RCRA Facility Investigation
2008 Soil Vapor Investigation Report
Buildings 1, 2, 3, 4, and the
Tank Storage Area Sampling Event
Former Hampshire Chemical Corp. Facility
Waterloo, New York
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CH2MHILL

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Acronyms and Abbreviations

µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
AF	attenuation factor
AOC	area of concern
COPI	constituent of potential interest
CSM	conceptual site model
DCA	dichloroethane
DCE	dichloroethene
DCP	dichloropropane
GC	gas chromatography
HCC	Hampshire Chemical Corp.
MEK	methyl ethyl ketone
MIBK	methyl isobutyl ketone
MPA	mercaptopropionic acid
MS	mass spectrometry
NaSH	sodium hydrosulfide
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PCE	tetrachloroethene
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RFI	Resource Conservation and Recovery Act facility investigation
SOP	standard operating procedure
SVI	soil vapor investigation
SWMU	solid waste management unit
T-acid	thioglycolic acid

TCA	trichloroethane
TCE	trichloroethene
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

SECTION 1

Introduction

On April 23 and 24, 2008, CH2M HILL conducted a subslab sampling event in support of evaluating the vapor intrusion pathway in Buildings 1, 2 (2-A and 2-B), 3, 4, and the Tank Storage Area at the Evans Chemetics manufacturing facility (former Hampshire Chemical Corp. [HCC]) in Waterloo, New York. Sampling activities were conducted at the request of the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) in a correspondence dated November 8, 2006, that requested a soil vapor investigation work plan to address potential vapor intrusion pathways at the facility (NYSDEC and New York State Department of Health [NYSDOH] 2006). The *Resource Conservation and Recovery Act* [RCRA] *Facility Investigation* [RFI]*, Soil Vapor Investigation Work Plan* was submitted to the NYSDEC and NYSDOH on February 26, 2007 (CH2M HILL 2007). In a letter dated April 25, 2007, the NYSDEC and NYSDOH approved the February 2007 work plan with the condition that a revised work plan be submitted to both agencies. The revised work plan was submitted to the NYSDEC and NYSDOH in June 2007 (CH2M HILL 2007).

The purpose of the subslab sampling in Buildings 1 through 4 and the Tank Storage Area was to collect data to evaluate potential vapor intrusion pathways into the buildings located either above or in close proximity to volatile organic compounds (VOCs) identified in subsurface soil and/or groundwater. During this sampling event, subslab samples were collected from Buildings 1, 2, 3, 4, and the Tank Storage Area. In addition, two outdoor ambient air samples were collected within the facility property. These samples were collected in accordance with the *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (New York State Department of Health [NYSDOH] 2006) and followed the revised June 2007 RFI*, Soil Vapor Investigation Work Plan* (CH2M HILL 2007).

SECTION 2

Site Background

The Evans Chemetics facility is located at 228 East Main Street in the Village of Waterloo, Seneca County, New York (Figure 1). The facility is bordered to the north by East Main Street, the east by Gorham Street, the west by East Water Street, and the south by the Seneca-Cayuga Canal.

RFI efforts have been performed since 1993 to determine the nature and extent of releases to the environment. The solid waste management units (SWMUs) and areas of concern (AOCs) that have been identified for further investigation and/or corrective measures are represented on Figure 2. The RFI data have been evaluated against the applicable NYSDEC screening levels for that time for each media (groundwater, soil, sediment), and various reports summarizing the data have been submitted to NYSDEC, including the RFI report by CH2M HILL in May 2006. Comments were provided by NYSDEC and NYSDOH in a letter dated November 8, 2006. In that letter, NYSDEC requested that an SVI work plan be submitted to address potential vapor intrusion pathways at the facility. That work plan was submitted to NYSDEC on February 26, 2007. During a site visit conducted on March 12, 2007, clarifications were obtained regarding the approach to the SVI evaluation, and a revised work plan was submitted to the NYSDEC in June 2007 (CH2M HILL 2007).

Buildings evaluated in this report where there is a potential for vapor intrusion are described in detail in the following sections and comprise:

- Building 1 is located adjacent to and south of Building 2. AOC C, "Gorham Street," is adjacent and east of Building 1.
- Buildings 2-A and 2-B are located in the northeast corner of the facility. AOC E is north of these buildings.
- Building 2 is located south of Buildings 2-A and 2-B, and includes the "Mercaptopropionic Acid (MPA) Process Area."
- Building 3 is located west of Building 1 along the Seneca-Cayuga Canal. AOC D is adjacent and southwest of Building 3.
- Building 4 is adjacent to and north of Building 3. AOC B underlies Building 4 and is the former Building 4 Pit, a below-grade sump that collected wastewater from Building 4.
- The Tank Storage Area is north of Building 4.

The locations of the buildings evaluated are shown on Figure 2.

Building surveys were completed during site walkthroughs in April 2006 and January 2007. The results of the building surveys are documented and provided in Section 2.3 of the SVI revised work plan (CH2M HILL 2007). During the April 2008 subslab sampling event, a list of constituents in each building was compiled and is presented as Appendix A.

2.1 Buildings 1 and 2

Buildings 2, 2-A, and 2-B are in the northeast corner of the site; Building 2-B is adjacent to AOC E (Figure 2). Buildings 2-A and 2-B contain the process for manufacturing thiodipropionate esters and 2-sulfoethyl methacrylate. Building 2 contains the process for manufacture of 3-MPA and low volume specialty constituents produced on a campaign basis. A small research and development laboratory and storage areas for intermediate process constituents are located in Building 2. Building 1, the site boiler room, is in the southeast area of the facility, south of Building 2.

Historically, a release of sodium hydrosulfide (NaSH) was reported in September 1995 from a vent located on the roof of Building 2, located within the property boundary of the former HCC facility. The release of less than 100 pounds of NaSH-contaminated site soil was later excavated (CH2M HILL 2006).

AOC C is a small area east of Building 1 and the MPA Process Area (Figure 2). Contaminated soil adjacent to Building 2 in AOC C was excavated in 1999. Although the bulk of the visibly stained soil was removed, several small veins of discolored soil reportedly remained in the excavation in the direction of the building foundation. Soil samples collected at the time of the excavation reported detected concentrations of acetone, benzene, methyl isobutyl ketone (4-methyl, 2-pentanone or MIBK), and methylene chloride above associated screening levels (CH2M HILL 2006). Soil samples were collected from AOC C in August 2007 as part of the RFI addendum field activities. No VOCs were detected in these samples.

Groundwater data associated with AOC C were collected from monitoring wells MW-7 and MW-8; MW-8 had a detection of chloroform at 1.08 micrograms per liter (µg/L) in 2005 (Figure 6). No other VOCs were detected in these wells.

AOC E is located to the north of Building 2-B (Figure 2). Several VOCs have been detected in soil at AOC E, including MIBK, acetone, 2-hexanone, methyl ethyl ketone (MEK or 2-butanone).

Groundwater data associated with AOC E were collected from monitoring well MW-10 and temporary piezometers installed around MW-10 during previous investigations at the site (Figure 6). Monitoring well MW-10 is located at the northern end of Gorham Street in the northeast area of the facility; five VOCs have been detected in groundwater from this area (MIBK, acetone, benzene, carbon disulfide, and toluene).

Groundwater data collected from this area are summarized in the RFI addendum report, which was submitted to the NYSDEC in November 2008 (CH2M HILL 2008).

The primary vapor intrusion pathway for the MPA Process Area of Building 2 and Building 1 is VOCs migrating from soil at AOC C through the soil vadose zone and into the subslab vapor space. Another potential pathway is VOCs migrating from groundwater at AOCs C and E through the vadose zone into the subslab vapor space. For Building 2, including the MPA Process Area, the vapor intrusion pathway is probably weak because of the slightly negative pressurization of the building air space, and limited or absent preferential pathways (Section 2.3.1, CH2M HILL 2007).

2.2 Building 3

Building 3 is directly west of Building 1 (Figure 2). Building 3 contains the process for manufacture of thioglycolic acid (T-acid). T-acid manufacturing processes occupy half of the ground and first floors of the building. The remainder of the ground floor is used for raw material storage and in-process chemical storage. The remainder of the first floor is maintenance storage area, including the maintenance stockroom.

AOC D is a small area to the southwest of Building 3 (Figure 2). In 2004, MEK was detected in soil at AOC D. No other VOCs have been detected in soil at AOC D.

Groundwater data associated with AOC D were collected from monitoring wells MW-11S, MW-21, MW-23, and MW-24 (Figure 6). Eight VOCs have been detected in groundwater in these wells (MIBK, acetone, benzene, carbon disulfide, chloromethane, ethylbenzene, toluene, and xylenes [total]).

Groundwater data collected from this area are summarized in the RFI addendum report, which was submitted to the NYSDEC in November 2008 (CH2M HILL 2008).

The primary vapor intrusion pathway for Building 3 is likely to be VOCs conveyed into the building from soil or groundwater at AOC D. A vapor intrusion pathway may exist through the Building 3 control room floor drains (Section 2.3.2, CH2M HILL 2007).

2.3 Building 4

Building 4/4A is adjacent to and northeast of Building 3 (Figure 2). Building 4/4A contains the process for purification of T-acid and the manufacture of thioglycolates.

AOC B, the former Building 4 Pit, was a below-grade sump located along the southern end of Building 4, extending from the west wall nearly the length of the building. The sump was a collection point for wash water in Building 4. Liquid that collected in the sump was pumped to the facility wastewater treatment plant for treatment and discharge to the Seneca-Cayuga Canal via a permitted outfall.

In July 1994, discolored soil was encountered in the foundation excavation for a new T-acid tower in Building 4. The discolored soil triggered an investigation of the area and found the source of impacts to be the below-grade sump later designated as AOC B.

A number of VOCs have been detected in soil at AOC B, including MIBK, acetone, carbon disulfide, chloroform, toluene, and xylenes (total).

Groundwater data associated with AOC B were collected from monitoring wells, piezometers, and a sampling port: MW-01, MW-02, MW-03, MW-22, MW-23, PZ-1, PZ-4, PZ-5, PZ-6, PZ-7, BLDG4-FD, BLDG4-PW, Bldg 4 Pit Sump (Figure 6). VOCs have been detected in groundwater in these wells, including 1,1-dichloroethane (1,1-DCA); 1,2-dichloropropane (1,2-DCP); MEK; MIBK; acetone; benzene; carbon disulfide; chlorobenzene; chloroform; cis-1,2-dichloroethene (cis-1,2-DCE); ethylbenzene; methylene chloride; toluene; trans-1,2-DCE; trichloroethene (TCE); vinyl chloride; and xylenes (total). Because of the detection of VOCs in site groundwater, soil vapor sampling was conducted for this building.

Soil and groundwater data collected from this area are summarized in the RFI addendum report, which was submitted to the NYSDEC in November 2008 (CH2M HILL 2008).

The primary potential vapor intrusion pathway for Building 4 includes VOCs potentially migrating from groundwater and soil at AOC B through the soil vadose zone and into the subslab vapor space. A potential vapor intrusion pathway exists because of the proximity of the former source to the buildings and the depressurized conditions indoors (Section 2.3.3, CH2M HILL 2007).

2.4 Tank Storage Area

The Tank Storage Area is an enclosed area north of Building 4 (Figure 2) and to the west and below the relative grade of Building 9. Sodium hydrosulfide, glycerin, glycerol monothioglycolate, and ammonium thioglycolate tanks are within this area. In addition, the Tank Storage Area is adjacent to monitoring well MW-01 (Figure 6).

AOC B is south of the Tank Storage Area. VOCs detected in soil and groundwater at AOC B are discussed in Section 2.3.

As part of the RFI addendum field activities, PZ-3 was installed inside the Tank Storage Area (Figure 6). In December 2007, six VOCs were detected in groundwater from PZ-3 (1,2-DCA; 1,2-DCP; MIBK; acetone; carbon disulfide; and toluene) (CH2M HILL 2008). Because of the detection of VOCs in groundwater, soil vapor sampling was conducted for this area.

Groundwater data collected from this area are summarized in the RFI addendum report, which was submitted to the NYSDEC in November 2008 (CH2M HILL 2008).

A potential vapor intrusion pathway exists because of VOCs in groundwater in the vicinity and the negative pressurization of the Tank Storage Area relative to the outside air (Section 2.3.4, CH2M HILL 2007).

SECTION 3

Vapor Intrusion Conceptual Site Model

The vapor intrusion conceptual site model (CSM) presented as Figure 3 depicts sources of constituents, migration pathways, potential receptor populations, and potential exposure pathways to the receptors.

Potential indoor air exposures in the buildings may result from VOCs in subsurface soil and/or shallow groundwater volatilizing, migrating vertically (and horizontally to a limited extent) through the soil column and entering the buildings through cracks. The VOCs may then be inhaled by building occupants. Sources of constituents potentially contributing to vapor intrusion are the VOCs detected in soil and in groundwater underneath or in close proximity to the buildings that were discussed in Section 2.

SECTION 4

Sampling Procedures and Methods

On April 23 and 24, 2008, 12 subslab and two ambient air samples were collected in accordance with the *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (NYSDOH 2006) and the *RFI Soil Vapor Investigation Work Plan*, revised in June 2007 (CH2M HILL 2007). The sample locations within each building and area are shown on Figures 4 and 5. The rationale for placement of these subslab probes were adjusted and agreed upon by NYSDEC during a March 2007 site visit. The placement of the subslab probes are presented for each building in the *RFI Soil Vapor Investigation Work Plan* (Section 4.1, CH2M HILL 2007).

Two ambient air samples were collected within the property boundary, and the locations are shown on Figures 4 and 5. Sampling and analysis of the subslab and ambient air samples were conducted in accordance with the work plan (CH2M HILL 2007). The field sampling log sheets are provided as Appendix B.

4.1 Subslab Vapor Sampling

Twelve subslab samples (SG-1 through SG-9, SG-3A, SG-5A, and SG-7A) were collected over an 8-hour period from inside Buildings 1 through 4 and the Tank Storage Area (Figure 2) as described in the standard operating procedure (SOP) (CH2M HILL 2007).

The final locations of the subslab vapor probes were based on site conditions and operations and are identified in Figures 4 and 5. Subslab vapor sampling was not conducted for at least 24 hours after probe installation was completed and the samples were collected in the manner stated in the NYSDOH guidance to obtain representative samples and to minimize possible discrepancies due to outdoor air infiltration (NYSDOH 2006). Helium was used as a tracer gas to verify the soil vapor sample was not affected by indoor air. Tracer gas readings were collected before and after sample collection.

4.2 Outdoor Air Sampling

Two outdoor (i.e., ambient) air samples (SG-B2 and SG-B4) were collected over an 8-hour period during daytime working hours. The ambient air samples were collected concurrently with the subslab soil vapor samples (Tables 1 and 2). Sample SG-B2 was collected outside Building 2 on the east side; sample SG-B4 was collected outside Building 11 on the east side. The locations of samples SG-B2 and SG-B4 are shown on Figures 4 and 5, respectively.

4.3 Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) samples for this sampling event included a co-located sample (field duplicate), which was collected by placing two canisters side by side and opening the valves simultaneously. The tubing from the field duplicate subslab probe was connected to each of the canisters utilizing a "T" fixture so the samples drew the

same air from the subslab probe. One field blank was collected by placing two canisters side by side and not opening one of the valves. This field blank was a control sample, and the SUMMA™ canisters were cleaned to the reporting limits by the laboratory. Zero grade humidified air was used by the laboratory to pressurize the canisters.

4.4 Laboratory Analysis and Validation

Columbia Analytical Services of Simi Valley, California (NYSDOH Environmental Laboratory Approval Program, New York Laboratory Identification Number 11221) supplied certified clean SUMMA™ canisters with individual tracking numbers and calibrated flow regulators. Air samples (subslab and outdoor air) were collected using evacuated stainless steel SUMMA™ canisters and analyzed in accordance with *Compendium Method TO-15: Determination of VOCs in Air Collected in Specially Prepared Canisters and Analyzed by Gas Chromatography (GC)/ Mass Spectrometry (MS)* (U.S. Environmental Protection Agency [USEPA] 1999). The reporting limits for Method TO-15 presented in the work plan (CH2M HILL 2007) were achieved (Appendix D).

The data were validated using applicable quality criteria in the *National Functional Guidelines for Organic Data Review* (USEPA 1994) and USEPA Region 2 data validation procedures (USEPA 2007). Appendix D contains the validated laboratory data package for the samples collected during this investigation.

4.5 Field Observations

Because of the thickness of the concrete slab in several of the buildings, selected vapor probe locations were moved from 1 to 3 feet away from the proposed locations to areas where the probe installation could be completed, with the exception of two locations (SG-5 and SG-5a), which were moved 5 to 10 feet away from the proposed locations. The locations that were moved 1 to 3 feet comprised SG-2, SG-3, SG-5, SG-5a, SG-6, SG-7, and SG-8. The final locations of the samples collected are presented on Figures 4 and 5. During installation of the vapor probe at location SG-5, an unknown liquid was observed on the drill bit, and an odor was noted during one of several attempts to install the vapor probe. Once the subslab probe at SG-5 was installed, the unsuccessful attempts were filled with concrete.

Prior to sampling, the field team noted activities in or near the sampling areas such as constituent use or storage and operation of forklifts or other vehicles that may influence the ambient and/or indoor air quality. A list of chemicals in each building is included as Appendix A.

SECTION 5

Subslab Soil Vapor Data Evaluation

The subslab sample results from each building were evaluated for the detected constituents, and are presented in Tables 1 through 9. The following lines of evidence were evaluated in this report to determine the potential significance of the vapor intrusion pathways in the various buildings:

- Comparison between types of sampling results – subslab soil vapor and ambient outdoor air, and available soil and groundwater data
- Comparison of the subslab soil vapor results to background levels of volatile constituents in indoor air – 90th percentile indoor air background levels from NYSDOH (2006)
- Comparison of the subslab soil vapor results to the NYSDOH air guideline values (2006)
- Comparison of the subslab soil vapor results to the USEPA (2002) generic risk-based target shallow soil gas-to-indoor air screening level at attenuation factors (AFs) of 0.1 and 0.01

The concentration levels of the constituents were compared to the criteria described in Section 5.1. The subslab soil vapor data evaluation approach is described in Section 5.2. The data assessment results are summarized in Section 5.3.

5.1 Criteria Used for Comparison

5.1.1 Site-Specific Ambient Outdoor Air Concentrations

As stated in NYSDOH guidance (2006), "New York State currently does not have any standards, criteria or guidance values for concentrations of compounds measured in subslab soil vapor samples. Additionally, there are currently no databases available of background levels of volatile constituents in soil vapor." NYSDOH (2006) guidance suggests that a comparison of subslab soil vapor results with background outdoor air concentrations will provide some perspective on the need for additional investigations. Therefore, as a first step, the subslab vapor sample results from the buildings/areas were compared with the site-specific ambient air concentrations.

Ambient air sample SG-B2 was collected near Building 2-B, Building 2, MPA Process Area (Building 2), and Building 1, and thus represents outdoor air conditions for these buildings. Sample SG-B4 was collected near Building 3, Building 4, and the Tank Storage Area, and thus represents outdoor air conditions for these buildings. The site-specific ambient air analytical results are listed in Tables 1 and 2. Subslab vapor data were compared to site-specific ambient air data to provide one line of evidence to determine if vapor intrusion is a potential concern.

5.1.2 90th Percentile Indoor Air Background Levels (NYSDOH)

The 90th percentile indoor air background levels are provided in Table C1: *NYSDOH 2003 Study of Volatile Organic Chemicals in Air of Fuel Oil Heated Homes of Appendix C* (NYSDOH 2006). Note that background indoor air concentrations are not risk-based, and an exceedance only indicates if the subslab soil vapor concentration is different from background aboveground indoor air concentrations, which provides one line of evidence in determining if the vapor detections are potentially site-related and/or if additional investigations are needed to further assess the soil vapor intrusion pathway. Additionally, some of the detected constituents do not have background indoor air concentrations listed in the NYSDOH guidance document (2006). The comparison is provided in Tables 3 through 9.

5.1.3 Air Guideline Values (NYSDOH)

NYSDOH (2006) provides air guideline values for five constituents (methylene chloride, polychlorinated biphenyls, tetrachlorodibenzo-*p*-dioxin equivalents, tetrachloroethene [PCE], and TCE). Detected concentrations in subslab soil vapor were compared against the available NYSDOH air guideline values. As noted above, NYSDOH currently does not have guidance values for subslab soil vapor. However, NYSDOH (2006) guidance suggests that a comparison of subslab soil vapor results with indoor air guideline values may provide some perspective on the concentrations measured in subslab soil vapor. The comparison of subslab soil vapor concentrations to air guideline values is provided in Tables 3 through 9.

5.1.4 Target Shallow Soil Gas-to-Indoor Air Screening Level at AFs of 0.1and 0.01 from USEPA (2002)

Target shallow soil gas concentrations were provided from USEPA (2002), *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)*. USEPA (2002) generic risk-based soil gas-to-indoor air screening levels based on AFs of 0.1 and 0.01 were used. Values based on a range of AFs (0.1 to 0.01) were used given the significant uncertainties in the actual attenuation and given statements from USEPA at various vapor intrusion workshops the last few years (http://iavi.rti.org/WorkshopsAndConferences.cfm) that it has been considering revising the default shallow soil gas-to-indoor air AF of 0.1 to a value closer to 0.01. Tables 3 to 9 include results of the comparisons against these criteria.

5.2 Subslab Soil Vapor Data Evaluation Approach

This soil vapor data evaluation generally was conducted in accordance with the NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (NYSDOH 2006). Consistent with NYSDOH SVI guidance (2006), multiple lines of evidence were considered in this SVI evaluation. The criteria used for comparison during this data evaluation are presented in Section 5.1.

Subslab soil vapor results were compared with site-specific outdoor air data collected in April 2008. Constituents of potential interest (COPIs) (i.e., constituents with detected concentrations above the site-specific outdoor air concentrations) were identified for each building. COPIs at each sample location exceeding the NYSDOH 90th percentile background indoor air concentrations are presented on Figures 4 and 5.

The subslab soil vapor results also were considered relative to historical site soil and groundwater data, if available, for the area where each subslab soil vapor sample was collected. As discussed in Section 5.1, subslab soil vapor concentrations also were compared with (1) the range of New York background indoor air levels listed in NYSDOH (2006), (2) NYSDOH air guideline values, and (3) USEPA (2002) generic soil gas-to-indoor air screening values in order to help focus on the VOCs that are of a vapor intrusion concerns.

Where applicable, groundwater data from co-located monitoring wells or piezometers (i.e., wells located in close proximity to the subslab soil vapor samples) were compared to generic groundwater screening levels. The generic groundwater screening levels were the target groundwater concentrations from USEPA (2002), *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)*, which are based on a default groundwater-to-indoor air AF of 0.001 and the assumption that partitioning across the water table obeys Henry's Law. These comparisons are presented in Tables 10 through 15. Co-located monitoring wells and peizometers are identified on Figure 6.

The subslab data collected in April 2008 are discussed in detail below for each of the buildings and areas (Building 2-A/2-B, Building 2, MPA Process Area [Building 2], Building 1, Building 3, Building 4, and Tank Storage Area). The COPIs identified are discussed individually under each site along with lines of evidence for their occurrence and vapor intrusion potential. While all exceedances of applicable criteria were evaluated, not all of the COPIs identified correlate to materials that were managed in the respective SWMUs and/or AOCs as identified in the RFI report (CH2M HILL 2008).

As listed in Tables 3 through 9, soil vapor concentration exceedances of indoor air background levels occur at each building. Therefore, additional samples (i.e., concurrent subslab and indoor air samples) were collected in accordance with the 2007 work plan (CH2M HILL 2007) in November 2008; the results of which were presented in the *Soil Vapor Investigation Report* submitted to NYSDEC on February 8, 2010 (CH2M HILL 2010).

5.3 Data Assessment Results

Each COPI is discussed below for its potential to be of vapor intrusion concern based on a review of multiple lines of evidence where applicable, including a comparison of soil vapor concentrations against the NYSDOH established air guideline values, 90th percentile background levels and the maximum background levels from NYSDOH guidance, and the USEPA (2002) generic risk-based soil gas-to-indoor air screening levels (Tables 3 to 9) based on an AF of 0.1 and an AF of 0.01. Groundwater comparisons are based on analytical results from sampling periods indicated in Tables 10 through 15.

Marginal levels of acetone, carbon disulfide, MIBK, MEK, and toluene were detected in the field blank. Appendix C contains the QA/QC results table.

5.3.1 Building 2-A/2-B

One subslab sample (SG-1) was collected at Building 2-B (Figure 4) to represent both Buildings 2-A and 2-B. VOCs detected in subslab soil vapor above the site-specific outdoor air concentrations at Building 2-B were identified as COPIs in this vapor intrusion evaluation (Table 1). In addition, groundwater data for COPIs in MW-10, which is located

just north of Building 2-B, were compared to generic groundwater screening levels (Table 10 and Figure 6). Note that Buildings 2-A and 2-B are considered the same air space and contain the process location for manufacturing thiodipropionate esters and 2-sulfoethyl methacrylate.

The following observations were made for COPIs detected in the soil vapor sample associated with Buildings 2-A and 2-B.

Acrylonitrile

Acrylonitrile was detected in the subslab sample associated with Buildings 2-A and 2-B, and results of comparison against various criteria are discussed below.

- The subslab soil vapor concentration exceeded the corresponding site-specific outdoor air concentration (Table 1).
- No NYSDOH guidance based background levels are available for comparison for this constituent.
- The subslab soil vapor concentration in the sample (5.9 micrograms per cubic meter [$\mu g/m^3$]) exceeded the USEPA (2002) generic risk-based soil gas-to-indoor air screening level of 3.6 $\mu g/m^3$ at an AF of 0.01 (Table 3).
- Acrylonitrile was not detected in groundwater in monitoring well MW-10, which is identified as AOC E, and located outside the northern side of Building 2-B (Table 10).
- Buildings 2-A and 2-B contain the process location for manufacturing thiodipropionate esters and 2-sulfoethyl methacrylate, which includes the use of acrylonitrile.

Chloroform and TCE

Chloroform and TCE were detected in subslab samples from Buildings 2A and 2B, and results of comparison against various criteria are discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 1).
- Subslab soil vapor concentrations exceeded the NYSDOH 90th percentile background indoor air concentrations.
- TCE in subslab soil vapor does not exceed the established NYSDOH air guideline value of 5 $\mu g/m^3$ (Table 3).
- Subslab soil vapor concentrations were above the generic risk-based soil gas–to–indoor air screening level based on an AF of 0.1 criteria, but not above the screening level based on an AF of 0.01 criteria from USEPA (2002) (Table 3).
- Chloroform and TCE were not detected in groundwater in monitoring well MW-10 (Table 10).

MIBK

MIBK was detected in sub-slab sample from Buildings 2A and 2B, and results of comparison against various criteria are discussed below.

- The subslab soil vapor concentration exceeded the corresponding site-specific outdoor air concentration (Table 1).
- The subslab soil vapor concentration exceeded the NYSDOH 90th percentile and maximum background indoor air concentrations (Table 3).
- The subslab soil vapor concentration did not exceed the generic risk-based soil gas–to–indoor air screening level based on an AF of 0.1 criteria from USEPA (2002) (Table 3).
- MIBK was detected in groundwater in monitoring well MW-10 (Table 10).
- MIBK is a constituent of Building 2A operations and was detected in ambient air samples, albeit at approximately 10 times lower levels.

Other Detected Constituents

All other results of detected constituents in subslab soil vapor samples, comprising carbon tetrachloride, chloromethane, methylene chloride, and PCE are discussed below:

- The subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 1).
- The subslab soil vapor concentrations did not exceed the NYSDOH 90th percentile or the maximum background indoor air concentrations (Table 3).
- PCE in the subslab soil vapor does not exceed the established NYSDOH air guideline value of 100 $\mu g/m^3$ (Table 3).
- Subslab soil vapor concentrations were below the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at a AF of 0.1 and 0.01 (Table 3).
- None of these COPIs was detected in groundwater in well MW-10 located outside the northern site of Building 2-B (Table 10).

Overall, several VOCs are present in subslab soil vapor under Buildings 2-A and 2-B. Of specific interest is acrylonitrile, as the subslab soil vapor concentration exceeded the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.01. However, only one of the detected constituents was in common with those detected in AOC E groundwater, which is MIBK.

5.3.2 Building 2

One subslab sample (SG-2) was collected at Building 2 (Figure 4). A duplicate sample was collected for the same duration and was a split sample of SG-2. There are no known VOC impacts to subsurface soil or groundwater in the area of Building 2. VOCs detected in subslab soil vapor above the site-specific outdoor air concentrations at Building 2 were identified as COPIs in this vapor intrusion evaluation (Table 1). Note that Building 2 contains indoor sources for constituents because of the process location for manufacture of 3-MPA and low volume specialty constituents produced on a campaign basis.

The following observations were made for COPIs detected in soil vapor at Building 2.

Chloroform and TCE

Chloroform and TCE were detected in the subslab sample from Building 2, and results of comparison against various criteria are discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 1).
- Subslab soil vapor concentrations exceeded the NYSDOH 90th percentile and/or maximum background indoor air concentrations.
- TCE does not exceed the established NYSDOH air guideline value of 5 $\mu g/m^3$ (Table 4).
- Subslab soil vapor concentrations were above the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.01 (Table 4).

1,2-DCA, Carbon Tetrachloride, and PCE

1,2-DCA, carbon tetrachloride, and PCE were detected in the subslab sample from Building 2, and results of comparison against various criteria are discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 1).
- Subslab soil vapor concentrations exceeded the NYSDOH 90th percentile background indoor air concentrations; however, they are below the maximum background level (Table 4).
- PCE does not exceed the established NYSDOH air guideline value of 100 $\mu g/m^3$ (Table 4).
- Subslab soil vapor concentration were above the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.1 criteria, but below an AF of 0.01 (Table 4).

1,1-DCE, 1,2-DCP, and Acetone

1,1-DCE, 1,2-DCP, and acetone also were detected in subslab sample from Building 2, and results of comparison against various criteria are discussed below.

- The subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 1).
- The subslab soil vapor concentrations exceeded the NYSDOH 90th percentile; however, they are below the maximum background level (Table 4).
- Subslab soil vapor concentrations were below the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.1 (Table 4).

At Building 2, the maximum detected concentration of all other constituents was below the most conservative screening criteria. Overall, no VOCs were detected in subsurface soil or groundwater in the area of Building 2. Only chloroform and TCE indicated levels in the soil vapor sample exceeding the USEPA (2002) generic risk-based soil gas-to-indoor air

screening level at an AF of 0.01. All other VOCs were generally below the health-protection based conservative screening values from USEPA with an AF of 0.01 and the NYSDOH background maximum levels.

5.3.3 MPA Process Area (Building 2)

Two subslab samples (SG-3 and SG-3a) were collected in the MPA Process Area (Figure 4). VOCs detected in subslab soil vapor above the site-specific outdoor air concentrations at the MPA Process Area were identified as COPIs (Table 1). This area is the process location for manufacture of 3-MPA within Building 2.

The following observations were made for COPIs detected in soil vapor at the MPA Process Area (Building 2).

Acrylonitrile

Acrylonitrile was detected in subslab samples from MPA Process Area of Building 2, and results of comparison against various criteria are discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 1).
- No NYSDOH guidance based background levels are available for comparison for this constituent (Table 5).
- Subslab soil vapor concentrations exceeded the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.1 and 0.01 (Table 5).
- Acrylonitrile is a constituent of Building 2 operations.

Benzene, Chloroform, and TCE

Benzene, chloroform, and TCE were detected in subslab samples from MPA process area of Building 2 and results of comparison against various criteria are discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 1).
- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations and the NYSDOH 90th percentile background indoor air concentrations, but all three constituents detected in subslab soil vapor samples were below the NYSDOH maximum background levels (Table 5).
- One of the two subslab sample concentrations exceeded the NYSDOH established air guideline value of 5 $\mu g/m^3$ for TCE (Table 5).
- Subslab soil vapor concentrations exceeded the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.01 (Table 5).

Chloroethane; cis-1,2-DCE; MIBK; and PCE

Chloroethane; cis-1,2-DCE; MIBK; and PCE also were detected in subslab samples from the MPA Process Area of Building 2, and results of comparison against various criteria are discussed below.

- The subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 1).
- The subslab soil vapor concentrations exceeded the NYSDOH 90th percentile; however, it was below the maximum background level (Table 5).
- Subslab soil vapor concentrations were below the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.1 and 0.01 (Table 5).
- PCE does not exceed the established NYSDOH air guideline value of 100 $\mu g/m^3$ (Table 5).
- MIBK is related to production in Building 2.

At the MPA Process Area of Building 2, the maximum detected concentrations of all other constituents were below the most conservative screening criteria.

Overall, in the MPA Process Area, there are no known VOC impacts to subsurface soil or groundwater. Acrylonitrile, benzene, chloroform, and TCE was detected at levels in soil vapor samples exceeding the USEPA (2002) generic risk-based soil gas-to-indoor air screening levels at an AF of 0.01. In addition, TCE exceeded the NYSDOH indoor air screening level of 5 $\mu g/m^3$. All other VOCs were generally below the health protection-based conservative screening values from USEPA with an AF of 0.01 and the NYSDOH background maximum levels.

5.3.4 Building 1

One subslab sample (SG-4) was collected in Building 1 (Figure 4). VOCs detected in subslab soil vapor above the site-specific outdoor air concentrations at Building 1 were identified as COPIs (Table 1). Note that Building 1 is the site boiler room, and VOC sources have not been identified in this area.

The following observations were made for COPIs detected in soil gas at Building 1.

Chloroform and TCE

Chloroform and TCE were detected in the subslab sample from Building 1, and results of comparison against various criteria are discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 1).
- Subslab soil vapor concentrations exceeded the NYSDOH 90th percentile and/or maximum background indoor air concentrations.
- TCE does not exceed the established NYSDOH air guideline value of 5 $\mu g/m^3$ (Table 6).

- Subslab soil vapor concentrations were above the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.01 (Table 6).

PCE

PCE was detected in subslab sample from Building 1, and results of comparison against various criteria are discussed below.

- The subslab soil vapor concentration exceeded the corresponding site-specific outdoor air concentration (Table 1).
- The subslab soil vapor concentration exceeded the NYSDOH 90th percentile background indoor air concentration, but was below the maximum background level.
- PCE did not exceed the established NYSDOH air guideline value of 100 $\mu g/m^3$ (Table 6).
- Subslab soil vapor concentration was above the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.1, but not an AF of 0.01 (Table 6).

1,1,1-Trichloroethane; 1,1,-DCA; and 1,2-DCP

1,1,1-Trichloroethane (TCA); 1,1,-DCA; and 1,2-DCP were detected in subslab sample from Building 1, and results of comparison against various criteria are discussed below.

- The subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 1).
- The subslab soil vapor concentrations exceeded the NYSDOH 90th percentile background indoor air concentrations, but concentrations were below the NYSDOH maximum background indoor air concentrations (Table 6).
- Subslab soil vapor concentrations were below the USEPA (2002) generic risk-based soil gas-to-indoor air screening levels at an AF of 0.1 (Table 6).

Benzene, Chloromethane, Ethylbenzene, Methylene Chloride, Toluene, and Xylenes

Benzene, chloromethane, ethylbenzene, methylene chloride, toluene, and xylenes were detected in subslab sample from Building 1, and results of comparison against various criteria are discussed below.

- The subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentration (Table 1).
- The subslab soil vapor concentrations did not exceed the NYSDOH 90th percentile or the maximum background indoor air concentrations, if available.
- Methylene chloride concentrations are below the established NYSDOH air guideline value (Table 6).
- The subslab soil vapor concentrations were below the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.1 (Table 6).

Overall, there are no known VOC impacts to subsurface soil or groundwater in the area of Building 1. Only chloroform and TCE indicated levels in the soil vapor sample exceeding the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.01.

All other VOCs were generally below the health protection-based conservative screening values from USEPA with an AF of 0.01 and the NYSDOH background maximum levels.

5.3.5 Building 3

Three subslab samples (SG-5, SG-5a, and SG-6) were collected within Building 3 (Figure 5). VOCs detected in subslab soil vapor above the site-specific outdoor air concentrations at Building 3 were identified as COPIs in this vapor intrusion evaluation (Table 2). In addition, groundwater data for COPIs in MW-11S, which is located southwest of Building 3 (downgradient), were compared to generic groundwater screening levels (Table 11 and Figure 6). Note that Building 3 is the process location for manufacture of T-acid.

Chloroform and TCE

Chloroform was detected at 1,100 µg/m^3, and TCE was detected at 20 µg/m^3 at Building 3. These concentrations were compared against various criteria, and results are discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 2).
- Subslab soil vapor concentrations exceeded the NYSDOH 90th percentile and/or the maximum background indoor air concentrations (Table 7).
- One of the three subslab sample concentrations exceeded the NYSDOH established air guideline value of 5 µg/m^3 for TCE (Table 7).
- Subslab soil vapor concentrations exceeded the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.01 (Table 7).
- Chloroform was not detected in groundwater in well MW-11S located southwest of Building 3 (Table 11).

MIBK

MIBK concentrations from Building 3 were compared against criteria as presented below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 2).
- Subslab soil vapor concentrations exceeded the NYSDOH 90th percentile and maximum background indoor air concentrations (Table 7).
- MIBK subslab soil vapor concentrations were below the conservative USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.1 (Table 7).
- MIBK was detected in groundwater in well MW-11S located southwest of Building 3; however, concentrations were below the risk-based target groundwater concentrations (Table 11).

1,1,-DCA; cis-1,2-DCE; and PCE

1,1,-DCA; cis-1,2-DCE; and PCE concentrations from Building 3 subslab soil vapor samples were compared against criteria as discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 2).
- Subslab soil vapor concentrations exceeded the NYSDOH 90th percentile background indoor air concentrations, but concentrations were below the NYSDOH maximum background indoor air concentrations (Table 7).
- PCE concentrations are below the established NYSDOH air guideline value (Table 7).
- Subslab soil vapor concentrations were below the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.1 (Table 7).
- 1,1,-DCA; cis-1,2-DCE; and PCE were not detected in groundwater at MW-11S (Table 11).

Bromodichloromethane, Carbon Disulfide, Carbon Tetrachloride, Methylene Chloride, and Xylenes

Bromodichloromethane, carbon disulfide, carbon tetrachloride, methylene chloride, and xylenes concentrations from Building 3 subslab soil vapor samples were compared against criteria as discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 2).
- Subslab soil vapor concentrations did not exceed the NYSDOH 90th percentile indoor air concentrations, if a value is available in NYSDOH guidance.
- Methylene chloride concentrations are below the established NYSDOH air guideline value (Table 7).
- Subslab soil vapor concentrations were below the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.1 (Table 7).
- Carbon disulfide and xylenes were detected in groundwater at MW-11S; however, their concentrations were below the risk-based target groundwater concentrations (Table 11).
- Bromodichloromethane, carbon tetrachloride, and methylene chloride were not detected in groundwater at MW-11S (Table 11).

Overall, Building 3 chloroform and TCE subslab soil vapor levels were well above screening levels and exceeded the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.01.

5.3.6 Building 4

Three subslab samples (SG-7, SG-7a, and SG-8) were collected at Building 4 (Figure 5). VOCs detected in subslab soil vapor above the site-specific outdoor air concentrations at Building 4 were identified as COPIs in this vapor intrusion evaluation (Table 2). In

addition, potential source area in groundwater as monitored by groundwater monitoring wells for COPIs in MW-03, PZ-1, and BLDG4-PIT-SSP, which are located inside Building 4 (Figure 6). The VOC data from these wells were compared to generic groundwater screening levels (Tables 12, 13, and 14). Note that Building 4 (and 4A) is the process location for purification of T-acid and the manufacture of thioglycolates.

The following observations were made for constituents detected in soil vapor at Building 4.

Chloroform, ethylbenzene, MIBK, and TCE

Chloroform, ethylbenzene, MIBK, and TCE concentrations from Building 4 subslab soil vapor samples were compared against criteria as discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 2).
- Subslab soil vapor concentrations exceeded the NYSDOH 90th percentile and maximum background indoor air concentrations (Table 8).
- TCE exceeded the established NYSDOH air guideline value in one of three samples collected (Table 8).
- Subslab soil vapor concentrations were above the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.01 (Table 8).
- Chloroform was detected in groundwater in PZ-1 and BLDG4-PIT-SSP, both located inside Building 4, above the risk-based target groundwater concentration (Tables 12 and 14).
- MIBK was detected in groundwater in PZ-1, MW-03, and BLDG4-PIT-SSP, all located inside Building 4; however, the concentrations were below the risk-based target groundwater concentration at PZ-1 and MW-03. At least one of the analyses at BLDG4-PIT-SSP exceeded the risk-based target groundwater concentration (Tables 12, 13, and 14).
- Ethylbenzene and TCE were detected in groundwater in MW-03, located inside Building 4; however, the concentrations were below the risk-based target groundwater concentration (Table 13).
- MIBK is a constituent of Building 4 operations and was detected in ambient air samples.

Methylene chloride and PCE

Methylene chloride and PCE concentrations from Building 4 subslab soil vapor samples were compared against criteria as discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 2).
- Subslab soil vapor concentrations exceeded the NYSDOH 90th percentile background indoor air concentrations, but were below the maximum background levels (Table 8).

- Methylene chloride exceeded the established NYSDOH air guideline value in one of three samples collected; however, PCE concentrations did not exceed the air guideline value (Table 8).
- Subslab soil vapor concentrations were above the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.1 but below the AF of 0.01 (Table 8).
- Methyl chloride was detected in groundwater at PZ-1 and BLDG4-PIT-SSP; however, the concentrations at PZ-1 were below the risk-based target groundwater concentration, while the concentrations at PZ-1 exceeded the risk-based target groundwater concentration (Tables 12 and 14).
- PCE was not detected in groundwater at PZ-1, MW-03, and BLDG4-PIT-SSP (Tables 12, 13, and 14).

Acrylonitrile and Benzene

Acrylonitrile and benzene concentrations from Building 4 subslab soil vapor samples were compared against criteria as discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 2).
- Benzene was below the NYSDOH 90th percentile and maximum background indoor air concentrations. Acrylonitrile does not have NYSDOH background values (Table 8).
- Subslab soil vapor concentrations for both constituents were above the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.01, but below the AF of 0.1 (Table 8).
- Benzene was detected in groundwater at MW-03 and BLDG4-PIT-SSP; however, the concentrations were below the risk-based target groundwater concentration (Tables 13 and 14).
- Acrylonitrile was not detected in groundwater at PZ-1, MW-03 and BLDG4-PIT-SSP (Tables 12, 13, and 14).

Cis-1,2-DCE and Xylenes

Cis-1,2-DCE and xylenes concentrations from Building 4 subslab soil vapor samples were compared against criteria as discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 2).
- Subslab soil vapor concentrations exceeded the NYSDOH 90th percentile and maximum background indoor air concentrations (Table 8).
- Cis-1,2-DCE and xylenes in subslab soil vapor samples were below the USEPA (2002) generic risk-based soil gas-to-indoor air screening levels at an AF of 0.1 (Table 8).
- Cis-1,2-DCE was detected in PZ-1, MW-03, and BLDG4-PIT-SSP, and xylenes (total) were detected in MW-01 and BLDG4-PIT-SSP; however, the concentrations were below the risk-based target groundwater concentration (Tables 12, 13, and 14).

1,1-DCA; 1,2-DCP; Chlorobenzene; MEK; and Toluene

1,1-DCA; 1,2-DCP; chlorobenzene; MEK; and toluene concentrations from Building 4 subslab soil vapor samples were compared against criteria as discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 2).
- Subslab soil vapor concentrations for all five of the compounds exceeded the NYSDOH 90th percentile background indoor air concentrations, while subslab soil vapor concentrations for 1,1-DCA; 1,2-DCP; and chlorobenzene exceeded the NYSDOH maximum background indoor air concentrations (Table 8).
- Subslab soil vapor concentrations were below the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.1 (Table 8).
- 1,1-DCA and MEK were detected in groundwater at PZ-1, MW-03, and BLDG4-PIT-SSP; however, the concentrations were below the risk-based target groundwater concentrations (Tables 12, 13, and 14).
- Chlorobenzene and toluene were detected in groundwater at MW-03 and BLDG4-PIT-SSP; however, the concentrations were below the risk-based target groundwater concentrations (Tables 13 and 14).
- 1,2-DCP was detected in groundwater at MW-03; however, the concentrations were below the risk-based target groundwater concentration (Table 13).

Carbon Disulfide and Chloromethane

Carbon disulfide and chloromethane concentrations from Building 4 subslab soil vapor sample were compared against criteria as discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 2).
- Subslab soil vapor concentrations did not exceed the NYSDOH 90th percentile or the maximum background indoor air concentrations, if available (Table 8).
- Subslab soil vapor concentrations were below the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.1 (Table 8).
- Carbon disulfide was detected in groundwater at PZ-1, MW-03, and BLDG4-PIT-SSP; however, the concentrations were below the risk-based target groundwater concentration (Tables 12, 13, and 14).
- Chloromethane was not detected in groundwater at PZ-1, MW-03, and BLDG4-PIT-SSP (Tables 12, 13, and 14).

Building 4 has a potential groundwater source area for several VOCs. Most of the VOCs detected in groundwater also were detected in the subslab soil vapor samples. However, some of the constituents detected also are part of the ongoing manufacturing processes in the building. Chloroform, ethylbenzene, MIBK, and TCE exceeded the USEPA (2002)

generic risk-based soil gas-to-indoor air screening level at an AF of 0.01. TCE and methylene chloride also exceeded the NYSDOH indoor air screening value.

Based on the soil sample results reported in the RFI addendum report (CH2M HILL 2008), the VOCs in soil sample location PZ-1 were low concentrations or not detected.

5.3.7 Tank Storage Area

One subslab sample (SG-9) was collected at the Tank Storage Area building (Figure 5). VOCs detected in subslab soil vapor above the site-specific outdoor air concentrations at the Tank Storage Area building were identified as COPIs in this vapor intrusion evaluation (Table 2). In addition, groundwater data for COPIs in PZ-3, which is located inside the Tank Storage Area building (Figure 6), were compared to generic groundwater screening levels (Table 15).

Chloroform and TCE

Chloroform and TCE concentrations from Tank Storage Area subslab soil vapor sample were compared against criteria as discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 2).
- Subslab soil vapor concentrations exceeded the NYSDOH 90th percentile and maximum background indoor air concentrations (Table 9).
- The concentration of TCE exceeds the established NYSDOH air guideline value (Table 9).
- Subslab soil vapor concentrations were above the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.1 and 0.01 (Table 9).
- Chloroform and TCE were not detected in groundwater at PZ-3 (Table 15).

1,2-DCP and PCE

1,2-DCP and PCE concentrations from Tank Storage Area subslab soil vapor sample were compared against criteria as discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 2).
- Subslab soil vapor concentrations exceeded the NYSDOH 90th percentile background indoor air concentrations, but concentrations were below the NYSDOH maximum background indoor air concentrations.
- PCE concentrations are below the established NYSDOH air guideline value (Table 9).
- Subslab soil vapor concentrations were below the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at a AF of 0.1 (Table 9).
- 1,2-Dichloropropane was detected in groundwater at PZ-3; however, the concentration was below the risk-based target groundwater concentration (Table 15).
- PCE was not detected in groundwater at PZ-3 (Table 15).

Benzene and Xylenes

Benzene and xylenes concentrations from Tank Storage Area subslab soil vapor sample were compared against criteria as discussed below.

- Subslab soil vapor concentrations exceeded the corresponding site-specific outdoor air concentrations (Table 2).
- Subslab soil vapor concentrations did not exceed the NYSDOH 90th percentile or the maximum background indoor air concentrations (Table 9).
- Subslab soil vapor concentrations were below the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.1 (Table 9).
- Benzene and xylenes were not detected in groundwater at PZ-3 (Table 15).

The Tank Storage Area has a potential groundwater source area for 1,2-DCP. This compound also was detected in the subslab soil vapor sample, and while it exceeded the NYSDOH 90th percentile background indoor air concentrations, it did not have any other exceedances.

Chloroform and TCE exceeded the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.01. TCE also exceeded the NYSDOH indoor air screening value. The adjacent Building 4 has a potential groundwater source area for VOCs.

Based on the soil sample results reported in the RFI addendum report (CH2M HILL 2008), the VOCs in soil sample location PZ-3 were low concentrations or not detected.

SECTION 6

Summary and Recommendations

Subslab soil vapor sampling has been conducted to evaluate the potential subsurface-to-indoor air vapor intrusion pathway at Buildings 2-A, 2-B, 2, 1, 3, 4, MPA Process Area, and Tank Storage Area. A number of VOCs were detected in the subslab soil vapor samples at each building. A review of these detections indicated several constituents were above site-specific background levels at each building. In addition, some soil vapor concentrations were shown to exceed statewide background indoor air concentrations and USEPA (2002) generic risk-based soil gas-to-indoor air screening levels at an AF of 0.01 or 0.1.

Some VOCs were detected beneath all of the buildings and included chloroform, PCE, and TCE. Chloroform and MIBK also were detected in the soil vapor samples at Building 4 (Table 2).

- Buildings 2-A and 2-B: Several VOCs are present in subslab soil vapor under Buildings 2-A and 2-B. Of specific interest is acrylonitrile, as the subslab soil vapor concentration exceeded the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.01.
- Building 2: Chloroform and TCE subslab soil vapor concentrations were above the USEPA (2002) generic risk-based soil gas-to-indoor air screening levels at an AF of 0.01.
- MPA Process Area: Acrylonitrile, benzene, chloroform, and TCE had levels in subslab soil gas samples exceeding the USEPA (2002) generic risk-based soil gas-to-indoor air screening levels at an AF of 0.01. In addition, TCE in subslab soil vapor exceeded the NYSDOH indoor air screening level of 5 $\mu g/m^3$.
- Building 1: Chloroform and TCE subslab soil vapor concentrations were above the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.01.
- Building 3: Chloroform and TCE subslab soil vapor levels were above the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.01.
- Building 4: Chloroform, ethylbenzene, MIBK, and TCE exceeded the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.01. TCE and methylene chloride in subslab soil vapor also exceeded the NYSDOH indoor air screening value.
- Tank Storage Area: 1,2-DCP was detected in the subslab soil vapor sample, and while it exceeded the NYSDOH 90th percentile background indoor air concentrations, it did not have any other exceedances of risk-based criteria. Chloroform and TCE exceeded the USEPA (2002) generic risk-based soil gas-to-indoor air screening level at an AF of 0.01. TCE in subslab soil vapor also exceeded the NYSDOH indoor air screening value and may have migrated.

As discussed in NYSDOH (2006) and other state and federal vapor intrusion guidance documents, elevated subslab soil gas concentrations do not necessarily mean vapors are

intruding into a building, but rather suggest the potential exists. Based on the results presented in this report and following the NYSDOH (2006) vapor intrusion evaluation guidance and the work plan previously submitted to NYSDEC (CH2M HILL 2007), additional indoor air sampling was performed for the buildings detailed in this report. This sampling included concurrent indoor air, outdoor air, and subslab vapor sampling, and the results were presented in the *Soil Vapor Investigation Report* submitted to NYSDEC on February 8, 2010 (CH2M HILL 2010). Additional investigation activities also have been performed in other media, including soil and groundwater, after developing the 2007 work plan. Based on this additional information, a revised work plan for continued vapor intrusion investigation will be prepared and submitted to NYSDEC for review.

It should be noted that comments were received from NYSDEC in June 2010 on the *Soil Vapor Investigation Report (*CH2M HILL 2010) referenced above, after a draft of this report had been prepared. The NYSDEC comments stated that use of USEPA RSLs, attenuation factors, and other USEPA-recommended risk-based screening levels is not part of the NYSDOH VI guidance (NYSDEC 2010). NYSDEC requested that USEPA methodologies not be included in future VI reports for this facility. Because this report was already in preparation, changes were not made to delete the USEPA risk-based results. However, it is important to note that the conclusions of this report would be the same if the USEPA risk-based criteria were not used in the evaluation. The conclusions from this evaluation are that all of the buildings included in this report would have additional sampling done and no buildings were excluded from further evaluation based on the USEPA risk-based screening levels.

SECTION 7

References

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Tables

TABLE 1
Subslab Soil Vapor Sample Results - Buildings 1 and 2
Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Field Sample ID		**Outside**	**Building 2-B**	**Building 2**		**MPA Process Area (Building 2)**		**Building 1**
Location ID		**WAT-SG-B2-042308**	**WAT-SG-1-042308**	**WAT-SG-2-042308**	**WAT-SG-DUP-042308**	**WAT-SG-3-042308**	**WAT-SG-3a-042308**	**WAT-SG-4-042308**
Sample Date		**SG-B2**	**SG-1**	**SG-2**	**SG-2**	**SG-3**	**SG-3A**	**SG-4**
Sample Type		**4/23/2008**	**4/23/2008**	**4/23/2008**	**4/23/2008**	**4/23/2008**	**4/23/2008**	**4/23/2008**
Lab Sample ID		**Site-Specific Ambient Air**	**Normal**	**Normal**	**Duplicate**	**Normal**	**Normal**	**Normal**
Dilution		**P0801215-001**	**P0801215-002**	**P0801215-003**	**P0801215-007**	**P0801215-004**	**P0801215-005**	**P0801215-006**
Matrix		**1.52**	**4.13**	**3.4**	**12.5**	**12.3**	**2.92**	**4.13**
Parameter	**CAS #**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**
Volatile Organics, by Method TO15 (UG/M3)								
1,1,1-TRICHLOROETHANE	71-55-6	0.15 U	0.41 U	0.34 U	1.3 U	1.2 U	0.29 U	12
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.15 U	0.41 U	0.34 U	1.3 U	1.2 U	0.29 U	0.41 U
1,1,2-TRICHLOROETHANE	79-00-5	0.15 U	0.41 U	0.34 U	1.3 U	1.2 U	0.29 U	0.41 U
1,1-DICHLOROETHANE	75-34-3	0.15 U	0.41 U	0.34 U	1.3 U	1.2 U	0.29 U	2.1
1,1-DICHLOROETHENE	75-35-4	0.15 U	0.41 U	4.2	4	1.2 U	0.29 U	0.41 U
1,2-DICHLOROETHANE	107-06-2	0.15 U	0.41 U	2	2.1	1.2 U	0.29 U	0.41 U
1,2-DICHLOROPROPANE	78-87-5	0.15 U	0.41 U	4	3.6	1.2 U	0.29 U	3.9
ACETONE	67-64-1	17 U	17 U	180	250 U	130 U	56 U	17 U
ACRYLONITRILE	107-13-1	1.3	5.9	1.2 J	6.3 U	27	6.9	0.86 J
BENZENE	71-43-2	0.57	0.45	0.93	1.3 U	90	13	0.81
BROMODICHLOROMETHANE	75-27-4	0.15 U	0.41 U	0.34 U	1.3 U	1.2 U	0.29 U	0.41 U
BROMOFORM	75-25-2	0.76 U	2.1 U	1.7 U	6.3 U	6.2 U	1.5 U	2.1 U
BROMOMETHANE	74-83-9	0.15 U	0.41 U	0.34 U	1.3 U	1.2 U	0.29 U	0.41 U
CARBON DISULFIDE	75-15-0	0.71 U	1.2 U	10	8.6 U	34	9.5	2.2 U
CARBON TETRACHLORIDE	56-23-5	0.27	0.29 J	2.1	1.6	1.2 U	0.29 U	0.41 U
CHLOROBENZENE	108-90-7	0.15 U	0.41 U	0.34 U	1.3 U	1.2 U	0.29 U	0.41 U
CHLOROETHANE	75-00-3	0.15 U	0.41 U	0.34 U	1.3 U	1.2 U	0.72	0.41 U
CHLOROFORM	67-66-3	1.1	2	240	260	25	3.6	440
CHLOROMETHANE	74-87-3	0.29	1.3	0.34 U	1.3 U	1 J	0.39	0.62
cis-1,2-DICHLOROETHYLENE	156-59-2	0.15 U	0.41 U	0.34 U	1.3 U	1.2 U	1.4	0.41 U
cis-1,3-DICHLOROPROPENE	10061-01-5	0.76 U	2.1 U	1.7 U	6.3 U	6.2 U	1.5 U	2.1 U
DIBROMOCHLOROMETHANE	124-48-1	0.15 U	0.41 U	0.34 U	1.3 U	1.2 U	0.29 U	0.41 U
ETHYLBENZENE	100-41-4	0.24 J	2.1 U	0.54 J	6.3 U	0.91 J	0.43 J	0.61 J
METHYL ETHYL KETONE (2-BUTANONE)	78-93-3	3.1	3.9 U	4.7 U	2.5 U	2.8 U	4.3 U	3.7 U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108-10-1	120	410	47 J	15 J	820	240	100
METHYLENE CHLORIDE	75-09-2	0.39 J	0.46 J	1.1 J	1.6 J	1.3 J	0.43 J	0.39 J
STYRENE	100-42-5	0.76 U	2.1 U	0.3 J	6.3 U	6.2 U	0.4 J	2.1 U
TETRACHLOROETHENE (PCE)	127-18-4	0.15 U	1.1	32	28	8.9	5.4	17
TOLUENE	108-88-3	1.2 U	1.5 U	5.7 J	2.1 U	16	26	5.8
TRANS-1,2-DICHLOROETHENE	156-60-5	0.15 U	0.41 U	0.34 U	1.3 U	1.2 U	0.29 U	0.41 U
TRANS-1,3-DICHLOROPROPENE	10061-02-6	0.76 U	2.1 U	1.7 U	6.3 U	6.2 U	1.5 U	2.1 U
TRICHLOROETHENE (TCE)	79-01-6	0.15 U	1.1	3.6	3.5	2.9	10	2.5
VINYL CHLORIDE	75-01-4	0.15 U	0.41 U	0.34 U	1.3 U	1.2 U	0.29 U	0.41 U
XYLENE, m,p-	108-38-3/1	0.91	0.77 J	3.3	6.3 U	4.4 J	2.3	4.3
XYLENE, o-	95-47-6	0.39 J	0.27 J	1.1 J	6.3 U	1.5 J	0.83 J	2.9
EPICHLOROHYDRIN	106-89-8	NF	NF	NF	NF	NF	NF	NF

Notes:
All compounds and criteria are in µg/m^3
NA = not applicable
NF = Not found by laboratory library search
J = estimated value
U = compound not detect at or above method detection limit
Shading in gray indicates that the constituent was detected above the site-specific ambient air concentration

TABLE 2
Subslab Soil Vapor Sample Results - Buildings 3, 4, and Tank Storage Area
Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area
Former Hampshire Chemical Corp. Facility, Waterloo, New York

		Outside	Building 3			Building 4			Tank Storage
Field Sample ID		**WAT-SG-B4-042408**	**WAT-SG-5-042408**	**WAT-SG-5a-042408**	**WAT-SG-6-042408**	**WAT-SG-7-042408**	**WAT-SG-7a-042408**	**WAT-SG-8-042408**	**WAT-SG-9-042408**
Location ID		**SG-B4**	**SG-5**	**SG-5a**	**SG-6**	**SG-7**	**SG-7A**	**SG-8**	**SG-9**
Sample Date		**4/24/2008**	**4/24/2008**	**4/24/2008**	**4/24/2008**	**4/24/2008**	**4/24/2008**	**4/24/2008**	**4/24/2008**
Sample Type		**Site-Specific Ambient Air**	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**
Lab Sample ID		**P0801215-009**	**P0801215-010**	**P0801215-011**	**P0801215-012**	**P0801215-013**	**P0801215-014**	**P0801215-015**	**P0801215-016**
Dilution		**1.57**	**9.33**	**4.13**	**41.33**	**203.75**	**1220**	**16.9**	**4.88**
Matrix		**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**	**AIR**
Parameter	**CAS #**								
Volatile Organics, by Method TO15 (UG/M3)									
1,1,1-TRICHLOROETHANE	71-55-6	0.16 U	0.93 U	0.41 U	4.1 U	20 U	120 U	1.7 U	0.49 U
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.16 U	0.93 U	0.41 U	4.1 U	20 U	120 U	1.7 U	0.49 U
1,1,2-TRICHLOROETHANE	79-00-5	0.16 U	0.93 U	0.41 U	4.1 U	20 U	120 U	1.7 U	0.49 U
1,1-DICHLOROETHANE	75-34-3	0.16 U	1.4	0.41 U	4.1 U	84	120 U	1.7 U	0.49 U
1,1-DICHLOROETHENE	75-35-4	0.11 J	0.93 U	0.41 U	4.1 U	20 U	120 U	1.7 U	0.49 U
1,2-DICHLOROETHANE	107-06-2	0.16 U	0.93 U	0.41 U	4.1 U	20 U	120 U	1.7 U	0.49 U
1,2-DICHLOROPROPANE	78-87-5	0.16 U	0.93 U	0.41 U	4.1 U	52	120 U	2.1	15
ACETONE	67-64-1	35	10 U	12 U	26 U	1800 U	1600 U	230 U	13 U
ACRYLONITRILE	107-13-1	1.1	4.7 U	2.1 U	21 U	100 U	610 U	3.3 J	2.4 U
BENZENE	71-43-2	0.48	0.93 U	0.41 U	4.1 U	20 U	120 U	5	0.66
BROMODICHLOROMETHANE	75-27-4	0.16 U	0.93 U	0.43	4.1 U	20 U	120 U	1.7 U	0.49 U
BROMOFORM	75-25-2	0.79 U	4.7 U	2.1 U	21 U	100 U	610 U	8.5 U	2.4 U
BROMOMETHANE	74-83-9	0.16 U	0.93 U	0.41 U	4.1 U	20 U	120 U	1.7 U	0.49 U
CARBON DISULFIDE	75-15-0	0.92 U	2.4 U	20	2600	310 U	3800	43	3.8 U
CARBON TETRACHLORIDE	56-23-5	0.38	0.93 U	0.55	4.1 U	20 U	120 U	1.7 U	0.49 U
CHLOROBENZENE	108-90-7	0.16 U	0.93 U	0.41 U	4.1 U	20 U	120 U	2.3	0.49 U
CHLOROETHANE	75-00-3	0.086 J	0.93 U	0.41 U	4.1 U	20 U	120 U	1.7 U	0.49 U
CHLOROFORM	67-66-3	1.3	1100	450	76	24000	1300	170	270
CHLOROMETHANE	74-87-3	0.56	0.93 U	0.41 U	4.1 U	20 U	120 U	2.1	0.51
cis-1,2-DICHLOROETHYLENE	156-59-2	0.16 U	0.93 U	2.1	4.1 U	19 J	120 U	1.7 U	0.49 U
cis-1,3-DICHLOROPROPENE	10061-01-5	0.79 U	4.7 U	2.1 U	21 U	100 U	610 U	8.5 U	2.4 U
DIBROMOCHLOROMETHANE	124-48-1	0.16 U	0.93 U	0.41 U	4.1 U	20 U	120 U	1.7 U	0.49 U
ETHYLBENZENE	100-41-4	0.25 J	4.7 U	2.1 U	21 U	870	430 J	1.6 J	2.4 U
METHYL ETHYL KETONE (2-BUTANONE)	78-93-3	0.98 U	0.97 U	1.3 U	21 U	17 U	610 U	32	1.3 U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108-10-1	94	3 U	2.3	110	12000	86000	380 J	11 J
METHYLENE CHLORIDE	75-09-2	0.36 J	4.7 U	0.29 J	2.6 J	35 J	240 J	2.3 J	0.31 J
STYRENE	100-42-5	0.12 J	4.7 U	2.1 U	21 U	100 U	610 U	8.5 U	2.4 U
TETRACHLOROETHENE (PCE)	127-18-4	0.16 U	3.8	4.1	3.4 J	26	120 U	3	6.4
TOLUENE	108-88-3	13	0.85 U	0.55 U	4.8 U	72 U	380 U	130	1.6 U
TRANS-1,2-DICHLOROETHENE	156-60-5	0.16 U	0.93 U	0.41 U	4.1 U	20 U	120 U	1.7 U	0.49 U
TRANS-1,3-DICHLOROPROPENE	10061-02-6	0.79 U	4.7 U	2.1 U	21 U	100 U	610 U	8.5 U	2.4 U
TRICHLOROETHENE (TCE)	79-01-6	0.45	2.4	20	4.1 U	54	120 U	1.7	520
VINYL CHLORIDE	75-01-4	0.16 U	0.93 U	0.41 U	4.1 U	20 U	120 U	1.7 U	0.49 U
XYLENE, m,p-	108-38-3/1	0.83	4.7 U	0.58 J	7.2 J	4600	8600	15	1.3 J
XYLENE, o-	95-47-6	0.21 J	4.7 U	0.27 J	2.9 J	950	1700	4.3 J	0.54 J
EPICHLOROHYDRIN	106-89-8	NF	NF	NF	NF	NF	NF	NF	NF

Notes:
All compounds and criteria are in µg/m3
NA = not applicable
NF = Not found by laboratory library search
J = estimated value
U = compound not detect at or above method detection limit
Shading in gray indicates that the constituent was detected above the site specific ambient air concentration

TABLE 3
Building 2-B - COPIs Compared to NY State Background and USEPA Health Protective Levels
Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area
Former Hampshire Chemical Corp. Facility, Waterloo, New York

								Background Indoor Air Value from NYSDOH 2003* (µg/m3)							
COPI	**CAS #**	**Number of Soil Gas Analyses**	**Number of Soil Gas Detects**	**Minimum Detected Concentration (µg/m3)**	**Maximum Detected Concentration (MDC) (µg/m3)**	**Mean Detected Concentration (µg/m3)**	**Mean Detected Concentration (Attenuation Factor - 0.01) (µg/m3)**	**Minimum**	**90th Percentile**	**Maximum**	**NYSDOH Air Guideline Value** (µg/m3)**	**Target Shallow Gas Concentration (Attenuation Factor - 0.1) (µg/m3)**	**MDC Exceeds?**	**Target Shallow Gas Concentration (Attenuation Factor - 0.01) (µg/m3)**	**MDC Exceeds?**
Summary Statistics Presented for COPIs Reported in Building 2-B (2007)															
ACRYLONITRILE	107-13-1	1	1	5.9	5.9	5.9	0.059	NA	NA	NA	NA	0.36	**Yes**	3.6	**Yes**
CARBON TETRACHLORIDE	56-23-5	1	1	0.29 J	0.29 J	0.29	0.0029	<0.25	0.8	4.2	NA	1.6	No	16	No
CHLOROFORM	67-66-3	1	1	2	2	2	0.02	<0.25	1.4	25	NA	1.1	**Yes**	11	No
CHLOROMETHANE	74-87-3	1	1	1.3	1.3	1.3	0.013	<0.25	3.3	260	NA	24	No	240	No
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108-10-1	1	1	410	410	410	4.1	<0.25	2.2	36	NA	800	No	8000	No
METHYLENE CHLORIDE	75-09-2	1	1	0.46 J	0.46 J	0.46	0.0046	<0.25	22	2100	60	52	No	520	No
TETRACHLOROETHENE (PCE)	127-18-4	1	1	1.1	1.1	1.1	0.011	<0.25	2.9	51	100	8.1	No	81	No
TRICHLOROETHENE (TCE)	79-01-6	1	1	1.1	1.1	1.1	0.011	<0.25	0.5	25	5	0.22	**Yes**	2.2	No

Notes:
* = NYSDOH. 2003. Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003. Revised November 14, 2005.
** = NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York. Table 3-1 - Air guideline values derived by the NYSDOH. October 2006.
Target shallow Gas Concentration = U.S. Environmental Protection Agency (USEPA). 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November 2002.
MDC = Maximum detected concentration
COPI = chemical of potential interest
J = estimated value
N/A = Not applicable

TABLE 4
Building 2 - COPIs Compared to NY State Background and USEPA Health Protective Levels
Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area
Former Hampshire Chemical Corp. Facility, Waterloo, New York

COPI	CAS #	Number of Soil Gas Analyses	Number of Soil Gas Detects	Minimum Detected Concentration (µg/m3)	Maximum Detected Concentration (MDC) (µg/m3)	Mean Detected Concentration (µg/m3)	Mean Detected Concentration (Attenuation Factor - 0.01) (µg/m3)	Background Indoor Air Value from NYSDOH 2003* (µg/m3)			NYSDOH Air Guideline Value** (µg/m3)	Target Shallow Gas Concentration (Attenuation Factor - 0.1) (µg/m3)	MDC Exceeds?	Target Shallow Gas Concentration (Attenuation Factor - 0.01) (µg/m3)	MDC Exceeds?
								Minimum	90th Percentile	Maximum					
Summary Statistics Presented for COPIs Reported in Building 2 (2007)															
1,1-DICHLOROETHENE	75-35-4	1	1	4.2	4.2	4.2	0.042	<0.25	<0.25	430	NA	2000	No	20000	No
1,2-DICHLOROETHANE	107-06-2	1	1	2.1	2.1	2.1	0.021	<0.25	<0.25	4.9	NA	0.94	**Yes**	9.4	No
1,2-DICHLOROPROPANE	78-87-5	1	1	4	4	4	0.04	<0.25	<0.25	34	NA	40	No	400	No
ACETONE	67-64-1	1	1	180	180	180	1.8	<0.25	110	690	NA	3500	No	35000	No
BENZENE	71-43-2	1	1	0.93	0.93	0.93	0.0093	<0.25	15	460	NA	3.1	No	31	No
CARBON DISULFIDE	75-15-0	1	1	10	10	10	0.1	NA	NA	NA	NA	7000	No	70000	No
CARBON TETRACHLORIDE	56-23-5	1	1	2.1	2.1	2.1	0.021	<0.25	0.8	4.2	NA	1.6	**Yes**	16	No
CHLOROFORM	67-66-3	1	1	260	260	260	2.6	<0.25	1.4	25	NA	1.1	**Yes**	11	**Yes**
ETHYLBENZENE	100-41-4	1	1	0.54 J	0.54 J	0.54	0.0054	<0.25	7.3	340	NA	22	No	220	No
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108-10-1	1	1	47 J	47 J	47	0.47	<0.25	2.2	36	NA	800	No	8000	No
METHYLENE CHLORIDE	75-09-2	1	1	1.6 J	1.6 J	1.6	0.016	<0.25	22	2100	60	52	No	520	No
TETRACHLOROETHENE (PCE)	127-18-4	1	1	32	32	32	0.32	<0.25	2.9	51	100	8.1	**Yes**	81	No
TOLUENE	108-88-3	1	1	5.7 J	5.7 J	5.7	0.057	<0.25	58	510	NA	4000	No	40000	No
TRICHLOROETHENE (TCE)	79-01-6	1	1	3.6	3.6	3.6	0.036	<0.25	0.5	25	5	0.22	**Yes**	2.2	**Yes**
XYLENE, m,p-	108-38-3/1	1	1	3.3	3.3	3.3	0.033	<0.25	12	550	NA	70000	No	700000	No
XYLENE, o-	95-47-6	1	1	1.1 J	1.1 J	1.1	0.011	<0.25	7.6	310	NA	70000	No	700000	No

Notes:
* = NYSDOH. 2003. Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003. Revised November 14, 2005.
** = NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York. Table 3-1 - Air guideline values derived by the NYSDOH. October 2006.
Target shallow Gas Concentration = U.S. Environmental Protection Agency (USEPA). 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November 2002.
MDC = Maximum detected concentration
COPI = chemical of potential interest
J = estimated value
N/A = Not applicable

TABLE 5
MPA Process Area (Building 2) - COPIs Compared to NY State Background and USEPA Health Protective Levels
Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area
Former Hampshire Chemical Corp. Facility, Waterloo, New York

COPI	CAS #	Number of Soil Gas Analyses	Number of Soil Gas Detects	Minimum Detected Concentration (µg/m3)	Maximum Detected Concentration (MDC) (µg/m3)	Mean Detected Concentration (µg/m3)	Mean Detected Concentration (Attenuation Factor - 0.01) (µg/m3)	Background Indoor Air Value from NYSDOH 2003* (µg/m3)			NYSDOH Air Guideline Value** (µg/m3)	Target Shallow Gas Concentration (Attenuation Factor - 0.1) (µg/m3)	MDC Exceeds?	Target Shallow Gas Concentration (Attenuation Factor - 0.01) (µg/m3)	MDC Exceeds?
								Minimum	90th Percentile	Maximum					
Summary Statistics Presented for COPIs Reported in MPA Process Area (Building 2) (2007)															
ACRYLONITRILE	107-13-1	2	2	6.9	27	16.95	0.1695	NA	NA	NA	NA	0.36	**Yes**	3.6	**Yes**
BENZENE	71-43-2	2	2	13	90	51.5	0.515	<0.25	15	460	NA	3.1	**Yes**	31	**Yes**
CARBON DISULFIDE	75-15-0	2	2	9.5	34	21.75	0.2175	NA	NA	NA	NA	7000	No	70000	No
CHLOROETHANE	75-00-3	2	1	0.72	0.72	0.72	0.0072	<0.25	<0.25	4.5	NA	100000	No	1000000	No
CHLOROFORM	67-66-3	2	2	3.6	25	14.3	0.143	<0.25	1.4	25	NA	1.1	**Yes**	11	**Yes**
CHLOROMETHANE	74-87-3	2	2	0.39	1 J	0.695	0.00695	<0.25	3.3	260	NA	24	No	240	No
cis-1,2-DICHLOROETHYLENE	156-59-2	2	1	1.4	1.4	1.4	0.014	<0.25	<0.25	7.4	NA	350	No	3500	No
ETHYLBENZENE	100-41-4	2	2	0.43 J	0.91 J	0.67	0.0067	<0.25	7.3	340	NA	22	No	220	No
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108-10-1	2	2	240	820	530	5.3	<0.25	2.2	36	NA	800	No	8000	No
METHYLENE CHLORIDE	75-09-2	2	2	0.43 J	1.3 J	0.865	0.00865	<0.25	22	2100	60	52	No	520	No
TETRACHLOROETHENE (PCE)	127-18-4	2	2	5.4	8.9	7.15	0.0715	<0.25	2.9	51	100	8.1	No	81	No
TOLUENE	108-88-3	2	2	16	26	21	0.21	<0.25	58	510	NA	4000	No	40000	No
TRICHLOROETHENE (TCE)	79-01-6	2	2	2.9	10	6.45	0.0645	<0.25	0.5	25	5	0.22	**Yes**	2.2	**Yes**
XYLENE, m,p-	108-38-3/1	2	2	2.3	4.4 J	3.35	0.0335	<0.25	12	550	NA	70000	No	700000	No
XYLENE, o-	95-47-6	2	2	0.83 J	1.5 J	1.165	0.01165	<0.25	7.6	310	NA	70000	No	700000	No

Notes:
* = NYSDOH. 2003. Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003. Revised November 14, 2005.
** = NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York. Table 3-1 - Air guideline values derived by the NYSDOH. October 2006.
Target shallow Gas Concentration = U.S. Environmental Protection Agency (USEPA). 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November 2002.
MDC = Maximum detected concentration
COPI = chemical of potential interest
J = estimated value
N/A = Not applicable

TABLE 6
Building 1 - COPIs Compared to NY State Background and USEPA Health Protective Levels
Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area
Former Hampshire Chemical Corp. Facility, Waterloo, New York

COPI	CAS #	Number of Soil Gas Analyses	Number of Soil Gas Detects	Minimum Detected Concentration (µg/m3)	Maximum Detected Concentration (MDC) (µg/m3)	Mean Detected Concentration (µg/m3)	Mean Detected Concentration (Attenuation Factor - 0.01) (µg/m3)	Background Indoor Air Value from NYSDOH 2003* (µg/m3)			NYSDOH Air Guideline Value** (µg/m3)	Target Shallow Gas Concentration (Attenuation Factor - 0.1) (µg/m3)	MDC Exceeds?	Target Shallow Gas Concentration (Attenuation Factor - 0.01) (µg/m3)	MDC Exceeds?
								Minimum	90th Percentile	Maximum					
Summary Statistics Presented for COPIs Reported in Building 1 (2007)															
1,1,1-TRICHLOROETHANE	71-55-6	1	1	12	12	12	0.12	<0.25	3.1	110	NA	22000	No	220000	No
1,1-DICHLOROETHANE	75-34-3	1	1	2.1	2.1	2.1	0.021	<0.25	<0.25	4.4	NA	5000	No	50000	No
1,2-DICHLOROPROPANE	78-87-5	1	1	3.9	3.9	3.9	0.039	<0.25	<0.25	34	NA	40	No	400	No
BENZENE	71-43-2	1	1	0.81	0.81	0.81	0.0081	<0.25	15	460	NA	3.1	No	31	No
CHLOROFORM	67-66-3	1	1	440	440	440	4.4	<0.25	1.4	25	NA	1.1	**Yes**	11	**Yes**
CHLOROMETHANE	74-87-3	1	1	0.62	0.62	0.62	0.0062	<0.25	3.3	260	NA	24	No	240	No
ETHYLBENZENE	100-41-4	1	1	0.61 J	0.61 J	0.61	0.0061	<0.25	7.3	340	NA	22	No	220	No
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108-10-1	1	1	100	100	100	1	<0.25	2.2	36	NA	800	No	8000	No
TETRACHLOROETHENE (PCE)	127-18-4	1	1	17	17	17	0.17	<0.25	2.9	51	100	8.1	**Yes**	81	No
TOLUENE	108-88-3	1	1	5.8	5.8	5.8	0.058	<0.25	58	510	NA	4000	No	40000	No
TRICHLOROETHENE (TCE)	79-01-6	1	1	2.5	2.5	2.5	0.025	<0.25	0.5	25	5	0.22	**Yes**	2.2	**Yes**
XYLENE, m,p-	108-38-3/1	1	1	4.3	4.3	4.3	0.043	<0.25	12	550	NA	70000	No	700000	No
XYLENE, o-	95-47-6	1	1	2.9	2.9	2.9	0.029	<0.25	7.6	310	NA	70000	No	700000	No

Notes:
* = NYSDOH. 2003. Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003. Revised November 14, 2005.
** = NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York. Table 3-1 - Air guideline values derived by the NYSDOH. October 2006.
Target shallow Gas Concentration = U.S. Environmental Protection Agency (USEPA). 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November 2002.
MDC = Maximum detected concentration
COPI = chemical of potential interest
J = estimated value
N/A = Not applicable

TABLE 7

Building 3 - COPIs Compared to NY State Background and USEPA Health Protective Levels

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility, Waterloo, New York

								Background Indoor Air Value from NYSDOH 2003* (µg/m3)							
COPI	**CAS #**	**Number of Soil Gas Analyses**	**Number of Soil Gas Detects**	**Minimum Detected Concentration (µg/m3)**	**Maximum Detected Concentration (MDC) (µg/m3)**	**Mean Detected Concentration (µg/m3)**	**Mean Detected Concentration (Attenuation Factor - 0.01) (µg/m3)**	**Minimum**	**90th Percentile**	**Maximum**	**NYSDOH Air Guideline Value** (µg/m3)**	**Target Shallow Gas Concentration (Attenuation Factor - .0.1) (µg/m3)**	**MDC Exceeds?**	**Target Shallow Gas Concentration (Attenuation Factor - 0.01) (µg/m3)**	**MDC Exceeds?**
Summary Statistics Presented for COPIs Reported in Building 3 (2007)															
1,1-DICHLOROETHANE	75-34-3	3	1	1.4	1.4	1.4	0.014	<0.25	<0.25	4.4	NA	5000	No	50000	No
BROMODICHLOROMETHANE	75-27-4	3	1	0.43	0.43	0.43	0.0043	NA	NA	NA	NA	1.4	No	14	No
CARBON DISULFIDE	75-15-0	3	2	20	2600	1310	13.1	NA	NA	NA	NA	7000	No	70000	No
CARBON TETRACHLORIDE	56-23-5	3	1	0.55	0.55	0.55	0.0055	<0.25	0.8	4.2	NA	1.6	No	16	No
CHLOROFORM	67-66-3	3	3	76	1100	542	5.42	<0.25	1.4	25	NA	1.1	**Yes**	11	**Yes**
cis-1,2-DICHLOROETHYLENE	156-59-2	3	1	2.1	2.1	2.1	0.021	<0.25	<0.25	7.4	NA	350	No	3500	No
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108-10-1	3	2	2.3	110	56.15	0.5615	<0.25	2.2	36	NA	800	No	8000	No
METHYLENE CHLORIDE	75-09-2	3	1	26 J	2.6 J	2.6	0.026	<0.25	22	2100	60	52	No	520	No
TETRACHLOROETHENE (PCE)	127-18-4	3	3	3.4 J	4.1	3.7667	0.0377	<0.25	2.9	51	100	8.1	No	81	No
TRICHLOROETHENE (TCE)	79-01-6	3	2	2.4	20	11.2	0.112	<0.25	0.5	25	5	0.22	**Yes**	2.2	**Yes**
XYLENE, m,p-	108-38-3/1	3	1	7.2 J	7.2	7.2	0.072	<0.25	12	550	NA	70000	No	700000	No
XYLENE, o-	95-47-6	3	2	0.27 J	2.9 J	1.585	0.01585	<0.25	7.6	310	NA	70000	No	700000	No

Notes:

* = NYSDOH. 2003. Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003. Revised November 14, 2005.

** = NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York. Table 3-1 - Air guideline values derived by the NYSDOH. October 2006.

Target shallow Gas Concentration = U.S. Environmental Protection Agency (USEPA). 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November 2002.

MDC = Maximum detected concentration

COPI = chemical of potential interest

J = estimated value

N/A = Not applicable

TABLE 8
Building 4 - COPIs Compared to NY State Background and USEPA Health Protective Levels
Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area
Former Hampshire Chemical Corp. Facility, Waterloo, New York

COPI	CAS #	Number of Soil Gas Analyses	Number of Soil Gas Detects	Minimum Detected Concentration (µg/m3)	Maximum Detected Concentration (MDC) (µg/m3)	Mean Detected Concentration (µg/m3)	Mean Detected Concentration (Attenuation Factor - 0.01) (µg/m3)	Background Indoor Air Value from NYSDOH 2003* (µg/m3)			NYSDOH Air Guideline Value** (µg/m3)	Target Shallow Gas Concentration (Attenuation Factor - 0.1) (µg/m3)	MDC Exceeds?	Target Shallow Gas Concentration (Attenuation Factor - 0.01) (µg/m3)	MDC Exceeds?
								Minimum	90th Percentile	Maximum					
Summary Statistics Presented for COPIs Reported in Building 4 (2007)															
1,1-DICHLOROETHANE	75-34-3	3	1	84	84	84	0.84	<0.25	<0.25	4.4	NA	5000	No	50000	No
1,2-DICHLOROPROPANE	78-87-5	3	2	2.1	52	27	0.27	<0.25	<0.25	34	NA	40	No	400	No
ACRYLONITRILE	107-13-1	3	1	3.3 J	3.3 J	3.3	0.033	NA	NA	NA	NA	0.36	**Yes**	3.6	No
BENZENE	71-43-2	3	1	5	5	5	0.05	<0.25	15	460	NA	3.1	**Yes**	31	No
CARBON DISULFIDE	75-15-0	3	2	43	3800	1922	19.22	NA	NA	NA	NA	7000	No	70000	No
CHLOROBENZENE	108-90-7	3	1	2.3	2.3	2.3	0.023	<0.25	<0.25	0.6	NA	600	No	6000	No
CHLOROFORM	67-66-3	3	3	170	24000	8490	84.9	<0.25	1.4	25	NA	1.1	**Yes**	11	**Yes**
CHLOROMETHANE	74-87-3	3	1	2.1	2.1	2.1	0.021	<0.25	3.3	260	NA	24	No	240	No
cis-1,2-DICHLOROETHYLENE	156-59-2	3	1	19 J	19 J	19	0.19	<0.25	<0.25	7.4	NA	350	No	3500	No
ETHYLBENZENE	100-41-4	3	3	1.6 J	870	434	4.34	<0.25	7.3	340	NA	22	**Yes**	220	**Yes**
METHYL ETHYL KETONE (2-BUTANONE)	78-93-3	3	1	32	32	32	0.32	<0.25	16	180	NA	10000	No	100000	No
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108-10-1	3	3	380 J	86000	32793	327.93	<0.25	2.2	36	NA	800	**Yes**	8000	**Yes**
METHYLENE CHLORIDE	75-09-2	3	3	2.3 J	240 J	92	0.92	<0.25	22	2100	60	52	**Yes**	520	No
TETRACHLOROETHENE (PCE)	127-18-4	3	2	3	26	15	0.15	<0.25	2.9	51	100	8.1	**Yes**	81	No
TOLUENE	108-88-3	3	1	130	130	130	1.3	<0.25	58	510	NA	4000	No	40000	No
TRICHLOROETHENE (TCE)	79-01-6	3	2	1.7	54	28	0.28	<0.25	0.5	25	5	0.22	**Yes**	2.2	**Yes**
XYLENE, m,p-	108-38-3/1	3	3	15	8600	4405	44.05	<0.25	12	550	NA	70000	No	700000	No
XYLENE, o-	95-47-6	3	3	4.3 J	1700	885	8.85	<0.25	7.6	310	NA	70000	No	700000	No

Notes:
* = NYSDOH. 2003. Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003. Revised November 14, 2005.
** = NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York. Table 3-1 - Air guideline values derived by the NYSDOH. October 2006.
MDC = Maximum detected concentration
Target shallow Gas Concentration = U.S. Environmental Protection Agency (USEPA). 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November 2002.
COPI = chemical of potential interest
J = estimated value
N/A = Not applicable

TABLE 9

Tank Storage Area - COPIs Compared to NY State Background and USEPA Health Protective Levels

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility, Waterloo, New York

								Background Indoor Air Value from NYSDOH 2003* (µg/m3)							
COPI	**CAS #**	**Number of Soil Gas Analyses**	**Number of Soil Gas Detects**	**Minimum Detected Concentration (µg/m3)**	**Maximum Detected Concentration (MDC) (µg/m3)**	**Mean Detected Concentration (µg/m3)**	**Mean Detected Concentration (Attenuation Factor - 0.01) (µg/m3)**	**Minimum**	**90th Percentile**	**Maximum**	**NYSDOH Air Guideline Value** (µg/m3)**	**Target Shallow Gas Concentration (Attenuation Factor - 0.1) (µg/m3)**	**MDC Exceeds?**	**Target Shallow Gas Concentration (Attenuation Factor - 0.01) (µg/m3)**	**MDC Exceeds?**
Summary Statistics Presented for COPIs Reported in Tank Storage Area (2007)															
1,2-DICHLOROPROPANE	78-87-5	1	1	15	15	15	0.15	<0.25	<0.25	34	NA	40	No	400	No
BENZENE	71-43-2	1	1	0.66	0.66	0.66	0.0066	<0.25	15	460	NA	3.1	No	31	No
CHLOROFORM	74-87-3	1	1	270	270	270	2.7	<0.25	1.4	25	NA	1.1	**Yes**	11	**Yes**
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108-10-1	1	1	11 J	11 J	11	0.11	<0.25	2.2	36	NA	800	No	8000	No
TETRACHLOROETHENE (PCE)	127-18-4	1	1	6.4	6.4	6.4	0.064	<0.25	2.9	51	100	8.1	No	81	No
TRICHLOROETHENE (TCE)	79-01-6	1	1	520	520	520	5.2	<0.25	0.5	25	5	0.22	**Yes**	2.2	**Yes**
XYLENE, m,p-	108-38-3/1	1	1	1.3 J	1.3 J	1.3	0.013	<0.25	12	550	NA	70000	No	700000	No
XYLENE, o-	95-47-6	1	1	0.54 J	0.54 J	0.54	0.0054	<0.25	7.6	310	NA	70000	No	700000	No

Notes:

* = NYSDOH. 2003. Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003. Revised November 14, 2005.

** = NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York. Table 3-1 - Air guideline values derived by the NYSDOH. October 2006.

Target shallow Gas Concentration = U.S. Environmental Protection Agency (USEPA). 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November 2002.

MDC = Maximum detected concentration

COPI = chemical of potential interest

J = estimated value

N/A = Not applicable

TABLE 10

MW-10 - COPIs Compared to Groundwater Screening Levels Protective of Human Health

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility, Waterloo, New York

COPI	CAS #	Number of Groundwater Detects	Number of Groundwater Analyses	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (MDC) (µg/L)	Mean Detected Concentration	Target Groundwater Concentration (µg/L)	MDC Exceeds?
Summary Statistics Presented for COPIs Reported in MW-10 (2002 - 2005)								
ACRYLONITRILE	107-13-1	0	4	N/A	N/A	N/A	8.5	N/A
CARBON TETRACHLORIDE	56-23-5	0	4	N/A	N/A	N/A	5	N/A
CHLOROFORM	67-66-3	0	4	N/A	N/A	N/A	80	N/A
CHLOROMETHANE	74-87-3	0	4	N/A	N/A	N/A	6.7	N/A
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108-10-1	2	4	73	260	166.5	14000	No
METHYLENE CHLORIDE	75-09-2	0	4	N/A	N/A	N/A	58	N/A
TETRACHLOROETHENE (PCE)	127-18-4	0	4	N/A	N/A	N/A	5	N/A
TRICHLOROETHENE (TCE)	79-01-6	0	4	N/A	N/A	N/A	5	N/A

Notes:

Target Groundwater Concentrations = U.S. Environmental Protection Agency (USEPA). 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November 2002. Table 2c Risk = 1x10^-6

N/A = Not applicable

J = estimated value

Screen interval = 4 - 14 ft

MW-10 is located outside Building 2-B. SG-1 is located inside Building 2-B.

TABLE 11

MW-11S - COPIs Compared to Groundwater Screening Levels Protective of Human Health

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility, Waterloo, New York

COPI	CAS #	Number of Groundwater Detects	Number of Groundwater Analyses	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (MDC) (µg/L)	Mean Detected Concentration	Target Groundwater Concentration (µg/L)	MDC Exceeds?
Summary Statistics Presented for COPIs Reported in MW-11S (2002 - 2005)								
1,1-DICHLOROETHANE	75-34-3	0	4	N/A	N/A	N/A	2200	N/A
BROMODICHLOROMETHANE	75-27-4	0	4	N/A	N/A	N/A	2.1	N/A
CARBON DISULFIDE	75-15-0	4	4	2.4	10.8	5.5	560	No
CARBON TETRACHLORIDE	56-23-5	0	4	N/A	N/A	N/A	5	N/A
CHLOROFORM	67-66-3	0	4	N/A	N/A	N/A	80	N/A
CIS-1,2-DICHLOROETHENE	156-59-2	0	4	N/A	N/A	N/A	210	N/A
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108-10-1	3	4	5.9 J	10	8.5	14000	No
METHYLENE CHLORIDE	75-09-2	0	4	N/A	N/A	N/A	58	N/A
TETRACHLOROETHENE (PCE)	127-18-4	0	4	N/A	N/A	N/A	5	N/A
TRICHLOROETHENE (TCE)	79-01-6	0	4	N/A	N/A	N/A	5	N/A
XYLENE, m p-	108-38-3/1	N/A	N/A	N/A	N/A	N/A	33000	N/A
XYLENES, o-	95-47-6	N/A	N/A	N/A	N/A	N/A	33000	N/A
XYLENES, total	1330-20-7	3	4	1.7	20.9	8.2	22000	No

Notes:

Target Groundwater Concentrations = U.S. Environmental Protection Agency (USEPA). 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November 2002. Table 2c Risk = 1x10^-6

N/A = Not applicable

J = estimated value

m,p-Xylenes was not reported. Total Xylenes were analyzed. The value shown for the m,p-xylenes and total xylenes is the most conservative value.

Screen interval = 4 - 14 ft

MW-11S is located outside Building 3. SG-5a is located inside Building 3.

TABLE 12

PZ-1 - COPIs Compared to Groundwater Screening Levels Protective of Human Health

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility, Waterloo, New York

COPI	CAS #	Number of Groundwater Detects	Number of Groundwater Analyses	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (MDC) (µg/L)	Mean Detected Concentration	Target Groundwater Concentration (µg/L)	MDC Exceeds?
Summary Statistics Presented for COPIs Reported in PZ-1 (2007)								
1,1-DICHLOROETHANE	75-34-3	1	1	1.49	1.49	1.49	2200	No
1,2-DICHLOROPROPANE	78-87-5	0	1	N/A	N/A	N/A	35	N/A
ACRYLONITRILE	107-13-1	0	1	N/A	N/A	N/A	8.5	N/A
BENZENE	71-43-2	0	1	N/A	N/A	N/A	5	N/A
CARBON DISULFIDE	75-15-0	1	1	1.56	1.56	1.56	560	No
CHLOROBENZENE	108-90-7	0	1	N/A	N/A	N/A	390	N/A
CHLOROFORM	67-66-3	1	1	101	101	101.0	80	Yes
CHLOROMETHANE	74-87-3	0	1	N/A	N/A	N/A	6.7	N/A
CIS-1,2-DICHLOROETHENE	156-59-2	1	1	18.6	18.6	18.6	210	No
ETHYLBENZENE	100-41-4	0	1	N/A	N/A	N/A	700	N/A
METHYL ETHYL KETONE (2-BUTANONE)	78-93-3	1	1	3.56 J	3.56 J	3.56	440000	No
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108-10-1	1	1	8070 J	8070 J	8070	14000	No
METHYLENE CHLORIDE	75-09-2	1	1	21.6	21.6	21.6	58	No
TETRACHLOROETHENE (PCE)	127-18-4	0	1	N/A	N/A	N/A	5	N/A
TOLUENE	108-88-3	0	1	N/A	N/A	N/A	1500	N/A
TRICHLOROETHENE (TCE)	79-01-6	0	1	N/A	N/A	N/A	5	N/A
XYLENES, m,p-	108-38-3/1	N/A	N/A	N/A	N/A	N/A	22000	N/A
XYLENES, o-	95-47-6	N/A	N/A	N/A	N/A	N/A	33000	N/A
XYLENES, total	1330-20-7	0	1	N/A	N/A	N/A	22000	N/A

Notes:

Target Groundwater Concentrations = U.S. Environmental Protection Agency (USEPA). 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November 2002. Table 2c Risk = 1x10^-6

N/A = Not applicable

J = estimated value

m,p-Xylenes was not reported. Total Xylenes were analyzed. The value shown for the m,p-xylenes and total xylenes is the most conservative value.

Screen interval = 9 - 9 ft

PZ-1 is located inside Building 4. SG-7 is located near this PZ-1.

TABLE 13

MW-03 - COPIs Compared to Groundwater Screening Levels Protective of Human Health

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility, Waterloo, New York

COPI	CAS #	Number of Groundwater Detects	Number of Groundwater Analyses	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (MDC) (µg/L)	Mean Detected Concentration	Target Groundwater Concentration (µg/L)	MDC Exceeds?
Summary Statistics Presented for COPIs Reported in MW-03 (2004 - 2007)								
1,1-DICHLOROETHANE	75-34-3	3	3	1.79 J	2.21	2.0	2200	No
1,2-DICHLOROPROPANE	78-87-5	1	3	1.77	1.77	1.77	35	No
ACRYLONITRILE	107-13-1	0	3	N/A	N/A	N/A	8.5	N/A
BENZENE	71-43-2	3	3	1.75	1.97	1.8	5	No
CARBON DISULFIDE	75-15-0	3	3	1.34	13.2	6.0	560	No
CHLOROBENZENE	108-90-7	3	3	5.49 J	5.99	5.7	390	No
CHLOROFORM	67-66-3	0	3	N/A	N/A	N/A	80	N/A
CHLOROMETHANE	74-87-3	0	3	N/A	N/A	N/A	6.7	N/A
CIS-1,2-DICHLOROETHENE	156-59-2	3	3	1.97 J	9.31	6.0	210	No
ETHYLBENZENE	100-41-4	3	3	1	1.13	1.0	700	No
METHYL ETHYL KETONE (2-BUTANONE)	78-93-3	3	3	4.9 J	28.8 J	15.4	440000	No
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108-10-1	3	3	4.58 J	29.6 J	14.7	14000	No
METHYLENE CHLORIDE	75-09-2	0	3	N/A	N/A	N/A	58	N/A
TETRACHLOROETHENE (PCE)	127-18-4	0	3	N/A	N/A	N/A	5	N/A
TOLUENE	108-88-3	3	3	10.2 J	35.7 J	26.4	1500	No
TRICHLOROETHENE (TCE)	79-01-6	1	3	0.292 J	0.292 J	0.3	5	No
XYLENES, m,p-	108-38-3/1	N/A	N/A	N/A	N/A	N/A	22000	N/A
XYLENES, o-	95-47-6	N/A	N/A	N/A	N/A	N/A	33000	N/A
XYLENES, total	1330-20-7	3	3	5.05	6.12	N/A	22000	N/A

Notes:

Target Groundwater Concentrations = U.S. Environmental Protection Agency (USEPA). 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November 2002. Table 2c Risk = 1x10^-6

N/A = Not applicable

J = estimated value

m,p-Xylenes was not reported. Total Xylenes were analyzed. The value shown for the m,p-xylenes and total xylenes is the most conservative value.

Screen interval = 3 - 16.5 ft (2004 & 2005); 14 - 14 ft (2007

MW-03 is located inside Building 4. SG-7a is located near MW-03.

TABLE 14

BLDG4-PIT-SSP - COPIs Compared to Groundwater Screening Levels Protective of Human Health

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility, Waterloo, New York

COPI	CAS #	Number of Groundwater Detects	Number of Groundwater Analyses	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (MDC) (µg/L)	Mean Detected Concentration	Target Groundwater Concentration (µg/L)	MDC Exceeds?
Summary Statistics Presented for COPIs Reported in BLDG4-PIT-SSP (2002 - 2007)								
1,1-DICHLOROETHANE	75-34-3	2	4	0.556 J	2.47 J	1.5	2200	No
1,2-DICHLOROPROPANE	78-87-5	0	4	N/A	N/A	N/A	35	N/A
ACRYLONITRILE	107-13-1	0	4	N/A	N/A	N/A	8.5	N/A
BENZENE	71-43-2	1	4	0.208 J	0.208 J	0.208	5	No
CARBON DISULFIDE	75-15-0	4	4	14.1	123	46	560	No
CHLOROBENZENE	108-90-7	2	4	0.168 J	15.8 J	8.0	390	No
CHLOROFORM	67-66-3	4	4	3.05	611	184	80	Yes
CHLOROMETHANE	74-87-3	0	4	N/A	N/A	N/A	6.7	N/A
CIS-1,2-DICHLOROETHENE	156-59-2	1	4	1.25	1.25	1.25	210	No
ETHYLBENZENE	100-41-4	0	4	N/A	N/A	N/A	700	N/A
METHYL ETHYL KETONE (2-BUTANONE)	78-93-3	3	4	38.6	284	181	440000	No
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108-10-1	4	4	31.8	25500	7233	14000	No
METHYLENE CHLORIDE	75-09-2	2	4	16	98.5	57	58	No
TETRACHLOROETHENE (PCE)	127-18-4	0	4	N/A	N/A	N/A	5	N/A
TOLUENE	108-88-3	4	4	2.03	158 J	44	1500	No
TRICHLOROETHENE (TCE)	79-01-6	0	4	N/A	N/A	N/A	5	N/A
XYLENE, m p-	108-38-3/1	N/A	N/A	N/A	N/A	N/A	22000	N/A
XYLENES, o-	95-47-6	N/A	N/A	N/A	N/A	N/A	33000	N/A
XYLENES, total	1330-20-7	1	4	0.458 J	0.458 J	0.46	22000	No

Notes:

Target Groundwater Concentrations = U.S. Environmental Protection Agency (USEPA). 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November 2002. Table 2c Risk = 1x10^-6

N/A = Not applicable

J = estimated value

m,p-Xylenes was not reported. Total Xylenes were analyzed. The value shown for the m,p-xylenes and total xylenes is the most conservative value.

Screen interval = 0 - 0.5 ft (2005); 2.67 - 2.67 ft (2007)

BLDG4-PIT SSP is a monitoring location inside Building 4. SG-7a was collected from a location near this BLDG4-PIT-SSP.

TABLE 15

PZ-3 - COPIs Compared to Groundwater Screening Levels Protective of Human Health

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility, Waterloo, New York

COPI	CAS #	Number of Groundwater Detects	Number of Groundwater Analyses	Minimum Detected Concentration (µg/L)	Maximum Detected Concentration (MDC) (µg/L)	Mean Detected Concentration	Target Groundwater Concentration (µg/L)	MDC Exceeds?
Summary Statistics Presented for COPIs Reported in PZ-3 (2007)								
1,2-DICHLOROPROPANE	78-87-5	1	1	0.323 J	0.323 J	0.323	35	No
BENZENE	71-43-2	0	1	N/A	N/A	N/A	5	N/A
CHLOROFORM	67-66-3	0	1	N/A	N/A	N/A	80	N/A
TETRACHLOROETHENE (PCE)	127-18-4	0	1	N/A	N/A	N/A	5	N/A
TRICHLOROETHENE (TCE)	79-01-6	0	1	N/A	N/A	N/A	5	N/A
XYLENES, m,p-	108-38-3/1	N/A	N/A	N/A	N/A	N/A	22000	N/A
XYLENES, o-	95-47-6	N/A	N/A	N/A	N/A	N/A	33000	N/A
XYLENES, total	1330-20-7	0	1	N/A	N/A	N/A	22000	N/A

Notes:

Target Groundwater Concentrations = U.S. Environmental Protection Agency (USEPA). 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November 2002. Table 2c Risk = 1x10^-6

N/A = Not applicable

J = estimated value

m,p-Xylenes was not reported. Total Xylenes were analyzed. The value shown for the m,p-xylenes and total xylenes is the most conservative value.

Screen interval = 11 - 11 ft

PZ-3 is located inside the Tank Storage area near SG-9.

Figures

\\NORTHEND\PROJ\DOW\WATERLOO\GIS_FOLDERS\MAPFILES\SMWU1\SOIL VAPOR INVESTIGATION REPORT\FIGURE1_FACILITY_LOCATION.MXD MUNWIN 4/1/11

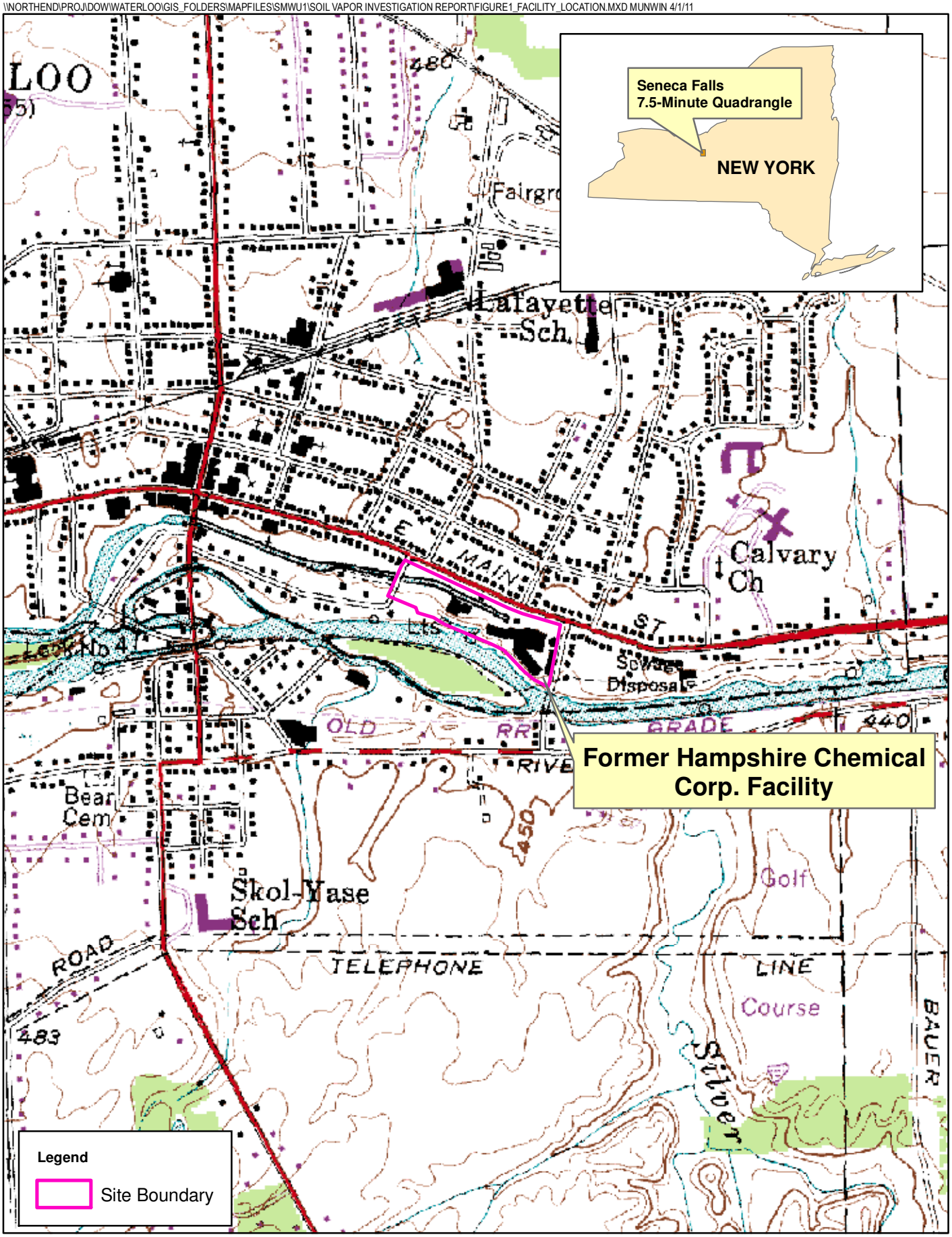
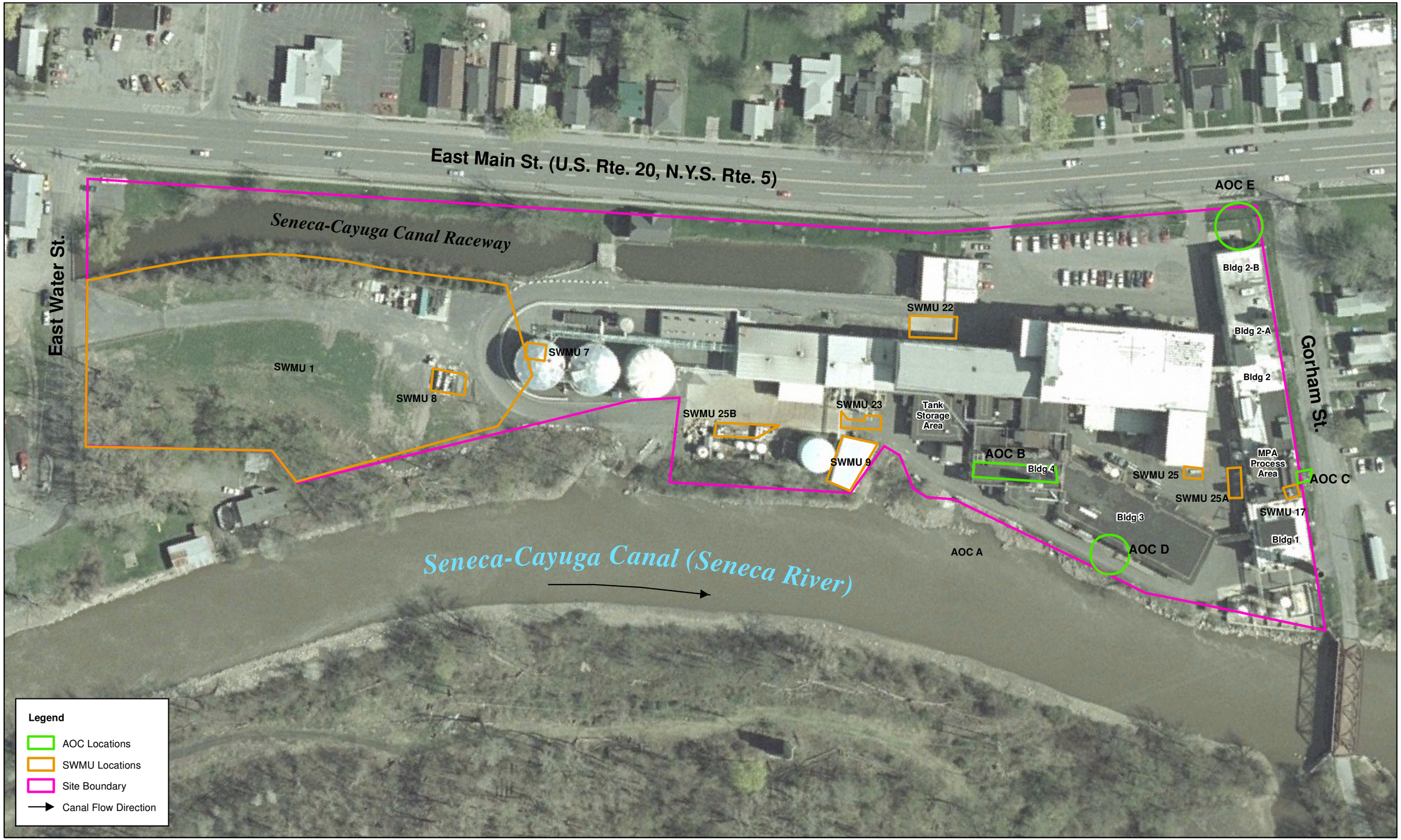


Figure 1
Facility Location Map
SMWU 1 Soil Vapor Intrusion Investigation Report
Former Hampshire Chemical Corp. Facility
Waterloo, New York

CH2MHILL



N

0 50 100 150 200

Feet

Figure 2
SWMU and AOC Locations
Soil Vapor Investigation Report, Buildings 1, 2, 3, 4, and Tank Storage Area
Former Hampshire Chemical Corp Facility
Waterloo, New York

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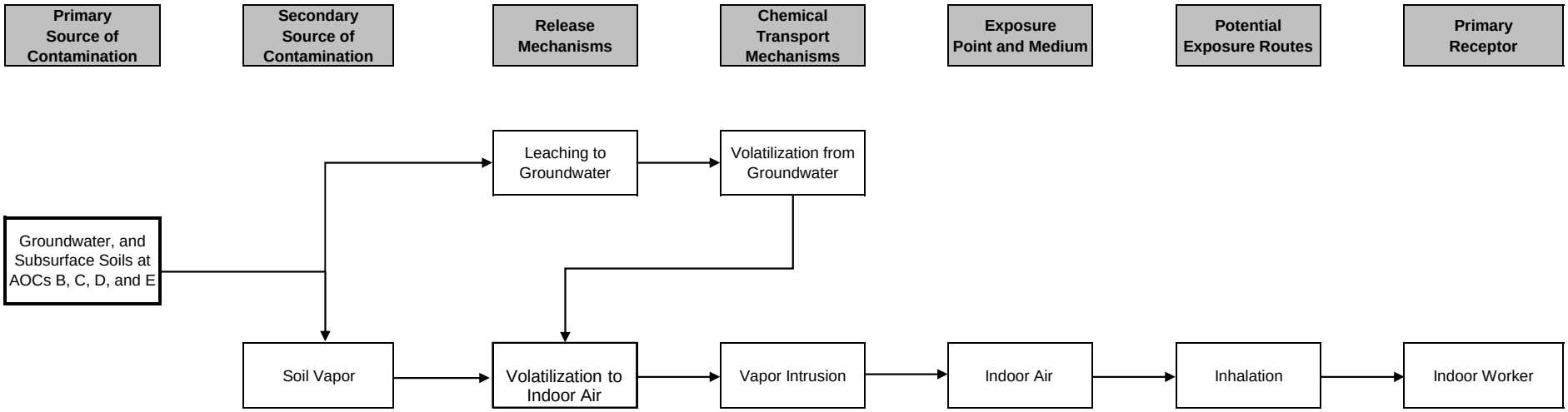
\\NORTHEND\PROJ\DOW\WATERLOO\GIS_FOLDERS\MAPFILES\SMWU1\SOIL VAPOR INVESTIGATION REPORT\FIGURE2_SWMU_AOC_LOCATIONS2.MXD MUNWIN 4/29/2010 15:23:10



Legend

→ Potentially complete pathway

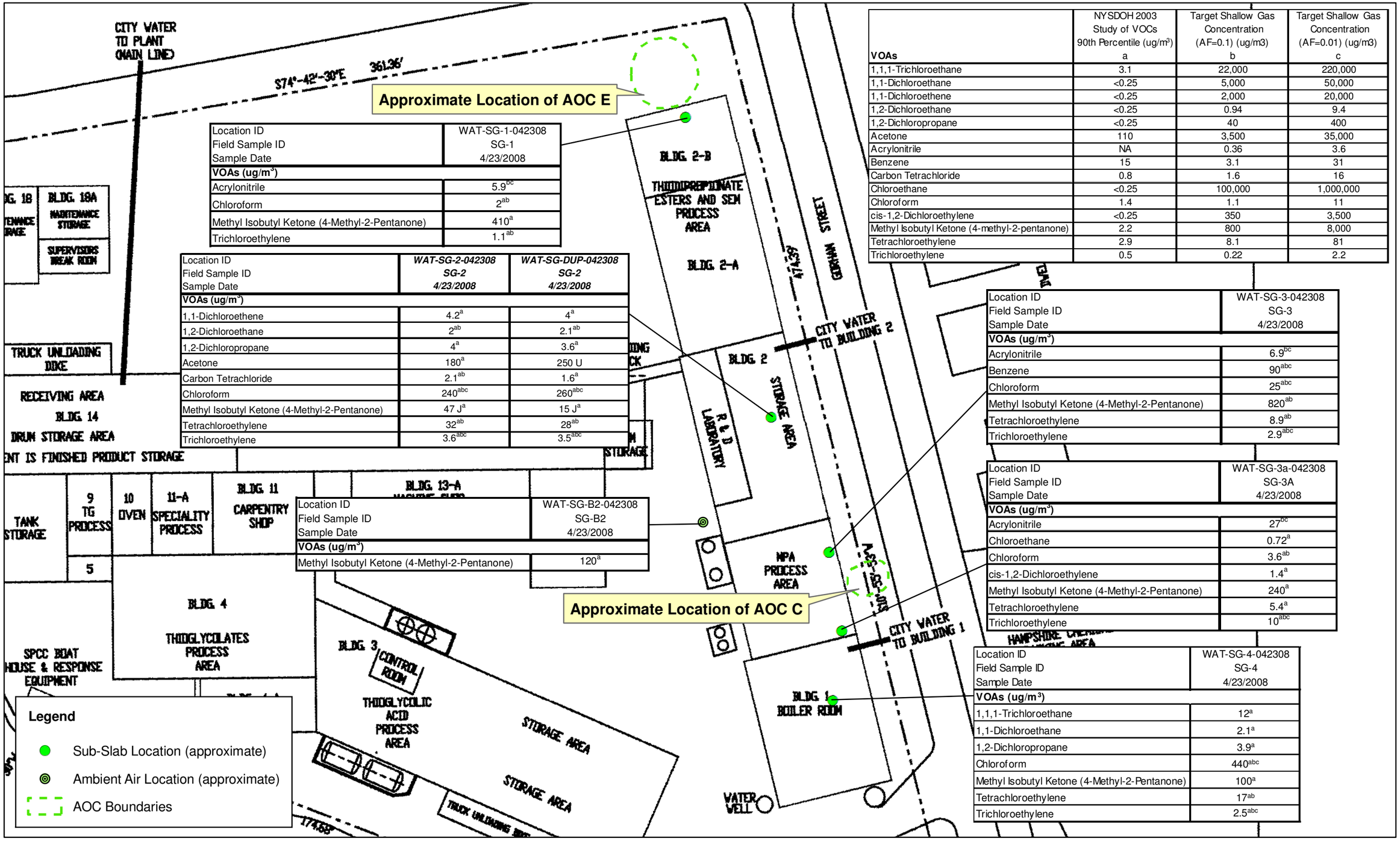
Figure 3

Human Health Conceptual Exposure Model

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility

Waterloo, New York



Location ID	WAT-SG-1-042308
Field Sample ID	SG-1
Sample Date	4/23/2008
VOAs (ug/m³)	
Acrylonitrile	5.9[bc]
Chloroform	2[ab]
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	410[a]
Trichloroethylene	1.1[ab]

Location ID	*WAT-SG-2-042308*	*WAT-SG-DUP-042308*
Field Sample ID	*SG-2*	*SG-2*
Sample Date	*4/23/2008*	*4/23/2008*
VOAs (ug/m³)		
1,1-Dichloroethene	4.2[a]	4[a]
1,2-Dichloroethane	2[ab]	2.1[ab]
1,2-Dichloropropane	4[a]	3.6[a]
Acetone	180[a]	250 U
Carbon Tetrachloride	2.1[ab]	1.6[a]
Chloroform	240[abc]	260[abc]
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	47 J[a]	15 J[a]
Tetrachloroethylene	32[ab]	28[ab]
Trichloroethylene	3.6[abc]	3.5[abc]

Location ID	WAT-SG-B2-042308
Field Sample ID	SG-B2
Sample Date	4/23/2008
VOAs (ug/m³)	
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	120[a]

VOAs	NYSDOH 2003 Study of VOCs 90th Percentile (ug/m³) a	Target Shallow Gas Concentration (AF=0.1) (ug/m3) b	Target Shallow Gas Concentration (AF=0.01) (ug/m3) c
1,1,1-Trichloroethane	3.1	22,000	220,000
1,1-Dichloroethane	<0.25	5,000	50,000
1,1-Dichloroethene	<0.25	2,000	20,000
1,2-Dichloroethane	<0.25	0.94	9.4
1,2-Dichloropropane	<0.25	40	400
Acetone	110	3,500	35,000
Acrylonitrile	NA	0.36	3.6
Benzene	15	3.1	31
Carbon Tetrachloride	0.8	1.6	16
Chloroethane	<0.25	100,000	1,000,000
Chloroform	1.4	1.1	11
cis-1,2-Dichloroethylene	<0.25	350	3,500
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	2.2	800	8,000
Tetrachloroethylene	2.9	8.1	81
Trichloroethylene	0.5	0.22	2.2

Location ID	WAT-SG-3-042308
Field Sample ID	SG-3
Sample Date	4/23/2008
VOAs (ug/m³)	
Acrylonitrile	6.9[bc]
Benzene	90[abc]
Chloroform	25[abc]
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	820[ab]
Tetrachloroethylene	8.9[ab]
Trichloroethylene	2.9[abc]

Location ID	WAT-SG-3a-042308
Field Sample ID	SG-3A
Sample Date	4/23/2008
VOAs (ug/m³)	
Acrylonitrile	27[bc]
Chloroethane	0.72[a]
Chloroform	3.6[ab]
cis-1,2-Dichloroethylene	1.4[a]
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	240[a]
Tetrachloroethylene	5.4[a]
Trichloroethylene	10[abc]

Location ID	WAT-SG-4-042308
Field Sample ID	SG-4
Sample Date	4/23/2008
VOAs (ug/m³)	
1,1,1-Trichloroethane	12[a]
1,1-Dichloroethane	2.1[a]
1,2-Dichloropropane	3.9[a]
Chloroform	440[abc]
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	100[a]
Tetrachloroethylene	17[ab]
Trichloroethylene	2.5[abc]

0 45 90
Feet

µg/m³ = micrograms per cubic meter
AF = attenuation factor

Figure 4
Soil Vapor Results Exceeding Screening Levels, Buildings 1 and 2
Soil Vapor Investigation Report, Buildings 1, 2, 3, 4, and Tank Storage Area
Former Hampshire Chemical Corp Facility
Waterloo, New York

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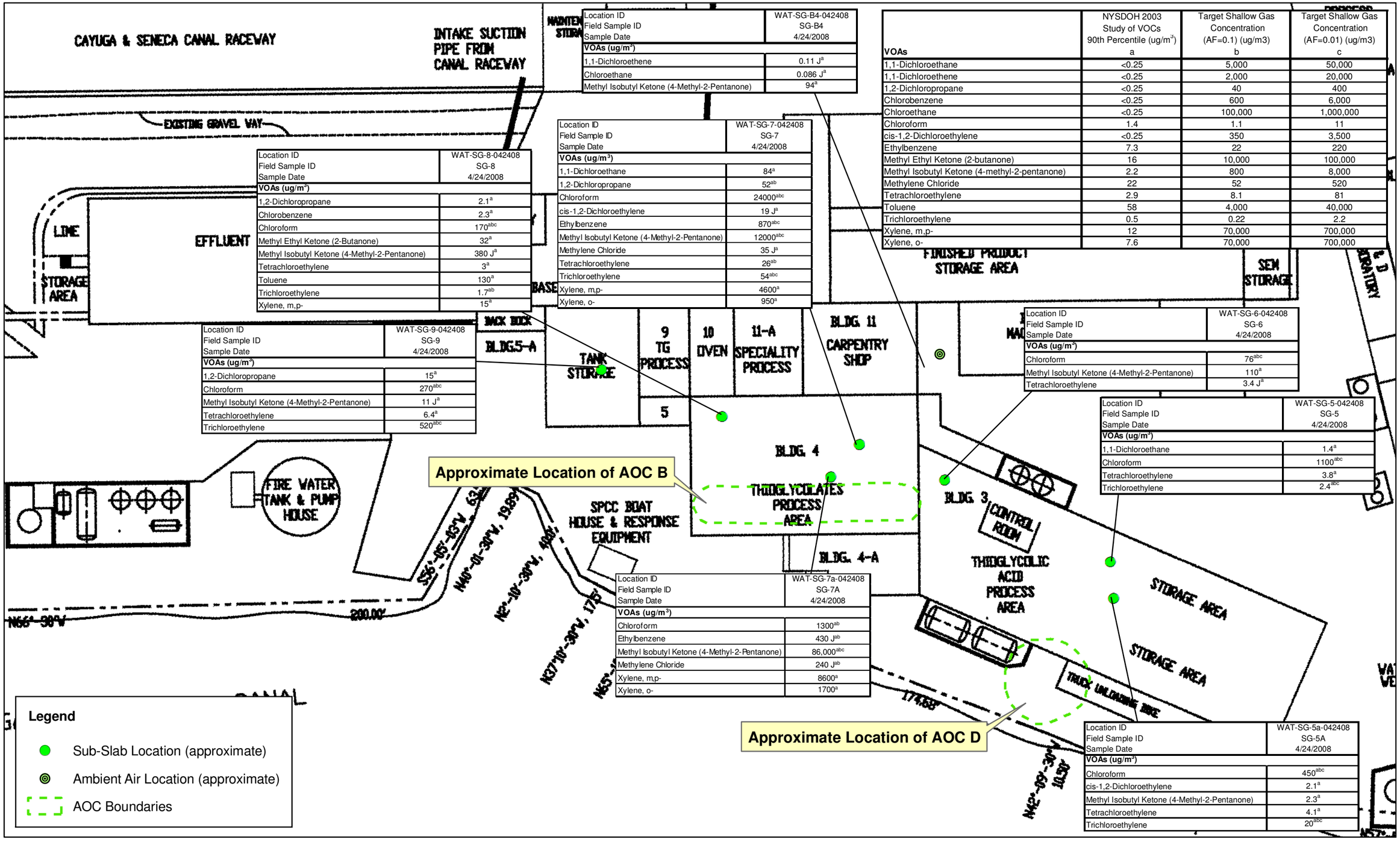
\\NORTHEND\PROJ\DOW\WATERLOO\GIS_FOLDERS\MAPFILES\SMWU1\SOIL VAPOR INVESTIGATION REPORT\FIGURE4_SOILVAPOR_RESULTS_2003.MXD MUNWIN 4/29/2010 15:16:17



Location ID	WAT-SG-8-042408
Field Sample ID	SG-8
Sample Date	4/24/2008
VOAs (ug/m³)	
1,2-Dichloropropane	2.1[a]
Chlorobenzene	2.3[a]
Chloroform	170[abc]
Methyl Ethyl Ketone (2-Butanone)	32[a]
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	380 J[a]
Tetrachloroethylene	3[a]
Toluene	130[a]
Trichloroethylene	1.7[ab]
Xylene, m,p-	15[a]

Location ID	WAT-SG-9-042408
Field Sample ID	SG-9
Sample Date	4/24/2008
VOAs (ug/m³)	
1,2-Dichloropropane	15[a]
Chloroform	270[abc]
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	11 J[a]
Tetrachloroethylene	6.4[a]
Trichloroethylene	520[abc]

Location ID	WAT-SG-B4-042408
Field Sample ID	SG-B4
Sample Date	4/24/2008
VOAs (ug/m³)	
1,1-Dichloroethene	0.11 J[a]
Chloroethane	0.086 J[a]
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	94[a]

Location ID	WAT-SG-7-042408
Field Sample ID	SG-7
Sample Date	4/24/2008
VOAs (ug/m³)	
1,1-Dichloroethane	84[a]
1,2-Dichloropropane	52[ab]
Chloroform	24000[abc]
cis-1,2-Dichloroethylene	19 J[a]
Ethylbenzene	870[abc]
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	12000[abc]
Methylene Chloride	35 J[a]
Tetrachloroethylene	26[ab]
Trichloroethylene	54[abc]
Xylene, m,p-	4600[a]
Xylene, o-	950[a]

Location ID	WAT-SG-7a-042408
Field Sample ID	SG-7A
Sample Date	4/24/2008
VOAs (ug/m³)	
Chloroform	1300[ab]
Ethylbenzene	430 J[ab]
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	86,000[abc]
Methylene Chloride	240 J[ab]
Xylene, m,p-	8600[a]
Xylene, o-	1700[a]

VOAs	NYSDOH 2003 Study of VOCs 90th Percentile (ug/m³) a	Target Shallow Gas Concentration (AF=0.1) (ug/m3) b	Target Shallow Gas Concentration (AF=0.01) (ug/m3) c
1,1-Dichloroethane	<0.25	5,000	50,000
1,1-Dichloroethene	<0.25	2,000	20,000
1,2-Dichloropropane	<0.25	40	400
Chlorobenzene	<0.25	600	6,000
Chloroethane	<0.25	100,000	1,000,000
Chloroform	1.4	1.1	11
cis-1,2-Dichloroethylene	<0.25	350	3,500
Ethylbenzene	7.3	22	220
Methyl Ethyl Ketone (2-butanone)	16	10,000	100,000
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	2.2	800	8,000
Methylene Chloride	22	52	520
Tetrachloroethylene	2.9	8.1	81
Toluene	58	4,000	40,000
Trichloroethylene	0.5	0.22	2.2
Xylene, m,p-	12	70,000	700,000
Xylene, o-	7.6	70,000	700,000

Location ID	WAT-SG-6-042408
Field Sample ID	SG-6
Sample Date	4/24/2008
VOAs (ug/m³)	
Chloroform	76[abc]
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	110[a]
Tetrachloroethylene	3.4 J[a]

Location ID	WAT-SG-5-042408
Field Sample ID	SG-5
Sample Date	4/24/2008
VOAs (ug/m³)	
1,1-Dichloroethane	1.4[a]
Chloroform	1100[abc]
Tetrachloroethylene	3.8[a]
Trichloroethylene	2.4[abc]

Location ID	WAT-SG-5a-042408
Field Sample ID	SG-5A
Sample Date	4/24/2008
VOAs (ug/m³)	
Chloroform	450[abc]
cis-1,2-Dichloroethylene	2.1[a]
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	2.3[a]
Tetrachloroethylene	4.1[a]
Trichloroethylene	20[abc]

µg/m³ = micrograms per cubic meter
AF = attenuation factor

Figure 5
Soil Vapor Results Exceeding Screening Levels, Buildings 3 and 4
Soil Vapor Investigation Report, Buildings 1, 2, 3, 4, and Tank Storage Area
Former Hampshire Chemical Corp Facility
Waterloo, New York

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\\NORTHEND\PROJ\DOW\WATERLOO\GIS_FOLDERS\MAPFILES\SMWU1\SOIL VAPOR INVESTIGATION REPORT\FIGURE5_SOILVAPOR_RESULTS_BLDGS3_4_2003.MXD MUNWIN 4/29/2010 15:02:30

Figure 6
Monitoring Well Locations
Soil Vapor Investigation Report, Buildings 1, 2, 3, 4, and Tank Storage Area
Former Hampshire Chemical Corp Facility
Waterloo, New York

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Appendix A
List of Chemicals in Buildings Evaluated

Appendix A

Chemical Inventory - Building 1 - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility, Waterloo, New York

Building 1 - Boiler Room

Quantity	ID	Units	Product Description
37	NA	50 lb bags	Solar salt for water softeners
1	NA	1 pint	Bostik - Never Seez Anti - seize & lubricating compound
1	NA	1 pint	Reactor seal pipe thread sealant
1	NA	16 oz	Top free excel cutting fluid by Winbro
1	NA	8 oz	WD - 40
2	NA	16 oz	Locite thread sealant with teflon
1	NA	18 oz can	ITW Dyman penetrating Oil & Moisture Remover
1	NA	NA	Nalco 1720 Oxygen scavenger
1	I-MT-102	NA	Brine tank
1	NA	NA	Nalco Tri - ACT ® 1820 Corrosion Inhibitor
1	NA	NA	Nex Guard 22310 Boiler water internal treatment

Aboveground Storage Tanks South of Building 1

Quantity	ID	Units	Product Description
1	16 - HT - 104 - 01	NA	Epichlorohydrin
1	1 - HT - 97 - 01	NA	HCl
1	NA	NA	Acrylinitrile

Aboveground Storage Tanks West of Buildings 1 and 2

Quantity	ID	Units	Product Description
1	2 - T - 534	NA	Ammonium bisulfate
1	2 - HT -11	Working Capacity - 1,800 gal	MIBK

Notes:
NA - Not available

Appendix A

Chemical Inventory - MPA Process Area - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility, Waterloo, New York

Dept 69 - MPA Process Area

Quantity	ID	Units	Product Description
1	2 - AST - 6		Tank
1	AST - 30, 35		Line labeled Thiomalic acid *
2	2A - PT-47	Gross 3900 lbs Tare 477 lbs	3-mercaptopropionic acid (99%)
5	NA	2,600 lbs	MPA Vac Dist
1	NA	NA	MIBK / MPA Water container
1	2 - HT - 78	NA	MPA crude
1	NA		Line near MIBK/MPA container labeled MIBK (from tote to acidification reactor)
1	NA	55 gal plastic drum	80% MPA
1	2-AT - 8	NA	MPA Blend Tank AST
1	2 - AST - 35	NA	MPA and Solvent MIBK
1	2-AST-30	NA	MPA and Solvent MIBK
1	2 - AST - 23	NA	MPA and Solvent MIBK
2	NA	2,600 lbs	MPA Cruel
1	NA	NA	Line labeled Sulfuric acid

Notes:

NA - Not available

* Thiomalic Acid (TMA) has not been produced since the late 1990s to early 2000s.

Appendix A

Chemical Inventory - Building 2 - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility, Waterloo, New York

Building 2 - Storage Area

Quantity	ID	Units	Product Description
1	NA	NA	Recycled HCl tank
1	2-T-44	NA	NaMPA Storage tank
1	2-AST-57	NA	Nitrile reactor
1	2-AST-55	NA	Hydro reactor
1	2-T-043	NA	Ammonia Scrubber
1	2-T-045	NA	Caustic Mix Tank
1	2-T-054	NA	Washed MIBK Tank
1	2-T-046	NA	Raffinate Tank
10	NA	20 kg bags	De - icing salt (Kwick melt safety salt, Sel Antiglance)
32	NA	2,600 lbs	VAC Dist MPA
1	2-HT-18	NA	Boiler Tank
1	NA	NA	Buffer solutions; 1.68 buffer; 4.0 buffer; 1.0 buffer

Lab Area

Quantity	ID	Units	Product Description
1	NA	5 gal container	NaSH + H2O container
1	NA	5 gal box container	0.1000 Normal NaOH by Anachemia
2	NA	6 gal box container	Sulfuric acid solution by GFS Chemicals Item # 1201
1	NA	4 Liters	Potassium iodate - iodide Item # 2269 by GFS Chemical
1	NA	1 gal glass container	10% H2SO4
1	NA	NA	DI water
1	NA	500 ml	Phenolphthalem
1	NA	NA	Potassium iodide KIO3 crystals

Notes:
NA - Not available

Appendix A

Chemical Inventory - Building 2-A - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility, Waterloo, New York

Building 2-A - Dept. 69 Thiodipropionate & MPA Derivative Production Unit

Quantity	ID	Units	Product Description
1	2A-HT-74	15,000 gal	Ditridecyl Thiodipropionate AST
1	2A-AST-40	NA	These are reactors that can contain any of the raw materials in the building
1	2A-AST-41	NA	These are reactors that can contain any of the raw materials in the building
1	2A-AST-42	NA	These are reactors that can contain any of the raw materials in the building
1	NA	3,500 gal	Exxal ® 8, Product #769724
27	NA	50lb bags	Pike Creek all purpose granulated salt
1	NA		Ammonium bisulfate AST
1	2A-AST-45		AST
1	2A-AST-46		AST
1	NA	55 gal drum	E-Pure MSA
1	NA	55 gal drum	DTBSP Filter drain
1	NA	55 gal drum	DTBSP Pan and Filter
1	HT 133	NA	Tank
1	A-HT-111	NA	Dilite ITA AST
1	2A-R-38	NA	Conc ITA
1	NA	NA	Line labeled Metacrylic acid
1	2A-R-42	NA	Sulfoethyl methyacrylate (SEM) AST
1	NA	55 gal drum	DPPD Inhibitor
1	2A - H - 44	NA	Small tank
1	2A - H - 47	NA	Small tank
1	2A - HT - 109		
1	2A - HT - 110		
1	2A - HT - 22		Ammonium bisulfate
1	NA	NA	Raceway water line

Notes:
NA - Not available

Appendix A

Chemical Inventory - Building 2-B - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility, Waterloo, New York

Building 2-B - Thiodipropionate Esters and SEM Process Area

Quantity	ID	Units	Product Description
1	2B HT 99	NA	Fatty Alcohol AST ALFOL - 18 Code 8098
1	2B WT - 1	NA	Fatty Alcohol AST ALFOL - 18
1	2B - T - 22	NA	S-19 Scrubber AST
1	2B - WT - 3	NA	TDPN Weight Tank AST
1	NA	10,500 lbs	Melt Tank AST
1	2B - T1	NA	Fatty Alcohol - Lauryl Alcohol - AST
1	2B - T2	Total Capacity - 7600 gal Working Capacity - 7300 gal	Tridecyl Alcohol Storage Tank
1	NA	55 gal	E-Pure MSA plastic drum
1	2B - T4	NA	TDPN AST (medium)
1	NA	NA	ALFOL 12 Code 2098 - Hook up connection outside building where trucks unload

Notes:
NA - Not available

Building 3 - OPWP Team Dept 68 Area

Quantity	ID	Units	Product Description
1	3-HT-106	Total Capacity 1,500 gal	Sodium hydrosulfide
1	3-HT-106A	Total Capacity 1,000 gal	Sodium hydrosulfide
1	3-HT-66	Total Capacity 5,700 gal	Sodium hydrosulfide
1	3-HT 63	Total Capacity 5,700 gal	Sodium hydrosulfide
1	NA	NA	Line labeled alkali waste to ETP
1	NA	NA	Area next to Former Tank Area called Hazardous Waste Scrubber Solution. Lines say caustic Feed to ETP (Flow out). Flow in Caustic Feed to Dept 68. Line labeled NaSH filter 1B, NaSH Fill # 7A
4	NA	2600 lb totes	Ethanolamine solutions (UN2491), Monoethanolamine Cl/Fe free
1	3-HT-122	NA	AST tank labeled Corrosive toxic
11	NA	2,600 lb totes	Ammonium thioglycolate 71%
1	NA	2,600 lb totes	Glycerol thioglycolate 7010
6	NA	2,600 lb totes	Glycerol thioglycolate 80%
2	NA	2,600 lb totes	Diammonium Dithioglycolate 48% and DAD totes 40%
4	NA	2,600 lb totes	Glyceryl thioglycolate - NK
8	NA	2,600 lb totes	MEAT totes
2	NA	2,600 lb totes	Glyceryl thioglycolate - 75%
1	NA	2,600 lb totes	60% ATG
1	NA	2,600 lb totes	90% TG - Blend
1	NA	2,600 lb totes	98% TG - Blend
1	NA	2000 lbs tote	Thioset - M
1	3-HT-113	Total Capacity 12,480 gal	Monochloroacidic acid
1	3-HT-59	Total Capacity 4,590 gal	Sodium hydrosulfide
1	3-AV-11	NA	NaSH dilution tank
1	3-AV-12	NA	NaSH holding tank
1	3-T-35	NA	Scrubber
1	3-AST-48	NA	H2S Generator

Lab Area

Quantity	ID	Units	Product Description
1	NA	NA	Buffer solutions: 1.68, 4.0, 7.0, 1.0
1	NA	500 ml bottle	Sulfite Form Liquid by Nalco
1	NA	1 liter	Titrating solution by Nalco
1	NA	1 liter	Hardness buffer by Nalco

Near Location #6

Quantity	ID	Units	Product Description
1	NA	1 gal	Clorox bleach
1	NA	NA	Phenolphthalien
1	NA	18 oz	State Fix "Terg-o-Cide in a can"
1	NA	12 oz	Krylon Industrial Touch Coat Acylic Enamel Aerosol
2	NA	21 oz	Trouble shooter by 3M
1	NA	1 gal	Sherwin Williams Industrial Enamel HS Industrial Marine Coatings in yellow

Outside Building 3 near Canal

Quantity	ID	Units	Product Description
1	3 -HT- 50	Total Capacity 10,000 gal	Sulfuric acid
1	3-HT-13-1	Total Capacity 10,000 gal	Sulfuric acid

Outside Building 3 between Bldg 3 and Machine Shop

Quantity	ID	Units	Product Description
1	3 -HT- 136	Total Capacity 9,290 gal	Sodium Hydroxide

Notes:
NA - Not available

Appendix A

Chemical Inventory - Building 4-A - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility, Waterloo, New York

Buildings 4A and 4B

Quantity	ID	Units	Product Description
1	4-HT-941	Total Capacity 5,200	Crude Thoglycolic Acid (TGA)
1	4-HT-951	Total Capacity 5,200	Crude TGA
1	NA	2,600 lb tote	1st Pass TGA Residue
1	AV - 11	NA	T-Acid Residue Holding Tank
1	AV - 8	NA	Could not see label; related to AV - 1

Building 4 - Dept 68 T-Acid & Derivative Production Unit

Quantity	ID	Units	Product Description
1	4-V-6	NA	Recycled MIBK AST
1	4-V-7	NA	Washed MIBK
5	NA	2,000 lb tote	Thioglycolic acid (TGA) 96-99% totes
4	NA	2,600 lb tote	DAD
9	NA	55 gal drums	Vac Dist TG (blue plastic drums)
9	NA	55 gal drums	TG concentrate
1	4-HT-7	NA	Regular T-Acid Extract
1	NA	5 gal container	Sulfuric acid
1	NA	55 gal drum	TG -Forerun
1	NA	5 gal container	TG NF
2	NA	330 gal	Ammonium hydroxide 26 BE
1	NA	2,600 lb tote	Glyceryl Thioglycolate
1	4-AST-7	NA	TGA 16 - 99% AST
1	HT-121	NA	T-Acid Extract Residue

Appendix A

Chemical Inventory - Building 4-A - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility, Waterloo, New York

Lab Area

Quantity	ID	Units	Product Description
1	NA	NA	Buffer solutions 1.68, 4.0, 1.0
1	NA	5 gal container	Potassium iodate - Iodide by GFS Chemicals
1	NA	NA	Potassium iodide (KI)
1	NA	NA	10% sulfuric acid solution

Outside Building 4 near Canal

Quantity	ID	Units	Product Description
2	NA	NA	Compressed nitrogen cylinders by Jackson Welding Supply Co.

Notes:
NA - Not available

Appendix A

Chemical Inventory - Tank Storage Area - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp. Facility, Waterloo, New York

Tank Storage Area

Quantity	ID	Units	Product Description
1	7-HT-105	Total Capacity 15,000 gal	Sodium hydrosulfide
28	NA	55 gal drums	Hydrogen peroxide
1	7-HT-128	Total Capacity 6,000 gal	Glycerin
1	7-HT-127	Total Capacity 6,000 gal	Glycerol monothioglycolate
1	7-HT-4	Total Capacity 5,000 gal	Ammonium thioglycolate
1	7-HT-5	Total Capacity 2,600 gal	I-MCH AST
4	NA	55 gal drums	Thioglycerol (TGNF)
4	NA	NA	Compressed Nitrogen cylinders by Jackson Welding Supply Co.

Outside Tank Storage Area

Quantity	ID	Units	Product Description
NA	NA	NA	MPA Fill Hopper Storage Area

Notes:
NA - Not available

Appendix B
Field Sampling Log Sheets

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Indoor Vapor Intrusion Assessment
Sub Slab Vapor Sampling Field Log

Project Info

Project Name: Former Hampshire Chemical Corp Facility, Waterloo, NY **Project # :** 369548.B2.RP

By: Rachel Kopec/NJO; Lisa La Fortune/NJO **Date:** 4/23/2008

Structure

Identification: Ambient air samples and field blank

Address:

Sample Location type:

- ☐ concrete slab on grade
- ☐ concrete footing w/crawl space
- ☐ basement
- ☐ Yard or Driveway
- ☒ other (describe) See identification

Soil Vapor Sampling System

Probe type (describe): n/a

Probe to sample interface system (describe):

Sample collection type: ☐ Syringe ☐ Tedlar bag ☒ Summa canister

Other info (describe other aspects)

Soil Vapor Probe Purging & Sampling Log

Sample location (show in diagram)	AA 1	FB 1	AA 2	
Sample Identification (field ID)	WAT-SG-B2-042308	WAT-SG-FB-042308	WAT-SG-B4-042408	
Date Installed*	n/a	n/a	n/a	
Depth of installed probe (feet bgs)	Ambient Air	Field Blank	Ambient Air	
Leak check (probe/sampling interface)	n/a	n/a	n/a	
Calculated dead volume (1 purge volume), ml				
Purge rate, ml/min.				
Purge duration, min. (3 volumes)				
Purge vacuum, " Hg				
Max PID Reading, ppmv (optional)				
Purge completed (time of day)				
Sampling period started (time of day)	8:27	9:55	7:55	
Sampling rate, ml/min	11.25	n/a	11.25	
Sampling vacuum, " Hg (initial/end)	30/6	0/0	30/6.5	
Sampling period ended (time of day)	16:27	17:55	15:55	

Observations and Comments:

n/a - Not applicable

AA 1 corresponds to grass surface at Gorham Street.

AA 2 correspond to asphalt paved area between Building 4 and the machine shop.

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Indoor Vapor Intrusion Assessment
Sub Slab Vapor Sampling Field Log

Project Info

Project Name: Former Hampshire Chemical Corp Facility, Waterloo, NY **Project # :** 369548.B2.RP

By: Rachel Kopec/NJO; Lisa La Fortune/NJO **Date:** 4/23/2008

Structure

Identification: Buildings 2-B, 2, and MPA Process Area

Address:

Sample Location type:

- [x] concrete slab on grade
- [ ] concrete footing w/crawl space
- [ ] basement
- [ ] Yard or Driveway
- [ ] other (describe)

Soil Vapor Sampling System

Probe type (describe): Stainless steel tubing, finished as a flushmount

Probe to sample interface system (describe): Swagelock and stainless steel tubing

Sample collection type: [ ] Syringe [ ] Tedlar bag [x] Summa canister

Other info (describe other aspects)

Soil Vapor Probe Purging & Sampling Log

Sample location (show in diagram)	1	2	2	3
Sample Identification (field ID)	WAT-SG-1-042308	WAT-SG-2-042308	WAT-SG-DUP-042308	WAT-SG-3-042308
Date Installed*	4/23/2008	4/23/2008	4/23/2008	4/23/2008
Depth of installed probe (inches bgs)	8.75	10.0	10.0	9.25
Leak check (probe/sampling interface)	ok (0 ppm)	ok (0 ppm)	ok (0 ppm)	ok (0 ppm)
Calculated dead volume (1 purge volume), ml	17	17	17	17
Purge rate, ml/min.	100	100	100	100
Purge duration, min. (3 volumes)	30 sec	30 sec	30 sec	30 sec
Purge vacuum, " Hg				
Max PID Reading, ppmv (optional)				
Purge completed (time of day)	8:33	8:59	-	9:17
Sampling period started (time of day)	8:38	9:04	-	9:21
Sampling rate, ml/min	11.25	11.25	11.25	11.25
Sampling vacuum, " Hg (initial/end)	30/0	30/8	30/0	30/0
Sampling period ended (time of day)	16:38	17:04	-	17:21

Observations and Comments: WAT-SG-DUP-042308 is a duplicate sample of WAT-SG-2-042308

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Indoor Vapor Intrusion Assessment
Sub Slab Vapor Sampling Field Log

Project Info

Project Name: Former Hampshire Chemical Corp Facility, Waterloo, NY **Project # :** 369548.B2.RP

By: Rachel Kopec/NJO; Lisa La Fortune/NJO **Date:** 4/23/2008

Structure

Identification: MPA Process Area and Building 1

Address:

Sample Location type:

- [x] concrete slab on grade
- [ ] concrete footing w/crawl space
- [ ] basement
- [ ] Yard or Driveway
- [ ] other (describe)

Soil Vapor Sampling System

Probe type (describe): Stainless steel tubing, finished as a flushmount

Probe to sample interface system (describe): Swagelock and stainless steel tubing

Sample collection type: [ ] Syringe [ ] Tedlar bag [x] Summa canister

Other info (describe other aspects)

Soil Vapor Probe Purging & Sampling Log

Sample location (show in diagram)	4	5		
Sample Identification (field ID)	WAT-SG-3a-042308	WAT-SG-4-042308		
Date Installed*	4/23/2008	4/23/2008		
Depth of installed probe (feet bgs)	10.0	9.5		
Leak check (probe/sampling interface)	ok (0 ppm)	ok (0 ppm)		
Calculated dead volume (1 purge volume), ml	17	17		
Purge rate, ml/min.	100	100		
Purge duration, min. (3 volumes)	30 sec	30 sec		
Purge vacuum, " Hg				
Max PID Reading, ppmv (optional)				
Purge completed (time of day)	9:29	9:49		
Sampling period started (time of day)	9:33	9:54		
Sampling rate, ml/min	11.25	11.25		
Sampling vacuum, " Hg (initial/end)	26/5	30/0		
Sampling period ended (time of day)	17:33	17:54		

Observations and Comments:

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Indoor Vapor Intrusion Assessment
Sub Slab Vapor Sampling Field Log

Project Info

Project Name: Former Hampshire Chemical Corp Facility, Waterloo, NY **Project # :** 369548.B2.RP

By: Rachel Kopec/NJO; Lisa La Fortune/NJO **Date:** 4/24/2008

Structure

Identification: Buildings 3 and 4

Address:

Sample Location type:

- [x] concrete slab on grade
- [ ] concrete footing w/crawl space
- [ ] basement
- [ ] Yard or Driveway
- [ ] other (describe)

Soil Vapor Sampling System

Probe type (describe): Stainless steel tubing, finished as a flushmount

Probe to sample interface system (describe): Swagelock and stainless steel tubing

Sample collection type: [ ] Syringe [ ] Tedlar bag [x] Summa canister

Other info (describe other aspects)

Soil Vapor Probe Purging & Sampling Log

Sample location (show in diagram)	5	5a	6	7
Sample Identification (field ID)	WAT-SG-5-042408	WAT-SG-5a-042408	WAT-SG-6-042408	WAT-SG-7-042408
Date Installed*	4/24/2008	4/24/2008	4/24/2008	4/24/2008
Depth of installed probe (inches bgs)	7.0	8.5	10.0	13.5
Leak check (probe/sampling interface)	ok (0 ppm)	ok (0 ppm)	ok (0 ppm)	ok (0 ppm)
Calculated dead volume (1 purge volume), ml	16	17	17	18
Purge rate, ml/min.	100	100	100	100
Purge duration, min. (3 volumes)	27 sec	30 sec	29 sec	30 sec
Purge vacuum, " Hg				
Max PID Reading, ppmv (optional)				
Purge completed (time of day)	7:55	8:03	8:17	8:27
Sampling period started (time of day)	7:59	8:08	8:21	8:32
Sampling rate, ml/min	11.25	11.25	11.25	11.25
Sampling vacuum, " Hg (initial/end)	27/4	30/0	29/0	30/11
Sampling period ended (time of day)	15:59	16:08	16:21	16:32

Observations and Comments:

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Indoor Vapor Intrusion Assessment
Sub Slab Vapor Sampling Field Log

Project Info

Project Name: Former Hampshire Chemical Corp Facility, Waterloo, NY **Project # :** 369548.B2.RP

By: Rachel Kopec/NJO; Lisa La Fortune/NJO **Date:** 4/24/2008

Structure

Identification: Building 4 and Tank Storage Area

Address:

Sample Location type:

- [x] concrete slab on grade
- [ ] concrete footing w/crawl space
- [ ] basement
- [ ] Yard or Driveway
- [ ] other (describe)

Soil Vapor Sampling System

Probe type (describe): Stainless steel tubing, finished as a flushmount

Probe to sample interface system (describe): Swagelock and stainless steel tubing

Sample collection type: [ ] Syringe [ ] Tedlar bag [x] Summa canister

Other info (describe other aspects)

Soil Vapor Probe Purging & Sampling Log

Sample location (show in diagram)	7a	8*	9	
Sample Identification (field ID)	WAT-SG-7a-042408	WAT-SG-8-042408	WAT-SG-9-042408	
Date Installed*	4/24/2008	4/24/2008	4/24/2008	
Depth of installed probe (inches bgs)	15.00	16.75	8.00	
Leak check (probe/sampling interface)	ok (0 ppm)	ok (0 ppm)	ok (0 ppm)	
Calculated dead volume (1 purge volume), ml	19	20	16	
Purge rate, ml/min.	100	100	100	
Purge duration, min. (3 volumes)	30 sec	30 sec	28 sec	
Purge vacuum, " Hg				
Max PID Reading, ppmv (optional)				
Purge completed (time of day)	8:50	8:59	9:20	
Sampling period started (time of day)	8:54	9:06	9:24	
Sampling rate, ml/min	11.25	11.25	11.25	
Sampling vacuum, " Hg (initial/end)	30/0	30/10	28/0	
Sampling period ended (time of day)	16:54	17:30	17:24	

Observations and Comments:

* Water was noted in tubing during purging and sample collection. Gauge indicated sample was not collecting. Gauge and flow controller were switched out with a clean one.

Appendix C
QA/QC Results Table

Appendix C
Quality Assurance/Quality Control Sample Results - April 2008 Sampling Event
Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Field Sample ID				***WAT-SG-2-042308***	***WAT-SG-DUP-042308***	***WAT-SG-FB-042308***
Location ID				***SG-2***	***SG-2***	***QC***
Sample Date				***4/23/2008***	***4/23/2008***	***4/23/2008***
Sample Type				***Normal***	***Duplicate***	***Equip Blank***
Lab Sample ID		NYSDOH	NYSDOH	***P0801215-003***	***P0801215-007***	***P0801215-008***
Dilution		2003	2003	***3.4***	***12.5***	***1***
Matrix		Guidance	Guidance	***AIR***	***AIR***	***AIR***
		a	b			
Volatile Organics, by Method TO15 (UG/M3)	***CAS #***	***90th Percentile***	***Maximum***			
1,1,1-TRICHLOROETHANE	71-55-6	3.1	110	0.34 U	1.3 U	0.1 U
1,1,2,2-TETRACHLOROETHANE	79-34-5	<0.25	2.7	0.34 U	1.3 U	0.1 U
1,1,2-TRICHLOROETHANE	79-00-5	<0.25	6.2	0.34 U	1.3 U	0.1 U
1,1-DICHLOROETHANE	75-34-3	<0.25	4.4	0.34 U	1.3 U	0.1 U
1,1-DICHLOROETHENE	75-35-4	<0.25	430	***4.2***[a]	***4***[a]	0.1 U
1,2-DICHLOROETHANE	107-06-2	<0.25	4.9	***2***[a]	***2.1***[a]	0.1 U
1,2-DICHLOROPROPANE	78-87-5	<0.25	34	***4***[a]	***3.6***[a]	0.1 U
ACETONE	67-64-1	110	690	***180***[a]	250 U	2.2 J B
ACRYLONITRILE	107-13-1	NA	NA	1.2 J	6.3 U	0.5 U
BENZENE	71-43-2	15	460	0.93	1.3 U	0.1 U
BROMODICHLOROMETHANE	75-27-4	NA	NA	0.34 U	1.3 U	0.1 U
BROMOFORM	75-25-2	NA	NA	1.7 U	6.3 U	0.5 U
BROMOMETHANE	74-83-9	0.6	23	0.34 U	1.3 U	0.1 U
CARBON DISULFIDE	75-15-0	NA	NA	10	8.6 U	0.44 J
CARBON TETRACHLORIDE	56-23-5	0.8	4.2	***2.1***[a]	***1.6***[a]	0.1 U
CHLOROBENZENE	108-90-7	<0.25	0.6	0.34 U	1.3 U	0.1 U
CHLOROETHANE	75-00-3	<0.25	4.5	0.34 U	1.3 U	0.1 U
CHLOROFORM	67-66-3	1.4	25	***240***[ab]	***260***[ab]	0.1 U
CHLOROMETHANE	74-87-3	3.3	260	0.34 U	1.3 U	0.1 U
cis-1,2-DICHLOROETHYLENE	156-59-2	<0.25	7.4	0.34 U	1.3 U	0.1 U
cis-1,3-DICHLOROPROPENE	10061-01-5	<0.25	3.5	1.7 U	6.3 U	0.5 U
DIBROMOCHLOROMETHANE	124-48-1	NA	NA	0.34 U	1.3 U	0.1 U
ETHYLBENZENE	100-41-4	7.3	340	0.54 J	6.3 U	0.5 U
METHYL ETHYL KETONE (2-BUTANONE)	78-93-3	16	180	4.7 U	2.5 U	0.36 J
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE	108-10-1	2.2	36	***47 J***[ab]	***15 J***[a]	0.096 J
METHYLENE CHLORIDE	75-09-2	22	2100	1.1 J	1.6 J	0.5 U
STYRENE	100-42-5	1.3	50	0.3 J	6.3 U	0.5 U
TETRACHLOROETHYLENE (PCE)	127-18-4	2.9	51	***32***[a]	***28***[a]	0.1 U
TOLUENE	108-88-3	58	510	5.7 J	2.1 U	0.24 J
TRANS-1,2-DICHLOROETHENE	156-60-5	NA	NA	0.34 U	1.3 U	0.1 U
TRANS-1,3-DICHLOROPROPENE	10061-02-6	<0.25	<0.25	1.7 U	6.3 U	0.5 U
TRICHLOROETHYLENE (TCE)	79-01-6	0.5	25	3.6[a]	***3.5***[a]	0.1 U
VINYL CHLORIDE	75-01-4	<0.25	1	0.34 U	1.3 U	0.1 U
XYLENE, m,p-	108-38-3/1	12	550	3.3	6.3 U	0.5 U
XYLENE, o-	95-47-6	7.6	310	1.1 J	6.3 U	0.5 U
EPICHLOROHYDRIN	106-89-8	NA	NA	0 UJ	0 UJ	0 UJ
Tentatively Identified Compounds (UG/M3)						
1,1'-Oxybispentane;Amyl Ether (C10H22O)	TIC	NA	NA	--	--	--
1-METHYLNAPHTHALENE	90-12-0	NA	NA	--	--	--
2,2'-Oxybispentane (C10H22O)	TIC	NA	NA	--	--	--
2-METHYLNAPHTHALENE	91-57-6	NA	NA	--	--	--
3-METHYLPENTANE	96-14-0	NA	NA	--	--	--
Acetaldehyde + Isobutane	TIC	NA	NA	--	--	--
BENZALDEHYDE	100-52-7	NA	NA	--	--	--
BUTANE	106-97-8	NA	NA	--	--	--
C11H24 Branched Alkane	TIC	NA	NA	--	--	--
C12H26 Branched Alkane	TIC	NA	NA	--	--	--
C14H28 Compound	TIC	NA	NA	40 J	--	--
C6HF13 (Tridecafluorohexane)	TIC	NA	NA	100 J	50 J	--
Chlorodifluoromethane + Propene + Propane	TIC	NA	NA	--	--	--
Dimethyl Sulfide	75-18-3	NA	NA	--	--	--
HEXAMETHYLCYCLOTRISILOXANE	541-05-9	NA	NA	30 J	--	--
Isooctanol	26952-21-6	NA	NA	--	--	--
NAPHTHALENE	91-20-3	NA	NA	--	--	--
n-Butyl Ether	TIC	NA	NA	--	--	--
n-DODECANE	112-40-3	11	420	10 J	--	--
n-Nonanal	124-19-6	NA	NA	--	--	--
n-Nonanal + C10H14 Aromatic	TIC	NA	NA	20 J	--	--
n-UNDECANE	1120-21-4	12	290	--	--	--
PROPANE	74-98-6	NA	NA	--	--	--
Propane + Propene	TIC	NA	NA	--	--	--
Propane +Carbonyl Sulfide	TIC	NA	NA	--	--	--
Unidentified Oxygenated Compound	TIC	NA	NA	--	--	--

* = New York State Department of Health (NYSDOH) 2003: Study of volatile organic chemicals in air of fuel oil heated homes.
All compounds and criteria are in ug/m3
Shading in gray indicates that constituent was detected above the guidance value
NA = not applicable
ND = compound not detected at or above method detection limit
NF = Compound was searched for, but not found
J = estimated value
U = compound not detected at or above method detection limit

Appendix D

Data Quality Evaluation and Laboratory Results

Data Quality Evaluation for the April 2008 Soil Vapor Investigation, Waterloo, New York

PREPARED FOR: Paul Taylor/CH2M HILL

PREPARED BY: Berney Kidd/CH2M HILL

DATE: May 30, 2008

Introduction

The objective of this Data Quality Evaluation (DQE) report is to assess the data quality of analytical results for soil vapor samples collected at the former Hampshire Chemical Corp. facility located in Waterloo, New York. Guidance for this DQE report came from the *U.S. Environmental Protection Agency (USEPA) Contract Laboratory National Functional Guidelines (NFG) for Organic Data Review, October 1999*, individual method requirements and historical laboratory quality control limits.

This report is intended as a general data quality assessment designed to summarize data issues.

Analytical Data

This DQE report covers 14 soil vapor samples, one field duplicate (FD), and one ambient blank (FB). Samples were collected on April 23 and April 24, 2008. The samples were reported as one sample delivery group, P0801215. Samples were collected and shipped by overnight carrier to Columbia Analytical Services in Simi Valley, California. The samples were analyzed for volatile organic compounds by method TO-15.

The sample delivery groups were assessed by reviewing the following: (1) the chain-of-custody documentation; (2) holding-time compliance; (3) initial and continuing calibration criteria; (4) method blanks and field blanks; (5) laboratory control samples (LCS); (6) surrogate spike recoveries; (7) internal standard recoveries; and (8) the required quality control (QC) samples at the specified frequencies.

Data flags were assigned according to the NFG. Multiple flags are routinely applied to specific sample method/matrix/analyte combinations, but there will only be one final flag. A final flag is applied to the data and is the most conservative of the applied validation flags. The final flag also includes matrix and blank sample impacts.

The data flags are those listed in the NFG and are defined below:

- J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

- R = The sample result was rejected due to serious deficiencies in the ability to analyze the sample and meet the QC criteria. The presence or absence of the analyte could not be verified.
- U = The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Findings

The overall summaries of the data validation are contained in the following sections and table below.

Holding Time

All holding time criteria were met.

Calibration

Initial and continuing calibration analyses were performed as required by the methods and all acceptance criteria were met.

The 4-methyl-2-pentanone results for samples WAT-SG-8-042408 and WAT-SG-9-042408 were reported above the linear calibration range. The results were qualified as estimated and flagged "J".

Method Blanks

Method blanks were analyzed at the required frequency and were free of contamination with the following exception:

Acetone was detected at a concentration less than the reporting limit (RL) in the method blanks. The associated data were qualified as non-detected results and flagged "U" when the sample concentrations were less than 10 times the blank concentrations.

Field Blanks

An ambient blank was collected and analyzed at the required frequency and was free of contamination with the following exceptions:

Acetone; 2-butanone; 4-methyl-2-pentanone; carbon disulfide; and, toluene were detected at concentrations less than the RL in the ambient blank. The associated data were qualified as non-detected results and flagged "U" when the sample concentrations were less than five times (10 times for acetone and 2-butanone) the blank concentrations.

Laboratory Control Samples

LCSs were analyzed as required and all accuracy criteria were met.

Surrogates

All surrogate acceptance criteria were met.

Internal Standards

All internal standard acceptance criteria were met.

Field Duplicates

A FD set was collected and analyzed and precision criteria were met with the following exceptions:

The relative percent difference (RPD) between the native sample and FD exceeded criteria for several 2-butanone, toluene and 4-methyl-2-pentanone. The detected results in the normal and FD were qualified as estimated and flagged "J".

Tentatively Identified Compounds

Tentatively identified compounds (TIC) were reported by the laboratory, either as detected TICs or as non-detected compounds for which a library search was performed. All TIC data were qualified as estimated; non-detected results were flagged "UJ" and detected results were flagged "J".

Chain of Custody

Required procedures were followed and were free of errors.

Overall Assessment

The goal of this assessment is to demonstrate that a sufficient number of representative samples were collected and the resulting analytical data can be used to support the decision making process. The procedures for assessing the precision, accuracy, representativeness, completeness and comparability were modeled after the *USEPA Contract Laboratory NFG for Organic Data Review, October 1999.* The following summary highlights the PARCC findings for the above-defined events:

Precision of the data was verified through the review of the field and laboratory data quality indicators that include FD RPD. Precision was generally acceptable with three analytes being qualified as estimated due to FD RPD exceedances.

Accuracy of the data was verified through the review of the calibration data, LCSs, and surrogate standards. Accuracy was generally acceptable. Two results were reported as estimated due to calibration issues. TIC data were reported are considered estimated.

Representativeness of the data was verified through the sample's collection, storage and preservation procedures, verification of holding-time compliance and evaluation of method/field blank data. All data were reported from analyses within the EPA recommended holding time. The method/field blank samples were generally free of

contamination with a few compounds being qualified as non-detected results due to low level detections in the method and/or ambient blanks.

Comparability of the data was ensured through the use of standard EPA analytical procedures and standard units for reporting. Results obtained are comparable to industry standards in that the collection and analytical techniques followed approved, documented procedures.

Completeness is a measure of the number of valid measurements obtained in relation to the total number of measurements planned. Completeness is expressed as the percentage of valid or usable measurements compared to planned measurements. Valid data are defined as all data that are not rejected for project use. All data were considered valid.

Table 1 – Validation Flags

Field ID	Method	Analyte	Final Result	Units	Final Flag	Reason
WAT-SG-DUP-042308	TO15	Acetone	250	UG/M3	U	FB<RL
WAT-SG-DUP-042308	TO15	4-Methyl-2-pentanone	15	UG/M3	J	FD>RPD
WAT-SG-DUP-042308	TO15	C6HF13 (Tridecafluorohexane)	50	UG/M3	J	TIC
WAT-SG-DUP-042308	TO15	Epichlorohydrin	0	UG/M3	UJ	TIC
WAT-SG-DUP-042308	TO15	Carbon Disulfide	8.6	UG/M3	U	FB<RL
WAT-SG-DUP-042308	TO15	2-Butanone	2.5	UG/M3	U	FD>RPD
WAT-SG-DUP-042308	TO15	2-Butanone	2.5	UG/M3	U	FB<RL
WAT-SG-DUP-042308	TO15	Toluene	2.1	UG/M3	U	FD>RPD
WAT-SG-DUP-042308	TO15	Toluene	2.1	UG/M3	U	FB<RL
WAT-SG-7a-042408	TO15	Acetone	1600	UG/M3	U	FB<RL
WAT-SG-7a-042408	TO15	Acetone	1600	UG/M3	U	LB<RL
WAT-SG-7a-042408	TO15	Toluene	380	UG/M3	U	FB<RL
WAT-SG-7a-042408	TO15	n-Butyl Ether	30000	UG/M3	J	TIC
WAT-SG-7a-042408	TO15	2,2'-Oxybispentane	30000	UG/M3	J	TIC
WAT-SG-7a-042408	TO15	Unidentified Oxygenated Compound	10000	UG/M3	J	TIC
WAT-SG-7a-042408	TO15	1,1'-Oxybispentane;Amyl Ether	10000	UG/M3	J	TIC
WAT-SG-7a-042408	TO15	Epichlorohydrin	0	UG/M3	UJ	TIC
WAT-SG-B2-042308	TO15	Acetone	17	UG/M3	U	FB<RL
WAT-SG-B2-042308	TO15	Benzaldehyde	20	UG/M3	J	TIC
WAT-SG-B2-042308	TO15	Epichlorohydrin	0	UG/M3	UJ	TIC
WAT-SG-B2-042308	TO15	Toluene	1.2	UG/M3	U	FB<RL
WAT-SG-B2-042308	TO15	Carbon Disulfide	0.71	UG/M3	U	FB<RL
WAT-SG-7-042408	TO15	Acetone	1800	UG/M3	U	FB<RL
WAT-SG-7-042408	TO15	Carbon Disulfide	310	UG/M3	U	FB<RL
WAT-SG-7-042408	TO15	2-Butanone	17	UG/M3	U	FB<RL
WAT-SG-7-042408	TO15	Toluene	72	UG/M3	U	FB<RL
WAT-SG-7-042408	TO15	Epichlorohydrin	0	UG/M3	UJ	TIC
WAT-SG-5a-042408	TO15	Acetone	12	UG/M3	U	FB<RL
WAT-SG-5a-042408	TO15	Acetone	12	UG/M3	U	LB<RL
WAT-SG-5a-042408	TO15	C6HF13 (Tridecafluorohexane)	50	UG/M3	J	TIC
WAT-SG-5a-042408	TO15	n-Nonanal	20	UG/M3	J	TIC
WAT-SG-5a-042408	TO15	Naphthalene	50	UG/M3	J	TIC
WAT-SG-5a-042408	TO15	2-Methylnaphthalene	70	UG/M3	J	TIC
WAT-SG-5a-042408	TO15	1- Methylnaphthalene	70	UG/M3	J	TIC
WAT-SG-5a-042408	TO15	Epichlorohydrin	0	UG/M3	UJ	TIC
WAT-SG-5a-042408	TO15	2-Butanone	1.3	UG/M3	U	FB<RL
WAT-SG-5a-042408	TO15	Toluene	0.55	UG/M3	U	FB<RL
WAT-SG-9-042408	TO15	Acetone	13	UG/M3	U	FB<RL
WAT-SG-9-042408	TO15	Acetone	13	UG/M3	U	LB<RL
WAT-SG-9-042408	TO15	4-Methyl-2-pentanone	11	UG/M3	J	>ICLinearRange
WAT-SG-9-042408	TO15	Propane	10	UG/M3	J	TIC
WAT-SG-9-042408	TO15	Acetaldehyde + Isobutane	30	UG/M3	J	TIC
WAT-SG-9-042408	TO15	C6HF13 (Tridecafluorohexane)	70	UG/M3	J	TIC

Field ID	Method	Analyte	Final Result	Units	Final Flag	Reason
WAT-SG-9-042408	TO15	Unidentified Oxygenated Compound	30	UG/M3	J	TIC
WAT-SG-9-042408	TO15	Epichlorohydrin	0	UG/M3	UJ	TIC
WAT-SG-9-042408	TO15	Carbon Disulfide	3.8	UG/M3	U	FB<RL
WAT-SG-9-042408	TO15	2-Butanone	1.3	UG/M3	U	FB<RL
WAT-SG-9-042408	TO15	Toluene	1.6	UG/M3	U	FB<RL
WAT-SG-2-042308	TO15	4-Methyl-2-pentanone	47	UG/M3	J	FD>RPD
WAT-SG-2-042308	TO15	C6HF13 (Tridecafluorohexane)	100	UG/M3	J	TIC
WAT-SG-2-042308	TO15	n-Nonanal + C10H14 Aromatic	20	UG/M3	J	TIC
WAT-SG-2-042308	TO15	Hexamethylcyclotrisiloxane	30	UG/M3	J	TIC
WAT-SG-2-042308	TO15	n-Dodecane	10	UG/M3	J	TIC
WAT-SG-2-042308	TO15	C14H28 Compound	40	UG/M3	J	TIC
WAT-SG-2-042308	TO15	Epichlorohydrin	0	UG/M3	UJ	TIC
WAT-SG-2-042308	TO15	2-Butanone	4.7	UG/M3	U	FD>RPD
WAT-SG-2-042308	TO15	2-Butanone	4.7	UG/M3	U	FB<RL
WAT-SG-2-042308	TO15	Toluene	5.7	UG/M3	J	FD>RPD
WAT-SG-4-042308	TO15	Acetone	17	UG/M3	U	FB<RL
WAT-SG-4-042308	TO15	Acetone	17	UG/M3	U	LB<RL
WAT-SG-4-042308	TO15	C6HF13 (Tridecafluorohexane)	80	UG/M3	J	TIC
WAT-SG-4-042308	TO15	C12H26 Branched Alkane	40	UG/M3	J	TIC
WAT-SG-4-042308	TO15	C11H24 Branched Alkane	50	UG/M3	J	TIC
WAT-SG-4-042308	TO15	C11H24 Branched Alkane	60	UG/M3	J	TIC
WAT-SG-4-042308	TO15	n-Undecane	70	UG/M3	J	TIC
WAT-SG-4-042308	TO15	Epichlorohydrin	0	UG/M3	UJ	TIC
WAT-SG-4-042308	TO15	Carbon Disulfide	2.2	UG/M3	U	FB<RL
WAT-SG-4-042308	TO15	2-Butanone	3.7	UG/M3	U	FB<RL
WAT-SG-6-042408	TO15	Acetone	26	UG/M3	U	FB<RL
WAT-SG-6-042408	TO15	Acetone	26	UG/M3	U	LB<RL
WAT-SG-6-042408	TO15	Propane +Carbonyl Sulfide	100	UG/M3	J	TIC
WAT-SG-6-042408	TO15	Dimethyl Sulfide	1000	UG/M3	J	TIC
WAT-SG-6-042408	TO15	Epichlorohydrin	0	UG/M3	UJ	TIC
WAT-SG-6-042408	TO15	Toluene	4.8	UG/M3	U	FB<RL
WAT-SG-3a-042308	TO15	Acetone	56	UG/M3	U	FB<RL
WAT-SG-3a-042308	TO15	Propane + Propene	30	UG/M3	J	TIC
WAT-SG-3a-042308	TO15	C6HF13 (Tridecafluorohexane)	200	UG/M3	J	TIC
WAT-SG-3a-042308	TO15	n-Nonanal	10	UG/M3	J	TIC
WAT-SG-3a-042308	TO15	Hexamethylcyclotrisiloxane	20	UG/M3	J	TIC
WAT-SG-3a-042308	TO15	C14H28 Compound	40	UG/M3	J	TIC
WAT-SG-3a-042308	TO15	Epichlorohydrin	0	UG/M3	UJ	TIC
WAT-SG-3a-042308	TO15	2-Butanone	4.3	UG/M3	U	FB<RL
WAT-SG-1-042308	TO15	Acetone	17	UG/M3	U	FB<RL
WAT-SG-1-042308	TO15	Acetone	17	UG/M3	U	LB<RL
WAT-SG-1-042308	TO15	Chlorodifluoromethane + Propene + Propane	20	UG/M3	J	TIC
WAT-SG-1-042308	TO15	Hexamethylcyclotrisiloxane	10	UG/M3	J	TIC
WAT-SG-1-042308	TO15	C6HF13 (Tridecafluorohexane)	10	UG/M3	J	TIC
WAT-SG-1-042308	TO15	Hexamethylcyclotrisiloxane	40	UG/M3	J	TIC

Field ID	Method	Analyte	Final Result	Units	Final Flag	Reason
WAT-SG-1-042308	TO15	Hexamethylcyclotrisiloxane	50	UG/M3	J	TIC
WAT-SG-1-042308	TO15	Epichlorohydrin	0	UG/M3	UJ	TIC
WAT-SG-1-042308	TO15	Carbon Disulfide	1.2	UG/M3	U	FB<RL
WAT-SG-1-042308	TO15	2-Butanone	3.9	UG/M3	U	FB<RL
WAT-SG-1-042308	TO15	Toluene	1.5	UG/M3	U	FB<RL
WAT-SG-5-042408	TO15	Acetone	10	UG/M3	U	FB<RL
WAT-SG-5-042408	TO15	Acetone	10	UG/M3	U	LB<RL
WAT-SG-5-042408	TO15	4-Methyl-2-pentanone	3	UG/M3	U	FB<RL
WAT-SG-5-042408	TO15	C6HF13 (Tridecafluorohexane)	80	UG/M3	J	TIC
WAT-SG-5-042408	TO15	Hexamethylcyclotrisiloxane	100	UG/M3	J	TIC
WAT-SG-5-042408	TO15	Hexamethylcyclotrisiloxane	30	UG/M3	J	TIC
WAT-SG-5-042408	TO15	Epichlorohydrin	0	UG/M3	UJ	TIC
WAT-SG-5-042408	TO15	Carbon Disulfide	2.4	UG/M3	U	FB<RL
WAT-SG-5-042408	TO15	2-Butanone	0.97	UG/M3	U	FB<RL
WAT-SG-5-042408	TO15	Toluene	0.85	UG/M3	U	FB<RL
WAT-SG-B4-042408	TO15	Propane + Propene	20	UG/M3	J	TIC
WAT-SG-B4-042408	TO15	Butane	10	UG/M3	J	TIC
WAT-SG-B4-042408	TO15	Hexamethylcyclotrisiloxane	10	UG/M3	J	TIC
WAT-SG-B4-042408	TO15	Benzaldehyde	9	UG/M3	J	TIC
WAT-SG-B4-042408	TO15	n-Nonanal	40	UG/M3	J	TIC
WAT-SG-B4-042408	TO15	Epichlorohydrin	0	UG/M3	UJ	TIC
WAT-SG-B4-042408	TO15	Carbon Disulfide	0.92	UG/M3	U	FB<RL
WAT-SG-B4-042408	TO15	2-Butanone	0.98	UG/M3	U	FB<RL
WAT-SG-3-042308	TO15	Acetone	130	UG/M3	U	FB<RL
WAT-SG-3-042308	TO15	C6HF13 (Tridecafluorohexane)	70	UG/M3	J	TIC
WAT-SG-3-042308	TO15	Epichlorohydrin	0	UG/M3	UJ	TIC
WAT-SG-3-042308	TO15	2-Butanone	2.8	UG/M3	U	FB<RL
WAT-SG-FB-042308	TO15	Epichlorohydrin	0	UG/M3	UJ	TIC
WAT-SG-8-042408	TO15	Acetone	230	UG/M3	U	FB<RL
WAT-SG-8-042408	TO15	4-Methyl-2-pentanone	380	UG/M3	J	>ICLinearRange
WAT-SG-8-042408	TO15	Isooctanol	400	UG/M3	J	TIC
WAT-SG-8-042408	TO15	3-Methylpentane	300	UG/M3	J	TIC
WAT-SG-8-042408	TO15	Unidentified Oxygenated Compound	600	UG/M3	J	TIC
WAT-SG-8-042408	TO15	C12H26 Branched Alkane	200	UG/M3	J	TIC
WAT-SG-8-042408	TO15	C11H24 Branched Alkane	100	UG/M3	J	TIC
WAT-SG-8-042408	TO15	Epichlorohydrin	0	UG/M3	UJ	TIC

LB<RL = Laboratory blank concentration below reporting limit
FB<RL = Field blank concentration below reporting limit
FD>RPD = Field duplicate relative percent difference criteria exceeded
>ICLinearRange = Result above instrument linear calibration range
TIC = Tentatively identified compound

2655 Park Center Drive, Suite A Simi Valley, California 93065 (805) 526-7161 (805) 526-7270 fax

Columbia Analytical Services INC.
An Employee - Owned Company

LABORATORY REPORT

May 14, 2008

Lisa La Fortune
CH2M Hill
119 Cherry Hill Road, Suite 300
Parsippany, NJ 07054

RE: DOW - Waterloo, NY / 369548.B2.FI

Dear Lisa:

Enclosed are the results of the samples submitted to our laboratory on April 28, 2008. For your reference, these analyses have been assigned our service request number P0801215.

All analyses were performed in accordance with our laboratory's quality assurance program. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 87 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Kate Aguilera
Project Manager

2655 Park Center Drive, Suite A Simi Valley, California 93065 (805) 526-7161 (805) 526-7270 fax

Columbia Analytical Services INC.
An Employee - Owned Company

Client:	CH2M Hill	CAS Project No:	P0801215
Project:	DOW - Waterloo, NY / 369548.B2.FI	NJ Certification ID:	CA009

CASE NARRATIVE

The samples were received intact under chain of custody on April 28, 2008 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Volatile Organic Compound Analysis

The samples were analyzed for selected volatile organic compounds and tentatively identified compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator.

The Method Blank associated with the samples analyzed on 5/2/08 and 5/5/08 contained low levels of Acetone and Carbon Disulfide below the Method Reporting Limit (MRL). Concentrations reported below the MRL are considered estimated and below what would generally be reported; therefore, the sample results are not significantly affected. However, the data is flagged to indicate the presence of the target analytes.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Client: CH2M Hill

Project: DOW - Waterloo, NY 369548.B2.FI

Folder: P0801215

Detailed Sample Information

CAS Sample ID	Client Sample ID	Container Type	Pi1 (Hg)	Pi1 (psig)	Pf1	Pi2 (Hg)	Pi2 (psig)	Pf2	Cont ID	Order #	FC ID	Order #
P0801215-001.01	WAT-SG-B2-042308	6.0 L-Summa Canister Ambient	-5.4	-2.7	3.5				AC00812	**8489**	FC00693	**8489**
P0801215-002.01	WAT-SG-1-042308	6.0 L-Summa Canister Ambient	0.0	0.0	3.5				AC01311	**8489**	oa00585	
P0801215-003.01	WAT-SG-2-042308	6.0 L-Summa Canister Ambient	-5.6	-2.8	3.5				AC00950	**8489**	OA00611	**8489**
P0801215-004.01	WAT-SG-3-042308	6.0 L-Summa Canister Ambient		0.1	3.5				AC01189	**8489**	oa00594	
P0801215-005.01	WAT-SG-3a-042308	6.0 L-Summa Canister Ambient	-4.4	-2.2	3.5				AC01387	**8489**	oa00590	
P0801215-006.01	WAT-SG-4-042308	6.0 L-Summa Canister Ambient	-0.1	0.0	3.6				AC00648	**8489**	oa00624	
P0801215-007.01	WAT-SG-DUP-042308	6.0 L-Summa Canister Ambient	-0.3	-0.1	3.6				AC01168	**8489**	oa00621	
P0801215-008.01	WAT-SG-FB-042308	6.0 L-Summa Canister Ambient	-29.2	-14.3	3.5				AC01209	**8489**	oa00617	
P0801215-009.01	WAT-SG-B4-042408	6.0 L-Summa Canister Ambient	-6.4	-3.1	3.5				AC00097	**8489**	FC00659	**8489**
P0801215-010.01	WAT-SG-5-042408	6.0 L-Summa Canister Ambient	-3.5	-1.7	3.5				AC00802	**8489**	oa00572	
P0801215-011.01	WAT-SG-5a-042408	6.0 L-Summa Canister Ambient	0.0	0.0	3.5				AC00615	**8489**	OA00591	**8489**
P0801215-012.01	WAT-SG-6-042408	6.0 L-Summa Canister Ambient	0.0	0.0	3.5				AC00814	**8489**	OA00589	**8489**
P0801215-013.01	WAT-SG-7-042408	6.0 L-Summa Canister Ambient	-7.2	-3.5	3.5				AC01276	**8489**	oa00616	
P0801215-014.01	WAT-SG-7a-042408	6.0 L-Summa Canister Ambient		0.2	3.5				AC01211	**8489**	OA00587	**8489**
P0801215-015.01	WAT-SG-8-042408	6.0 L-Summa Canister Ambient	-8.0	-3.9	3.6				AC01235	**8489**	OA00601	**8489**
P0801215-016.01	WAT-SG-9-042408	6.0 L-Summa Canister Ambient		0.3	3.6				AC01020	**8489**	oa00584	

Detailed Sample Information

CAS Sample ID	Client Sample ID	Container Type	Pi1 (Hg)	Pi1 (psig)	Pf1	Pi2 (Hg)	Pi2 (psig)	Pf2	Cont ID	Order #	FC ID	Order #

Miscellaneous Items - received

AVG00528
AVG00807
AVG00794
AVG00582
AVG00633
OA00607
AVG00463
AVG00466
AVG00484
AVG00793
AC00940
AVG00686
AVG00683
AVG00758
AVG00754
AVG00469
AVG00462
AVG00333
AVG00696

Air - Chain of Custody Record & Analytical Service Request

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P0801215

Company Name & Address (Reporting Information)	CH2M Hill 119 Cherry Hill Rd, Suite 300 Parsippany, NJ 07054
Project Name	Dow - Waterloo, NY
Project Number	369548.B2.FI
Project Manager	Stacey Felts-Back
P.O. # / Billing Information	927815
Phone	973-316-9300
Fax	973-334-1847
Email Address for Result Reporting	Rachel.Kopec@CH2M.com
Sampler (Print & Sign)	Rachel Kopec
CAS Contact	Kate Aguilera

Analysis Method and/or Analytes: TO-15 (See Purchase Order)

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Sample Type (Air/Tube/Solid)	Canister ID (Bar Code # - AC, SC, etc.)	Flow Controller (Bar Code - FC #)	Sample Volume	TO-15				Comments e.g. Actual Preservative or specific instructions
WAT-SG-B2-042308	1-5.4	4/23/08	0827	Air	AC00812	FC00693	6L	X				
WAT-SG-1-042308	2-0.8	4/23/08	0838	Air	AC01311	OA00515	6L	X				
WAT-SG-2-042308	3-5.6	4/23/08	0904	Air	AC00950	OA00611	6L	X				
WAT-SG-3-042308	4-10.1	4/23/08	0921	Air	AC01159	OA00594	6L	X				
WAT-SG-3a-042308	5-4.4	4/23/08	0933	Air	AC01387	OA00590	6L	X				
WAT-SG-4-042308	6-0.1	4/23/08	0954	Air	AC00684	OA00624	6L	X				
WAT-[redacted]-SG-DUP-042308	7-0.3	4/23/08	—	Air	AC01168	OA00631	6L	X				
WAT-SG-FB-042308	8-29.2	4/23/08	0955	Air	AC01209	OA00617	6L	X				
WAT-SG-B4-042408	9-6.4	4/24/08	0755	Air	AC00097	FC00659	6L	X				
WAT-SG-5-042408	10-3.5	4/24/08	0759	Air	AC00802	OA00572	6L	X				
WAT-SG-5a-042408	11-0.0	4/24/08	0808	Air	AC00615	OA00591	6L	X				
WAT-SG-6-042408	12-0.0	4/24/08	0821	Air	AC00814	OA00589	6L	X				
WAT-SG-7-042408	13-7.2	4/24/08	0832	Air	AC01276	OA00616	6L	X				
WAT-SG-7a-042408	14-10.2	4/24/08	0854	Air	AC01211	OA00557	6L	X				
WAT-SG-8-042408	15-8.0	4/24/08	0906	Air	AC01335	OA00601	6L	X				Switched Flow Controllers to OA00607

Report Tier Levels - please select
Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) X
EDD required (Yes) / No
Type: Lab Spec 7
EDD Units: ug/m3

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date: 4/25/08	Time: 0800	Received by: (Signature) FEDEX	Date: #	Time:	
Relinquished by: (Signature) Fedex	Date:	Time:	Received by: (Signature)	Date: 4/25/08	Time: 0930	Cooler / Blank
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:	Temperature °C

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Air - Chain of Custody Record & Analytical Service Request

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) (10 Day - Standard) [circled]

CAS Project No. P0801245

CAS Contact: Kate Aguilera

Company Name & Address (Reporting Information): CH2M Hill, 119 Cherry Hill Rd, Suite 300, Parsippany, NJ 07054

Project Name: Dow-Waterloo, NY

Project Number: 369548.B2.FI

Project Manager: Stacey Felts-Bock

Phone: 973-316-9300

Fax: 973-334-5847

P.O. # / Billing Information: 927815

Email Address for Result Reporting: Rachel.Kopec@CH2M.com

Sampler (Print & Sign): Rachel Kopec / [signature]

Analysis Method and/or Analytes

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Sample Type (Air/Tube/ Solid)	Canister ID (Bar Code # - AC, SC, etc.)	Flow Controller (Bar Code - FC #)	Sample Volume	TO-15 (see PO)				Comments e.g. Actual Preservative or specific instructions
WAT-SG-9-042408	(16) +03	4/24/08	0924	Air	AC01020	FC00554	6L	X				

Report Tier Levels - please select
Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) X

EDD required (Yes) / No
Type: Lab Spec ?
EDD Units: ug/m3

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
[signature]	4/25/08	0800	Fraley		
Fraley			[signature]	4/28/08	0830

Cooler / Blank
Temperature °C

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: CH2M Hill Work order: P0801215

Project: DOW - Waterloo, NY / 369548.B2.FI

Sample(s) received on: 4/28/2008 Date opened: 4/28/2008 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
	Cooler Temperature _____ °C Blank Temperature _____ °C			
9	Was a **trip blank** received?	☐	☒	☐
	Trip blank supplied by CAS: Serial # _____ -TB _____			
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☒	☐
	Were custody seals on outside of sample container?	☐	☐	☒
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0801215-001.01	6.0 L Ambient Can					
P0801215-002.01	6.0 L Ambient Can					
P0801215-003.01	6.0 L Ambient Can					
P0801215-004.01	6.0 L Ambient Can					
P0801215-005.01	6.0 L Ambient Can					
P0801215-006.01	6.0 L Ambient Can					
P0801215-007.01	6.0 L Ambient Can					

Explain any discrepancies: (include lab sample ID numbers):

Sample -006 canister serial number is listed as AC00684 on the COC, we received canister AC00648.

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12);
Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: CH2M Hill Work order: P0801215

Project: DOW - Waterloo, NY / 369548.B2.FI

Sample(s) received on: 4/28/2008 Date opened: 4/28/2008 by: MZAMORA

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0801215-008.01	6.0 L Ambient Can					
P0801215-009.01	6.0 L Ambient Can					
P0801215-010.01	6.0 L Ambient Can					
P0801215-011.01	6.0 L Ambient Can					
P0801215-012.01	6.0 L Ambient Can					
P0801215-013.01	6.0 L Ambient Can					
P0801215-014.01	6.0 L Ambient Can					
P0801215-015.01	6.0 L Ambient Can					
P0801215-016.01	6.0 L Ambient Can					

Explain any discrepancies: (include lab sample ID numbers):

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12);
Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-B2-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-001

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00812

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -2.7 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.52

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.29**	0.15	0.076	**0.14**	0.074	0.037	
75-01-4	Vinyl Chloride	0.15	0.15	0.076	0.059	0.059	0.030	**U**
74-83-9	Bromomethane	0.15	0.15	0.076	0.039	0.039	0.020	**U**
75-00-3	Chloroethane	0.15	0.15	0.076	0.058	0.058	0.029	**U**
67-64-1	**Acetone**	**17**	7.6	0.11	**7.2**	3.2	0.047	**B**
107-13-1	**Acrylonitrile**	**1.3**	0.76	0.11	**0.59**	0.35	0.049	
75-35-4	1,1-Dichloroethene	0.15	0.15	0.076	0.038	0.038	0.019	**U**
75-09-2	**Methylene Chloride**	**0.39**	0.76	0.076	**0.11**	0.22	0.022	**J**
75-15-0	**Carbon Disulfide**	**0.71**	0.76	0.18	**0.23**	0.24	0.059	**J**
156-60-5	trans-1,2-Dichloroethene	0.15	0.15	0.076	0.038	0.038	0.019	**U**
75-34-3	1,1-Dichloroethane	0.15	0.15	0.076	0.038	0.038	0.019	**U**
78-93-3	**2-Butanone (MEK)**	**3.1**	0.76	0.076	**1.0**	0.26	0.026	
156-59-2	cis-1,2-Dichloroethene	0.15	0.15	0.076	0.038	0.038	0.019	**U**
67-66-3	**Chloroform**	**1.1**	0.15	0.090	**0.23**	0.031	0.018	
107-06-2	1,2-Dichloroethane	0.15	0.15	0.076	0.038	0.038	0.019	**U**
71-55-6	1,1,1-Trichloroethane	0.15	0.15	0.076	0.028	0.028	0.014	**U**
71-43-2	**Benzene**	**0.57**	0.15	0.076	**0.18**	0.048	0.024	
56-23-5	**Carbon Tetrachloride**	**0.27**	0.15	0.076	**0.043**	0.024	0.012	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.
B = Analyte was found in the method blank.

Verified By: RC Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-B2-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-001

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00812

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -2.7 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.52

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	1,2-Dichloropropane	0.15	0.15	0.076	0.033	0.033	0.016	U
75-27-4	Bromodichloromethane	0.15	0.15	0.076	0.023	0.023	0.011	U
79-01-6	Trichloroethene	0.15	0.15	0.076	0.028	0.028	0.014	U
10061-01-5	cis-1,3-Dichloropropene	0.76	0.76	0.079	0.17	0.17	0.017	U
108-10-1	**4-Methyl-2-pentanone**	**120**	0.76	0.085	**29**	0.19	0.021	
10061-02-6	trans-1,3-Dichloropropene	0.76	0.76	0.096	0.17	0.17	0.021	U
79-00-5	1,1,2-Trichloroethane	0.15	0.15	0.076	0.028	0.028	0.014	U
108-88-3	**Toluene**	**1.2**	0.76	0.076	**0.32**	0.20	0.020	
124-48-1	Dibromochloromethane	0.15	0.15	0.10	0.018	0.018	0.012	U
127-18-4	Tetrachloroethene	0.15	0.15	0.076	0.022	0.022	0.011	U
108-90-7	Chlorobenzene	0.15	0.15	0.078	0.033	0.033	0.017	U
100-41-4	**Ethylbenzene**	**0.24**	0.76	0.094	**0.055**	0.18	0.022	J
179601-23-1	**m,p-Xylenes**	**0.91**	0.76	0.20	**0.21**	0.18	0.046	
75-25-2	Bromoform	0.76	0.76	0.12	0.074	0.074	0.011	U
100-42-5	Styrene	0.76	0.76	0.12	0.18	0.18	0.027	U
95-47-6	**o-Xylene**	**0.39**	0.76	0.096	**0.089**	0.18	0.022	J
79-34-5	1,1,2,2-Tetrachloroethane	0.15	0.15	0.097	0.022	0.022	0.014	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: RC Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-B2-042308** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-001

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 4/23/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/2/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AC00812

Initial Pressure (psig): -2.7 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.52

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
18.87	Benzaldehyde	**20**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: RC Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-1-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-002

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01311

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 0.30 Liter(s)

Initial Pressure (psig): 0.0 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.24

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**1.3**	0.41	0.21	**0.61**	0.20	0.10	
75-01-4	Vinyl Chloride	0.41	0.41	0.21	0.16	0.16	0.081	**U**
74-83-9	Bromomethane	0.41	0.41	0.21	0.11	0.11	0.053	**U**
75-00-3	Chloroethane	0.41	0.41	0.21	0.16	0.16	0.078	**U**
67-64-1	**Acetone**	**17**	21	0.30	**7.0**	8.7	0.13	**J, B**
107-13-1	**Acrylonitrile**	**5.9**	2.1	0.29	**2.7**	0.95	0.13	
75-35-4	1,1-Dichloroethene	0.41	0.41	0.21	0.10	0.10	0.052	**U**
75-09-2	**Methylene Chloride**	**0.46**	2.1	0.21	**0.13**	0.60	0.060	**J**
75-15-0	**Carbon Disulfide**	**1.2**	2.1	0.50	**0.40**	0.66	0.16	**J**
156-60-5	trans-1,2-Dichloroethene	0.41	0.41	0.21	0.10	0.10	0.052	**U**
75-34-3	1,1-Dichloroethane	0.41	0.41	0.21	0.10	0.10	0.051	**U**
78-93-3	**2-Butanone (MEK)**	**3.9**	2.1	0.21	**1.3**	0.70	0.070	
156-59-2	cis-1,2-Dichloroethene	0.41	0.41	0.21	0.10	0.10	0.052	**U**
67-66-3	**Chloroform**	**2.0**	0.41	0.24	**0.40**	0.085	0.050	
107-06-2	1,2-Dichloroethane	0.41	0.41	0.21	0.10	0.10	0.051	**U**
71-55-6	1,1,1-Trichloroethane	0.41	0.41	0.21	0.076	0.076	0.038	**U**
71-43-2	**Benzene**	**0.45**	0.41	0.21	**0.14**	0.13	0.065	
56-23-5	**Carbon Tetrachloride**	**0.29**	0.41	0.21	**0.045**	0.066	0.033	**J**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.
B = Analyte was found in the method blank.

Verified By: RC Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-1-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-002

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01311

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 0.30 Liter(s)

Initial Pressure (psig): 0.0 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.24

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	1,2-Dichloropropane	0.41	0.41	0.21	0.089	0.089	0.045	U
75-27-4	Bromodichloromethane	0.41	0.41	0.21	0.062	0.062	0.031	U
79-01-6	**Trichloroethene**	**1.1**	0.41	0.21	**0.21**	0.077	0.038	
10061-01-5	cis-1,3-Dichloropropene	2.1	2.1	0.21	0.46	0.46	0.047	U
108-10-1	**4-Methyl-2-pentanone**	**410**	2.1	0.23	**100**	0.50	0.057	
10061-02-6	trans-1,3-Dichloropropene	2.1	2.1	0.26	0.46	0.46	0.057	U
79-00-5	1,1,2-Trichloroethane	0.41	0.41	0.21	0.076	0.076	0.038	U
108-88-3	**Toluene**	**1.5**	2.1	0.21	**0.39**	0.55	0.055	J
124-48-1	Dibromochloromethane	0.41	0.41	0.28	0.049	0.049	0.033	U
127-18-4	**Tetrachloroethene**	**1.1**	0.41	0.21	**0.16**	0.061	0.030	
108-90-7	Chlorobenzene	0.41	0.41	0.21	0.090	0.090	0.046	U
100-41-4	Ethylbenzene	2.1	2.1	0.26	0.48	0.48	0.059	U
179601-23-1	**m,p-Xylenes**	**0.77**	2.1	0.54	**0.18**	0.48	0.12	J
75-25-2	Bromoform	2.1	2.1	0.31	0.20	0.20	0.030	U
100-42-5	Styrene	2.1	2.1	0.31	0.49	0.49	0.074	U
95-47-6	**o-Xylene**	**0.27**	2.1	0.26	**0.063**	0.48	0.060	J
79-34-5	1,1,2,2-Tetrachloroethane	0.41	0.41	0.26	0.060	0.060	0.039	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: RG Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-1-042308** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-002

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 4/23/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/2/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.30 Liter(s)
Test Notes: **T**
Container ID: AC01311

Initial Pressure (psig): 0.0 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.24

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
4.46	Chlorodifluoromethane + Propene + Propane	**20**	
15.92	Hexamethylcyclotrisiloxane	**10**	*
16.27	C_6HF_{13} (Tridecafluorohexane)	**10**	
19.72	Hexamethylcyclotrisiloxane	**40**	*
22.06	Hexamethylcyclotrisiloxane	**50**	*
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.
* = Possible artifact

Verified By: RG Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-2-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-003

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00950

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 0.45 Liter(s)

Initial Pressure (psig): -2.8 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.53

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	Chloromethane	0.34	0.34	0.17	0.16	0.16	0.082	U
75-01-4	Vinyl Chloride	0.34	0.34	0.17	0.13	0.13	0.067	U
74-83-9	Bromomethane	0.34	0.34	0.17	0.088	0.088	0.044	U
75-00-3	Chloroethane	0.34	0.34	0.17	0.13	0.13	0.064	U
67-64-1	**Acetone**	**180**	17	0.25	**77**	7.2	0.10	B
107-13-1	**Acrylonitrile**	**1.2**	1.7	0.24	**0.53**	0.78	0.11	J
75-35-4	**1,1-Dichloroethene**	**4.2**	0.34	0.17	**1.1**	0.086	0.043	
75-09-2	**Methylene Chloride**	**1.1**	1.7	0.17	**0.31**	0.49	0.049	J
75-15-0	**Carbon Disulfide**	**10**	1.7	0.41	**3.3**	0.55	0.13	
156-60-5	trans-1,2-Dichloroethene	0.34	0.34	0.17	0.086	0.086	0.043	U
75-34-3	1,1-Dichloroethane	0.34	0.34	0.17	0.084	0.084	0.042	U
78-93-3	**2-Butanone (MEK)**	**4.7**	1.7	0.17	**1.6**	0.58	0.058	
156-59-2	cis-1,2-Dichloroethene	0.34	0.34	0.17	0.086	0.086	0.043	U
67-66-3	**Chloroform**	**240**	0.34	0.20	**50**	0.070	0.041	
107-06-2	**1,2-Dichloroethane**	**2.0**	0.34	0.17	**0.49**	0.084	0.042	
71-55-6	1,1,1-Trichloroethane	0.34	0.34	0.17	0.062	0.062	0.031	U
71-43-2	**Benzene**	**0.93**	0.34	0.17	**0.29**	0.11	0.053	
56-23-5	**Carbon Tetrachloride**	**2.1**	0.34	0.17	**0.33**	0.054	0.027	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.
B = Analyte was found in the method blank.

Verified By: RG Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-2-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-003

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00950

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 0.45 Liter(s)

Initial Pressure (psig): -2.8 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.53

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	**1,2-Dichloropropane**	**4.0**	0.34	0.17	**0.87**	0.074	0.037	
75-27-4	Bromodichloromethane	0.34	0.34	0.17	0.051	0.051	0.025	**U**
79-01-6	**Trichloroethene**	**3.6**	0.34	0.17	**0.66**	0.063	0.032	
10061-01-5	cis-1,3-Dichloropropene	1.7	1.7	0.18	0.37	0.37	0.039	**U**
108-10-1	**4-Methyl-2-pentanone**	**47**	1.7	0.19	**11**	0.41	0.046	
10061-02-6	trans-1,3-Dichloropropene	1.7	1.7	0.21	0.37	0.37	0.047	**U**
79-00-5	1,1,2-Trichloroethane	0.34	0.34	0.17	0.062	0.062	0.031	**U**
108-88-3	**Toluene**	**5.7**	1.7	0.17	**1.5**	0.45	0.045	
124-48-1	Dibromochloromethane	0.34	0.34	0.23	0.040	0.040	0.027	**U**
127-18-4	**Tetrachloroethene**	**32**	0.34	0.17	**4.7**	0.050	0.025	
108-90-7	Chlorobenzene	0.34	0.34	0.17	0.074	0.074	0.038	**U**
100-41-4	**Ethylbenzene**	**0.54**	1.7	0.21	**0.13**	0.39	0.049	**J**
179601-23-1	**m,p-Xylenes**	**3.3**	1.7	0.44	**0.75**	0.39	0.10	
75-25-2	Bromoform	1.7	1.7	0.26	0.16	0.16	0.025	**U**
100-42-5	**Styrene**	**0.30**	1.7	0.26	**0.070**	0.40	0.061	**J**
95-47-6	**o-Xylene**	**1.1**	1.7	0.21	**0.26**	0.39	0.049	**J**
79-34-5	1,1,2,2-Tetrachloroethane	0.34	0.34	0.22	0.050	0.050	0.032	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: Rc Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-2-042308** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-003

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 4/23/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/2/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.45 Liter(s)
Test Notes: **T**
Container ID: AC00950

Initial Pressure (psig): -2.8 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.53

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
16.27	C_6HF_{13} (Tridecafluorohexane)	**100**	
21.27	n-Nonanal + $C_{10}H_{14}$ Aromatic	**20**	
22.06	Hexamethylcyclotrisiloxane	**30**	*
22.66	n-Dodecane	**10**	
24.81	$C_{14}H_{28}$ Compound	**40**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.
* = Possible artifact

Verified By: RC Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-3-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-004

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01189

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 0.10 Liter(s)

Initial Pressure (psig): 0.1 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.23

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**1.0**	1.2	0.62	**0.51**	0.60	0.30	**J**
75-01-4	Vinyl Chloride	1.2	1.2	0.62	0.48	0.48	0.24	**U**
74-83-9	Bromomethane	1.2	1.2	0.62	0.32	0.32	0.16	**U**
75-00-3	Chloroethane	1.2	1.2	0.62	0.47	0.47	0.23	**U**
67-64-1	**Acetone**	**130**	62	0.90	**53**	26	0.38	**B**
107-13-1	**Acrylonitrile**	**27**	6.2	0.86	**12**	2.8	0.40	
75-35-4	1,1-Dichloroethene	1.2	1.2	0.62	0.31	0.31	0.16	**U**
75-09-2	**Methylene Chloride**	**1.3**	6.2	0.62	**0.39**	1.8	0.18	**J**
75-15-0	**Carbon Disulfide**	**34**	6.2	1.5	**11**	2.0	0.47	
156-60-5	trans-1,2-Dichloroethene	1.2	1.2	0.62	0.31	0.31	0.16	**U**
75-34-3	1,1-Dichloroethane	1.2	1.2	0.62	0.30	0.30	0.15	**U**
78-93-3	**2-Butanone (MEK)**	**2.8**	6.2	0.62	**0.96**	2.1	0.21	**J**
156-59-2	cis-1,2-Dichloroethene	1.2	1.2	0.62	0.31	0.31	0.16	**U**
67-66-3	**Chloroform**	**25**	1.2	0.73	**5.1**	0.25	0.15	
107-06-2	1,2-Dichloroethane	1.2	1.2	0.62	0.30	0.30	0.15	**U**
71-55-6	1,1,1-Trichloroethane	1.2	1.2	0.62	0.23	0.23	0.11	**U**
71-43-2	**Benzene**	**90**	1.2	0.62	**28**	0.39	0.19	
56-23-5	Carbon Tetrachloride	1.2	1.2	0.62	0.20	0.20	0.098	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.
B = Analyte was found in the method blank.

Verified By: Re Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-3-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-004

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01189

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 0.10 Liter(s)

Initial Pressure (psig): 0.1 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.23

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	1,2-Dichloropropane	1.2	1.2	0.62	0.27	0.27	0.13	U
75-27-4	Bromodichloromethane	1.2	1.2	0.62	0.18	0.18	0.092	U
79-01-6	**Trichloroethene**	**2.9**	1.2	0.62	**0.54**	0.23	0.11	
10061-01-5	cis-1,3-Dichloropropene	6.2	6.2	0.64	1.4	1.4	0.14	U
108-10-1	**4-Methyl-2-pentanone**	**820**	6.2	0.69	**200**	1.5	0.17	
10061-02-6	trans-1,3-Dichloropropene	6.2	6.2	0.77	1.4	1.4	0.17	U
79-00-5	1,1,2-Trichloroethane	1.2	1.2	0.62	0.23	0.23	0.11	U
108-88-3	**Toluene**	**16**	6.2	0.62	**4.1**	1.6	0.16	
124-48-1	Dibromochloromethane	1.2	1.2	0.84	0.14	0.14	0.098	U
127-18-4	**Tetrachloroethene**	**8.9**	1.2	0.62	**1.3**	0.18	0.091	
108-90-7	Chlorobenzene	1.2	1.2	0.63	0.27	0.27	0.14	U
100-41-4	**Ethylbenzene**	**0.91**	6.2	0.76	**0.21**	1.4	0.18	J
179601-23-1	**m,p-Xylenes**	**4.4**	6.2	1.6	**1.0**	1.4	0.37	J
75-25-2	Bromoform	6.2	6.2	0.93	0.60	0.60	0.090	U
100-42-5	Styrene	6.2	6.2	0.93	1.4	1.4	0.22	U
95-47-6	**o-Xylene**	**1.5**	6.2	0.77	**0.34**	1.4	0.18	J
79-34-5	1,1,2,2-Tetrachloroethane	1.2	1.2	0.79	0.18	0.18	0.11	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: RC Date: 5/2/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-3-042308** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-004

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 4/23/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/2/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.10 Liter(s)
Test Notes: **T**
Container ID: AC01189

Initial Pressure (psig): 0.1 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.23

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
16.27	C_6HF_{13} (Tridecafluorohexane)	**70**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-3a-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-005

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01387

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/5/08
Volume(s) Analyzed: 0.50 Liter(s)

Initial Pressure (psig): -2.2 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.39**	0.29	0.15	**0.19**	0.14	0.071	
75-01-4	Vinyl Chloride	0.29	0.29	0.15	0.11	0.11	0.057	**U**
74-83-9	Bromomethane	0.29	0.29	0.15	0.075	0.075	0.038	**U**
75-00-3	**Chloroethane**	**0.72**	0.29	0.15	**0.27**	0.11	0.055	
67-64-1	**Acetone**	**56**	15	0.21	**23**	6.1	0.090	**B**
107-13-1	**Acrylonitrile**	**6.9**	1.5	0.20	**3.2**	0.67	0.094	
75-35-4	1,1-Dichloroethene	0.29	0.29	0.15	0.074	0.074	0.037	**U**
75-09-2	**Methylene Chloride**	**0.43**	1.5	0.15	**0.12**	0.42	0.042	**J**
75-15-0	**Carbon Disulfide**	**9.5**	1.5	0.35	**3.0**	0.47	0.11	
156-60-5	trans-1,2-Dichloroethene	0.29	0.29	0.15	0.074	0.074	0.037	**U**
75-34-3	1,1-Dichloroethane	0.29	0.29	0.15	0.072	0.072	0.036	**U**
78-93-3	**2-Butanone (MEK)**	**4.3**	1.5	0.15	**1.4**	0.50	0.050	
156-59-2	**cis-1,2-Dichloroethene**	**1.4**	0.29	0.15	**0.35**	0.074	0.037	
67-66-3	**Chloroform**	**3.6**	0.29	0.17	**0.74**	0.060	0.035	
107-06-2	1,2-Dichloroethane	0.29	0.29	0.15	0.072	0.072	0.036	**U**
71-55-6	1,1,1-Trichloroethane	0.29	0.29	0.15	0.054	0.054	0.027	**U**
71-43-2	**Benzene**	**13**	0.29	0.15	**4.0**	0.091	0.046	
56-23-5	Carbon Tetrachloride	0.29	0.29	0.15	0.046	0.046	0.023	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.
B = Analyte was found in the method blank.

Verified By: Re Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-3a-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-005

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01387

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/5/08
Volume(s) Analyzed: 0.50 Liter(s)

Initial Pressure (psig): -2.2 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	1,2-Dichloropropane	0.29	0.29	0.15	0.063	0.063	0.032	U
75-27-4	Bromodichloromethane	0.29	0.29	0.15	0.044	0.044	0.022	U
79-01-6	**Trichloroethene**	**10**	0.29	0.15	**1.9**	0.054	0.027	
10061-01-5	cis-1,3-Dichloropropene	1.5	1.5	0.15	0.32	0.32	0.033	U
108-10-1	**4-Methyl-2-pentanone**	**240**	1.5	0.16	**58**	0.36	0.040	
10061-02-6	trans-1,3-Dichloropropene	1.5	1.5	0.18	0.32	0.32	0.041	U
79-00-5	1,1,2-Trichloroethane	0.29	0.29	0.15	0.054	0.054	0.027	U
108-88-3	**Toluene**	**26**	1.5	0.15	**6.8**	0.39	0.039	
124-48-1	Dibromochloromethane	0.29	0.29	0.20	0.034	0.034	0.023	U
127-18-4	**Tetrachloroethene**	**5.4**	0.29	0.15	**0.79**	0.043	0.022	
108-90-7	Chlorobenzene	0.29	0.29	0.15	0.063	0.063	0.032	U
100-41-4	**Ethylbenzene**	**0.43**	1.5	0.18	**0.10**	0.34	0.042	J
179601-23-1	**m,p-Xylenes**	**2.3**	1.5	0.38	**0.53**	0.34	0.087	
75-25-2	Bromoform	1.5	1.5	0.22	0.14	0.14	0.021	U
100-42-5	**Styrene**	**0.40**	1.5	0.22	**0.095**	0.34	0.052	J
95-47-6	**o-Xylene**	**0.83**	1.5	0.18	**0.19**	0.34	0.042	J
79-34-5	1,1,2,2-Tetrachloroethane	0.29	0.29	0.19	0.043	0.043	0.027	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: RC Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-3a-042308** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-005

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 4/23/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/5/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.50 Liter(s)
Test Notes: **T**
Container ID: AC01387

Initial Pressure (psig): -2.2 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.46

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.46	Propane + Propene	**30**	
16.27	C_6HF_{13} (Tridecafluorohexane)	**200**	
21.26	n-Nonanal	**10**	
22.06	Hexamethylcyclotrisiloxane	**20**	*
24.81	$C_{14}H_{28}$ Compound	**40**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.
* = Possible artifact

Verified By: RG Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-4-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-006

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00648

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 0.30 Liter(s)

Initial Pressure (psig): 0.0 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.24

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.62**	0.41	0.21	**0.30**	0.20	0.10	
75-01-4	Vinyl Chloride	0.41	0.41	0.21	0.16	0.16	0.081	**U**
74-83-9	Bromomethane	0.41	0.41	0.21	0.11	0.11	0.053	**U**
75-00-3	Chloroethane	0.41	0.41	0.21	0.16	0.16	0.078	**U**
67-64-1	**Acetone**	**17**	21	0.30	**7.0**	8.7	0.13	**J, B**
107-13-1	**Acrylonitrile**	**0.86**	2.1	0.29	**0.39**	0.95	0.13	**J**
75-35-4	1,1-Dichloroethene	0.41	0.41	0.21	0.10	0.10	0.052	**U**
75-09-2	**Methylene Chloride**	**0.39**	2.1	0.21	**0.11**	0.60	0.060	**J**
75-15-0	**Carbon Disulfide**	**2.2**	2.1	0.50	**0.71**	0.66	0.16	
156-60-5	trans-1,2-Dichloroethene	0.41	0.41	0.21	0.10	0.10	0.052	**U**
75-34-3	**1,1-Dichloroethane**	**2.1**	0.41	0.21	**0.53**	0.10	0.051	
78-93-3	**2-Butanone (MEK)**	**3.7**	2.1	0.21	**1.2**	0.70	0.070	
156-59-2	cis-1,2-Dichloroethene	0.41	0.41	0.21	0.10	0.10	0.052	**U**
67-66-3	**Chloroform**	**440**	0.41	0.24	**90**	0.085	0.050	
107-06-2	1,2-Dichloroethane	0.41	0.41	0.21	0.10	0.10	0.051	**U**
71-55-6	**1,1,1-Trichloroethane**	**12**	0.41	0.21	**2.2**	0.076	0.038	
71-43-2	**Benzene**	**0.81**	0.41	0.21	**0.25**	0.13	0.065	
56-23-5	Carbon Tetrachloride	0.41	0.41	0.21	0.066	0.066	0.033	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.
B = Analyte was found in the method blank.

Verified By: RG Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-4-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-006

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00648

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 0.30 Liter(s)

Initial Pressure (psig): 0.0 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.24

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	**1,2-Dichloropropane**	**3.9**	0.41	0.21	**0.84**	0.089	0.045	
75-27-4	Bromodichloromethane	0.41	0.41	0.21	0.062	0.062	0.031	U
79-01-6	**Trichloroethene**	**2.5**	0.41	0.21	**0.46**	0.077	0.038	
10061-01-5	cis-1,3-Dichloropropene	2.1	2.1	0.21	0.46	0.46	0.047	U
108-10-1	**4-Methyl-2-pentanone**	**100**	2.1	0.23	**25**	0.50	0.057	
10061-02-6	trans-1,3-Dichloropropene	2.1	2.1	0.26	0.46	0.46	0.057	U
79-00-5	1,1,2-Trichloroethane	0.41	0.41	0.21	0.076	0.076	0.038	U
108-88-3	**Toluene**	**5.8**	2.1	0.21	**1.5**	0.55	0.055	
124-48-1	Dibromochloromethane	0.41	0.41	0.28	0.049	0.049	0.033	U
127-18-4	**Tetrachloroethene**	**17**	0.41	0.21	**2.6**	0.061	0.030	
108-90-7	Chlorobenzene	0.41	0.41	0.21	0.090	0.090	0.046	U
100-41-4	**Ethylbenzene**	**0.61**	2.1	0.26	**0.14**	0.48	0.059	J
179601-23-1	**m,p-Xylenes**	**4.3**	2.1	0.54	**0.99**	0.48	0.12	
75-25-2	Bromoform	2.1	2.1	0.31	0.20	0.20	0.030	U
100-42-5	Styrene	2.1	2.1	0.31	0.49	0.49	0.074	U
95-47-6	**o-Xylene**	**2.9**	2.1	0.26	**0.66**	0.48	0.060	
79-34-5	1,1,2,2-Tetrachloroethane	0.41	0.41	0.26	0.060	0.060	0.039	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: _____ Date: 5/2/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-4-042308** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-006

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 4/23/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/2/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.30 Liter(s)
Test Notes: **T**
Container ID: AC00648

Initial Pressure (psig): 0.0 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.24

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
16.28	C_6HF_{13} (Tridecafluorohexane)	**80**	
20.73	$C_{12}H_{26}$ Branched Alkane	**40**	
21.02	$C_{11}H_{24}$ Branched Alkane	**50**	
21.05	$C_{11}H_{24}$ Branched Alkane	**60**	
21.44	n-Undecane	**70**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: RG Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-DUP-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-007

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01168

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/5/08
Volume(s) Analyzed: 0.10 Liter(s)

Initial Pressure (psig): -0.1 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.25

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	Chloromethane	1.3	1.3	0.63	0.61	0.61	0.30	U
75-01-4	Vinyl Chloride	1.3	1.3	0.63	0.49	0.49	0.24	U
74-83-9	Bromomethane	1.3	1.3	0.63	0.32	0.32	0.16	U
75-00-3	Chloroethane	1.3	1.3	0.63	0.47	0.47	0.24	U
67-64-1	**Acetone**	**250**	63	0.91	**100**	26	0.38	B
107-13-1	Acrylonitrile	6.3	6.3	0.88	2.9	2.9	0.40	U
75-35-4	**1,1-Dichloroethene**	**4.0**	1.3	0.63	**1.0**	0.32	0.16	
75-09-2	**Methylene Chloride**	**1.6**	6.3	0.63	**0.45**	1.8	0.18	J
75-15-0	**Carbon Disulfide**	**8.6**	6.3	1.5	**2.8**	2.0	0.48	
156-60-5	trans-1,2-Dichloroethene	1.3	1.3	0.63	0.32	0.32	0.16	U
75-34-3	1,1-Dichloroethane	1.3	1.3	0.63	0.31	0.31	0.15	U
78-93-3	**2-Butanone (MEK)**	**2.5**	6.3	0.63	**0.83**	2.1	0.21	J
156-59-2	cis-1,2-Dichloroethene	1.3	1.3	0.63	0.32	0.32	0.16	U
67-66-3	**Chloroform**	**260**	1.3	0.74	**53**	0.26	0.15	
107-06-2	**1,2-Dichloroethane**	**2.1**	1.3	0.63	**0.51**	0.31	0.15	
71-55-6	1,1,1-Trichloroethane	1.3	1.3	0.63	0.23	0.23	0.11	U
71-43-2	Benzene	1.3	1.3	0.63	0.39	0.39	0.20	U
56-23-5	**Carbon Tetrachloride**	**1.6**	1.3	0.63	**0.26**	0.20	0.099	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.
B = Analyte was found in the method blank.

Verified By: RG Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-DUP-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-007

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01168

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/5/08
Volume(s) Analyzed: 0.10 Liter(s)

Initial Pressure (psig): -0.1 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.25

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	**1,2-Dichloropropane**	**3.6**	1.3	0.63	**0.78**	0.27	0.14	
75-27-4	Bromodichloromethane	1.3	1.3	0.63	0.19	0.19	0.093	U
79-01-6	**Trichloroethene**	**3.5**	1.3	0.63	**0.65**	0.23	0.12	
10061-01-5	cis-1,3-Dichloropropene	6.3	6.3	0.65	1.4	1.4	0.14	U
108-10-1	**4-Methyl-2-pentanone**	**15**	6.3	0.70	**3.6**	1.5	0.17	
10061-02-6	trans-1,3-Dichloropropene	6.3	6.3	0.79	1.4	1.4	0.17	U
79-00-5	1,1,2-Trichloroethane	1.3	1.3	0.63	0.23	0.23	0.11	U
108-88-3	**Toluene**	**2.1**	6.3	0.63	**0.56**	1.7	0.17	J
124-48-1	Dibromochloromethane	1.3	1.3	0.85	0.15	0.15	0.10	U
127-18-4	**Tetrachloroethene**	**28**	1.3	0.63	**4.1**	0.18	0.092	
108-90-7	Chlorobenzene	1.3	1.3	0.64	0.27	0.27	0.14	U
100-41-4	Ethylbenzene	6.3	6.3	0.78	1.4	1.4	0.18	U
179601-23-1	m,p-Xylenes	6.3	6.3	1.6	1.4	1.4	0.37	U
75-25-2	Bromoform	6.3	6.3	0.95	0.60	0.60	0.092	U
100-42-5	Styrene	6.3	6.3	0.95	1.5	1.5	0.22	U
95-47-6	o-Xylene	6.3	6.3	0.79	1.4	1.4	0.18	U
79-34-5	1,1,2,2-Tetrachloroethane	1.3	1.3	0.80	0.18	0.18	0.12	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: RG Date: 5/22/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-DUP-042308** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-007

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 4/23/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/5/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.10 Liter(s)
Test Notes: **T**
Container ID: AC01168

Initial Pressure (psig): -0.1 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.25

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
16.26	C_6HF_{13} (Tridecafluorohexane)	**50**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: Rev Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-FB-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-008

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01209

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	Chloromethane	0.10	0.10	0.050	0.048	0.048	0.024	U
75-01-4	Vinyl Chloride	0.10	0.10	0.050	0.039	0.039	0.020	U
74-83-9	Bromomethane	0.10	0.10	0.050	0.026	0.026	0.013	U
75-00-3	Chloroethane	0.10	0.10	0.050	0.038	0.038	0.019	U
67-64-1	**Acetone**	**2.2**	5.0	0.073	**0.92**	2.1	0.031	J, B
107-13-1	Acrylonitrile	0.50	0.50	0.070	0.23	0.23	0.032	U
75-35-4	1,1-Dichloroethene	0.10	0.10	0.050	0.025	0.025	0.013	U
75-09-2	Methylene Chloride	0.50	0.50	0.050	0.14	0.14	0.014	U
75-15-0	**Carbon Disulfide**	**0.44**	0.50	0.12	**0.14**	0.16	0.039	J
156-60-5	trans-1,2-Dichloroethene	0.10	0.10	0.050	0.025	0.025	0.013	U
75-34-3	1,1-Dichloroethane	0.10	0.10	0.050	0.025	0.025	0.012	U
78-93-3	**2-Butanone (MEK)**	**0.36**	0.50	0.050	**0.12**	0.17	0.017	J
156-59-2	cis-1,2-Dichloroethene	0.10	0.10	0.050	0.025	0.025	0.013	U
67-66-3	Chloroform	0.10	0.10	0.059	0.020	0.020	0.012	U
107-06-2	1,2-Dichloroethane	0.10	0.10	0.050	0.025	0.025	0.012	U
71-55-6	1,1,1-Trichloroethane	0.10	0.10	0.050	0.018	0.018	0.0092	U
71-43-2	Benzene	0.10	0.10	0.050	0.031	0.031	0.016	U
56-23-5	Carbon Tetrachloride	0.10	0.10	0.050	0.016	0.016	0.0080	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.
B = Analyte was found in the method blank.

Verified By: RG Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-FB-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-008

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01209

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	1,2-Dichloropropane	0.10	0.10	0.050	0.022	0.022	0.011	U
75-27-4	Bromodichloromethane	0.10	0.10	0.050	0.015	0.015	0.0075	U
79-01-6	Trichloroethene	0.10	0.10	0.050	0.019	0.019	0.0093	U
10061-01-5	cis-1,3-Dichloropropene	0.50	0.50	0.052	0.11	0.11	0.011	U
108-10-1	**4-Methyl-2-pentanone**	**0.096**	0.50	0.056	**0.023**	0.12	0.014	J
10061-02-6	trans-1,3-Dichloropropene	0.50	0.50	0.063	0.11	0.11	0.014	U
79-00-5	1,1,2-Trichloroethane	0.10	0.10	0.050	0.018	0.018	0.0092	U
108-88-3	**Toluene**	**0.24**	0.50	0.050	**0.065**	0.13	0.013	J
124-48-1	Dibromochloromethane	0.10	0.10	0.068	0.012	0.012	0.0080	U
127-18-4	Tetrachloroethene	0.10	0.10	0.050	0.015	0.015	0.0074	U
108-90-7	Chlorobenzene	0.10	0.10	0.051	0.022	0.022	0.011	U
100-41-4	Ethylbenzene	0.50	0.50	0.062	0.12	0.12	0.014	U
179601-23-1	m,p-Xylenes	0.50	0.50	0.13	0.12	0.12	0.030	U
75-25-2	Bromoform	0.50	0.50	0.076	0.048	0.048	0.0074	U
100-42-5	Styrene	0.50	0.50	0.076	0.12	0.12	0.018	U
95-47-6	o-Xylene	0.50	0.50	0.063	0.12	0.12	0.015	U
79-34-5	1,1,2,2-Tetrachloroethane	0.10	0.10	0.064	0.015	0.015	0.0093	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: Re Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-FB-042308** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-008

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 4/23/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/2/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AC01209

Canister Dilution Factor: 1.00

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
	Epichlorohydrin	NF	

NF = Compound was searched for, but not found.

Verified By: RG Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-B4-042408**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-009

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00097

Date Collected: 4/24/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -3.1 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.57

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.56**	0.16	0.079	**0.27**	0.076	0.038	
75-01-4	Vinyl Chloride	0.16	0.16	0.079	0.061	0.061	0.031	**U**
74-83-9	Bromomethane	0.16	0.16	0.079	0.040	0.040	0.020	**U**
75-00-3	**Chloroethane**	**0.086**	0.16	0.079	**0.033**	0.060	0.030	**J**
67-64-1	**Acetone**	**35**	7.9	0.11	**15**	3.3	0.048	**B**
107-13-1	**Acrylonitrile**	**1.1**	0.79	0.11	**0.48**	0.36	0.051	
75-35-4	**1,1-Dichloroethene**	**0.11**	0.16	0.079	**0.029**	0.040	0.020	**J**
75-09-2	**Methylene Chloride**	**0.36**	0.79	0.079	**0.10**	0.23	0.023	**J**
75-15-0	**Carbon Disulfide**	**0.92**	0.79	0.19	**0.29**	0.25	0.061	
156-60-5	trans-1,2-Dichloroethene	0.16	0.16	0.079	0.040	0.040	0.020	**U**
75-34-3	1,1-Dichloroethane	0.16	0.16	0.079	0.039	0.039	0.019	**U**
78-93-3	**2-Butanone (MEK)**	**0.98**	0.79	0.079	**0.33**	0.27	0.027	
156-59-2	cis-1,2-Dichloroethene	0.16	0.16	0.079	0.040	0.040	0.020	**U**
67-66-3	**Chloroform**	**1.3**	0.16	0.093	**0.26**	0.032	0.019	
107-06-2	1,2-Dichloroethane	0.16	0.16	0.079	0.039	0.039	0.019	**U**
71-55-6	1,1,1-Trichloroethane	0.16	0.16	0.079	0.029	0.029	0.014	**U**
71-43-2	**Benzene**	**0.48**	0.16	0.079	**0.15**	0.049	0.025	
56-23-5	**Carbon Tetrachloride**	**0.38**	0.16	0.079	**0.060**	0.025	0.012	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.
B = Analyte was found in the method blank.

Verified By: RG Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-B4-042408**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-009

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00097

Date Collected: 4/24/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -3.1 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.57

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	1,2-Dichloropropane	0.16	0.16	0.079	0.034	0.034	0.017	U
75-27-4	Bromodichloromethane	0.16	0.16	0.079	0.023	0.023	0.012	U
79-01-6	**Trichloroethene**	**0.45**	0.16	0.079	**0.083**	0.029	0.015	
10061-01-5	cis-1,3-Dichloropropene	0.79	0.79	0.082	0.17	0.17	0.018	U
108-10-1	**4-Methyl-2-pentanone**	**94**	0.79	0.088	**23**	0.19	0.021	
10061-02-6	trans-1,3-Dichloropropene	0.79	0.79	0.099	0.17	0.17	0.022	U
79-00-5	1,1,2-Trichloroethane	0.16	0.16	0.079	0.029	0.029	0.014	U
108-88-3	**Toluene**	**13**	0.79	0.079	**3.5**	0.21	0.021	
124-48-1	Dibromochloromethane	0.16	0.16	0.11	0.018	0.018	0.013	U
127-18-4	Tetrachloroethene	0.16	0.16	0.079	0.023	0.023	0.012	U
108-90-7	Chlorobenzene	0.16	0.16	0.080	0.034	0.034	0.017	U
100-41-4	**Ethylbenzene**	**0.25**	0.79	0.097	**0.057**	0.18	0.022	J
179601-23-1	**m,p-Xylenes**	**0.83**	0.79	0.20	**0.19**	0.18	0.047	
75-25-2	Bromoform	0.79	0.79	0.12	0.076	0.076	0.012	U
100-42-5	**Styrene**	**0.12**	0.79	0.12	**0.028**	0.18	0.028	J
95-47-6	**o-Xylene**	**0.21**	0.79	0.099	**0.049**	0.18	0.023	J
79-34-5	1,1,2,2-Tetrachloroethane	0.16	0.16	0.10	0.023	0.023	0.015	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: RG Date: 5/2/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-B4-042408** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-009

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 4/24/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/2/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AC00097

Initial Pressure (psig): -3.1 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.57

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
4.46	Propane + Propene	**20**	
5.18	n-Butane	**10**	
16.45	Hexamethylcyclotrisiloxane	**10**	*
18.87	Benzaldehyde	**9**	
21.27	n-Nonanal	**40**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.
* = Possible artifact

Verified By: Rev Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-5-042408**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-010

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00802

Date Collected: 4/24/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 0.15 Liter(s)

Initial Pressure (psig): -1.7 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.40

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	Chloromethane	0.93	0.93	0.47	0.45	0.45	0.23	U
75-01-4	Vinyl Chloride	0.93	0.93	0.47	0.37	0.37	0.18	U
74-83-9	Bromomethane	0.93	0.93	0.47	0.24	0.24	0.12	U
75-00-3	Chloroethane	0.93	0.93	0.47	0.35	0.35	0.18	U
67-64-1	**Acetone**	**10**	47	0.68	**4.3**	20	0.29	J, B
107-13-1	Acrylonitrile	4.7	4.7	0.65	2.2	2.2	0.30	U
75-35-4	1,1-Dichloroethene	0.93	0.93	0.47	0.24	0.24	0.12	U
75-09-2	Methylene Chloride	4.7	4.7	0.47	1.3	1.3	0.13	U
75-15-0	**Carbon Disulfide**	**2.4**	4.7	1.1	**0.78**	1.5	0.36	J
156-60-5	trans-1,2-Dichloroethene	0.93	0.93	0.47	0.24	0.24	0.12	U
75-34-3	**1,1-Dichloroethane**	**1.4**	0.93	0.47	**0.33**	0.23	0.12	
78-93-3	**2-Butanone (MEK)**	**0.97**	4.7	0.47	**0.33**	1.6	0.16	J
156-59-2	cis-1,2-Dichloroethene	0.93	0.93	0.47	0.24	0.24	0.12	U
67-66-3	**Chloroform**	**1,100**	0.93	0.55	**230**	0.19	0.11	
107-06-2	1,2-Dichloroethane	0.93	0.93	0.47	0.23	0.23	0.12	U
71-55-6	1,1,1-Trichloroethane	0.93	0.93	0.47	0.17	0.17	0.086	U
71-43-2	Benzene	0.93	0.93	0.47	0.29	0.29	0.15	U
56-23-5	Carbon Tetrachloride	0.93	0.93	0.47	0.15	0.15	0.074	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.
B = Analyte was found in the method blank.

Verified By: RC Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-5-042408**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-010

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00802

Date Collected: 4/24/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 0.15 Liter(s)

Initial Pressure (psig): -1.7 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.40

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	1,2-Dichloropropane	0.93	0.93	0.47	0.20	0.20	0.10	U
75-27-4	Bromodichloromethane	0.93	0.93	0.47	0.14	0.14	0.070	U
79-01-6	**Trichloroethene**	**2.4**	0.93	0.47	**0.45**	0.17	0.087	
10061-01-5	cis-1,3-Dichloropropene	4.7	4.7	0.49	1.0	1.0	0.11	U
108-10-1	**4-Methyl-2-pentanone**	**3.0**	4.7	0.52	**0.74**	1.1	0.13	J
10061-02-6	trans-1,3-Dichloropropene	4.7	4.7	0.59	1.0	1.0	0.13	U
79-00-5	1,1,2-Trichloroethane	0.93	0.93	0.47	0.17	0.17	0.086	U
108-88-3	**Toluene**	**0.85**	4.7	0.47	**0.23**	1.2	0.12	J
124-48-1	Dibromochloromethane	0.93	0.93	0.63	0.11	0.11	0.075	U
127-18-4	**Tetrachloroethene**	**3.8**	0.93	0.47	**0.56**	0.14	0.069	
108-90-7	Chlorobenzene	0.93	0.93	0.48	0.20	0.20	0.10	U
100-41-4	Ethylbenzene	4.7	4.7	0.58	1.1	1.1	0.13	U
179601-23-1	m,p-Xylenes	4.7	4.7	1.2	1.1	1.1	0.28	U
75-25-2	Bromoform	4.7	4.7	0.71	0.45	0.45	0.069	U
100-42-5	Styrene	4.7	4.7	0.71	1.1	1.1	0.17	U
95-47-6	o-Xylene	4.7	4.7	0.59	1.1	1.1	0.14	U
79-34-5	1,1,2,2-Tetrachloroethane	0.93	0.93	0.60	0.14	0.14	0.087	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: Re Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-5-042408** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-010

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 4/24/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/2/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.15 Liter(s)
Test Notes: **T**
Container ID: AC00802

Initial Pressure (psig): -1.7 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.40

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
16.27	C_6HF_{13} (Tridecafluorohexane)	**80**	
22.07	Hexamethylcyclotrisiloxane	**100**	*
24.09	Hexamethylcyclotrisiloxane	**30**	*
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.
* = Possible artifact

Verified By: Rec Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-5a-042408**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-011

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00615

Date Collected: 4/24/08
Date Received: 4/28/08
Date Analyzed: 5/5/08
Volume(s) Analyzed: 0.30 Liter(s)

Initial Pressure (psig): 0.0 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.24

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	Chloromethane	0.41	0.41	0.21	0.20	0.20	0.10	U
75-01-4	Vinyl Chloride	0.41	0.41	0.21	0.16	0.16	0.081	U
74-83-9	Bromomethane	0.41	0.41	0.21	0.11	0.11	0.053	U
75-00-3	Chloroethane	0.41	0.41	0.21	0.16	0.16	0.078	U
67-64-1	**Acetone**	**12**	21	0.30	**5.1**	8.7	0.13	J, B
107-13-1	Acrylonitrile	2.1	2.1	0.29	0.95	0.95	0.13	U
75-35-4	1,1-Dichloroethene	0.41	0.41	0.21	0.10	0.10	0.052	U
75-09-2	**Methylene Chloride**	**0.29**	2.1	0.21	**0.083**	0.60	0.060	J
75-15-0	**Carbon Disulfide**	**20**	2.1	0.50	**6.5**	0.66	0.16	
156-60-5	trans-1,2-Dichloroethene	0.41	0.41	0.21	0.10	0.10	0.052	U
75-34-3	1,1-Dichloroethane	0.41	0.41	0.21	0.10	0.10	0.051	U
78-93-3	**2-Butanone (MEK)**	**1.3**	2.1	0.21	**0.45**	0.70	0.070	J
156-59-2	**cis-1,2-Dichloroethene**	**2.1**	0.41	0.21	**0.54**	0.10	0.052	
67-66-3	**Chloroform**	**450**	0.41	0.24	**93**	0.085	0.050	
107-06-2	1,2-Dichloroethane	0.41	0.41	0.21	0.10	0.10	0.051	U
71-55-6	1,1,1-Trichloroethane	0.41	0.41	0.21	0.076	0.076	0.038	U
71-43-2	Benzene	0.41	0.41	0.21	0.13	0.13	0.065	U
56-23-5	**Carbon Tetrachloride**	**0.55**	0.41	0.21	**0.087**	0.066	0.033	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.
B = Analyte was found in the method blank.

Verified By: RG Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-5a-042408**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-011

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00615

Date Collected: 4/24/08
Date Received: 4/28/08
Date Analyzed: 5/5/08
Volume(s) Analyzed: 0.30 Liter(s)

Initial Pressure (psig): 0.0 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.24

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	1,2-Dichloropropane	0.41	0.41	0.21	0.089	0.089	0.045	U
75-27-4	**Bromodichloromethane**	**0.43**	0.41	0.21	**0.064**	0.062	0.031	
79-01-6	**Trichloroethene**	**20**	0.41	0.21	**3.6**	0.077	0.038	
10061-01-5	cis-1,3-Dichloropropene	2.1	2.1	0.21	0.46	0.46	0.047	U
108-10-1	**4-Methyl-2-pentanone**	**2.3**	2.1	0.23	**0.55**	0.50	0.057	
10061-02-6	trans-1,3-Dichloropropene	2.1	2.1	0.26	0.46	0.46	0.057	U
79-00-5	1,1,2-Trichloroethane	0.41	0.41	0.21	0.076	0.076	0.038	U
108-88-3	**Toluene**	**0.55**	2.1	0.21	**0.15**	0.55	0.055	J
124-48-1	Dibromochloromethane	0.41	0.41	0.28	0.049	0.049	0.033	U
127-18-4	**Tetrachloroethene**	**4.1**	0.41	0.21	**0.61**	0.061	0.030	
108-90-7	Chlorobenzene	0.41	0.41	0.21	0.090	0.090	0.046	U
100-41-4	Ethylbenzene	2.1	2.1	0.26	0.48	0.48	0.059	U
179601-23-1	**m,p-Xylenes**	**0.58**	2.1	0.54	**0.13**	0.48	0.12	J
75-25-2	Bromoform	2.1	2.1	0.31	0.20	0.20	0.030	U
100-42-5	Styrene	2.1	2.1	0.31	0.49	0.49	0.074	U
95-47-6	**o-Xylene**	**0.27**	2.1	0.26	**0.062**	0.48	0.060	J
79-34-5	1,1,2,2-Tetrachloroethane	0.41	0.41	0.26	0.060	0.060	0.039	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: RG Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-5a-042408** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-011

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 4/24/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/5/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.30 Liter(s)
Test Notes: **T**
Container ID: AC00615

Initial Pressure (psig): 0.0 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.24

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
16.27	C_6HF_{13} (Tridecafluorohexane)	**50**	
21.27	n-Nonanal	**20**	
22.69	Naphthalene	**50**	
24.03	2-Methylnaphthalene	**70**	
24.25	1-Methylnaphthalene	**70**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: Re Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-6-042408**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-012

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00814

Date Collected: 4/24/08
Date Received: 4/28/08
Date Analyzed: 5/5/08
Volume(s) Analyzed: 0.030 Liter(s)

Initial Pressure (psig): 0.0 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.24

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	Chloromethane	4.1	4.1	2.1	2.0	2.0	1.0	U
75-01-4	Vinyl Chloride	4.1	4.1	2.1	1.6	1.6	0.81	U
74-83-9	Bromomethane	4.1	4.1	2.1	1.1	1.1	0.53	U
75-00-3	Chloroethane	4.1	4.1	2.1	1.6	1.6	0.78	U
67-64-1	**Acetone**	**26**	210	3.0	**11**	87	1.3	J, B
107-13-1	Acrylonitrile	21	21	2.9	9.5	9.5	1.3	U
75-35-4	1,1-Dichloroethene	4.1	4.1	2.1	1.0	1.0	0.52	U
75-09-2	**Methylene Chloride**	**2.6**	21	2.1	**0.74**	6.0	0.60	J
75-15-0	**Carbon Disulfide**	**2,600**	21	5.0	**840**	6.6	1.6	
156-60-5	trans-1,2-Dichloroethene	4.1	4.1	2.1	1.0	1.0	0.52	U
75-34-3	1,1-Dichloroethane	4.1	4.1	2.1	1.0	1.0	0.51	U
78-93-3	2-Butanone (MEK)	21	21	2.1	7.0	7.0	0.70	U
156-59-2	cis-1,2-Dichloroethene	4.1	4.1	2.1	1.0	1.0	0.52	U
67-66-3	**Chloroform**	**76**	4.1	2.4	**16**	0.85	0.50	
107-06-2	1,2-Dichloroethane	4.1	4.1	2.1	1.0	1.0	0.51	U
71-55-6	1,1,1-Trichloroethane	4.1	4.1	2.1	0.76	0.76	0.38	U
71-43-2	Benzene	4.1	4.1	2.1	1.3	1.3	0.65	U
56-23-5	Carbon Tetrachloride	4.1	4.1	2.1	0.66	0.66	0.33	U

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J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.
B = Analyte was found in the method blank.

Verified By: RC Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-6-042408**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-012

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00814

Date Collected: 4/24/08
Date Received: 4/28/08
Date Analyzed: 5/5/08
Volume(s) Analyzed: 0.030 Liter(s)

Initial Pressure (psig): 0.0 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.24

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	1,2-Dichloropropane	4.1	4.1	2.1	0.89	0.89	0.45	U
75-27-4	Bromodichloromethane	4.1	4.1	2.1	0.62	0.62	0.31	U
79-01-6	Trichloroethene	4.1	4.1	2.1	0.77	0.77	0.38	U
10061-01-5	cis-1,3-Dichloropropene	21	21	2.1	4.6	4.6	0.47	U
108-10-1	**4-Methyl-2-pentanone**	**110**	21	2.3	**26**	5.0	0.57	
10061-02-6	trans-1,3-Dichloropropene	21	21	2.6	4.6	4.6	0.57	U
79-00-5	1,1,2-Trichloroethane	4.1	4.1	2.1	0.76	0.76	0.38	U
108-88-3	**Toluene**	**4.8**	21	2.1	**1.3**	5.5	0.55	J
124-48-1	Dibromochloromethane	4.1	4.1	2.8	0.49	0.49	0.33	U
127-18-4	**Tetrachloroethene**	**3.4**	4.1	2.1	**0.51**	0.61	0.30	J
108-90-7	Chlorobenzene	4.1	4.1	2.1	0.90	0.90	0.46	U
100-41-4	Ethylbenzene	21	21	2.6	4.8	4.8	0.59	U
179601-23-1	**m,p-Xylenes**	**7.2**	21	5.4	**1.6**	4.8	1.2	J
75-25-2	Bromoform	21	21	3.1	2.0	2.0	0.30	U
100-42-5	Styrene	21	21	3.1	4.9	4.9	0.74	U
95-47-6	**o-Xylene**	**2.9**	21	2.6	**0.66**	4.8	0.60	J
79-34-5	1,1,2,2-Tetrachloroethane	4.1	4.1	2.6	0.60	0.60	0.39	U

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J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: RG Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-6-042408** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-012

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 4/24/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/5/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.030 Liter(s)
Test Notes: **T**
Container ID: AC00814

Initial Pressure (psig): 0.0 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.24

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.45	Propane +Carbonyl Sulfide	**100**	
13.51	Dimethyl Sulfide	**1,000**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: RC Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-7-042408**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-013

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01276

Date Collected: 4/24/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 0.0080 Liter(s)

Initial Pressure (psig): -3.5 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.63

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	Chloromethane	20	20	10	9.9	9.9	4.9	U
75-01-4	Vinyl Chloride	20	20	10	8.0	8.0	4.0	U
74-83-9	Bromomethane	20	20	10	5.2	5.2	2.6	U
75-00-3	Chloroethane	20	20	10	7.7	7.7	3.9	U
67-64-1	**Acetone**	**1,800**	1,000	15	**760**	430	6.3	B
107-13-1	Acrylonitrile	100	100	14	47	47	6.6	U
75-35-4	1,1-Dichloroethene	20	20	10	5.1	5.1	2.6	U
75-09-2	**Methylene Chloride**	**35**	100	10	**10**	29	2.9	J
75-15-0	**Carbon Disulfide**	**310**	100	24	**100**	33	7.9	
156-60-5	trans-1,2-Dichloroethene	20	20	10	5.1	5.1	2.6	U
75-34-3	**1,1-Dichloroethane**	**84**	20	10	**21**	5.0	2.5	
78-93-3	**2-Butanone (MEK)**	**17**	100	10	**5.8**	35	3.5	J
156-59-2	**cis-1,2-Dichloroethene**	**19**	20	10	**4.9**	5.1	2.6	J
67-66-3	**Chloroform**	**24,000**	20	12	**4,800**	4.2	2.5	
107-06-2	1,2-Dichloroethane	20	20	10	5.0	5.0	2.5	U
71-55-6	1,1,1-Trichloroethane	20	20	10	3.7	3.7	1.9	U
71-43-2	Benzene	20	20	10	6.4	6.4	3.2	U
56-23-5	Carbon Tetrachloride	20	20	10	3.2	3.2	1.6	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.
B = Analyte was found in the method blank.

Verified By: RL Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-7-042408**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-013

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01276

Date Collected: 4/24/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 0.0080 Liter(s)

Initial Pressure (psig): -3.5 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.63

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	**1,2-Dichloropropane**	**52**	20	10	**11**	4.4	2.2	
75-27-4	Bromodichloromethane	20	20	10	3.0	3.0	1.5	**U**
79-01-6	**Trichloroethene**	**54**	20	10	**10**	3.8	1.9	
10061-01-5	cis-1,3-Dichloropropene	100	100	11	22	22	2.3	**U**
108-10-1	**4-Methyl-2-pentanone**	**12,000**	100	11	**2,900**	25	2.8	
10061-02-6	trans-1,3-Dichloropropene	100	100	13	22	22	2.8	**U**
79-00-5	1,1,2-Trichloroethane	20	20	10	3.7	3.7	1.9	**U**
108-88-3	**Toluene**	**72**	100	10	**19**	27	2.7	**J**
124-48-1	Dibromochloromethane	20	20	14	2.4	2.4	1.6	**U**
127-18-4	**Tetrachloroethene**	**26**	20	10	**3.9**	3.0	1.5	
108-90-7	Chlorobenzene	20	20	10	4.4	4.4	2.3	**U**
100-41-4	**Ethylbenzene**	**870**	100	13	**200**	23	2.9	
179601-23-1	**m,p-Xylenes**	**4,600**	100	26	**1,100**	23	6.1	
75-25-2	Bromoform	100	100	15	9.9	9.9	1.5	**U**
100-42-5	Styrene	100	100	15	24	24	3.6	**U**
95-47-6	**o-Xylene**	**950**	100	13	**220**	23	3.0	
79-34-5	1,1,2,2-Tetrachloroethane	20	20	13	3.0	3.0	1.9	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: RC Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-7-042408** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-013

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 4/24/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/2/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.0080 Liter(s)
Test Notes:
Container ID: AC01276

Initial Pressure (psig): -3.5 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.63

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
	Epichlorohydrin	NF	

NF = Compound was searched for, but not found.

Verified By: RG Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-7a-042408**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-014

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01211

Date Collected: 4/24/08
Date Received: 4/28/08
Date Analyzed: 5/5/08
Volume(s) Analyzed: 0.0010 Liter(s)

Initial Pressure (psig): 0.2 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.22

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	Chloromethane	120	120	61	59	59	30	U
75-01-4	Vinyl Chloride	120	120	61	48	48	24	U
74-83-9	Bromomethane	120	120	61	31	31	16	U
75-00-3	Chloroethane	120	120	61	46	46	23	U
67-64-1	**Acetone**	**1,600**	6,100	89	**690**	2,600	38	J, B
107-13-1	Acrylonitrile	610	610	85	280	280	39	U
75-35-4	1,1-Dichloroethene	120	120	61	31	31	15	U
75-09-2	**Methylene Chloride**	**240**	610	61	**69**	180	18	J
75-15-0	**Carbon Disulfide**	**3,800**	610	150	**1,200**	200	47	
156-60-5	trans-1,2-Dichloroethene	120	120	61	31	31	15	U
75-34-3	1,1-Dichloroethane	120	120	61	30	30	15	U
78-93-3	2-Butanone (MEK)	610	610	61	210	210	21	U
156-59-2	cis-1,2-Dichloroethene	120	120	61	31	31	15	U
67-66-3	**Chloroform**	**1,300**	120	72	**270**	25	15	
107-06-2	1,2-Dichloroethane	120	120	61	30	30	15	U
71-55-6	1,1,1-Trichloroethane	120	120	61	22	22	11	U
71-43-2	Benzene	120	120	61	38	38	19	U
56-23-5	Carbon Tetrachloride	120	120	61	19	19	9.7	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.
B = Analyte was found in the method blank.

Verified By: Rs Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-7a-042408**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-014

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01211

Date Collected: 4/24/08
Date Received: 4/28/08
Date Analyzed: 5/5/08
Volume(s) Analyzed: 0.0010 Liter(s)

Initial Pressure (psig): 0.2 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.22

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	1,2-Dichloropropane	120	120	61	26	26	13	U
75-27-4	Bromodichloromethane	120	120	61	18	18	9.1	U
79-01-6	Trichloroethene	120	120	61	23	23	11	U
10061-01-5	cis-1,3-Dichloropropene	610	610	63	130	130	14	U
108-10-1	**4-Methyl-2-pentanone**	**86,000**	610	68	**21,000**	150	17	
10061-02-6	trans-1,3-Dichloropropene	610	610	77	130	130	17	U
79-00-5	1,1,2-Trichloroethane	120	120	61	22	22	11	U
108-88-3	**Toluene**	**380**	610	61	**100**	160	16	J
124-48-1	Dibromochloromethane	120	120	83	14	14	9.7	U
127-18-4	Tetrachloroethene	120	120	61	18	18	9.0	U
108-90-7	Chlorobenzene	120	120	62	27	27	14	U
100-41-4	**Ethylbenzene**	**430**	610	76	**99**	140	17	J
179601-23-1	**m,p-Xylenes**	**8,600**	610	160	**2,000**	140	37	
75-25-2	Bromoform	610	610	93	59	59	9.0	U
100-42-5	Styrene	610	610	93	140	140	22	U
95-47-6	**o-Xylene**	**1,700**	610	77	**390**	140	18	
79-34-5	1,1,2,2-Tetrachloroethane	120	120	78	18	18	11	U

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J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: RG Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-7a-042408** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-014

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 4/24/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/5/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.0010 Liter(s)
Test Notes: **T**
Container ID: AC01211

Initial Pressure (psig): 0.2 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.22

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
17.38	n-Butyl Ether	**30,000**	
20.17	2,2'-Oxybispentane ($C_{10}H_{22}O$)	**30,000**	
20.24	Unidentified Oxygenated Compound	**10,000**	
20.47	Unidentified Oxygenated Compound	**10,000**	
21.03	1,1'-Oxybispentane;Amyl Ether ($C_{10}H_{22}O$)	**10,000**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: Re Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-8-042408**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-015

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01235

Date Collected: 4/24/08
Date Received: 4/28/08
Date Analyzed: 5/5/08
Volume(s) Analyzed: 0.10 Liter(s)

Initial Pressure (psig): -3.9 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.69

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**2.1**	1.7	0.85	**1.0**	0.82	0.41	
75-01-4	Vinyl Chloride	1.7	1.7	0.85	0.66	0.66	0.33	**U**
74-83-9	Bromomethane	1.7	1.7	0.85	0.44	0.44	0.22	**U**
75-00-3	Chloroethane	1.7	1.7	0.85	0.64	0.64	0.32	**U**
67-64-1	**Acetone**	**230**	85	1.2	**98**	36	0.52	**B**
107-13-1	**Acrylonitrile**	**3.3**	8.5	1.2	**1.5**	3.9	0.55	**J**
75-35-4	1,1-Dichloroethene	1.7	1.7	0.85	0.43	0.43	0.21	**U**
75-09-2	**Methylene Chloride**	**2.3**	8.5	0.85	**0.66**	2.4	0.24	**J**
75-15-0	**Carbon Disulfide**	**43**	8.5	2.0	**14**	2.7	0.65	
156-60-5	trans-1,2-Dichloroethene	1.7	1.7	0.85	0.43	0.43	0.21	**U**
75-34-3	1,1-Dichloroethane	1.7	1.7	0.85	0.42	0.42	0.21	**U**
78-93-3	**2-Butanone (MEK)**	**32**	8.5	0.85	**11**	2.9	0.29	
156-59-2	cis-1,2-Dichloroethene	1.7	1.7	0.85	0.43	0.43	0.21	**U**
67-66-3	**Chloroform**	**170**	1.7	1.0	**34**	0.35	0.20	
107-06-2	1,2-Dichloroethane	1.7	1.7	0.85	0.42	0.42	0.21	**U**
71-55-6	1,1,1-Trichloroethane	1.7	1.7	0.85	0.31	0.31	0.15	**U**
71-43-2	**Benzene**	**5.0**	1.7	0.85	**1.6**	0.53	0.26	
56-23-5	Carbon Tetrachloride	1.7	1.7	0.85	0.27	0.27	0.13	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.
B = Analyte was found in the method blank.

Verified By: Rec Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-8-042408**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-015

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01235

Date Collected: 4/24/08
Date Received: 4/28/08
Date Analyzed: 5/5/08
Volume(s) Analyzed: 0.10 Liter(s)

Initial Pressure (psig): -3.9 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.69

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	**1,2-Dichloropropane**	**2.1**	1.7	0.85	**0.46**	0.37	0.18	
75-27-4	Bromodichloromethane	1.7	1.7	0.85	0.25	0.25	0.13	U
79-01-6	**Trichloroethene**	**1.7**	1.7	0.85	**0.32**	0.31	0.16	
10061-01-5	cis-1,3-Dichloropropene	8.5	8.5	0.88	1.9	1.9	0.19	U
108-10-1	**4-Methyl-2-pentanone**	**380**	8.5	0.95	**92**	2.1	0.23	E
10061-02-6	trans-1,3-Dichloropropene	8.5	8.5	1.1	1.9	1.9	0.23	U
79-00-5	1,1,2-Trichloroethane	1.7	1.7	0.85	0.31	0.31	0.15	U
108-88-3	**Toluene**	**130**	8.5	0.85	**33**	2.2	0.22	
124-48-1	Dibromochloromethane	1.7	1.7	1.1	0.20	0.20	0.13	U
127-18-4	**Tetrachloroethene**	**3.0**	1.7	0.85	**0.44**	0.25	0.12	
108-90-7	**Chlorobenzene**	**2.3**	1.7	0.86	**0.51**	0.37	0.19	
100-41-4	**Ethylbenzene**	**1.6**	8.5	1.0	**0.38**	1.9	0.24	J
179601-23-1	**m,p-Xylenes**	**15**	8.5	2.2	**3.4**	1.9	0.51	
75-25-2	Bromoform	8.5	8.5	1.3	0.82	0.82	0.12	U
100-42-5	Styrene	8.5	8.5	1.3	2.0	2.0	0.30	U
95-47-6	**o-Xylene**	**4.3**	8.5	1.1	**0.98**	1.9	0.25	J
79-34-5	1,1,2,2-Tetrachloroethane	1.7	1.7	1.1	0.25	0.25	0.16	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: RG Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-8-042408** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-015

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 4/24/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/5/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.10 Liter(s)
Test Notes: **T**
Container ID: AC01235

Initial Pressure (psig): -3.9 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.69

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
19.52	Isooctanol	**400**	
20.18	3-Methylpentane	**300**	
20.24	Unidentified Oxygenated Compound	**600**	
20.72	$C_{12}H_{26}$ Branched Alkane	**200**	
21.01	$C_{11}H_{24}$ Branched Alkane	**100**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: Rw Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-9-042408** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-016

Test Code: EPA TO-15 Date Collected: 4/24/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/5/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.25 Liter(s)
Test Notes:
Container ID: AC01020

Initial Pressure (psig): 0.3 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.22

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.51**	0.49	0.24	**0.25**	0.24	0.12	
75-01-4	Vinyl Chloride	0.49	0.49	0.24	0.19	0.19	0.095	U
74-83-9	Bromomethane	0.49	0.49	0.24	0.13	0.13	0.063	U
75-00-3	Chloroethane	0.49	0.49	0.24	0.19	0.19	0.093	U
67-64-1	**Acetone**	**13**	24	0.36	**5.6**	10	0.15	J, B
107-13-1	Acrylonitrile	2.4	2.4	0.34	1.1	1.1	0.16	U
75-35-4	1,1-Dichloroethene	0.49	0.49	0.24	0.12	0.12	0.062	U
75-09-2	**Methylene Chloride**	**0.31**	2.4	0.24	**0.089**	0.70	0.070	J
75-15-0	**Carbon Disulfide**	**3.8**	2.4	0.59	**1.2**	0.78	0.19	
156-60-5	trans-1,2-Dichloroethene	0.49	0.49	0.24	0.12	0.12	0.062	U
75-34-3	1,1-Dichloroethane	0.49	0.49	0.24	0.12	0.12	0.060	U
78-93-3	**2-Butanone (MEK)**	**1.3**	2.4	0.24	**0.44**	0.83	0.083	J
156-59-2	cis-1,2-Dichloroethene	0.49	0.49	0.24	0.12	0.12	0.062	U
67-66-3	**Chloroform**	**270**	0.49	0.29	**56**	0.10	0.059	
107-06-2	1,2-Dichloroethane	0.49	0.49	0.24	0.12	0.12	0.060	U
71-55-6	1,1,1-Trichloroethane	0.49	0.49	0.24	0.089	0.089	0.045	U
71-43-2	**Benzene**	**0.66**	0.49	0.24	**0.21**	0.15	0.076	
56-23-5	Carbon Tetrachloride	0.49	0.49	0.24	0.078	0.078	0.039	U

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B = Analyte was found in the method blank.

Verified By: RC Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-9-042408**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-016

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01020

Date Collected: 4/24/08
Date Received: 4/28/08
Date Analyzed: 5/5/08
Volume(s) Analyzed: 0.25 Liter(s)

Initial Pressure (psig): 0.3 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.22

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	**1,2-Dichloropropane**	**15**	0.49	0.24	**3.3**	0.11	0.053	
75-27-4	Bromodichloromethane	0.49	0.49	0.24	0.073	0.073	0.036	**U**
79-01-6	**Trichloroethene**	**520**	0.49	0.24	**96**	0.091	0.045	
10061-01-5	cis-1,3-Dichloropropene	2.4	2.4	0.25	0.54	0.54	0.056	**U**
108-10-1	**4-Methyl-2-pentanone**	**11**	2.4	0.27	**2.6**	0.60	0.067	**E**
10061-02-6	trans-1,3-Dichloropropene	2.4	2.4	0.31	0.54	0.54	0.068	**U**
79-00-5	1,1,2-Trichloroethane	0.49	0.49	0.24	0.089	0.089	0.045	**U**
108-88-3	**Toluene**	**1.6**	2.4	0.24	**0.42**	0.65	0.065	**J**
124-48-1	Dibromochloromethane	0.49	0.49	0.33	0.057	0.057	0.039	**U**
127-18-4	**Tetrachloroethene**	**6.4**	0.49	0.24	**0.94**	0.072	0.036	
108-90-7	Chlorobenzene	0.49	0.49	0.25	0.11	0.11	0.054	**U**
100-41-4	Ethylbenzene	2.4	2.4	0.30	0.56	0.56	0.070	**U**
179601-23-1	**m,p-Xylenes**	**1.3**	2.4	0.63	**0.29**	0.56	0.15	**J**
75-25-2	Bromoform	2.4	2.4	0.37	0.24	0.24	0.036	**U**
100-42-5	Styrene	2.4	2.4	0.37	0.57	0.57	0.087	**U**
95-47-6	**o-Xylene**	**0.54**	2.4	0.31	**0.12**	0.56	0.071	**J**
79-34-5	1,1,2,2-Tetrachloroethane	0.49	0.49	0.31	0.071	0.071	0.045	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
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J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: Rc Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-9-042408** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-016

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 4/24/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/5/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.25 Liter(s)
Test Notes: **T**
Container ID: AC01020

Initial Pressure (psig): 0.3 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.22

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.46	Propane	**10**	
4.87	Acetaldehyde + Isobutane	**30**	
16.27	C6HF13 (Tridecafluorohexane)	**70**	
20.23	Unidentified Oxygenated Compound	**30**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: RG Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **Method Blank** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P080502-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 5/2/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	Chloromethane	0.10	0.10	0.050	0.048	0.048	0.024	U
75-01-4	Vinyl Chloride	0.10	0.10	0.050	0.039	0.039	0.020	U
74-83-9	Bromomethane	0.10	0.10	0.050	0.026	0.026	0.013	U
75-00-3	Chloroethane	0.10	0.10	0.050	0.038	0.038	0.019	U
67-64-1	**Acetone**	**0.78**	5.0	0.073	**0.33**	2.1	0.031	J
107-13-1	Acrylonitrile	0.50	0.50	0.070	0.23	0.23	0.032	U
75-35-4	1,1-Dichloroethene	0.10	0.10	0.050	0.025	0.025	0.013	U
75-09-2	Methylene Chloride	0.50	0.50	0.050	0.14	0.14	0.014	U
75-15-0	Carbon Disulfide	0.50	0.50	0.12	0.16	0.16	0.039	U
156-60-5	trans-1,2-Dichloroethene	0.10	0.10	0.050	0.025	0.025	0.013	U
75-34-3	1,1-Dichloroethane	0.10	0.10	0.050	0.025	0.025	0.012	U
78-93-3	2-Butanone (MEK)	0.50	0.50	0.050	0.17	0.17	0.017	U
156-59-2	cis-1,2-Dichloroethene	0.10	0.10	0.050	0.025	0.025	0.013	U
67-66-3	Chloroform	0.10	0.10	0.059	0.020	0.020	0.012	U
107-06-2	1,2-Dichloroethane	0.10	0.10	0.050	0.025	0.025	0.012	U
71-55-6	1,1,1-Trichloroethane	0.10	0.10	0.050	0.018	0.018	0.0092	U
71-43-2	Benzene	0.10	0.10	0.050	0.031	0.031	0.016	U
56-23-5	Carbon Tetrachloride	0.10	0.10	0.050	0.016	0.016	0.0080	U

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
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Verified By: Re Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **Method Blank** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P080502-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 5/2/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	1,2-Dichloropropane	0.10	0.10	0.050	0.022	0.022	0.011	U
75-27-4	Bromodichloromethane	0.10	0.10	0.050	0.015	0.015	0.0075	U
79-01-6	Trichloroethene	0.10	0.10	0.050	0.019	0.019	0.0093	U
10061-01-5	cis-1,3-Dichloropropene	0.50	0.50	0.052	0.11	0.11	0.011	U
108-10-1	4-Methyl-2-pentanone	0.50	0.50	0.056	0.12	0.12	0.014	U
10061-02-6	trans-1,3-Dichloropropene	0.50	0.50	0.063	0.11	0.11	0.014	U
79-00-5	1,1,2-Trichloroethane	0.10	0.10	0.050	0.018	0.018	0.0092	U
108-88-3	Toluene	0.50	0.50	0.050	0.13	0.13	0.013	U
124-48-1	Dibromochloromethane	0.10	0.10	0.068	0.012	0.012	0.0080	U
127-18-4	Tetrachloroethene	0.10	0.10	0.050	0.015	0.015	0.0074	U
108-90-7	Chlorobenzene	0.10	0.10	0.051	0.022	0.022	0.011	U
100-41-4	Ethylbenzene	0.50	0.50	0.062	0.12	0.12	0.014	U
179601-23-1	m,p-Xylenes	0.50	0.50	0.13	0.12	0.12	0.030	U
75-25-2	Bromoform	0.50	0.50	0.076	0.048	0.048	0.0074	U
100-42-5	Styrene	0.50	0.50	0.076	0.12	0.12	0.018	U
95-47-6	o-Xylene	0.50	0.50	0.063	0.12	0.12	0.015	U
79-34-5	1,1,2,2-Tetrachloroethane	0.10	0.10	0.064	0.015	0.015	0.0093	U

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: RC Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **Method Blank** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P080502-MB

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 5/2/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
	Epichlorohydrin	NF	

NF = Compound was searched for, but not found.

Verified By: RC Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **Method Blank**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P080505-MB

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/5/08
Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	Chloromethane	0.10	0.10	0.050	0.048	0.048	0.024	U
75-01-4	Vinyl Chloride	0.10	0.10	0.050	0.039	0.039	0.020	U
74-83-9	Bromomethane	0.10	0.10	0.050	0.026	0.026	0.013	U
75-00-3	Chloroethane	0.10	0.10	0.050	0.038	0.038	0.019	U
67-64-1	**Acetone**	**0.45**	5.0	0.073	**0.19**	2.1	0.031	J
107-13-1	Acrylonitrile	0.50	0.50	0.070	0.23	0.23	0.032	U
75-35-4	1,1-Dichloroethene	0.10	0.10	0.050	0.025	0.025	0.013	U
75-09-2	Methylene Chloride	0.50	0.50	0.050	0.14	0.14	0.014	U
75-15-0	Carbon Disulfide	0.50	0.50	0.12	0.16	0.16	0.039	U
156-60-5	trans-1,2-Dichloroethene	0.10	0.10	0.050	0.025	0.025	0.013	U
75-34-3	1,1-Dichloroethane	0.10	0.10	0.050	0.025	0.025	0.012	U
78-93-3	2-Butanone (MEK)	0.50	0.50	0.050	0.17	0.17	0.017	U
156-59-2	cis-1,2-Dichloroethene	0.10	0.10	0.050	0.025	0.025	0.013	U
67-66-3	Chloroform	0.10	0.10	0.059	0.020	0.020	0.012	U
107-06-2	1,2-Dichloroethane	0.10	0.10	0.050	0.025	0.025	0.012	U
71-55-6	1,1,1-Trichloroethane	0.10	0.10	0.050	0.018	0.018	0.0092	U
71-43-2	Benzene	0.10	0.10	0.050	0.031	0.031	0.016	U
56-23-5	Carbon Tetrachloride	0.10	0.10	0.050	0.016	0.016	0.0080	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: RC Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **Method Blank**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P080505-MB

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/5/08
Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
78-87-5	1,2-Dichloropropane	0.10	0.10	0.050	0.022	0.022	0.011	U
75-27-4	Bromodichloromethane	0.10	0.10	0.050	0.015	0.015	0.0075	U
79-01-6	Trichloroethene	0.10	0.10	0.050	0.019	0.019	0.0093	U
10061-01-5	cis-1,3-Dichloropropene	0.50	0.50	0.052	0.11	0.11	0.011	U
108-10-1	4-Methyl-2-pentanone	0.50	0.50	0.056	0.12	0.12	0.014	U
10061-02-6	trans-1,3-Dichloropropene	0.50	0.50	0.063	0.11	0.11	0.014	U
79-00-5	1,1,2-Trichloroethane	0.10	0.10	0.050	0.018	0.018	0.0092	U
108-88-3	Toluene	0.50	0.50	0.050	0.13	0.13	0.013	U
124-48-1	Dibromochloromethane	0.10	0.10	0.068	0.012	0.012	0.0080	U
127-18-4	Tetrachloroethene	0.10	0.10	0.050	0.015	0.015	0.0074	U
108-90-7	Chlorobenzene	0.10	0.10	0.051	0.022	0.022	0.011	U
100-41-4	Ethylbenzene	0.50	0.50	0.062	0.12	0.12	0.014	U
179601-23-1	m,p-Xylenes	0.50	0.50	0.13	0.12	0.12	0.030	U
75-25-2	Bromoform	0.50	0.50	0.076	0.048	0.048	0.0074	U
100-42-5	Styrene	0.50	0.50	0.076	0.12	0.12	0.018	U
95-47-6	o-Xylene	0.50	0.50	0.063	0.12	0.12	0.015	U
79-34-5	1,1,2,2-Tetrachloroethane	0.10	0.10	0.064	0.015	0.015	0.0093	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: RC Date: 5/12/08

Client: **CH2M Hill**
Client Sample ID: **Method Blank** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P080505-MB

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 5/5/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
	Epichlorohydrin	NF	

NF = Compound was searched for, but not found.

Verified By: RC Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

SURROGATE SPIKE RECOVERY RESULTS

Client: **CH2M Hill**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**
CAS Project ID: P0801215

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister(s)
Test Notes:

Date(s) Collected: 4/23 - 4/24/08
Date(s) Received: 4/28/08
Date(s) Analyzed: 5/2 - 5/5/08

Client Sample ID	CAS Sample ID	1,2-Dichloroethane-d4		Toluene-d8		Bromofluorobenzene		Data Qualifier
		% Recovered	Acceptance Limits	% Recovered	Acceptance Limits	% Recovered	Acceptance Limits	
Method Blank	P080502-MB	**93**	70-130	**97**	70-130	**105**	70-130	
Method Blank	P080505-MB	**98**	70-130	**98**	70-130	**102**	70-130	
Lab Control Sample	P080502-LCS	**93**	70-130	**98**	70-130	**106**	70-130	
Lab Control Sample	P080505-LCS	**99**	70-130	**96**	70-130	**106**	70-130	
WAT-SG-B2-042308	P0801215-001	**92**	70-130	**97**	70-130	**104**	70-130	
WAT-SG-1-042308	P0801215-002	**94**	70-130	**97**	70-130	**103**	70-130	
WAT-SG-1-042308	P0801215-002DUP	**95**	70-130	**97**	70-130	**103**	70-130	
WAT-SG-2-042308	P0801215-003	**98**	70-130	**97**	70-130	**103**	70-130	
WAT-SG-3-042308	P0801215-004	**93**	70-130	**98**	70-130	**105**	70-130	
WAT-SG-3a-042308	P0801215-005	**101**	70-130	**97**	70-130	**103**	70-130	
WAT-SG-4-042308	P0801215-006	**95**	70-130	**97**	70-130	**104**	70-130	
WAT-SG-DUP-042308	P0801215-007	**99**	70-130	**98**	70-130	**105**	70-130	
WAT-SG-FB-042308	P0801215-008	**94**	70-130	**98**	70-130	**103**	70-130	
WAT-SG-B4-042408	P0801215-009	**96**	70-130	**96**	70-130	**102**	70-130	
WAT-SG-5-042408	P0801215-010	**100**	70-130	**98**	70-130	**102**	70-130	
WAT-SG-5a-042408	P0801215-011	**105**	70-130	**96**	70-130	**101**	70-130	
WAT-SG-6-042408	P0801215-012	**97**	70-130	**98**	70-130	**104**	70-130	
WAT-SG-7-042408	P0801215-013	**96**	70-130	**97**	70-130	**104**	70-130	
WAT-SG-7a-042408	P0801215-014	**100**	70-130	**97**	70-130	**103**	70-130	
WAT-SG-8-042408	P0801215-015	**98**	70-130	**97**	70-130	**104**	70-130	
WAT-SG-9-042408	P0801215-016	**101**	70-130	**98**	70-130	**102**	70-130	

Verified By: RG Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **CH2M Hill**
Client Sample ID: **Lab Control Sample** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P080502-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 5/02/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: NA Liter(s)
Test Notes:

CAS #	Compound	Spike Amount ng	Result ng	% Recovery	Project Acceptance Limits	Data Qualifier
74-87-3	Chloromethane	24.5	**24.8**	**101**	70-130	
75-01-4	Vinyl Chloride	24.8	**29.5**	**119**	70-130	
74-83-9	Bromomethane	25.0	**28.1**	**112**	70-130	
75-00-3	Chloroethane	25.0	**29.9**	**120**	70-130	
67-64-1	Acetone	26.8	**29.5**	**110**	70-130	
107-13-1	Acrylonitrile	25.5	**30.3**	**119**	70-130	
75-35-4	1,1-Dichloroethene	27.8	**32.2**	**116**	70-130	
75-09-2	Methylene Chloride	27.8	**29.6**	**106**	70-130	
75-15-0	Carbon Disulfide	25.0	**27.7**	**111**	70-130	
156-60-5	trans-1,2-Dichloroethene	26.5	**29.8**	**112**	70-130	
75-34-3	1,1-Dichloroethane	26.8	**28.3**	**106**	70-130	
78-93-3	2-Butanone (MEK)	27.0	**28.2**	**104**	70-130	
156-59-2	cis-1,2-Dichloroethene	27.0	**29.8**	**110**	70-130	
67-66-3	Chloroform	29.8	**33.0**	**111**	70-130	
107-06-2	1,2-Dichloroethane	26.3	**27.8**	**106**	70-130	
71-55-6	1,1,1-Trichloroethane	26.8	**28.8**	**107**	70-130	
71-43-2	Benzene	27.0	**29.6**	**110**	70-130	
56-23-5	Carbon Tetrachloride	26.0	**30.1**	**116**	70-130	

Verified By: RG Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **CH2M Hill**
Client Sample ID: **Lab Control Sample** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P080502-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 5/02/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: NA Liter(s)
Test Notes:

CAS #	Compound	Spike Amount ng	Result ng	% Recovery	Project Acceptance Limits	Data Qualifier
78-87-5	1,2-Dichloropropane	26.5	**29.4**	**111**	70-130	
75-27-4	Bromodichloromethane	27.8	**31.5**	**113**	70-130	
79-01-6	Trichloroethene	27.3	**30.3**	**111**	70-130	
10061-01-5	cis-1,3-Dichloropropene	25.0	**27.9**	**112**	70-130	
108-10-1	4-Methyl-2-pentanone	27.5	**29.8**	**108**	70-130	
10061-02-6	trans-1,3-Dichloropropene	28.0	**31.2**	**111**	70-130	
79-00-5	1,1,2-Trichloroethane	26.3	**29.3**	**111**	70-130	
108-88-3	Toluene	26.5	**29.2**	**110**	70-130	
124-48-1	Dibromochloromethane	27.0	**29.6**	**110**	70-130	
127-18-4	Tetrachloroethene	26.0	**28.7**	**110**	70-130	
108-90-7	Chlorobenzene	26.5	**29.2**	**110**	70-130	
100-41-4	Ethylbenzene	26.3	**29.0**	**110**	70-130	
179601-23-1	m,p-Xylenes	62.5	**68.7**	**110**	70-130	
75-25-2	Bromoform	31.3	**36.2**	**116**	70-130	
100-42-5	Styrene	26.3	**29.8**	**113**	70-130	
95-47-6	o-Xylene	29.8	**32.7**	**110**	70-130	
79-34-5	1,1,2,2-Tetrachloroethane	29.8	**33.9**	**114**	70-130	

Verified By: Rev Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **CH2M Hill**
Client Sample ID: **Lab Control Sample** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P080505-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 5/05/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: NA Liter(s)
Test Notes:

CAS #	Compound	Spike Amount ng	Result ng	% Recovery	Project Acceptance Limits	Data Qualifier
74-87-3	Chloromethane	24.5	**26.6**	**109**	70-130	
75-01-4	Vinyl Chloride	24.8	**28.4**	**115**	70-130	
74-83-9	Bromomethane	25.0	**28.2**	**113**	70-130	
75-00-3	Chloroethane	25.0	**29.1**	**116**	70-130	
67-64-1	Acetone	26.8	**30.0**	**112**	70-130	
107-13-1	Acrylonitrile	25.5	**30.2**	**118**	70-130	
75-35-4	1,1-Dichloroethene	27.8	**29.8**	**107**	70-130	
75-09-2	Methylene Chloride	27.8	**28.4**	**102**	70-130	
75-15-0	Carbon Disulfide	25.0	**27.1**	**108**	70-130	
156-60-5	trans-1,2-Dichloroethene	26.5	**28.8**	**109**	70-130	
75-34-3	1,1-Dichloroethane	26.8	**27.6**	**103**	70-130	
78-93-3	2-Butanone (MEK)	27.0	**28.8**	**107**	70-130	
156-59-2	cis-1,2-Dichloroethene	27.0	**29.0**	**107**	70-130	
67-66-3	Chloroform	29.8	**32.1**	**108**	70-130	
107-06-2	1,2-Dichloroethane	26.3	**27.5**	**105**	70-130	
71-55-6	1,1,1-Trichloroethane	26.8	**28.5**	**106**	70-130	
71-43-2	Benzene	27.0	**28.6**	**106**	70-130	
56-23-5	Carbon Tetrachloride	26.0	**29.3**	**113**	70-130	

Verified By: _____ Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **CH2M Hill**
Client Sample ID: **Lab Control Sample** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P080505-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 5/05/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: NA Liter(s)
Test Notes:

CAS #	Compound	Spike Amount ng	Result ng	% Recovery	Project Acceptance Limits	Data Qualifier
78-87-5	1,2-Dichloropropane	26.5	**28.8**	**109**	70-130	
75-27-4	Bromodichloromethane	27.8	**31.2**	**112**	70-130	
79-01-6	Trichloroethene	27.3	**28.4**	**104**	70-130	
10061-01-5	cis-1,3-Dichloropropene	25.0	**28.1**	**112**	70-130	
108-10-1	4-Methyl-2-pentanone	27.5	**28.4**	**103**	70-130	
10061-02-6	trans-1,3-Dichloropropene	28.0	**31.5**	**113**	70-130	
79-00-5	1,1,2-Trichloroethane	26.3	**28.3**	**108**	70-130	
108-88-3	Toluene	26.5	**26.6**	**100**	70-130	
124-48-1	Dibromochloromethane	27.0	**28.1**	**104**	70-130	
127-18-4	Tetrachloroethene	26.0	**25.7**	**99**	70-130	
108-90-7	Chlorobenzene	26.5	**26.5**	**100**	70-130	
100-41-4	Ethylbenzene	26.3	**26.4**	**100**	70-130	
179601-23-1	m,p-Xylenes	62.5	**62.8**	**100**	70-130	
75-25-2	Bromoform	31.3	**34.9**	**112**	70-130	
100-42-5	Styrene	26.3	**27.0**	**103**	70-130	
95-47-6	o-Xylene	29.8	**29.8**	**100**	70-130	
79-34-5	1,1,2,2-Tetrachloroethane	29.8	**31.9**	**107**	70-130	

Verified By: Rev Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

LABORATORY DUPLICATE SUMMARY RESULTS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-1-042308**
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

CAS Project ID: P0801215
CAS Sample ID: P0801215-002DUP

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16
Analyst: Wida Ang
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01311

Date Collected: 4/23/08
Date Received: 4/28/08
Date Analyzed: 5/2/08
Volume(s) Analyzed: 0.30 Liter(s)

Initial Pressure (psig): 0.0 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.24

Compound	Sample Result µg/m³	Sample Result ppbV	Duplicate Sample Result µg/m³	Duplicate Sample Result ppbV	Average µg/m³	% RPD	RPD Limit	Data Qualifier
Chloromethane	1.26	0.609	1.17	0.565	1.215	**7**	25	
Vinyl Chloride	ND	ND	ND	ND	-	-	25	**U**
Bromomethane	ND	ND	ND	ND	-	-	25	**U**
Chloroethane	ND	ND	ND	ND	-	-	25	**U**
Acetone	16.5	6.97	16.7	7.05	16.6	**1**	25	**J, B**
Acrylonitrile	5.90	2.72	5.91	2.72	5.905	**0.2**	25	
1,1-Dichloroethene	ND	ND	ND	ND	-	-	25	**U**
Methylene Chloride	0.463	0.133	0.413	0.119	0.438	**11**	25	**J**
Carbon Disulfide	1.23	0.396	1.32	0.425	1.275	**7**	25	**J**
trans-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	**U**
1,1-Dichloroethane	ND	ND	ND	ND	-	-	25	**U**
2-Butanone (MEK)	3.90	1.32	3.91	1.32	3.905	**0.3**	25	
cis-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	**U**
Chloroform	1.96	0.401	1.98	0.406	1.97	**1**	25	
1,2-Dichloroethane	ND	ND	ND	ND	-	-	25	**U**
1,1,1-Trichloroethane	ND	ND	ND	ND	-	-	25	**U**
Benzene	0.446	0.140	0.417	0.131	0.4315	**7**	25	
Carbon Tetrachloride	0.285	0.0454	0.277	0.0440	0.281	**3**	25	**J**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: RW Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

LABORATORY DUPLICATE SUMMARY RESULTS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-1-042308** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI** CAS Sample ID: P0801215-002DUP

Test Code: EPA TO-15 Date Collected: 4/23/08
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 4/28/08
Analyst: Wida Ang Date Analyzed: 5/2/08
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.30 Liter(s)
Test Notes:
Container ID: AC01311

Initial Pressure (psig): 0.0 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.24

Compound	Sample Result µg/m³	Sample Result ppbV	Duplicate Sample Result µg/m³	Duplicate Sample Result ppbV	Average µg/m³	% RPD	RPD Limit	Data Qualifier
1,2-Dichloropropane	ND	ND	ND	ND	-	-	25	U
Bromodichloromethane	ND	ND	ND	ND	-	-	25	U
Trichloroethene	1.10	0.205	1.13	0.210	1.115	3	25	
cis-1,3-Dichloropropene	ND	ND	ND	ND	-	-	25	U
4-Methyl-2-pentanone	408	99.6	405	99.0	406.5	0.7	25	
trans-1,3-Dichloropropene	ND	ND	ND	ND	-	-	25	U
1,1,2-Trichloroethane	ND	ND	ND	ND	-	-	25	U
Toluene	1.45	0.386	1.40	0.371	1.425	4	25	J
Dibromochloromethane	ND	ND	ND	ND	-	-	25	U
Tetrachloroethene	1.10	0.163	1.11	0.164	1.105	0.9	25	
Chlorobenzene	ND	ND	ND	ND	-	-	25	U
Ethylbenzene	ND	ND	ND	ND	-	-	25	U
m,p-Xylenes	0.773	0.178	0.789	0.182	0.781	2	25	J
Bromoform	ND	ND	ND	ND	-	-	25	U
Styrene	ND	ND	ND	ND	-	-	25	U
o-Xylene	0.273	0.0628	0.277	0.0638	0.275	1	25	J
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	-	-	25	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
J = The analyte was positively identified below the method reporting limit; the associated numerical value is considered estimated.

Verified By: RG Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

Method Blank Summary

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Lab File ID: 05020803.D
Analyst: Wida Ang Date Analyzed: 5/02/08
Sampling Media: 6.0 L Summa Canister(s) Time Analyzed: 08:11
Test Notes:

Client Sample ID	CAS Sample ID	Lab File ID	Time Analyzed
Lab Control Sample	P080502-LCS	05020805.D	09:27
WAT-SG-3-042308	P0801215-004	05020806.D	10:25
WAT-SG-B2-042308	P0801215-001	05020810.D	13:00
WAT-SG-7-042408	P0801215-013	05020811.D	13:38
WAT-SG-FB-042308	P0801215-008	05020814.D	15:46
WAT-SG-1-042308	P0801215-002	05020815.D	16:23
WAT-SG-1-042308 (Lab Duplicate)	P0801215-002DUP	05020816.D	17:01
WAT-SG-2-042308	P0801215-003	05020817.D	17:39
WAT-SG-4-042308	P0801215-006	05020819.D	18:54
WAT-SG-B4-042408	P0801215-009	05020821.D	20:15
WAT-SG-5-042408	P0801215-010	05020822.D	20:53

Verified By: RL Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

Method Blank Summary

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Lab File ID: 05050806.D
Analyst: Wida Ang Date Analyzed: 5/05/08
Sampling Media: 6.0 L Summa Canister(s) Time Analyzed: 08:54
Test Notes:

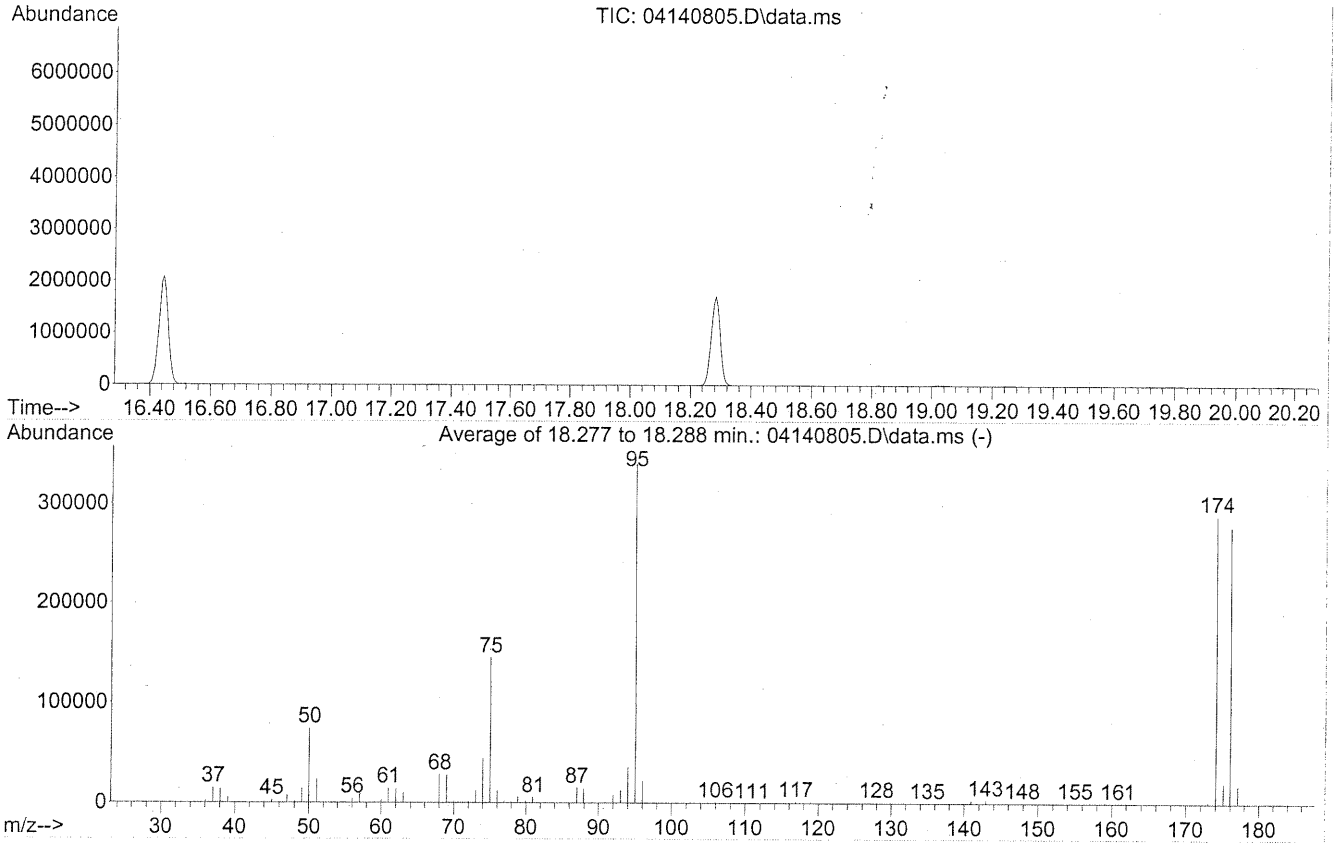
Client Sample ID	CAS Sample ID	Lab File ID	Time Analyzed
WAT-SG-7a-042408	P0801215-014	05050807.D	09:32
WAT-SG-9-042408	P0801215-016	05050809.D	10:55
Lab Control Sample	P080505-LCS	05050815.D	14:54
WAT-SG-6-042408	P0801215-012	05050816.D	15:32
WAT-SG-3a-042308	P0801215-005	05050819.D	17:50
WAT-SG-5a-042408	P0801215-011	05050821.D	19:06
WAT-SG-DUP-042308	P0801215-007	05050827.D	23:14
WAT-SG-8-042408	P0801215-015	05050828.D	23:52

Verified By: Re Date: 5/12/08

Data Path : J:\MS16\DATA\2008_04\14\
Data File : 04140805.D
Acq On : 14 Apr 2008 10:53 am
Operator : CB
Sample : BFB
Misc : S20-04070801
ALS Vial : 1 Sample Multiplier: 1

Integration File: RTEINT.P

Method : J:\MS16\METHODS\R16041408.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Thu Apr 10 07:29:28 2008



AutoFind: Scans 2479, 2480, 2481; Background Corrected with Scan 2469

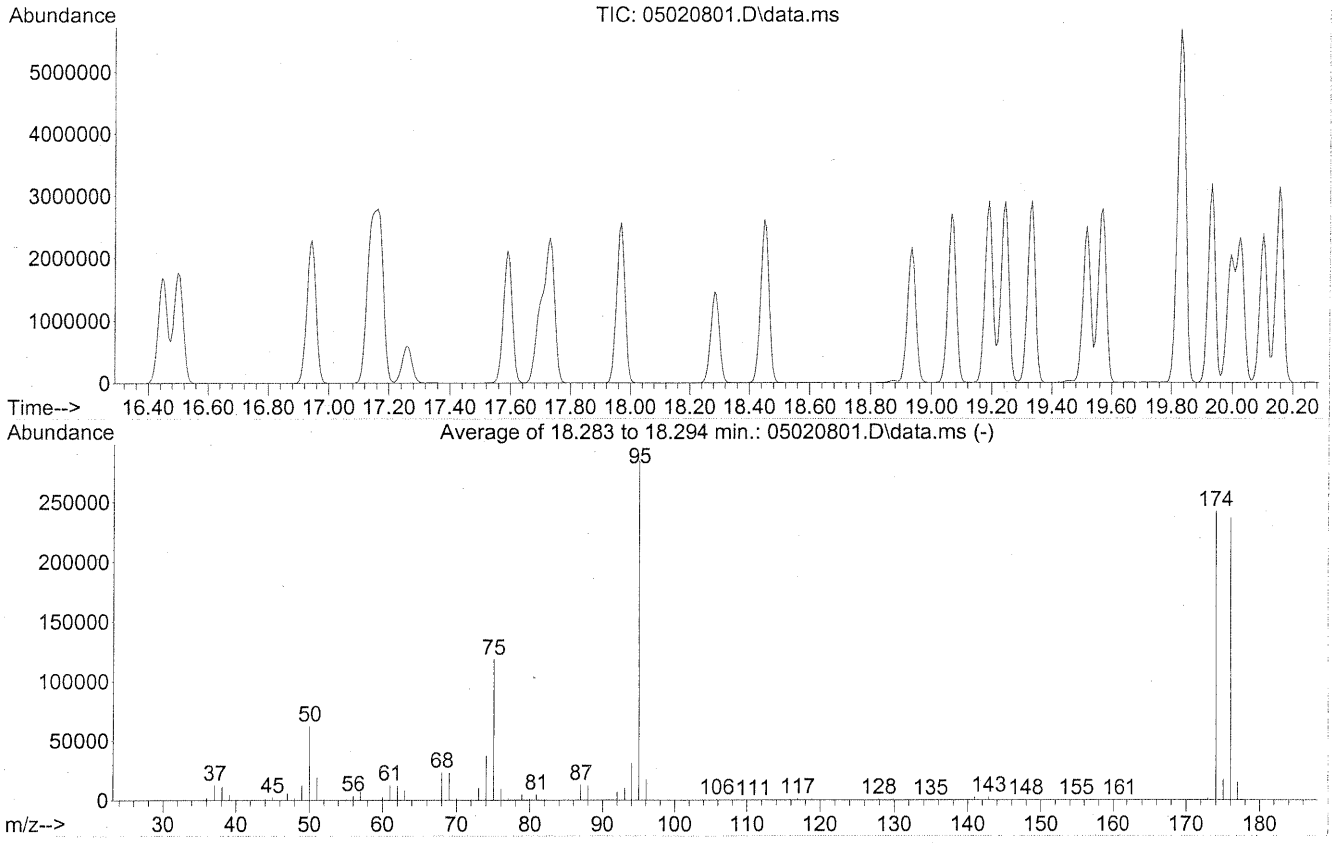
Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	21.9	74461	PASS
75	95	30	66	42.6	145195	PASS
95	95	100	100	100.0	340565	PASS
96	95	5	9	6.6	22379	PASS
173	174	0.00	2	0.7	2058	PASS
174	95	50	120	84.9	289109	PASS
175	174	4	9	7.0	20245	PASS
176	174	93	101	96.1	277717	PASS
177	176	5	9	6.5	18179	PASS

CB 04/14/08

Data Path : J:\MS16\DATA\2008_05\02\
Data File : 05020801.D
Acq On : 2 May 2008 6:39 am
Operator : WA
Sample : 25ng TO-15 CCV STD
Misc : S20-04290801/S20-04110802
ALS Vial : 1 Sample Multiplier: 1

Integration File: RTEINT.P

Method : J:\MS16\METHODS\R16041408.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Tue Apr 15 07:25:17 2008



AutoFind: Scans 2480, 2481, 2482; Background Corrected with Scan 2469

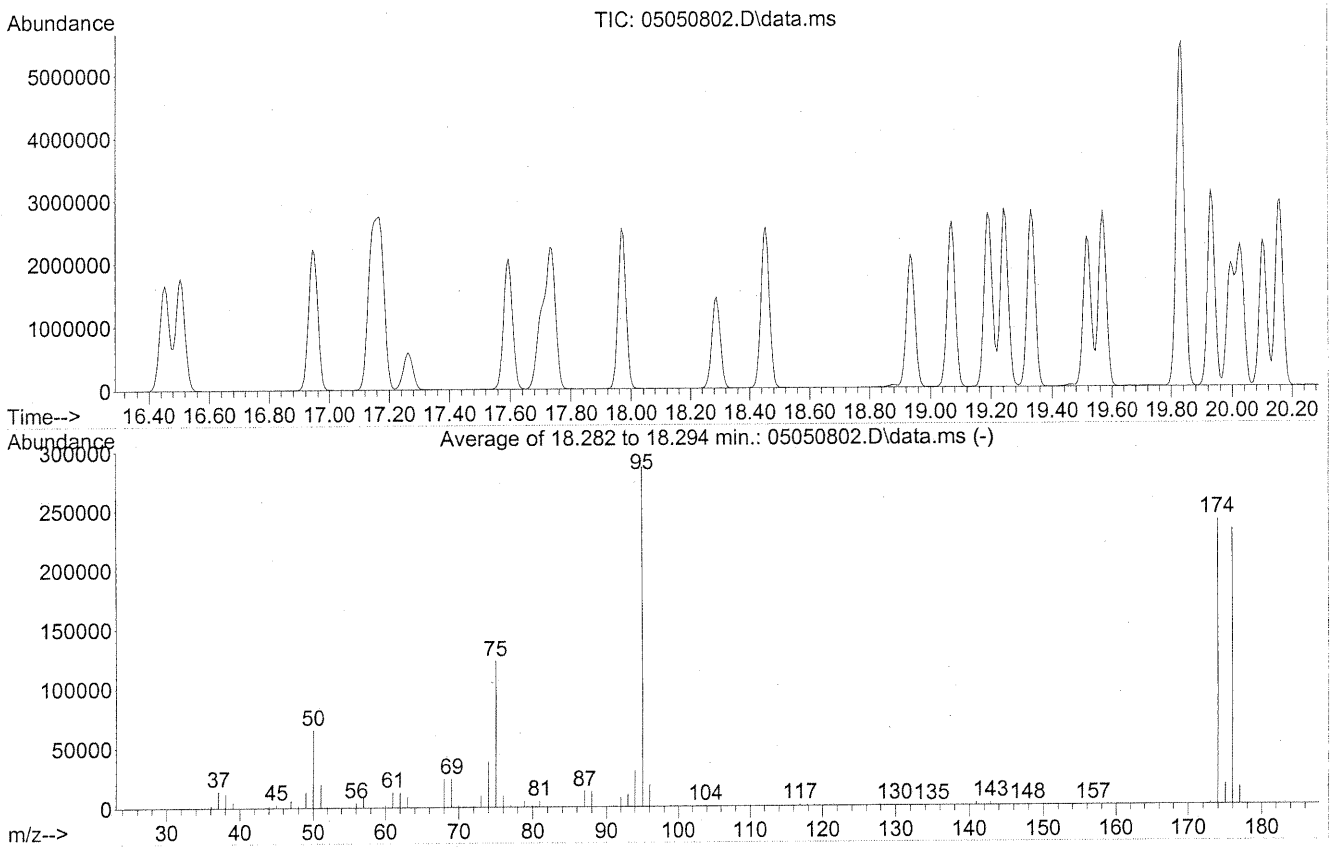
Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	22.0	62621	PASS
75	95	30	66	41.6	118403	PASS
95	95	100	100	100.0	284779	PASS
96	95	5	9	6.3	17874	PASS
173	174	0.00	2	0.7	1782	PASS
174	95	50	120	85.1	242325	PASS
175	174	4	9	7.3	17623	PASS
176	174	93	101	97.8	236907	PASS
177	176	5	9	6.4	15197	PASS

MDA 5/2/08

Data Path : J:\MS16\DATA\2008_05\05\
Data File : 05050802.D
Acq On : 5 May 2008 5:41 am
Operator : WA
Sample : 25ng TO-15 CCV STD
Misc : S20-04290801/S20-04110802
ALS Vial : 1 Sample Multiplier: 1

Integration File: rteint.p

Method : J:\MS03\METHODS\R3041708.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Thu Apr 17 14:25:29 2008



AutoFind: Scans 2480, 2481, 2482; Background Corrected with Scan 2470

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	22.9	65459	PASS
75	95	30	66	42.9	122848	PASS
95	95	100	100	100.0	286080	PASS
96	95	5	9	6.4	18408	PASS
173	174	0.00	2	0.8	1898	PASS
174	95	50	120	84.0	240384	PASS
175	174	4	9	7.1	17112	PASS
176	174	93	101	96.8	232597	PASS
177	176	5	9	6.5	15091	PASS

Method Path : J:\MS16\METHODS\
Method File : R16041408.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Tue Apr 15 07:25:17 2008
Response Via : Initial Calibration

Calibration Files
0.1 =04140806.D 0.5 =04140807.D 1.0 =04140808.D 5.0 =04140809.D 25 =04140810.D 50 =04140811.D
100 =04140812.D

		Compound	0.1	0.5	1.0	5.0	25	50	100	Avg	%RSD
1)	IR	Bromochloromethane...	----------	----------	ISTD	----------	----------	----------	----------		
2)	T	Propene	2.243	2.255	1.776	1.671	1.653	1.676	1.795	1.867	14.28
3)	T	Dichlorodifluo...	2.754	2.893	2.431	2.323	2.138	2.055	2.100	2.385	13.83
4)	T	Chloromethane	3.659	3.921	3.140	2.554	2.917	2.599	1.598	2.913	26.53
5)	T	Freon 114	1.613	1.686	1.330	1.319	1.259	1.242	1.229	1.383	13.56
6)	T	Vinyl Chloride	1.944	2.215	1.775	1.700	1.675	1.615	1.714	1.805	11.54
7)	T	1,3-Butadiene	1.489	1.408	1.285	1.033	1.250	1.243	1.446	1.308	11.92
8)	T	Bromomethane	1.180	1.250	0.934	0.687	0.753	0.739	0.721	0.895	26.06
9)	T	Chloroethane	0.962	1.243	0.965	0.791	0.919	0.893	0.773	0.935	16.65
10)	T	Ethanol	1.184	0.761	0.882	0.852	1.237	1.214	1.230	1.051	19.92
11)	T	Acetonitrile		3.414	2.529	2.506	3.331	3.211	3.128	3.020	13.29
12)	T	Acrolein		1.243	0.947	0.825	0.953	0.875	0.894	0.956	15.54
13)	T	Acetone			1.675	1.330	1.213	1.064	1.049	1.266	20.21
14)	T	Trichlorofluor...	2.355	2.545	2.058	2.011	2.060	2.044	2.049	2.160	9.53
15)	T	Isopropanol	5.597	5.720	4.435	3.808	4.613	3.750	2.496	4.346	25.90
16)	T	Acrylonitrile	2.667	2.636	2.148	2.026	2.427	2.355	2.329	2.370	9.93
17)	T	1,1-Dichloroet...	1.150	1.337	1.121	0.999	1.027	1.015	1.012	1.094	11.15
18)	T	tert-Butanol	5.448	4.882	3.802	3.707	3.901	3.791	3.740	4.181	16.60
19)	T	Methylene Chlo...		1.466	1.120	1.037	1.022	0.984	0.961	1.098	17.13
20)	T	Allyl Chloride	2.346	2.346	1.927	1.715	1.970	1.849	1.991	2.021	11.89
21)	T	Trichlorotrifl...	1.100	1.251	0.970	0.954	0.940	0.948	0.978	1.020	11.30
22)	T	Carbon Disulfide		5.180	4.125	3.772	3.920	3.823	3.836	4.109	13.11
23)	T	trans-1,2-Dich...	2.233	2.505	1.999	2.027	2.008	1.985	1.961	2.103	9.48
24)	T	1,1-Dichloroet...	2.688	2.970	2.433	2.339	2.301	2.207	2.082	2.431	12.50
25)	T	Methyl tert-Bu...	3.649	3.986	3.199	3.151	3.079	3.035	3.027	3.304	11.18
26)	T	Vinyl Acetate		0.138	0.172	0.221	0.240	0.243	0.237	0.209	20.78
27)	T	2-Butanone		0.913	0.726	0.768	0.706	0.685	0.681	0.747	11.73
28)	T	cis-1,2-Dichlo...	1.990	2.388	1.912	1.883	1.883	1.841	1.792	1.955	10.24
29)	T	Diisopropyl Ether	0.823	1.150	0.954	0.928	0.925	0.900	0.873	0.936	11.04
30)	T	Ethyl Acetate	0.363	0.588	0.495	0.494	0.499	0.486	0.470	0.485	13.61
31)	T	n-Hexane	3.147	3.441	2.763	2.644	2.626	2.581	2.552	2.822	12.05

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Method Path : J:\MS16\METHODS\
Method File : R16041408.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)

32)	T	Chloroform	1.723	2.026	1.615	1.563	1.535	1.492	1.465	1.631	11.90
33)	S	1,2-Dichloroet...	1.474	1.488	1.470	1.521	1.505	1.507	1.499	1.495	1.23
34)	T	Tetrahydrofuran	0.436	0.895	0.686	0.680	0.706	0.675	0.655	0.676	19.76
35)	T	Ethyl tert-But...	1.305	1.695	1.333	1.314	1.359	1.331	1.313	1.379	10.21
36)	T	1,2-Dichloroet...	2.070	2.184	1.761	1.726	1.720	1.656	1.619	1.819	11.97
37)	IR	1,4-Difluorobenzen...	----------ISTD----------								
38)	T	1,1,1-Trichlor...	0.447	0.497	0.414	0.392	0.398	0.390	0.388	0.418	9.72
39)	T	Isopropyl Acetate	0.191	0.255	0.204	0.201	0.218	0.209	0.205	0.212	9.86
40)	T	1-Butanol		0.253	0.159	0.160	0.387	0.376	0.367	0.284	38.03
41)	T	Benzene	1.226	1.237	1.007	0.941	0.945	0.919	0.910	1.026	13.98
42)	T	Carbon Tetrach...	0.306	0.423	0.365	0.376	0.399	0.391	0.386	0.378	9.69
43)	T	Cyclohexane	0.553	0.492	0.405	0.361	0.365	0.356	0.352	0.412	19.28
44)	T	tert-Amyl Meth...	0.721	0.879	0.693	0.672	0.704	0.687	0.679	0.719	10.07
45)	T	1,2-Dichloropr...	0.367	0.387	0.314	0.297	0.301	0.292	0.287	0.321	12.40
46)	T	Bromodichlorom...	0.308	0.374	0.301	0.305	0.306	0.296	0.289	0.311	9.13
47)	T	Trichloroethene	0.379	0.425	0.340	0.320	0.316	0.304	0.298	0.340	13.56
48)	T	1,4-Dioxane	0.237	0.249	0.199	0.185	0.200	0.191	0.186	0.207	12.45
49)	T	Isooctane	1.846	2.048	1.656	1.558	1.632	1.575	1.539	1.693	11.05
50)	T	Methyl Methacr...	0.082	0.132	0.110	0.104	0.119	0.116	0.115	0.111	14.05
51)	T	n-Heptane	0.287	0.327	0.267	0.253	0.254	0.243	0.236	0.267	11.78
52)	T	cis-1,3-Dichlo...	0.423	0.480	0.388	0.388	0.400	0.388	0.380	0.407	8.64
53)	T	4-Methyl-2-pen...	0.390	0.427	0.362	0.353	0.365	0.352	0.342	0.370	7.92
54)	T	trans-1,3-Dich...	0.358	0.432	0.349	0.342	0.366	0.356	0.353	0.365	8.37
55)	T	1,1,2-Trichlor...	0.307	0.328	0.266	0.253	0.255	0.247	0.242	0.271	12.21
56)	I	Chlorobenzene-d5 (...	----------ISTD----------								
57)	S	Toluene-d8 (SS2)	2.559	2.529	2.516	2.526	2.490	2.526	2.519	2.524	0.81
58)	T	Toluene	3.197	3.468	2.823	2.644	2.614	2.553	2.506	2.829	12.95
59)	T	2-Hexanone	3.284	2.927	2.378	2.351	2.414	2.295	2.163	2.545	15.91
60)	T	Dibromochlorom...	0.844	0.967	0.759	0.766	0.798	0.790	0.778	0.815	8.91
61)	T	1,2-Dibromoethane	0.818	0.954	0.761	0.737	0.735	0.726	0.707	0.777	11.04
62)	T	Butyl Acetate	2.616	2.904	2.281	2.218	2.570	2.467	2.335	2.484	9.52
63)	T	n-Octane	0.805	1.003	0.863	0.796	0.827	0.798	0.764	0.837	9.48
64)	T	Tetrachloroethene	0.943	1.037	0.836	0.777	0.779	0.761	0.742	0.839	13.15
65)	T	Chlorobenzene	2.257	2.495	2.048	1.908	1.895	1.848	1.800	2.036	12.48
66)	T	Ethylbenzene	3.740	3.979	3.214	3.043	3.079	3.011	2.938	3.286	12.36
67)	T	m- & p-Xylene	2.411	2.575	2.097	1.991	2.005	1.967	1.930	2.139	11.74
68)	T	Bromoform	0.454	0.555	0.457	0.457	0.487	0.484	0.475	0.481	7.33
69)	T	Styrene	2.345	2.445	2.005	1.995	2.053	2.013	1.963	2.117	9.16
70)	T	o-Xylene	2.672	2.789	2.252	2.120	2.147	2.106	2.044	2.304	13.01

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Method Path : J:\MS16\METHODS\
Method File : R16041408.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)

71)	T	n-Nonane	2.506	2.675	2.178	2.090	2.118	2.006	1.841	2.202	13.17
72)	T	1,1,2,2-Tetrac...	1.102	1.121	0.899	0.876	0.902	0.877	0.846	0.946	12.11
73)	S	Bromofluoroben...	0.870	0.876	0.870	0.878	0.877	0.884	0.885	0.877	0.67
74)	T	Cumene	3.629	3.983	3.138	3.022	3.218	3.128	3.071	3.313	10.79
75)	T	alpha-Pinene	1.644	1.889	1.529	1.508	1.585	1.533	1.485	1.596	8.75
76)	T	n-Propylbenzene	4.203	4.604	3.689	3.503	3.748	3.665	3.596	3.858	10.31
77)	T	3-Ethyltoluene	4.141	4.218	3.305	3.195	3.473	3.447	3.392	3.596	11.39
78)	T	4-Ethyltoluene	3.754	4.045	3.256	3.098	3.158	3.063	3.013	3.341	11.92
79)	T	1,3,5-Trimethy...	3.172	3.591	2.796	2.707	2.746	2.701	2.673	2.912	11.85
80)	T	alpha-Methylst...	1.578	1.814	1.476	1.493	1.689	1.644	1.611	1.615	7.20
81)	T	2-Ethyltoluene	3.890	4.215	3.338	3.165	3.432	3.375	3.308	3.532	10.66
82)	T	1,2,4-Trimethy...	3.433	3.557	2.863	2.693	2.769	2.712	2.654	2.954	12.76
83)	T	n-Decane	2.476	2.480	2.013	1.972	2.066	1.994	1.918	2.131	11.31
84)	T	Benzyl Chloride	2.575	2.593	2.116	2.095	2.330	2.302	2.252	2.323	8.55
85)	T	1,3-Dichlorobe...	2.251	2.293	1.785	1.714	1.765	1.719	1.670	1.885	14.17
86)	T	1,4-Dichlorobe...	2.125	2.193	1.723	1.654	1.724	1.683	1.639	1.820	12.89
87)	T	sec-Butylbenzene	4.030	4.583	3.583	3.506	3.736	3.670	3.587	3.813	9.96
88)	T	p-Isopropyltol...	3.729	3.891	3.109	2.974	3.274	3.195	3.117	3.327	10.38
89)	T	1,2,3-Trimethy...	3.116	3.289	2.555	2.473	2.745	2.687	2.643	2.787	10.81
90)	T	1,2-Dichlorobe...	1.989	2.097	1.639	1.569	1.631	1.562	1.499	1.712	13.60
91)	T	d-Limonene	0.830	1.072	0.855	0.850	0.943	0.906	0.874	0.904	9.20
92)	T	1,2-Dibromo-3-...	0.510	0.561	0.426	0.423	0.578	0.569	0.557	0.518	12.99
93)	T	n-Undecane	2.179	2.478	1.976	1.946	2.132	2.075	1.979	2.109	8.74
94)	T	1,2,4-Trichlor...	0.387	0.357	0.270	0.256	0.305	0.298	0.284	0.308	15.28
95)	T	Naphthalene	5.441	4.054	3.041	2.923	4.101	4.124	4.051	3.962	21.06
96)	T	n-Dodecane	1.986	1.944	1.568	1.514	1.733	1.729	1.619	1.728	10.46
97)	T	Hexachloro-1,3...	0.602	0.610	0.459	0.429	0.497	0.488	0.468	0.508	13.89

(#) = Out of Range

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Evaluate Continuing Calibration Report

Data Path : J:\MS16\DATA\2008_05\02\
Data File : 05020801.D
Acq On : 2 May 2008 6:39 am
Operator : WA
Sample : 25ng TO-15 CCV STD
Misc : S20-04290801/S20-04110802
ALS Vial : 1 Sample Multiplier: 1

Quant Time: May 02 12:20:28 2008
Quant Method : J:\MS16\METHODS\R16041408.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Apr 15 07:25:17 2008
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	87	0.01
2	T	Propene	1.867	1.830	2.0	96	-0.03
3	T	Dichlorodifluoromethane	2.385	2.463	-3.3	100	-0.02
4	T	Chloromethane	2.913	3.106	-6.6	92	-0.01
5	T	Freon 114	1.383	1.430	-3.4	99	-0.02
6	T	Vinyl Chloride	1.805	1.996	-10.6	103	-0.01
7	T	1,3-Butadiene	1.308	1.838	-40.5#	128	0.00
8	T	Bromomethane	0.895	0.984	-9.9	113	0.00
9	T	Chloroethane	0.935	1.051	-12.4	99	0.00
10	T	Ethanol	1.051	1.351	-28.5	95	0.03
11	T	Acetonitrile	3.020	3.477	-15.1	91	0.02
12	T	Acrolein	0.956	1.103	-15.4	100	0.00
13	T	Acetone	1.266	1.480	-16.9	106	0.02
14	T	Trichlorofluoromethane	2.160	2.257	-4.5	95	0.00
15	T	Isopropanol	4.346	4.516	-3.9	85	0.03
16	T	Acrylonitrile	2.370	2.619	-10.5	94	0.02
17	T	1,1-Dichloroethene	1.094	1.154	-5.5	98	0.00
18	T	tert-Butanol	4.181	4.016	3.9	89	0.03
19	T	Methylene Chloride	1.098	1.103	-0.5	94	0.02
20	T	Allyl Chloride	2.021	2.250	-11.3	99	0.02
21	T	Trichlorotrifluoroethane	1.020	1.132	-11.0	105	0.00
22	T	Carbon Disulfide	4.109	4.359	-6.1	97	0.00
23	T	trans-1,2-Dichloroethene	2.103	2.187	-4.0	95	0.02
24	T	1,1-Dichloroethane	2.431	2.450	-0.8	92	0.02
25	T	Methyl tert-Butyl Ether	3.304	3.386	-2.5	96	0.00
26	T	Vinyl Acetate	0.209	0.288	-37.8#	104	0.00
27	T	2-Butanone	0.747	0.772	-3.3	95	0.00
28	T	cis-1,2-Dichloroethene	1.955	2.009	-2.8	93	0.01
29	T	Diisopropyl Ether	0.936	1.017	-8.7	95	0.00
30	T	Ethyl Acetate	0.485	0.547	-12.8	95	0.00
31	T	n-Hexane	2.822	3.007	-6.6	99	0.00
32	T	Chloroform	1.631	1.614	1.0	91	0.02
33	S	1,2-Dichloroethane-d4(SS1)	1.495	1.411	5.6	81	0.01
34	T	Tetrahydrofuran	0.676	0.740	-9.5	91	0.00
35	T	Ethyl tert-Butyl Ether	1.379	1.468	-6.5	94	0.00
36	T	1,2-Dichloroethane	1.819	1.787	1.8	90	0.01
37	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	83	0.00
38	T	1,1,1-Trichloroethane	0.418	0.441	-5.5	92	0.01

5/2/08

Data Path : J:\MS16\DATA\2008_05\02\
Data File : 05020801.D
Acq On : 2 May 2008 6:39 am
Operator : WA
Sample : 25ng TO-15 CCV STD
Misc : S20-04290801/S20-04110802
ALS Vial : 1 Sample Multiplier: 1

Quant Time: May 02 12:20:28 2008
Quant Method : J:\MS16\METHODS\R16041408.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Apr 15 07:25:17 2008
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
39	T	Isopropyl Acetate	0.212	0.239	-12.7	91	0.01
40	T	1-Butanol	0.284	0.310	-9.2	67	0.00
41	T	Benzene	1.026	1.059	-3.2	93	0.01
42	T	Carbon Tetrachloride	0.378	0.438	-15.9	91	0.01
43	T	Cyclohexane	0.412	0.419	-1.7	95	0.00
44	T	tert-Amyl Methyl Ether	0.719	0.774	-7.6	91	0.00
45	T	1,2-Dichloropropane	0.321	0.336	-4.7	93	0.00
46	T	Bromodichloromethane	0.311	0.334	-7.4	91	0.00
47	T	Trichloroethene	0.340	0.354	-4.1	93	0.00
48	T	1,4-Dioxane	0.207	0.213	-2.9	89	0.00
49	T	Isooctane	1.693	1.822	-7.6	93	0.00
50	T	Methyl Methacrylate	0.111	0.126	-13.5	87	0.00
51	T	n-Heptane	0.267	0.282	-5.6	92	0.00
52	T	cis-1,3-Dichloropropene	0.407	0.443	-8.8	92	0.00
53	T	4-Methyl-2-pentanone	0.370	0.382	-3.2	87	0.00
54	T	trans-1,3-Dichloropropene	0.365	0.400	-9.6	91	0.00
55	T	1,1,2-Trichloroethane	0.271	0.283	-4.4	92	0.00
56	I	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	84	0.00
57	S	Toluene-d8 (SS2)	2.524	2.475	1.9	83	0.00
58	T	Toluene	2.829	2.862	-1.2	92	0.00
59	T	2-Hexanone	2.545	2.272	10.7	79	0.00
60	T	Dibromochloromethane	0.815	0.867	-6.4	91	0.00
61	T	1,2-Dibromoethane	0.777	0.806	-3.7	92	0.00
62	T	Butyl Acetate	2.484	2.455	1.2	80	0.00
63	T	n-Octane	0.837	0.891	-6.5	90	0.00
64	T	Tetrachloroethene	0.839	0.843	-0.5	91	0.00
65	T	Chlorobenzene	2.036	2.049	-0.6	91	0.00
66	T	Ethylbenzene	3.286	3.314	-0.9	90	0.00
67	T	m- & p-Xylene	2.139	2.155	-0.7	90	0.00
68	T	Bromoform	0.481	0.522	-8.5	90	0.00
69	T	Styrene	2.117	2.164	-2.2	88	0.00
70	T	o-Xylene	2.304	2.313	-0.4	90	0.00
71	T	n-Nonane	2.202	2.211	-0.4	88	0.00
72	T	1,1,2,2-Tetrachloroethane	0.946	0.986	-4.2	92	0.00
73	S	Bromofluorobenzene (SS3)	0.877	0.921	-5.0	88	0.00
74	T	Cumene	3.313	3.434	-3.7	89	0.00
75	T	alpha-Pinene	1.596	1.646	-3.1	87	0.00
76	T	n-Propylbenzene	3.858	4.014	-4.0	90	0.00

Data Path : J:\MS16\DATA\2008_05\02\
Data File : 05020801.D
Acq On : 2 May 2008 6:39 am
Operator : WA
Sample : 25ng TO-15 CCV STD
Misc : S20-04290801/S20-04110802
ALS Vial : 1 Sample Multiplier: 1

Quant Time: May 02 12:20:28 2008
Quant Method : J:\MS16\METHODS\R16041408.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Apr 15 07:25:17 2008
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
77	T	3-Ethyltoluene	3.596	3.623	-0.8	87	0.00
78	T	4-Ethyltoluene	3.341	3.427	-2.6	91	0.00
79	T	1,3,5-Trimethylbenzene	2.912	2.920	-0.3	89	0.00
80	T	alpha-Methylstyrene	1.615	1.617	-0.1	80	0.00
81	T	2-Ethyltoluene	3.532	3.645	-3.2	89	0.00
82	T	1,2,4-Trimethylbenzene	2.954	2.941	0.4	89	0.00
83	T	n-Decane	2.131	2.207	-3.6	90	0.00
84	T	Benzyl Chloride	2.323	2.421	-4.2	87	0.00
85	T	1,3-Dichlorobenzene	1.885	1.906	-1.1	90	0.00
86	T	1,4-Dichlorobenzene	1.820	1.850	-1.6	90	0.00
87	T	sec-Butylbenzene	3.813	3.982	-4.4	89	0.00
88	T	p-Isopropyltoluene	3.327	3.442	-3.5	88	0.00
89	T	1,2,3-Trimethylbenzene	2.787	2.899	-4.0	89	0.00
90	T	1,2-Dichlorobenzene	1.712	1.761	-2.9	91	0.00
91	T	d-Limonene	0.904	0.870	3.8	77	0.00
92	T	1,2-Dibromo-3-Chloropropane	0.518	0.617	-19.1	89	0.00
93	T	n-Undecane	2.109	2.319	-10.0	91	0.00
94	T	1,2,4-Trichlorobenzene	0.308	0.328	-6.5	90	0.00
95	T	Naphthalene	3.962	4.244	-7.1	87	0.00
96	T	n-Dodecane	1.728	2.173	-25.8	105	0.00
97	T	Hexachloro-1,3-butadiene	0.508	0.520	-2.4	88	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : J:\MS16\DATA\2008_05\05\
Data File : 05050802.D
Acq On : 5 May 2008 5:41 am
Operator : WA
Sample : 25ng TO-15 CCV STD
Misc : S20-04290801/S20-04110802
ALS Vial : 1 Sample Multiplier: 1

Quant Time: May 05 09:24:03 2008
Quant Method : J:\MS16\METHODS\R16041408.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Apr 15 07:25:17 2008
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	83	0.02
2	T	Propene	1.867	1.930	-3.4	97	-0.02
3	T	Dichlorodifluoromethane	2.385	2.513	-5.4	98	0.00
4	T	Chloromethane	2.913	3.240	-11.2	92	0.00
5	T	Freon 114	1.383	1.446	-4.6	95	0.00
6	T	Vinyl Chloride	1.805	2.035	-12.7	101	0.00
7	T	1,3-Butadiene	1.308	1.871	-43.0#	124	0.00
8	T	Bromomethane	0.895	0.926	-3.5	102	0.00
9	T	Chloroethane	0.935	0.972	-4.0	88	0.01
10	T	Ethanol	1.051	1.398	-33.0#	94	0.04
11	T	Acetonitrile	3.020	3.648	-20.8	91	0.03
12	T	Acrolein	0.956	1.107	-15.8	96	0.02
13	T	Acetone	1.266	1.518	-19.9	104	0.03
14	T	Trichlorofluoromethane	2.160	2.292	-6.1	92	0.01
15	T	Isopropanol	4.346	4.628	-6.5	83	0.04
16	T	Acrylonitrile	2.370	2.668	-12.6	91	0.03
17	T	1,1-Dichloroethene	1.094	1.156	-5.7	93	0.01
18	T	tert-Butanol	4.181	4.076	2.5	87	0.04
19	T	Methylene Chloride	1.098	1.124	-2.4	91	0.03
20	T	Allyl Chloride	2.021	2.203	-9.0	93	0.02
21	T	Trichlorotrifluoroethane	1.020	1.142	-12.0	101	0.01
22	T	Carbon Disulfide	4.109	4.471	-8.8	95	0.01
23	T	trans-1,2-Dichloroethene	2.103	2.220	-5.6	92	0.02
24	T	1,1-Dichloroethane	2.431	2.505	-3.0	90	0.03
25	T	Methyl tert-Butyl Ether	3.304	3.412	-3.3	92	0.02
26	T	Vinyl Acetate	0.209	0.283	-35.4#	98	0.02
27	T	2-Butanone	0.747	0.779	-4.3	92	0.02
28	T	cis-1,2-Dichloroethene	1.955	2.038	-4.2	90	0.02
29	T	Diisopropyl Ether	0.936	1.027	-9.7	92	0.01
30	T	Ethyl Acetate	0.485	0.560	-15.5	93	0.02
31	T	n-Hexane	2.822	3.070	-8.8	97	0.01
32	T	Chloroform	1.631	1.647	-1.0	89	0.03
33	S	1,2-Dichloroethane-d4(SS1)	1.495	1.438	3.8	79	0.02
34	T	Tetrahydrofuran	0.676	0.742	-9.8	87	0.01
35	T	Ethyl tert-Butyl Ether	1.379	1.470	-6.6	90	0.01
36	T	1,2-Dichloroethane	1.819	1.820	-0.1	88	0.02
37	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	81	0.01
38	T	1,1,1-Trichloroethane	0.418	0.437	-4.5	89	0.02

5/5/08

Data Path : J:\MS16\DATA\2008_05\05\
Data File : 05050802.D
Acq On : 5 May 2008 5:41 am
Operator : WA
Sample : 25ng TO-15 CCV STD
Misc : S20-04290801/S20-04110802
ALS Vial : 1 Sample Multiplier: 1

Quant Time: May 05 09:24:03 2008
Quant Method : J:\MS16\METHODS\R16041408.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Apr 15 07:25:17 2008
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
39	T	Isopropyl Acetate	0.212	0.240	-13.2	89	0.02
40	T	1-Butanol	0.284	0.295	-3.9	61	0.02
41	T	Benzene	1.026	1.055	-2.8	90	0.02
42	T	Carbon Tetrachloride	0.378	0.430	-13.8	87	0.02
43	T	Cyclohexane	0.412	0.418	-1.5	92	0.02
44	T	tert-Amyl Methyl Ether	0.719	0.766	-6.5	88	0.01
45	T	1,2-Dichloropropane	0.321	0.335	-4.4	90	0.01
46	T	Bromodichloromethane	0.311	0.338	-8.7	89	0.01
47	T	Trichloroethene	0.340	0.351	-3.2	90	0.01
48	T	1,4-Dioxane	0.207	0.209	-1.0	84	0.01
49	T	Isooctane	1.693	1.828	-8.0	90	0.01
50	T	Methyl Methacrylate	0.111	0.124	-11.7	83	0.01
51	T	n-Heptane	0.267	0.281	-5.2	89	0.02
52	T	cis-1,3-Dichloropropene	0.407	0.439	-7.9	88	0.00
53	T	4-Methyl-2-pentanone	0.370	0.380	-2.7	84	0.00
54	T	trans-1,3-Dichloropropene	0.365	0.397	-8.8	87	0.01
55	T	1,1,2-Trichloroethane	0.271	0.285	-5.2	90	0.01
56	I	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	82	0.00
57	S	Toluene-d8 (SS2)	2.524	2.454	2.8	81	0.00
58	T	Toluene	2.829	2.839	-0.4	89	0.01
59	T	2-Hexanone	2.545	2.271	10.8	77	0.00
60	T	Dibromochloromethane	0.815	0.859	-5.4	88	0.00
61	T	1,2-Dibromoethane	0.777	0.795	-2.3	89	0.01
62	T	Butyl Acetate	2.484	2.488	-0.2	79	0.00
63	T	n-Octane	0.837	0.903	-7.9	89	0.00
64	T	Tetrachloroethene	0.839	0.825	1.7	87	0.00
65	T	Chlorobenzene	2.036	2.041	-0.2	88	0.00
66	T	Ethylbenzene	3.286	3.286	0.0	87	0.00
67	T	m- & p-Xylene	2.139	2.129	0.5	87	0.00
68	T	Bromoform	0.481	0.518	-7.7	87	0.00
69	T	Styrene	2.117	2.142	-1.2	85	0.00
70	T	o-Xylene	2.304	2.284	0.9	87	0.01
71	T	n-Nonane	2.202	2.279	-3.5	88	0.00
72	T	1,1,2,2-Tetrachloroethane	0.946	0.987	-4.3	90	0.00
73	S	Bromofluorobenzene (SS3)	0.877	0.911	-3.9	85	0.00
74	T	Cumene	3.313	3.382	-2.1	86	0.00
75	T	alpha-Pinene	1.596	1.621	-1.6	84	0.00
76	T	n-Propylbenzene	3.858	4.001	-3.7	87	0.00

JDA 5/5/08

Data Path : J:\MS16\DATA\2008_05\05\
Data File : 05050802.D
Acq On : 5 May 2008 5:41 am
Operator : WA
Sample : 25ng TO-15 CCV STD
Misc : S20-04290801/S20-04110802
ALS Vial : 1 Sample Multiplier: 1

Quant Time: May 05 09:24:03 2008
Quant Method : J:\MS16\METHODS\R16041408.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Tue Apr 15 07:25:17 2008
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
77 T	3-Ethyltoluene	3.596	3.667	-2.0	87	0.00
78 T	4-Ethyltoluene	3.341	3.309	1.0	86	0.00
79 T	1,3,5-Trimethylbenzene	2.912	2.870	1.4	86	0.00
80 T	alpha-Methylstyrene	1.615	1.573	2.6	76	0.00
81 T	2-Ethyltoluene	3.532	3.634	-2.9	87	0.00
82 T	1,2,4-Trimethylbenzene	2.954	2.908	1.6	86	0.00
83 T	n-Decane	2.131	2.221	-4.2	88	0.00
84 T	Benzyl Chloride	2.323	2.413	-3.9	85	0.00
85 T	1,3-Dichlorobenzene	1.885	1.886	-0.1	88	0.00
86 T	1,4-Dichlorobenzene	1.820	1.830	-0.5	87	0.00
87 T	sec-Butylbenzene	3.813	3.966	-4.0	87	0.00
88 T	p-Isopropyltoluene	3.327	3.408	-2.4	85	0.00
89 T	1,2,3-Trimethylbenzene	2.787	2.890	-3.7	86	0.00
90 T	1,2-Dichlorobenzene	1.712	1.752	-2.3	88	0.00
91 T	d-Limonene	0.904	0.851	5.9	74	0.00
92 T	1,2-Dibromo-3-Chloropropane	0.518	0.620	-19.7	88	0.00
93 T	n-Undecane	2.109	2.331	-10.5	90	0.00
94 T	1,2,4-Trichlorobenzene	0.308	0.330	-7.1	89	0.00
95 T	Naphthalene	3.962	4.151	-4.8	83	0.00
96 T	n-Dodecane	1.728	2.162	-25.1	102	0.00
97 T	Hexachloro-1,3-butadiene	0.508	0.523	-3.0	86	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

Internal Standard Area and RT Summary

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Lab File ID: 05020801.D
Analyst: Wida Ang Date Analyzed: 5/2/08
Sampling Media: 6.0 L Summa Canister(s) Time Analyzed: 06:39
Test Notes:

		IS1 (BCM)		IS2 (DFB)		IS3 (CBZ)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	24 Hour Standard	328364	9.22	1386260	11.36	583340	16.45
	Upper Limit	459710	9.55	1940764	11.69	816676	16.78
	Lower Limit	197018	8.89	831756	11.03	350004	16.12
	Client Sample ID						
01	Method Blank	319561	9.18	1348291	11.34	568631	16.44
02	Lab Control Sample	325686	9.23	1361442	11.37	571978	16.45
03	WAT-SG-3-042308	322553	9.19	1364976	11.34	575596	16.45
04	WAT-SG-B2-042308	320779	9.19	1340869	11.35	565181	16.45
05	WAT-SG-7-042408	313548	9.20	1337401	11.35	564597	16.45
06	WAT-SG-FB-042308	308726	9.19	1310306	11.34	550257	16.44
07	WAT-SG-1-042308	309028	9.19	1291100	11.35	548762	16.45
08	WAT-SG-1-042308 (Lab Duplicate)	306175	9.20	1300972	11.35	547690	16.45
09	WAT-SG-2-042308	297029	9.21	1276048	11.36	540559	16.45
10	WAT-SG-4-042308	312570	9.20	1310803	11.35	556700	16.45
11	WAT-SG-B4-042408	275684	9.20	1153300	11.34	501911	16.45
12	WAT-SG-5-042408	276441	9.20	1190544	11.34	508037	16.44
13							
14							
15							
16							
17							
18							
19							
20							

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = 140% of internal standard area
AREA LOWER LIMIT = 60% of internal standard area
RT UPPER LIMIT = 0.33 minutes of internal standard RT
RT LOWER LIMIT = 0.33 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Verified By: RG Date: 5/12/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill** CAS Project ID: P0801215
Client Project ID: **DOW - Waterloo, NY / 369548.B2.FI**

Internal Standard Area and RT Summary

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Lab File ID: 05050802.D
Analyst: Wida Ang Date Analyzed: 5/5/08
Sampling Media: 6.0 L Summa Canister(s) Time Analyzed: 05:41
Test Notes:

		IS1 (BCM)		IS2 (DFB)		IS3 (CBZ)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	24 Hour Standard	314157	9.23	1343679	11.37	570129	16.45
	Upper Limit	439820	9.56	1881151	11.70	798181	16.78
	Lower Limit	188494	8.90	806207	11.04	342077	16.12
	Client Sample ID						
01	Method Blank	283657	9.19	1218732	11.34	515790	16.44
02	WAT-SG-7a-042408	278358	9.19	1195074	11.34	512911	16.45
03	WAT-SG-9-042408	276807	9.19	1198759	11.35	509213	16.44
04	Lab Control Sample	282838	9.23	1207055	11.37	525387	16.45
05	WAT-SG-6-042408	298964	9.19	1278940	11.34	541935	16.45
06	WAT-SG-3a-042308	270641	9.20	1164207	11.35	503590	16.45
07	WAT-SG-5a-042408	232996	9.20	1023989	11.35	451363	16.45
08	WAT-SG-DUP-042308	309518	9.19	1359291	11.34	570320	16.44
09	WAT-SG-8-042408	311326	9.19	1357811	11.34	575259	16.45
10							
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20							

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = 140% of internal standard area
AREA LOWER LIMIT = 60% of internal standard area
RT UPPER LIMIT = 0.33 minutes of internal standard RT
RT LOWER LIMIT = 0.33 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Verified By: RC Date: 5/12/08

QC Certification

Columbia Analytical Services, Inc.
2655 Park Center Drive, Suite A
Simi Valley, CA 93065
Ph. 805-526-7161
Fax 805-526-7270

Container IDs	Cleaned Date	Date Analyzed	QC Results	Comments
AC00097*	04/11/2008	04/21/2008	Pass w/ Conditions	EPA TO-15 (Client Specified)
AC00615	04/17/2008	04/21/2008	Pass w/ Conditions	SIM
AC00648	04/02/2008	04/21/2008	Pass w/ Conditions	EPA TO-15 (Client Specified)
AC00802	04/17/2008	04/21/2008	Pass w/ Conditions	SIM
AC00812*	04/11/2008	04/21/2008	Pass w/ Conditions	EPA TO-15 (Client Specified)
AC00814	04/02/2008	04/21/2008	Pass w/ Conditions	EPA TO-15 (Client Specified)
AC00940	04/02/2008	04/21/2008	Pass w/ Conditions	EPA TO-15 (Client Specified)
AC00950	04/02/2008	04/21/2008	Pass w/ Conditions	EPA TO-15 (Client Specified)
AC01020*	04/11/2008	04/21/2008	Pass w/ Conditions	EPA TO-15 (Client Specified)
AC01168	04/02/2008	04/21/2008	Pass w/ Conditions	EPA TO-15 (Client Specified)
AC01189	04/17/2008	04/21/2008	Pass w/ Conditions	SIM
AC01209	04/02/2008	04/21/2008	Pass w/ Conditions	EPA TO-15 (Client Specified)
AC01211	04/17/2008	04/21/2008	Pass w/ Conditions	SIM
AC01235	04/17/2008	04/21/2008	Pass w/ Conditions	SIM
AC01276	04/17/2008	04/21/2008	Pass w/ Conditions	SIM
AC01311	04/17/2008	04/21/2008	Pass w/ Conditions	SIM
AC01387	04/17/2008	04/21/2008	Pass w/ Conditions	SIM
FC00659	04/09/2008	04/09/2008		
FC00693	04/10/2008	04/10/2008		
OA00572	04/18/2008	04/21/2008		
OA00584	04/18/2008	04/21/2008		
OA00585	04/18/2008	04/21/2008		
OA00587	04/18/2008	04/21/2008		
OA00589	04/18/2008	04/21/2008		

*** QC Canister**

Container IDs	Cleaned Date	Date Analyzed	QC Results	Comments
OA00590	04/18/2008	04/21/2008		
OA00591	04/18/2008	04/21/2008		
OA00594	04/18/2008	04/21/2008		
OA00601	04/18/2008	04/21/2008		
OA00607	04/18/2008	04/21/2008		
OA00611	04/18/2008	04/21/2008		
OA00616	04/18/2008	04/21/2008		
OA00617	04/18/2008	04/21/2008		
OA00621	04/18/2008	04/21/2008		
OA00624	04/18/2008	04/21/2008		

* QC Canister