TABLE OF CONTENTS

HERTEL SITE
373 HERTEL
(359 HERTEL ON TAX RECORDS)

THIS STUDY DONE DURING & AFTER THE
CERCLA SUPERFUND CLEANUP)

© Copyright

REAC

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

1.1 Objective of Study

The objective of this study was for the Response Engineering and Analytical Contract (REAC) to provide technical support to the United States Environmental Protection Agency/Environmental Response Team Center (U.S. EPA/ERTC) during soil collection, and install and sample groundwater from five monitor wells. The purpose of these sampling activities was to determine the presence and magnitude of contamination at the Morgan Materials site.

1.2 Site Background (U.S. EPA 1998)

The Morgan Materials site is located at 373 Hertel Road, a mixed residential and industrial area of Buffalo in Erie County, New York (Figure 1). The site sits on approximately 3.5 acres and consists of six interconnected warehouses. Population within a 2-mile radius of the site is approximately 30,000. There is a residential neighborhood of 30 homes immediately across the street from the site; the nearest residential property is 100 feet (ft) north in the same neighborhood. A middle school is located about 400 ft west of the site; three schools are located within a 0.75-mile radius.

Morgan Materials, Inc. is a broker of off-specification and discontinued chemicals that were purchased for the purpose of resale. On 14 March 1997, the New York State Department of Environmental Conservation (NYSDEC) requested that the U.S. EPA evaluate the site for a removal action. On 27 and 28 March 1997, U.S. EPA's Removal Action Branch and Superfund Technical Assessment and Response Team (START) performed a site evaluation and found numerous environmental concerns. During the evaluation, U.S. EPA observed between 8,000 and 10,000 drums possibly containing hazardous substances including flammable liquids, corrosive liquids and solids, and poisonous liquids. Many drums were found to be leaking, corroding, crushed, and/or deteriorating. Drums were stacked on pallets up to four high, with some appearing ready to topple. There was evidence of material spills inside the warehouse facility; spilled materials from previous cleanups were being stored in drums as well. Small portions of the warehouse floor consisted of soil and broken concrete, and there were areas of accumulated water. Information subsequently obtained increased the total number of drums to more than 20,000.

1.3 Geology and Hydrogeology (Engineering-Science, Inc. 1992)

The Morgan Materials site is located in the Erie-Ontario lowlands physiographic province where the bedrock is predominantly limestone, dolomite, and shale. This area has been repeatedly covered by continental glacial ice sheets which have deposited unstratified till. Thick veneers of stratified till have been deposited by glacial meltwater channels. Meltwater also formed lakes at the ice margins, where silts and clays accumulated. Erie county is covered by such lake sediments.

Stratified glacial tills consisting of sand and gravel may act as aquifers in the area of the site, with the clay and silt behaving as aquitards. No wells are known to obtain groundwater from bedrock [approximately 60 ft to 80 ft below ground surface (bgs)] in the vicinity of the site. Drilling activities at the site have shown the upper 30 ft of overburden to consist mainly of red-brown silty clay, overlain by fill material at some areas of the site.

The Niagara River is the closest body of water to the site, approximately 0.75 miles to the west. The Niagara receives surface water and groundwater from the direction of the site (Environmental-Science, Inc. 1992).

2.0 METHODOLOGY

2.1 Soil Sampling

Soil samples were collected at 17 locations (Figure 2) for analyses of volatile organic compounds (VOCs), base/neutral acid (BNA) extractable compounds, target analyte list (TAL) metals, pesticides, and polychlorinated biphenyls (PCBs). At each location, a Geoprobe™ was used to core down to 4 ft bgs. Upon extraction, the core was scanned with a photo ionization detector (PID) for VOCs. If sections of the core were found to have detectable VOCs, portions of those sections were placed in sample jars for further VOC analysis. Otherwise, representative samples from the entire length of the core were place in VOC jars for analysis. The remainder of the core was emptied onto plastic sheeting and thoroughly mixed. Sample jars for the remaining analyses were filled from this mixture. All samples were labeled, logged, placed in an ice-packed cooler, and shipped to the REAC laboratories in Edison, NJ. Samples were collected per REAC/ERTC Standard Operating Procedure (SOP) #2012, *Soil Sampling*.

2.2 Monitor Wells

2.2.1 Monitor Well Installation

Five groundwater monitor wells were installed in the overburden per REAC/ERTC SOP #2048, *Monitor Well Installation*, to monitor groundwater quality at the Morgan Materials site. Each boring was drilled using 6-inch outside diameter (3.25-inch inside diameter) hollow-stem augers. To evaluate lithology and water-bearing zone(s), split-spoon samples were collected continuously at three locations, and at 5-foot intervals at two others. Wells were constructed of 2-inch diameter, schedule 40 polyvinyl chloride (PVC) well screen and casing. With the exception of MW-3, well screens were 10 ft long with a slot size of 0.010 inches (#10 slot); a 5-foot well screen was used at MW-3 because of the proximity of the water table to ground surface at that location. Annular space between the well screen and the formation was filled with filter pack (Morie #1) to an elevation approximately 2 ft above the top of the screen. A 1- to 2-foot bentonite seal was placed above the filter pack to prevent infiltration of the cement grout into the filter pack and well screen. A cement-bentonite grout mixture was placed above the seal and extended to just below ground surface. Depending on the location, wells were completed with either a protective stick-up casing or flush-mount installations, with cement pads to provide drainage away from the wells.

2.2.2 Monitor Well Development

Monitor wells were developed with new teflon™ disposable bailers between 24 and 48 hours after installation. Parameters such as pH, specific conductance, dissolved oxygen, temperature, and turbidity were monitored at regular volumetric intervals. Normally, development would continue until the water was sediment free, ideally with turbidity readings less than 5 NTUs. However, three of the five wells (MW-1, MW-2, and MW-5) recharged very slowly and went dry a number of times during development. These wells were developed to the extent that time allowed. Two other wells, MW-3 and MW-4, did not clear up to the desired <5 NTUs; 35 and 20 well volumes of water were purged from each of these wells, respectively. Field well-development forms can be found in Appendix A.

2.2.3 Groundwater Sampling

Monitor wells were sampled using new disposable teflon™ bailers, approximately 18 to 20 hours after development was completed. This time interval allowed the slow-recharging wells to recharge sufficiently for sampling. REAC personnel were not able to obtain a groundwater sample from Monitor Well MW-5 due to slow recharge in the well.

Wells were sampled by lowering and raising bailers very slowly to avoid agitating water within the wells. VOC samples were always collected first, followed by random ordered sampling for BNAs, TAL metals, pesticides, and PCBs. Samples for TAL metals analysis were preserved in the field immediately after collection by adjusting the pH to less than 2 standard units; the pH was lowered by adding to the sample a 10 percent solution of ultra pure nitric acid and laboratory distilled/deionized water. The nitric acid solution was prepared at REAC laboratories by a chemist. All samples were labeled, logged, placed in an ice-packed cooler, and shipped to REAC. Samples were collected per REAC/ERT SOP #2007, *Groundwater Well Sampling*.

3.0 RESULTS

A table showing analytical results is associated with each following subsections unless less than two compounds were detected. For the most part, the analyte list for each table is limited to detected compounds (please refer to Appendix C for a full list of analytes, detection limits, and results). For VOCs, all analytes detected in either groundwater or soil are listed in both tables. All TAL metals are listed in the tables for soils and groundwater. Also, if available, each analytical-results table displays the NYSDEC cleanup objectives for each analyte for soil, and groundwater quality standards for water. If NYSDEC standards were unavailable, U.S. EPA maximum contaminant levels (MCLs) were substituted, if available.

3.1 Monitor Well Installation and Development

Five groundwater monitor wells were installed into the first water-bearing zone below grade at each location (Figure 2). Table 1 shows well construction details. Borehole logs and well construction diagrams can be found in Appendix B. At monitor well locations MW-1, MW-2, and MW-5, boreholes were advanced through a red-brown, dry, firm, silty clay with low plasticity, into a gray-brown, highly plastic, soft, moist, clay considered the first water-bearing zone. At each of these locations, the moist clay was encountered between 30 and 32 ft bgs.

At monitor well location MW-3, the borehole was advanced through approximately 10 ft of moist to wet, gray-black, gravel fill. The borehole was further advanced through 10 ft of dry red-brown, silty clay. Upon examination of wet cuttings around the borehole, it was determined that a perched aquifer existed over the clay, which was acting as a low-conductivity hydraulic barrier (aquitard) at this location. The well was installed to monitor the perched aquifer so as not to disrupt the integrity of the aquitard.

The borehole at MW-4 was advanced through approximately 24 ft of black-brown-red, poorly sorted gravel and sand similar to that of MW-3, although this material was saturated starting at approximately 11 ft bgs. Dry, red-brown, silty clay was encountered at 26 ft bgs; the well was set to a total depth of 28 ft bgs.

3.2 Analytical Results

3.2.1 Volatile Organic Compounds

Table 2 lists the detected VOC results for Geoprobe™ soil samples: listed VOCs are limited to those detected in soil or groundwater. Tetrachloroethene (PCE) was detected at the highest concentrations ranging from 39 micrograms per kilogram (μg/kg) at Geoprobe Point (GP)-17 to 31,000 μg/kg at GP-12. Trichloroethene (TCE) was detected at five sample locations: 1,400 μg/kg at GP-10, 2,700 μg/kg at GP-7, 350 μg/kg at GP-6, 1.9 μg/kg at GP-16, and 1.4 μg/kg at GP-17. 1,1,2,2-Tetrachloroethane (PCA) was found at two sample locations: GP-6 at 520 μg/kg, and GP-7 at 1,300 μg/kg. Acetone was detected at sample location GP-17 at 16,000 μg/kg, and in lower concentrations at GP-3, GP-4, and GP-5. Other VOCs detected in low concentrations include: trichlorofluoromethane, carbon disulfide, trans-1,2-dichloroethene (DCE), cis-1,2-DCE, benzene, carbon tetrachloride, 1,1,2-trichloroethane (TCA), toluene, ethylbenzene, xylenes, p-isopropyltoluene, and naphthalene.

VOCs detected in the groundwater samples are listed in Table 3. No VOCs were detected in Monitor Wells MW-1 and MW-2. Seven VOCs were detected in Monitor Wells MW-3 and MW-4. TCE and cis-1,2-DCE were found in the highest concentrations, 500 micrograms per liter (μg/L) and 540 μg/L respectively, both at Monitor Well MW-3. The sample from MW-3 also had 62 μg/L vinyl chloride. The highest VOC concentration detected in Monitor Well MW-4 was 6.7 μg/L TCE. Other detected VOCs in Monitor Wells MW-3 and MW-4 include: 1,1-DCE, methyl-tertiary-butylether (MTBE), and trans-1,2-DCE.

3.2.2 Target Analyte List Metals

Table 4 lists soil sample results for TAL metals analyses. All soil samples contained high concentrations of aluminum [4,100-16,000 milligrams per kilogram (mg/kg)], calcium (3,000-120,000 mg/kg), iron (9,200-89,000 mg/kg), magnesium (1,400-19,000 mg/kg), manganese (140-2,400 mg/kg), and potassium (360-2,400 mg/kg). Zinc was detected at two locations in relatively high concentrations; 1,200 mg/kg at GP-15 and 4,000 mg/kg at GP-10. Samples from 11 geoprobe locations contained detectable amounts of mercury ranging from 0.03 mg/kg to 1.0 mg/kg at sample location GP-14. Chromium was detected at most sample locations in concentrations ranging from 13 mg/kg to 65 mg/kg at GP-15. Cadmium was found at four sample locations in concentrations ranging from 0.54 mg/kg to 1.9 mg/kg at GP-13. Beryllium was detected at eight locations ranging from 0.69 mg/kg at GP-9 and GP-17, to 2.6 mg/kg at GP-15. Other metals detected at all locations include: arsenic, barium, cobalt, copper, lead, nickel, and vanadium. Selenium was detected at one location, GP-15, at 0.74 mg/kg.

Table 5 shows groundwater sample results for TAL metals analyses. As with the soil samples, groundwater samples contained high concentrations of calcium (55,000-140,000 μg/L), iron (120-15,000μg/L), magnesium (5,100-280,000 μg/L), and potassium (5,800-7,700 μg/L). Sodium was detected in concentrations ranging from 45,000 μg/L to 270,000 μg/L. Mercury was detected in Monitor Well MW-1 at 0.20 μg/L. Other metals detected in groundwater include: aluminum, barium, lead, manganese, and zinc.

3.2.3 Base Neutral Acid Extractable Compounds

Table 6 shows soil sample analytical results for detected BNA compounds. A majority of the soil samples contained polynuclear aromatic hydrocarbons (PAHs) ranging from 78 μg/kg to 14,000 μg/kg at location GP-12. Diethylphthalate was also detected in concentrations ranging from 200 μg/kg to 11,000 μg/kg at sample location GP-6. The soil sample from location GP-17 also contained a high level of phenol at 280,000 μg/kg. Sample locations GP-8 and GP-9 showed no detected BNAs.

Concentrations of bis(2-ethylhexyl)phthalate were detected in groundwater samples from MW-1, MW-2, MW-3, and the Field Blank. At MW-1, the detected concentration of bis(2-ethylhexyl)phthalate was 14 μg/L; 2.5 μg/L at MW-2; 2.6 μg/L at MW-3; and 10 μg/L in the Field Blank. No other BNAs were detected in groundwater samples.

3.2.4 Pesticides and Polychlorinated Biphenyls

Soil sample analytical results for detected pesticides and PCBs are shown in Table 7. No target compounds were found in any of the groundwater samples. Low concentrations of heptachlor epoxide, endosulfan (I), p,p'-dichlorodiphenyldichloroethylene (DDE), p,p'-dichlorodiphenyldichloroethane (DDD), endrin aldehyde, and methoxychlor where detected in soil samples. Of these compounds, the highest concentration was 43 μg/kg heptachlor epoxide detected at sample location GP-6, in the northwest corner of Building 1 (Figure 2). Sample location GP-6 also had the highest detected concentrations of p,p'-DDD (13 μg/kg) and methoxychlor (23 μg/kg). p,p'-dichlorodiphenyltrichloroethane (DDT) was detected at three locations: GP-15 (10 μg/kg), GP-12 (7.4 μg/kg), and GP-13 (6.0μg/kg). All other detections in soil samples were at low (<5 μg/kg) concentrations. In six soil samples, one or a combination of aroclor 1248, aroclor 1254, and aroclor 1260 were detected with the highest concentrations being 310 μg/kg aroclor 1254 and 290 μg/kg aroclor 1260, both at GP-14.

4.0 DISCUSSION OF RESULTS

Two water-bearing zones exist beneath the site: one confined by a stiff silty clay; the second is perched above the clay within the fill, as found at MW-3 and MW-4. It is unclear if the confined water-bearing zone is continuous beneath the entire site, or whether the perched zone is continuous between Monitor Wells MW-3 and MW-4. However, both situations seem likely.

The dry, stiff clay supporting the perched aquifer seems to provide a barrier to downward vertical movement of groundwater from this water-bearing zone. The extent and continuity of the clay in relation to the perched aquifer are unknown. However, samples obtained from the confined zone do not show evidence of the contamination detected in soil samples, or in samples obtained from the perched aquifer, except for mercury detected at MW-1. Unfortunately, local groundwater flow directions of either water-bearing zone are not currently known.

Figure 3 shows selected analytical results that "stand out" at certain sample locations, due either to high concentrations of individual contaminants, a wide variety of contaminants, or a unique detection of an element or compound. Selected data are presented next to the appropriate sample point and color coded by analyte group. At several sample locations, "Total PAH" indicates the summed concentrations of PAHs as defined by National Institute for Occupational Safety and Health (NIOSH) method number 5515 (see Appendix D). Units in this figure are expressed in parts per billion (ppb) or parts per million (ppm).

Groundwater analytical results suggest that groundwater quality in the perched aquifer (MW-3 and MW-4) is generally worse than in the clay water-bearing zone (MW-1 and MW-2), particularly for VOCs. Monitor Well MW-3 had the highest VOC concentrations with high levels of cis-1,2-DCE, TCE, and PCE. MW-4 also had lower detectable concentrations of vinyl chloride, MTBE, cis-1,2-DCE, and TCE (Table 3). Monitor Well MW-3 also had concentrations of aluminum, arsenic, iron, manganese, and sodium (Table 5) that were either not found at other wells, or not at the elevated concentrations detected in MW-3. Most of these metals could have been derived from the clay, however, that leads to the question of why concentrations of these metals are elevated in MW-3. Mercury was detected at Monitor Well MW-1 at 0.20 μg/L; it was not detected at other monitor wells. Most of the elements or compounds that exceeded NYSDEC water quality limits are volatile organic compounds. They include: vinyl chloride, cis-1,2-dichloroethene, TCE, and PCE at MW-3; vinyl chloride and TCE at MW-4 (Table 3). Three metals exceeded NYSDEC water quality objectives: sodium at all wells; iron at MW-1 and MW-3; manganese at MW-3 (Table 5).

BNAs were generally not detected in groundwater samples except for bis(2-ethylhexyl)phthalate detected at low concentrations in samples from Monitor Wells MW-1, MW-2, and MW-3, as well as the field blank. Because this constituent was found in the field blank at similar levels as the groundwater samples, these results should be considered invalid.

Soil samples with VOC concentrations exceeding NYSDEC cleanup objectives include samples from locations GP-7 (2,700 μg/kg TCE; 1,300 μg/kg PCE), GP-10 (1,400 μg/kg TCE; 4,800 PCE), GP-12 (31,000 PCE), and GP-17 (16,000 μg/kg acetone). Also detected at sample location GP-17 were low concentrations of the same VOCs found in the groundwater sample from the adjacent Monitor Well MW-3 (Table 2 and Table 3).

The presence of TAL metals in soil was fairly consistent throughout the site [i.e., most elements that were detected at one location were detected at all locations (Table 4)]. Some exceptions to this are beryllium, cadmium, mercury, selenium, and zinc. Metals detected in concentrations exceeding NYSDEC cleanup objectives include: arsenic, beryllium, cadmium, chromium, iron, mercury, nickel, and zinc. Arsenic exceeds NYSDEC cleanup objectives at several locations, however, concentrations were within the eastern U.S. background range (indicated in parentheses in Table 4) at all locations. The same can be observed for beryllium, except at sample location GP-15. Cadmium exceeds specified limits at two locations: GP-12 and GP-13. Chromium exceeds cleanup objectives at most locations, but was detected in concentrations much greater then the average (about 23 mg/kg) at only two locations: GP-15 and GP-17. Iron exceeds cleanup objectives at all locations, but given the prevalent high concentrations, the site background concentration is probably significantly higher than the cleanup objective. The same observations can be made for zinc and nickel, however zinc was detected in very high concentrations at sample locations GP-10 and GP-15; and nickel at GP-15 and GP-17. Mercury was detected in concentrations exceeding NYSDEC objectives at GP-2, GP-13, GP-14, and GP-17.

BNAs were detected at most sample locations, except GP-8 and GP-9. Sample location GP-16 had the widest variety of contaminants, albeit at relatively low concentrations; GP-1, GP-10, and GP-17 also had high numbers of different contaminants. Sample location GP-17 had the highest concentration of any one contaminant in the group: 280,000 μg/kg phenol. Locations GP-1, and GP-10 through GP-17 had one or more PAHs detected in concentrations exceeding NYSDEC cleanup objectives (Table 6).

Higher concentrations of PCBs and pesticides in soil were limited to a few sample locations: GP-1, GP-6, GP-14, and GP-15. A combination or one of aroclor 1248, 1254, and aroclor 1260 was most common. Sample location GP-6 had the highest levels of other contaminants in this group. None of the detected concentrations exceeded specified NYSDEC cleanup objectives (Table 7).

5.0 CONCLUSIONS

Based on soil borings, and the soil and groundwater analytical results, the following conclusions can be made regarding the Morgan Materials site:

- The site overlies a stiff, red-brown, dry, silty clay which acts as a confining layer for an underlying water-bearing zone within a plastic clay, and a supporting layer for a water-bearing zone composed of a red-brown to gray-black, sandy, gravel fill. The thickness of the gravel fill increases from west to east across the site.

- Groundwater within the fill displays worse quality than groundwater within the clay. Groundwater samples obtained from wells screened in the clay showed no concentrations above NYSDEC water quality regulatory levels. This suggests that the stiff clay may provide an effective barrier to vertical groundwater movement.

- There are several sample locations where one or more contaminants were detected (Figure 3), but four areas stand out: 1) the western portion of Building 1, where a high number of different compounds were detected at GP-6; 2) the eastern section of Building 1, where TCE and PCE were detected at relatively high concentrations in soil samples from GP-7 and GP-10, in addition to a high concentration of zinc detected at GP-10; 3) the area surrounding the loading dock where high concentrations of VOCs, metals, PAHs, and phenol were detected in soil samples, in addition to VOCs and metals detected in the groundwater sample obtained from MW-3; and 4) GP-15 where several metals were detected at concentrations exceeding NYSDEC cleanup objectives.

REFERENCES

Engineering-Science, Inc. 1992. Phase II Investigations - Hertel Avenue, NYS Site Number 915121, Erie County, New York.

New York State Department of Environmental Conservation. 1994a. Memorandum dated 24 January 1994 from M.J. O'Toole, Director, Division of Hazardous Waste Remediation, to Regional Hazardous Waste Remediation Engineers, Bureau Directors and Section Chiefs. Subject: Determination of Soil Cleanup Objectives and Cleanup Levels.

New York State Department of Environmental Conservation. 1994b. Water Quality Regulation: Surface and Groundwater Classifications and Standards. New York State Codes, Rules and Regulations, Title 6, Chapter X, Parts 700-705.

U.S. EPA. 1992. Drinking Water Regulations and Health Advisories. Office of Water, U.S. EPA, Washington, D.C.

U.S. EPA. 1998. Action Memorandum dated 10 April 1998 from K. Matheis, On-Scene Coordinator, to J. Fox, Regional Administrator.

TABLE 1
Well Construction Details
Morgan Materials Site
January 1999

Well	Total Depth (ft bgs)	Screened Interval (ft bgs)	Depth to Water (ft bgs)
MW-1	35	25-35	26.5
MW-2	38	28-38	5.5
MW-3	20	8-13	8
MW-4	28	18-28	12.5
MW-5	37	27-37	34

ft bgs = feet below ground surface

TABLE 2
Volatile Organic Compounds in Soil
Morgan Materials Site
January 1999

Location	NYSDEC Objectives[1]	GP-1	GP-2	GP-3	GP-4	GP-5	GP-6	GP-7	GP-8	GP-9
Analyte	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Vinyl Chloride	120	U	U	U	U	U	U	U	U	U
Tricholorofluoromethane	na	U	U	1.3	0.7 J	U	U	U	U	U
Acetone	110	U	U	27	34	23	U	U	U	U
1,1-Dichloroethene	400	U	U	U	U	U	U	U	U	U
Carbon Disulfide	2,700	U	U	7.9	U	U	72	U	U	U
Methyl-tertiary-butylether	na	U	U	U	U	U	U	U	U	U
trans-1,2-Dicholoroethene	na	U	U	U	U	U	58	2.1	U	U
cis-1,2-Dichloroethene	na	U	U	U	U	U	U	18	U	U
Carbon Tetrachloride	600	U	U	U	U	U	U	U	U	U
Benzene	60	U	U	1.6	U	U	U	U	U	U
Trichloroethene	700	U	U	U	U	U	350	2,700	U	U
1,1,2-Trichloroethane	na	U	U	U	U	U	150	6.3	U	U
Toluene	1,500	U	U	5.6	U	U	8.6	U	1.3	U
Tetrachloroethene	1,400	U	U	U	U	U	U	66	U	U
Ethylbenzene	5,500	U	U	1.2	U	U	11	U	U	U
p & m-Xylene	1,200	U	U	2.1	U	U	62	U	U	U
o-Xylene	1,200	U	U	0.9 J	U	U	41	U	U	U
1,1,2,2-Tetrachloroethane	600	U	U	U	U	U	520	1,300	U	U
p-Isopropyltoluene	na	U	U	U	U	U	U	U	U	U
Naphthalene	13,000	U	U	U	U	U	73	U	U	U

Samples collected 3-4 November 1998.
(1) - New York State Department of Environmental Conservation (NYSDEC) soil cleanup objectives to protect groundwater quality (NYSDEC 1994a).
µg/kg - micrograms per kilogram.
Concentrations exceeding NYSDEC objectives in bold.
J - denotes below method dectection limit.
U - denotes compound not detected.
na - not available.

TABLE 2 (Cont'd)
Volatile Organic Compounds in Soil
Morgan Materials Site
January 1999

Location	NYSDEC Objectives[1]	GP-10	GP-11	GP-12	GP-13	GP-14	GP-15	GP-16	GP-17
Analyte	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Vinyl Chloride	120	U	U	U	U	U	U	U	U
Tricholorofluoromethane	na	U	U	U	U	0.7 J	U	U	U
Acetone	110	U	U	U	U	U	U	U	16,000
1,1-Dichloroethene	400	U	U	U	U	U	U	U	U
Carbon Disulfide	2,700	U	U	U	U	U	U	U	U
Methyl-tertiary-butylether	na	U	U	U	U	U	U	U	U
trans-1,2-Dicholoroethene	na	U	U	U	U	U	U	U	U
cis-1,2-Dichloroethene	na	U	U	U	U	U	U	U	4.1
Carbon Tetrachloride	600	U	U	3.1	U	U	U	U	U
Benzene	60	U	U	U	U	U	U	U	U
Trichloroethene	700	1,400	U	U	U	U	U	1.9	1.4
1,1,2-Trichloroethane	na	U	U	U	U	U	U	U	U
Toluene	1,500	U	U	U	U	U	U	U	U
Tetrachloroethene	1,400	4,800	U	31,000	U	U	U	U	39
Ethylbenzene	5,500	U	U	U	U	U	U	U	U
p & m-Xylene	1,200	U	U	U	U	U	U	U	U
o-Xylene	1,200	U	U	U	U	U	U	U	U
1,1,2,2-Tetrachloroethane	600	33	U	U	U	U	U	U	U
p-Isopropyltoluene	na	U	U	U	U	U	U	U	7.5
Naphthalene	13,000	U	U	U	U	U	U	U	U

Samples collected 3-4 November 1998.
(1) - New York State Department of Environmental Conservation (NYSDEC) soil cleanup objectives to protect groundwater quality (NYSDEC 1994a).
µg/kg - micrograms per kilogram.
Concentrations exceeding NYSDEC objectives in bold.
J - denotes below method dectection limit.
U - denotes compound not detected.
na - not available.

TABLE 3
Volatile Organic Compounds in Groundwater
Morgan Materials Site
January 1999

Location	NYSDEC Objectives[1]	MW-1	MW-2	MW-3	MW-4
Compound	µg/L	µg/L	µg/L	µg/L	µg/L
Vinyl Chloride	2	U	U	**62**	**5.6**
Tricholorofluoromethane	na	U	U	U	U
Acetone	50	U	U	U	U
1,1-Dichloroethene	5	U	U	2.1	U
Carbon Disulfide	50	U	U	U	U
Methyl-tertiary-butylether	na	U	U	U	6.2
trans-1,2-Dicholoroethene	100[2]	U	U	4	U
cis-1,2-Dichloroethene	70[2]	U	U	**540**	23
Carbon Tetrachloride	5	U	U	U	U
Benzene	0.7	U	U	U	U
Trichloroethene	5	U	U	**500**	**6.7**
Bromodichloromethane	100[2]	U	U	U	U
1,1,2-Trichloroethane	0.6	U	U	U	U
Toluene	5	U	U	U	U
Tetrachloroethene	5	U	U	**390**	U
Ethylbenzene	5	U	U	U	U
p & m-Xylene	5	U	U	U	U
o-Xylene	5	U	U	U	U
1,1,2,2-Tetrachloroethane	5	U	U	U	U
p-Isopropyltoluene	na	U	U	U	U
Naphthalene	10	U	U	U	U

Samples collected 7 November 1998.
µg/L - micrograms per liter.
(1) - New York State Department of Environmental Conservation (NYSDEC) water quality regulations (NYSDEC 1994b).
(2) - NYSDEC water quality regulation unavailable; U.S. Environmental Protection Agency (USEPA) maximum contaminant level (MCL) indicated (USEPA 1992).
Concentrations exceeding specified limits in bold.
J - denotes below Method Detection limit.
U - denotes compound Not Detected.
na - not available

TABLE 4

Tareget Analyte List Metals in Soil

Morgan Materials Site

January 1999

Location	NYSDEC Objectives[1]	GP-1	GP-2	GP-3	GP-4	GP-5	GP-6	GP-7	GP-8	GP-9	GP-10
Parameter	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	SB (33,000)	10,000	6,700	3,500	16,000	13,000	5,900	17,000	15,000	13,000	5,900
Antimony	SB	U	U	U	U	U	U	U	U	U	U
Arsenic	7.5 or SB	4.2	2.6	2.5	3.6	2.9	3.1	3.3	3.3	2.9	5.8
Barium	300 or SB	95	80	41	130	62	97	120	110	95	39
Beryllium	.16 or SB (0-1.75)	**0.90**	U	U	**0.84**	U	U	**0.89**	**0.75**	**0.69**	U
Cadmium	1	U	U	U	U	U	U	U	U	U	0.54
Calcium	SB (130-35,000)	51,000	24,000	120,000	18,000	3,000	27,000	24,000	62,000	60,000	12,000
Chromium	10 or SB	19	17	17	23	15	10	22	20	17	19
Cobalt	30 or SB	7.0	4.0	2.2	13	16	4.1	14	12	9.0	4.9
Copper	25 or SB	81	30	27	25	11	9.5	22	21	23	32
Iron	2,000 or SB	**40,000**	**17,000**	**13,000**	**30,000**	**21,000**	**9,200**	**29,000**	**26,000**	**23,000**	**52,000**
Lead	SB	95	45	76	36	14	11	17	9.6	13	13
Magnesium	SB (100-5,000)	6,900	3,100	15,000	5,700	4,300	6,000	13,000	17,000	19,000	2,200
Manganese	SB (50-5,000)	1,100	140	760	450	440	220	740	570	460	1,400
Mercury	0.1	0.09	0.37	0.05	U	U	U	U	U	0.03	0.03
Nickel	13 or SB (0.5-25)	24	29	13	30	15	13	31	27	23	7.9
Potassium	SB (8,500-43,000)	1,100	1,200	360	1,300	980	1,100	2,200	2,400	2,100	630
Selenium	2 or SB	U	U	U	U	U	U	U	U	U	U
Silver	SB	U	U	U	U	U	U	U	U	U	U
Sodium	SB (6,000-8,000)	220	370	1,500	420	250	520	190	310	260	290
Thallium	SB	U	U	U	U	U	U	U	U	U	U
Vanadium	150 or SB	20	14	17	30	26	12	32	28	25	28
Zinc	20 or SB (9-50)	**140**	**52**	**64**	**82**	**65**	**28**	**91**	**69**	**70**	**4,000**

Samples collected 3-4 November 1998.

(1) - New York State Department of Environmental Conservation (NYSDEC) soil cleanup objectives to protect groundwater quality (NYSDEC 1994a).

mg/kg - milligrams per kilogram.

SB - site background (numbers in parentheses are eastern US background).

Concentrations exceeding specified limits in **bold**.

U - denotes not detected.

TABLE 4 (Cont'd)
Tareget Analyte List Metals in Soil
Morgan Materials Site
January 1999

Location	NYSDEC Objectives(1)	GP-11	GP-12	GP-13	GP-14	GP-15	GP-16	GP-17	Field Blank-O	Field Blank-I
Parameter	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	SB (33,000)	4,900	6,500	4,100	4,300	19,000	12,000	11,000	59	28
Antimony	SB	U	U	U	U	U	U	U	U	U
Arsenic	7.5 or SB (3-12)	5	8.7	5.1	9.9	10	5.0	7.0	U	U
Barium	300 or SB	47	610	47	81	200	120	140	1.1	U
Beryllium	.16 or SB (0-1.75)	U	U	U	U	2.6	1.2	0.69	U	U
Cadmium	1	0.6	1.4	1.9	0.81	U	U	0.84	U	U
Calcium	SB (130-35,000)	7,700	7,800	24,000	25,000	83,000	86,000	21,000	80	U
Chromium	10 or SB	19	21	13	29	65	13	59	U	U
Cobalt	30 or SB	4.9	9.1	4.5	5.7	7.3	6.3	6.4	U	U
Copper	25 or SB	51	78	72	230	120	42	260	U	U
Iron	2,000 or SB	47,000	77,000	43,000	83,000	89,000	16,000	54,000	290	89
Lead	SB	66	83	99	140	45	21	110	U	U
Magnesium	SB (100-5,000)	1900	2000	12000	2200	14000	15000	1400	U	U
Manganese	SB (50-5,000)	710	1,000	600	2,300	2,400	980	4,300	15	2.8
Mercury	0.1	0.04	0.10	0.12	1.0	0.07	U	0.51	U	U
Nickel	13 or SB (0.5-25)	13	27	11	23	170	18	1,000	2.8	U
Potassium	SB (8,500-43,000)	660	790	440	460	1,200	1,600	1,000	U	U
Selenium	2 or SB	U	U	U	U	0.74	U	U	U	U
Silver	SB	U	U	U	U	U	U	U	U	U
Sodium	SB (6,000-8,000)	99	140	230	210	450	370	780	U	U
Thallium	SB	U	U	U	U	U	U	U	U	U
Vanadium	150 or SB	18	23	11	22	28	17	28	U	U
Zinc	20 or SB (9-50)	120	330	610	190	1,200	110	350	2	U

Samples collected 3-4 November 1998.

(1) - New York State Department of Environmental Conservation (NYSDEC) soil cleanup objectives to protect groundwater quality (NYSDEC 1994a).

mg/kg - milligrams per kilogram.

SB - site background (numbers in parentheses are eastern US background).

Concentrations exceeding specified limits in bold.

U - denotes not detected.

TABLE 5
Target Analyte List Metals in Groundwater
Morgan Materials Site
January 1999

Location	NYSDEC Objectives[1]	MW-1	MW-2	MW-3	MW-4
Analyte	µg/L	µg/L	µg/L	µg/L	µg/L
Aluminum	na	760	64	1,200	130
Antimony	6[2]	U	U	U	U
Arsenic	25	U	U	2.5	U
Barium	1,000	58	22	140	16
Beryllium	4[2]	U	U	U	U
Cadmium	10	U	U	U	U
Calcium	na	140,000	130,000	92,000	55,000
Chromium	50	U	U	U	U
Cobalt	na	U	U	U	U
Copper	200	U	U	U	U
Iron	300	**1,400**	120	**15,000**	260
Lead	25	U	U	3.8	U
Magnesium	na	250,000	280,000	15,000	5,100
Manganese	300	190	84	**570**	22
Mercury	2	0.20	U	U	U
Nickel	100[2]	U	U	U	U
Potassium	na	7,700	7,700	5,800	11,000
Selenium	10	U	U	U	U
Silver	50	U	U	U	U
Sodium	20,000	**110,000**	**150,000**	**270,000**	**45,000**
Thallium	2[2]	U	U	U	U
Vanadium	na	U	U	U	U
Zinc	300	22	U	21	U

Samples collected 7 November 1998.

µg/L - micrograms per liter.

(1) - New York State Department of Environmental Conservation (NYSDEC) groundwater standards (NYSDEC 1994a, 1994b).

(2) - NYSDEC water quality regulation unavailable; U.S. Environmental Protection Agency (USEPA) maximum contaminant level (MCL) indicated (USEPA 1992).

Concentrations exceeding specified limits in **bold**.

U - denotes compound Not Detected.

na - not available.

TABLE 6
Base Neutral Acid Extractables in Soil
Morgan Materials Site
January 1999

Location	NYSDEC Objectives[1]	GP-1	GP-2	GP-3	GP-4	GP-5	GP-6	GP-7	GP-8	GP-9
Analyte	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Phenol	30	U	U	U	U	U	U	U	U	U
Naphthalene	13,000	1,700 J	U	U	U	U	U	U	U	U
4-Chloro-3-methylphenol	240	U	U	U	U	U	U	U	U	U
2-Methylnaphthalene	36,400	920 J	110 J	U	120 J	U	6,800 J	U	U	U
Acenaphthene	50,000	U	U	U	U	U	U	U	U	U
Dibenzofuran	6,200	970 J	U	U	U	U	4,800 J	U	U	U
Diethylphthalate	7,100	U	390	2,500 J	440	490	11,000	450	U	U
Fluorene	50,000	1,100 J	U	U	U	U	5,500 J	U	U	U
Phenanthrene	50,000	7,200	U	U	U	U	19,000	U	U	U
Anthracene	50,000	1,800 J	U	U	U	U	18,000	U	U	U
Carbazole	na	830 J	U	U	U	U	U	U	U	U
Fluoranthene	50,000	7,200	81 J	780 J	88 J	U	U	U	U	U
Pyrene	50,000	5,400	U	800 J	78 J	U	2,400 J	U	U	U
Benzo(a)anthracene	224	2,900 J	U	U	U	U	U	U	U	U
Chrysene	400	3,000 J	U	U	U	U	U	U	U	U
Bis(2-Ethylhexyl)phthalate	50,000	U	100 J	U	U	U	U	97 J	U	U
Benzo(b)fluoranthene	1,100	2,200 J	U	U	U	U	U	U	U	U
Benzo(k)fluoranthene	1,100	2,500 J	U	U	U	U	U	U	U	U
Benzo(a)pyrene	61	2,500 J	U	U	U	U	U	U	U	U
Indeno(1,2,3-cd)pyrene	3,200	1,400 J	U	U	U	U	U	U	U	U
Dibenzo(a,h)anthracene	14	U	U	U	U	U	U	U	U	U
Benzo(g,h,i)perylene	50,000	1,400 J	U	810 J	U	U	U	U	U	U

Samples collected 3-4 November 1998.

(1) - New York State Department of Environmental Conservation (NYSDEC) soil cleanup objectives to protect groundwater quality (NYSDEC 1994a).

µg/kg - micrograms per kilogram.

U - denotes not detected.

J - denotes below method detection limit.

na - not available.

TABLE 6 (Cont'd)
Base Neutral Acid Extractables in Soil
Morgan Materials Site
January 1999

Location	NYSDEC Objectives[1]	GP-10	GP-11	GP-12	GP-13	GP-14	GP-15	GP-16	GP-17
Analyte	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Phenol	30	U	U	U	U	U	U	U	280,000
Naphthalene	13,000	180 J	U	U	U	1,500	U	460	860 J
4-Chloro-3-methylphenol	240	U	U	U	U	U	U	U	U
2-Methylnaphthalene	36,400	290 J	U	920 J	U	2,500	1,100 J	130 J	840 J
Acenaphthene	50,000	U	U	U	U	U	U	160 J	U
Dibenzofuran	6,200	90 J	U	U	U	570	U	210 J	970 J
Diethylphthalate	7,100	U	U	U	U	U	U	320 J	2,400 J
Fluorene	50,000	U	U	U	U	U	U	250 J	U
Phenanthrene	50,000	U	U	2700 J	1400 J	980	3,800	1,700	U
Anthracene	50,000	250 J	U	U	U	95 J	770 J	390 J	U
Carbazole	na	U	U	U	U	97 J	U	240 J	U
Fluoranthene	50,000	730	3,200 J	6,200	2,700 J	810	5,000	1,900	1,300 J
Pyrene	50,000	710	3,400 J	5,600	2,400 J	750	4,100	1,500	1,100 J
Benzo(a)anthracene	224	1,000	2,500 J	6,000	1,900 J	530	2,200 J	810	U
Chrysene	400	1,700	3,500 J	9,300	2,500 J	730	2,400 J	810	1,100 J
Bis(2-Ethylhexyl)phthalate	50,000	U	U	1,200 J	2,500 J	140 J	U	88 J	U
Benzo(b)fluoranthene	1,100	2,600	4,500	14,000	2,800 J	760	2,200 J	810	1,300 J
Benzo(k)fluoranthene	1,100	1,700	3,600 J	9,900	2,300 J	610	2,200 J	860	1,100 J
Benzo(a)pyrene	61	1,500	4,300	9,500	2,600 J	730	2,500 J	880	1,300 J
Indeno(1,2,3-cd)pyrene	3,200	1,500	3,500 J	9,500	1,800 J	500	1,500 J	570	980 J
Dibenzo(a,h)anthracene	14	700	1,300 J	3,700	U	220 J	U	140 J	U
Benzo(g,h,i)perylene	50,000	1,800	4,500	11,000	2,100 J	620	1,600 J	580	1,200 J

Samples collected 3-4 November 1998.

(1) - New York State Department of Environmental Conservation (NYSDEC) soil cleanup objectives to protect groundwater quality (NYSDEC 1994a).

µg/kg - micrograms per kilogram.

U - denotes not detected.

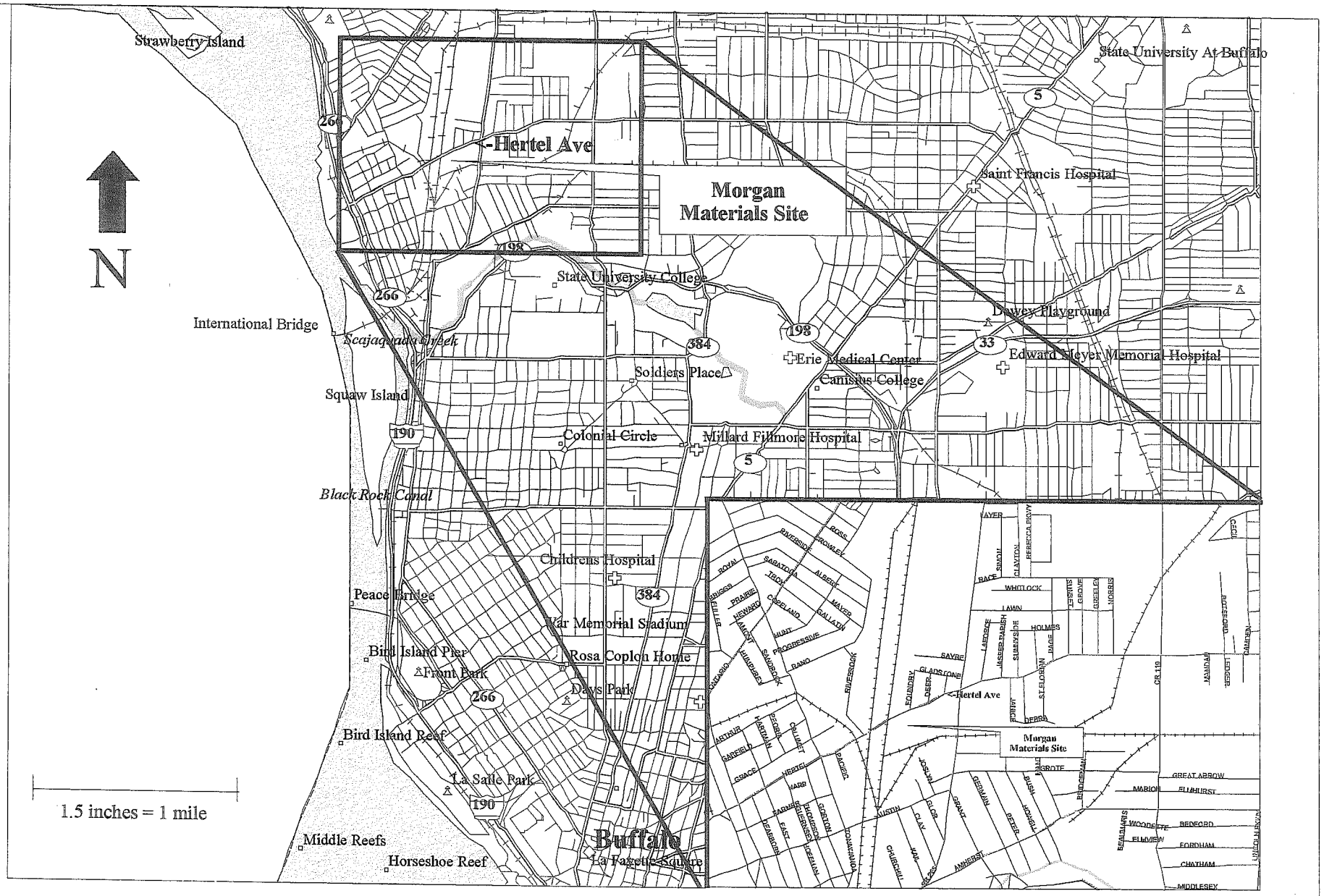
J - denotes below method detection limit.

na - not available.

TABLE 7
Pesticides and Polychlorinated Biphenyls in Soil
Morgan Materials Site
January 1999

Location	NYSDEC Objectives[1]	GP-1	GP-2	GP-3	GP-4	GP-5	GP-6	GP-7	GP-8	GP-9	GP-10	GP-11	GP-12	GP-13	GP-14	GP-15	GP-16	GP-17
Analyte	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Heptachlor Epoxide	20	U	U	U	U	U	43	U	U	U	U	U	U	U	3.3 J	U	U	U
Endosulfan (I)	900	U	U	U	U	U	U	U	U	U	U	U	1.7 J	U	U	U	U	U
p,p'-D D E	2,100	2.2 J	U	U	U	U	U	U	U	U	U	U	U	2.4 J	3.7	U	U	U
Endrin	100	U	U	U	U	U	U	U	U	U	U	U	2.1 J	U	U	U	U	U
p,p'-D D D	2,900	U	U	2.8 J	U	U	13	U	U	U	U	U	U	U	U	U	U	U
p,p'-D D T	2,100	3.6 J	U	U	U	U	U	U	U	U	U	U	7.4	6.0	U	10	U	U
Endrin Aldehyde	na	U	U	U	U	U	U	U	U	U	U	U	U	U	3.2 J	U	U	U
Methoxychlor	9,000	U	U	U	U	U	23	U	U	U	U	U	U	U	U	U	U	U
Aroclor 1248	1,000	260	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Aroclor 1254	1,000	U	U	15 W	U	U	U	U	U	U	U	U	U	U	310	U	U	U
Aroclor 1260	1,000	49	U	U	U	U	U	U	U	U	U	U	20 W	30 W	290	130	U	U

Samples collected 3-4 November 1998.
(1) - New York State Department of Environmental Conservation (NYSDEC) soil cleanup objectives to protect groundwater quality (NYSDEC 1994a).
µg/kg - micrograms per kilogram.
Concentrations exceeding specified limits in bold.
U - denotes not detected.
J - denotes below method detection limit.
W - denotes weathered analyte; the results should be regarded as estimated.
na - not available.



U.S. EPA ENVIRONMENTAL RESPONSE TEAM CENTER
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
68-C4-0022
W.O.# 03347-143-001-3399-01

FIGURE 1
SITE LOCATION MAP
MORGAN MATERIALS SITE
BUFFALO, NY
JANUARY 1999

HERTEL AVENUE

N

GP-1
GP-16
MW-1
GP-2
5
1
MW-5
GP-9
GP-6
GP-7
GP-10
GP-8
GP-5
6
GP-3
MW-4
GP-11
2
3
4
GP-4
GP-12
GP-15
MW-2
LOADING DOCK
FENCE
GP-13
GP-14
GP-17
MW-3

SCALE:
20 0 20 FEET

LEGEND
- GEOPROBE
- MONITOR WELL

U.S. EPA ENVIRONMENTAL RESPONSE TEAM CENTER
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
68-C4-0022
W.O.# 03347-143-001-3399-01

FIGURE 2
GEOPROBE SAMPLE AND MONITOR WELL LOCATIONS
MORGAN MATERIALS SITE
BUFFALO, NEW YORK
JANUARY 1999

399/BLDNG1.DWG 1/4/99

APPENDIX A
Field Well Development Forms
Morgan Materials Site
Buffalo, New York
January 1999

GEOLIS Well Development Form

COMPANY: Weston / REAC
CLIENT: USEPA / ERT
PROJECT: Morgan Materials
SITE/AREA:

LOCATION ID: MW-1
DATE: 11/5/98
MEASURED BY: W. Avery
SIGNATURE: WA

ONE WELL VOLUME: 1.25 gallons WELL TD: 34.40 ft TOC

Well Volume (gallons/foot): 2-inch = 0.16, 4-inch = 0.65, 6-inch = 1.47, 8-inch = 2.61

TIME	ACTIVITY CODE	DEPTH TO WATER (ft)	PURGE RATE (gpm)	PURGE VOLUME (gal)	FIELD MEASUREMENTS: pH	SC	DO	Temp	TURBIDITY	COMMENTS
1010	DBB	26.59		3	7.39	2.65	1.75	11.1	799	Brown, cloudy (W)
1021				13	7.38	2.68	8.48	10.8	904	
1037	DBE			4 ~ 2.5G						
1620	DBB			+1 G						Dry
11/6/98 525	DBB	29.99								
1000	DBE			+3	7.17	2.76		10.7	975	Dry (E 12 Gal)
1255	DBB	33.2					2.55			
1305	DBE			14	7.66	2.82	2.44	7.8	420	Dry
	FINAL									

WA

FINAL WELL YIELD: _____ GPM PUMP RATE - ESTIMATED CORRESPONDING DRAWDOWN: _____ FT

DEVELOPMENT ACTIVITY CODES

DBB - Begin Bailing
DOB - Begin Overpumping
DRB - Begin Rawhiding
DCB - Begin Recirculation
DHB - Begin Hydraulic Jetting
DAB - Begin Air Surging
DSB - Begin Surge Blocking
DXB - Begin Other
Specify other method: _____
FMT - Field Measurements (select from codes at right)

DBE - End Bailing
DOE - End Overpumping
DRE - End Rawhiding
DCE - End Recirculation
DHE - End Hydraulic Jetting
DAE - End Air Surging
DSE - End Surge Blocking
DXE - End Other

FIELD MEASUREMENT CODES

MTP - Temperature
MSC - Specific Conductance
MPD - Photoionizer (e.g., HNu)
MFD - Flame Ionizer (e.g., OVA)
MDO - Dissolved Oxygen
MPH - pH
MEH - Eh
MMC - Imhoff Cone
MO1 - Other: _____
MO2 - Other: _____

TURBIDITY

Enter Turbidity Meter Reading (Final should be < 5 NTU)
OR
Enter Qualitative Observations
H - High: Opaque/Muddy/Silty
M - Medium: Translucent/Cloudy
L - Low: Transparent/Some Silt
N - None: Clear/No Visible Silt

COPYRIGHT © 1990, 1994 by Roy F. Weston, Inc.

26.59

GEOLIS Well Development Form

COMPANY: Weston / REAC
CLIENT: USEPA
PROJECT: Morgan Materials
SITE/AREA:

LOCATION ID: MW-3
DATE: 11/6/98
MEASURED BY: Will Akers
SIGNATURE: WA

ONE WELL VOLUME: 1.1 gallons WELL TD: 14.94 ft TOC

Well Volume (gallons/foot): 2-Inch = 0.16 6-Inch = 1.47 4-Inch = 0.65 8-Inch = 2.61

TIME	ACTIVITY CODE	DEPTH TO WATER (ft)	PURGE RATE (gpm)	PURGE VOLUME (gal)	FIELD MEASUREMENTS pH	MSC	DO	Temp	TURBIDITY	COMMENTS
1008	DBB	7.976		1 gal	7.28	2.13	2.39	12.6	999*	
1030		8.08		7 gal	7.33	2.16	5.20	13.0	999	Dk Gray/Br.
1040		8.06		13	7.31	2.11	9.53	12.7	999	
1100		8.1		18	7.34	2.11	1.57	12.6	999	Medium
1130		8.11		24	7.33	2.10	2.20	12.7	999	↓
1137	DBE			27						
1430	DBB	8.14		32	7.34	2.12	1.90	12.5	999	Medium
1443		8.16		37	7.35	2.12	1.88	12.7	999	↓
1458	DBE	8.18		42	7.39	2.11	2.04	12.7	999	↓
										* Turbidity probe probably not working.
	FINAL									

FINAL WELL YIELD: _____ GPM PUMP RATE - ESTIMATED CORRESPONDING DRAWDOWN: _____ FT

DEVELOPMENT ACTIVITY CODES

DBB - Begin Bailing
DOB - Begin Overpumping
DRB - Begin Rawhiding
DCB - Begin Recirculation
DHB - Begin Hydraulic Jetting
DAB - Begin Air Surging
DSB - Begin Surge Blocking
DXB - Begin Other
Specify other method: _____
FMT - Field Measurements (select from codes at right)

DBE - End Bailing
DOE - End Overpumping
DRE - End Rawhiding
DCE - End Recirculation
DHE - End Hydraulic Jetting
DAE - End Air Surging
DSE - End Surge Blocking
DXE - End Other

FIELD MEASUREMENT CODES

MTP - Temperature
MSC - Specific Conductance
MPD - Photoionizer (e.g., HNu)
MFD - Flame Ionizer (e.g., OVA)
MDO - Dissolved Oxygen
MPH - pH
MEH - Eh
MMC - Imhoff Cone
MO1 - Other: _____
MO2 - Other: _____

TURBIDITY

Enter Turbidity Meter Reading (Final should be < 5 NTU)
OR
Enter Qualitative Observations
H - High: Opaque/Muddy/Silty
M - Medium: Translucent/Cloudy
L - Low: Transparent/Some Silt
N - None: Clear/No Visible Silt

COPYRIGHT © 1990, 1994 by Roy F. Weston, Inc.

GEOLIS Well Development Form

COMPANY: Weston / REAC
CLIENT: USEPA / ERT
PROJECT: Morgan Mountain
SITE/AREA:

LOCATION ID: MW-5
DATE: 11/6/98
MEASURED BY: J Rossmann
SIGNATURE: JR

ONE WELL VOLUME: 0.4 gallons WELL TD: 36.5 ft TOC

Well Volume (gallons/foot): 2-inch = 0.16 | 6-inch = 1.47 | 4-inch = 0.65 | 8-inch = 2.61

TIME	ACTIVITY CODE	DEPTH TO WATER (ft)	PURGE RATE (gpm)	PURGE VOLUME (gal)	FIELD MEASUREMENTS				TURBIDITY	COMMENTS
1240	DBB	36.0		~~NA~~						~~Dust~~
0918	DBB	34.0		1						Dry
0940	DBE									1-2" water
	FINAL									

NA

FINAL WELL YIELD: _____ GPM PUMP RATE - ESTIMATED CORRESPONDING DRAWDOWN: _____ FT

DEVELOPMENT ACTIVITY CODES

DBB - Begin Bailing
DOB - Begin Overpumping
DRB - Begin Rawhiding
DCB - Begin Recirculation
DHB - Begin Hydraulic Jetting
DAB - Begin Air Surging
DSB - Begin Surge Blocking
DXB - Begin Other
Specify other method: _____
FMT - Field Measurements (select from codes at right)

DBE - End Bailing
DOE - End Overpumping
DRE - End Rawhiding
DCE - End Recirculation
DHE - End Hydraulic Jetting
DAE - End Air Surging
DSE - End Surge Blocking
DXE - End Other

FIELD MEASUREMENT CODES

MTP - Temperature
MSC - Specific Conductance
MPD - Photolonizer (e.g., HNu)
MFD - Flame Ionizer (e.g., OVA)
MDO - Dissolved Oxygen
MPH - pH
MEH - Eh
MMC - Imhoff Cone
MO1 - Other: _____
MO2 - Other: _____

TURBIDITY

Enter Turbidity Meter Reading
(Final should be < 5 NTU)
OR
Enter Qualitative Observations

H - High: Opaque/Muddy/Silty
M - Medium: Translucent/Cloudy
L - Low: Transparent/Some Silt
N - None: Clear/No Visible Silt

COPYRIGHT © 1990, 1994 by Roy F. Weston, Inc.

APPENDIX B
Borehole and Well Construction Logs
Morgan Materials Site
Buffalo, New York
January 1999

U.S EPA Environmental Response Team Center

Response Engineering and Analytical Contract

68-C4-0024

W.O. # 03347-143-001-3399-01

BOREHOLE LOG AND WELL CONSTRUCTION DIAGRAM

Site Name: Morgan Materials Site
Site Location: Buffalo, New York
Boring ID: MW-1

Total Depth: 35.0 ft
Logger: W. Avery
Date Started: 11/3/98
Date Completed: 11/3/98

All depths are in feet (ft) below ground surface.
Well completed with flush-mount casing and cement pad.

Depth	Material	USCS Classification	Comments	Depth to Water	Well Construction Summary	Well Completion Diagram
0		SW	0-2 (core): Dark gray gravelly sand, rounded, loose, dry, non-cemented.			
		MH	2-4 (core): Red-brown clayey silt, minor fine-grained sub-rounded gravel, moderate sorting, dry, low plasticity, soft, moderately calcareous.		Grout from 0 to 20.5 ft around inner casing.	
-5		CL	4.5-6 (core): Same as above.			
		CL	7.4-8 (core): Red-brown silty clay, minor fine-grained sub-rounded gravel, moderate sorting, dry, low plasticity, soft, moderately calcareous.			
		CL	8-10 (core): Same as above.			
-10		CL	11.6-12 (core): Red-brown clay, minor angular gravel, moderate sorting, dry, firm, low plasticity, moderately calcareous.		Inner casing is 2-inch schedule 40 PVC.	
		CL	12-14 (core): Same as above with minor silt.			
-15		CL	14-16 (core): Red-brown clay with minor fine-grained sub-rounded gravel, moderate sorting, dry, firm, moderate plasticity, moderately calcareous.			
		CL	16-18 (core): Red-brown silty clay with minor fine-grained sub-rounded gravel, well sorted, dry, firm, low plasticity, moderately calcareous.			
		CL	18-20 (core): Same as above with moderate plasticity.			
-20		CL	20-22 (core): Red-brown silty clay with minor fine-grained sub-rounded gravel, well sorted, dry, firm, gray clay vertical tracers, moderate plasticity, moderately calcareous.		Bentonite seal from 20.5 to 23 ft.	
		CL	22.2-24 (core): Same as above.			
-25		CH	24-26 (core): Red-brown silty clay with minor sub-rounded to angular gravel, moderate sorting, high plasticity, dry, soft, higher silt content, coarse gravel at bottom of spoon.		Sand pack from 23 to 35 ft.	
		CL	26-28 (core): Red-brown silty clay with sandy gravel pockets. Well sorted, dry, sft, moderate plasticity, moderately calcareous.	▽		
		CL	28-29.5 (core): Red-brown silty clay with minor sub-rounded fine-grained gravel, well sorted, dry, moderate plasticity, firm.			
-30		CH	29.5-30 (core): Gray-brown clay. Moist, well-sorted, highly plastic.		2-inch PVC, No. 10 slot screen from 25 to 35 ft.	
		CH	30-32 (core): Same as above with gray clay tracers.			
-35			32-34 (core): Same as above.			

U.S EPA Environmental Response Team Center

Response Engineering and Analytical Contract

68-C4-0024

W.O. # 03347-143-001-3399-01

BOREHOLE LOG AND WELL CONSTRUCTION DIAGRAM

Site Name: Morgan Materials Site
Site Location: Buffalo, New York
Boring ID: MW-2

Total Depth: 38.0 ft
Logger: W. Avery
Date Started: 11/3/98
Date Completed: 11/3/98

All depths are in feet (ft) below ground surface.
Well completed with flush-mount casing and cement pad.

Depth	Material	USCS Classification	Comments	Depth to Water	Well Construction Summary	Well Completion Diagram
0		SW	0-2 (core): Mottled gray, tan, brown sand, angular, loose, dry, non-cemented.			
		SP	2-4 (core): Dark brown gravelly sand, minor fine-grained sub-angular gravel, poorly sorted, dry, low plasticity.		Grout from 0 to 23.2 ft around inner casing.	
-5		GP-GM	4-5 (core): Gray-black sub-angular gravel and sand, poorly sorted, dry, non-cemented.	▽		
		CL	7.5-8 (core): Red-brown silty clay, minor fine-grained sub-rounded gravel, well sorted, dry, low plasticity, soft, moderately calcareous.			
		CL	8-10 (core): Red-brown silty clay, minor rounded gravel, well sorted, dry, low plasticity, moderately calcareous.			
-10		CL	10-12 (core): Red-brown clay, minor angular gravel, well sorted, dry, firm, moderate plasticity, moderately calcareous, dolomite present.		Inner casing is 2-inch schedule 40 PVC.	
		CL	12-14 (core): Red-brown silty clay, minor fine-grained sub-angular gravel, well sorted, dry, very stiff, moderately calcareous.			
-15		CL	14-16 (core): Same as above.			
		CL	16-18 (core): Red-brown silty clay with minor fine-grained sub-angular gravel, well sorted, dry, very stiff, moderate plasticity, moderately calcareous.			
		CL	18-20 (core): Same as above with larger gravel fragments.			
-20		CL	20-22 (core): Red-brown silty clay with minor fine-grained sub-rounded gravel, well sorted, dry, very stiff, gray clay sub-vertical striations, moderate plasticity, moderately calcareous.			
		CL	22-24 (core): Same as above.			
-25		CL	24-26 (core): Red-brown silty clay with minor sub-rounded gravel, well sorted, moderate plasticity, dry, very stiff, moderately calcareous.		Bentonite seal from 23.2 to 26 ft.	
		CL	26-28 (core): Same as above with limestone fragments.		Sand pack from 26 to 38 ft.	
		CL	28-30 (core): Same as above.			
-30		CL	30-32 (core): Same as above.		2-inch PVC, No. 10 slot screen from 28 to 38 ft.	
		CH	32-34 (core): Red-grey clay, well sorted, moist, soft, high plasticity, slightly calcareous.			
-35						

U.S EPA Environmental Response Team Center

Response Engineering and Analytical Contract

68-C4-0024

W.O. # 03347-143-001-3399-01

BOREHOLE LOG AND WELL CONSTRUCTION DIAGRAM

Site Name: Morgan Materials Site
Site Location: Buffalo, New York
Boring ID: MW-3

Total Depth: 20.0 ft
Logger: W. Avery
Date Started: 11/4/98
Date Completed: 11/4/98

All depths are in feet (ft) below ground surface.
Well completed with above ground, locking protective casing.

Depth	Material	USCS Classification	Comments	Depth to Water	Well Construction Summary	Well Completion Diagram
0					Grout from 0 to 4 ft around inner casing.	
					Inner casing is 2-inch schedule 40 PVC.	
-5		SP	4-6 (core): Black-gray sand, minor fine-grained sub-angular gravel, poorly sorted, moist, non-cemented.		Bentonite seal from 4 to 6 ft.	
				▽	Sand pack from 6 to 21 ft.	
-10		SP / CL	10-11 (core): Red-brown clay, minor sub-angular gravel, moderate sorting, dry, firm, low plasticity, moderately calcareous.		2-inch PVC. No. 10 slot screen from 8 to 13 ft.	
-15		CL	14-16 (core): Same as above.			
-20		CL	19-21 (core): Red-brown clay, minor sub-angular gravel, well sorted, dry, firm, non-cemented, moderate plasticity, moderately calcareous.			

U.S EPA Environmental Response Team Center

Response Engineering and Analytical Contract

68-C4-0024

W.O. # 03347-143-001-3399-01

BOREHOLE LOG AND WELL CONSTRUCTION DIAGRAM

Site Name: Morgan Materials Site
Site Location: Buffalo, New York
Boring ID: MW-4

Total Depth: 28.0 ft
Logger: W. Avery
Date Started: 11/4/98
Date Completed: 11/4/98

All depths are in feet (ft) below ground surface.
Well completed with above ground, locking protective casing.

Depth	Material	USCS Classification	Comments	Depth to Water	Well Construction Summary	Well Completion Diagram
0		SP	0-2 (core): Dark brown-red-tan medium-fine grained sand, minor fine-grained angular gravel, moderately sorted, dry, non-cemented.			
		SP	2-4 (core): Dark brown-tan angular sand, minor medium-fine grained sub-angular gravel, poorly sorted, dry, non-cemented.		Grout from 0 to 14 ft around inner casing.	
-5		SP	4-6 (core): Red-brown-gray medium sand with medium-fine grained sub-angular gravel, moderately sorted, dry, non-cemented.			
		SP	6-8 (core): Black-gray-tan fine-grained sub-angular sand, medium-fine grained angular gravel, moderately sorted, dry, non-cemented.			
		SP	8-10 (core): Red-black coarse angular fractured gravel, medium-fine grained sub-angular sand, poorly sorted, dry, red mudstone rock fragments in sand.			
-10		SP	10-12 (core): Red-black coarse angular sand, medium-fine grained angular fractured gravel, poorly sorted, moist with last foot wet.		Inner casing is 2-inch schedule 40 PVC.	
		GP	12-14 (core): Red-black medium-fine grained angular gravel, minor fine sub-angular sand, poorly sorted, wet-saturated, non-cemented.	▽		
-15		GP	14-16 (core): Dark gray-black medium-fine grained angular fractured gravel, minor coarse grained angular sand, poorly sorted, wet-saturated.		Bentonite seal from 14 to 16 ft.	
		GP	16-18 (core): Same as above.			
		SP	18-20 (core): Dark gray medium-fine grained angular sand, fine grained angular fractured gravel, poorly sorted, saturated.			
-20		GP	20-22 (core): Dark gray-tan fine grained sub-angular gravel, medium grained angular sand, poorly sorted, saturated.		Sand pack from 16 to 28 ft.	
		SP-SM	22-24 (core): Dark gray sandy gravel with tan gravel layer at 23.6-23.8, saturated, non-cemented.			
		CL	24-26 (core): Gray-Red-brown silty clay possibly stained by water, moderate plasticity, moist, moderately calcareous.		2-inch PVC, No. 10 slot screen from 18 to 28 ft.	
-25		CL	26-28 (core): Red-brown silty clay, vertical gray striations, moderate plasticity, dry, moderately calcareous.			

U.S EPA Environmental Response Team Center

Response Engineering and Analytical Contract

68-C4-0024

W.O. # 03347-143-001-3399-01

BOREHOLE LOG AND WELL CONSTRUCTION DIAGRAM

Site Name: Morgan Materials Site
Site Location: Buffalo, New York
Boring ID: MW-5

Total Depth: 37.0 ft
Logger: W. Avery
Date Started: 11/5/98
Date Completed: 11/5/98

All depths are in feet (ft) below ground surface.
Well completed with flush-mount casing and cement pad.

Depth	Material	USCS Classification	Comments	Depth to Water	Well Construction Summary	Well Completion Diagram
0		CL	0-2 (core): Top 1 inch is black to brown, dry, gravel fill. Rest of core is red-brown silty caly, low plasticity.			
		CL	2-4 (core): Red-brown silty clay.		Grout from 0 to 22.5 ft around inner casing.	
-5		CL	4-6 (core): Red-brown silty clay, minor fine-grained gravel, well sorted, dry, low plasticity, moderately calcareous.			
-10		CL	9-11 (core): Red-brown silty clay, minor fine-grained gravel, well sorted, dry, low plasticity, firm, non-cemented.		Inner casing is 2-inch schedule 40 PVC.	
-15		CL	14-16 (core): Same as above.			
-20		CL	19-21 (core): Same as above.		Bentonite seal from 22.5 to 25 ft.	
-25		CL	24-26 (core): Same as above becoming softer downward.		Sand pack from 25 to 37 ft.	
-30		CL	29-31 (core): Red-brown silty clay, minor fine-grained gravel, well sorted, dry, soft, moderate plasticity.		2-inch PVC, No. 10 slot screen from 27 to 37 ft.	
		CH	32-34 (core): Gray-brown clay, high plasticity, soft, moist.	▼		
-35						

APPENDIX C
Analytical Report for Samples Taken in November 1998
Morgan Materials Site
Buffalo, New York
January 1999

Roy F. Weston, Inc.
GSA Raritan Depot
Bldg. 209 Annex (Bay F)
2890 Woodbridge Avenue
Edison, New Jersey 08837-3679
732-321-4200 • Fax 732-494-4021

DATE: 24 December 1998

TO: R. Singhvi EPA/ERTC

FROM: V. Kansal Analytical Section Leader Vinod Kansal

SUBJECT: DOCUMENT TRANSMITTAL UNDER WORK ASSIGNMENT # 3-399

Attached please find the following document prepared under this work assignment:

Morgan Materials Site - Analytical Report

Central File WA # 3-399
P. Campagna
W. Avery
M. Barkley

(w/attachment)
Work Assignment Manager (w/attachment)
Task Leader (w/attachment)
Data Validation and Report Writing
Group Leader (w/o attachment)

Click to WESTON On The Web http://www.rfweston.com

ANALYTICAL REPORT

Prepared by
Roy F. Weston, Inc.

Morgan Materials Site
Buffalo, New York

December 1998

EPA Work Assignment No. 3-399
WESTON Work Order No. 03347-143-001-3399-01
EPA Contract No. 68-C4-0022

Submitted to
P. Campagna
EPA-ERTC

Wm H. Avery 12/23/98
W. Avery Date
Task Leader

Vinod Kansal 12/23/98
V. Kansal Date
Analytical Section Leader

Vinod Kansal 12/24/98
E Gilardi Date
Program Manager

Analysis by:
REAC

Prepared by:
M. Bernick

Reviewed by:
M. Barkley

3_399\DEL\AR\9812\MORGANAR

Table of Contents

Appendices will be furnished on request.

Introduction

REAC in response to WA #3-399, provided analytical support for environmental samples collected from the Morgan Materials Site located in Buffalo, New York as described in the following table. The support also included QA/QC, data review, and preparation of an analytical report containing a summary of analytical methods, results, and QA/QC results.

The samples were treated with procedures consistent with those specified in SOP #1008.

Chain of Custody	Number of Samples	Sampling Date	Date Received	Matrix	Analysis	Laboratory
01401	6	11/3/98	11/6/98	Soil	Pest/PCB, BNA & TAL Metals	REAC
	1				Pest/PCB & BNA	
01402	10	11/3/98	11/6/98	Soil	VOC	
	7	11/4/98				
	2	11/5/98				
01403	3	11/3/98	11/6/98	Soil	Pest/PCB, BNA & TAL Metals	
	1				TAL Metals	
01404	6	11/4/98	11/6/98	Soil	Pest/PCB, BNA, TAL Metals	
	1				Pest/PCB & BNA	
01405	2	11/5/98	11/6/98	Soil	Pest/PCB, BNA, TAL Metals	
	1	11/4/98			TAL Metals	
01406	1	11/5/98	11/6/98	Soil	VOC	
01407	6	11/7/98	11/9/98	Water	VOC	
01408	5	11/7/98	11/9/98	Water	Pest/PCB, BNA, TAL Metals	

CASE NARRATIVE

Data Package H505 - VOC

Water trip blank 17926 contained chloroform (1.9 µg/L). The chloroform in sample 17925 was less than ten times the blank concentration; this result is considered not detected.

In the initial calibration on 10/28/98 the percent relative standard deviation for naphthalene (44%) exceeded the QC limits. The naphthalene result for sample 17911 should be considered estimated.

In the initial calibration on 10/29/98 the percent relative standard deviation for naphthalene (43%) and acetone (39%) exceeded the QC limits. These compounds were not detected in the associated samples; the data are not affected.

In the continuing calibration on 11/10/98 the percent difference for dichlorodifluoromethane (29%) exceeded the QC limits. Thi compound was not detected in the associated samples; the data are not affected.

In the continuing calibration on 11/12/98 the percent difference for dichlorodifluoromethane (29%), acetone (26%), and 2-butanone (27%) exceeded the QC limits. These compounds were not detected in the associated samples; the data are not affected.

Data Package H517 - BNA

Field blank B17918 contained 200 µg/kg diethylphthalate. Associated sample B17916 contained less than ten times the blank concentration of this analyte; the diethylphthalate result is considered not detected.

Field blank B17919 contained 200 µg/kg diethylphthalate. Associated samples B17912, B17913, B17914, and B17909 contained less than ten times the blank concentration of this analyte; the diethylphthalate results are considered not detected.

Field blank B17925 contained 10 µg/L diethylphthalate. Associated samples B17921, B17922 and B17923 contained less than ten times the blank concentration of this analyte; the diethylphthalate results are considered not detected.

Data Package H540 - Metals - Water

The percent recoveries for A17924MS for selenium (Se) (73%) and silver (Ag) (11%), for A17924MSD for Se (74%) and Ag (12%) exceeded the QC limits. The Se results for samples A17921, A17922, A17923, A17924, and A17925 are considered estimated. The Ag results for samples A17921, A17922, A17923, A17924, and A17925 are considered unusable.

Data Package H539 - Metals - Soil

The percent recoveries for E17910MS for arsenic (As) (0%), antimony (Sb) (54%), mercury (Hg) (55%), and Se (24%) for E17910MSD for As (29%), Sb (63%), copper (Cu) (329%), lead (Pb) (368%), Se (30%), and zinc (Zn) (133%) exceeded the QC limits. The percent recoveries for E17908MS for Sb (44%), thallium (Tl) (53%), and Se (46%) for E17908MSD for Sb (31%) and Se (44%) exceeded the QC limits. The As results for samples E17901, E17902, E17903, E17904, E17905, E17906, E17907, E17908, E17909, E17910, E17911, E17912, E17913, E179014, E17915, E17916 and E17917 are considered estimated and for samples E17918 and E17919 are considered unusable. The Sb results for samples E17901, E17902, E17903, E17904, E17905, E17906, E17907, E17908, E17909, E17910, E17911, E17912, E17913, E179014, E17915, E17916, E17917, E17918 and E17919 are considered estimated. The Cu results for samples E17901, E17902, E17903, E17904, E17905, E17906, E17907, E17908, E17909, E17910, E17911, E17912, E17913, E179014, E17915, E17916 and E17917 are considered estimated. The Pb results for samples E17901, E17902, E17903, E17904, E17905, E17906, E17907, E17908, E17909, E17910, E17911, E17912, E17913, E179014, E17915, E17916 and E17917 are considered estimated. The Hg results for samples E17901, E17902, E17903, E17904, E17905, E17906, E17907, E17908, E17909, E17910, E17911, E17912, E17913, E179014, E17915, E17916, E17917, E17918 and E17919 are considered estimated. The Se results for sample E17902 is considered estimated and for samples E17901, E17903, E17904, E17905, E17906, E17907, E17908, E17909, E17910, E17911, E17912, E17913, E179014, E17915, E17916, E17917, E17918 and E17919 are considered unusable. The Tl results for samples E17901, E17902, E17903, E17904, E17905, E17906, E17907, E17908, E17909, E17910, E17911, E17912, E17913, E179014, E17915, E17916, E17917, E17918 and E17919 are considered estimated. The Zn results for samples E17901, E17902, E17903, E17904, E17905, E17906, E17907, E17908, E17909, E17910, E17911, E17912, E17913, E179014, E17915, E17916, E17917 and E17918 are considered estimated.

The Hg MS percent recovery for sample E17910 was 0% for the original analysis on 11/24/98. The sample and the MS/MSD samples were prepared and reanalyzed on 12/2/98. The E17910 Hg results are reported from the 12/2/98 analysis exceeding the sample holding time by one day; the results are considered estimated.

Sample E17918 field blank-O contained aluminum (Al) (59 mg/kg), barium (Ba) (1.1 mg/kg), Calcium (Ca) (80 mg/kg), iron (Fe) (290 mg/kg), manganese (Mn) (15 mg/kg), nickel (Ni) (2.8 mg/kg) and Zn (2.0 mg/kg). Sample E17919 field blank-I contained Al (28 mg/kg), Fe (89 mg/kg), and Mn (2.8 mg/kg).

Data Package H536 - Pest/PCB

In the end of sequence calibration check on 11/16/98 the percent difference for b-BHC (29), p,p'-DDE (27), p,p'-DDD (32), endosulfan (II) (39), p,p'-DDT (49), endrin aldehyde (65), endosulfan sulfate (37), methoxychlor (42), endrin ketone (50), and DCBP (75) exceeded the QC limits. No compounds were quatitated with this standard; the data are not affected.

In the end of sequence calibration check on 12/2/98 the percent difference for archlor 1254 (55) and 1260 (50) exceeded the QC limits. No compounds were quatitated with this standard; the data are not affected.

One surrogate exceeded the QC limits for water samples G17923, G17924, G17925 and soil samples A17906, A17911 and A17915; the data are not affected.

Summary of Abbreviations

AA	Atomic Absorption
B	The analyte was found in the blank
BFB	Bromofluorobenzene
BPQL	Below the Practical Quantitation Limit
BS	Blank Spike
BSD	Blank Spike Duplicate
C	Centigrade
D	(Surrogate Table) this value is from a diluted sample and was not calculated (Result Table) this result was obtained from a diluted sample
CLP	Contract Laboratory Protocol
COC	Chain of Custody
CONC	Concentration
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
DFTPP	Decafluorotriphenylphosphine
DL	Detection Limit
E	The value is greater than the highest linear standard and is estimated
EMPC	Estimated maximum possible concentration
J	The value is below the method detection limit and is estimated
ICAP	Inductively Coupled Argon Plasma
IDL	Instrument Detection Limit
ISTD	Internal Standard
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MI	Matrix Interference
MRL	Method Reporting Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MW	Molecular Weight
NA	either Not Applicable or Not Available
NC	Not Calculated
NR	Not Requested
NS	Not Spiked
% D	Percent Difference
% REC	Percent Recovery
PQL	Practical Quantitation Limit
PPBV	Parts per billion by volume
QL	Quantitation Limit
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SIM	Selected Ion Mode
U	Denotes not detected
W	Denotes weathered analyte, the results should be regarded as estimated.

m	cubic meter	kg	kilogram
L	liter	g	gram
dL	deciliter	cg	centigram
mL	milliliter	mg	milligram
μL	microliter	μg	microgram
ng	nanogram	pg	picogram

*	denotes a value that exceeds the acceptable QC limit

Abbreviations that are specific to a particular table are explained in footnotes on that table

Revision 7/9/98

Analytical Procedure for VOC in Water

A modified 524.2 method was used for the analysis of Volatile Organic Compounds in water. Samples were purged, trapped, and desorbed to a GC/MS system. Prior to purging, the samples were spiked with a three component surrogate mixture consisting of toluene-d_8 , 4-bromofluorobenzene and 1,2-dichloroethane-d_4 and a three component internal standard mixture consisting of bromochloromethane, 1,4-difluorobenzene, and chlorobenzene-d_5 . The following conditions and parameters were utilized:

The purge and trap unit consisted of: A Tekmar concentrator (3000 series) equipped with an autosampler (Dynatech) and a trap consisting of a VOCARB 4000 (Supelco), which itself contained of four adsorbent beds: Carbopack B (graphitized carbon 60/80 mesh), Carbopack C (graphitized carbon 60/80 mesh), Carboxen-1000 (60/80 mesh), and Carboxen-1001 (60/80 mesh).

The purge and trap instrument conditions were:

Purge	10 min at 25° C
Dry Purge	2 min at 25° C
Desorb Preheat	230° C
Desorb	4 min at 230° C
Purge Flow Rate	40 mL/min
Bake	8 min at 250° C

A Hewlett Packard 5970 GC/MSD equipped with an RTE-A data system was used to analyze the data.

The instrument conditions were:

Column:	30 meter x 0.53mm ID, RTx-Volatiles (Restek Corp.) column with 3.0µm thickness.
Temperature:	5 min at 10° C 6° C/min to 140° C 0.1 min at 140° C 12° C/min to 160° C 5 min at 160° C
Flow Rate	Helium at 10 mL/min
GC/MS Interface	Glass jet separator with 30 mL/min helium make-up gas at 250° C.

GC/MS Interface:	Glass jet separator with 30 mL make-up gas at 250° C.
Mass Spectrometer:	Electron Impact Ionization at a nominal electron energy of 70 electron volts, scanning from 35-300 amu at one scan/sec.

Computer: Preprogrammed to plot Extracted Ion Current Profile (EICP); capable of integrating ions and plotting abundances vs time or scan number. A library search (NBS-Wiley) for tentatively identified compounds was performed on samples.

The GC/MS system was calibrated using 6 VOC standards at 5, 20, 50, 100, 150, and 200 µg/L. Before analysis each day, the system was tuned with 50 ng BFB and passed a continuing calibration check when analyzing a 50 µg/L standard mixture in which the responses were evaluated by comparison to the average response of the calibration curve.

The results are in Table 1.1; the tentatively identified compounds (TIC) are listed in Table 1.2. The concentrations of the analytes were calculated using the following equation:

$$C_u = \frac{A_x \times I_{is}}{A_{is} \times RF\ (\text{or } RF_{ave}) \times V_o}$$

where

C_u	= Concentration of target analyte (µg/L)
A_x	= Area of the target analyte
I_{is}	= mass of specific internal standard (ng)
A_{is}	= Area of the specific internal standard
RF	= Response Factor
RF_{ave}	= average Response Factor
V_o	= Volume of sample purged (mL), taking into account dilutions

The average Response Factor is used when a sample is associated with an initial calibration curve. The Response Factor is used when a sample is associated with a continuing calibration curve.

Response Factor calculation:

The response factor (RF) for each specific analyte is quantitated based on the area response from the continuing calibration check as follows:

$$RF = \frac{A_c \times I_{is}'}{A_{is}' \times I_c}$$

where,

RF	= Response factor for a specific analyte
A_c	= Area of the analyte in the standard
I_{is}	= Mass of the specific internal standard
A_{is}'	= Area of the specific internal standard
I_c	= Mass of the analyte in the standard

$$RF_{ave} = \frac{RF_1 + \ldots + RF_n}{n}$$

and

n = number of Samples

Revision of 1/27/97

A modified 524.2 method was used for the analysis of Volatile Organic Compounds in soil. Samples were purged, trapped, and desorbed to a GC/MS system. Prior to purging, the samples were spiked with a three component surrogate mixture consisting of toluene-d_8, 4-bromofluorobenzene and 1,2-dichloroethane-d_4 and a three component internal standard mixture consisting of bromochloromethane, 1,4-difluorobenzene, and chlorobenzene-d_5. The following conditions and parameters were utilized:

The purge and trap unit consisted of: A Tekmar concentrator (3000 series) equipped with an autosampler (Dynatech) and a trap consisting of a VOCARB 4000 (Supelco), which itself contained of four adsorbent beds: Carbopack B (graphitized carbon 60/80 mesh), Carbopack C (graphitized carbon 60/80 mesh), Carboxen-1000 (60/80 mesh), and Carboxen-1001 (60/80 mesh).

The purge and trap instrument conditions were:

Purge	10 min at 25° C
Dry Purge	2 min at 25° C
Desorb Preheat	230° C
Desorb	4 min at 230° C
Purge Flow Rate	40 mL/min
Bake	8 min at 250° C

A Hewlett Packard 5970 GC/MSD equipped with an RTE-A data system was used to analyze the data.

The instrument conditions were:

Column:	30 meter x 0.53mm ID, RTx-Volatiles (Restek Corp.) column with 3.0µm thickness.
Temperature:	5 min at 10° C 6° C/min to 140° C 0.1 min at 140° C 12° C/min to 160° C 5 min at 160° C
Flow Rate	Helium at 10 mL/min
GC/MS Interface	Glass jet separator with 30 mL/min helium make-up gas at 250° C.

GC/MS Interface:	Glass jet separator with 30 mL make-up gas at 250° C.
Mass Spectrometer:	Electron Impact Ionization at a nominal electron energy of 70 electron volts, scanning from 35-300 amu at one scan/sec.

Computer: Preprogrammed to plot Extracted Ion Current Profile (EICP); capable of integrating ions and plotting abundances vs time or scan number. A library search (NBS-Wiley) for tentatively identified compounds was performed on samples.

The GC/MS system was calibrated using 6 VOC standards at 5, 20, 50, 100, 150, and 200 µg/L. Before analysis each day, the system was tuned with 50 ng BFB and passed a continuing calibration check when analyzing a 50 µg/L standard mixture in which the responses were evaluated by comparison to the average response of the calibration curve.

The medium level soil extracts were analyzed by extracting 5.0 g soil with 5 mL methanol, diluting an aliquot with 5 mL water and analyzing the solution by the purge and trap method. The results are in Table 1.3; the tentatively identified compounds are listed in Table 1.4. The concentrations of the analytes were calculated using the following equation:

$$C_u = \frac{DF \times A_x \times I_{is}}{A_{is} \times RF \text{ (or } RF_{ave}) \times W_s \times D}$$

where

C_u	= Concentration of target analyte (µg/kg) on a dry weight basis
DF	= Dilution Factor
A_x	= Area of the target analyte
I_{is}	= mass of specific internal standard (ng)
A_{is}	= Area of the specific internal standard
RF	= Response Factor
RF_{ave}	= average Response Factor
W_s	= Weight of sample (g)
D	= Decimal percent solids

The average Response Factor is used when a sample is associated with an initial calibration curve. The Response Factor is used when a sample is associated with a continuing calibration curve.

Response Factor calculation:

The response factor (RF) for each specific analyte is quantitated based on the area response from the continuing calibration check as follows:

$$RF = \frac{A_c \times I_{is}}{A_{is} \times I_c}$$

where,

RF	= Response factor for a specific analyte
A_c	= Area of the analyte in the standard
I_{is}	= Mass of the specific internal standard
A_{is}	= Area of the specific internal standard
I_c	= Mass of the analyte in the standard

$$RF_{ave} = \frac{RF_1 + \ldots + RF_n}{n}$$

and

n = number of Samples

Revision of 1/27/97

Extraction Procedure

Prior to extraction, each sample was spiked with a six component surrogate mixture consisting of nitrobenzene-d_5, 2-fluorobiphenyl, terphenyl-d_{14}, phenol-d_5, 2-fluorophenol, and 2,4,6-tribromophenol. One liter of sample was extracted according to Method 625, Section 10, as outlined in the Federal Register Vol. 49, #209, Friday, Oct. 26, 1984. After the extracts were combined and concentrated to 1.0 mL, they were spiked with an internal standards mixture consisting of 1,4-dichlorobenzene-d_4, naphthalene-d_8, acenaphthene-d_{10}, phenanthrene-d_{10}, chrysene-d_{12}, and perylene-d_{12}. Following this preparation, the extracts were analyzed.

Analytical Procedure

An HP 6890/5972 Gas Chromatograph/Mass Spectrometer (GC/MS), equipped with a 6890 autosampler and controlled by a PC computer equipped with Enviroquant software was used to analyze the samples.

The instrument conditions were:

Column	Restek Rtx-5 (crossbonded SE-54) 30 meter x 0.25mm ID, 0.50 µm film thickness
Injection Temperature	280° C
Transfer Temperature	280° C
Source Temperature & Analyzer Temperature	Controlled by thermal transfer of heat from transfer line
Temperature Program	50°C for 0.5 min 20° C/min to 295° C, hold for 8.5 min 25° C/min to 310° C, hold for 15 min
Pulsed Split Injection	Split time = 2.00 min @ 8:1 split ratio Pressure pulse = 16 psi for 0.5 min, then normal
Injection Volume	1µL Must use 4 mm ID single gooseneck liners packed with 10 mm pulg of silanized & conditioned glass wool.

The GC/MS system was calibrated using 5 BNA standards at 20, 50, 80, 120, and 160 µg/mL. Before analysis each day, the system was tuned with 50 ng decafluorotriphenylphosphine (DFTPP) and passed a continuing calibration check when analysing a 50 µg/mL standard mixture in which the responses were evaluated by comparison to the average response of the calibration curve.

The BNA results are listed in Table 1.5; the Tentatively Identified Compounds are listed in Table 1.6. The concentration of the detected compounds was calculated using the following equation:

$$C_u = \frac{DF \times A_u \times I_{is} \times V_t}{A_{is} \times RF(or\ RF_{ave}) \times V_i \times V_o}$$

where

C_u = Concentration of target analyte (µg/L)
DF = Dilution Factor
A_u = Area of target analyte
I_{is} = Mass of specific internal standard (ng)
V_t = Volume of extract (µL)
A_{is} = Area of specific internal standard
RF = Response Factor (unitless)
RF_{ave} = average Response Factor
V_i = Volume of extract injected (µL)
V_o = Volume of sample (mL)

The RF_{ave} is used when a sample is associated with an initial calibration curve. The RF is used when a sample is associated with a continuing calibration curve.

Response Factor calculation:

The RF for each specific analyte is quantitated based on the area response from the continuing calibration check as follows:

$$RF = \frac{A_c \times I_{is}}{A_{is} \times I_c}$$

where

RF = Response factor for a specific analyte
A_c = Area of the analyte in the standard
I_{is} = Mass of the specific internal standard
A_{is} = Area of the specific internal standard

$$RF_{ave} = \frac{RF_1 + \ldots + RF_n}{n}$$

I_c = Mass of the analyte in the standard
and

n = number of Samples

Rev. 7/11/94

Sample Preparation

A representative 45 mL aliquot of each sample was mixed with 5.0 mL concentrated nitric acid, placed in an acid rinsed Teflon container, capped with a Teflon lined cap, and digested according to SW-846, Method 3015 in a CEM MDS-2100 microwave oven, which was programmed to bring the samples to 160 +/- 4°C in 10 minutes (first stage) and slowly rise to 165-170°C in the second 10 minutes (second stage). After digestion, samples were allowed to cool to room temperature and were transfered to polyethylene bottles. Samples were analyzed for all metals, except mercury, by US EPA SW-846, Method 7000 Atomic Absorption (AA) or Method 6010 Inductively Coupled Argon Plasma (ICAP) procedures.

A 100 mL aliquot of each sample was transfered to a 300-mL BOD bottle and prepared according to SW-846, Method 7470. The samples were heated for 2 hours on a hot plate at 95 °C, cooled to room temperature, and reduced with Hydroxylamine hydrochloride (NH_2OH:HCl). Mercury was then analyzed separately on a Varian SpectrAA-300 Atomic Absorption Spectrophotometer equipped with a Varian VGA-76 vapor gas analyzer by SW-846, Method 7470.

A reagent blank and a blank spike sample were carried through the sample preparation procedure for each analytical batch of samples processed. One matrix spike (MS) and one matrix spike duplicate (MSD) sample were also processed for each analytical batch or every 10 samples.

Analysis and Calculations

The AA and ICAP instruments were calibrated and operated according to SW-846, Method 7000/7470/6010 and the manufacturer's operating instructions. After calibration, initial calibration verification (ICV), initial calibration blank (ICB), and QC check standards were run to verify proper calibration. The continuing calibration verification (CCV) and continuing calibration blank (CCB) standards were run after every 10 samples to verify proper operation during sample analysis.

The metal concentrations in solution, in micrograms per liter (µg/L) were read directly from the read-out systems of the instruments. ICAP and Mercury results were taken directly from instrument read-outs. The ICAP results were corrected for digestion volume (45 mL sample + 5 mL nitric acid) prior to instrument read-out; AA read-outs (excluding Mercury) were externally corrected for digestion volume (1.1111 * AA read-out).

For samples that required dilution to fall within the instrument calibration range:

$$\mu g/L \text{ metal in sample} = A\ [\ (C+B) / C\ ]$$

where:

A = direct read-out (ICAP and Mercury)
A = corrected read-out (AA)
B = acid blank matrix used for dilution, mL
C = sample aliquot, mL

Results of the analyses are listed in Table 1.11.

Analytical Procedure for Metals in Soil

Sample Preparation

A representative 1-2 g (wet weight) sample, weighed to 0.01 g accuracy, was mixed with 10 mL 1:1 nitric acid, placed a clean beaker and digested in nitric acid and hydrogen peroxide according to SW-846, Method 3050. The final reflux w either nitric acid or hydrochloric acid depending on the metals to be determined. After digestion , the samples were allow to cool to room temperature and transferred to 100 mL volumetric flasks and diluted to volume with ASTM Type II water. The samples were analyzed for all metals, except mercury, by USEPA SW-846, Method 7000 (Atomic absorption) Method 6010 (Inductively Coupled Argon Plasma-ICAP) procedures.

A representative 0.5-0.6 g (wet weight) sample, weighed to 0.01 g accuracy, was prepared and analyzed separately for mercury on a Varian SpectrAA-300 Atomic Absorption Spectrophotometer equipped with a Varian VGA-76 vapor g analyzer according to SW-846, Method 7471.

A separate sample was used to determine total solids.

A reagent blank and a blank spike sample were carried through the sample preparation procedure for each batch of sampl processed. One matrix spike (MS) and one matrix spike duplicate (MSD) were analyzed for each batch or for every ten samples.

Analysis and Calculations

The instruments were calibrated and operated according to SW-846, Method 7000/7471/6010 and the manufacture operating instructions. After calibration, initial calibration verification (ICV), initial calibration blank (ICB) and quali control check standards were run to verify proper calibration. The continuing calibration verification (CCV) and continuin calibration blank (CCB) were run after every ten samples to assure proper operation during sample analysis.

The metal concentrations in solution , in micrograms per liter (µg/L) were taken from the read-out systems of the Atom Absorption instruments. The results were converted to milligrams per kilogram (mg/kg) by correcting the reading for th sample weight and percent solids. The ICAP results (mg/kg) were corrected for sample weight prior to instrument read-out, the instrument read-out was then corrected for percent solids.

Final concentrations, based on wet weight are given by:

$$\text{mg metal/kg sample} = [(A \times V)/W] \times DF \times CF$$

where:

A = Instrument read-out (µg/L, AA; mg/kg, ICAP)
V = final volume of processed sample (mL, AA; 1.00 ICAP)
W = weight of sample (g, AA; 1.00 ICAP)
DF = Dilution Factor (1.00 for no dilution)
CF = conversion factor (0.001, AA; 1.00, ICAP)

For samples that required dilution to be within the instrument calibration range, DF is given by:

$$DF = (C+B)/C$$

where:

B = acid blank matrix used for dilution (mL)
C = sample blank aliquot (mL)

Final concentrations, based on dry weight, are given by:

$$\text{mg/kg(dry)} = [\text{mg/kg (wet)} \times 100] / S$$

where

S = percent solids

The results are listed in Table 1.12.

Table 1.1 Results of the Analysis for VOC in Water
WA # 3-399 Morgan Materials Site

SAMPLE # :	Lab Blank		17926 Trip Blank		17925 Field Blank		17924 MW-4		17923 MW-3	
LOCATION :										
COLLECTED			11/07/98		11/07/98		11/07/98		11/07/98	
ANALYZED :	11/10/98		11/10/98		11/10/98		11/10/98		11/11/98	
FILE # :	A5290		A5291		A5292		A5293		A5294	
DIL. FACT.:	1		1		1		1		1	
UNIT :	µg/L		µg/L		µg/L		µg/L		µg/L	
COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
Dichlorodifluoromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Chloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Vinyl Chloride	U	1.0	U	1.0	U	1.0	5.6	1.0	62	1.0
Bromomethane	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
Chloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Trichlorofluoromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Acetone	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
1,1-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	2.1	1.0
Carbon Disulfide	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Methylene Chloride	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Methyl-tertiary-butylether	U	1.0	U	1.0	U	1.0	6.2	1.0	U	1.0
trans-1,2-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	4.0	1.0
1,1-Dichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
2-Butanone	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0
2,2-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
cis-1,2-Dichloroethene	U	1.0	U	1.0	U	1.0	23	1.0	540	1.0
Chloroform	U	1.0	1.9	1.0	2.0	1.0	U	1.0	U	1.0
1,1-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,1-Trichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Carbon Tetrachloride	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Benzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Trichloroethene	U	1.0	U	1.0	U	1.0	6.7	1.0	500	1.0
1,2-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Dibromomethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Bromodichloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
cis-1,3-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
trans-1,3-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,2-Trichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,3-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Dibromochloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dibromoethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Bromoform	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
4-Methyl-2-Pentanone	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
Toluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
2-Hexanone	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
Tetrachloroethene	U	1.0	U	1.0	U	1.0	U	1.0	390	1.0
Chlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,1,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Ethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
p & m-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
o-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Styrene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Isopropylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,2,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,3-Trichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Bromobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
n-Propylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
2-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
4-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,3,5-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
tert-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,4-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
sec-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,3-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
p-Isopropyltoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,4-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
n-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dibromo-3-Chloroprop	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,4-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Naphthalene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Hexachlorobutadiene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,3-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0

Table 1.1 (cont.) Results of the Analysis for VOC in Water
WA # 3-399 Morgan Materials Site

SAMPLE # :	Lab Blank		17922		17921	
LOCATION :			MW-2		MW-1	
COLLECTED			11/07/98		11/07/98	
ANALYZED :	11/10/98		11/11/98		11/11/98	
FILE # :	A5290		A5295		A5296	
DIL. FACT.:	1		1		1	
UNIT :	µg/L		µg/L		µg/L	
COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL
Dichlorodifluoromethane	U	1.0	U	1.0	U	1.0
Chloromethane	U	1.0	U	1.0	U	1.0
Vinyl Chloride	U	1.0	U	1.0	U	1.0
Bromomethane	U	2.0	U	2.0	U	2.0
Chloroethane	U	1.0	U	1.0	U	1.0
Trichlorofluoromethane	U	1.0	U	1.0	U	1.0
Acetone	U	2.0	U	2.0	U	2.0
1,1-Dichloroethene	U	1.0	U	1.0	U	1.0
Carbon Disulfide	U	1.0	U	1.0	U	1.0
Methylene Chloride	U	1.0	U	1.0	U	1.0
Methyl-tertiary-butylether	U	1.0	U	1.0	U	1.0
trans-1,2-Dichloroethene	U	1.0	U	1.0	U	1.0
1,1-Dichloroethane	U	1.0	U	1.0	U	1.0
2-Butanone	U	4.0	U	4.0	U	4.0
2,2-Dichloropropane	U	1.0	U	1.0	U	1.0
cis-1,2-Dichloroethene	U	1.0	U	1.0	U	1.0
Chloroform	U	1.0	U	1.0	U	1.0
1,1-Dichloropropene	U	1.0	U	1.0	U	1.0
1,2-Dichloroethane	U	1.0	U	1.0	U	1.0
1,1,1-Trichloroethane	U	1.0	U	1.0	U	1.0
Carbon Tetrachloride	U	1.0	U	1.0	U	1.0
Benzene	U	1.0	U	1.0	U	1.0
Trichloroethene	U	1.0	U	1.0	U	1.0
1,2-Dichloropropane	U	1.0	U	1.0	U	1.0
Dibromomethane	U	1.0	U	1.0	U	1.0
Bromodichloromethane	U	1.0	U	1.0	U	1.0
cis-1,3-Dichloropropene	U	1.0	U	1.0	U	1.0
trans-1,3-Dichloropropene	U	1.0	U	1.0	U	1.0
1,1,2-Trichloroethane	U	1.0	U	1.0	U	1.0
1,3-Dichloropropane	U	1.0	U	1.0	U	1.0
Dibromochloromethane	U	1.0	U	1.0	U	1.0
1,2-Dibromoethane	U	1.0	U	1.0	U	1.0
Bromoform	U	1.0	U	1.0	U	1.0
4-Methyl-2-Pentanone	U	2.0	U	2.0	U	2.0
Toluene	U	1.0	U	1.0	U	1.0
2-Hexanone	U	2.0	U	2.0	U	2.0
Tetrachloroethene	U	1.0	U	1.0	U	1.0
Chlorobenzene	U	1.0	U	1.0	U	1.0
1,1,1,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0
Ethylbenzene	U	1.0	U	1.0	U	1.0
p & m-Xylene	U	1.0	U	1.0	U	1.0
o-Xylene	U	1.0	U	1.0	U	1.0
Styrene	U	1.0	U	1.0	U	1.0
Isopropylbenzene	U	1.0	U	1.0	U	1.0
1,1,2,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0
1,2,3-Trichloropropane	U	1.0	U	1.0	U	1.0
Bromobenzene	U	1.0	U	1.0	U	1.0
n-Propylbenzene	U	1.0	U	1.0	U	1.0
2-Chlorotoluene	U	1.0	U	1.0	U	1.0
4-Chlorotoluene	U	1.0	U	1.0	U	1.0
1,3,5-Trimethylbenzene	U	1.0	U	1.0	U	1.0
tert-Butylbenzene	U	1.0	U	1.0	U	1.0
1,2,4-Trimethylbenzene	U	1.0	U	1.0	U	1.0
sec-Butylbenzene	U	1.0	U	1.0	U	1.0
1,3-Dichlorobenzene	U	1.0	U	1.0	U	1.0
p-Isopropyltoluene	U	1.0	U	1.0	U	1.0
1,4-Dichlorobenzene	U	1.0	U	1.0	U	1.0
1,2-Dichlorobenzene	U	1.0	U	1.0	U	1.0
n-Butylbenzene	U	1.0	U	1.0	U	1.0
1,2-Dibromo-3-Chloroprop	U	1.0	U	1.0	U	1.0
1,2,4-Trichlorobenzene	U	1.0	U	1.0	U	1.0
Naphthalene	U	1.0	U	1.0	U	1.0
Hexachlorobutadiene	U	1.0	U	1.0	U	1.0
1,2,3-Trichlorobenzene	U	1.0	U	1.0	U	1.0

Table 1.2 Results of TIC for VOC in Water
Morgan Material Site WA# 3399

Sample # LAB BLANK Unit µg/L
LabFile# A5290 Con. Factor 1

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.2 (cont.) Results of TIC for VOC in Water
Morgan Material Site WA# 3399

Sample # 17926 Unit µg/L

LabFile# A5291 Con. Factor 1

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.2 (cont.) Results of TIC for VOC in Water
Morgan Material Site WA# 3399

Sample # 17925 Unit µg/L

LabFile# A5292 Con. Factor 1

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.2 (cont.) Results of TIC for VOC in Water
Morgan Material Site WA# 3399

Sample # 17924 Unit µg/L

LabFile# A5293 Con. Factor 1

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.2 (cont.) Results of TIC for VOC in Water
Morgan Material Site WA# 3399

Sample # 17923 Unit µg/L

LabFile# A5294 Con. Factor 1

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.2 (cont.) Results of TIC for VOC in Water
Morgan Material Site WA# 3399

Sample # 17922
LabFile# A5295

Unit µg/L
Con. Factor 1

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.2 (cont.) Results of TIC for VOC in Water
Morgan Material Site WA# 3399

Sample # 17921 Unit µg/L

LabFile# A5296 Con. Factor 1

	CAS#	Compound	Q	RT	Conc
1		Unknown		24.20	21
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.3 Results of the Analysis for VOC in Soil
WA # 3-399 Morgan Materials Site
Based on Dry Weight

SAMPLE # :	Sand Blank		17901		17902		17903		17904	
LOCATION :			GP-1		GP-15		GP-12		GP-13	
COLLECTED			11/03/98		11/03/98		11/03/98		11/03/98	
ANALYZED :	11/06/98		11/06/98		11/06/98		11/06/98		11/06/98	
FILE # :	A5217		A5218		A5219		A5220		A5221	
DIL. FACT.:	1		1		1		1		1	
% Solid :	100		82		87		90		89	
UNIT :	µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
Dichlorodifluoromethane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Chloromethane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Vinyl Chloride	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Bromomethane	U	2.0	U	2.4	U	2.3	U	2.2	U	2.2
Chloroethane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Trichlorofluoromethane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Acetone	U	2.0	U	2.4	U	2.3	U	2.2	U	2.2
1,1-Dichloroethene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Carbon Disulfide	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Methylene Chloride	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Methyl-tertiary-butylether	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
trans-1,2-Dichloroethene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,1-Dichloroethane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
2-Butanone	U	4.0	U	4.9	U	4.6	U	4.4	U	4.5
2,2-Dichloropropane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
cis-1,2-Dichloroethene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Chloroform	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,1-Dichloropropene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,2-Dichloroethane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,1,1-Trichloroethane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Carbon Tetrachloride	U	1.0	U	1.2	U	1.1	3.1	1.1	U	1.1
Benzene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Trichloroethene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,2-Dichloropropane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Dibromomethane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Bromodichloromethane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
cis-1,3-Dichloropropene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
trans-1,3-Dichloropropene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,1,2-Trichloroethane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,3-Dichloropropane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Dibromochloromethane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,2-Dibromoethane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Bromoform	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
4-Methyl-2-Pentanone	U	2.0	U	2.4	U	2.3	U	2.2	U	2.2
Toluene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
2-Hexanone	U	2.0	U	2.4	U	2.3	U	2.2	U	2.2
Tetrachloroethene	U	1.0	U	1.2	U	1.1	31000	1.1	U	1.1
Chlorobenzene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,1,1,2-Tetrachloroethane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Ethylbenzene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
p & m-Xylene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
o-Xylene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Styrene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Isopropylbenzene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,1,2,2-Tetrachloroethane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,2,3-Trichloropropane	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Bromobenzene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
n-Propylbenzene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
2-Chlorotoluene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
4-Chlorotoluene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,3,5-Trimethylbenzene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
tert-Butylbenzene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,2,4-Trimethylbenzene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
sec-Butylbenzene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,3-Dichlorobenzene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
p-Isopropyltoluene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,4-Dichlorobenzene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,2-Dichlorobenzene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
n-Butylbenzene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,2-Dibromo-3-Chloroprop	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,2,4-Trichlorobenzene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Naphthalene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
Hexachlorobutadiene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1
1,2,3-Trichlorobenzene	U	1.0	U	1.2	U	1.1	U	1.1	U	1.1

Table 1.3 (cont.) Results of the Analysis for VOC in Soil
WA # 3-399 Morgan Materials Site
Based on Dry Weight

SAMPLE # :	Sand Blank		17908		17909		17911	
LOCATION :			GP-10		GP-7		GP-6	
COLLECTED			11/03/98		11/03/98		11/04/98	
ANALYZED :	11/06/98		11/06/98		11/06/98		11/06/98	
FILE # :	A5217		A5225		A5226		A5228	
DIL. FACT.:	1		1		1		5	
% Solid :	100		94		85		83	
UNIT :	µg/kg		µg/kg		µg/kg		µg/kg	
COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
Dichlorodifluoromethane	U	1.0	U	1.1	U	1.2	U	6.0
Chloromethane	U	1.0	U	1.1	U	1.2	U	6.0
Vinyl Chloride	U	1.0	U	1.1	U	1.2	U	6.0
Bromomethane	U	2.0	U	2.1	U	2.4	U	12
Chloroethane	U	1.0	U	1.1	U	1.2	U	6.0
Trichlorofluoromethane	U	1.0	U	1.1	U	1.2	U	6.0
Acetone	U	2.0	U	2.1	U	2.4	U	12
1,1-Dichloroethene	U	1.0	U	1.1	U	1.2	U	6.0
Carbon Disulfide	U	1.0	U	1.1	U	1.2	72	6.0
Methylene Chloride	U	1.0	U	1.1	U	1.2	U	6.0
Methyl-tertiary-butylether	U	1.0	U	1.1	U	1.2	U	6.0
trans-1,2-Dichloroethene	U	1.0	U	1.1	2.1	1.2	58	6.0
1,1-Dichloroethane	U	1.0	U	1.1	U	1.2	U	6.0
2-Butanone	U	4.0	U	4.3	U	4.7	U	24
2,2-Dichloropropane	U	1.0	U	1.1	U	1.2	U	6.0
cis-1,2-Dichloroethene	U	1.0	U	1.1	18	1.2	U	6.0
Chloroform	U	1.0	U	1.1	U	1.2	U	6.0
1,1-Dichloropropene	U	1.0	U	1.1	U	1.2	U	6.0
1,2-Dichloroethane	U	1.0	U	1.1	U	1.2	U	6.0
1,1,1-Trichloroethane	U	1.0	U	1.1	U	1.2	U	6.0
Carbon Tetrachloride	U	1.0	U	1.1	U	1.2	U	6.0
Benzene	U	1.0	U	1.1	U	1.2	U	6.0
Trichloroethene	U	1.0	1400	1.1	2700	1.2	350	6.0
1,2-Dichloropropane	U	1.0	U	1.1	U	1.2	U	6.0
Dibromomethane	U	1.0	U	1.1	U	1.2	U	6.0
Bromodichloromethane	U	1.0	U	1.1	U	1.2	U	6.0
cis-1,3-Dichloropropene	U	1.0	U	1.1	U	1.2	U	6.0
trans-1,3-Dichloropropene	U	1.0	U	1.1	U	1.2	U	6.0
1,1,2-Trichloroethane	U	1.0	U	1.1	6.3	1.2	150	6.0
1,3-Dichloropropane	U	1.0	U	1.1	U	1.2	U	6.0
Dibromochloromethane	U	1.0	U	1.1	U	1.2	U	6.0
1,2-Dibromoethane	U	1.0	U	1.1	U	1.2	U	6.0
Bromoform	U	1.0	U	1.1	U	1.2	U	6.0
4-Methyl-2-Pentanone	U	2.0	U	2.1	U	2.4	U	12
Toluene	U	1.0	U	1.1	U	1.2	8.6	6.0
2-Hexanone	U	2.0	U	2.1	U	2.4	U	12
Tetrachloroethene	U	1.0	4800	1.1	66	1.2	U	6.0
Chlorobenzene	U	1.0	U	1.1	U	1.2	U	6.0
1,1,1,2-Tetrachloroethane	U	1.0	U	1.1	U	1.2	U	6.0
Ethylbenzene	U	1.0	U	1.1	U	1.2	11	6.0
p & m-Xylene	U	1.0	U	1.1	U	1.2	62	6.0
o-Xylene	U	1.0	U	1.1	U	1.2	41	6.0
Styrene	U	1.0	U	1.1	U	1.2	U	6.0
Isopropylbenzene	U	1.0	U	1.1	U	1.2	U	6.0
1,1,2,2-Tetrachloroethane	U	1.0	33	1.1	1300	1.2	520	6.0
1,2,3-Trichloropropane	U	1.0	U	1.1	U	1.2	U	6.0
Bromobenzene	U	1.0	U	1.1	U	1.2	U	6.0
n-Propylbenzene	U	1.0	U	1.1	U	1.2	U	6.0
2-Chlorotoluene	U	1.0	U	1.1	U	1.2	U	6.0
4-Chlorotoluene	U	1.0	U	1.1	U	1.2	U	6.0
1,3,5-Trimethylbenzene	U	1.0	U	1.1	U	1.2	U	6.0
tert-Butylbenzene	U	1.0	U	1.1	U	1.2	U	6.0
1,2,4-Trimethylbenzene	U	1.0	U	1.1	U	1.2	U	6.0
sec-Butylbenzene	U	1.0	U	1.1	U	1.2	U	6.0
1,3-Dichlorobenzene	U	1.0	U	1.1	U	1.2	U	6.0
p-Isopropyltoluene	U	1.0	U	1.1	U	1.2	U	6.0
1,4-Dichlorobenzene	U	1.0	U	1.1	U	1.2	U	6.0
1,2-Dichlorobenzene	U	1.0	U	1.1	U	1.2	U	6.0
n-Butylbenzene	U	1.0	U	1.1	U	1.2	U	6.0
1,2-Dibromo-3-Chloroprop	U	1.0	U	1.1	U	1.2	U	6.0
1,2,4-Trichlorobenzene	U	1.0	U	1.1	U	1.2	U	6.0
Naphthalene	U	1.0	U	1.1	U	1.2	73	6.0
Hexachlorobutadiene	U	1.0	U	1.1	U	1.2	U	6.0
1,2,3-Trichlorobenzene	U	1.0	U	1.1	U	1.2	U	6.0

Table 1.3 (cont.) Results of the Analysis for VOC in Soil
WA # 3-399 Morgan Materials Site
Based on Dry Weight

SAMPLE # :	Sand Blank	17920	17919	17918	17917	
LOCATION :		Trip Blank	Field Blank-I	Field Blank-O	GP-17	
COLLECTED		11/05/98	11/05/98	11/05/98	11/04/98	
ANALYZED :	11/06/98	11/07/98	11/07/98	11/07/98	11/07/98	
FILE # :	A5234	A5235	A5236	A5237	A5244	
DIL. FACT.:	1	1	1	1	1	
% Solid :	100	100	100	100	83	
UNIT :	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	

COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
Dichlorodifluoromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Chloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Vinyl Chloride	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Bromomethane	U	2.0	U	2.0	U	2.0	U	2.0	U	2.4
Chloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Trichlorofluoromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Acetone	U	2.0	U	2.0	U	2.0	U	2.0	16000	2.4
1,1-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Carbon Disulfide	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Methylene Chloride	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Methyl-tertiary-butylether	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
trans-1,2-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,1-Dichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
2-Butanone	U	4.0	U	4.0	U	4.0	U	4.0	U	4.8
2,2-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
cis-1,2-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	4.1	1.2
Chloroform	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,1-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,2-Dichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,1,1-Trichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Carbon Tetrachloride	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Benzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Trichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	1.4	1.2
1,2-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Dibromomethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Bromodichloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
cis-1,3-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
trans-1,3-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,1,2-Trichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,3-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Dibromochloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,2-Dibromoethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Bromoform	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
4-Methyl-2-Pentanone	U	2.0	U	2.0	U	2.0	U	2.0	U	2.4
Toluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
2-Hexanone	U	2.0	U	2.0	U	2.0	U	2.0	U	2.4
Tetrachloroethene	U	1.0	U	1.0	U	1.0	U	1.0	39	1.2
Chlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,1,1,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Ethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
p & m-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
o-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Styrene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Isopropylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,1,2,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,2,3-Trichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Bromobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
n-Propylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
2-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
4-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,3,5-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
tert-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,2,4-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
sec-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,3-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	7.5	1.2
p-Isopropyltoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,4-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,2-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
n-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,2-Dibromo-3-Chloroprop	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,2,4-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Naphthalene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
Hexachlorobutadiene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2
1,2,3-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2

Table 1.3 (cont.) Results of the Analysis for VOC in Soil
WA # 3-399 Morgan Materials Site
Based on Dry Weight

SAMPLE # :	Sand Blank		17916		17914	
LOCATION :			GP-16		GP-2	
COLLECTED			11/04/98		11/04/98	
ANALYZED :	11/06/98		11/07/98		11/07/98	
FILE # :	A5234		A5245		A5247	
DIL. FACT.:	1		1		1	
% Solid :	100		79		85	
UNIT :	µg/kg		µg/kg		µg/kg	
COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL
Dichlorodifluoromethane	U	1.0	U	1.3	U	1.2
Chloromethane	U	1.0	U	1.3	U	1.2
Vinyl Chloride	U	1.0	U	1.3	U	1.2
Bromomethane	U	2.0	U	2.5	U	2.4
Chloroethane	U	1.0	U	1.3	U	1.2
Trichlorofluoromethane	U	1.0	U	1.3	U	1.2
Acetone	U	2.0	U	2.5	U	2.4
1,1-Dichloroethene	U	1.0	U	1.3	U	1.2
Carbon Disulfide	U	1.0	U	1.3	U	1.2
Methylene Chloride	U	1.0	U	1.3	U	1.2
Methyl-tertiary-butylether	U	1.0	U	1.3	U	1.2
trans-1,2-Dichloroethene	U	1.0	U	1.3	U	1.2
1,1-Dichloroethane	U	1.0	U	1.3	U	1.2
2-Butanone	U	4.0	U	5.1	U	4.7
2,2-Dichloropropane	U	1.0	U	1.3	U	1.2
cis-1,2-Dichloroethene	U	1.0	U	1.3	U	1.2
Chloroform	U	1.0	U	1.3	U	1.2
1,1-Dichloropropene	U	1.0	U	1.3	U	1.2
1,2-Dichloroethane	U	1.0	U	1.3	U	1.2
1,1,1-Trichloroethane	U	1.0	U	1.3	U	1.2
Carbon Tetrachloride	U	1.0	U	1.3	U	1.2
Benzene	U	1.0	U	1.3	U	1.2
Trichloroethene	U	1.0	1.9	1.3	U	1.2
1,2-Dichloropropane	U	1.0	U	1.3	U	1.2
Dibromomethane	U	1.0	U	1.3	U	1.2
Bromodichloromethane	U	1.0	U	1.3	U	1.2
cis-1,3-Dichloropropene	U	1.0	U	1.3	U	1.2
trans-1,3-Dichloropropene	U	1.0	U	1.3	U	1.2
1,1,2-Trichloroethane	U	1.0	U	1.3	U	1.2
1,3-Dichloropropane	U	1.0	U	1.3	U	1.2
Dibromochloromethane	U	1.0	U	1.3	U	1.2
1,2-Dibromoethane	U	1.0	U	1.3	U	1.2
Bromoform	U	1.0	U	1.3	U	1.2
4-Methyl-2-Pentanone	U	2.0	U	2.5	U	2.4
Toluene	U	1.0	U	1.3	U	1.2
2-Hexanone	U	2.0	U	2.5	U	2.4
Tetrachloroethene	U	1.0	U	1.3	U	1.2
Chlorobenzene	U	1.0	U	1.3	U	1.2
1,1,1,2-Tetrachloroethane	U	1.0	U	1.3	U	1.2
Ethylbenzene	U	1.0	U	1.3	U	1.2
p & m-Xylene	U	1.0	U	1.3	U	1.2
o-Xylene	U	1.0	U	1.3	U	1.2
Styrene	U	1.0	U	1.3	U	1.2
Isopropylbenzene	U	1.0	U	1.3	U	1.2
1,1,2,2-Tetrachloroethane	U	1.0	U	1.3	U	1.2
1,2,3-Trichloropropane	U	1.0	U	1.3	U	1.2
Bromobenzene	U	1.0	U	1.3	U	1.2
n-Propylbenzene	U	1.0	U	1.3	U	1.2
2-Chlorotoluene	U	1.0	U	1.3	U	1.2
4-Chlorotoluene	U	1.0	U	1.3	U	1.2
1,3,5-Trimethylbenzene	U	1.0	U	1.3	U	1.2
tert-Butylbenzene	U	1.0	U	1.3	U	1.2
1,2,4-Trimethylbenzene	U	1.0	U	1.3	U	1.2
sec-Butylbenzene	U	1.0	U	1.3	U	1.2
1,3-Dichlorobenzene	U	1.0	U	1.3	U	1.2
p-Isopropyltoluene	U	1.0	U	1.3	U	1.2
1,4-Dichlorobenzene	U	1.0	U	1.3	U	1.2
1,2-Dichlorobenzene	U	1.0	U	1.3	U	1.2
n-Butylbenzene	U	1.0	U	1.3	U	1.2
1,2-Dibromo-3-Chloroprop	U	1.0	U	1.3	U	1.2
1,2,4-Trichlorobenzene	U	1.0	U	1.3	U	1.2
Naphthalene	U	1.0	U	1.3	U	1.2
Hexachlorobutadiene	U	1.0	U	1.3	U	1.2
1,2,3-Trichlorobenzene	U	1.0	U	1.3	U	1.2

Table 1.3 (cont.) Results of the Analysis for VOC in Soil
WA # 3-399 Morgan Materials Site
Based on Dry Weight

SAMPLE # :	Sand Blank		17906		17907		17910		17905	
LOCATION :			GP-9		GP-8		GP-14		GP-11	
COLLECTED			11/03/98		11/03/98		11/03/98		11/03/98	
ANALYZED :	11/09/98		11/09/98		11/09/98		11/09/98		11/09/98	
FILE # :	A5250		A5253		A5254		A5255		A5258	
DIL. FACT.:	1		1		1		1		1	
% Solid :	100		86		84		94		89	
UNIT :	µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
Dichlorodifluoromethane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Chloromethane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Vinyl Chloride	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Bromomethane	U	2.0	U	2.3	U	2.4	U	2.1	U	2.2
Chloroethane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Trichlorofluoromethane	U	1.0	U	1.2	U	1.2	0.7 J	1.1	U	1.1
Acetone	U	2.0	U	2.3	U	2.4	U	2.1	U	2.2
1,1-Dichloroethene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Carbon Disulfide	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Methylene Chloride	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Methyl-tertiary-butylether	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
trans-1,2-Dichloroethene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,1-Dichloroethane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
2-Butanone	U	4.0	U	4.7	U	4.8	U	4.3	U	4.5
2,2-Dichloropropane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
cis-1,2-Dichloroethene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Chloroform	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,1-Dichloropropene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,2-Dichloroethane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,1,1-Trichloroethane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Carbon Tetrachloride	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Benzene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Trichloroethene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,2-Dichloropropane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Dibromomethane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Bromodichloromethane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
cis-1,3-Dichloropropene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
trans-1,3-Dichloropropene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,1,2-Trichloroethane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,3-Dichloropropane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Dibromochloromethane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,2-Dibromoethane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Bromoform	U	2.0	U	2.3	U	2.4	U	2.1	U	2.2
4-Methyl-2-Pentanone	U	1.0	U	1.2	1.3	1.2	U	1.1	U	1.1
Toluene	U	2.0	U	2.3	U	2.4	U	2.1	U	2.2
2-Hexanone	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Tetrachloroethene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Chlorobenzene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,1,1,2-Tetrachloroethane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Ethylbenzene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
p & m-Xylene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
o-Xylene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Styrene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Isopropylbenzene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,1,2,2-Tetrachloroethane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,2,3-Trichloropropane	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Bromobenzene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
n-Propylbenzene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
2-Chlorotoluene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
4-Chlorotoluene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,3,5-Trimethylbenzene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
tert-Butylbenzene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,2,4-Trimethylbenzene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
sec-Butylbenzene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,3-Dichlorobenzene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
p-Isopropyltoluene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,4-Dichlorobenzene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,2-Dichlorobenzene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
n-Butylbenzene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,2-Dibromo-3-Chloroprop	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,2,4-Trichlorobenzene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Naphthalene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
Hexachlorobutadiene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1
1,2,3-Trichlorobenzene	U	1.0	U	1.2	U	1.2	U	1.1	U	1.1

00031

Table 1.3 (cont.) Results of the Analysis for VOC in Soil
WA # 3-399 Morgan Materials Site
Based on Dry Weight

SAMPLE # :	Sand Blank		17912		17915	
LOCATION :			GP-5		GP-3	
COLLECTED			11/04/98		11/04/98	
ANALYZED :	11/10/98		11/10/98		11/10/98	
FILE # :	A5267		A5268		A5276	
DIL. FACT.:	1		1		1	
% Solid :	100		85		86	
UNIT :	µg/kg		µg/kg		µg/kg	
COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL
Dichlorodifluoromethane	U	1.0	U	1.2	U	1.2
Chloromethane	U	1.0	U	1.2	U	1.2
Vinyl Chloride	U	1.0	U	1.2	U	1.2
Bromomethane	U	2.0	U	2.4	U	2.3
Chloroethane	U	1.0	U	1.2	U	1.2
Trichlorofluoromethane	U	1.0	U	1.2	1.3	1.2
Acetone	U	2.0	23	2.4	27	2.3
1,1-Dichloroethene	U	1.0	U	1.2	U	1.2
Carbon Disulfide	U	1.0	U	1.2	7.9	1.2
Methylene Chloride	U	1.0	U	1.2	U	1.2
Methyl-tertiary-butylether	U	1.0	U	1.2	U	1.2
trans-1,2-Dichloroethene	U	1.0	U	1.2	U	1.2
1,1-Dichloroethane	U	1.0	U	1.2	U	1.2
2-Butanone	U	4.0	U	4.7	U	4.7
2,2-Dichloropropane	U	1.0	U	1.2	U	1.2
cis-1,2-Dichloroethene	U	1.0	U	1.2	U	1.2
Chloroform	U	1.0	U	1.2	U	1.2
1,1-Dichloropropene	U	1.0	U	1.2	U	1.2
1,2-Dichloroethane	U	1.0	U	1.2	U	1.2
1,1,1-Trichloroethane	U	1.0	U	1.2	U	1.2
Carbon Tetrachloride	U	1.0	U	1.2	U	1.2
Benzene	U	1.0	U	1.2	1.6	1.2
Trichloroethene	U	1.0	U	1.2	U	1.2
1,2-Dichloropropane	U	1.0	U	1.2	U	1.2
Dibromomethane	U	1.0	U	1.2	U	1.2
Bromodichloromethane	U	1.0	U	1.2	U	1.2
cis-1,3-Dichloropropene	U	1.0	U	1.2	U	1.2
trans-1,3-Dichloropropene	U	1.0	U	1.2	U	1.2
1,1,2-Trichloroethane	U	1.0	U	1.2	U	1.2
1,3-Dichloropropane	U	1.0	U	1.2	U	1.2
Dibromochloromethane	U	1.0	U	1.2	U	1.2
1,2-Dibromoethane	U	1.0	U	1.2	U	1.2
Bromoform	U	1.0	U	1.2	U	1.2
4-Methyl-2-Pentanone	U	2.0	U	2.4	U	2.3
Toluene	U	1.0	U	1.2	5.6	1.2
2-Hexanone	U	2.0	U	2.4	U	2.3
Tetrachloroethene	U	1.0	U	1.2	U	1.2
Chlorobenzene	U	1.0	U	1.2	U	1.2
1,1,1,2-Tetrachloroethane	U	1.0	U	1.2	U	1.2
Ethylbenzene	U	1.0	U	1.2	1.2	1.2
p & m-Xylene	U	1.0	U	1.2	2.1	1.2
o-Xylene	U	1.0	U	1.2	0.9 J	1.2
Styrene	U	1.0	U	1.2	U	1.2
Isopropylbenzene	U	1.0	U	1.2	U	1.2
1,1,2,2-Tetrachloroethane	U	1.0	U	1.2	U	1.2
1,2,3-Trichloropropane	U	1.0	U	1.2	U	1.2
Bromobenzene	U	1.0	U	1.2	U	1.2
n-Propylbenzene	U	1.0	U	1.2	U	1.2
2-Chlorotoluene	U	1.0	U	1.2	U	1.2
4-Chlorotoluene	U	1.0	U	1.2	U	1.2
1,3,5-Trimethylbenzene	U	1.0	U	1.2	U	1.2
tert-Butylbenzene	U	1.0	U	1.2	U	1.2
1,2,4-Trimethylbenzene	U	1.0	U	1.2	U	1.2
sec-Butylbenzene	U	1.0	U	1.2	U	1.2
1,3-Dichlorobenzene	U	1.0	U	1.2	U	1.2
p-Isopropyltoluene	U	1.0	U	1.2	U	1.2
1,4-Dichlorobenzene	U	1.0	U	1.2	U	1.2
1,2-Dichlorobenzene	U	1.0	U	1.2	U	1.2
n-Butylbenzene	U	1.0	U	1.2	U	1.2
1,2-Dibromo-3-Chloroprop	U	1.0	U	1.2	U	1.2
1,2,4-Trichlorobenzene	U	1.0	U	1.2	U	1.2
Naphthalene	U	1.0	U	1.2	U	1.2
Hexachlorobutadiene	U	1.0	U	1.2	U	1.2
1,2,3-Trichlorobenzene	U	1.0	U	1.2	U	1.2

Table 1.3 (cont.) Results of the Analysis for VOC in Soil
WA # 3-399 Morgan Materials Site
Based on Dry Weight

SAMPLE # :	Sand Blank		17913	
LOCATION :			GP-4	
COLLECTED			11/04/98	
ANALYZED :	11/10/98		11/10/98	
FILE # :	A5283		A5284	
DIL. FACT.:	1		1	
% Solid :	100		78	
UNIT :	µg/kg		µg/kg	

COMPOUND	CONC.	MDL	CONC.	MDL
Dichlorodifluoromethane	U	1.0	U	1.3
Chloromethane	U	1.0	U	1.3
Vinyl Chloride	U	1.0	U	1.3
Bromomethane	U	2.0	U	2.6
Chloroethane	U	1.0	U	1.3
Trichlorofluoromethane	U	1.0	0.7 J	1.3
Acetone	U	2.0	34	2.6
1,1-Dichloroethene	U	1.0	U	1.3
Carbon Disulfide	U	1.0	U	1.3
Methylene Chloride	U	1.0	U	1.3
Methyl-tertiary-butylether	U	1.0	U	1.3
trans-1,2-Dichloroethene	U	1.0	U	1.3
1,1-Dichloroethane	U	1.0	U	1.3
2-Butanone	U	4.0	U	5.1
2,2-Dichloropropane	U	1.0	U	1.3
cis-1,2-Dichloroethene	U	1.0	U	1.3
Chloroform	U	1.0	U	1.3
1,1-Dichloropropene	U	1.0	U	1.3
1,2-Dichloroethane	U	1.0	U	1.3
1,1,1-Trichloroethane	U	1.0	U	1.3
Carbon Tetrachloride	U	1.0	U	1.3
Benzene	U	1.0	U	1.3
Trichloroethene	U	1.0	U	1.3
1,2-Dichloropropane	U	1.0	U	1.3
Dibromomethane	U	1.0	U	1.3
Bromodichloromethane	U	1.0	U	1.3
cis-1,3-Dichloropropene	U	1.0	U	1.3
trans-1,3-Dichloropropene	U	1.0	U	1.3
1,1,2-Trichloroethane	U	1.0	U	1.3
1,3-Dichloropropane	U	1.0	U	1.3
Dibromochloromethane	U	1.0	U	1.3
1,2-Dibromoethane	U	1.0	U	1.3
Bromoform	U	1.0	U	1.3
4-Methyl-2-Pentanone	U	2.0	U	2.6
Toluene	U	1.0	U	1.3
2-Hexanone	U	2.0	U	2.6
Tetrachloroethene	U	1.0	U	1.3
Chlorobenzene	U	1.0	U	1.3
1,1,1,2-Tetrachloroethane	U	1.0	U	1.3
Ethylbenzene	U	1.0	U	1.3
p & m-Xylene	U	1.0	U	1.3
o-Xylene	U	1.0	U	1.3
Styrene	U	1.0	U	1.3
Isopropylbenzene	U	1.0	U	1.3
1,1,2,2-Tetrachloroethane	U	1.0	U	1.3
1,2,3-Trichloropropane	U	1.0	U	1.3
Bromobenzene	U	1.0	U	1.3
n-Propylbenzene	U	1.0	U	1.3
2-Chlorotoluene	U	1.0	U	1.3
4-Chlorotoluene	U	1.0	U	1.3
1,3,5-Trimethylbenzene	U	1.0	U	1.3
tert-Butylbenzene	U	1.0	U	1.3
1,2,4-Trimethylbenzene	U	1.0	U	1.3
sec-Butylbenzene	U	1.0	U	1.3
1,3-Dichlorobenzene	U	1.0	U	1.3
p-Isopropyltoluene	U	1.0	U	1.3
1,4-Dichlorobenzene	U	1.0	U	1.3
1,2-Dichlorobenzene	U	1.0	U	1.3
n-Butylbenzene	U	1.0	U	1.3
1,2-Dibromo-3-Chloroprop	U	1.0	U	1.3
1,2,4-Trichlorobenzene	U	1.0	U	1.3
Naphthalene	U	1.0	U	1.3
Hexachlorobutadiene	U	1.0	U	1.3
1,2,3-Trichlorobenzene	U	1.0	U	1.3

Table 1.4 Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # SAND BLANK Unit µg/kg
LabFile# A5217 Con. Factor 1

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17901 Unit µg/kg

LabFile# A5218 Con. Factor 1.2195

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17902 Unit µg/kg

LabFile# A5219 Con. Factor 1.1494

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17903
LabFile# A5220

Unit µg/kg
Con. Factor 1.1111

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17904 Unit µg/kg

LabFile# A5221 Con. Factor 1.1236

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17908 Unit µg/kg

LabFile# A5225 Con. Factor 1.0638

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17909 Unit µg/kg

LabFile# A5226 Con. Factor 1.1765

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17911 Unit µg/kg

LabFile# A5228 Con. Factor 6.0241

	CAS#	Compound	Q	RT	Conc
1		Unknown ketone		22.21	42000
2		Unknown ketone		22.85	7500
3					
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # SAND BLANK Unit µg/kg
LabFile# A5234 Con. Factor 1

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17920 Unit µg/kg

LabFile# A5235 Con. Factor 1

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17919
LabFile# A5236

Unit µg/kg
Con. Factor 1

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17918 Unit µg/kg

LabFile# A5237 Con. Factor 1

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17917 Unit µg/kg

LabFile# A5244 Con. Factor 1.2048

	CAS#	Compound	Q	RT	Conc
1		Unknown		6.72	8
2		Unknown		10.21	47
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17916 Unit µg/kg

LabFile# A5245 Con. Factor 1.2658

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17914 Unit µg/kg

LabFile# A5247 Con. Factor 1.1765

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # SAND BLANK
LabFile# A5250

Unit µg/kg
Con. Factor 1

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17906
LabFile# A5253

Unit µg/kg
Con. Factor 1.1628

	CAS#	Compound	Q	RT	Conc
1		Trimethylsilanol C3H10OSi		7.93	198
2		Siloxane		11.53	20
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17907 Unit µg/kg

LabFile# A5254 Con. Factor 1.1905

	CAS#	Compound	Q	RT	Conc
1		Unknown		7.87	25
2		Unknown		12.48	6
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17910 Unit µg/kg

LabFile# A5255 Con. Factor 1.0638

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17905 Unit µg/kg

LabFile# A5258 Con. Factor 1.1236

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # SAND BLANK Unit µg/kg
LabFile# A5267 Con. Factor 1

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17912
LabFile# A5268

Unit µg/kg
Con. Factor 1.1765

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17915 Unit µg/kg

LabFile# A5276 Con. Factor 1.1628

	CAS#	Compound	Q	RT	Conc
1		Unknown		2.66	8
2		Unknown		4.51	7
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # SAND BLANK Unit µg/kg
LabFile# A5283 Con. Factor 1

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (cont.) Results of TIC for VOC in Soil
Morgan Material Site WA# 3399

Sample # 17913 Unit µg/kg

LabFile# A5284 Con. Factor 1.2821

	CAS#	Compound	Q	RT	Conc
1		NO PEAKS FOUND			0
2					0
3					0
4					0
5					0
6					0
7					0
8					0
9					0
10					0
11					0
12					0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0

*Estimated Concentration (Response Factor = 1.0)

Table 1.5 Results of the Analysis for BNA in Water
WA # 3-399 Morgan Materials Site

Sample No.	WBLK111098	F17921	F17922	F17923	F17924
Sample Location	Lab Blank	MW-1	MW-2	MW-3	MW-4
GC/MS File Name	MM052	MM047	MM048	MM049	MM050
Dilution Factor	1	1	1	1	1

Compound Name	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L
Phenol	U	10	U	10	U	10	U	10	U	10
bis(-2-Chloroethyl)Ether	U	10	U	10	U	10	U	10	U	10
2-Chlorophenol	U	10	U	10	U	10	U	10	U	10
1,3-Dichlorobenzene	U	10	U	10	U	10	U	10	U	10
1,4-Dichlorobenzene	U	10	U	10	U	10	U	10	U	10
Benzyl alcohol	U	10	U	10	U	10	U	10	U	10
1,2-Dichlorobenzene	U	10	U	10	U	10	U	10	U	10
2-Methylphenol	U	10	U	10	U	10	U	10	U	10
bis(2-Chloroisopropyl)ether	U	10	U	10	U	10	U	10	U	10
4-Methylphenol	U	10	U	10	U	10	U	10	U	10
N-Nitroso-Di-n-propylamine	U	10	U	10	U	10	U	10	U	10
Hexachloroethane	U	10	U	10	U	10	U	10	U	10
Nitrobenzene	U	10	U	10	U	10	U	10	U	10
Isophorone	U	10	U	10	U	10	U	10	U	10
2-Nitrophenol	U	10	U	10	U	10	U	10	U	10
2,4-Dimethylphenol	U	10	U	10	U	10	U	10	U	10
bis(2-Chloroethoxy)methane	U	10	U	10	U	10	U	10	U	10
2,4-Dichlorophenol	U	10	U	10	U	10	U	10	U	10
1,2,4-Trichlorobenzene	U	10	U	10	U	10	U	10	U	10
Naphthalene	U	10	U	10	U	10	U	10	U	10
4-Chloroaniline	U	10	U	10	U	10	U	10	U	10
Hexachlorobutadiene	U	10	U	10	U	10	U	10	U	10
4-Chloro-3-methylphenol	U	10	U	10	U	10	U	10	U	10
2-Methylnaphthalene	U	10	U	10	U	10	U	10	U	10
Hexachlorocyclopentadiene	U	10	U	10	U	10	U	10	U	10
2,4,6-Trichlorophenol	U	10	U	10	U	10	U	10	U	10
2,4,5-Trichlorophenol	U	10	U	10	U	10	U	10	U	10
2-Chloronaphthalene	U	10	U	10	U	10	U	10	U	10
2-Nitroaniline	U	10	U	10	U	10	U	10	U	10
Dimethylphthalate	U	10	U	10	U	10	U	10	U	10
Acenaphthylene	U	10	U	10	U	10	U	10	U	10
2,6-Dinitrotoluene	U	10	U	10	U	10	U	10	U	10
3-Nitroaniline	U	10	U	10	U	10	U	10	U	10
Acenaphthene	U	10	U	10	U	10	U	10	U	10
2,4-Dinitrophenol	U	10	U	10	U	10	U	10	U	10
4-Nitrophenol	U	10	U	10	U	10	U	10	U	10
Dibenzofuran	U	10	U	10	U	10	U	10	U	10
2,4-Dinitrotoluene	U	10	U	10	U	10	U	10	U	10
Diethylphthalate	U	10	U	10	U	10	U	10	U	10
4-Chlorophenyl-phenylether	U	10	U	10	U	10	U	10	U	10
Fluorene	U	10	U	10	U	10	U	10	U	10
4-Nitroaniline	U	10	U	10	U	10	U	10	U	10
4,6-Dinitro-2-methylphenol	U	10	U	10	U	10	U	10	U	10
N-Nitrosodiphenylamine	U	10	U	10	U	10	U	10	U	10
4-Bromophenyl-phenylether	U	10	U	10	U	10	U	10	U	10
Hexachlorobenzene	U	10	U	10	U	10	U	10	U	10
Pentachlorophenol	U	10	U	10	U	10	U	10	U	10
Phenanthrene	U	10	U	10	U	10	U	10	U	10
Anthracene	U	10	U	10	U	10	U	10	U	10
Carbazole	U	10	U	10	U	10	U	10	U	10
Di-n-butylphthalate	U	10	U	10	U	10	U	10	U	10
Fluoranthene	U	10	U	10	U	10	U	10	U	10
Pyrene	U	10	U	10	U	10	U	10	U	10
Butylbenzylphthalate	U	10	U	10	U	10	U	10	U	10
Benzo(a)anthracene	U	10	U	10	U	10	U	10	U	10
3,3'-Dichlorobenzidine	U	10	U	10	U	10	U	10	U	10
Chrysene	U	10	U	10	U	10	U	10	U	10
Bis(2-Ethylhexyl)phthalate	U	10	14	10	2.5 J	10	2.6 J	10	U	10
Di-n-octylphthalate	U	10	U	10	U	10	U	10	U	10
Benzo(b)fluoranthene	U	10	U	10	U	10	U	10	U	10
Benzo(k)fluoranthene	U	10	U	10	U	10	U	10	U	10
Benzo(a)pyrene	U	10	U	10	U	10	U	10	U	10
Indeno(1,2,3-cd)pyrene	U	10	U	10	U	10	U	10	U	10
Dibenzo(a,h)anthracene	U	10	U	10	U	10	U	10	U	10
Benzo(g,h,i)perylene	U	10	U	10	U	10	U	10	U	10

Table 1.5 (Cont.) Results of the Analysis for BNA in Water
WA # 3-399 Morgan Materials Site

Sample No.	F17925
Sample Location	Field Blank
GC/MS File Name	MM051
Dilution Factor	1

Compound Name	Conc. µg/L	MDL µg/L
Phenol	U	10
bis(-2-Chloroethyl)Ether	U	10
2-Chlorophenol	U	10
1,3-Dichlorobenzene	U	10
1,4-Dichlorobenzene	U	10
Benzyl alcohol	U	10
1,2-Dichlorobenzene	U	10
2-Methylphenol	U	10
bis(2-Chloroisopropyl)ether	U	10
4-Methylphenol	U	10
N-Nitroso-Di-n-propylamine	U	10
Hexachloroethane	U	10
Nitrobenzene	U	10
Isophorone	U	10
2-Nitrophenol	U	10
2,4-Dimethylphenol	U	10
bis(2-Chloroethoxy)methane	U	10
2,4-Dichlorophenol	U	10
1,2,4-Trichlorobenzene	U	10
Naphthalene	U	10
4-Chloroaniline	U	10
Hexachlorobutadiene	U	10
4-Chloro-3-methylphenol	U	10
2-Methylnaphthalene	U	10
Hexachlorocyclopentadiene	U	10
2,4,6-Trichlorophenol	U	10
2,4,5-Trichlorophenol	U	10
2-Chloronaphthalene	U	10
2-Nitroaniline	U	10
Dimethylphthalate	U	10
Acenaphthylene	U	10
2,6-Dinitrotoluene	U	10
3-Nitroaniline	U	10
Acenaphthene	U	10
2,4-Dinitrophenol	U	10
4-Nitrophenol	U	10
Dibenzofuran	U	10
2,4-Dinitrotoluene	U	10
Diethylphthalate	U	10
4-Chlorophenyl-phenylether	U	10
Fluorene	U	10
4-Nitroaniline	U	10
4,6-Dinitro-2-methylphenol	U	10
N-Nitrosodiphenylamine	U	10
4-Bromophenyl-phenylether	U	10
Hexachlorobenzene	U	10
Pentachlorophenol	U	10
Phenanthrene	U	10
Anthracene	U	10
Carbazole	U	10
Di-n-butylphthalate	U	10
Fluoranthene	U	10
Pyrene	U	10
Butylbenzylphthalate	U	10
Benzo(a)anthracene	U	10
3,3'-Dichlorobenzidine	U	10
Chrysene	U	10
Bis(2-Ethylhexyl)phthalate	10	10
Di-n-octylphthalate	U	10
Benzo(b)fluoranthene	U	10
Benzo(k)fluoranthene	U	10
Benzo(a)pyrene	U	10
Indeno(1,2,3-cd)pyrene	U	10
Dibenzo(a,h)anthracene	U	10
Benzo(g,h,i)perylene	U	10

Table 1.6 Results of the TIC for BNA in Water
WA # 3-399 Morgan Materials Site

Sample # WBLK111098 Lab Blank

LabFile # MM052

Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc * µg/L
1		Unknown organic acid		13.55	5.7
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.6 (Cont.) Results of the TIC for BNA in Water
WA # 3-399 Morgan Materials Site

Sample # F17921 MW-1

LabFile # MM047

Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc * µg/L
1		Possible 2-butoxy-ethanol		4.44	12
2		Possible eucalyptol + diene/cycloalkene		5.65	52
3		Possible camphor + diene/cycloalkene		6.66	6.6
4		Unknown alcohol		6.81	40
5		Possible caprolactum		7.51	370
6		Unknown diene/cycloalkene		7.82	8.4
7		Unknown amine		8.41	4.9
8		Unknown PAH isomer		12.61	5.2
9		Unknown organic acid		13.55	6.7
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.6 (Cont.) Results of the TIC for BNA in Water
WA # 3-399 Morgan Materials Site

Sample # F17922 MW-2

LabFile # MM048

Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc * µg/L
1		Possible caprolactum		7.44	47
2		Unknown organic acid		13.55	5.7
3		Unknown		16.49	4.0
4		Unknown		16.62	5.6
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.6 (Cont.) Results of the TIC for BNA in Water
WA # 3-399 Morgan Materials Site

Sample # F17923 MW-3

LabFile # MM049 Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc * µg/L
1	127-18-4	Tetrachloroethylene	98	3.69	140
2		Unknown alkene		3.73	38
3		Unknown alcohol		4.45	12
4		Possible eucalyptol + diene/cycloalkene		5.65	19
5		Unknown alcohol		6.81	25
6		Possible caprolactam		7.43	6.9
7		Unknown		7.94	6.3
8		Possible tri(2-chloroethyl)phosphate		10.63	13
9		Unknown organic acid		13.55	7.5
10		Unknown amine isomer + alkane		22.33	58
11		Unknown alkane + diene/cycloalkene + unknown		26.8	19
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.6 (Cont.) Results of the TIC for BNA in Water
WA # 3-399 Morgan Materials Site

Sample # F17924 MW-4

LabFile # MM050 Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc * µg/L
1		Unknown alcohol		4.45	10
2		Possible eucalyptol + diene/cycloalkene		5.65	26
3		Unknown diene/cycloalkene		6.31	7.4
4		Unknown alcohol		6.36	13
5		Unknown alcohol		6.81	28
6		Possible caprolactam		7.43	9.8
7		Unknown diene/cycloalkene		7.81	4.4
8		Unknown organic acid		13.55	6.4
9		Unknown alkane + carboxyl amine isomer + diene/cycloalkene		22.26	16
10		Unknown alkane + unknown		29.39	6.8
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.6 (Cont.) Results of the TIC for BNA in Water
WA # 3-399 Morgan Materials Site

Sample # F17925 Field Blank

LabFile # MM051 Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc * µg/L
1	119-61-9	Benzophenone	96	10.03	15
2		Unknown organic acid		13.55	5.7
3		Unknown alkane + unknown		16.61	4.1
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.7 Results of the Analysis for BNA in Soil
WA # 3-399 Morgan Materials Site
(Results are Based on Dry Weight)

Sample No.	SBLK110698		B17901		B17902		B17903		B17904	
Sample Location	Sand Blank		GP-1		GP-15		GP-12		GP-13	
GC/MS File Name	MM024		MM012		MM013		MM014		MM015	
Dilution Factor	1		10		10		10		10	
% Solid	100		87		90		90		80	
Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
Phenol	U	330	U	3800	U	3700	U	3700	U	3700
bis(-2-Chloroethyl)Ether	U	330	U	3800	U	3700	U	3700	U	3700
2-Chlorophenol	U	330	U	3800	U	3700	U	3700	U	3700
1,3-Dichlorobenzene	U	330	U	3800	U	3700	U	3700	U	3700
1,4-Dichlorobenzene	U	330	U	3800	U	3700	U	3700	U	3700
Benzyl alcohol	U	330	U	3800	U	3700	U	3700	U	3700
1,2-Dichlorobenzene	U	330	U	3800	U	3700	U	3700	U	3700
2-Methylphenol	U	330	U	3800	U	3700	U	3700	U	3700
bis(2-Chloroisopropyl)ether	U	330	U	3800	U	3700	U	3700	U	3700
4-Methylphenol	U	330	U	3800	U	3700	U	3700	U	3700
N-Nitroso-Di-n-propylamine	U	330	U	3800	U	3700	U	3700	U	3700
Hexachloroethane	U	330	U	3800	U	3700	U	3700	U	3700
Nitrobenzene	U	330	U	3800	U	3700	U	3700	U	3700
Isophorone	U	330	U	3800	U	3700	U	3700	U	3700
2-Nitrophenol	U	330	U	3800	U	3700	U	3700	U	3700
2,4-Dimethylphenol	U	330	U	3800	U	3700	U	3700	U	3700
bis(2-Chloroethoxy)methane	U	330	U	3800	U	3700	U	3700	U	3700
2,4-Dichlorophenol	U	330	U	3800	U	3700	U	3700	U	3700
1,2,4-Trichlorobenzene	U	330	U	3800	U	3700	U	3700	U	3700
Naphthalene	U	330	1700 J	3800	U	3700	U	3700	U	3700
4-Chloroaniline	U	330	U	3800	U	3700	U	3700	U	3700
Hexachlorobutadiene	U	330	U	3800	U	3700	U	3700	U	3700
4-Chloro-3-methylphenol	U	330	U	3800	U	3700	U	3700	U	3700
2-Methylnaphthalene	U	330	920 J	3800	1100 J	3700	920 J	3700	U	3700
Hexachlorocyclopentadiene	U	330	U	3800	U	3700	U	3700	U	3700
2,4,6-Trichlorophenol	U	330	U	3800	U	3700	U	3700	U	3700
2,4,5-Trichlorophenol	U	330	U	3800	U	3700	U	3700	U	3700
2-Chloronaphthalene	U	330	U	3800	U	3700	U	3700	U	3700
2-Nitroaniline	U	330	U	3800	U	3700	U	3700	U	3700
Dimethylphthalate	U	330	U	3800	U	3700	U	3700	U	3700
Acenaphthylene	U	330	U	3800	U	3700	U	3700	U	3700
2,6-Dinitrotoluene	U	330	U	3800	U	3700	U	3700	U	3700
3-Nitroaniline	U	330	U	3800	U	3700	U	3700	U	3700
Acenaphthene	U	330	U	3800	U	3700	U	3700	U	3700
2,4-Dinitrophenol	U	330	U	3800	U	3700	U	3700	U	3700
4-Nitrophenol	U	330	U	3800	U	3700	U	3700	U	3700
Dibenzofuran	U	330	970 J	3800	U	3700	U	3700	U	3700
2,4-Dinitrotoluene	U	330	U	3800	U	3700	U	3700	U	3700
Diethylphthalate	U	330	U	3800	U	3700	U	3700	U	3700
4-Chlorophenyl-phenylether	U	330	U	3800	U	3700	U	3700	U	3700
Fluorene	U	330	1100 J	3800	U	3700	U	3700	U	3700
4-Nitroaniline	U	330	U	3800	U	3700	U	3700	U	3700
4,6-Dinitro-2-methylphenol	U	330	U	3800	U	3700	U	3700	U	3700
N-Nitrosodiphenylamine	U	330	U	3800	U	3700	U	3700	U	3700
4-Bromophenyl-phenylether	U	330	U	3800	U	3700	U	3700	U	3700
Hexachlorobenzene	U	330	U	3800	U	3700	U	3700	U	3700
Pentachlorophenol	U	330	U	3800	U	3700	2700 J	3700	1400 J	3700
Phenanthrene	U	330	7200	3800	3800	3700	U	3700	U	3700
Anthracene	U	330	1800 J	3800	770 J	3700	U	3700	U	3700
Carbazole	U	330	830 J	3800	U	3700	U	3700	U	3700
Di-n-butylphthalate	U	330	U	3800	U	3700	6200	3700	2700 J	3700
Fluoranthene	U	330	7200	3800	5000	3700	5600	3700	2400 J	3700
Pyrene	U	330	5400	3800	4100	3700	U	3700	U	3700
Butylbenzylphthalate	U	330	U	3800	U	3700	6000	3700	1900 J	3700
Benzo(a)anthracene	U	330	2900 J	3800	2200 J	3700	U	3700	U	3700
3,3'-Dichlorobenzidine	U	330	U	3800	U	3700	9300	3700	2500 J	3700
Chrysene	U	330	3000 J	3800	2400 J	3700	1200 J	3700	2500 J	3700
Bis(2-Ethylhexyl)phthalate	U	330	U	3800	U	3700	U	3700	U	3700
Di-n-octylphthalate	U	330	U	3800	U	3700	14000	3700	2800 J	3700
Benzo(b)fluoranthene	U	330	2200 J	3800	2200 J	3700	9900	3700	2300 J	3700
Benzo(k)fluoranthene	U	330	2500 J	3800	2200 J	3700	9500	3700	2600 J	3700
Benzo(a)pyrene	U	330	2500 J	3800	2500 J	3700	9500	3700	1800 J	3700
Indeno(1,2,3-cd)pyrene	U	330	1400 J	3800	1500 J	3700	3700	3700	U	3700
Dibenzo(a,h)anthracene	U	330	U	3800	U	3700	11000	3700	2100 J	3700
Benzo(g,h,i)perylene	U	330	1400 J	3800	1600 J	3700				

Table 1.7 (cont.) Results of the Analysis for BNA in Soil
WA # 3-399 Morgan Materials Site
(Results are Based on Dry Weight)

Sample No.	B17905		B17910		B17906		B17907		B17908	
Sample Location	GP-11		GP-14		GP-9		GP-8		GP-10	
GC/MS File Name	MM018		MM019		MM020		MM021		MM022	
Dilution Factor	10		1		1		1		1	
% Solid	90		92		84		85		92	

Compound Name	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg		MDL µg/kg
Phenol	U		3700	U		360	U	400	U		390	U	360			
bis(-2-Chloroethyl)Ether	U		3700	U		360	U	400	U		390	U	360			
2-Chlorophenol	U		3700	U		360	U	400	U		390	U	360			
1,3-Dichlorobenzene	U		3700	U		360	U	400	U		390	U	360			
1,4-Dichlorobenzene	U		3700	U		360	U	400	U		390	U	360			
Benzyl alcohol	U		3700	U		360	U	400	U		390	U	360			
1,2-Dichlorobenzene	U		3700	U		360	U	400	U		390	U	360			
2-Methylphenol	U		3700	U		360	U	400	U		390	U	360			
bis(2-Chloroisopropyl)ether	U		3700	U		360	U	400	U		390	U	360			
4-Methylphenol	U		3700	U		360	U	400	U		390	U	360			
N-Nitroso-Di-n-propylamine	U		3700	U		360	U	400	U		390	U	360			
Hexachloroethane	U		3700	U		360	U	400	U		390	U	360			
Nitrobenzene	U		3700	U		360	U	400	U		390	U	360			
Isophorone	U		3700	U		360	U	400	U		390	U	360			
2-Nitrophenol	U		3700	U		360	U	400	U		390	U	360			
2,4-Dimethylphenol	U		3700	U		360	U	400	U		390	U	360			
bis(2-Chloroethoxy)methane	U		3700	U		360	U	400	U		390	U	360			
2,4-Dichlorophenol	U		3700	U		360	U	400	U		390	U	360			
1,2,4-Trichlorobenzene	U		3700	U		360	U	400	U		390	U	360			
Naphthalene	U		3700	1500		360	U	400	U		390	180	J	360		
4-Chloroaniline	U		3700	U		360	U	400	U		390	U	360			
Hexachlorobutadiene	U		3700	U		360	U	400	U		390	U	360			
4-Chloro-3-methylphenol	U		3700	U		360	U	400	U		390	U	360			
2-Methylnaphthalene	U		3700	2500		360	U	400	U		390	290	J	360		
Hexachlorocyclopentadiene	U		3700	U		360	U	400	U		390	U	360			
2,4,6-Trichlorophenol	U		3700	U		360	U	400	U		390	U	360			
2,4,5-Trichlorophenol	U		3700	U		360	U	400	U		390	U	360			
2-Chloronaphthalene	U		3700	U		360	U	400	U		390	U	360			
2-Nitroaniline	U		3700	U		360	U	400	U		390	U	360			
Dimethylphthalate	U		3700	U		360	U	400	U		390	U	360			
Acenaphthylene	U		3700	U		360	U	400	U		390	U	360			
2,6-Dinitrotoluene	U		3700	U		360	U	400	U		390	U	360			
3-Nitroaniline	U		3700	U		360	U	400	U		390	U	360			
Acenaphthene	U		3700	U		360	U	400	U		390	U	360			
2,4-Dinitrophenol	U		3700	U		360	U	400	U		390	U	360			
4-Nitrophenol	U		3700	U		360	U	400	U		390	90	J	360		
Dibenzofuran	U		3700	570		360	U	400	U		390	U	360			
2,4-Dinitrotoluene	U		3700	U		360	U	400	U		390	U	360			
Diethylphthalate	U		3700	U		360	U	400	U		390	U	360			
4-Chlorophenyl-phenylether	U		3700	U		360	U	400	U		390	U	360			
Fluorene	U		3700	U		360	U	400	U		390	U	360			
4-Nitroaniline	U		3700	U		360	U	400	U		390	U	360			
4,6-Dinitro-2-methylphenol	U		3700	U		360	U	400	U		390	U	360			
N-Nitrosodiphenylamine	U		3700	U		360	U	400	U		390	U	360			
4-Bromophenyl-phenylether	U		3700	U		360	U	400	U		390	U	360			
Hexachlorobenzene	U		3700	U		360	U	400	U		390	U	360			
Pentachlorophenol	U		3700	U		360	U	400	U		390	U	360			
Phenanthrene	U		3700	980		360	U	400	U		390	250	J	360		
Anthracene	U		3700	95	J	360	U	400	U		390	U	360			
Carbazole	U		3700	97	J	360	U	400	U		390	U	360			
Di-n-butylphthalate	U		3700	U		360	U	400	U		390	730	360			
Fluoranthene	3200	J	3700	810		360	U	400	U		390	710	360			
Pyrene	3400	J	3700	750		360	U	400	U		390	U	360			
Butylbenzylphthalate	U		3700	U		360	U	400	U		390	1000	360			
Benzo(a)anthracene	2500	J	3700	530		360	U	400	U		390	U	360			
3,3'-Dichlorobenzidine	U		3700	U		360	U	400	U		390	1700	360			
Chrysene	3500	J	3700	730		360	U	400	U		390	U	360			
Bis(2-Ethylhexyl)phthalate	U		3700	140	J	360	U	400	U		390	U	360			
Di-n-octylphthalate	U		3700	U		360	U	400	U		390	2600	360			
Benzo(b)fluoranthene	4500		3700	760		360	U	400	U		390	1700	360			
Benzo(k)fluoranthene	3600	J	3700	610		360	U	400	U		390	1500	360			
Benzo(a)pyrene	4300		3700	730		360	U	400	U		390	1500	360			
Indeno(1,2,3-cd)pyrene	3500	J	3700	500		360	U	400	U		390	700	360			
Dibenzo(a,h)anthracene	1300	J	3700	220	J	360	U	400	U		390	1800	360			
Benzo(g,h,i)perylene	4500		3700	620		360	U	400	U		390					

Table 1.7 (cont.) Results of the Analysis for BNA in Soil
WA # 3-399 Morgan Materials Site
(Results are Based on Dry Weight)

Sample No.	B17909	B17911	B17912	B17913	B17914
Sample Location	GP-7	GP-6	GP-5	GP-4	GP-2
GC/MS File Name	MM027	MM028	MM029	MM030	MM031
Dilution Factor	1	20	1	1	1
% Solid	83	80	81	85	87

Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
Phenol	U	400	U	8400	U	410	U	390	U	380
bis(-2-Chloroethyl)Ether	U	400	U	8400	U	410	U	390	U	380
2-Chlorophenol	U	400	U	8400	U	410	U	390	U	380
1,3-Dichlorobenzene	U	400	U	8400	U	410	U	390	U	380
1,4-Dichlorobenzene	U	400	U	8400	U	410	U	390	U	380
Benzyl alcohol	U	400	U	8400	U	410	U	390	U	380
1,2-Dichlorobenzene	U	400	U	8400	U	410	U	390	U	380
2-Methylphenol	U	400	U	8400	U	410	U	390	U	380
bis(2-Chloroisopropyl)ether	U	400	U	8400	U	410	U	390	U	380
4-Methylphenol	U	400	U	8400	U	410	U	390	U	380
N-Nitroso-Di-n-propylamine	U	400	U	8400	U	410	U	390	U	380
Hexachloroethane	U	400	U	8400	U	410	U	390	U	380
Nitrobenzene	U	400	U	8400	U	410	U	390	U	380
Isophorone	U	400	U	8400	U	410	U	390	U	380
2-Nitrophenol	U	400	U	8400	U	410	U	390	U	380
2,4-Dimethylphenol	U	400	U	8400	U	410	U	390	U	380
bis(2-Chloroethoxy)methane	U	400	U	8400	U	410	U	390	U	380
2,4-Dichlorophenol	U	400	U	8400	U	410	U	390	U	380
1,2,4-Trichlorobenzene	U	400	U	8400	U	410	U	390	U	380
Naphthalene	U	400	U	8400	U	410	U	390	U	380
4-Chloroaniline	U	400	U	8400	U	410	U	390	U	380
Hexachlorobutadiene	U	400	U	8400	U	410	U	390	U	380
4-Chloro-3-methylphenol	U	400	6800 J	8400	U	410	120 J	390	110 J	380
2-Methylnaphthalene	U	400	U	8400	U	410	U	390	U	380
Hexachlorocyclopentadiene	U	400	U	8400	U	410	U	390	U	380
2,4,6-Trichlorophenol	U	400	U	8400	U	410	U	390	U	380
2,4,5-Trichlorophenol	U	400	U	8400	U	410	U	390	U	380
2-Chloronaphthalene	U	400	U	8400	U	410	U	390	U	380
2-Nitroaniline	U	400	U	8400	U	410	U	390	U	380
Dimethylphthalate	U	400	U	8400	U	410	U	390	U	380
Acenaphthylene	U	400	U	8400	U	410	U	390	U	380
2,6-Dinitrotoluene	U	400	U	8400	U	410	U	390	U	380
3-Nitroaniline	U	400	U	8400	U	410	U	390	U	380
Acenaphthene	U	400	U	8400	U	410	U	390	U	380
2,4-Dinitrophenol	U	400	U	8400	U	410	U	390	U	380
4-Nitrophenol	U	400	U	8400	U	410	U	390	U	380
Dibenzofuran	U	400	4800 J	8400	U	410	U	390	U	380
2,4-Dinitrotoluene	U	400	U	8400	U	410	U	390	U	380
Diethylphthalate	450	400	11000	8400	490	410	440	390	390	380
4-Chlorophenyl-phenylether	U	400	U	8400	U	410	U	390	U	380
Fluorene	U	400	5500 J	8400	U	410	U	390	U	380
4-Nitroaniline	U	400	U	8400	U	410	U	390	U	380
4,6-Dinitro-2-methylphenol	U	400	U	8400	U	410	U	390	U	380
N-Nitrosodiphenylamine	U	400	U	8400	U	410	U	390	U	380
4-Bromophenyl-phenylether	U	400	U	8400	U	410	U	390	U	380
Hexachlorobenzene	U	400	U	8400	U	410	U	390	U	380
Pentachlorophenol	U	400	U	8400	U	410	U	390	U	380
Phenanthrene	U	400	19000	8400	U	410	U	390	U	380
Anthracene	U	400	18000	8400	U	410	U	390	U	380
Carbazole	U	400	U	8400	U	410	U	390	U	380
Di-n-butylphthalate	U	400	U	8400	U	410	88 J	390	81 J	380
Fluoranthene	U	400	2400 J	8400	U	410	78 J	390	U	380
Pyrene	U	400	U	8400	U	410	U	390	U	380
Butylbenzylphthalate	U	400	U	8400	U	410	U	390	U	380
Benzo(a)anthracene	U	400	U	8400	U	410	U	390	U	380
3,3'-Dichlorobenzidine	U	400	U	8400	U	410	U	390	U	380
Chrysene	U	400	U	8400	U	410	U	390	100 J	380
Bis(2-Ethylhexyl)phthalate	97 J	400	U	8400	U	410	U	390	U	380
Di-n-octylphthalate	U	400	U	8400	U	410	U	390	U	380
Benzo(b)fluoranthene	U	400	U	8400	U	410	U	390	U	380
Benzo(k)fluoranthene	U	400	U	8400	U	410	U	390	U	380
Benzo(a)pyrene	U	400	U	8400	U	410	U	390	U	380
Indeno(1,2,3-cd)pyrene	U	400	U	8400	U	410	U	390	U	380
Dibenzo(a,h)anthracene	U	400	U	8400	U	410	U	390	U	380
Benzo(g,h,i)perylene	U	400	U	8400	U	410	U	390	U	380

Table 1.7 (cont.) Results of the Analysis for BNA in Soil
WA # 3-399 Morgan Materials Site
(Results are Based on Dry Weight)

Sample No.	B17915		B17916		B17917		B17918		B17919	
Sample Location	GP-3		GP-16		GP-17		Field Blank-0		Field Blank-I	
GC/MS File Name	MM032		MM034		MM035		MM036		MM037	
Dilution Factor	10		1		10		1		1	
% Solid	87		84		81		100		100	

Compound Name	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg
Phenol	U		3800	U		400	280000		4100	U		330	U		330
bis(-2-Chloroethyl)Ether	U		3800	U		400	U		4100	U		330	U		330
2-Chlorophenol	U		3800	U		400	U		4100	U		330	U		330
1,3-Dichlorobenzene	U		3800	U		400	U		4100	U		330	U		330
1,4-Dichlorobenzene	U		3800	U		400	U		4100	U		330	U		330
Benzyl alcohol	U		3800	U		400	U		4100	U		330	U		330
1,2-Dichlorobenzene	U		3800	U		400	U		4100	U		330	U		330
2-Methylphenol	U		3800	U		400	U		4100	U		330	U		330
bis(2-Chloroisopropyl)ether	U		3800	U		400	U		4100	U		330	U		330
4-Methylphenol	U		3800	U		400	U		4100	U		330	U		330
N-Nitroso-Di-n-propylamine	U		3800	U		400	U		4100	U		330	U		330
Hexachloroethane	U		3800	U		400	U		4100	U		330	U		330
Nitrobenzene	U		3800	U		400	U		4100	U		330	U		330
Isophorone	U		3800	U		400	U		4100	U		330	U		330
2-Nitrophenol	U		3800	U		400	U		4100	U		330	U		330
2,4-Dimethylphenol	U		3800	U		400	U		4100	U		330	U		330
bis(2-Chloroethoxy)methane	U		3800	U		400	U		4100	U		330	U		330
2,4-Dichlorophenol	U		3800	U		400	U		4100	U		330	U		330
1,2,4-Trichlorobenzene	U		3800	U		400	U		4100	U		330	U		330
Naphthalene	U		3800	460		400	860	J	4100	U		330	U		330
4-Chloroaniline	U		3800	U		400	U		4100	U		330	U		330
Hexachlorobutadiene	U		3800	U		400	U		4100	U		330	U		330
4-Chloro-3-methylphenol	U		3800	U		400	U		4100	U		330	U		330
2-Methylnaphthalene	U		3800	130	J	400	840	J	4100	U		330	U		330
Hexachlorocyclopentadiene	U		3800	U		400	U		4100	U		330	U		330
2,4,6-Trichlorophenol	U		3800	U		400	U		4100	U		330	U		330
2,4,5-Trichlorophenol	U		3800	U		400	U		4100	U		330	U		330
2-Chloronaphthalene	U		3800	U		400	U		4100	U		330	U		330
2-Nitroaniline	U		3800	U		400	U		4100	U		330	U		330
Dimethylphthalate	U		3800	U		400	U		4100	U		330	U		330
Acenaphthylene	U		3800	U		400	U		4100	U		330	U		330
2,6-Dinitrotoluene	U		3800	U		400	U		4100	U		330	U		330
3-Nitroaniline	U		3800	U		400	U		4100	U		330	U		330
Acenaphthene	U		3800	160	J	400	U		4100	U		330	U		330
2,4-Dinitrophenol	U		3800	U		400	U		4100	U		330	U		330
4-Nitrophenol	U		3800	U		400	U		4100	U		330	U		330
Dibenzofuran	U		3800	210	J	400	970	J	4100	U		330	U		330
2,4-Dinitrotoluene	U		3800	U		400	U		4100	U		330	U		330
Diethylphthalate	2500	J	3800	320	J	400	2400	J	4100	200	J	330	200	J	330
4-Chlorophenyl-phenylether	U		3800	U		400	U		4100	U		330	U		330
Fluorene	U		3800	250	J	400	U		4100	U		330	U		330
4-Nitroaniline	U		3800	U		400	U		4100	U		330	U		330
4,6-Dinitro-2-methylphenol	U		3800	U		400	U		4100	U		330	U		330
N-Nitrosodiphenylamine	U		3800	U		400	U		4100	U		330	U		330
4-Bromophenyl-phenylether	U		3800	U		400	U		4100	U		330	U		330
Hexachlorobenzene	U		3800	U		400	U		4100	U		330	U		330
Pentachlorophenol	U		3800	U		400	U		4100	U		330	U		330
Phenanthrene	U		3800	1700		400	U		4100	U		330	U		330
Anthracene	U		3800	390	J	400	U		4100	U		330	U		330
Carbazole	U		3800	240	J	400	U		4100	U		330	U		330
Di-n-butylphthalate	U		3800	U		400	U		4100	U		330	U		330
Fluoranthene	780	J	3800	1900		400	1300	J	4100	U		330	U		330
Pyrene	800	J	3800	1500		400	1100	J	4100	U		330	U		330
Butylbenzylphthalate	U		3800	U		400	U		4100	U		330	U		330
Benzo(a)anthracene	U		3800	810		400	U		4100	U		330	U		330
3,3'-Dichlorobenzidine	U		3800	U		400	U		4100	U		330	U		330
Chrysene	U		3800	810		400	1100	J	4100	U		330	U		330
Bis(2-Ethylhexyl)phthalate	U		3800	88	J	400	U		4100	U		330	U		330
Di-n-octylphthalate	U		3800	U		400	U		4100	U		330	U		330
Benzo(b)fluoranthene	U		3800	810		400	1300	J	4100	U		330	U		330
Benzo(k)fluoranthene	U		3800	860		400	1100	J	4100	U		330	U		330
Benzo(a)pyrene	U		3800	880		400	1300	J	4100	U		330	U		330
Indeno(1,2,3-cd)pyrene	U		3800	570		400	980	J	4100	U		330	U		330
Dibenzo(a,h)anthracene	U		3800	140	J	400	U		4100	U		330	U		330
Benzo(g,h,i)perylene	810	J	3800	580		400	1200	J	4100	U		330	U		330

Table 1.8 Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # SBLK110698 Sand Blank

LabFile # MM024

Con. Factor 33

	CAS#	Compound	Q	RT	Conc * µg/kg
1		No TICs Detected			
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17901 GP-1

LabFile # MM012

Con. Factor 380

	CAS#	Compound	Q	RT	Conc * µg/kg
1		PAH isomer		11.81	1700
2		Benzo - pyrene isomer		18.45	1900
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17902 GP-15

LabFile # MM013 Con. Factor 370

	CAS#	Compound	Q	RT	Conc * µg/kg
1		No TICs Detected			
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17903 GP-12

LabFile # MM014

Con. Factor 371.6

	CAS#	Compound	Q	RT	Conc * µg/kg
1	127-18-4	Tetrachloroethylene	98	3.71	140000
2		Benzo-napptho-thiophene isomer		14.28	1800
3		Benzo - pyrene isomer		17.84	1700
4		Benzo - pyrene isomer		18.45	15000
5		Benzo - pyrene isomer		18.94	2600
6		Dibenz - anthracene isomer		22.76	2400
7		Dibenz - anthracene isomer		23.68	2400
8		Dibenz - anthracene isomer		23.84	4000
9		Dibenzpyrene isomer		30.03	2500
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17904 GP-13

LabFile # MM015

Con. Factor 370.4

	CAS#	Compound	Q	RT	Conc * µg/kg
1		Unknown alcohol		5.43	17000
2		Methyl-benzamine isomer		6.04	4900
3		Possible Chloro-methyl-benzamine isomer		7.84	1900
4		Methyl-benzamine isomer		10.31	3400
5		Unknown		13.35	6400
6		Benzo - pyrene isomer		18.45	2700
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17905 GP-11
LabFile # MM018 Con. Factor 369.1

	CAS#	Compound	Q	RT	Conc * µg/kg
1		Benzo - pyrene isomer		18.45	5100
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17910 GP-14

LabFile # MM019

Con. Factor 36.15

	CAS#	Compound	Q	RT	Conc * µg/kg
1		Alkane		4.38	510
2		Alkyl benzene		4.44	910
3		Alkyl benzene		5.02	690
4		Alkyl benzene		5.31	1200
5		Alkane		6.07	740
6		Methyl-naphthalene isomer		7.98	1800
7		Dimethyl-naphthalene isomer		8.61	850
8		Dimethyl-naphthalene isomer		8.72	1300
9		Dimethyl-naphthalene isomer		8.75	870
10		Dimethyl-naphthalene isomer		8.87	620
11		Trimethyl-naphthalene isomer		9.55	1100
12		Trimethyl-naphthalene isomer		9.66	670
13		Trimethyl-naphthalene isomer		9.84	1200
14		Methyl-dibenzofuran isomer		10.03	510
15		Alkane		10.68	760
16		Methyl-phenanthrene isomer		11.64	520
17		Methyl-phenanthrene isomer		11.68	630
18		Alkane		11.71	500
19		Alkane		12.19	490
20		Benzo - pyrene isomer		18.45	840

* Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17906 GP-9

LabFile # MM020

Con. Factor 39.68

	CAS#	Compound	Q	RT	Conc * µg/kg
1		Unknown alcohol		7.33	540
2		Unknown		8.6	420
3		Unknown amine		8.98	780
4		Chloro-alkane isomer		10.06	430
5		Possible chlorinated alkane isomer		11.18	3400
6		Unknown - possible amine		11.26	4300
7		Unknown - possible amine		11.31	5400
8		Unknown - possible amine		11.63	520
9		Unknown - possible amine		11.68	440
10		Unknown - possible amine		11.76	600
11		Possible chlorinated alkane isomer		12.1	6100
12		Unknown - possible amine		12.16	24000
13		Unknown - possible amine		12.2	21000
14		Unknown - possible amine		12.24	20000
15		Unknown - possible amine		12.29	15000
16		Unknown		12.47	800
17		Unknown		13.06	870
18		Unknown - possible amine		13.15	470
19		Unknown - possible amine		14.23	910
20		Unknown - possible amine		14.35	490

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17907 GP-8

LabFile # MM021 Con. Factor 39.08

	CAS#	Compound	Q	RT	Conc * µg/kg
1		No TICs Detected			
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17908 GP-10

LabFile # MM022

Con. Factor 36.27

	CAS#	Compound	Q	RT	Conc * µg/kg
1		Unknown alcohol		3.67	230
2	127-18-4	Tetrachloroethylene	98	3.71	15000
3	79-34-5	1,1,2,2-Tetrachloroethane	81	4.58	440
4		Methyl-aniline isomer		6.01	270
5		Methyl-naphthalene isomer		7.99	240
6		Trimethyl-naphthalene isomer		9.84	220
7		Unknown		10.68	230
8		Methyl-pyrene isomer		13.58	230
9		Methyl-pyrene isomer		14.08	220
10		Benzo(x)naptho(x)thiophene isomer		14.28	270
11		Benzo(x)carbazole isomer		15.23	230
12		Methyl-chrysene isomer		15.61	370
13		PAH Isomer		15.74	220
14		PAH Isomer		18.13	280
15		Benzo - pyrene isomer		18.46	2800
16		PAH Isomer		22.76	540
17		PAH Isomer		22.87	380
18		PAH Isomer		23.69	550
19		PAH Isomer		23.85	800
20		PAH Isomer		30.06	1200

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17909 GP-7

LabFile # MM027

Con. Factor 39.97

	CAS#	Compound	Q	RT	Conc * µg/kg
1	127-18-4	Tetrachloroethylene	98	3.69	320
2	79-34-5	1,1,2,2-Tetrachloroethane	96	4.57	300
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site.

Sample # B17911 GP-6

LabFile # MM028 Con. Factor 835.4

	CAS#	Compound	Q	RT	Conc * µg/kg
1		Unknown alcohol		5.01	49000
2		Unknown alkane		7.38	28000
3		Unknown alkane		8.12	34000
4		Dimethyl-naphthalene isomer		8.59	25000
5		Unknown alkane		8.68	91000
6		Dimethyl-naphthalene isomer		8.73	30000
7		Unknown alcohol		8.92	28000
8		Unknown alkene + unknown		8.96	26000
9		Unknown amine		8.99	22000
10		Unknown alkane		9.26	25000
11		Trimethyl-naphthalene isomer		9.53	80000
12		Unknown alkane		10.15	220000
13		Unknown alkene + unknown		10.19	22000
14		Unknown alkane		10.73	180000
15		Unknown alkane		11.16	49000
16		Unknown alkane		11.19	24000
17		Methyl-anthracene isomer + unknown alkane		11.61	28000
18		Unknown alkane		11.69	28000
19		Unknown PAH isomer + unknown alkane		11.77	23000
20		Dimethyl-phenanthrene isomer + unknown alkane		12.32	39000

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17912 GP-5

LabFile # MM029

Con. Factor 41.36

	CAS#	Compound	Q	RT	Conc * µg/kg
1		Unknown alcohol		5.28	1500
2		Unknown acid		5.81	2000
3		Unknown		7.51	55000
4		Possible alkene/cycloalkane		7.56	21000
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17913 GP-4

LabFile # MM030

Con. Factor 39.03

	CAS#	Compound	Q	RT	Conc * µg/kg
1		Unknown alcohol		3.73	1500
2		Unknown		3.95	220
3		Unknown alcohol		14.10	330
4		Unknown alcohol		15.44	300
5		Unknown - possible aldehyde		16.70	240
6		Unknown		29.69	510
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17914 GP-2

LabFile # MM031 Con. Factor 38.4

	CAS#	Compound	Q	RT	Conc * µg/kg
1		Unknown acid		11.06	850
2		Unknown phthalate isomer		12.73	2900
3		Unknown phthalate isomer		12.82	770
4		Unknown		12.89	190
5		Unknown		17.41	670
6		Unknown		17.64	610
7		Unknown PAH isomer		23.02	3300
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17915 GP-3

LabFile # MM032

Con. Factor 384

	CAS#	Compound	Q	RT	Conc * µg/kg
1		Methyl-benzenamine isomer		6.00	4900
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17916 GP-16

LabFile # MM034 Con. Factor 39.64

	CAS#	Compound	Q	RT	Conc * µg/kg
1		Unknown PAH isomer		11.61	160
2		Unknown PAH isomer		11.65	180
3		Unknown PAH isomer		11.79	360
4		Unknown PAH isomer		13.25	310
5		Unknown PAH isomer		13.33	160
6		Unknown PAH isomer		14.34	170
7		Unknown PAH isomer		15.55	200
8		Unknown PAH isomer		18.36	650
9		Unknown PAH isomer		18.85	200
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17917 GP-17

LabFile # MM035

Con. Factor 411.5

	CAS#	Compound	Q	RT	Conc * µg/kg
1		Unknown		10.35	41000
2		Unknown		10.42	95000
3		Unknown		11.78	26000
4		Unknown phenol		11.81	27000
5		Unknown phenol		11.99	110000
6		Unknown phenol		12.29	140000
7		Unknown		13.23	15000
8		Unknown carboxylic acid		13.67	16000
9		Unknown		14.12	23000
10		Unknown carboxylic acid		14.29	32000
11		Unknown		15.29	43000
12		Unknown		15.37	15000
13		Unknown		15.51	35000
14		Unknown		15.62	16000
15		Unknown		15.71	14000
16		Unknown phenol		17.95	41000
17		Unknown PAH isomer		18.42	18000
18		Unknown		20.27	24000
19		Unknown		20.63	17000
20		Unknown		21.62	40000

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17918 Field Blank-0

LabFile # MM036 Con. Factor 33.33

	CAS#	Compound	Q	RT	Conc * µg/kg
1		No TICs Detected			
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.8 (cont.) Results of the TIC for BNA in Soil
WA # 3-399 Morgan Materials Site

Sample # B17919 Field Blank-I

LabFile # MM037 Con. Factor 33.33

	CAS#	Compound	Q	RT	Conc * µg/kg
1		No TICs Detected			
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.9 Results of the Analysis for Pesticide/PCB in Water
WA# 3-399 Morgan Materials Site

Client ID	WBLK110998		G 17921		G 17922		G 17923		G 17924	
Location	-		MW-1		MW-2		MW-3		MW-4	
Analyte	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L
a-BHC	U	0.02	0.005 J	0.02	U	0.02	U	0.02	U	0.02
g-BHC	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
b-BHC	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
Heptachlor	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
d-BHC	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
Aldrin	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
Heptachlor Epoxide	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
g-Chlordane	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
a-Chlordane	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
Endosulfan (I)	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
p,p'-D D E	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
Dieldrin	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
Endrin	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
p,p'-D D D	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
Endosulfan (II)	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
p,p'-D D T	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
Endrin Aldehyde	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
Endosulfan Sulfate	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
Methoxychlor	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
Endrin Ketone	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02
Toxaphene	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5
Aroclor 1016	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3
Aroclor 1221	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5
Aroclor 1232	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3
Aroclor 1242	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3
Aroclor 1248	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3
Aroclor 1254	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3
Aroclor 1260	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3
Aroclor 1268	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3

Table 1.9 (cont.) Results of the Analysis for Pesticide/PCB in Water
WA# 3-399 Morgan Materials Site

Client ID	G 17925	
Location	Field Blank	
	Conc.	MDL
Analyte	µg/L	µg/L
a-BHC	U	0.02
g-BHC	U	0.02
b-BHC	U	0.02
Heptachlor	U	0.02
d-BHC	U	0.02
Aldrin	U	0.02
Heptachlor Epoxide	U	0.02
g-Chlordane	U	0.02
a-Chlordane	U	0.02
Endosulfan (I)	U	0.02
p,p'-D D E	U	0.02
Dieldrin	U	0.02
Endrin	U	0.02
p,p'-D D D	U	0.02
Endosulfan (II)	U	0.02
p,p'-D D T	U	0.02
Endrin Aldehyde	U	0.02
Endosulfan Sulfate	U	0.02
Methoxychlor	U	0.02
Endrin Ketone	U	0.02
Toxaphene	U	0.5
Aroclor 1016	U	0.3
Aroclor 1221	U	0.5
Aroclor 1232	U	0.3
Aroclor 1242	U	0.3
Aroclor 1248	U	0.3
Aroclor 1254	U	0.3
Aroclor 1260	U	0.3
Aroclor 1268	U	0.3

Table 1.10 Results of the Analysis for Pesticide/PCBs in Soil
WA# 3-399 Morgan Materials Site
Based on dry weight

Client ID	SBLK110998		A17901		A17902		A17903		A17904	
Location	-		GP-1		GP-15		GP-12		GP-13	
Percent Solid	100		87		89.8		89.7		90	
Analyte	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
a-BHC	U	3.3	U	3.8	U	3.7	U	3.7	U	3.7
g-BHC	U	3.3	U	3.8	U	3.7	U	3.7	U	3.7
b-BHC	U	3.3	U	3.8	U	3.7	U	3.7	U	3.7
Heptachlor	U	3.3	U	3.8	U	3.7	U	3.7	U	3.7
d-BHC	U	3.3	U	3.8	U	3.7	U	3.7	U	3.7
Aldrin	U	3.3	U	3.8	U	3.7	U	3.7	U	3.7
Heptachlor Epoxide	U	3.3	U	3.8	U	3.7	U	3.7	U	3.7
g-Chlordane	U	3.3	U	3.8	U	3.7	U	3.7	U	3.7
a-Chlordane	U	3.3	U	3.8	U	3.7	U	3.7	U	3.7
Endosulfan (I)	U	3.3	U	3.8	U	3.7	1.7 J	3.7	U	3.7
p,p'-D D E	U	3.3	2.2 J	3.8	U	3.7	U	3.7	2.4 J	3.7
Dieldrin	U	3.3	U	3.8	U	3.7	U	3.7	U	3.7
Endrin	U	3.3	U	3.8	U	3.7	2.1 J	3.7	U	3.7
p,p'-D D D	U	3.3	U	3.8	U	3.7	U	3.7	U	3.7
Endosulfan (II)	U	3.3	U	3.8	U	3.7	U	3.7	U	3.7
p,p'-D D T	U	3.3	3.6 J	3.8	10	3.7	7.4	3.7	6.0	3.7
Endrin Aldehyde	U	3.3	U	3.8	U	3.7	U	3.7	U	3.7
Endosulfan Sulfate	U	3.3	U	3.8	U	3.7	U	3.7	U	3.7
Methoxychlor	U	3.3	U	3.8	U	3.7	U	3.7	U	3.7
Endrin Ketone	U	3.3	U	3.8	U	3.7	U	3.7	U	3.7
Toxaphene	U	83	U	96	U	93	U	93	U	93
Aroclor 1016	U	42	U	48	U	46	U	46	U	46
Aroclor 1221	U	83	U	96	U	93	U	93	U	93
Aroclor 1232	U	42	U	48	U	46	U	46	U	46
Aroclor 1242	U	42	U	48	U	46	U	46	U	46
Aroclor 1248	U	42	260	48	U	46	U	46	U	46
Aroclor 1254	U	42	U	48	U	46	U	46	U	46
Aroclor 1260	U	42	49	48	130	46	20 W	46	30 W	46
Aroclor 1268	U	42	U	48	U	46	U	46	U	46

Table 1.10 (cont.) Results of the Analysis for Pesticide/PCBs in Soil
WA# 3-399 Morgan Materials Site
Based on dry weight

Client ID	A17905		A17910		A17906		A17907		A17908	
Location	GP-11		GP-14		GP-9		GP-8		GP-10	
Percent Solid	90.3		92.2		84		85.3		91.9	
Analyte	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
a-BHC	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
g-BHC	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
b-BHC	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
Heptachlor	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
d-BHC	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
Aldrin	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
Heptachlor Epoxide	U	3.7	3.3 J	3.6	U	4.0	U	3.9	U	3.6
g-Chlordane	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
a-Chlordane	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
Endosulfan (I)	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
p,p'-D D E	U	3.7	3.7	3.6	U	4.0	U	3.9	U	3.6
Dieldrin	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
Endrin	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
p,p'-D D D	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
Endosulfan (II)	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
p,p'-D D T	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
Endrin Aldehyde	U	3.7	3.2 J	3.6	U	4.0	U	3.9	U	3.6
Endosulfan Sulfate	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
Methoxychlor	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
Endrin Ketone	U	3.7	U	3.6	U	4.0	U	3.9	U	3.6
Toxaphene	U	92	U	90	U	99	U	98	U	91
Aroclor 1016	U	46	U	45	U	50	U	49	U	45
Aroclor 1221	U	92	U	90	U	99	U	98	U	91
Aroclor 1232	U	46	U	45	U	50	U	49	U	45
Aroclor 1242	U	46	U	45	U	50	U	49	U	45
Aroclor 1248	U	46	U	45	U	50	U	49	U	45
Aroclor 1254	U	46	310	45	U	50	U	49	U	45
Aroclor 1260	U	46	290	45	U	50	U	49	U	45
Aroclor 1268	U	46	U	45	U	50	U	49	U	45

Table 1.10 (cont.) Results of the Analysis for Pesticide/PCBs in Soil
WA# 3-399 Morgan Materials Site
Based on dry weight

Client ID	A17909		A17911		A17912		A17913		A17914	
Location	GP-7		GP-6		GP-5		GP-4		GP-2	
Percent Solid	83.4		79.8		80.6		85.4		86.8	
Analyte	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
a-BHC	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
g-BHC	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
b-BHC	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
Heptachlor	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
d-BHC	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
Aldrin	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
Heptachlor Epoxide	U	4.0	43	4.2	U	4.1	U	3.9	U	3.8
g-Chlordane	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
a-Chlordane	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
Endosulfan (I)	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
p,p'-D D E	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
Dieldrin	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
Endrin	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
p,p'-D D D	U	4.0	13	4.2	U	4.1	U	3.9	U	3.8
Endosulfan (II)	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
p,p'-D D T	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
Endrin Aldehyde	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
Endosulfan Sulfate	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
Methoxychlor	U	4.0	23	4.2	U	4.1	U	3.9	U	3.8
Endrin Ketone	U	4.0	U	4.2	U	4.1	U	3.9	U	3.8
Toxaphene	U	100	U	100	U	100	U	98	U	96
Aroclor 1016	U	50	U	52	U	52	U	49	U	48
Aroclor 1221	U	100	U	100	U	100	U	98	U	96
Aroclor 1232	U	50	U	52	U	52	U	49	U	48
Aroclor 1242	U	50	U	52	U	52	U	49	U	48
Aroclor 1248	U	50	U	52	U	52	U	49	U	48
Aroclor 1254	U	50	U	52	U	52	U	49	U	48
Aroclor 1260	U	50	U	52	U	52	U	49	U	48
Aroclor 1268	U	50	U	52	U	52	U	49	U	48

Table 1.10 (cont.) Results of the Analysis for Pesticide/PCBs in Soil
WA# 3-399 Morgan Materials Site
Based on dry weight

Client ID	A17915		A17916		A17917		A17918		A17919	
Location	GP-3		GP-16		GP-17		Field Blank-0		Field Blank-I	
Percent Solid	86.8		84.1		81		100		100	
Analyte	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
a-BHC	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
g-BHC	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
b-BHC	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
Heptachlor	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
d-BHC	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
Aldrin	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
Heptachlor Epoxide	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
g-Chlordane	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
a-Chlordane	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
Endosulfan (I)	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
p,p'-D D E	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
Dieldrin	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
Endrin	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
p,p'-D D D	2.8 J	3.8	U	4.0	U	4.1	U	3.3	U	3.3
Endosulfan (II)	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
p,p'-D D T	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
Endrin Aldehyde	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
Endosulfan Sulfate	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
Methoxychlor	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
Endrin Ketone	U	3.8	U	4.0	U	4.1	U	3.3	U	3.3
Toxaphene	U	96	U	99	U	100	U	83	U	83
Aroclor 1016	U	48	U	50	U	51	U	42	U	42
Aroclor 1221	U	96	U	99	U	100	U	83	U	83
Aroclor 1232	U	48	U	50	U	51	U	42	U	42
Aroclor 1242	U	48	U	50	U	51	U	42	U	42
Aroclor 1248	U	48	U	50	U	51	U	42	U	42
Aroclor 1254	15 W	48	U	50	U	51	U	42	U	42
Aroclor 1260	U	48	U	50	U	51	U	42	U	42
Aroclor 1268	U	48	U	50	U	51	U	42	U	42

Table 1.11 Results of the Analysis for Metals in Water
WA # 3-399 Morgan Materials Site

Client ID		Method Blank		A17921		A17922		A17923		A17924		A17925	
Location		Lab		MW-1		MW-2		MW-3		MW-4		Field Blank	
Parameter	Analysis Method	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L
Aluminum	ICAP	U	50	760	50	64	50	1200	50	130	50	U	50
Antimony	AA-Fur	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2
Arsenic	AA-Fur	U	2.2	U	2.2	U	2.2	2.5	2.2	U	2.2	U	2.2
Barium	ICAP	U	5.0	58	5.0	22	5.0	140	5.0	16	5.0	U	5.0
Beryllium	ICAP	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
Cadmium	ICAP	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
Calcium	ICAP	U	100	140000	100	130000	100	92000	100	55000	100	U	100
Chromium	ICAP	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
Cobalt	ICAP	U	10	U	10	U	10	U	10	U	10	U	10
Copper	ICAP	U	10	U	10	U	10	U	10	U	10	U	10
Iron	ICAP	U	25	1400	25	120	25	15000	25	260	25	U	25
Lead	AA-Fur	U	2.2	U	2.2	U	2.2	3.8	2.2	U	2.2	U	2.2
Magnesium	ICAP	U	500	250000	500	280000	500	15000	500	5100	500	U	500
Manganese	ICAP	U	5.0	190	5.0	84	5.0	570	5.0	22	5.0	U	5.0
Mercury	Cold Vapor	U	0.20	0.20	0.20	U	0.20	U	0.20	U	0.20	U	0.20
Nickel	ICAP	U	10	U	10	U	10	U	10	U	10	U	10
Potassium	ICAP	U	2000	7700	2000	7700	2000	5800	2000	11000	2000	U	2000
Selenium	AA-Fur	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2
Silver	ICAP	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
Sodium	ICAP	U	500	110000	500	150000	500	270000	500	45000	500	U	500
Thallium	AA-Fur	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2
Vanadium	ICAP	U	10	U	10	U	10	U	10	U	10	U	10
Zinc	ICAP	U	10	22	10	U	10	21	10	U	10	U	10

Table 1.12 Results of the Analysis for Metals in Soil
WA # 3-399 Morgan Materials Site
Results Based on Dry Weight

Client ID		Method Blank		E17901		E17902		E17903		E17904		E17905	
Location		Lab		GP-1		GP-15		GP-12		GP-13		GP-11	
% Solids		NA		87.06		92.26		68.87		89.71		90.85	
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg
Aluminum	ICAP	U	18	10000	21	19000	19	6500	26	4100	19	4900	19
Antimony	ICAP	U	6.0	U	6.9	U	6.3	U	8.6	U	6.5	U	6.2
Arsenic	AA-Fur	U	0.50	4.2	1.1	10	0.54	8.7	0.62	5.1	0.52	5	0.52
Barium	ICAP	U	1.0	95	1.1	200	1.0	610	1.4	47	1.1	47	1.0
Beryllium	ICAP	U	0.50	0.90	0.57	2.6	0.52	U	0.72	U	0.54	U	0.52
Cadmium	ICAP	U	0.50	U	0.57	U	0.52	1.4	0.72	1.9	0.54	0.6	0.52
Calcium	ICAP	U	50	51000	57	83000	52	7800	72	24000	54	7700	52
Chromium	ICAP	U	0.50	19	0.57	65	0.52	21	0.72	13	0.54	19	0.52
Cobalt	ICAP	U	1.0	7.0	1.1	7.3	1.0	9.1	1.4	4.5	1.1	4.9	1.0
Copper	ICAP	U	1.0	81	1.1	120	1.0	78	1.4	72	1.1	51	1.0
Iron	ICAP	U	10	40000	11	89000	10	77000	14	43000	11	47000	10
Lead	ICAP	U	4.0	95	4.6	45	4.2	83	5.8	99	4.3	66	4.2
Magnesium	ICAP	U	50	6900	57	14000	52	2000	72	12000	54	1900	52
Manganese	ICAP	U	1.0	1100	1.1	2400	1.0	1000	1.4	600	1.1	710	1.0
Mercury	Cold Vapor	U	0.04	0.09	0.03	0.07	0.05	0.10	0.05	0.12	0.04	0.04	0.04
Nickel	ICAP	U	1.0	24	1.1	170	1.0	27	1.4	11	1.1	13	1.0
Potassium	ICAP	U	200	1100	230	1200	210	790	290	440	220	660	210
Selenium	AA-Fur	U	0.50	U	0.55	0.74	0.54	U	0.62	U	0.52	U	0.52
Silver	ICAP	U	0.50	U	0.57	U	0.52	U	0.72	U	0.54	U	0.52
Sodium	ICAP	U	50	220	57	450	52	140	72	230	54	99	52
Thallium	AA-Fur	U	0.50	U	0.55	U	0.54	U	0.62	U	0.52	U	0.52
Vanadium	ICAP	U	2.0	20	2.3	28	2.1	23	2.9	11	2.2	18	2.1
Zinc	ICAP	U	2.0	140	2.3	1200	2.1	330	2.9	610	2.2	120	2.1

Table 1.12 (cont.) Results of the Analysis for Metals in Soil
WA # 3-399 Morgan Materials Site
Results Based on Dry Weight

Client ID		E17910		E17905		E17907		E17908		E17909		E17911	
Location		GP-14		GP-9		GP-8		GP-10		GP-7		GP-6	
% Solids		94.29		89.50		85.50		93.79		85.38		80.37	
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg
Aluminum	ICAP	4300	19	13000	20	15000	21	5900	18	17000	20	5900	18
Antimony	ICAP	U	6.2	U	6.6	U	7.0	U	6.1	U	6.6	U	5.9
Arsenic	AA-Fur	9.9	0.46	2.9	1.0	3.3	0.50	5.8	0.50	3.3	1.1	3.1	0.54
Barium	ICAP	81	1.0	95	1.1	110	1.2	39	1.0	120	1.1	97	0.99
Beryllium	ICAP	U	0.51	0.69	0.55	0.75	0.58	U	0.51	0.89	0.55	U	0.49
Cadmium	ICAP	0.81	0.51	U	0.55	U	0.58	0.54	0.51	U	0.55	U	0.49
Calcium	ICAP	25000	51	60000	55	62000	58	12000	51	24000	55	27000	49
Chromium	ICAP	29	0.51	17	0.55	20	0.58	19	0.51	22	0.55	10	0.49
Cobalt	ICAP	5.7	1.0	9.0	1.1	12	1.2	4.9	1.0	14	1.1	4.1	0.99
Copper	ICAP	230	1.0	23	1.1	21	1.2	32	1.0	22	1.1	9.5	0.99
Iron	ICAP	83000	10	23000	11	26000	12	52000	10	29000	11	9200	9.9
Lead	ICAP	140	4.1	13	4.4	9.6	4.7	13	4.1	17	4.4	11	3.9
Magnesium	ICAP	2200	51	19000	55	17000	58	2200	51	13000	55	6000	49
Manganese	ICAP	2300	1.0	460	1.1	570	1.2	1400	1.0	740	1.1	220	0.99
Mercury	Cold Vapor	1.0	0.04	0.03	0.03	U	0.04	0.03	0.03	U	0.04	U	0.03
Nickel	ICAP	23	1.0	23	1.1	27	1.2	7.9	1.0	31	1.1	13	0.99
Potassium	ICAP	460	210	2100	220	2400	230	630	200	2200	220	1100	200
Selenium	AA-Fur	U	0.46	U	0.52	U	0.50	U	0.50	U	0.56	U	0.54
Silver	ICAP	U	0.51	U	0.55	U	0.58	U	0.51	U	0.55	U	0.49
Sodium	ICAP	210	51	260	55	310	58	290	51	190	55	520	49
Thallium	AA-Fur	U	0.46	U	0.52	U	0.50	U	0.50	U	0.56	U	0.54
Vanadium	ICAP	22	2.1	25	2.2	28	2.3	28	2.0	32	2.2	12	2.0
Zinc	ICAP	190	2.1	70	2.2	69	2.3	4000	2.0	91	2.2	28	2.0

Table 1.12 (cont.) Results of the Analysis for Metals in Soil
WA # 3-399 Morgan Materials Site
Results Based on Dry Weight

Client ID		E17912		E17913		E17914		E17915		E17916 GP-6 ~~GP-5~~		E17917	
Location		GP-5		GP-4		GP-2		GP-3				GP-17	
% Solids		80.42		78.66		85.88		89.04		81.57		79.12	
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg
Aluminum	ICAP	13000	21	16000	22	6700	19	3500	19	12000	21	11000	22
Antimony	ICAP	U	7.0	U	7.3	U	6.2	U	6.5	U	7.1	U	7.4
Arsenic	AA-Fur	2.9	1.1	3.6	1.2	2.6	0.53	2.5	0.48	5.0	1.1	7.0	0.58
Barium	ICAP	62	1.2	130	1.2	80	1.0	41	1.1	120	1.2	140	1.2
Beryllium	ICAP	U	0.58	0.84	0.61	U	0.52	U	0.54	1.2	0.6	0.69	0.61
Cadmium	ICAP	U	0.58	U	0.61	U	0.52	U	0.54	U	0.6	0.84	0.61
Calcium	ICAP	3000	58	18000	61	24000	52	120000	54	86000	60	21000	61
Chromium	ICAP	15	0.58	23	0.61	17	0.52	17	0.54	13	0.6	59	0.61
Cobalt	ICAP	16	1.2	13	1.2	4.0	1.0	2.2	1.1	6.3	1.2	6.4	1.2
Copper	ICAP	11	1.2	25	1.2	30	1.0	27	1.1	42	1.2	260	1.2
Iron	ICAP	21000	12	30000	12	17000	10	13000	11	16000	12	54000	12
Lead	ICAP	14	4.6	36	4.9	45	4.2	76	4.3	21	4.8	110	4.9
Magnesium	ICAP	4300	58	5700	61	3100	52	15000	54	15000	60	1400	61
Manganese	ICAP	440	1.2	450	1.2	140	1.0	760	1.1	980	1.2	4300	1.2
Mercury	Cold Vapor	U	0.05	U	0.05	0.37	0.03	0.05	0.03	U	0.05	0.51	0.05
Nickel	ICAP	15	1.2	30	1.2	29	1.0	13	1.1	18	1.2	1000	1.2
Potassium	ICAP	980	230	1300	240	1200	210	360	220	1600	240	1000	250
Selenium	AA-Fur	U	0.56	U	0.6	U	0.53	U	0.48	U	0.52	U	0.58
Silver	ICAP	U	0.58	U	0.61	U	0.52	U	0.54	U	0.6	U	0.61
Sodium	ICAP	250	58	420	61	370	52	1500	54	370	60	780	61
Thallium	AA-Fur	U	0.56	U	0.6	U	0.53	U	0.48	U	0.52	U	0.58
Vanadium	ICAP	26	2.3	30	2.4	14	2.1	17	2.2	17	2.4	28	2.5
Zinc	ICAP	65	2.3	82	2.4	52	2.1	64	2.2	110	2.4	350	2.5

Table 1.12 (cont.) Results of the Analysis for Metals in Soil
WA # 3-399 Morgan Materials Site
Results Based on Dry Weight

Client ID		E17918		E17919	
Location		Field Blank-0		Field Blank-I	
% Solids		99.75		99.79	
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg
Aluminum	ICAP	59	18	28	17
Antimony	ICAP	U	6.0	U	5.8
Arsenic	AA-Fur	U	0.48	U	0.5
Barium	ICAP	1.1	1.0	U	0.96
Beryllium	ICAP	U	0.50	U	0.48
Cadmium	ICAP	U	0.50	U	0.48
Calcium	ICAP	80	50	U	48
Chromium	ICAP	U	0.50	U	0.48
Cobalt	ICAP	U	1.0	U	0.96
Copper	ICAP	U	1.0	U	0.96
Iron	ICAP	290	10	89	9.6
Lead	ICAP	U	4.0	U	3.9
Magnesium	ICAP	U	50	U	48
Manganese	ICAP	15	1.0	2.8	0.96
Mercury	Cold Vapor	U	0.02	U	0.04
Nickel	ICAP	2.8	1.0	U	0.96
Potassium	ICAP	U	200	U	190
Selenium	AA-Fur	U	0.48	U	0.5
Silver	ICAP	U	0.50	U	0.48
Sodium	ICAP	U	50	U	48
Thallium	AA-Fur	U	0.48	U	0.5
Vanadium	ICAP	U	2.0	U	1.9
Zinc	ICAP	2	2.0	U	1.9

Extraction Procedure

Prior to extraction each sample was spiked with a six component surrogate mixture consisting of nitrobenzene-d_5, 2-fluorobiphenyl, terphenyl-d_{14}, phenol-d_5, 2-fluorophenol, and 2,4,6-tribromophenol. Thirty grams of sample was mixed with 30 g anhydrous sodium sulfate, and Soxhlet extracted for 16 hours with 300 mL of 1:1 acetone:methylene chloride. The extract was concentrated to 1.0 mL., an internal standard mixture consisting of 1,4-dichlorobenzene-d_4, naphthalene-d_8, acenaphthene-d_{10}, phenanthrene-d_{10}, chrysene-d_{12}, and perylene-d_{12} was added, and analyzed.

Analysis Procedure

An HP 6890/5972 Gas Chromatograph/Mass Spectrometer (GC/MS), equipped with a 6890 autosampler and controlled by a PC computer equipped with Enviroquant software was used to analyze the samples.

The instrument conditions were:

Column	Restek Rtx-5 (crossbonded SE-54) 30 meter x 0.25mm ID, 0.50 µm film thickness
Injection Temperature	280° C
Transfer Temperature	280° C
Source Temperature & Analyzer Temperature	Controlled by thermal transfer of heat from transfer line
Temperature Program	50°C for 0.5 min 20° C/min to 295° C, hold for 8.5 min 25° C/min to 310° C, hold for 15 min
Pulsed Split Injection	Split time = 2.00 min @ 8:1 split ratio Pressure pulse = 16 psi for 0.5 min, then normal
Injection Volume	1µL Must use 4 mm ID single gooseneck liners packed with 10 mm pulg of silanized & conditioned glass wool.

The GC/MS system was calibrated using 5 BNA standards at 20, 50, 80, 120, and 160 µg/mL. Before analysis each day, the system was tuned with 50 ng decafluorotriphenylphosphine (DFTPP) and passed a continuing calibration check when analysing a 50 µg/mL standard mixture in which the responses were evaluated by comparison to the average response of the calibration curve.

The BNA soil results, based on dry weight, are listed in Table 1.7; the tentatively identified compounds are listed in Table 1.8. The concentration of the detected compounds was calculated using the following equation:

$$C_u = \frac{DF \times A_u \times I_{is} \times V_t}{A_{is} \times RF(\ or\ RF_{ave}) \times V_i \times W \times D}$$

where

C_u	=	Concentration of target analyte (µg/Kg)
DF	=	Dilution Factor
A_u	=	Area of target analyte
I_{is}	=	Mass of specific internal standard (ng)
V_t	=	Volume of extract (µl)
A_{is}	=	Area of specific internal standard
RF	=	Response Factor (unitless)
RF_{ave}	=	average Response Factor
V_i	=	Volume of extract injected (µl)
W	=	Weight of sample (g)
D	=	Decimal per cent solids

The RF_{ave} is used when a sample is associated with an initial calibration curve. The RF is used when a sample is associated with a continuing calibration.

Response Factor calculation:

The RF for each specific analyte is quantitated based on the area response from the continuing calibration check as follows:

$$RF = \frac{A_c \times I_{is}}{A_{is} \times I_c}$$

where

RF	=	Response factor for a specific analyte
A_c	=	Area of the analyte in the standard
I_{is}	=	Mass of the specific internal standard
A_{is}	=	Area of the specific internal standard
I_c	=	Mass of the analyte in the standard

$$RF_{ave} = \frac{RF_1 + \ldots + RF_n}{n}$$

and

n = number of Samples

Revision of 10/14/97

Extraction Procedure

One liter of sample was spiked with a surrogate solution consisting of tetrachloro-m-xylene and decachlorobiphenyl, and was extracted three times with 60 mL portions of methylene chloride. The combined extracts were filtered, concentrated to 10 mL, solvent exchanged with 60 mL hexane, and the hexane concentrated to 1.0 mL.

Gas Chromatographic Analysis-PCB Quantitation

The samples were analyzed for PCBs using simultaneous dual column injections. The analysis was done on an HP 5890 GC/ECD system, equipped with an HP 7673A automatic sampler, and controlled with an HP-CHEM STATION. The following conditions were employed:

First Column	DB-608, 30 meter, 0.32mm fused silica capillary, 0.50 µm film thickness
Second Column	RTX-CLPesticides, 30 meter, 0.32mm fused silica capillary, 0.50 µm film thickness
Injector Temperature	200° C
Detector Temperature	325° C
Temperature Program	70°C for 1 minute 30°C/min to 150°C, 0.5min at 150°C 8°C/min to 275°C, 10min at 275°C
Injection Volume	2µL

Gas Chromatographic Analysis-Pesticides and PCBs(screening)

The diluted samples were analyzed for pesticides and PCBs (screening) using simultaneous dual column injections. The analysis was done on an HP 6890 GC/ECD system, equipped with an HP 6890 automatic injector, and controlled with HP-CHEM STATION software. The following conditions were employed:

First Column	DB-608, 30 meter, 0.32mm fused silica capillary, 0.50 µm film thickness
Second Column	RTX-CLPesticides, 30 meter, 0.32mm fused silica capillary, 0.50 µm film thickness
Injector Temperature	200° C
Detector Temperature	325° C
Temperature Program	120°C for 1 minute 9°C/min to 285°C, 10 min at 285°C
Injection Volume	1µL

The gas chromatographs were calibrated using 5 pesticide standards at 20, 50, 100, 200, and 500 µg/L. The results from each mixture were used to calculate the response factor (RF) of each analyte and the average Response Factor was used to calculate the concentration of pesticide in the sample. Quantification was based on the DB-608 column (signal 1) and the identity of the analyte was confirmed using the RTX-CLPesticides column (signal 2). A fingerprint chromatogram was run using each of the eight Aroclor mixtures and toxaphene; calibration curves were run only if a particular Aroclor or toxaphene was found in the sample.

The Pesticide/PCB results, listed in Table 1.9, were calculated from the following formula:

$$C_u = \frac{DF \times A_u \times V_t}{RF_{ave} \times V_i \times V_s}$$

where

C_u = Concentration of analyte (µg/L)
DF = Dilution Factor
A_u = Area or peak height
V_t = Volume of sample (mL)
RF_{ave} = Average response factor
V_i = Volume of extract injected (µL)
V_s = Sample volume (mL)

Response Factor calculation:

The RF for each specific analyte is quantitated based on the area response from the continuing calibration check as follows:

$$RF = \frac{A_u}{total\ pg\ injected}$$

where

A_u = Area or peak height

and

$$RF_{ave} = \frac{RF_1 + \ldots + RF_n}{n}$$

where

n = number of samples

Revision 10/15/98

Extraction Procedure

The soil samples were extracted by the Soxhlet method. Thirty grams of sample was spiked with a surrogate solution consisting of tetrachloro-m-xylene and decachlorobiphenyl, 30 g anhydrous sodium sulfate and Soxhlet extracted for 16 hours with 300 mL hexane. The extract was concentrated to 5.0 mL.

Gas Chromatographic Analysis-PCB Quantitation

The samples were analyzed for PCBs using simultaneous dual column injections. The analysis was done on an HP 5890 GC/ECD system, equipped with an HP 7673A automatic sampler, and controlled with an HP-CHEM STATION. The following conditions were employed:

First Column	DB-608, 30 meter, 0.32mm fused silica capillary, 0.50 µm film thickness
Second Column	RTX-CLPesticides, 30 meter, 0.32mm fused silica capillary, 0.50 µm film thickness
Injector Temperature	200° C
Detector Temperature	325° C
Temperature Program	70°C for 1 minute 30°C/min to 150°C, 0.5min at 150°C 8°C/min to 275°C, 10min at 275°C
Injection Volume	2µL

Gas Chromatographic Analysis-Pesticides and PCBs(screening)

The diluted samples were analyzed for pesticides and PCBs (screening) using simultaneous dual column injections. The analysis was done on an HP 6890 GC/ECD system, equipped with an HP 6890 automatic injector, and controlled with HP-CHEM STATION software. The following conditions were employed:

First Column	DB-608, 30 meter, 0.32mm fused silica capillary, 0.50 µm film thickness
Second Column	RTX-CLPesticides, 30 meter, 0.32mm fused silica capillary, 0.50 µm film thickness
Injector Temperature	200° C
Detector Temperature	325° C
Temperature Program	120°C for 1 minute 9°C/min to 285°C, 10 min at 285°C
Injection Volume	1µL

The gas chromatographs were calibrated using 5 pesticide standards at 20, 50, 100, 200, and 500 µg/L. The results from each mixture were used to calculate the response factor (RF) of each analyte and the average Response Factor was used to calculate the concentration of pesticide in the sample. Quantification was based on the DB-608 column (signal 1) and the identity of the analyte was confirmed using the Rtx-1701 column (signal 2). A fingerprint chromatogram was run using each of the eight Aroclor mixtures and toxaphene; calibration curves were run only if a particular Aroclor or toxaphene was found in the sample.

The soil pesticide/PCB results, listed in Table 1.10, are calculated by using the following formula:

$$C_u = \frac{DF \times A_u \times V_t}{RF_{ave} \times V_i \times W \times D}$$

where

C_u = Concentration of analyte (mg/Kg)
DF = Dilution Factor
A_u = Area or peak height
V_t = Volume of sample (mL)
RF_{ave} = Average response factor
V_i = Volume of extract injected (µL)
W = Weight of sample (g)
D = Decimal per cent solids

Response Factor calculation:

The RF for each specific analyte is quantitated based on the area response from the continuing calibration check as follows:

$$RF = \frac{A_u}{total\ pg\ injected}$$

where

A_u = Area or peak height

and

$$RF_{ave} = \frac{RF_1 + \ldots + RF_n}{n}$$

where

n = number of samples

Revision 7/11/94

Results of the Internal Standard Areas and Surrogate Recoveries for VOC in Water

Prior to purging, the samples were spiked with a three component surrogate mixture consisting of toluene-d_8, 4-bromofluorobenzene and 1,2-dichloroethane-d_4 and a three component internal standard mixture consisting of bromochloromethane, 1,4-difluorobenzene, and chlorobenzene-d_5.

The internal standard areas are listed in Table 2.1. All 33 internal standard areas were within QC criteria. The surrogate percent recoveries, also listed in Table 2.1, ranged from 96 to 104. All 33 recoveries were within QC limits.

Results of the MS/MSD Analysis for VOC in Water

Sample 17921 was chosen for the matrix spike/matrix spike duplicate (MS/MSD) analysis. The percent recoveries, listed in Table 2.2, ranged from 90 to 99. All 10 recoveries were within QC limits. The relative percent differences (RPDs), also listed in Table 2.2, ranged from 1 to 2. All 5 RPD values were within QC limits.

Results of the Internal Standard Areas and Surrogate Recoveries for VOC in Soil

Prior to purging, the samples were spiked with a three component surrogate mixture consisting of toluene-d_8, 4-bromofluorobenzene and 1,2-dichloroethane-d_4 and a three component internal standard mixture consisting of bromochloromethane, 1,4-difluorobenzene, and chlorobenzene-d_5.

The internal standard areas are listed in Table 2.3. All 111 internal standard areas were within QC criteria. The surrogate percent recoveries, also listed in Table 2.3, ranged from 76 to 114. All 111 recoveries were within QC limits.

Results of the MS/MSD Analysis for VOC in Soil

Samples 17903, 17912, and 17906 were chosen for the matrix spike/matrix spike duplicate (MS/MSD) analysis. The percent recoveries, listed in Table 2.4, ranged from 62 to 101. All 30 recoveries were within QC limits. The relative percent differences (RPDs), also listed in Table 2.4, ranged from zero (0) to 15. All 15 RPD values were within QC limits.

Table 2.1 Results of the Internal Standard Areas and Surrogate Recoveries for VOC in Water
WA # 3-399 Morgan Materials Site

	Sample #	Data File	Internal Standards 1 area	2 area	3 area	Surrogates DIC %	TOL %	BRO %	Flags	Chrom. Acceptable Y or N	Premlim. Acceptable Y or ReRun
CAL CHECK	50 PPB VOC	>A5289	46160	229746	205670	NA	NA	NA			
LAB BLANK		>A5290	44252	227671	202854	98	101	99			
_____	17926	>A5291	44102	225393	201571	97	100	102			
_____	17925	>A5292	43046	224262	207253	98	97	101			
_____	17924	>A5293	42101	224436	210636	99	98	101			
_____	17923	>A5294	44244	231358	215516	97	98	102	*O		
_____	17922	>A5295	45629	235612	219425	96	98	100			
_____	17921	>A5296	46860	239389	216676	98	101	100			
_____	17921MS	>A5297	47280	243162	212302	98	101	99			
_____	17921MSD	>A5298	47277	233983	205640	97	101	100			
CAL CHECK	50 PPB VOC	>A5301	49299	237039	211926	NA	NA	NA			
LAB BLANK		>A5302	43248	219965	209375	100	96	104			
_____	17923	>A5305	45303	229118	206409	98	98	103			

SURROGATE LIMITS	WATER	SOIL
S1 (DIC) = 1,2-Dichloroethane-d4	(76-114)	(70-121)
S2 (TOL) = Toluene-d8	(88-110)	(81-117)
S3 (BRO) = Bromofluorobenzene	(86-115)	(74-121)

Table 2.2 Results of the MS/MSD Analysis for VOC in Water
WA#3-399 Morgan Material Site

Sample ID: 17921

Compound Name	Sample Conc. (µg/L)	MS Spike Added (µg/L)	MSD Spike Added (µg/L)	MS Conc. (µg/L)	MSD Conc. (µg/L)	MS % Rec.	MSD % Rec.	RPD	QC Limits RPD	QC Limits % Rec.
1,1-Dichloroethene	U	50	50	45.70	45.10	91	90	1	14	61 - 145
Trichloroethene	U	50	50	47.10	46.50	94	93	1	14	71 - 120
Benzene	U	50	50	49.40	49.00	99	98	1	11	76 - 127
Toluene	U	50	50	49.40	48.40	99	97	2	13	76 - 125
Chlorobenzene	U	50	50	49.50	49.20	99	98	1	13	75 - 130

Table 2.3 Results of the Internal Standard Areas and Surrogate Recoveries for VOC in Soil
WA # 3-399 Morgan Materials Site

	Sample #	Data File	Internal Standards 1 area	2 area	3 area	Surrogates DIC %	TOL %	BRO %	Flags	Chrom. Acceptable Y or N	Preliminary Acceptable Y or ReRun
CAL CHECK	50 PPB VOC	>A5216	35131	195293	162579	NA	NA	NA			
SAND BLANK		>A5217	36466	206085	168865	95	99	97			
_____	17901	>A5218	33302	185806	158650	97	98	99			
_____	17902	>A5219	36313	201253	160016	94	102	93			
_____	17903	>A5220	34257	190753	147048	93	103	88	*O		
_____	17904	>A5221	33312	190024	163910	96	96	99			
_____	17908	>A5225	33989	183193	126247	95	114	76	*O		
_____	17909	>A5226	34272	191948	168896	95	94	99	*O		
_____	17911 5X	>A5228	30735	169368	121641	95	104	87			
CAL CHECK	50 PPB VOC	>A5233	29407	168342	141386	NA	NA	NA			
SAND BLANK		>A5234	34048	185158	159851	98	96	101			
_____	17920	>A5235	29717	162532	143541	97	95	103			
_____	17919	>A5236	34283	191103	163925	98	97	100			
_____	17918	>A5237	33748	190979	162870	98	98	98			
_____	17917	>A5244	33614	190350	147626	96	105	90	*O		
_____	17916	>A5245	31173	172272	144648	100	100	92			
_____	17914	>A5247	32629	188009	169202	98	96	101			
CAL CHECK	50 PPB VOC	>A5249	34927	205327	168803	NA	NA	NA			
SAND BLANK		>A5250	34222	191898	170688	97	94	101			
MEOH BLANK		>A5251	38871	227954	192443	94	98	97			
_____	17906	>A5253	33489	187613	157090	97	99	97			
_____	17907	>A5254	33252	189855	167921	97	93	100			
_____	17910	>A5255	32911	190581	152111	96	102	88			
_____	17905	>A5258	35755	196705	151500	99	103	90			
_____	17903 500X	>A5259	34120	202479	176057	96	96	97			
MS	17903 500X	>A5260	33313	195225	170159	99	93	99			
MSD	17903 500X	>A5261	32669	196441	165007	98	96	96			

SURROGATE LIMITS	WATER	SOIL
S1 (DIC) = 1,2-Dichloroethane-d4	(76-114)	(70-121)
S2 (TOL) = Toluene-d8	(88-110)	(81-117)
S3 (BRO) = Bromofluorobenzene	(86-115)	(74-121)

Table 2.3 (cont.) Results of the Internal Standard Areas and Surrogate Recoveries for VOC in Soil
WA # 3-399 Morgan Materials Site

	Sample #	Data File	Internal Standards 1 area	2 area	3 area	Surrogates DIC %	TOL %	BRO %	Flags	Chrom. Acceptable Y or N	Preml in. Data Acceptable Y or ReRun
CAL CHECK	50 PPB VOC	>A5266	34704	192442	166815	NA	NA	NA		____	____
SAND BLANK		>A5267	33282	190936	162579	96	102	100		____	____
____	17912	>A5268	29467	176076	143162	94	104	92		____	____
____	17912MS	>A5269	31292	183790	148494	94	104	94		____	____
____	17912MSD	>A5270	32304	190575	162522	96	101	96		____	____
____	17906MS	>A5272	33367	192591	159884	94	102	94		____	____
____	17906MSD	>A5273	29266	162636	133221	98	103	93		____	____
____	17915	>A5276	31926	178143	127804	93	108	86		____	____
CAL CHECK	50 PPB VOC	>A5278	32805	185029	157583	NA	NA	NA		____	____
MEOH BLANK		>A5279	41557	231755	190515	92	103	102		____	____
____	17908 50X	>A5280	36391	219043	177369	96	104	102		____	____
____	17909 50X	>A5281	35055	213945	172960	95	105	103		____	____
____	17917 100X	>A5282	34792	206932	170215	95	102	102		____	____
SAND BLANK		>A5283	34489	201599	170041	99	101	104		____	____
____	17913	>A5284	31164	180580	138058	97	109	91		____	____

SURROGATE LIMITS	WATER	SOIL
S1 (DIC) = 1,2-Dichloroethane-d4	(76-114)	(70-121)
S2 (TOL) = Toluene-d8	(88-110)	(81-117)
S3 (BRO) = Bromofluorobenzene	(86-115)	(74-121)

Table 2.4 Results of the MS/MSD Analysis for VOC in Soil
WA#3-399 Morgan Material Site
Based on Dry Weight

Sample ID:17903

Compound Name	Sample Conc. (µg/kg)	MS Spike Added (µg/kg)	MSD Spike Added (µg/kg)	MS Conc. (µg/kg)	MSD Conc. (µg/kg)	MS % Rec.	MSD % Rec.	RPD	QC Limits RPD	QC Limits % Rec.
1,1-Dichloroethene	U	27800	27800	22600.0	25800.0	81	93	13	22	59 - 172
Trichloroethene	U	27800	27800	23900.0	26600.0	86	96	11	24	62 - 137
Benzene	U	27800	27800	25100.0	28100.0	90	101	11	21	66 - 142
Toluene	U	27800	27800	23300.0	27100.0	84	98	15	21	59 - 139
Chlorobenzene	U	27800	27800	24300.0	27700.0	87	100	13	21	60 - 133

Table 2.4 (cont.) Results of the MS/MSD Analysis for VOC in Soil
WA#3-399 Morgan Material Site
Based on Dry Weight

Sample ID:17912

Compound Name	Sample Conc. (µg/kg)	MS Spike Added (µg/kg)	MSD Spike Added (µg/kg)	MS Conc. (µg/kg)	MSD Conc. (µg/kg)	MS % Rec.	MSD % Rec.	RPD	QC Limits RPD	QC Limits % Rec.
1,1-Dichloroethene	U	58.8	58.8	54.0	51.2	92	87	5	22	59 - 172
Trichloroethene	U	58.8	58.8	43.7	43.6	74	74	0	24	62 - 137
Benzene	U	58.8	58.8	49.8	48.8	85	83	2	21	66 - 142
Toluene	U	58.8	58.8	46.0	44.2	78	75	4	21	59 - 139
Chlorobenzene	U	58.8	58.8	37.3	36.6	63	62	2	21	60 - 133

Table 2.4 (cont.) Results of the MS/MSD Analysis for VOC in Soil
WA#3-399 Morgan Material Site
Based on Dry Weight

Sample ID:17906

Compound Name	Sample Conc. (µg/kg)	MS Spike Added (µg/kg)	MSD Spike Added (µg/kg)	MS Conc. (µg/kg)	MSD Conc. (µg/kg)	MS % Rec.	MSD % Rec.	RPD	QC Limits RPD	QC Limits % Rec.
1,1-Dichloroethene	U	58.1	58.1	50.8	52.3	87	90	3	22	59 - 172
Trichloroethene	U	58.1	58.1	45.9	46.0	79	79	0	24	62 - 137
Benzene	U	58.1	58.1	50.3	51.6	87	89	3	21	66 - 142
Toluene	U	58.1	58.1	49.6	49.2	85	85	1	21	59 - 139
Chlorobenzene	U	58.1	58.1	43.0	39.7	74	68	8	21	60 - 133

Results of the Internal Standard Areas and Surrogate Recoveries for BNA in Water

Prior to extraction, each sample was spiked with a six component surrogate mixture consisting of nitrobenzene-d_5, 2-fluorobiphenyl, terphenyl-d_{14}, phenol-d_5, 2-fluorophenol, and 2,4,6-tribromophenol. After the extracts were combined and concentrated, they were spiked with an internal standards mixture consisting of 1,4-dichlorobenzene-d_4, naphthalene-d_8, acenaphthene-d_{10}, phenanthrene-d_{10}, chrysene-d_{12}, and perylene-d_{12}.

The internal standard areas are listed in Table 2.5. All 48 internal standard areas were within QC criteria. The surrogate percent recoveries, also listed in Table 2.5, ranged from 44 to 107. All 48 recoveries were within QC limits.

Results of the BS/BSD Analysis for BNA in Water

The blank spike/blank spike duplicate (BS/BSD) percent recoveries, listed in Table 2.6, ranged from 45 to 94. All 22 recoveries were within QC limits. The relative percent differences (RPDs), also listed in Table 2.6, ranged from zero (0) to 9. All 11 RPD values were within QC limits.

Results of the Internal Standard Areas and Surrogate Recoveries for BNA in Soil

Prior to extraction, each sample was spiked with a six component surrogate mixture consisting of nitrobenzene-d_5, 2-fluorobiphenyl, terphenyl-d_{14}, phenol-d_5, 2-fluorophenol, and 2,4,6-tribromophenol. After the extracts were combined and concentrated, they were spiked with an internal standards mixture consisting of 1,4-dichlorobenzene-d_4, naphthalene-d_8, acenaphthene-d_{10}, phenanthrene-d_{10}, chrysene-d_{12}, and perylene-d_{12}.

The internal standard areas are listed in Table 2.7. All 150 internal standard areas were within QC criteria. The reported surrogate percent recoveries, also listed in Table 2.7, ranged from 44 to 105. All 144 reported recoveries were within QC limits. Six recoveries were diluted out.

Results of the MS/MSD Analysis for BNA in Soil

Samples B17904 and B17919 were chosen for the matrix spike/matrix spike duplicate (MS/MSD) analysis. The percent recoveries, listed in Table 2.8, ranged from 67 to 543. Thirty-eight out of 44 recoveries were within QC limits. The relative percent differences (RPDs), also listed in Table 2.8, ranged from zero (0) to 35. Twenty-one out of 22 RPD values were within QC limits.

Table 2.5 Results of the Internal Standard Areas and Surrogate Recoveries for BNA in Water
WA # 3-399 Morgan Materials Site

Analysis Date 11/16/98
Matrix Water

Sample No.	File ID	Surr. 1	Surr. 2	Surr. 3	Surr. 4	Surr. 5	Surr. 6
WBLK111098	MM044.D	67	51	107	101	89	96
WBLK111098 MS	MM045.D	66	53	101	103	86	93
WBLK111098 MSD	MM046.D	63	50	100	96	81	93
F17921	MM047.D	60	68	104	104	70	92
F17922	MM048.D	71	73	100	98	84	92
F17923	MM049.D	69	59	100	97	87	92
F17924	MM050.D	68	54	104	103	89	94
F17925	MM051.D	56	44	95	94	66	91

Surrogate Limits

		Water
Surr	2-Fluorophenol	(21-110)
Surr	Phenol-d5	(10-110)
Surr	Nitrobenzene-d5	(35-114)
Surr	2-Fluorobiphenyl	(43-116)
Surr	2,4,6-Tribromophenol	(10-123)
Surr	Terphenyl-d14	(33-141)

00111

Table 2.5 (Cont.) Results of the Internal Standard Areas and Surrogate Recoveries for BNA in Water
WA # 3-399 Morgan Materials Site

Analysis Date 11/16/98
Matrix Water

Sample No.	File ID	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
WBLK111098	MM052.D	47298	163065	89586	168223	171331	144133.
WBLK111098 MS	MM045.D	45875	166940	90330	172125	176677	149398
WBLK111098 MSD	MM046.D	45747	166674	91332	172621	175407	148229
F17921	MM047.D	46783	167669	91173	173052	181805	154769
F17922	MM048.D	46457	173520	92575	176793	179944	158091
F17923	MM049.D	48265	180244	95707	184728	187957	163629
F17924	MM050.D	49020	175624	95596	180072	182396	157560
F17925	MM051.D	47724	174221	93833	178530	176729	153128
Cal Check Area	MM043.D	58081	213896	115700	195922	195131	208296

IS 1 d4-Dichlorobenzene
IS 2 d8-Naphthalene
IS 3 d10-Acenaphthene
IS 4 d10-Phenanthrene
IS 5 d12-Chrysene
IS 6 d12-Perylene

Table 2.6 Results of BS/BSD Analysis for BNA in Water
WA # 3-399 Morgan Materials Site

Sample ID: WBLK111098

Compound Name	Sample Conc. µg/L	BS Spike Added µg/L	BS Conc. µg/L	BS % Rec.	BSD Spike Added µg/L	BSD Conc. µg/L	BSD % Rec.	RPD	QC Limits % Rec.	QC Limits RPD
Phenol	U	100	52.1	52	100	50.2	50	4	12 - 110	4
2-Chlorophenol	U	100	84.6	85	100	82.0	82	3	27 - 123	40
1,4-Dichlorobenzene	U	50	41.0	82	50	39.9	80	3	36 - 97	2
N-Nitroso-Di-N-Propylami	U	50	44.4	89	50	45.8	92	3	41 - 116	3
1,2,4-Trichlorobenzene	U	50	42.8	86	50	42.8	86	0	39 - 98	28
4-Chloro-3-Methylphenol	U	100	94.4	94	100	87.7	88	7	23 - 97	42
Acenaphthene	U	50	46.0	92	50	46.0	92	0	46 - 118	3
4-Nitrophenol	U	100	44.9	45	100	47.6	48	6	10 - 80	5
2,4-Dinitrotoluene	U	50	44.8	90	50	45.1	90	1	24 - 96	38
Pentachlorophenol	U	100	76.4	76	100	69.8	70	9	9 - 103	5
Pyrene	U	50	41.5	83	50	41.7	83	1	26 - 127	3

Table 2.7 Results of the Internal Standard Areas and Surrogate Recoveries for BNA in Soil- WA # 3-399 Morgan Materials Site

Analysis Date 11/10/98
Matrix Soil

Sample No.	File ID	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
B17901	MM012.D	34989	130372	73605	144348	145109	128946.
B17902	MM013.D	39442	143995	82689	159312	161939	140647
B17903	MM014.D	38838	137243	80011	152046	151578	132343
B17904	MM015.D	41456	152868	86865	163900	162371	140574
B17904 MS	MM016.D	39293	141326	81449	157267	153939	130624
B17904 MSD	MM017.D	36363	135096	78527	148763	148346	125152
B17905	MM018.D	39250	138521	79127	151802	145318	122821
B17910	MM019.D	33288	119557	71355	134167	133654	117990
B17906	MM020.D	34993	129821	74946	141429	138051	117983
B17907	MM021.D	36247	130512	73217	140185	137333	113819
B17908	MM022.D	36849	129664	73571	143445	141051	121624
SBLK1106	MM024.D	34670	124173	70907	134908	129318	104252
Cal Check Area	MM010.D	44128	162222	90093	158511	154248	146825

IS 1 = d4-Dichlorobenzene
IS 2 = d8-Naphthalene
IS 3 = d10-Acenaphthene
IS 4 = d10-Phenanthrene
IS 5 = d12-Chrysene
IS 6 = d12-Perylene

Table 2.11 Results of the Surrogate Recoveries
for Pesticides/PCBs in Soil
WA# 3-399 Morgan Materials Site

Sample ID	Percent Recovery TCMX	DCBP
SBLK110998	107	127
A17901	93	104
A17902	107	97
A17903	87	116
A17904	94	112
A17904MS	94	109
A17904MSD	88	121
A17905	86	90
A17910	90	88
A17906	69	41 *
A17907	97	107
A17908	89	98
A17909	90	92
A17911	0 *	93
A17912	90	106
A17913	96	63
A17914	95	63
A17915	76	17 *
A17916	97	109
A17917	90	100
A17918	103	106
A17919	103	113
A17919MS	98	112
A17919MSD	106	119

	QC Limits
Tetrachloro-m-xylene (TCMX)	60-150
Decachlorobiphenyl (DCBP)	60-150

Table 2.12 Results of the MS/MSD Analysis for Pesticide/PCB in Soil
WA# 3-399 Morgan Materials Site
Results Based on Dry Weight

Sample ID: A 17904

Compound	Sample Conc µg/kg	MS Spike Added µg/kg	MS Conc µg/kg	MS % Rec	MSD Spike Added µg/kg	MSD Conc µg/kg	MSD % Rec	RPD	Advisory QC Limits % Rec	Advisory QC Limits RPD
g-BHC	U	23.148	23.851	103	23.148	27.822	120	15	46-127	50
Heptachlor	U	23.148	21.543	93	23.148	23.905	103	10	35-130	31
Aldrin	U	23.148	20.634	89	23.148	22.195	96	8	34-132	43
Dieldrin	U	46.296	45.612	99	46.296	52.670	114	14	31-134	38
Endrin	U	46.296	46.263	100	46.296	48.489	105	5	42-139	45
p,p'-DDT	6.0	46.296	29.746	51	46.296	30.582	53	4	23-134	50

Table 2.12 (cont.) Results of the MS/MSD Analysis for Pesticide/PCB in Soil
WA# 3-399 Morgan Materials Site
Results Based on Dry Weight

Sample ID: A 17919

Compound	Sample Conc µg/kg	MS Spike Added µg/kg	MS Conc µg/kg	MS % Rec		MSD Spike Added µg/kg	MSD Conc µg/kg	MSD % Rec		RPD	Advisory QC Limits % Rec	Advisory QC Limits RPD
g-BHC	U	20.833	4.021	19	*	20.833	4.473	21	*	10	46-127	50
Heptachlor	U	20.833	18.389	88		20.833	20.386	98		11	35-130	31
Aldrin	U	20.833	19.784	95		20.833	21.238	102		7	34-132	43
Dieldrin	U	41.667	41.384	99		41.667	44.732	107		8	31-134	38
Endrin	U	41.667	39.476	95		41.667	41.328	99		4	42-139	45
p,p'-DDT	U	41.667	18.506	44		41.667	20.416	49		11	23-134	50

Results of the QC Standard Analysis for Metals in Water

The QC standards ERA-434, QC-7x100, QC-21x100, TMWS, TMAA#1 and TMAA#2 were used to check the accuracy of the calibration curves. The percent recoveries for the metals found in the QC standards listed in Table 2.13, ranged from 87 to 113. There are 95% confidence interval limits available for 19 of the 36 concentration recoveries. All 19 concentration recoveries are within the limits. There are no 95% confidence interval limits available for the remaining 17 recoveries.

Results of the MS/MSD Analysis for Metals in Water

Sample A17924 was chosen for matrix spike/matrix spike duplicate (MS/MSD) analysis. The reported percent recoveries, listed in Table 2.14, ranged from 11 to 116. Thirty-six out of 40 recoveries were within QC limits. The relative percent differences (RPDs), also listed in Table 2.14, ranged from 0 to 20. All 20 RPDs were with in QC limits.

Results of the Blank Spike Analysis for Metals in Water

The percent recoveries for the blank spike metals, listed in Table 2.15, ranged from 73 to 96. Twenty-two out of 23 recoveries were within QC limits.

Results of the QC Standard Analysis for Metals (Soil)

The QC standards ERA-434, QC-7x100, QC-21x100, TMWS, TMAA#1 and TMAA#2 were used to check the accuracy of the calibration curves. The percent recoveries for the metals found in the QC standards listed in Table 2.16, ranged from 85 to 111. There are 95% confidence interval limits available for 19 of the 38 concentration recoveries. All 19 concentration recoveries are within the limits. There are no 95% confidence interval limits available for the remaining 19 recoveries.

Results of the MS/MSD Analysis for Metals in Soil

Samples E17910 and E17908 were chosen for matrix spike/matrix spike duplicate (MS/MSD) analysis. The reported percent recoveries, listed in Table 2.17, ranged from zero (0) to 368. Fourty-seven out of 62 reported recoveries were within QC limits. The reported relative percent differences (RPDs), also listed in Table 2.17, ranged from zero (0) to 118. Twenty-three out of 30 reported RPDs were with in QC limits. Six percent recoveries and three RPDs were not calculated because the sample concentration of the analyte was greater than four times the spike concentration. One RPD was not calculated because the MS recovery was zero (0).

Results of the Blank Spike Analysis for Metals in Soil

The percent recoveries for the blank spike metals, listed in Table 2.18, ranged from 91 to 105. All 24 recoveries were within QC limits.

Table 2.13 Results of the QC Standard Analysis for Metals in Water
WA # 3-399 Morgan Materials Site

Metal	Date Analyzed	Quality Control Standard	Conc. Recovered µg/L	Certified Value µg/L	95% Confidence Interval µg/L	% Recovery
Aluminum	11/24/98	QC-7 x100	1031	1000	NA	103
	11/24/98	ERA-434	732	647	531 - 763	113
Antimony	11/23/98	TMAA#2	102.4	100	81.7 - 125.7	102
Arsenic	11/20/98	TMAA #1	48.88	50	41.9-55.9	98
Barium	11/24/98	QC-7 x100	992	1000	NA	99
	11/24/98	ERA-434	760	735	603 - 867	103
Beryllium	11/24/98	QC-21 x100	1013	1000	NA	101
	11/24/98	ERA-434	86.9	82	68 - 97	106
Cadmium	11/24/98	QC-21 x100	1003	1000	NA	100
	11/24/98	ERA-434	79.7	77	63 - 90	104
Calcium	11/24/98	QC-21 x100	1006	1000	NA	101
Chromium	11/24/98	QC-21 x100	1006	1000	NA	101
	11/24/98	ERA-434	109	106	87 - 125	103
Cobalt	11/24/98	QC-21 x100	1016	1000	NA	102
	11/24/98	ERA-434	96.4	88	72 - 104	110
Copper	11/24/98	QC-21 x100	1011	1000	NA	101
	11/24/98	ERA-434	154	147	121 - 173	105
Iron	11/24/98	QC-21 x100	1032	1000	NA	103
	11/24/98	ERA-434	221	206	169 - 243	107
Lead	11/20/98	TMAA#1	50.21	50	43.4 - 56.3	100
Magnesium	11/24/98	QC-21 x100	988	1000	NA	99
Manganese	11/24/98	QC-21 x100	1011	1000	NA	101
	11/24/98	ERA-434	247	235	193 - 277	105
Mercury	11/24/98	TMWS	2.7	2.9	2.13 - 3.53	93
Nickel	11/24/98	QC-21 x100	1022	1000	NA	102
	11/24/98	ERA-434	125	112	92 - 132	112
Potassium	11/24/98	QC-7 x100	8691	10000	NA	87
Selenium	11/20/98	TMAA #1	49.4	50	39.4-57.4	99
Silver	11/24/98	QC-7 x100	1005	1000	NA	100
	11/24/98	ERA-434	91.5	88	72 - 104	104
Sodium	11/24/98	QC-7 x100	993	1000	NA	99
Thallium	11/20/98	TMAA #2	49.7	50	39.9-57.97	99
Vanadium	11/24/98	QC-21 x100	1000	1000	NA	100
	11/24/98	ERA-434	119	118	97 - 139	101
Zinc	11/24/98	QC-21 x100	1039	1000	NA	104
	11/24/98	ERA-434	285	265	217 - 313	108

Table 2.14 Results of the MS/MSD Analysis for Metals in Water
WA # 3-399 Morgan Materials Site

Sample ID: A17924

Metal	Sample Conc µg/L	MS Spike Added µg/L	MS Conc µg/L	MS % Rec	MSD Spike Added µg/L	MSD Conc µg/L	MSD % Rec	RPD	Recommended QC Limits % Rec	RPD
Aluminum	134	4444	4393	96	4444	4420	96	1	75-125	20
Antimony	U	55.6	50.9	92	55.6	49.6	89	3	75-125	20
Arsenic	U	55.6	58.7	106	55.6	56.8	102	3	75-125	20
Barium	15.5	556	539	94	556	542	95	1	75-125	20
Beryllium	U	222	218	98	222	219	99	0	75-125	20
Cadmium	U	222	214	96	222	214	96	0	75-125	20
Chromium	U	222	216	97	222	216	97	0	75-125	20
Cobalt	U	222	220	99	222	219	99	0	75-125	20
Copper	U	222	217	98	222	218	98	0	75-125	20
Iron	256	4444	4563	97	4444	4590	98	1	75-125	20
Lead	U	55.6	48	86	55.6	47.3	85	1	75-125	20
Manganese	21.9	222	236	96	222	237	97	0	75-125	20
Mercury	U	2.00	1.90	95	2.00	2.00	100	5	75-125	20
Nickel	U	222	219	99	222	222	100	1	75-125	20
Potassium	10660	4444	15810	116	4444	15010	98	17	75-125	20
Selenium	U	55.6	40.6	73 *	55.6	40.9	74 *	1	75-125	20
Silver	U	222	24.5	11 *	222	25.6	12 *	9	75-125	20
Thallium	U	55.6	52.3	94	55.6	42.9	77	20	75-125	20
Vanadium	U	556	537	97	556	539	97	0	75-125	20
Zinc	U	222	219	99	222	219	99	0	75-125	20

Table 2.15 Results of the Blank Spike Analysis for Metals in Water
WA # 3-399 Morgan Materials Site

Metal	Spiked Conc. µg/L	Recovered Conc. µg/L	% Recovery	Recommended QC Limits % Rec
Aluminum	4444	4048	91	75-125
Antimony	55.6	51.3	92	75-125
Arsenic	55.6	52.2	94	75-125
Barium	556	493	89	75-125
Beryllium	222	208	94	75-125
Cadmium	222	202	91	75-125
Calcium	4444	4072	92	75-125
Chromium	222	207	93	75-125
Cobalt	222	208	94	75-125
Copper	222	205	92	75-125
Iron	4444	4119	93	75-125
Lead	55.6	50.9	92	75-125
Magnesium	4444	4040	91	75-125
Manganese	222	207	93	75-125
Mercury	2.00	1.9	95	75-125
Nickel	222	209	94	75-125
Potassium	4444	3249	73	75-125
Selenium	55.6	53.1	96	75-125
Silver	222	192	86	75-125
Sodium	4444	3995	90	75-125
Thallium	55.6	48.7	88	75-125
Vanadium	556	512	92	75-125
Zinc	222	207	93	75-125

Table 2.16 Results of the QC Standard Analysis for Metals (Soil)
WA # 3-399 Morgan Materials Site

Metal	Date Analyzed	Quality Control Standard	Conc. Recovered µg/L	Certified Value µg/L	95 % Confidence Interval µg/L	% Recovery
Aluminum	11/25/98	QC-7 x100	1022	1000	NA	102
	11/25/98	ERA-434	709	647	531-763	110
Antimony	11/25/98	QC-21 x100	970	1000	NA	97
Arsenic	12/01/98	TMAA #1	49.6	50	41.9-55.9	99
Barium	11/25/98	QC-7 x100	992	1000	NA	99
	11/25/98	ERA-434	743	735	603 - 867	101
Beryllium	11/25/98	QC-21 x100	1025	1000	NA	102
	11/25/98	ERA-434	87	82	68 - 97	106
Cadmium	11/25/98	QC-21 x100	1031	1000	NA	103
	11/25/98	ERA-434	82.1	77	63 - 90	107
Calcium	11/25/98	QC-21 x100	1048	1000	NA	105
Chromium	11/25/98	QC-21 x100	1034	1000	NA	103
	11/25/98	ERA-434	112	106	87 - 125	106
Cobalt	11/25/98	QC-21 x100	1050	1000	NA	105
	11/25/98	ERA-434	97.6	88	72 - 104	111
Copper	11/25/98	QC-21 x100	1020	1000	NA	102
	11/25/98	ERA-434	156	147	121 - 173	106
Iron	11/25/98	QC-21 x100	1069	1000	NA	107
	11/25/98	ERA-434	227	206	169 - 243	110
Lead	11/25/98	QC-21 x100	1033	1000	NA	103
	11/25/98	ERA-434	96.1	94	77 - 111	102
Magnesium	11/25/98	QC-21 x100	987	1000	NA	99
Manganese	11/25/98	QC-21 x100	1034	1000	NA	103
	11/25/98	ERA-434	248	235	193 - 277	106
Mercury	11/24/98	TMWS	2.7	2.9	2.13 - 3.53	93
Mercury	12/02/98	TMWS	2.6	2.9	2.13 - 3.53	90
Nickel	11/25/98	QC-21 x100	1073	1000	NA	107
	11/25/98	ERA-434	120	112	92 - 132	107
Potassium	11/25/98	QC-7 x100	8515	10000	NA	85
Selenium	11/30/98	TMAA #1	50.41	50	39.4-57.4	101
Silver	11/25/98	QC-7 x100	1013	1000	NA	101
	11/25/98	ERA-434	91.4	88	72 - 104	104
Sodium	11/25/98	QC-7 x100	995	1000	NA	100
Thallium	11/30/98	TMAA #2	48.6	50	39.9-57.97	97
Vanadium	11/25/98	QC-21 x100	1027	1000	NA	103
	11/25/98	ERA-434	121	118	97 - 139	103
Zinc	11/25/98	QC-21 x100	1065	1000	NA	107
	11/25/98	ERA-434	290	265	217 - 313	109

Table 2.17 Results of the MS/MSD Analysis for Metals in Soil
WA # 3-399 Morgan Materials Site
Results Based on Dry Weight

Sample ID: E17910

Metal	Sample Conc mg/kg	MS Spike Added mg/kg	MS Conc mg/kg	MS % Rec	MSD Spike Added mg/kg	MSD Conc mg/kg	MSD % Rec	RPD	Recommended QC Limits %Rec	RPD
Antimony	U	51.0	27.4	54 *	50.5	31.8	63 *	16	75-125	20
Arsenic	9.9	4.82	9.61	0 *	4.86	11.3	29 *	NC	75-125	20
Barium	81.5	102	178	95	101	174	92	3	75-125	20
Beryllium	U	51.0	49.5	97	50.5	48.9	97	0	75-125	20
Cadmium	0.815	51.0	48.3	93	50.5	47.7	93	0	75-125	20
Chromium	28.7	51.0	81.2	103	50.5	73.2	88	16	75-125	20
Cobalt	5.67	51.0	53.7	94	50.5	51.9	92	3	75-125	20
Copper	233	51.0	276	84	50.5	399	329 *	118 *	75-125	20
Lead	138	51.0	199	120	50.5	324	368 *	102 *	75-125	20
Manganese	2293	51.0	1996	NC	50.5	2147	NC	NC	75-125	20
Mercury	1.04	0.416	1.27	55 *	0.408	1.37	81	38 *	75-125	20
Nickel	23.4	51.0	78.2	107	50.5	70.6	93	14	75-125	20
Selenium	U	4.82	1.17	24 *	4.86	1.46	30 *	21 *	75-125	20
Silver	U	51.0	45.2	89	50.5	44.2	88	1	75-125	20
Thallium	U	4.82	4.05	84	4.86	4.04	83	1	75-125	20
Vanadium	21.7	102	121	97	101	115	92	5	75-125	20
Zinc	190	51.0	233	84	50.5	257	133 *	45 *	75-125	20

Table 2.17 (cont.) Results of the MS/MSD Analysis for Metals in Soil
WA # 3-399 Morgan Materials Site
Results Based on Dry Weight

Sample ID: E17908

Metal	Sample Conc mg/kg	MS Spike Added mg/kg	MS Conc mg/kg	MS % Rec	MSD Spike Added mg/kg	MSD Conc mg/kg	MSD % Rec	RPD	Recommended QC Limits %Rec	RPD
Antimony	U	52.8	23.4	44 *	52.8	16.3	31 *	36 *	75-125	20
Arsenic	5.81	5.33	9.94	77	5.13	9.79	78	0	75-125	20
Barium	39.3	106	139	94	106	139	94	0	75-125	20
Beryllium	U	52.8	52.9	100	52.8	53.3	101	1	75-125	20
Cadmium	0.543	52.8	51.7	97	52.8	52.4	98	1	75-125	20
Chromium	19	52.8	71.9	100	52.8	68.9	95	6	75-125	20
Cobalt	4.88	52.8	56.6	98	52.8	57.6	100	2	75-125	20
Copper	32	52.8	84.7	100	52.8	81.3	93	7	75-125	20
Lead	13.3	52.8	64.1	96	52.8	65.5	99	3	75-125	20
Manganese	1410	52.8	1406	NC	52.8	1215	NC	NC	75-125	20
Mercury	0.03	0.395	0.454	107	0.333	0.367	101	6	75-125	20
Nickel	7.91	52.8	60.6	100	52.8	61.5	102	-2	75-125	20
Selenium	U	5.33	2.45	46 *	5.13	2.26	44 *	4	75-125	20
Silver	U	52.8	50	95	52.8	50.5	96	1	75-125	20
Thallium	U	5.33	2.83	53 *	5.13	3.93	77	36 *	75-125	20
Vanadium	28.2	106	132	98	106	128	95	4	75-125	20
Zinc	3998	52.8	4013	NC	52.8	4038	NC	NC	75-125	20

Table 2.18 Results of the Blank Spike Analysis for Metals in Soil
WA # 3-399 Morgan Materials Site

Metal	Spiked Conc. mg/kg	Sand Blank Conc. mg/kg	Recovered Conc. mg/kg	% Recovery	Recommended QC Limits
Aluminum	800	U	826	103	75-125
Antimony	50.0	U	51.1	102	75-125
Arsenic	4.95	U	5.13	104	75-125
Barium	100	U	97.6	98	75-125
Beryllium	50.0	U	51.1	102	75-125
Cadmium	50.0	U	49.6	99	75-125
Calcium	800	U	818	102	75-125
Chromium	50.0	U	51.3	103	75-125
Cobalt	50.0	U	51.2	102	75-125
Copper	50.0	U	50.2	100	75-125
Iron	800	U	835	104	75-125
Lead	50.0	U	48.4	97	75-125
Magnesium	800	U	801	100	75-125
Manganese	50.0	U	50.7	101	75-125
Mercury	0.377	NA	0.396	105	75-125
Mercury	0.400	NA	0.4	100	75-125
Nickel	50.0	U	51	102	75-125
Potassium	800	U	729	91	75-125
Selenium	4.95	U	5.01	101	75-125
Silver	50.0	U	48.8	98	75-125
Sodium	800	U	800	100	75-125
Thallium	4.95	U	5.07	102	75-125
Vanadium	100	U	101	101	75-125
Zinc	50.0	U	50.9	102	75-125

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: MORGAN MATERIALS
Project Number: 03347-143-001-3399-01
RFW Contact: Will Avery Phone: 732-321-4200

No: 01401

SHEET NO. 1 OF 2

110698 -

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	Pest/PCB	BNA	TAL
802	A17901	GP-1	S	11/3/98	1	8oz glass/4°C	X		
803	B17901	↓				↓		X	
804	E17901	↓				4oz glass/4°C			X
805	A17902	GP-15				8oz glass/4°C	X		
806	B17902	↓				↓		X	
807	E17902	↓				4oz glass/4°C			X
808	A17903	GP-12				8oz glass/4°C	X		
809	B17903	↓				↓		X	
810	E17903	↓				4oz glass/4°C			X
811	A17904	GP-13				8oz glass/4°C	X		
812	B17904	↓				↓		X	
813	E17904	↓				4oz glass/4°C			X
814	A17905	GP-11				8oz glass/4°C	X		
815	B17905	↓				↓		X	
816	E17905	↓				4oz glass/4°C			X
817	A17910	GP-14				8oz glass/4°C	X		
818	B17910	↓				↓		X	
819	E17910	↓				4oz glass/4°C			X
820	A17906	GP-9				8oz glass/4°C	X		
821	B17906	↓				↓		X	

Special Instructions:

QA'd [illegible] 11/11/98

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Lab to pick MS/MSD

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time
All Analyses	[illegible]	11/5/98	C Bassin	11/6/98	9:40

Items/Reason	Relinquished By	Date	Received By	Date	Time
7/ Pest/PCB	C Bassin	11/6/98	[illegible]	11/6/98	11:35
7/ BNA	C Bassin	11/6/98	[illegible]	11/6/98	11:35
6/ TAL	C Bassin	11/6/98	[illegible]	11/6/98	11:35

FORM #4 8/94

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: Morgan Material
Project Number: 03347-143-001-3399-01
RFW Contact: Will Arena Phone: 732-321-4200

No: 01402

SHEET NO. 1 OF 2

110698-

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	VOA			
782	CD 17901	GP-1	S	11/3/98	2	4oz glass/4°C	X			
783	CD 17902	GP-15			2		X			
784	CD 17903	GP-12			2		X			
785	CD 17904	GP-13					X			
786	CD 17905	GP-11					X			
~~787~~	~~CD 17906~~									
787	CD 17910	GP-14	S	11/3/98	2	4oz glass/4°C	X			
788	CD 17906	GP-9					X			
789	CD 17907	GP-8					X			
790	CD 17908	GP-10					X			
791	CD 17909	GP-7					X			
792	CD 17911	GP-6		11/4/98			X			
793	CD 17912	GP-5					X			
794	CD 17913	GP-4					X			
795	CD 17914	GP-2					X			
796	CD 17915	GP-3					X			
797	CD 17916	GP-16					X			
798	CD 17917	GP-17					X			
799	CD 17918	Field Blank-D		11/5/98		40ml vial/4°C	X			
800	CD 17919	Field Blank-I					X			

11/4 11/5/98

00137

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions:

QA'd By S. Jacobowitz

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
All/Analysis	Will Arena	11/5/98	C Grasso	11/6/98	9:40	All/Analysis	C Grasso	11/6/98	Lisa Gilday	11/6/98	1:00 pm

FORM #4 8/94

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: Morgan Materials
Project Number: 03347-143-001-3399-01
RFW Contact: Will Avery Phone: 732-321-4200

No: 01403

SHEET NO. 2 OF 2

110698-

Sample Identification / Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	Pest/PCB	BNA	TAL
822	E17906	GP-9	S	11/3/98	1	4oz Glass/4°C			X
823	A17907	GP-8			1	8oz Glass/4°C	X		
824	B17907	↓				↓		X	
825	E17907	↓				4oz Glass/4°C			X
826	A17908	GP-10				8oz Glass/4°C	X		
827	B17908	↓				↓		X	
828	E17908	↓				4oz glass/4°C			X
829	A17909	GP-7				8oz glass/4°C	X		
830	B17909	↓				↓		X	
831	E17909	↓	↓	↓	↓	4oz glass/4°C			X

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions:

QA'd 11/4/98

Lab to P.U.B MS/MSD

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time
All Analyses	Will Avery	11/5/98	C Gasser	11/6/98	9:40

Items/Reason	Relinquished By	Date	Received By	Date	Time
B/Pest/PCB	C Gasser	11/6/98	Matthew J. Maurer	11/6/98	11:35 am
3/ BNA	C Gasser	11/6/98	Matthew J. Maurer	11/6/98	11:35 am
4/TAL	C Gasser	11/6/98	[illegible]	11/6/98	11:35 am

FORM #4

8/94

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: Morgan Materials
Project Number: 03347-143-001-3399-01
RFW Contact: Will Avery Phone: 732-321-4200

No: 01404

SHEET NO. 1 OF 2

110698-

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	Pest/PCB	BNA	TAL	
832	A17911	GP-6	S	11/4/98	1	8oz glass/4°C	X			
833	B17911					↓		X		
834	E17911					4oz glass/4°C			X	
835	A17912	GP-5				8oz glass/4°C	X			
836	B17912					↓		X		
837	E17912					4oz glass/4°C			X	
838	A17913	GP-4				8oz glass/4°C	X			
839	B17913					↓		X		
840	E17913					4oz glass/4°C			X	
841	A17914	GP-2				8oz Glass/4°C	X			
842	B17914					↓		X		
843	E17914					4oz Glass/4°C			X	
844	A17915	GP-3				8oz Glass/4°C	X			
845	B17915					↓		X		
846	E17915					4oz Glass/4°C	[illegible]		X	
847	A17916	GP-16				8oz Glass/4°C	X			
848	B17916					↓		X		
849	E17916					4oz Glass/4°C			X	
850	A17917	GP-17				8oz Glass/4°C	X			
851	B17917					↓		X		

11/5/98

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions:

CHH (Smg) 11/4/98

Lab to perform MS/MSD

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time
All Analyses	[signature]	11/5/98	C Garson	11/6/98	7:40

Items/Reason	Relinquished By	Date	Received By	Date	Time
All					
T/P+PCB	[illegible]	[illegible]	[illegible]	11/6/98	11:35
T/BNA	[illegible]	[illegible]	[illegible]	11/6/98	11:35
T/TAL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

FORM #4

8/94

001339

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: Morgan Materials
Project Number: 03347-143-001-3399-01
RFW Contact: Will Avery Phone: 732-321-4200

No: 01405
SHEET NO. 2 OF 2

110698-

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	Pest/PCB	BNA	TAL	
852	E17917	GP-17	S	11/4/98	1	4oz Glass/4°C			X	
853	A17918	Field Blank-D	S	11/5/98	1	8oz Glass/4°C	X			
854	B17918	↓	↓	↓	↓	↓		X		
855	E17918	↓	↓	↓	↓	40z Glass/4°C			X	
856	A17919	Field Blank-I	↓	↓	↓	8oz Glass/4°C	X			
857	B17919	↓	↓	↓	↓	↓		X		
858	E17919	↓	↓	↓	↓	40z Glass/4°C			X	

11/4 11/5/98

11/5/98

Special Instructions:

QA'd (Sny) 11/4/98

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Lab to pick MS/MSD

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time
All Analyses	Will Avery	11/5/98	C Gasser	11/6/98	7:40

Items/Reason	Relinquished By	Date	Received By	Date	Time
2/Pest/PCB	C Gasser	11/6/98	[illegible]	11/6/98	11 35am
2/BNA	C Gasser	11/6/98	[illegible]	11/6/98	11 35am
3/TAL	C Gasser	11/6/98	[illegible]	[illegible]	11 4-m

FORM #4

8/94

REAC, E ..on, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHA. OF CUSTODY RECORD

Project Name: Morgan Mineral
Project Number: 0337-143-001-3399-01
RFW Contact: Will Avery Phone: 732-321-4200

No: 01406

SHEET NO. 2 OF 2

110698-

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	VOA
801	CD17920	Trip Blank	S	11/5/98	2	40 ml vials/4°C	X

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions:

Grab MA 11/5/98

LAB to Pick MS/MSD

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
All Analysis	[illegible]	11/6/98	C Brewer	11/6/98	940	All Analysis	C Brewer	11/6/98	[illegible]	11/6/98	1:00 pm

FORM #4 8/94

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: Morgan Material's
Project Number: ~~3399~~ 05347-142-001-3399-01
RFW Contact: W. Avery Phone: 732-321-4200

No: 01407

SHEET NO. 1 OF 1

110998-

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	VOA			
859	BCD 17921	MW-1	W	11/7/98	3	40ml / ~~HCl~~ 4°C	X			
860	BCD 17922	MW-2	↓	↓	↓	↓	X			
861	BCD 17923	MW-3	↓	↓	↓	↓	X			
862	BCD 17924	MW-4	↓	↓	↓	↓	X			
863	BCD 17925	Field Blank	↓	↓	↓	↓	X			
864	AB 17926	Trip Blank	W	11/7/98	2	40ml / ~~HCl~~ 4°C	X			

MW-4 11/7/98
MW-3 11/7/98
MW-2 11/7/98

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions:

Add: W. Avery

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
All/Analysis	[signature]	11/7/98	C. Grasso	11/9/98	10:00	All/Analysis	C. Grasso	11/9/98	[signature]	11/9/98	1010

FORM #4

8/94

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: Morgan Materials
Project Number: ~~3399~~ 03347-143-001-3399-01
RFW Contact: W Avery Phone: 732-321-4200

No: 01408

110998-

SHEET NO. 1 OF 1

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	TAL Metals	BNA	Pest-/PCB	
865	A17921	MW-1	W	11/7/98	1	1 L poly / HNO3	X			
866	EF 17921	MW-1	↓	↓	2	32oz Amber/4°C		X		
867	G,H 17921	↓	↓	↓	2	↓			X	
868	A17922	MW-2	W		1	1L poly / HNO3	X			
869	EF 17922	↓	↓		2	32oz Amber/4°C		X		
870	GA 17922	↓	↓	↓	2	↓			X	
871	A17923	MW-3			1	1 L poly / HNO3	X			
872	EF 17923	↓	↓	↓	2	32oz Amber/4°C		X		
873	G,H 17923	↓	↓	↓	2	↓			X	
874	A17924	MW-4			1	1 L poly / HNO3	X			
875	EF 17924	↓	↓	↓	2	32oz Amber/4°C		X		
876	G,H 17924	↓	↓	↓	2	↓			X	
877	A17925	Field Blank			1	1 L poly / HNO3	X			
878	EF 17925	↓	↓	↓	2	32oz Amber/4°C		X		
879	G,H 17925	↓	↓	↓	2	↓			X	

~~11/7/98~~ 11/7/98 ~~11/7/98~~ 11/7/98

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions:

* Rec'd E17923 and H17923 broken 11/9/98 (C.J)
REAC #'s 872 & 873

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time
All/Analysis	Jerry A Avery	11/7/98	C Garcia	11/9/98	10:00

Items/Reason	Relinquished By	Date	Received By	Date	Time
5/TAL	C Garcia	11/9/98			
5/BNA	C Garcia	11/9/98			
5/Pest/PCB	C Garcia	11/9/98			

FORM #4

8/94

0013