Addendum to the June 1999 Closure Certification Report for the Former Drum Storage Area at the Former Peregrine, U.S., Inc. Property at the Coldwater Road Facility G-1245 East Coldwater Road Flint, Michigan (EPA I.D. No. MIR 000 020 743)

Prepared for:
Remediation and Liability Management Company, Inc.
Pontiac, Michigan

January 2005

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CLOSURE CERTIFICATION ADDENDUM

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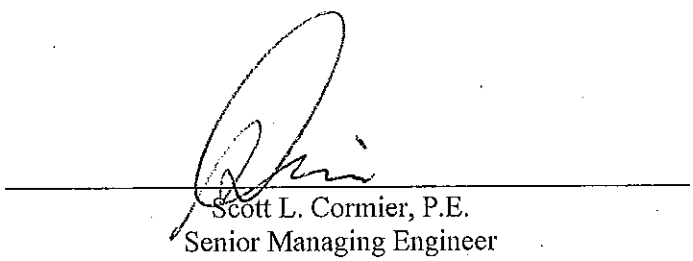

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January 2005

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Closure certification

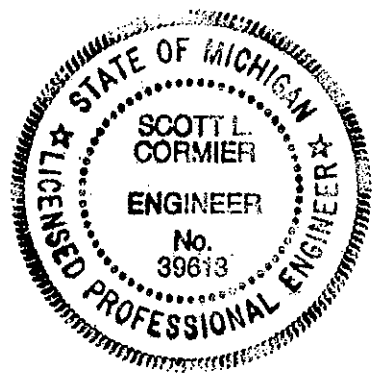
This section presents the certification statement as required by 40 CFR 264.115 and Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), Mich. Admin. Code Rule 299.9613(2).

Professional Engineers Certification

I, Scott L. Cormier, a Professional Engineer in the State of Michigan, certify under penalty of law that this document and attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

O'BRIEN & GERE ENGINEERS, INC.

Scott L. Cormier, P.E.
Senior Managing Engineer



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1. Introduction

This Closure Certification Addendum Report (Addendum Report) documents final closure of the former Drum Storage Area, which is the last RCRA unit to be closed at the REALM Coldwater Road Landfill facility in Flint, Michigan. As such, this Addendum Report also requests closure approval for the entire REALM Coldwater Road Landfill facility in accordance with the October 1992 Corrective Action Consent Order (CACO) and the Michigan Department of Environmental Quality (MDEQ)-approved 1989 Closure and Post-Closure Care Plan (Closure Plan).

This Addendum Report presents results of the additional investigation activities at the former Drum Storage Area to satisfy the March 26, 1998 MDEQ Waste Management Division (WMD) request. The objective of the investigation was to assess potential releases to the soil and ground water beneath the concrete sumps at the former Drum Storage Area subsequent to cleaning of the drum storage pad and sumps. The cleaning activities were performed in accordance with the approved Closure Plan.

This Addendum Report also documents the implementation of an Interim Remedial Measure (IRM) performed at the former Drum Storage Area to accelerate closure.

1.1. Site history

1.1.1. Site ownership

The REALM Coldwater Road Landfill facility is located north of the REALM former Peregrine U.S., Inc. (REALM former Peregrine property) property as shown on the Site Location Map, Figure 1. The REALM Coldwater Road Landfill facility consists of the wastewater treatment sludge monofill landfill, former wastewater treatment plant (decommissioned and demolished in 1999), restored wetlands and leachate accumulation facility. This facility is bordered on the south by the REALM former Peregrine property, which formerly contained several manufacturing buildings and support facilities. The buildings on the REALM former Peregrine property were decommissioned and demolished between 1999 and 2001. A figure depicting the division between the REALM Coldwater Road Landfill facility and the REALM former Peregrine property is included as Figure 2.

On December 10, 1996, an asset Purchase Agreement for the manufacturing portion of the Coldwater Road site was signed by GM and Peregrine. GM retained ownership of the northern portion of the

Coldwater Road Landfill site (which is now referred to as the "REALM Coldwater Road Landfill facility") and sold the manufacturing facility (referred to as the "REALM former Peregrine property, MID 000 020 743"). In August 1999, REALM took back ownership of the manufacturing facility from Peregrine.

On April 14, 2000 a MDEQ Notification of Regulated Waste Activity form (EQP5150) and U.S. E.P.A. Hazardous Waste Permit Application Part A (EPA form 8700-23) were submitted to document change of ownership of the landfill and the former wastewater treatment plant property from GM to REALM. REALM, a wholly-owned subsidiary of GM, manages the RCRA closure program for the REALM Coldwater Road Landfill facility under the CACO and also manages a voluntary RCRA Corrective Action program for the REALM former Peregrine property.

1.1.2. RCRA landfill closure

Several of the RCRA units and SWMUs were closed in accordance with the Closure Plan during construction of the on-site hazardous waste landfill between 1990 and 1994. Roy F. Weston, Inc. (Weston) provided quality assurance oversight and closure verification during this construction phase. As documented in the Draft Closure Certification Documentation Package, Weston, November 1994, there were several units not closed at the completion of landfill construction. Closure of these remaining units was completed between 1994 and 2003 with oversight provided by O'Brien & Gere. Closure documentation for all units covered under the CACO for the REALM Coldwater Road Landfill facility, except for the former Drum Storage Area, is provided in the following five final closure reports:

- Final Closure Certification Documentation Package - Decontamination Pits and Sump, Chromium Reduction Basins at the WWTP, September 1998, Roy F. Weston, Inc. (Weston).

- Subsurface Investigation of Decontamination Pits/Sump and Chromium Reduction Basins Report, June 1999, O'Brien & Gere Engineers, Inc. (O'Brien & Gere).

- Final Closure Certification, former Drum Storage Area and Waste Pile Pad, June 1999, Weston.

- Part I - Final Closure Certification Documentation, November 2000, O'Brien & Gere and subsequent data submittals.

- Part II - Final Closure Certification Documentation, November 2000, Weston and subsequent data submittals.

To assist with understanding past closure activities, a site-wide Summary Report was prepared and is included in Appendix A.

1.1.3. RCRA REALM former Peregrine property activities

Two of the RCRA units covered under the CACO for the REALM Coldwater Road Landfill facility were located on the REALM former Peregrine property. These units were closed in accordance with the Closure Plan; therefore, REALM requested MDEQ approval for closure of these two units by submitting the June 1999 Final Closure Certification Report (Weston). The MDEQ response to this June 1999 Report was that the MDEQ had previously denied closure for the former Drum Storage Area in a letter addressed to Peregrine, dated March 26, 1998 because of an unexpected event which is further described in Section 1.2. A copy of the MDEQ letter to Peregrine dated March 26, 1998 is included in Appendix B.

Following REALM taking ownership of the former Peregrine property, a voluntary RCRA Corrective Action program for the REALM former Peregrine property commenced in May 2000 by Conestoga-Rovers & Associates (CRA). Some of the data presented in the RCRA Corrective Action documents by CRA is associated with the former Drum Storage Area and, thus pertinent data is also presented in this Addendum Report.

Corrective action activities associated with the REALM former Peregrine property, which includes the former Drum Storage Area, will retain the Peregrine EPA I.D. number, MIR 000 020 743. The remaining portion of the REALM Coldwater Road Landfill facility uses the REALM EPA I.D. number MID 005 356 860.

1.2. Former Drum Storage Area background

As previously noted, the former Drum Storage Area, which is located on the REALM former Peregrine property, is the only remaining unit under the CACO not currently closed. This section provides a description of the former Drum Storage Area, usage history, and closure activity background.

1.2.1. Former Drum Storage Area description

The former Drum Storage Area was located outside of the former manufacturing building (Building 44), as identified on the Site Plan, Figure 2. The former Drum Storage Area consisted of a 100 ft by 56-ft concrete pad with a four-inch high concrete curb (secondary containment) around the perimeter of the pad. A 42-ft by 72-ft area of the concrete pad was formerly fenced.

A sump existed in the southwest corner of the pad, which previously collected rainwater and potential releases from the drums stored on the pad. The sump consisted of two 6 ft by 6 ft by 8-ft deep concrete vaults (east and west sumps). The east sump collected liquids and sediments and allowed liquids to overflow over a separating wall or weir to the west sump. A pump (previously located at the west sump) then

discharged accumulated liquid in the west sump directly to the former wastewater treatment plant (WWTP). The west sump was enclosed in a small steel structure. A layout of the former Drum Storage Area is included as Figure 3.

Following the decommissioning and demolition of the former manufacturing facility (1999 – 2001), the former Drum Storage Area was filled with 3 to 4 ft of clean fill over the concrete pad and sumps.

1.2.2. Historical Former Drum Storage usage

Wastes formerly stored at the former Drum Storage Area were generated by parts finishing and washing, maintenance cleaning, and paint dip operations at the facility. Hazardous wastes formerly stored at this area included spent 1,1,1-trichloroethane (F001), spent xylene (F003), and spent paint thinner sludge (D001). Other hazardous wastes stored on a one time basis included corrosive materials (D002), reactive materials (D003) and chromium wastes (D007).

1.2.3. Previous closure activities at the Former Drum Storage Area

As detailed in the June 1999 Final Closure Certification Report (Weston), the former Drum Storage Area was cleaned in May and August 1991, and July and August 1992, in accordance with the approved 1989 Closure Plan. A brief summary of the cleaning activities performed at the former Drum Storage Area includes:

- Removal, decontamination, and disposal of sludges and miscellaneous materials from the area.
- The concrete pad, east and west sumps, concrete pad adjacent to the sump pump shed, sump pump and associated piping were triple-rinsed with high pressure water, scrubbed with detergent and flushed with potable water.
- Removed sludges and associated decontamination waters were either pumped directly to the WWTP or transported to an approved hazardous waste disposal facility.
- Clean closure verification sampling and analysis was conducted to confirm clean closure of the concrete pad, east and west sumps, sump pump, and associated piping.

Subsequent to the August 27, 1992 cleaning activities, a draft Closure Certification Report (Weston, November 1994) was submitted to the MDEQ which concluded that the former Drum Storage Area was decontaminated in accordance with the approved 1989 Closure Plan. The Final Closure Certification Report was submitted to the MDEQ in June 1999 certifying closure of the former Drum Storage Area (Weston, June 1999). As described in the June 1999 Final Closure Certification Report, prior to the cleaning activities, GM removed approximately 10 cyd of

gritty, oily (hazardous) waste sludge's that had accumulated in the east sump.

In a letter to Peregrine U.S., Inc., dated March 26, 1998, the MDEQ denied closure approval for the former Drum Storage Area because the removal of waste sludge's from the former Drum Storage Area sumps constituted an unexpected event under 40 CFR 265.112(c) (REALM was unaware of this MDEQ letter prior to submitting the June 1999 Final Closure Certification Report). Because of this unexpected event, MDEQ requested soil sampling be performed beneath the concrete sumps to assess a potential release.

1.2.4. Investigation summary at the Former Drum Storage Area

Following MDEQ notification that closure of the former Drum Storage Area was previously denied, REALM submitted a Work Plan Amendment to the Closure Plan and Post-Closure Plan for the Former Drum Storage Area (Work Plan) to the MDEQ on February 16, 2000 for subsurface investigation at the former Drum Storage Area. The Work Plan was approved by the MDEQ in a letter, dated June 27, 2000. A copy of the MDEQ approval letter to REALM is included in Appendix C. Following MDEQ approval, soil and ground water investigations were completed in a phased approach between August 2000 and July 2002 at the former Drum Storage Area as described in Chapter 2.

During the former Drum Storage Area investigations, it was identified that several historical investigations of the former Peregrine property existed. There was some data in these historical reports that was associated with the former Drum Storage Area (presented in Section 2.4); therefore, additional investigations were performed in November 2002. This Addendum Report supplements the June 1999 Closure Certification Report for the former Drum Storage Area by presenting subsurface investigation results at the former Drum Storage Area.

1.3. Applicable closure criteria

Under the October 1992 CACO, the REALM Coldwater Road Landfill facility had interim status pursuant to RCRA and was subject to the regulations and environmental protection standards of the Michigan Hazardous Waste Management Act, 1979 PA 64, as amended. However, following removal of a substantial volume of delisted non-hazardous soils from the REALM Coldwater Road landfill facility, verification soil samples still exceeded the background cleanup criteria established in the 1989 Closure Plan. Therefore, GM requested modification to the 1989 Closure Plan in a letter dated April 23, 1997. The letter requested changing the 1989 Closure Plan cleanup criteria (site specific background concentrations) to the MDEQ Type B health-

based cleanup criteria specified in the administrative rules promulgated pursuant to Part 201 of the NREPA, 1994, PA, as amended. This modification to the 1989 Closure Plan was approved by the MDEQ in a letter dated June 26, 1998. Therefore, on-going activities at the REALM Coldwater Road Landfill facility under the CACO follow MDEQ Part 201 cleanup criteria.

The objective of the sampling and analysis at the former Drum Storage Area was to evaluate the potential for historical releases from the concrete sumps for closure under the CACO. Therefore, conservatively, soil analytical results were compared to MDEQ Generic Industrial Drinking Water Protection criteria and ground water analytical results were compared to MDEQ Generic Industrial Drinking Water criteria. A discussion on the analytical results compared to the appropriate criteria is included in Section 2.

2. Summary of former Drum Storage Area investigations

This section describes the methods for investigation sample collection and results of the soil and ground water sampling and analysis conducted in the vicinity of the former Drum Storage Area. Sampling and analysis was conducted in accordance with procedures outlined in the MDEQ approved February 16, 2000 Work Plan for the former Drum Storage Area and January 1999 Quality Assurance Project Plan (QAPP), as amended in May 2002 developed for the REALM Coldwater Road Landfill facility.

O'Brien & Gere completed investigation of the former Drum Storage Area in a phased approach following MDEQ approval of the Work Plan. An initial field investigation was performed in August 2000 and subsequent investigations were performed in May 2002, June 2002, and November 2002. These investigations were performed to evaluate the extent of TCE impact in subsurface soil and evaluate ground water quality in the vicinity of the former Drum Storage Area.

2.1. Initial investigation- August 2000

The purpose of the initial Geoprobe® investigation was to assess the potential for a release from the former Drum Storage Area sumps at the request of the MDEQ.

O'Brien & Gere completed the soil sampling activities adjacent to the concrete sumps of the former Drum Storage Area on August 1, 2000 (see Figure 4 for Geoprobe® soil boring locations). Initial borings GB-1 through GB-4 were installed on each side of the sumps (as close as feasible – approximately 10 ft from the sumps) to evaluate the potential for a release. The Geoprobe® borings were installed at the following depths: three (GB-1, GB-2 and GB-3) to a depth of 12 ft below grade and one (GB-4) to a depth of 17 ft below grade. To collect a soil sample beneath the bottom of the concrete sumps, as requested in the March 26, 1998 MDEQ letter, the borings were installed to a depth of approximately 12 ft below grade. Due to limited access between the south side of the sump house and the former manufacturing building, Geoprobe® boring GB-4 was installed inside the former manufacturing building on the south side. Since the former manufacturing building floor was approximately 5 ft above former ground surface, GB-4 was installed to a depth of 17 ft below the building floor, commensurate with 12 ft below the outside ground surface.

The borings were installed using a direct push hydraulic Geoprobe® unit. A 4-ft long tubular sampler with disposable acetate liner was driven into the subsurface material to obtain representative samples. Soil samples were classified in accordance with ASTM method D-2488 by an O'Brien & Gere geologist. Completed soil boring logs are included in Appendix D. Soil samples were field screened using a photoionization detector (PID), visual and olfactory methods in 2-ft intervals from the ground surface to the boring terminus. The headspace screening procedure was accomplished by placing a portion of the soil sample (biased based on visual and olfactory observations) into a re-sealable plastic bag and allowing the sample to reach ambient air temperature prior to screening with the PID. The maximum PID reading was recorded on the boring log for each sample.

Since impact to soil was not observed during field screening, one soil sample from the bottom of each boring was selected for analysis based on this depth being below the bottom of the former Drum Storage Area sumps and most likely to detect impact from a release. The sampling interval from 9-11 ft below grade was selected for analysis at boring locations GB-1 through GB-3 and 14-16 ft below grade for boring location GB-4. Boring GB-4 was extended to this depth since it was located in the former main manufacturing building floor, which is at a higher elevation than the surrounding surface grade. This phase of investigation included analyzing soil samples for the same parameters analyzed previously during the clean closure verification sampling of the former Drum Storage Area. Soil samples were collected in accordance with USEPA Method 5035 and analyzed for the presence of VOCs by USEPA method 8260, cyanide by USEPA method 9010, lead by USEPA method 6020 and mercury by USEPA method 7471M. Chromium was analyzed for valence-specific (trivalent and hexavalent) fractions at the request of the MDEQ in the March 26, 1998 letter by USEPA methods 6020 and 7197, respectively. Quality assurance/ quality control (QA/QC) samples including a duplicate, equipment blank, trip blank and MS/MSD samples were also collected and analyzed in accordance with the QAPP. Soil samples selected for analysis were submitted to Merit Laboratories, Inc. (formerly Fire and Environmental Consulting Laboratories, Inc.) of East Lansing, Michigan.

A Level III data package was requested from the laboratory. The data was independently validated by O'Brien & Gere in accordance with the QAPP to assess the suitability of the measurement system for providing useful analytical data. The results of data validation, included in Appendix E, indicated the VOCs, chromium, lead, mercury and cyanide data were determined to be 100% usable for qualitative and quantitative purposes.

VOCs were not detected in 3 of the 4 soil borings sampled at the former Drum Storage Area. Boring GB-1 was the only boring with detected VOCs. TCE and cis-1,2-dichloroethene were detected at concentrations of 6,720 and 820 ug/kg, respectively in this boring (9 to 11 ft interval). The concentration of cis-1,2-dichloroethane was below all generic cleanup criteria; however, the concentration of TCE exceeded the

Generic Industrial Drinking Water Protection criteria. Lead was detected in all the soil samples analyzed, however these results were below the MDEQ Generic Industrial Drinking Water Protection criteria. Tri-valent chromium was detected in 2 of the 4 samples; however the concentrations of these metals were below the MDEQ Generic Industrial Drinking Water Protection criteria. Analytical results for cyanide were below method detection limits. Table 1 summarizes these analytical results and qualified analytical data sheets are included in the Data Validation Report included in Appendix E.

The subsurface conditions observed during this initial investigation included silty clay observed from the surface to an approximate depth of 12 ft below grade (terminus of boring) in three of the four borings. In one boring (GB-4) completed inside the former main manufacturing building, approximately 5 ft of a sandy fill material was observed below the concrete floor above the clay. During installation of the soil borings saturated soil conditions were not observed.

The initial investigation identified TCE impact to soil above the MDEQ Generic Industrial Drinking Water protection criterion at a depth of 9-11 ft below grade at GB-1, west of the former Drum Storage Area sumps.

2.2. Additional investigation –May 2002

Based on the results of the August 2000 soil sampling at the former Drum Storage Area and discussions with MDEQ, three additional Geoprobe® borings (GB-5, GB-6 and GB-7) and one temporary monitoring well (DSA MW-1) were installed at the former Drum Storage Area to assess the extent of TCE impact in soil and assess the potential presence of ground water. This investigation was performed between May 10 and July 23, 2002.

2.2.1. Soil investigation

The Geoprobe® borings were installed radially outward (approximately 5-10 ft) from GB-1 to horizontally and vertically assess the extent of TCE soil impact. The borings were installed to an approximate depth of 20 ft below grade. The sampling was performed in accordance with the methods described in Section 2.1. The boring locations are shown on Figure 4. Although these borings appear to be installed deeper than the August 1, 2000 borings, the grade in this area had increased approximately 3-4 ft as a result of demolishing the main manufacturing facility on the REALM former Peregrine property, therefore the borings were installed to a greater depth than the borings installed in August 2000. The boring used for installation of the temporary monitoring well (DSA MW-1) was installed to a depth of 25 ft below grade to vertically assess the previously detected impact to soil in this area at GB-1 and assess the potential presence of ground water. Completed soil boring logs are included in Appendix D.

Two soil samples were collected from each of the Geoprobe® borings for laboratory analysis, except for boring DSA MW-1. In the Geoprobe® borings, one soil sample was collected from either the interval indicating potential impact through field screening or at the depth equivalent to previously identified impact (approximately 9-11 ft below grade at GB-1). The second soil sample was collected from the terminus of the boring for vertical assessment of potential impact. In DSA MW-1 one soil sample was collected from the terminus of the boring for laboratory analysis for vertical assessment of soil impact. Soil samples selected for analysis were collected using Encore® samplers, labeled, placed in a cooler with ice and chain-of-custody documentation and delivered to Merit Laboratories, Inc. (Merit) of East Lansing, Michigan. The samples were analyzed for the presence of VOCs by USEPA Method 8260.

The analytical data was independently validated by O'Brien & Gere in accordance with the QAPP to assess the suitability of the measurement system for providing useful analytical data. The results of data validation, included in Appendix F, indicated the VOCs data were 100% usable for qualitative and quantitative purposes.

VOCs were not detected in 6 of 7 samples collected. The soil sample from 14-15 ft in GB-7 was the only sample that detected VOCs. TCE and cis-1,2-dichloroethene were detected at concentrations of 1,510 and 300 ug/kg, respectively. The concentration of cis-1,2-dichloroethene was below all generic cleanup criteria, however TCE exceeded the Generic Industrial Drinking Water Protection criterion of 100 ug/kg. At the request of the MDEQ and because ground water could not initially be sampled in this area (see Section 2.2.2), this soil sample was subsequently analyzed for leachable TCE by the Synthetic Precipitate Leaching Procedure (SPLP) USEPA Method 8260B. The SPLP analytical results identified a leachable concentration of TCE of 19 ug/l, which is above the MDEQ Generic Industrial Drinking Water Criterion (5 ug/l). The results of data validation, included in Appendix G, indicated the SPLP data were 100% usable for qualitative and quantitative purposes.

The analytical results for the May 10, 2002 soil sampling and SPLP TCE analysis are summarized on Tables 2 and 3, respectively. Qualified analytical data sheets are included in the Data Validation Reports, included in Appendices F and G, respectively.

Similar to the initial investigation, the subsurface conditions observed for this additional investigation included observations of silty clay in the borings from previous grade (approximately 4 ft below present grade), with fill material above, to a depth of 20 ft below grade. In two borings (GB-5 and DSA MW-1), a thin sand lense was observed at an approximate depth of 10 ft below grade and a monitoring well was set at DSA MW-1 with the screened interval set at approximately 9.7 - 14.7 ft below grade, straddling this sand lense to intercept potential ground water. A discussion on the ground water investigation is discussed in the following section.

2.2.2. Ground water investigation

Because the previously installed monitoring wells in the vicinity of the former Drum Storage Area could not be located, one temporary monitoring well (DSA MW-1) was installed approximately 4 ft north of GB-1 to collect a ground water sample for VOC analysis. The temporary monitoring well was constructed of 2-inch diameter schedule 40 PVC riser flush threaded to a 5 ft length of no. 10 well slot, 2-inch schedule 40 PVC well screen. The screen was set at an approximate depth of 9.7 – 14.7 ft below grade across a thin (approximately 0.75 ft thick) sand lense (observed from 10-10.75 ft below grade). Once the screen and riser were placed through the augers, clean silica sand was placed around the well screen to approximately 2.5-ft above the screen. After the sand was placed around the well screen, a bentonite seal was placed above the sand pack. The well was finished above grade with a steel protective casing. A monitoring well construction detail is included in Appendix H.

An attempt was made to develop temporary well DSA MW-1 subsequent to installation; however, the well was observed to be dry the day of and one day after installation. The well was checked during each of the following two consecutive weeks and ground water was not observed in the well. On June 17, 2002, the well was again checked and a 5-ft water column was observed. The ground water elevation was measured to be 803.07' (approximately 9 ft below grade). This ground water was evacuated and the ground water level did not recover for the remainder of that day. The temporary well was again checked on June 26, 2002, and again a 5-ft water column was observed. This ground water was evacuated and recovery of a 1-ft water column was observed after approximately 4 hrs. Well development of DSA MW-1 was considered complete based on surging, and then evacuating the ground water out of the well on these two separate occasions.

A water sample was then collected from temporary well DSA MW-1 on July 23, 2002 after allowing the water to stabilize. The well was sampled to acquire ground water quality data and to assess whether TCE impact to soil was leaching to ground water. The water sample was split with a MDEQ WMD representative. The temporary well was sampled using low-flow sampling methods and analyzed for the presence of VOCs by USEPA Method 8260. The results of data validation, included in Appendix I, indicated the VOCs data for groundwater were 100% usable for qualitative and quantitative purposes.

The analytical results from the ground water sample collected from DSA MW-1 and analyzed by O'Brien & Gere and the MDEQ WMD indicated the detection of VOCs. The constituents which exceed the MDEQ Generic Industrial Drinking Water Criteria were TCE and cis-1,2-dichloroethene. The concentrations of the ground water samples analyzed are as follows: O'Brien & Gere sample- TCE 1,420 ug/l and cis-1,2-dichloroethene 650 ug/l; and the MDEQ sample- TCE 2,200 ug/l and cis-1,2-dichloroethene 920 ug/l. The O'Brien & Gere ground water analytical results are summarized on Table 4 and qualified analytical data sheets are included in the Data Validation Report included in Appendix I.

The draft MDEQ WMD ground water analytical results are included in Appendix J.

Based on the yield of the well observed and historical site information from previous investigations, it does not appear that the sand lense which well DSA MW-1 screens is continuous across the site or is capable of yielding usable quantities of ground water for economical use. Therefore, this saturated lense is not considered a useable aquifer. A study was performed in the Fall of 2002 by CRA to investigate the potential for Groundwater Not In An Aquifer (GWNIAA) across the REALM former Peregrine property. The results of this study indicated the perched water at the site meets the requirements for GWNIAA. Further discussions of the GWNIAA results are included in Section 3.

In summary, this phase of investigation determined that shallow ground water observed at the former Drum Storage Area is impacted by TCE and cis-1,2-dichloroethene with concentrations exceeding MDEQ Generic Industrial Drinking Water criteria. The extent of soil impact was assessed north, east and northwest of GB-1, however, soil impact required further assessment to the south and southwest of GB-7.

2.3. Additional investigation- June 2002

Based on the results of the May 10, 2002 soil sampling event indicating TCE impact in soil at GB-7 above MDEQ Generic Industrial Drinking Water Protection criterion, an additional phase of soil sampling was performed on June 4, 2002, to assess the extent of TCE impact to soil. The sampling was performed in accordance with the methods described in Section 2.1. Two rings of Geoprobe borings (first ring-GB-8, GB-9 and GB-10, second ring- GB-11, GB-12 and GB-13) were placed radially outward from GB-7 as shown on Figure 4. One soil sample from each soil boring was collected from either the interval indicating potential impact through field screening or at the approximate depth where previous sampling results indicated impact. QA/QC samples including a duplicate, equipment blank, trip blank and MS/MSD samples were also collected and analyzed in accordance with the QAPP. The borings were installed to a depth of 20 ft below grade. Completed soil boring logs are included in Appendix D.

The soil samples from the first ring were submitted to the laboratory for analysis of VOCs by USEPA Method 8260. The results of data validation, included in Appendix K, indicated the VOCs data were 100% usable for qualitative and quantitative purposes. The analytical results for the first ring of soil samples were below method detection limits, therefore the second/outer ring samples were not analyzed.

The soil sample analytical results for the June 4, 2002 sampling event are summarized on Table 5 and qualified analytical data sheets are included in the Data Validation Report included in Appendix K.

The subsurface conditions observed were similar to those observed in the previous investigations, which included silty clay observed to the terminus of the borings. Saturated conditions were not observed during the installation of these borings.

2.4. Additional Investigation- November 2002

During the former Drum Storage Area investigations, O'Brien & Gere became aware of historical investigations on the REALM former Peregrine property as a result of the RCRA Corrective Action program by CRA. In addition, the RCRA Facility Investigation (RFI) on the REALM former Peregrine property also provided additional data at the former Drum Storage Area. Identification of this additional data prompted further investigation at the former Drum Storage Area in November 2002.

Below is a brief summary of the historical investigations followed by a description of the November 2002 investigations.

2.4.1. Historical investigations

Three historical investigations were performed at the REALM former Peregrine property: GaiaTech, Inc. (Phase II Environmental Investigation dated November 25, 1996), RMT, Inc. (Post-Closing Environmental Assessment dated July 1997) and the CRA RFI, dated November 2000. The results from these investigations are presented in detail in the CRA March 2000 Description of Current Conditions (DOCC) Report and the November 2000 RFI.

In the Phase II Environmental Investigation (GaiaTech, Inc.) the former Drum Storage Area was identified as an Area of Concern (AOC) and was investigated through the installation of two soil borings and one monitoring well (SB-14, SB-15 and MW-14) depicted on Figure 4. The results of the soil sample analysis indicated a concentration of trichloroethene (TCE) at 2,210 ug/kg, was detected at location MW-14 (3-5 ft below grade) above the MDEQ Industrial Drinking Water Protection criteria (100 ug/kg). The analytical results from the ground water sample collected at MW-14 indicated a concentration of TCE (21.3 ug/l) above the MDEQ Generic Industrial Drinking Water criteria (5 ug/l).

The RMT, Inc. Post-Closing Environmental Assessment was performed subsequent to Peregrine acquiring the property. RMT, Inc. installed one monitoring well (PFW-6) north of the former Drum Storage Area sump within the former Drum Storage Area pad and three soil borings (PFB-25, PFB-26 and PFB-27) south of the former Drum Storage Area pad inside the former main manufacturing building. These sample locations are shown on Figure 4. Analytical results from a soil sample collected at PFW-6 from the 3-5 ft below grade interval indicated a concentration of

TCE (1,600 ug/kg) above the MDEQ Generic Industrial Drinking Water Protection criteria. Soil sample analytical results from borings PFB-25, PFB-26 and PFB-27 were below method detection limits for volatile organic compounds (VOCs). Ground water analytical results from monitoring well PFW-6 were below method detection limits or MDEQ Generic Industrial Drinking Water criteria.

The CRA RFI was performed to investigate and characterize potential soil and ground water environmental quality at the identified areas of interest at the REALM former Pergerine property. One soil boring (BH-12-1-00) was installed west of the former Drum Storage Area sump. A subsurface soil sample was collected at 1.5-2.5 ft below grade and was analyzed for the presence of VOCs. The analytical results exhibited a concentration of TCE of 110 ug/kg. This detection of TCE is above the MDEQ Industrial Drinking Water Protection criteria.

Based on the results of the previous investigations indicating concentrations of VOCs in soil and ground water, these data were further evaluated by O'Brien & Gere at the former Drum Storage Area.

2.4.2. November 2002 investigations

The November 2002 sampling was performed in accordance with the methods described in Section 2.1. A Geoprobe® boring (GB-14) was installed between the previous investigation locations (borings PFW-6 and MW-14) where detection of TCE were located, to assess the vertical extent of impact. Two rings of Geoprobe® borings (first ring-GB-15, GB-16 and GB-17, second ring- GB-18, GB-19 and GB-20) were placed radially outward from GB-14 as shown on Figure 4 to assess the potential horizontal extent of impact. One soil sample from each soil boring was collected from either the interval indicating potential impact through field screening or at the approximate depth where previous sampling results indicated impact. QA/QC samples including a duplicate, equipment blank, trip blank and MS/MSD samples were also collected and analyzed in accordance with the QAPP. The borings were installed to a depth of 15 ft below grade. Completed soil boring logs are included in Appendix D.

The soil samples from GB-14 and the first ring (GB-15, GB-16 and GB-17) were submitted to the laboratory for analysis of TCE by USEPA Method 8260. The results of data validation, included in Appendix L, indicated the TCE data were 100% usable for qualitative and quantitative purposes. The analytical results for these samples were below method detection limits, therefore, the second/outer ring of samples were not analyzed.

The soil sample analytical results for the November 26, 2002 sampling event are summarized on Table 6 and qualified analytical data sheets are included in the Data Validation Report included in Appendix L.

The subsurface conditions observed were similar to those observed in the previous investigations, which included silty clay observed to the

terminus of the borings. Saturated conditions were not observed during the installation of these borings. In two of the Geoprobe® borings (GB-17 and GB-20) a thin sand lense was observed at a depth between approximately 8-10 ft below grade. During sampling activities these borings were left open for the balance of the day in an attempt to collect a ground water sample. At the end of the day the open boreholes were checked and ground water was not observed in the holes. The holes were backfilled with soil cuttings mixed with bentonite.

Based on the above discussions, TCE impact to soil and ground water at the former Drum Storage Area has been delineated.

2.5. Summary of subsurface conditions

This section describes the subsurface conditions observed based on the installation of the Geoprobe® borings and monitoring well at the former Drum Storage Area.

Subsurface soil conditions at the former Drum Storage Area consist almost entirely of a silty clay unit from the original ground surface to a depth of 21 ft below grade. A thin (approximately 0.33-0.83 ft thick) sand lense was observed in four of the borings (GB-5, DSA MW-1, GB-17 and GB-20) at the former Drum Storage Area. These borings are separated by borings in which this sand lense was not observed indicating the sand lense is not continuous in the vicinity of the former Drum Storage Area. Following demolition of the former manufacturing building, approximately 3-4 ft of sand fill was placed over this area.

Although saturated soil conditions were not observed in the Geoprobe® borings, a monitoring well installed at the former Drum Storage Area yielded water after several weeks. Groundwater in the former Drum Storage Area is considered perched, discontinuous, and not within a useable aquifer.

2.6. Contaminant distribution

The chemicals of concern (COCs) at the former Drum Storage Area are defined as those chemicals in which analytical results exceed the MDEQ Part 201 Generic Industrial Drinking Water Protection criteria for soil and the Part 201 Generic Industrial Drinking Water criteria for ground water. The following is a list of the COCs for soil and ground water at the former Drum Storage Area:

Soil:
- trichloroethene

Ground water
- trichloroethene
- cis, 1,2-dichloroethene.

2.6.1. Soil

TCE was the only compound detected (in borings GB-1, GB-7, BH-12-1-00, PFW-6 and MW-14) in soil at concentrations that exceeded MDEQ Generic Industrial Drinking Water Protection criterion at the former Drum Storage Area. Based on the results of the multiple phases of investigation at the former Drum Storage Area, the extent of TCE impact to soil has been assessed vertically and horizontally. It does not appear that the soil impact north of the former sumps (MW-14 and PFW-6) is connected to the impacted area west/southwest of the former sumps (GB-1, GB-7, and BH-12-1-00) based on no detectable TCE concentrations at boring GB-2, which is between these two areas. The locations of these borings are shown on Figure 5.

Analytical results indicate the impact to soil is horizontally limited to a total area of approximately 1,500 sq ft (approximately 1,000 sq ft surrounding the former Drum Storage Area sumps and 500 sq ft area north of the sumps). TCE impact to soil is vertically limited to approximately 15 ft below grade around the former sumps and 12 ft below grade north of the former sumps.

2.6.2. Ground water

Ground water impact at the former Drum Storage Area consists of TCE and cis-1,2-dichloroethene at DSA MW-1 above the MDEQ Generic Industrial Drinking Water criteria. TCE was also detected in a historical ground water sample (March 1997) collected north of the sumps at MW-14 above the MDEQ Generic Industrial Drinking Water criteria. Through recent investigations, ground water at the former Drum Storage Area was observed to be present in only one boring (DSA MW-1) in a limited area within a small sand lense which was observed in four borings (GB-5, DSA MW-1, GB-17 and GB-20). This sand lense is discontinuous based on the subsurface conditions observed at the former Drum Storage Area, demonstrating a discontinuous water-bearing unit. Therefore, additional investigation for ground water impact was not possible or required.

3. Interim remedial measures (IRM)

Based on concrete and soil removal activities being performed at various areas at the former Peregrine (US), Inc. property, REALM elected to implement an IRM at the former Drum Storage Area by removal of the source area including the concrete sumps and surrounding impacted subsurface soil to the north, to accelerate site closure.

CRA and their subcontractor(s) were responsible for soil and equipment removal and O'Brien & Gere performed verification of soil remediation (VSR) sampling and analysis at the former Drum Storage Area. The sampling and analysis was performed in accordance with the MDEQ-approved IRM Work Plan dated February 2004, site specific Quality Assurance Project Plan (QAPP) for the Coldwater Road Landfill RCRA closure program, dated January 2000 and subsequent QAPP Addendum, dated May 2002.

3.1. Sump removal and subsurface soil excavation

Excavation at the former Drum Storage Area began with the demolition and removal of the concrete sumps on March 30, 2004. The majority of the soil surrounding the sumps was observed to be a gray-brown clay. The sumps consisted of two 6 ft by 6 ft by 8-ft deep concrete vaults (east sump and west sump). As detailed in the June 1999 Final Closure Certification Report (Weston), the sumps and associated piping were previously cleaned in accordance with the approved 1989 Closure Plan.

Subsequent to removing the sumps, four soil samples were collected from below the sumps and were analyzed for waste characterization (TCLP VOCs, TCLP SVOCs, TCLP metals, total PCBs and reactivity, corrosivity and ignitability) by method 1311 to evaluate proper disposal. Analytical results for the waste characterization samples are included in Appendix M. The results of the analysis indicated the soil beneath and surrounding the sumps was non-hazardous. The sumps and soil removed from the excavation were disposed of at the Brent Run Landfill in Montrose, Michigan. A copy of the manifests and weight tickets for the concrete and soil disposals are included in Appendix N.

The TCE subsurface soil impact near the sumps and the historical detection of TCE north of the sumps was previously assessed, based on this assessment, a soil excavation area of 40 ft by 25 ft and 20 ft deep was approximated for the area immediately surrounding the sumps and 30 ft by 15 ft by 12 ft deep for soil north of the sumps. These areas were demarcated prior to initiating excavation activities. A figure depicting the

assessment borings, VSR sample locations and the originally proposed extent of soil to be removed is included as Figure 6.

Soil removal at the former Drum Storage Area began on April 7, 2004. Once soil removal was complete VSR samples were collected for analysis of TCE in accordance with the MDEQ-approved February 2004 IRM Work Plan. Based on detection of TCE above the MDEQ Generic Industrial Drinking Water Protection criterion in VSR samples collected from the excavation north of the sumps for the initial sampling and an additional expansion of the excavation, additional soil was removed and additional VSR samples were collected and analyzed. The additional excavations and VSR sampling are discussed in Section 3.2.

During excavation activities, a former discharge line from the sumps to the former wastewater treatment plant was observed at the southwest corner of the sump excavation. Also, an unknown utility line was observed in the northeast corner of the north excavation. The approximate locations of these lines observed in the excavation are shown on Figure 6. Since these conditions were identified as potential migration pathways, a soil sample from below the lines (Pipe 1 - sump area and Pipe 2 - north area) within each utility corridor was collected and submitted to the laboratory for analysis of TCE. The analytical results for these samples were below method detection limits. These analytical results, along with the VSR sample results are summarized on Table 7.

A total of approximately 1,655 tons of soil were removed and disposed of from the former Drum Storage Area excavation.

3.2. Verification of soil remediation soil sampling

The VSR soil samples collected were analyzed for the presence of TCE by USEPA Method 8260. Analytical methods used for analysis of VSR samples was performed in accordance with the QAPP for the Coldwater Road site. QA/QC samples including a duplicate, equipment blank, trip blank and MS/MSD samples were also collected and analyzed in accordance with the QAPP. The samples were labeled, placed in a cooler with ice and shipped via courier service to the laboratory. Chain-of-custody documentation accompanied each shipment of samples to the laboratory. The VSR soil samples were analyzed by Merit Laboratories, Inc. of East Lansing, Michigan. A Level III Data package was requested from the laboratory for the samples analyzed. The data was independently validated by O'Brien & Gere to assess the suitability of the measurement system for providing useful analytical data.

Sump Area Excavation

Following removal of the concrete sumps and surrounding soil, but prior to backfilling, VSR soil samples were collected from the sump area excavation in accordance with the MDEQ-approved February 2004 IRM Work Plan and the MDEQ Sampling Strategies and Statistics Training

Materials (S^3TM) for Part 201 Cleanup Criteria. Based on this document, VSR soil samples were required from three locations from the floor and eight locations from the sidewalls of the sump excavation. The assessment sample from GB-7 (19-20 ft) was used as a VSR floor sample and two other sample locations (Sump F1 and Sump F2) were collected from the excavation floor. The assessment samples from GB-2, GB-3, GB-4, GB-5, GB-6, GB-8, GB-9 and GB-10 were used as the sidewall VSR samples. The VSR and soil boring sample locations are depicted on Figure 6.

Analytical results for the VSR samples collected from the sump excavation (Sump F1 and Sump F2) were below the reported detection limit for TCE. The analytical result from the soil sample collected within the utility corridor under the pipe at the southwest corner of the sump excavation (Pipe 1) was also below the reported detection limit for TCE. Analytical results for the VSR soil samples are summarized on Table 7.

The results of the data validation indicated the TCE data were determined to be 100% usable for qualitative and quantitative purposes. The VSR samples Data Validation Report including qualified analytical data sheets is included in Appendix O.

North of Sump Area excavation

Following removal of the soil north of the sumps, but prior to backfilling, VSR soil samples were collected from the excavation in accordance with the MDEQ-approved February 2004 Work Plan and MDEQ S^3TM. Based on this document, VSR soil samples were required from two locations from the floor and six locations from the sidewalls of the excavation north of the sumps. The assessment sample from GB-14 (10-12 ft) was used as a VSR floor sample and one other sample location (North F1) was collected from the excavation floor. The assessment samples from GB-2, GB-15, GB-16, and GB-17 were used as sidewall VSR samples with two additional sidewall samples (SW1 and SW2) collected from the excavation. The VSR and soil boring sample locations are depicted on Figure 6.

The analytical results for the initial sidewall samples indicated sample SW2 results were below the reported detection limit for TCE, however, the result for sample SW1 (400 ug/kg), was above the MDEQ Generic Industrial Drinking Water Protection criterion (100 ug/kg). Therefore, additional soil was removed from the west sidewall of the north excavation and additional VSR sidewall samples were collected. VSR sidewall samples SW3 (located directly west at the same approximate elevation as VSR sample SW1) and SW4 (located directly below SW3 at the base of the excavation) were collected and analyzed for the potential presence of TCE. Analytical results indicated a concentration of TCE in sample SW3 (470 ug/kg) above the MDEQ Generic Industrial Drinking Water Protection criterion. The results for VSR sample SW4 were below the reported detection limit for TCE.

Based on the concentration of TCE detected in the VSR SW3 sample, the process was performed once again- additional soil was removed from the

north excavation to the west and additional VSR sidewall samples were collected and analyzed. VSR sidewall samples SW5 (located directly west at the same approximate elevation as VSR sample SW3) and SW6 (located directly below SW5 at the base of the excavation) were collected and analyzed for the potential presence TCE.

Analytical results for these VSR sidewall samples were below the reported detection limit for TCE. The analytical result from the soil sample collected within the utility corridor under the pipe at the northeast corner of the sump excavation (Pipe 2) was also below the reported detection limit for TCE. Analytical results for the VSR soil samples are summarized on Table 7.

The results of the data validation indicated the TCE data were determined to be 100% usable for qualitative and quantitative purposes. The VSR samples Data Validation Report including qualified analytical data sheets is included in Appendix O.

3.3. Ground water removal

Based on the results of the ground water sample collected from monitoring well DSA MW-1 and a historical sample collected from MW-14 indicating impact, the February 2004 IRM Work Plan proposed removal of potentially impacted ground water that collected in the open excavation to attain closure.

Once the excavation was open, a berm was constructed surrounding the excavation to prevent potential surface runoff from entering the excavation. Also, several attempts were made to construct a cover overtop of the excavation to prevent precipitation from entering the excavation, however, based on the size of the excavation a cover could not be constructed.

A small amount of water from the southwest discharge line utility corridor was observed to seep into the open excavation. This water was removed on April 14, 2004. No appreciable amount of ground water was observed to gather in the open excavation. The excavation was allowed to remain open in an attempt to collect and remove potentially impacted ground water. The excavation was checked daily to assess whether ground water was collecting in the excavation. On April 23, 2004 the excavation was checked for ground water and a negligible amount of water was observed in the excavation. Based on no appreciable amount of ground water collecting in the excavation over a period of ten days, REALM made a decision to terminate ground water recovery efforts and backfill the excavation.

The excavation was backfilled on April 26, 2004 using clean material from the former Summerfield property located in Genesee Township, Michigan. The material was analyzed for VOCs, semivolatile organic compounds (SVOCs), herbicides, pesticides, polychlorinated biphenyls (PCBs) and metals prior to use. The analytical results indicated no

detections above reported detection limits for VOCs, SVOCs, herbicides, pesticides, PCBs or MDEQ Statewide Default Background Levels for metals. Therefore, the material was determined to be suitable for use as backfill for the excavation. A copy of the analytical results for the backfill material analyzed is included in Appendix P.

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4. Migration pathway evaluation

In accordance with Part 201 (Environmental Remediation) of Act 451, Mich. Admin. Code Rule 299, compliance for Generic site closures are attained when chemical concentrations in soil and ground water are below applicable values for migration pathways pertinent to the site. The following sections summarize pertinent migration pathways at the former Drum Storage Area. The COCs at the former Drum Storage Area, as defined in Section 2.6 are:

Soil:
- trichloroethene

Ground water
- trichloroethene
- cis, 1,2-dichloroethene.

4.1. Migration pathway evaluation

The pertinent migration pathways associated with the former Drum Storage Area are:

- Migration to ground water in an aquifer based on ingestion
- Soil leaching of hazardous substances into ground water
- Migration from ground water to surface water
- Runoff or erosion of soil to surface water
- Dermal contact with ground water (utility worker exposure)
- Soil inhalation
- Direct contact.

Each pertinent migration pathway evaluation for the former Drum Storage Area is discussed below:

Migration to ground water in an aquifer based on ingestion. In accordance with Mich. Admin. Code Rule 299.5710, exposure to ground water by ingestion may be considered a relevant pathway for ground water that satisfies either of the following conditions: 1). The ground water is in an aquifer. 2). The ground water is not in an aquifer, but can reasonably be expected to transport a hazardous substance into an aquifer in a concentration that exceeds the generic residential criteria.

A GWNIAA study performed by CRA demonstrates that the shallow perched water beneath the entire REALM former Peregrine property, including the former Drum Storage Area, is not in communication with ground water in an aquifer through the following results:

- subsurface geology in the area of the former Drum Storage Area indicates the clay till aquitard above the usable drift aquifer in the former Drum Storage Area is approximately 60 ft thick;
- vertical conductivities for the clay till aquitard range from 2.2×10^{-8} to 1.5×10^{-8} cm/sec;
- results from pump tests performed on the drift aquifer indicate no response in the nearby perched wells.

These conclusions suggest that movement of water from the perched zone to the drift aquifer is highly unlikely and it is unlikely concentrations previously detected in the ground water could migrate vertically to the usable aquifer in concentrations which exceed the Part 201 Generic Residential Drinking Water criteria.

Also, CRA intends to impose ground water resource use restrictions for the entire REALM former Peregrine property including the former Drum Storage Area.

Therefore, the former Drum Storage Area is in compliance with Generic Industrial standards for the migration to ground water in an aquifer based on ingestion exposure pathway.

Soil leaching of hazardous substances into ground water. In accordance with Mich. Admin. Code Rule 299.5722, to assure that soils do not pose a threat of aquifer contamination, the concentration of the hazardous substance in soil shall be below that which produces a concentration in leachate that is equal to the least restrictive of the applicable ground water criteria. The cleanup criteria protective of ground water may be determined by; soil leachate analysis, comparing the concentration in soil to the Part 201 Drinking Water Protection Criteria or by use of other methods that demonstrate impact to soil will not result in ground water criteria being exceeded (actual ground water data being an acceptable method).

IRMs (soil removal and limited ground water removal from ground water within the soil removed) were implemented to remove impacted soil at the former Drum Storage Area to below MDEQ Generic Industrial/Residential Drinking Water Protection criteria. Approximately 1,655 tons of soil were removed and disposed from the former Drum Storage Area. Results of VSR soil sampling indicated the extent of impacted soil has been removed. Therefore, there are no exposure risks associated with the soil leaching to ground water pathway. The former Drum Storage Area is in compliance with Generic Industrial standards for the soil leaching of hazardous substances into ground water pathway.

Ground water to surface water. In accordance with Mich. Admin. Code Rule 299.5716, COCs in ground water at the surface water

interface must be no greater than the Generic Industrial Ground Water-Surface Water Interface (GSI) Criteria.

Surface water receptor (wetlands) on landfill property-
Although concentrations of TCE in ground water were detected above the MDEQ Industrial Groundwater/Surface Water Interface (GSI) criterion, the nearest surface water body is located approximately 2,250 ft northwest of the former Drum Storage Area and considerable dilution-attenuation would be expected before ground water reaches this surface water body. Conservatively, a ten-fold dilution-attenuation factor is commonly expected for such distances. This equates to concentrations of COCs (TCE at 142 ug/l and cis 1,2- dichloroethene at 65 ug/l) at the nearest surface water interface. These concentrations are below the MDEQ GSI criteria for TCE (200 ug/l) and cis 1,2- dichloroethene (620-ug/l).

In addition, a review of historical ground water analytical data (from a post-closure monitoring program being performed at the adjacent landfill) indicates that no concentrations of TCE or cis 1,2-dichlororethene have been detected in ground water samples from perched zone monitoring wells on the west side of the landfill (the landfill is located between the wetland area and the former Drum Storage Area – see Figure 2).

Discharge to surface water from storm sewers-
In addition to the ground water migrating to surface water exposure pathway, MDEQ regulations require that storm sewers must be addressed as a potential preferential pathway when evaluating the GSI criteria.

Through the implementation of an IRM, the source of ground water impact at the former Drum Storage Area has been removed. The nearest storm sewer underground utility line is located approximately 80 ft north of the former Drum Storage Area. Based on the subsurface geology in this area and the distance to the nearest storm sewer line, it is unlikely the discontinuous sand/silt lenses containing water are connected to the sewer line.

Therefore, the former Drum Storage Area is in compliance with Generic Industrial standards for the migration to surface water pathway.

Runoff or erosion of soil to surface water. In accordance with Mich. Admin. Code Rule 299.5728, the concentrations of constituents in the surface soil must not be transported into surface water at levels exceeding the surface water quality standards.

The former Drum Storage Area was previously covered with approximately six inches of asphalt preventing potential impact to surface soil. The nearest surface body of water (Coldwater landfill wetlands) is located approximately 2,250 ft northwest of the former Drum Storage Area. Since the area between the former Drum Storage Area and the wetlands is covered by asphalt and concrete, and based on the topography of the area, it is unlikely soil erosion or runoff would

directly enter the wetlands via overland flow. Also, there is no potential for runoff or erosion of soil to surface water as the TCE impacted soil has been removed under the IRM performed at the former Drum Storage Area. Therefore, the former Drum Storage Area is in compliance with the Generic Industrial standards for the runoff or erosion of soil to surface water pathway.

Dermal contact with groundwater (utility worker exposure). In accordance with Mich. Admin. Code Rule 299.5712, exposure to dermal contact shall apply when contaminated ground water is, or will be as a result of migration of ground water contamination, encountered at a depth where construction or maintenance of utilities or other subsurface activities may reasonably be expected to result in persons coming into contact with the ground water.

The analytical results for the ground water sample collected at the former Drum Storage Area (DSA MW-1) indicate concentrations of TCE and cis 1,2-dichloroethene are below the MDEQ Generic Groundwater Contact criteria. Therefore, the former Drum Storage Area is in compliance with the Generic Industrial standards for the dermal contact with ground water pathway.

Soil inhalation. In accordance with Mich. Admin. Code Rule 299.5726, concentrations of constituents in soil must not result in an ambient air emission that causes injurious effects to human health, safety, or welfare and animal life.

An IRM was implemented to remove impacted soil at the former Drum Storage Area to below MDEQ Generic Industrial/Residential Drinking Water Protection criteria. Approximately 1,655 tons of soil were removed and disposed from the former Drum Storage Area. Results of VSR soil sampling indicated the extent of impacted soil has been removed; therefore, the former Drum Storage Area is in compliance with the Generic Industrial standards for the soil inhalation pathway.

Direct contact. In accordance with Mich. Admin. Code Rule 299.5720, the concentrations of the constituents in soil must be no greater than the Direct Contact criteria.

An IRM was implemented to remove impacted soil at the former Drum Storage Area to below MDEQ Generic Industrial/Residential Drinking Water Protection criteria. Results of VSR soil sampling indicated the extent of impacted soil has been removed; therefore, the former Drum Storage Area is in compliance with the Generic Industrial standards for the direct contact pathway

Based on the above summary, Generic Industrial compliance is achieved for the former Drum Storage Area.

5. Conclusions

This Addendum Report supplements the June 1999 Final Certification Closure Report for the former Drum Storage Area at the REALM Coldwater Road Landfill facility in Flint, Michigan. The former Drum Storage Area is located on the REALM former Peregrine property; however, closure of the former Drum Storage Area falls under the CACO for the REALM Coldwater Road Landfill facility.

At the request of MDEQ, additional subsurface investigation was performed at the Drum Storage Area to evaluate potential releases to the soil and ground water subsequent to cleaning of the drum storage pad and sumps. The results of this investigation identified TCE in soil above Generic Industrial Drinking Water Protection criteria within two localized areas around and north of the former sumps. TCE and cis-1,2 dichloroethene was also found in ground water above Generic Industrial Drinking Water criteria. Ground water at the former Drum Storage Area is discontinuous and not likely connected to the lower usable aquifer.

Based on concrete and soil removal activities being performed at various areas at the former Peregrine property, REALM elected to implement an IRM at the former Drum Storage Area by removal of the source area including the concrete sumps and surrounding impacted subsurface soil and subsurface soil to the north, to accelerate site closure. VSR sampling and analysis was performed in accordance with the MDEQ-approved IRM Work Plan dated February 2004, site specific QAPP and subsequent QAPP Addendum. VSR sample results indicated the extent of impacted soil was removed. A total of approximately 1,655 tons of soil were removed and disposed of from the former Drum Storage Area excavation. No appreciable amount of ground water was observed in the excavation, therefore, no ground water was removed.

An evaluation of pertinent migration pathways for the former Drum Storage area concluded that compliance with Generic Industrial cleanup criteria is achieved for this area with the implementation of ground water use restrictions. Based on the investigation and closure activities presented herein, at the former Drum Storage Area performed in accordance with the Closure Plan and subsequent MDEQ-approved Work Plans, closure of the former Drum Storage Area pursuant to the CACO is achieved.

Because the former Drum Storage Area is the last RCRA unit to be closed at the REALM Coldwater Road Landfill facility under the CACO, REALM requests closure approval for the entire REALM Coldwater Road facility. Post-closure activities associated with the landfill are continuing in accordance with the Post-Closure Plan, which is being amended to reflect current site conditions and financial assurance.

Following MDEQ approval of closure, REALM anticipates implementing deed restrictions and negotiation of a post-closure operating license for the REALM Coldwater Road Landfill facility.

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TABLES

Table 1

Former Drum Storage Area

Soil Analytical Results - August 2000

Volatile Organic Compounds by USEPA Method 5035/8260 (ug/Kg)

Sample Location	GB-1	GB-2	DUP (GB-2)	GB-3	GB-4	MDEQ Part 201 Generic Cleanup Criteria
Sample Depth	(9'-11')	(9'-11')	(9'-11')	(9'-11')	(14'-16')	Industrial Drinking Water Protection Criteria
Date Collected	8/1/2000	8/1/2000	8/1/2000	8/1/2000	8/1/2000	
Parameter						
Benzene	50 U	50 U	50 U	50 U	50 U	100
Bromobenzene	50 U	50 U	50 U	50 U	50 U	1,500
Bromochloromethane	50 U	50 U	50 U	50 U	50 U	NA
Bromodichloromethane	50 U	50 U	50 U	50 U	50 U	2,000 {W}
Bromoform	50 U	50 U	50 U	50 U	50 U	2,000 {W}
Bromomethane	50 U	50 U	50 U	50 U	50 U	580
n-Butylbenzene	50 U	50 U	50 U	50 U	50 U	4,600
sec-Butylbenzene	50 U	50 U	50 U	50 U	50 U	4,600
tert-Butylbenzene	50 U	50 U	50 U	50 U	50 U	4,600
Carbon tetrachloride	50 U	50 U	50 U	50 U	50 U	100
Chlorobenzene	50 U	50 U	50 U	50 U	50 U	2,000
Chloroethane	50 U	50 U	50 U	50 U	50 U	34,000
Chloroform	50 U	50 U	50 U	50 U	50 U	2,000 {W}
Chloromethane	50 U	50 U	50 U	50 U	50 U	22,000
Dibromochloromethane	50 U	50 U	50 U	50 U	50 U	2,000 {W}
1,2-Dibromo-3-chloropropane	50 U	50 U	50 U	50 U	50 U	4.0 {M}
1,2-Dibromoethane	50 U	50 U	50 U	50 U	50 U	NA
Dibromomethane	50 U	50 U	50 U	50 U	50 U	4,600
1,2-Dichlorobenzene	50 U	50 U	50 U	50 U	50 U	14,000
1,3-Dichlorobenzene	50 U	50 U	50 U	50 U	50 U	480
1,4-Dichlorobenzene	50 U	50 U	50 U	50 U	50 U	1,700
Dichlorodifluoromethane	50 U	50 U	50 U	50 U	50 U	270.0E+3
1,1-Dichloroethane	50 U	50 U	50 U	50 U	50 U	50,000
1,2-Dichloroethane	50 U	50 U	50 U	50 U	50 U	100
1,1-Dichloroethylene	50 U	50 U	50 U	50 U	50 U	140
cis-1,2-Dichloroethene	820	50 U	50 U	50 U	50 U	1,400
trans-1,2-Dichloroethene	50 U	50 U	50 U	50 U	50 U	2,000
1,2-Dichloropropane	50 U	50 U	50 U	50 U	50 U	100
1,3-Dichloropropane	50 U	50 U	50 U	50 U	50 U	1,300
2,2-Dichloropropane	50 U	50 U	50 U	50 U	50 U	NA
1,1-Dichloropropene	50 U	50 U	50 U	50 U	50 U	NA
cis-1,3-Dichloropropene	50 U	50 U	50 U	50 U	50 U	NA
Ethylbenzene	50 U	50 U	50 U	50 U	50 U	1,500
Hexachlorobutadiene	50 U	50 U	50 U	50 U	50 U	72,000
Isopropylbenzene	50 U	50 U	50 U	50 U	50 U	2.60E+05
p-Isopropyltoluene	50 U	50 U	50 U	50 U	50 U	NA
Methylene Chloride	300 U	300 U	300 U	300 U	300 U	100
Naphthalene	50 U	50 U	50 U	50 U	50 U	1.0E+05
n-Propylbenzene	50 U	50 U	50 U	50 U	50 U	4,600
Styrene	50 U	50 U	50 U	50 U	50 U	2,700
1,1,1,2-Tetrachloroethane	50 U	50 U	50 U	50 U	50 U	6,400
1,1,2,2-Tetrachloroethene	50 U	50 U	50 U	50 U	50 U	700
Tetrachloroethene	50 U	50 U	50 U	50 U	50 U	100
Toluene	50 U	50 U	50 U	50 U	50 U	16,000
1,2,3-Trichlorobenzene	50 U	50 U	50 U	50 U	50 U	NA
1,2,4-Trichlorobenzene	50 U	50 U	50 U	50 U	50 U	4,200
1,1,1-Trichloroethane	50 U	50 U	50 U	50 U	50 U	4,000
Trichloroethene	**6720**	50 U	50 U	50 U	50 U	100
Trichlorofluoromethane	50 U	50 U	50 U	50 U	50 U	1.50E+05
1,2,3-Trichloropropane	50 U	50 U	50 U	50 U	50 U	2,400
1,2,4-Trimethylbenzene	50 U	50 U	50 U	50 U	50 U	2,100
1,3,5-Trimethylbenzene	50 U	50 U	50 U	50 U	50 U	1,800
Vinyl Chloride	50 U	50 U	50 U	50 U	50 U	40
o-Xylene	50 U	50 U	50 U	50 U	50 U	5,600
p,m-Xylene	50 U	50 U	50 U	50 U	50 U	5,600
Acetone	500 U	500 U	500 U	500 U	500 U	42,000
2-Butanone (MEK)	500 U	500 U	500 U	500 U	500 U	7.60E+05
Carbon disulfide	500 U	500 U	500 U	500 U	500 U	46,000
2-Hexanone	500 U	500 U	500 U	500 U	500 U	58,000
4-Methyl-2-pentanone (MIBK)	500 U	500 U	500 U	500 U	500 U	1.00E+05

Notes:

1) Results and criteria are shown in parts per billion (ug/Kg).
2) MDEQ Part 201 Generic Industrial Cleanup Criteria as listed in Part 201 PA 451 dated December 19, 2002.
3) Samples analyzed by Fire & Environmental Consulting Laboratories, Inc. of East Lansing, Michigan.
4) "U" denotes the analyte was analyzed for, but was not detected above the reported detection limit.
5) "C" Value presented is a screening level based on the chemical-specific generic soil saturation concentration.
6) "M" Calculated criterion is below the analytical Target Detection Limit (TDL), therefore, the criterion defaults to the TDL.
7) "W" Concentrations of trihalomethanes in soil must be added together to determine compliance with the DWPC of 2,000 ug/kg.
8) "NA" indicates criteria not available.
9) Bold type indicates MDEQ Generic Industrial Drinking Water Protection Criterion exceedance.
10) "DUP" denotes duplicate sample.

Table 1

Former Drum Storage Area

Soil Analytical Results - August 2000

Metals by USEPA methods 6020, 7197, 7471M and Cyanide by USEPA Method 9010 (ug/Kg)

						MDEQ Part 201 Generic Cleanup Criteria
Sample Location	**GB-1**	**GB-2**	**DUP (GB-2)**	**GB-3**	**GB-4**	**Industrial Drinking Water Protection Criteria**
Sample Depth	**(9'-11')**	**(9'-11')**	**(9'-11')**	**(9'-11')**	**(14'-16')**	
Date Collected	**8/1/2000**	**8/1/2000**	**8/1/2000**	**8/1/2000**	**8/1/2000**	
Parameter						
Chromium VI	1000 U	1000 U	1000 U	1000 U	1000 U	30,000
Chromium III	11100 J	11900 J	12000 J	12500 J	11600 J	1.0E+9 (D)
Chromium (Total)	11100 J	11900 J	12000 J	12500 J	11600 J	1.0E+9 (D)
Lead	7,600	7,800	7,700	7,000	7,400	7.0E+05
Mercury	100 U	100 U	100 U	100 U	100 U	1,200
Cyanide	500 U	500 U	500 U	500 U	500 U	4,000 (P)

Notes:

1) Results and criteria are shown in parts per billion (ug/Kg).
2) MDEQ Part 201 Generic Industrial Cleanup Criteria as listed in Part 201 PA 451 dated December 19, 2002.
3) Samples analyzed by Fire & Environmental Consulting Laboratories, Inc. of East Lansing, Michigan.
4) "U" denotes the analyte was analyzed for, but was not detected.
5) "J" denotes that the concentration should be considered approximate.
6) "P" Amenable or Method OIA-1677 analysis are used to quantify cyanide concentrations for compliance with all groundwater criteria.
7) "D" Calculated criterion exceeds 100%, hence it is reduced to 100% (i.e., 1.0E+9 ppb).
8) "DUP" denotes duplicate sample.

Table 2

Former Drum Storage Area

Soil Analytical Results - May 2002

Volatile Organic Compounds by USEPA Method 5035/8260 (ug/Kg)

Sample Location	DSA MW-1	GB-5	GB-5	GB-6	DUP (GB-6)	GB-6	GB-7	GB-7	MDEQ Part 201 Generic Cleanup Criteria
Sample Depth	(24'-25')	(14'-15')	(19'-20')	(14'-15')	(14'-15')	(19'-20')	(14'-15')	(19'-20')	Industrial Drinking Water Protection Criteria
Date Collected	5/10/2002	5/10/2002	5/10/2002	5/10/2002	5/10/2002	5/10/2002	5/10/2002	5/10/2002	
Parameter									
Benzene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	100
Bromobenzene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	1,500
Bromochloromethane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	NA
Bromodichloromethane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	2,000 {W}
Bromoform	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	2,000 {W}
Bromomethane	300 U	300 U	300 U	300 U	300 U	300 U	300 U	300 U	580
n-Butylbenzene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	4,600
sec-Butylbenzene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	4,600
tert-Butylbenzene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	4,600
Carbon tetrachloride	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	100
Chlorobenzene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	2,000
Chloroethane	60 UJ	60 UJ	60 UJ	60 UJ	60 UJ	60 UJ	60 UJ	60 UJ	34,000
Chloroform	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	2,000 {W}
Chloromethane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	22,000
2-Chlorotoluene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	NA
4-Chlorotoluene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	NA
Dibromochloromethane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	2,000 {W}
1,2-Dibromo-3-chloropropane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	4.0 {M}
1,2-Dibromoethane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	NA
Dibromomethane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	4,600
1,2-Dichlorobenzene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	14,000
1,3-Dichlorobenzene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	480
1,4-Dichlorobenzene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	1,700
Dichlorodifluoromethane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	270.0E+3
1,1-Dichloroethane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	50,000
1,2-Dichloroethane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	100
1,1-Dichloroethylene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	140
cis-1,2-Dichloroethene	60 U	60 U	60 U	60 U	60 U	60 U	300	60 U	1,400
trans-1,2-Dichloroethene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	2,000
1,2-Dichloropropane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	100
1,3-Dichloropropane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	1,300
2,2-Dichloropropane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	NA
1,1-Dichloropropene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	NA
cis-1,3-Dichloropropene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	NA
Ethylbenzene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	1,500
Isopropylbenzene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	2.60E+05
p-Isopropyltoluene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	NA
Methylene Chloride	300 U	300 U	300 U	300 U	300 U	300 U	300 U	300 U	100
Naphthalene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	1.0E+05
n-Propylbenzene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	4,600
Styrene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	2,700
1,1,1,2-Tetrachloroethane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	6,400
1,1,2,2-Tetrachloroethane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	700
Tetrachloroethene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	100
Toluene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	16,000
1,2,3-Trichlorobenzene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	NA
1,2,4-Trichlorobenzene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	4,200
1,1,1-Trichloroethane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	4,000
1,1,2-Trichloroethane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	100
Trichloroethene	60 U	60 U	60 U	60 U	60 U	60 U	**1510**	60 U	100
Trichlorofluoromethane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	1.50E+05
1,2,3-Trichloropropane	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	2,400
1,2,4-Trimethylbenzene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	2,100
1,3,5-Trimethylbenzene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	1,800
Vinyl Chloride	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	40
o-Xylene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	5,600
p,m-Xylene	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	5,600
2-Butanone (MEK)	300 U	300 U	300 U	300 U	300 U	300 U	300 U	300 U	7.60E+05

Notes:

1) Results and criteria are shown in parts per billion (ug/Kg).
2) MDEQ Part 201 Generic Industrial Cleanup Criteria as listed in Part 201 PA 451 dated December 19, 2002.
3) Samples analyzed by Fire & Environmental Consulting Laboratories, Inc. of East Lansing, Michigan.
4) "U" denotes the analyte was analyzed for, but was not detected above the reported detection limit.
5) "M" Calculated criterion is below the analytical Target Detection Limit (TDL), therefore, the criterion defaults to the TDL.
6) "W" Concentrations of trihalomethanes in soil must be added together to determine compliance with the DWPC of 2,000 ug/kg.
7) "NA" indicates criteria not available.
8) Bold type indicates MDEQ Generic Industrial Drinking Water Protection Criterion exceedance.
9) DSA MW-1 is listed as MW-1 on the chan-of-custody document.
10) "UJ" denotes the analyte reporting limit should be considered approximate.
11) "DUP" denotes duplicate sample.

Table 3
Former Drum Storage Area
SPLP Analytical Results - May 2002
Trichloroethene SPLP by USEPA Method 8260B (ug/l)

		MDEQ Part 201 Generic Cleanup Criterion
Sample Location	**GB-7**	**Industrial Drinking Water Criterion**
Sample Depth	**(14'-15')**	
Date Collected	**5/10/2002**	
Parameter		
Trichloroethene	**19**	5 (A)

Notes:
1) Result and criterion are shown in parts per billion (ug/l).
2) MDEQ Part 201 Generic Industrial Cleanup Criterion as listed in Part 201 PA 451 dated December 19, 2002.
3) Sample analyzed by Merit Laboratories, Inc. of East Lansing, Michigan.
4) "A" denotes the criterion is the State of Michigan Drinking Water Standard established pursuant to Section 5 of the Safe Drinking Water Act, Act No. 399 of the Public Acts of 1976.
5) Bold type indicates MDEQ Generic Industrial Drinking Water Criterion exceedance.

Table 4

Former Drum Storage Area

Ground Water Analytical Results - July 2002

Volatile Organic Compounds by USEPA Method 5035/8260 (ug/Kg)

Sample Location	DSA MW-1	DUP (DSA MW-1)	MDEQ Part 201 Generic Cleanup Criteria
Date Collected	7/23/2002	7/23/2002	Industrial Drinking Water Criteria
Parameter			
Benzene	1 U	1 U	5 (A)
Bromobenzene	1 U	1 U	50
Bromochloromethane	1 U	1 U	NA
Bromodichloromethane	1 U	1 U	100 (A,W)
Bromoform	1 U	1 U	100 (A,W)
Bromomethane	1 U	1 U	29
n-Butylbenzene	1 U	1 U	230
sec-Butylbenzene	1 U	1 U	230
tert-Butylbenzene	1 U	1 U	230
Carbon tetrachloride	1 U	1 U	5(A)
Chlorobenzene	1 U	1 U	100 (A)
Chloroethane	1 U	1 U	1,700
Chloroform	1 U	1 U	100 (A,W)
Chloromethane	1 U	1 U	1,100
2-Chlorotoluene	1 U	1 U	NA
4-Chlorotoluene	1 U	1 U	NA
1,2-Dibromoethane	1 U	1 U	NA
Dibromochloromethane	1 U	1 U	100 (A,W)
1,2-Dibromo-3-chloropropane	1 U	1 U	NA
Dibromomethane	1 U	1 U	230
1,2-Dichlorobenzene	1 U	1 U	600 (A)
1,3-Dichlorobenzene	1 U	1 U	19
1,4-Dichlorobenzene	1 U	1 U	75 (A)
Dichlorodifluoromethane	1 U	1 U	4,800
1,1-Dichloroethane	13	13	2,500
1,2-Dichloroethane	1 U	1 U	5 (A)
1,1-Dichloroethylene	3	3	7 (A)
cis-1,2-Dichloroethene	650	800	70 (A)
trans-1,2-Dichloroethene	18	19	100 (A)
1,2-Dichloropropane	1 U	1 U	5 (A)
2,2-Dichloropropane	1 U	1 U	NA
1,1-Dichloropropene	1 U	1 U	NA
cis-1,3-Dichloropropene	1 U	1 U	NA
Ethylbenzene	1 U	1 U	74 (E)
Isopropylbenzene	1 U	1 U	2,300
p-Isopropyltoluene	1 U	1 U	NA
Methylene Chloride	5 U	5 U	5 (A)
Naphthalene	1 U	1 U	1,500
n-Propylbenzene	1 U	1 U	230
Styrene	1 U	1 U	100 (A)
1,1,1,2-Tetrachloroethane	1 U	1 U	320
1,1,2,2-Tetrachloroethane	1 U	1 U	35
Tetrachloroethene	1 U	1 U	5 (A)
Toluene	1 U	1 U	790 (E)
1,1,1-Trichloroethane	1 U	1 U	200 (A)
1,1,2-Trichloroethane	1 U	1 U	5.0(A)
Trichloroethene	1420 J	1830	5 (A)
Trichlorofluoromethene	1 U	1 U	7,300
1,2,3-Trichlorobenzene	1 U	1 U	NA
1,2,4-Trichlorobenzene	1 U	1 U	70(A)
1,2,3-Trichloropropane	1 U	1 U	120
1,2,4-Trimethylbenzene	1 U	1 U	63 (E)
1,3,5-Trimethylbenzene	1 U	1 U	72 (E)
Vinyl Chloride	1 U	1 U	2 (A)
o-Xylene	1 U	1 U	280 (E)
p,m-Xylene	1 U	1 U	280 (E)
2-Butanone (MEK)	50 U	50 U	38,000

Notes:

1) Results and criteria are shown in parts per billion (ug/Kg).
2) MDEQ Part 201 Generic Industrial Cleanup Criteria as listed in Part 201 PA 451 dated December 19, 2002.
3) Samples analyzed by Merit Laboratories, Inc. of East Lansing, Michigan.
4) "A" denotes the criterion is the State of Michigan Drinking Water Standard established pursuant to Section 5 of the Safe Drinking Water Act, Act No. 399 of the Public Acts of 1976.
5) "U" denotes the analyte was analyzed for, but was not detected above the reported detection limit.
6) "E" denotes criterion is the aesthetic drinking water value, as required by section 20120(1)(5).
7) "W" Concentrations of trihalomethanes in soil must be added together to determine compliance with the DWPC of 2,000 ug/kg.
8) "NA" indicates criteria not available.
9) Bold type indicates MDEQ Generic Industrial Drinking Water Protection Criterion exceedance.
10) DSA MW-1 is listed as DSP-1 on the chain-of-custody document.
11) "J" denotes the analyte concentration should be considered approximate.
12) "DUP" denotes duplicate sample.

Table 5

Former Drum Storage Area

Soil Analytical Results - June 2002

Volatile Organic Compounds by USEPA Method 5035/8260 (ug/Kg)

Sample Location	GB-8	GB-9	GB-10	DUP (GB-10)	MDEQ Part 201 Generic Cleanup Criteria
Sample Depth	(14'-15')	(14'-15')	(14'-15')	(14'-15')	Industrial Drinking Water Protection Criteria
Date Collected	6/4/2002	6/4/2002	6/4/2002	6/4/2002	
Parameter					
Benzene	60 U	60 U	60 U	60 U	100
Bromobenzene	60 U	60 U	60 U	60 U	1,500
Bromochloromethane	60 U	60 U	60 U	60 U	NA
Bromodichloromethane	60 U	60 U	60 U	60 U	2,000 {W}
Bromoform	60 UJ	60 UJ	60 UJ	60 UJ	2,000 {W}
Bromomethane	300 U	300 U	300 U	300 U	580
n-Butylbenzene	60 U	60 U	60 U	60 U	4,600
sec-Butylbenzene	60 U	60 U	60 U	60 U	4,600
tert-Butylbenzene	60 U	60 U	60 U	60 U	4,600
2-Chlorotoluene	60 U	60 U	60 U	60 U	NA
4-Chlorotoluene	60 U	60 U	60 U	60 U	NA
Carbon tetrachloride	60 U	60 U	60 U	60 U	100
Chlorobenzene	60 U	60 U	60 U	60 U	2,000
Chloroethane	60 UJ	60 UJ	60 UJ	60 UJ	34,000
Chloroform	60 U	60 U	60 U	60 U	2,000 {W}
Chloromethane	60 U	60 U	60 U	60 U	22,000
Dibromochloromethane	60 U	60 U	60 U	60 U	2,000 {W}
1,2-Dibromo-3-chloropropane	60 UJ	60 UJ	60 UJ	60 UJ	4.0 {M}
1,2-Dibromoethane	60 U	60 U	60 U	60 U	NA
Dibromomethane	60 U	60 U	60 U	60 U	4,600
1,2-Dichlorobenzene	60 U	60 U	60 U	60 U	14,000
1,3-Dichlorobenzene	60 U	60 U	60 U	60 U	480
1,4-Dichlorobenzene	60 U	60 U	60 U	60 U	1,700
Dichlorodifluoromethane	60 U	60 U	60 U	60 U	270.0E+3
1,1-Dichloroethane	60 U	60 U	60 U	60 U	50,000
1,2-Dichloroethane	60 U	60 U	60 U	60 U	100
1,1-Dichloroethylene	60 U	60 U	60 U	60 U	140
cis-1,2-Dichlorothene	60 U	60 U	60 U	60 U	1,400
trans-1,2-Dichlorothene	60 U	60 U	60 U	60 U	2,000
1,2-Dichloropropane	60 U	60 U	60 U	60 U	100
1,3-Dichloropropane	60 U	60 U	60 U	60 U	1,300
2,2-Dichloropropane	60 U	60 U	60 U	60 U	NA
1,1-Dichloropropene	60 U	60 U	60 U	60 U	NA
cis-1,3-Dichloropropene	60 U	60 U	60 U	60 U	NA
Ethylbenzene	60 U	60 U	60 U	60 U	1,500
Isopropylbenzene	60 U	60 U	60 U	60 U	2.60E+05
p-Isopropyltoluene	60 U	60 U	60 U	60 U	NA
Methylene Chloride	300 U	300 U	300 U	300 U	100
Naphthalene	60 U	60 U	60 U	60 U	1.0E+05
n-Propylbenzene	60 U	60 U	60 U	60 U	4,600
Styrene	60 U	60 U	60 U	60 U	2,700
1,1,1,2-Tetrachloroethane	60 U	60 U	60 U	60 U	6,400
1,1,2,2-Tetrachloroethene	60 U	60 U	60 U	60 U	700
Tetrachloroethene	60 U	60 U	60 U	60 U	100
Toluene	60 U	60 U	60 U	60 U	16,000
1,2,3-Trichlorobenzene	60 U	60 U	60 U	60 U	NA
1,2,4-Trichlorobenzene	60 U	60 U	60 U	60 U	4,200
1,1,1-Trichloroethane	60 U	60 U	60 U	60 U	4,000
1,1,2-Trichloroethane	60 U	60 U	60 U	60 U	100
Trichloroethene	60 U	60 U	60 U	60 U	100
Trichlorofluoromethane	60 U	60 U	60 U	60 U	1.50E+05
1,2,3-Trichloropropane	60 U	60 U	60 U	60 U	2,400
1,2,4-Trimethylbenzene	60 U	60 U	60 U	60 U	2,100
1,3,5-Trimethylbenzene	60 U	60 U	60 U	60 U	1,800
Vinyl Chloride	60 U	60 U	60 U	60 U	40
o-Xylene	60 U	60 U	60 U	60 U	5,600
p,m-Xylene	60 U	60 U	60 U	60 U	5,600
2-Butanone (MEK)	300 U	300 U	300 U	300 U	7.60E+05

Notes:

1) Results and criteria are shown in parts per billion (ug/Kg).
2) MDEQ Part 201 Generic Industrial Cleanup Criteria as listed in Part 201 PA 451 dated December 19, 2002.
3) Samples analyzed by Merit Laboratories, Inc. of East Lansing, Michigan.
4) "U" denotes the analyte was analyzed for, but was not detected above the reported detection limit.
5) "M" Calculated criterion is below the analytical Target Detection Limit (TDL), therefore, the criterion defaults to the TDL.
6) "W" Concentrations of trihalomethanes in soil must be added together to determine compliance with the DWPC of 2,000 ug/kg.
7) "NA" indicates criteria not available.
8) "UJ" denotes the analyte reporting limit should be considered approximate.
9) "DUP" denotes duplicate sample.

Table 6

Former Drum Storage Area

Soil Analytical Results - November 2002

TCE by USEPA Method 5035/8260 (ug/Kg)

Sample Location	GB-14	DUP(GB-14)	GB-15	GB-16	GB-17	MDEQ Part 201 Generic Cleanup Criteria
Sample Depth	(10'-12')	(10'-12')	(5'-7')	(5'-7')	(5'-7')	Industrial Drinking Water Protection Criteria
Date Collected	11/26/2002	11/26/2002	11/26/2002	11/26/2002	11/26/2002	
Parameter						
Trichloroethene	60 U	60 U	60 U	60 U	60 U	100

Notes:

1) Results and criteria are shown in parts per billion (ug/Kg).
2) MDEQ Part 201 Generic Industrial Cleanup Criteria as listed in Part 201 PA 451 dated December 19, 2002.
3) Samples analyzed by Merit Laboratories, Inc. of East Lansing, Michigan.
4) "U" denotes the analyte was analyzed for, but was not detected above the reported detection limit.
5) "DUP" denotes duplicate sample.

Table 7

Former Drum Storage Area

Soil Analytical Results - VSR Samples

Trichloroethene by USEPA Method 5035/8260 (ug/Kg)

Sump Excavation

Sample Location	Sump-F1	Sump-F2	Pipe-1	Pipe-2	MDEQ Part 201 Generic Cleanup Criteria
Date Collected	4/8/2004	4/8/2004	4/8/2004	4/8/2004	Industrial Drinking Water Protection
Parameter					
Trichloroethene	50 U	50 U	50 U	50 U	100

North Excavation

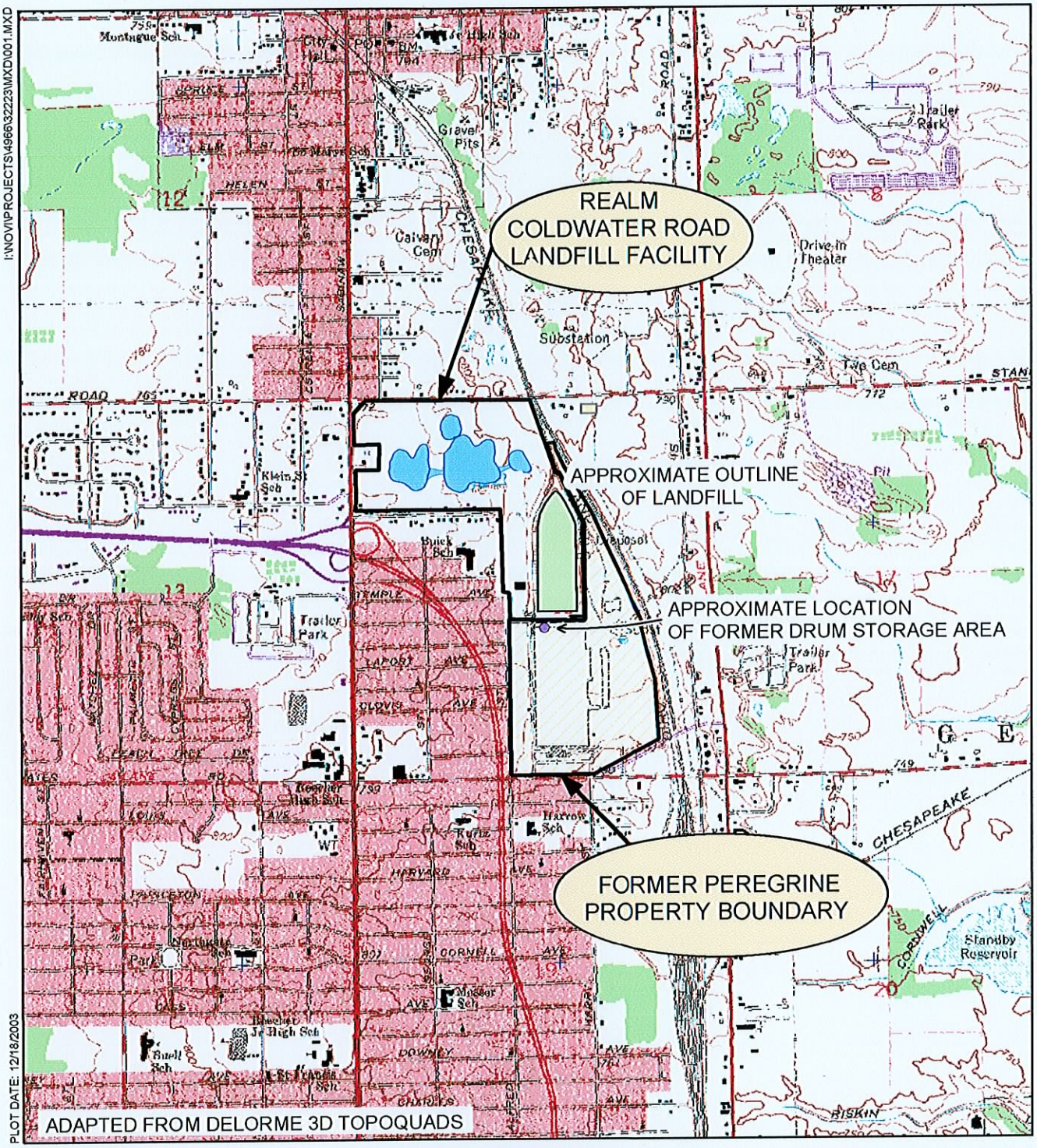
Sample Location	North-F1	SW1	SW2	SW3	SW4	SW5	SW6	MDEQ Part 201 Generic Cleanup Criteria
Date Collected	4/8/2004	4/8/2004	4/8/2004	4/13/2004	4/13/2004	4/15/2004	4/15/2004	Industrial Drinking Water Protection
Parameter								
Trichloroethene	50 U	400	50 U	470	50 U	60 U	60 U	100

Notes:

1) Results and criteria are shown in parts per billion (ug/Kg).
2) MDEQ Part 201 Generic Industrial Cleanup Criteria as listed in Part 201 PA 451 dated December 19, 2002.
3) Samples analyzed by Merit Laboratories, Inc. of East Lansing, Michigan.
4) "U" denotes the analyte was analyzed for, but was not detected above the reported detection limit.
5) Bold type indicates MDEQ Generic Industrial Drinking Water Protection Criterion exceedance.

FIGURES

FIGURE 1



REALM
FORMER DRUM STORAGE AREA
COLDWATER ROAD FACILITY
FLINT, MICHIGAN

SITE LOCATION MAP

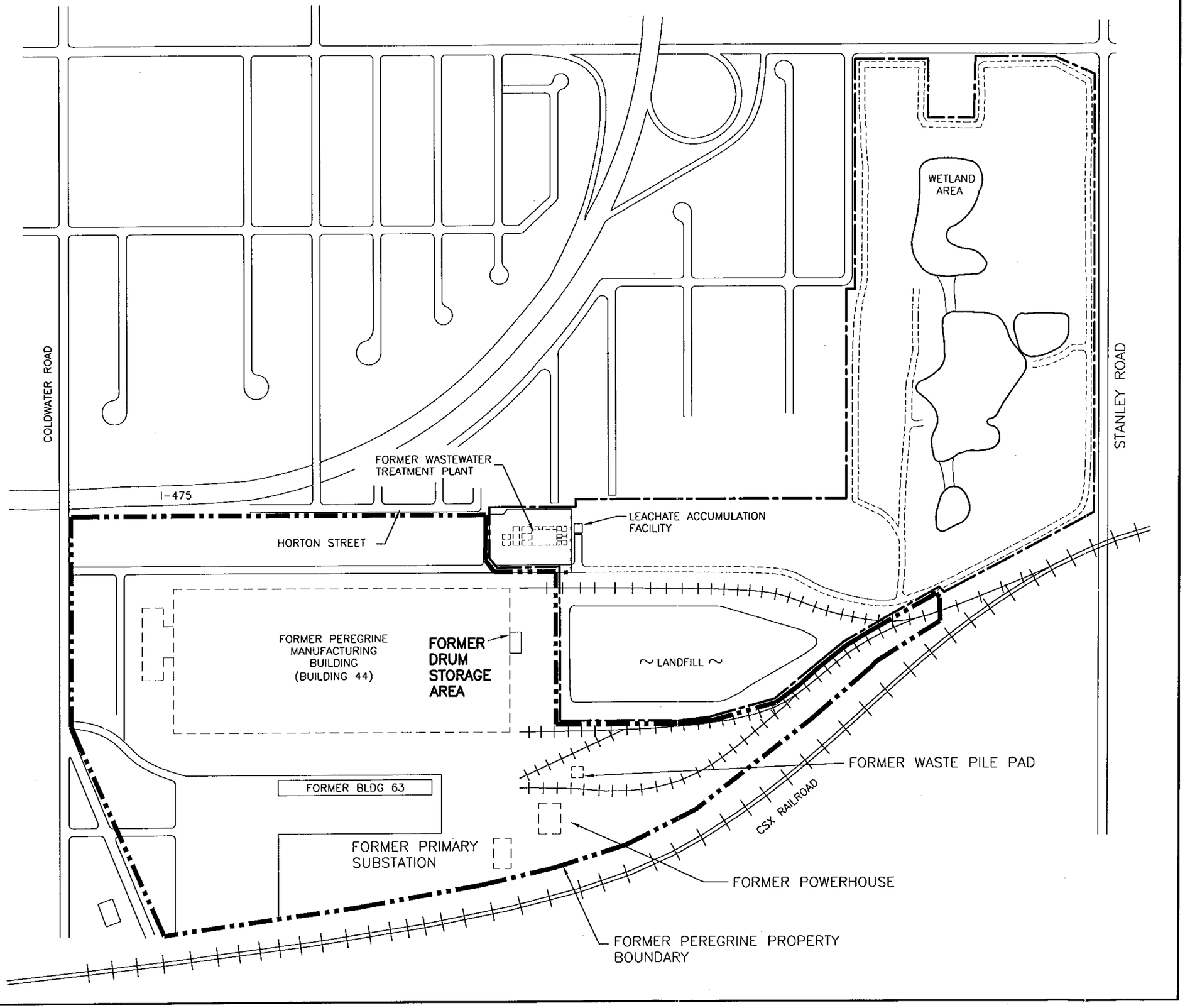
N

0 800 1,600 2,400 3,200
Feet

DATE: 1/28/03
FILE: 4966/32223/001.MXD

O'BRIEN & GERE ENGINEERS, INC.

FIGURE 2



LEGEND

FORMER REALM PEREGRINE PROPERTY BOUNDARY

REALM COLDWATER ROAD LANDFILL FACILITY PROPERTY BOUNDARY

REALM FORMER DRUM STORAGE AREA COLDWATER ROAD FACILITY FLINT, MICHIGAN

SITE PLAN

500 0 500

APPROXIMATE SCALE IN FEET

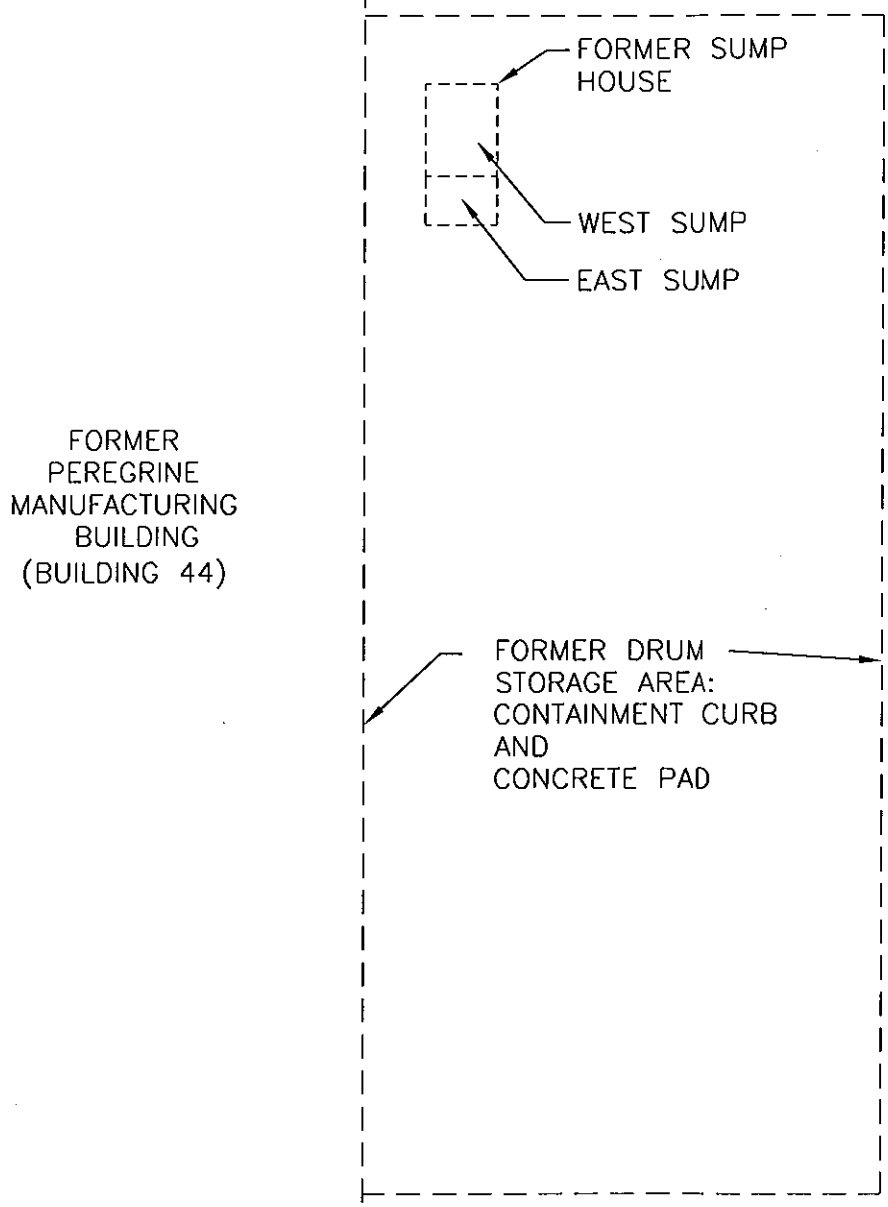
FILE NO. 4966/32223.001

O'BRIEN & GERE ENGINEERS, INC.

I:\WW\PROJECTS\4966\32223\3_REP\USA CLOSURE REPORT\FIGURES\FIGURE 2 - SITE PLAN.dwg

PLOT DATE: 11/19/2004 LAK

FIGURE 3



REALM
FORMER DRUM STORAGE AREA
COLDWATER ROAD FACILITY
FLINT, MICHIGAN

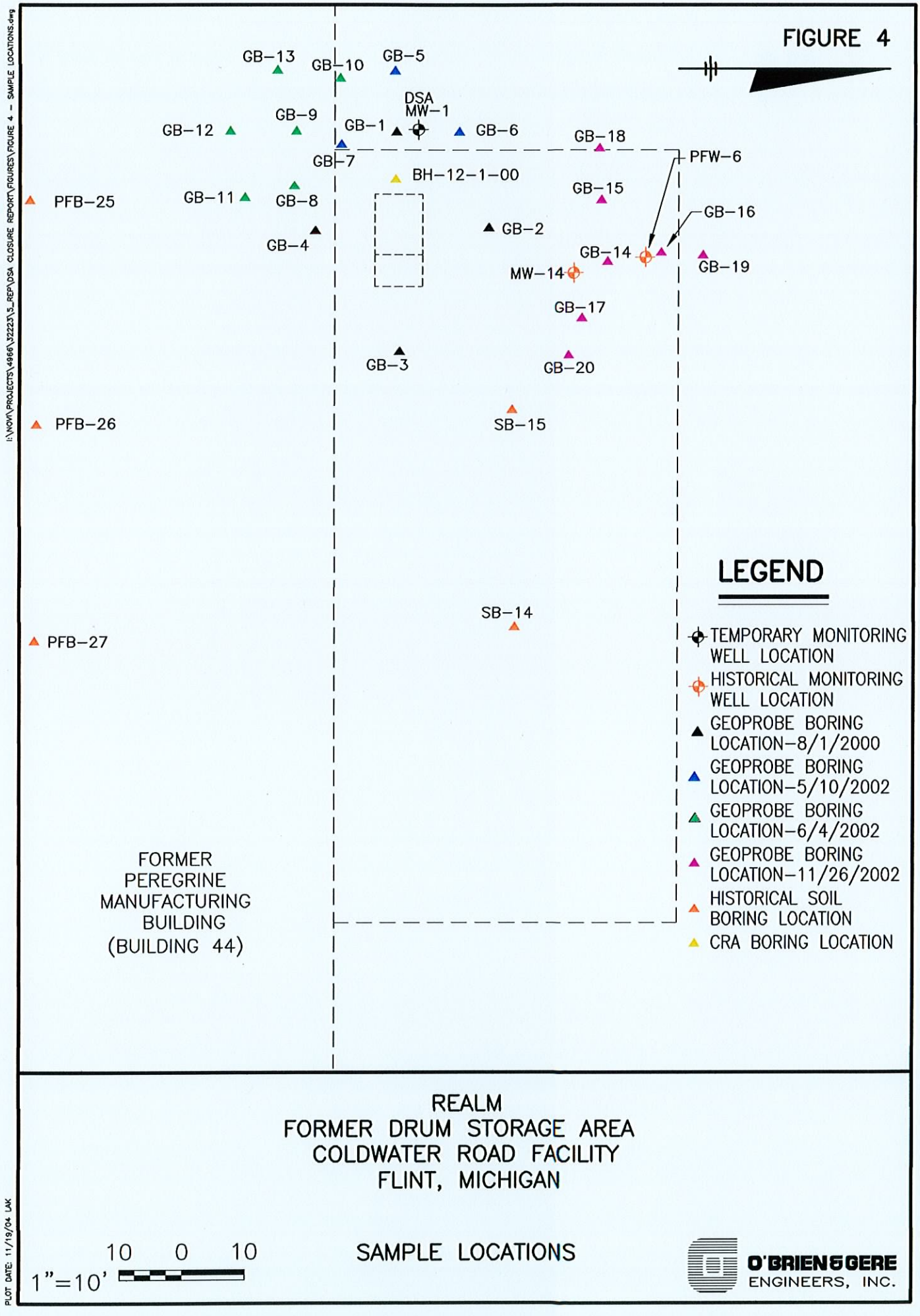
FORMER DRUM STORAGE AREA AND SUMPS

10 0 10
1"=10'

O'BRIEN & GERE ENGINEERS, INC.

I:\NOVI\PROJECTS\4966\32223\5_REP\DSA CLOSURE REPORT\FIGURES\FIGURE 3 - FMR DSA AND SUMPS.dwg

PLOT DATE: 11/19/04 LAK



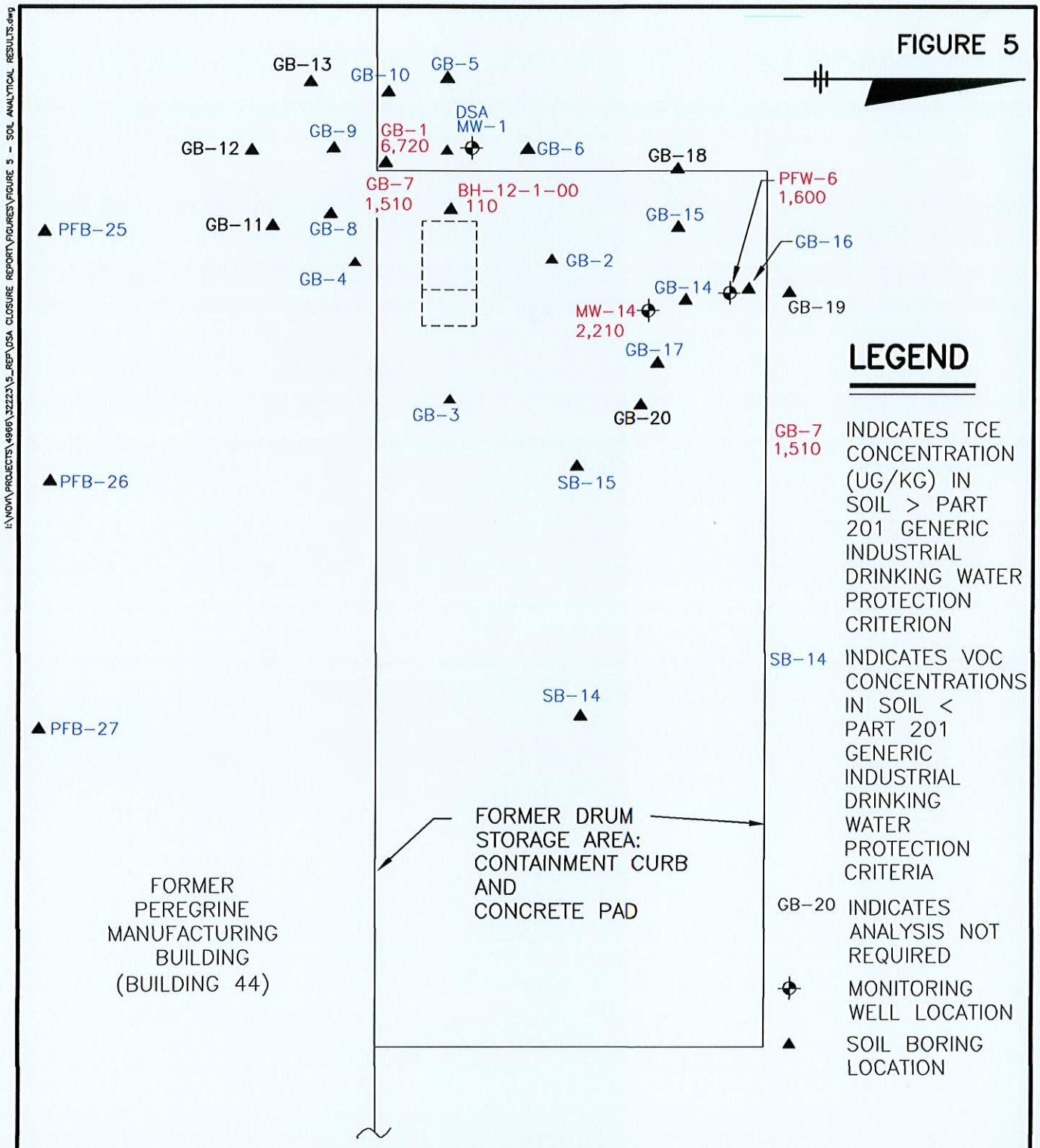
REALM
FORMER DRUM STORAGE AREA
COLDWATER ROAD FACILITY
FLINT, MICHIGAN

SAMPLE LOCATIONS

10 0 10
1"=10'

O'BRIEN & GERE
ENGINEERS, INC.

I:\NOV\PROJECTS\4966\32223\3_REP\DSA CLOSURE REPORT\FIGURES\FIGURE 4 - SAMPLE LOCATIONS.dwg
PLOT DATE: 11/19/04 LAK



REALM
FORMER DRUM STORAGE AREA
COLDWATER ROAD FACILITY
FLINT, MICHIGAN

10 0 10
1"=10'

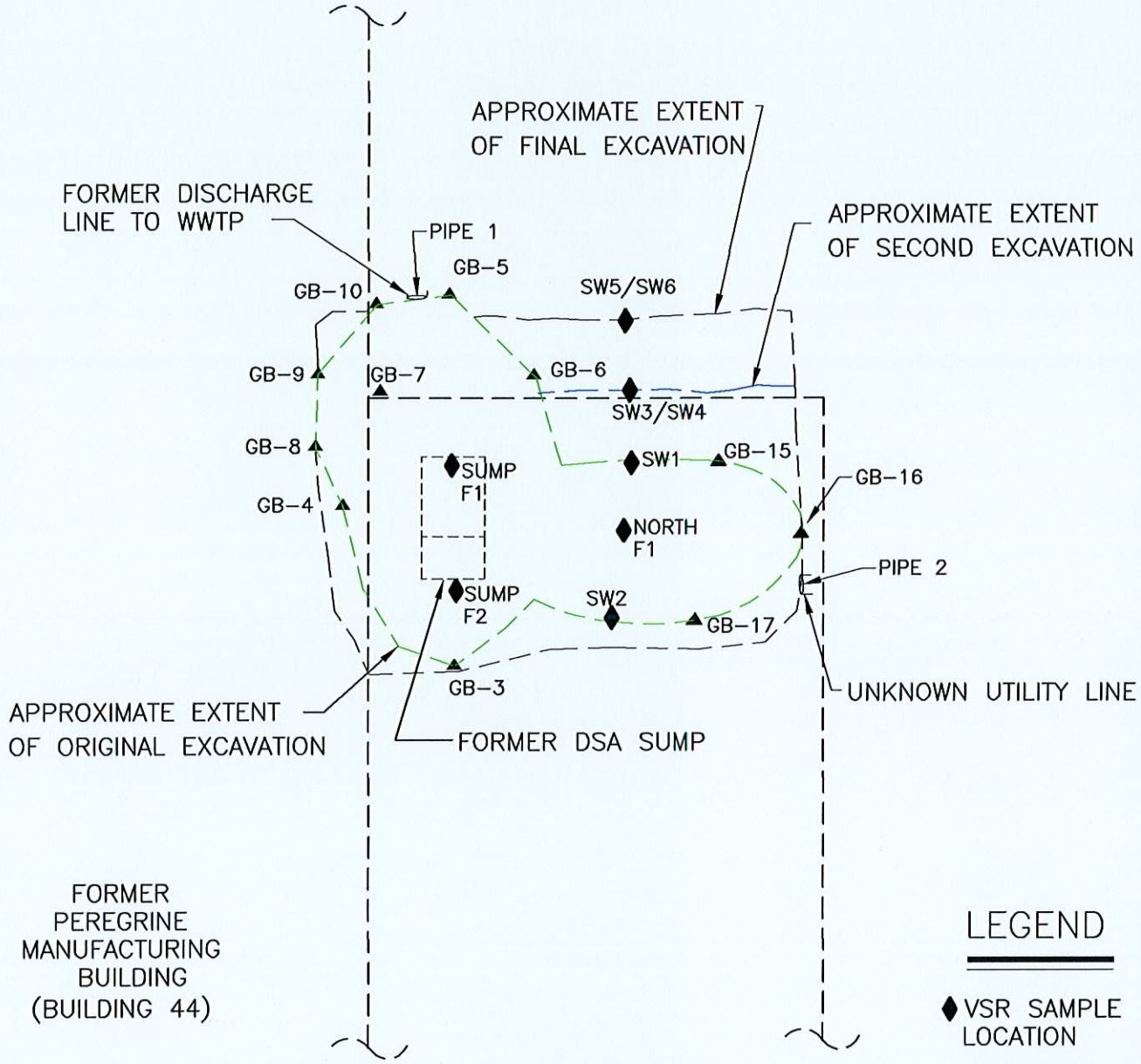
SOIL ANALYTICAL RESULTS

O'BRIEN & GERE ENGINEERS, INC.

I:\WOVN\PROJECTS\4966\32223\5_REP\DSA CLOSURE REPORT\FIGURES\FIGURE 5 - SOIL ANALYTICAL RESULTS.dwg

PLOT DATE: 11/19/04 LAK

FIGURE 6



NOTE; VSR SAMPLES SW4 AND SW6 WERE LOCATED DIRECTLY BELOW SW3 AND SW5, RESPECTIVELY.

REALM
FORMER DRUM STORAGE AREA
COLDWATER ROAD FACILITY
FLINT, MICHIGAN

10 0 10
1"=10'

SOIL EXCAVATION EXTENT AND VSR
SAMPLE LOCATIONS

O'BRIEN & GERE
ENGINEERS, INC.

I:\NOV\PROJECTS\4966\32223\5_REP\DSA CLOSURE REPORT\FIGURES\FIGURE 6 - SOIL EXC AND VSR LOCATIONS.dwg

PLOT DATE: 11/19/04 LAK

APPENDICES

APPENDIX A

Solid Waste Management Units
Closure Summary Report
dated May 2003

SUMMARY REPORT

Solid Waste Management Units Closure Summary Report Coldwater Road Landfill Facility Flint, Michigan (MID 005 356 860)

Remediation and Liability
Management Company, Inc.
Troy, Michigan

May 2003

SUMMARY REPORT

Solid Waste Management Units
Closure Summary Report
Coldwater Road Landfill Facility
Flint, Michigan
(MID 005 356 860)

Prepared for:
Remediation and Liability Management Company, Inc.
Troy, Michigan

Scott L. Cormier, P.E.
Senior Managing Engineer

May 2003

O'BRIEN & GERE ENGINEERS, INC.

33469 West 14 Mile Road, Suite 150
Farmington Hills, MI 48331

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1. Site Plan

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1. Introduction

Final closure of the Resource Conservation and Recovery Act (RCRA) units, solid waste management units (SWMUs) and other corrective action areas (CAAs) at the Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Landfill facility at 6220 Horton Street (formerly 1245 East Coldwater Road) in Flint, Michigan (MID 005 356 860) (see Figure 1) is documented in five final closure reports and one pending report:

- Final Closure Certification Documentation Package Decontamination Pits and Sump, Chromium Reduction basins at the WWTP, September 1998, Roy F. Weston, Inc. (Weston).

- Subsurface Investigation of Decontamination Pits/Sump and Chromium Reduction Basins Report, June 1999, O'Brien & Gere Engineers, Inc. (O'Brien & Gere).

- Final Closure Certification, Drum Storage Area and Waste Pile Pad, June 1999, Weston.

- Part I - Final Closure Certification Documentation, November 2000, O'Brien & Gere.

- Part II - Final Closure Certification Documentation, November 2000, Weston.

- Addendum to the June 1999 Closure Certification Report for the Former Drum Storage Area at the REALM Former Peregrine U.S., Inc. Property at the Coldwater Road Facility, O'Brien & Gere, (amendment being submitted in May 2003).

Closure of the RCRA units, SWMUs, and CAAs was completed in accordance with the 1992 Corrective Action Consent Order for this site and the Michigan Department of Environmental Quality (MDEQ, formerly MDNR) approved site specific Closure Plan and Post Closure Plan (Closure Plan), O'Brien & Gere, August 1989. This RCRA Closure program is now being managed by REALM, a wholly-owned subsidiary of GM.

Several of the units were closed during construction of the on-site hazardous waste landfill between 1990 and 1994. Weston provided quality assurance oversight and closure verification during this construction phase; however, there were several units that were not closed by 1994 (documented in the Draft Closure Certification Documentation Package, Weston, November 1994). Closure of these

remaining units was completed between 1994 and 2003 with oversight provided by O'Brien & Gere. A summary of the closure activities with oversight by O'Brien & Gere and Weston is outlined on Table 1 and graphically represented on Figure 1.

The purpose of this report is to summarize the remediation activities conducted to close all RCRA units, SWMUs and CAAs at the REALM Coldwater Road Landfill facility.

1.1. Property ownership

The REALM Coldwater Road Landfill facility is located north of the REALM former Peregrine property and consists of the wastewater treatment sludge monofill landfill, former wastewater treatment plant (decommissioned and demolished in 1999), restored wetlands and leachate accumulation facility. This facility is bordered on the south by the REALM former Peregrine property which formerly contained a manufacturing building and support facilities. A figure depicting the division between the REALM Coldwater Road Landfill facility and the REALM former Peregrine property is included as Figure 1.

On December 10, 1996, an asset Purchase Agreement for the manufacturing portion on the Coldwater Road site was signed by GM and Peregrine, U.S., Inc. (Peregrine). GM retained ownership of the northern portion of the Coldwater Road Site (which is now referred to as the "REALM Coldwater Road Landfill facility") and sold the manufacturing facility (referred to as the "REALM former Peregrine property- MID 000 020 743"). In August 1999, REALM took back ownership of the manufacturing facility. Refer to Figure 1 for a Site Plan detailing the two site property lines.

On April 14, 2000 an MDEQ Notification of Regulated Waste Activity form (EQP5150) and U.S. E.P.A. Hazardous Waste Permit Application Part A (EPA form 8700-23) were submitted to document change of ownership of the landfill and the former wastewater treatment plant property from GM to REALM, a wholly-owned subsidiary of GM.

Two of the units (drum storage area and waste pile pad) remained on the REALM former Peregrine property. The buildings on this property were decommissioned and demolished from 1999 to 2001. Clean closure of the waste pile pad is documented in the June 1999 Final Closure Certification Documentation Package. Clean closure of the drum storage area is documented in the Addendum to the June 1999 Closure Certification Report for the Former Drum Storage Area at the REALM former Peregrine U.S., Inc. Property at the Coldwater Road Facility being submitted to the MDEQ in May 2003.

Future site caretaking and monitoring efforts for the REALM Coldwater Road Landfill facility will be managed by REALM.

1.2. Site history

In August 1989, GM prepared a Closure Plan to remediate several RCRA units and SWMUs at the Coldwater Road facility. The Closure Plan outlined removal of the listed hazardous waste sludge (F006) from the units, solidification and disposal in an on-site hazardous waste landfill as well as decontamination of four decon pits and drum storage area. The Closure Plan was approved by the Michigan Department of Natural Resources (currently the Michigan Department of Environmental Quality) in September, 1989.

GM entered into a Consent Order with the Michigan Department of Natural Resources (currently the Michigan Department of Environmental Quality) in October 1992 to close the units in accordance with the approved Closure Plan. The consent order lists the following units to be closed:

- former Landfarm Area (SWMU)
- Sludge Lakes, including areas North of the Sludge Lakes (SWMU)
- Settling Lagoons (RCRA Unit)
- Sludge Drying Beds (RCRA Unit)
- Decontamination Pits (SWMU)
- Drum Storage Area (RCRA Unit)
- Sludge Retention Basin (SWMU).

The locations of these units are shown on Figure 1. The closure standard was background for the metals of concern. As the closure activities progressed, several additional areas were identified as areas of potential concern and were also included in the closure program. These additional areas, also shown on Figure 1, were:

- Waste Pile Pad
- Chromium Reduction Basin
- Klein Street Right of Way
- Daniel's Property
- Wetlands Area.

Documentation of closure activities for all of the above units is provided in the November 1994 Draft Closure Certification Documentation Package, Inland Fisher Guide Division General Motors Corporation, Surface Remediation Project, Coldwater Road Plant, Flint, Michigan (EPA I.D. No. MID 005 356 860) prepared by Roy F. Weston, Inc. which has been submitted to the Michigan Department of Environmental Quality (MDEQ).

After two expansions of the initial landfill, the landfill reached maximum capacity. Approximately 530,000 yd^3 of sludge and associated soils were disposed in the landfill. Several areas of contaminated soil remained which contained metals greater than the background closure criteria. These were:

- Sludge Retention Basin
- Miscellaneous Cleanup Area
- Stabilized Materials Area
- Stockpiled Materials Area
- Construction Related Landfarm Area
- Railroad Area.

GM submitted a request to delist the materials in these areas for off-site disposal as non-hazardous waste. The delisting petition was approved by MDEQ on February 7, 1996 and the receiving state (Utah). Following approval of the delisting petition, GM excavated material in these areas and disposed of it off site, in accordance with the MDEQ-approved "Work Plan for Excavation of Delisted Materials" (Work Plan), dated February 1996. As a result of this phase of closure activities, one additional area was closed to the background closure standard. This was:

- Railroad Area.

However, in spite of the removal of substantial material in each of these areas, closure samples analyzed for four metals (chromium, copper, nickel, and zinc) indicated that five of the areas still exceeded the background standard for one or more metals. In addition, two new areas (the "East" and "West" areas) were determined by sampling to exceed the background standard for one or more metals. These seven areas are hereinafter referred to as the "Remaining Materials Area" or RMA. The Remaining Materials Area consisted of:

- Sludge Retention Basin (underlying soil only)
- Miscellaneous Cleanup Area
- Stabilized Materials Area
- Stockpiled Materials Area
- Construction Related Landfarm Area
- East Area
- West Area.

Based on additional characterization of the material within the RMA and an evaluation of site-specific exposure pathways, the RMA was closed by placement of a soil cover in accordance with the MDEQ-approved Closure Plan modification, dated April 23, 1997. The closure standard approved by the MDEQ as part of the Closure Plan modification was Michigan Act 307 Type B criteria.

Following an October 30, 1997 clarification response submittal to the MDEQ by O'Brien & Gere, the MDEQ approved the Closure Plan modification on June 26, 1998 to leave the delisted materials in-place at

the RMA, contingent upon GM completing four quarterly rounds of ground water sampling and analysis downgradient of the RMA.

GM completed final grading, topsoil placement, and seeding of the RMA in the fall of 1998; however, vegetative growth was not considered acceptable by GM until the spring of 1999. Additionally, the fourth round of ground water sampling and analysis was completed on April 26, 1999 and submitted to the MDEQ on July 28, 1999. MDEQ approved of the sampling results and the wells were properly abandoned.

The requested closure of the drum storage area submitted in the November 1994 Draft Closure Certification Documentation Package (which included the drum storage area and waste pile pad) was denied by the MDEQ in a letter to Peregrine, U.S., Inc., dated March 26, 1998 because the waste sludges removed from the former drum storage area sumps constituted an unexpected event under 40 CFR 265.112(c). Therefore, the MDEQ requested soil sampling be performed beneath the concrete sumps to assess potential releases. The MDEQ letter did not approve nor deny closure of the waste pile pad. The drum storage area and waste pile pad are located on the REALM former Peregrine property.

Because GM was unaware of the March 26, 1998 letter to Peregrine, U.S., Inc. denying closure of the drum storage area, a Closure Certification Report for the drum storage area and waste pile pad was submitted to the MDEQ in June 1999 by Weston. Upon receipt of this Closure Certification Report, MDEQ notified GM of the March 26, 1998 letter requesting an investigation at the drum storage area.

Investigation activities at the drum storage area were performed in accordance with the MDEQ-approved February 16, 2000 Drum Storage Area Closure Plan and Post-Closure Plan Amendment (Closure Plan Amendment) prepared by O'Brien & Gere. Results of the investigation indicated compliance with the Closure Plan and Closure Plan Amendment. A report documenting this compliance (Addendum to the June 1999 Closure Certification Report) is being submitted to the MDEQ in May 2003.

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2. Summary of RCRA units, SWMUs and CAAs

This chapter summarizes the RCRA units, SWMUs and CAAs; the nature of the contamination; remedial activities; and closure results for each SWMU. In addition, the location of the units has been broken down as follows:

- Located on the REALM Coldwater Road Landfill facility
- Located off of the REALM Coldwater Road Landfill facility and the REALM former Peregrine property
- Located on the REALM former Peregrine property (manufacturing plant).

Table 1, attached, provides an outline of these RCRA units, SWMUs and AOCs in relation to their location.

2.1. REALM Coldwater Road Landfill facility

2.1.1. Settling lagoons

This series of three interconnecting surface impoundments, (the S-Lagoons) received effluent and sludge until May of 1987 from the WWTP. The effluent received by the settling lagoons was generated primarily from zinc and chrome plating operations and therefore was generated an F006-listed hazardous waste sludge. The F006 sludge contained heavy metals including, chrome, copper, nickel, and zinc and a trace of organic constituents. The sludge settled out in these lagoons, thereby allowing the supernatant to overflow by design to the north end of the final lagoon into an underground pipe. This pipe (outfall 001) conveyed flow north under the abandoned retention basin and then west to Hughes Drain and eventually to the Flint River. The settling lagoons were constructed both above and below grade, of natural on-site clay soils. The location of the settling lagoons with respect to the rest of the property is shown on Figure 1.

Remedial activities in the S-Lagoons began by pumping standing water from the sludge surface directly to the WWTP. The wet sludge in the primary and secondary lagoons was transported to the final lagoon using a dragline to consolidate the waste into one impoundment for solidification. The lagoons contained an average depth of 6 to 8 ft of sludge. The combined sludge in the tertiary lagoon was then excavated and staged at a pugmill treatment unit in the stockpiled materials area as shown on Figure 1.

Stabilization/solidification of S-Lagoon sludge utilized a Portland cement and for some sludge activated carbon reagent mixture to achieve the treatment standard and stockpiled generally in the stabilized material area in Figure 1 prior to disposal in the landfill cell. The bottoms and sides of the settling lagoons were excavated of the residual sludge using a bulldozer and an excavator.

Soils verification sampling and analysis was conducted to determine that the background cleanup standards had been achieved.

2.1.2. Sludge drying beds

This unit consisted of three shallow basins used to de-water wet sludge from the settling lagoons. The sludge that accumulated in the lagoons was decanted and then directed to one of the three drying beds via an open ditch. The wet sludge was dried by evaporation and infiltration into an underdrain system. The underdrain system from each bed flowed to an open channel constructed along the north side of the drying beds. This channel flowed into the NPDES-permitted plant outfall 002 that discharged to Hughes Drain and eventually to the Flint River. An underdrain system was present in the bottom of each drying bed consisting of a network of 4-inch perforated polyvinyl chloride (PVC) pipe surrounded by pea gravel. This pipe network had been installed in 1-ft-wide and 2-ft deep trenches that ran north and south on 30-ft centers. These pipes manifolded into a 6-inch pipe along the north side of the bed. The manifold pipe from each bed emptied into a ditch that paralleled the north berm of the drying beds and flowed along the south side of the Landfarm into the wetland area. The location of the sludge drying beds with respect to the rest of the property is shown on Figure 1.

The three sludge drying beds contained between 3 and 4 ft of sludge. In-place methods were utilized in each of the drying beds to solidify the wet sludge and to facilitate handling and transportation to a pugmill for final stabilization treatment. Initial mixing and loading of the solidified sludge was performed with an excavator. The solidified waste was transported to the pugmill for final stabilization/solidification treatment using lime kiln dust (LKD) and Class F fly ash. All pipe and pea gravel drainage media was excavated and disposed of in the on-site landfill. Clay soils were encountered in the bottom of each drying bed after all visual contamination and underdrain materials were removed.

Areas adjacent to the drying beds were also remediated by excavation, treatment, and landfill disposal of soils and sludge. These areas included: a ditch along the north side of the drying beds, the Haul Road, an area west of the drying beds, and a ditch between the S-Lagoons and the drying beds.

Soils verification samples were collected and analyzed to confirm that the background cleanup standards were achieved at each drying bed and adjacent area.

2.1.3. Former landfarm area

This area was located on the north side of the sludge drying beds. The landfarm encompassed an area of approximately 20 acres and was characterized by intermittent vegetation surrounded by piles of dried sludge. This area received F006 sludge from the sludge drying beds until the effective date of RCRA in 1980. The location of the landfarm with respect to the rest of the property is shown on Figure 1.

Prior to initiation of closure activities, surface soils were sampled within the landfarm. This sampling and analysis confirmed that surface soils within the site sampling grid required removal, stabilization/solidification, and disposal, with the exception of the extreme western area of the landfarm.

The landfarm sampling grid was expanded to the north and east due to detection of contaminated surface soils outside the grid in this area. Contaminated surface and subsurface soils in the remaining areas were excavated in 6 inch lifts until analytical results from the follow-up verification sampling indicated the concentrations of the constituents were below the background cleanup standards. Contaminated soils were excavated and treated at a pugmill, then disposed of in the on-site landfill, except for some soils east of the landfarm area which were excavated and disposed of off-site as a non-hazardous waste in accordance with the delisting determination.

Verification soil sampling and analysis confirmed removal of soils to the background cleanup standards.

Following contaminated soil removal in the landfarm area, the area was used extensively as a clay borrow source for the on-site landfill liner and cap systems. After the clay was removed, the area was restored as a new wetland.

2.1.4. Sludge retention basin

This impoundment consisted of a 54,000-ft^2 basin located north of the settling lagoons. This basin was used once to drain wet F006 sludge via an open ditch that accumulated in the final settling lagoon in the early 1970sThe sludge retention basin was constructed of earthen berms and an underdrain system. The location of the sludge retention basin with respect to the rest of the property is shown on Figure 1.

The depth of sludge within the retention basin was approximately 2 ft in the south end and 4 ft in the north end. Removal of the sludge began by in-place solidification with LKD and fly ash. An excavator mixed the sludge and reagents until the mix was dry enough to be loaded into dump trucks and was then transported to the pugmill for final stabilization/solidification treatment. Additional underlying soils were

excavated from the sludge retention basin area and disposed of off-site as a non-hazardous waste in accordance with the delisting determination.

Verification soil sampling and analysis confirmed removal of soils to the Act 307 Type B criteria specified by the Modified Closure Plan. A topsoil and vegetative cover was subsequently placed over this area.

2.1.5. Sludge lakes

This cluster of five sludge lakes (surface impoundments) was located northeast of the WWTP and were used as wastewater settling lagoons in the late 1960s. These lakes accepted effluent and sludge from the WWTP during the 1960s. The sludge lakes were used to settle F006 sludge from the effluent. Each sludge lake was constructed with a clay berm and contained varying amounts of standing water. The location of the sludge lakes with respect to the rest of the property is shown on Figure 1.

Closure activities began in the sludge lakes by decanting the standing water present on all five lakes. The water was transferred to the final S-Lagoon by a portable pump and hose where it was then pumped to the WWTP for treatment.

The sludge in these lakes was solidified in place and then transported to the pugmill for final stabilization treatment.

Excavation of the solidified sludge revealed clay subsoils in the bottom and sides of each lake. Soil verification sampling and analysis confirmed removal to the background cleanup standards.

2.1.6. Area north of sludge lakes

The area north of the sludge lakes was relatively flat and grassy. This area is bounded on the west, north, and east by railroad spurs that serviced the manufacturing facility and its coal burning power plant. Most surface soils over this area contained F006 sludge and sludge residues. Sludge was suspected to have been placed in this area by overflow of sludge and water from the sludge lakes and/or breaches in the sludge lake berms. The location of the area north of the sludge lakes with respect to the rest of the property is shown on Figure 1.

Removal of the contaminated surface soils began at the north end and progressed southward to the sludge lakes. The approximate depth of contaminated surface soils was found to range from 6 inches in the northern area to about 5 ft in the area adjacent to the lakes. Excavated material was then transported to the sludge lake area where it was stabilized/solidified at the pugmill.

Soil verification sampling confirmed that the elevated levels of contamination encountered in the surface soils were removed to the background cleanup standards.

2.1.7. Decontamination pits

Four 30 ft by 50 ft concrete decontamination pits were located north of the former WWTP. These pits were used to store contaminated equipment such as pumps, tanks, and demolished flooring from the manufacturing facility. The equipment staged in this area was decontaminated by rinsing with natural precipitation or with plant water. Portable pumps and hoses were used to discharge accumulated liquids to the WWTP. Water from the eastern pit normally contained chromium, while water from the other three pits normally contained cyanide. Each pit drains into a concrete sump located along the north side of the pits. The location of the decontamination pits with respect to the rest of the property is shown on Figure 1.

Closure activities at the decontamination pits began by pumping the 2-ft of standing water in the pits to the on-site WWTP for treatment. Each of the four pits also contained waste debris, bricks, miscellaneous metal, machine parts, and wooden pallets. Debris was decontaminated with high-pressure water and was then loaded into a roll off box for off-site disposal. All runoff from the debris pressure washing was contained within the decontamination pits and pumped to the WWTP for treatment.

Per the Closure Plan the concrete floor and side walls of each pit were scrubbed with a detergent and triple-rinsed with high pressure water. All wash waters and rinseate were pumped to the WWTP for treatment. Samples of the final rinseate were taken from each pit and the results met the cleanup standards specified for the decontamination pits.

A two-chamber concrete sump to the north of the decontamination pits was also decontaminated in the same manner as the pits. A confirmatory sample was taken from the third rinse. This analysis indicated that the sump met the cleanup standards specified for the decontamination pits.

Finally the portable pump and hose were flushed with clean water and decontaminated. Analytical results from a sample of this wash water also met the background cleanup requirements specified for the decontamination pits.

2.1.8. Chrome reduction basin at WWTP

Two above ground concrete basins are located south of the former WWTP. These basins, formerly lined with fiberglass, received chromium-laden rinse waters from plating operations. Chromium wastewaters were treated in the basins with sodium bisulfide to reduce hexavalent chromium to trivalent chromium, then pumped to the WWTP

for final treatment. The location of the chrome reduction basins with respect to the rest of the property is shown on Figure 1.

Corrective action work at the two chromium reduction basins consisted of removing accumulated waters from the basins for treatment at the WWTP, removing the fiberglass lining present on the bottom and sidewalls of the concrete basins, and high pressure washing the concrete bottom and sidewalls of the basin structure.

The rinseate from the final washing was sampled and analyzed for metals concentrations in accordance with the Closure Plan. Background cleanup standards have been achieved as determined by rinseate analysis, with the exception of lead being slightly above the standard in the analysis representing the east wall of the east basin.

2.1.9. Wetlands area

The wetlands area is located west of the sludge drying beds area and south of Stanley Road. This area contained elevated concentrations of metals in surface and near-surface soils. The location of the wetlands area with respect to the rest of the property is shown on Figure 1.

The wetlands area required excavation of surface and subsurface soils prior to construction of the wetlands restoration plans. Approximately 37,675 yd3 of soils were removed from an approximate 3.5-acre area. Excavated soils were transported to a pugmill staging area for stabilization treatment, then disposed of at the on-site landfill.

Post-excavation verification soil sampling and analysis confirmed removal of soils to the background cleanup standards. Following soil removal, a new wetlands area was constructed in this area of the site.

2.1.10. Miscellaneous clean up area

The miscellaneous clean up area is located north of the settling lagoons and south of the sludge retention basin within the RMA. This area contained soil contaminated with solidified materials during solidification activities. The contaminated soil was delisted as a non-hazardous waste for off-site disposal. The location of the miscellaneous clean up area with respect to the rest of the property is shown on Figure 1.

Excavation of the delisted contaminated soil was accomplished with excavators, bulldozers and trucks. Excavated material was then transported off-site for disposal as a non-hazardous waste. A topsoil and vegetative cover was subsequently placed over this area.

Post-excavation verification soil sampling and analysis confirmed removal of soils to the Act 307 Type B standards specified by the Modified Closure Plan.

2.1.11. Stabilized materials area

The stabilized materials area contained solidified material, which remained after the landfill had reached capacity. This area is located north of the sludge retention basin within the RMA. The contaminated soil was delisted as a non-hazardous waste for off-site disposal. The location of the stabilized materials area with respect to the rest of the property is shown on Figure 1.

Excavation of the delisted contaminated soil was accomplished with excavators, bulldozers and trucks. Excavated material was then transported off-site for disposal as a non-hazardous waste. A topsoil and vegetative cover was subsequently placed over this area.

Post-excavation verification soil sampling and analysis confirmed removal of soils to the Act 307 Type B standards specified by the Modified Closure Plan.

2.1.12. Stockpiled materials area

The stockpiled materials area contained solidified material, which remained after the landfill had reached capacity. This area is located north of the sludge retention basin, adjacent to the stabilized materials area within the RMA. The contaminated soil was delisted as a non-hazardous waste for off-site disposal. The location of the stockpiled materials with respect to the rest of the property is shown on Figure 1.

Excavation of the delisted contaminated soil was accomplished with excavators, bulldozers and trucks. Excavated material was then transported off-site for disposal as a non-hazardous waste. A topsoil and vegetative cover was subsequently placed over this area.

Post-excavation verification soil sampling and analysis confirmed removal of soils to the Act 307 Type B standards specified by the Modified Closure Plan.

2.1.13. Construction related landfarm area

The construction related landfarm area is located north of the stockpiled materials area within the RMA. This area contained soil contaminated with solidified materials during solidification activities. The contaminated soil was delisted as a non-hazardous waste for off-site disposal. The location of the construction related landfarm area with respect to the rest of the property is shown on Figure 1.

Excavation of the delisted contaminated soil was accomplished with excavators, bulldozers and trucks. Excavated material was then transported off-site for disposal as a non-hazardous waste under the delisting determination. A topsoil and vegetative cover was subsequently placed over this area.

Post-excavation verification soil sampling and analysis confirmed removal of soils to the Act 307 Type B standards specified by the Modified Closure Plan.

2.1.14. East and west areas

The east and west areas may have received runoff or windblown deposition from the site during solidification activities. These areas are east and west of the sludge retention basin, within the RMA. The location of the east and west areas with respect to the rest of the property is shown on Figure 1.

Excavation of contaminated soil was accomplished with excavators, bulldozers and trucks. Excavated material was then transported off-site for disposal, as a non-hazardous waste. A topsoil and vegetative cover was subsequently placed over these areas.

Post-excavation verification soil sampling and analysis confirmed removal of soils to the Act 307 Type B standards specified by the Modified Closure Plan.

2.1.15. Landfill

The hazardous waste landfill located on the REALM Coldwater Road landfill facility was used for on-site disposal of treated soils and sludge. It is located in the area of the former sludge lakes and area north of the sludge lakes. The landfill encompasses approximately 20 acres and contains approximately 530,000 yd^3 of treated soils and sludge. The location of the landfill with respect to the rest of the property is shown on Figure 1.

The landfill was designed for the on-site disposal of solidified sludge and contaminated soils. The hazardous waste landfill was closed, capped, and seeded as required by the Closure Plan. Landfill monitoring is being conducted per the approved Post-Closure Plan.

2.1.16. Haul road area

The haul road area is located along the eastern edge of the REALM Coldwater Road Landfill facility. This area may have received historical runoff or windblown deposition from the site. Elevated concentrations of

site-related metals were measured in soil samples taken in this area. The location of the haul road area with respect to the rest of the property is shown on Figure 1.

Surface soils were excavated to a depth of approximately 6 inches in this area. Excavation of contaminated soil was accomplished with excavators, bulldozers and trucks. Delisted excavated material was then transported off-site for disposal as a non-hazardous waste under the delisting determination.

Post-excavation verification soil sampling and analysis, and achieving a 95% Upper Confidence Limit (UCL) statistical evaluation confirmed removal of soils to the Closure Plan cleanup criteria.

2.2. Located off of the REALM Coldwater Road Landfill facility and the REALM former Peregrine property

2.2.1. Klein Street right-of-way

This area is an off-site property located north of Klein Street and south of the REALM Coldwater Road Landfill facility fence line. This area may have received historical runoff from the site. Elevated concentrations of site-related metals were measured in soil samples taken in this area. The location of the Klein Street right-of-way with respect to the rest of the property is shown on Figure 1.

Surface soils were excavated to a depth of approximately 6 inches along an approximate 722-ft^2 area of the Klein Street right-of-way. Approximately 15 yd^3 of soils were removed from the property, treated at the pugmill stabilization treatment process, then placed in the on-site landfill.

Post-excavation verification soil sampling and analysis confirmed removal of soils to the background cleanup standards specified by the Closure Plan.

2.2.2. Daniel's property

This off-site parcel of property is located immediately west of the wetlands area of the REALM Coldwater Road Landfill facility and is surrounded on three sides by the REALM Coldwater Road Landfill facility. This property may have received historical runoff or windblown deposition from the site. Elevated concentrations of site-related metals were measured in soil samples taken in this area. The location of the Daniel's property with respect to the rest of the property is shown on Figure 1.

Surface soils were excavated to a depth of approximately 6 to 12 inches in a 16,000 ft^2 area of the Daniel's property. Approximately 663 yd^3 of soils were removed from the property, treated at the pugmill stabilization treatment process, then placed in the on-site landfill.

Post-excavation verification soil sampling and analysis confirmed removal of soils to the background cleanup standards specified by the Closure Plan.

2.2.3. Railroad area

The railroad area is located along the eastern edge of the REALM Coldwater Road Landfill facility. This property may have received historical runoff or windblown deposition from the site. Elevated concentrations of site-related metals were measured in soil samples taken in this area. The location of the railroad area with respect to the rest of the property is shown on Figure 1.

Surface soils were excavated to a depth of approximately 6 inches in this area. Excavation of contaminated soil was accomplished with excavators, bulldozers and trucks. Delisted excavated material was then transported off-site for disposal as a non-hazardous waste under the delisting determination.

Post-excavation verification soil sampling and analysis confirmed removal of soils to the background cleanup standards specified by the Closure Plan.

2.3. Located on the REALM former Peregrine property

Two areas (drum storage area and waste pile pad) associated with the REALM Coldwater Road Landfill facility are now located on the REALM former Peregrine property. Subsequent to performing closure activities at the former Drum Storage Area, a Draft Closure Certification Report was submitted to the MDEQ in November 1994 and a Final Closure Certification Report was submitted in June 1999 by Weston. The MDEQ denied approval of the Draft Closure Certification Report based on waste sludges removed from the sumps constituting an unexpected event requiring additional investigation. An investigation was performed and an Addendum to the June 1999 Closure Certification Report has been prepared and is being submitted to the MDEQ in May 2003.

The waste pile pad was closed by GM as documented in the June 1999 Closure Certification Documentation Package by Weston.

2.3.1. Drum storage area

This concrete pad is located immediately adjacent to the north side of the former main manufacturing building, on the REALM former Peregrine property. Formerly, an 8-ft high fenced area on the pad with dimensions of 42 by 72 ft was capable of storing 648 standard 55 gal drums. Secondary containment was provided by a 4-inch high concrete curb around the perimeter of the pad. A sump in the southwest corner of the pad collected drainage and waste residues from the pad. The sump consisted of two 6-ft by 8-ft deep concrete chambers. The first chamber collected any sediment and overflowed liquids to the second chamber. A pump then served to discharge accumulated liquid directly to the WWTP. The location of the drum storage area and sump with respect to the rest of the property is shown on Figure 1.

Wastes stored at the drum storage area were generated by parts finishing and washing, maintenance cleaning, and paint dip operations at the former manufacturing facility. Hazardous wastes stored at this area included spent 1,1,1-trichloromethane (F001), spent xylene (F003), and spent paint thinner sludge (D001). Other hazardous wastes stored on a one time basis included corrosive materials (D002), reactive materials (D003), and chromium wastes (F007).

The drum storage area concrete pad was triple-rinsed with high-pressure water and scrubbed with detergent. All wash and rinseate was pumped directly from the sump to the WWTP via an existing pipeline. Verification sampling and analysis of the final rinse of the concrete pad confirmed decontamination of the pad to the background cleanup requirements specified in the Closure Plan.

The east sump chamber contained approximately 10 yd^3 of gritty, oily sludge. The west sump chamber contained 2 ft of standing water with a trace of sludge present. The water was pumped directly to the WWTP by the existing pump.

The remaining sludge was sampled and analyzed. Analytical results indicated that the sludge was classified as D005, D007, D008, and D009 wastes. This sludge was then solidified, drummed, and transported to the licensed Chemical Waste Management, Inc. hazardous waste disposal facility in Emelle, Alabama. The sump was also triple-washed and scrubbed with detergent. The existing pump and associated piping was decontaminated and flushed with tap water.

Samples of the final rinse water were obtained from the sump of the drum storage pad and from the rinse water of the existing pump and associated piping to confirm decontamination of this unit to the background cleanup requirements specified in the Closure Plan.

As described above and reported in the June 1999 Final Closure Certification Report, prior to the cleaning activities, GM removed approximately 10 cubic yards of gritty, oily (hazardous) waste sludges that had accumulated in the east sump. The MDEQ commented in a March 26, 1998 letter to Peregrine that the discovery of the sludges

constituted an unexpected event under 40 CFR 265.112(c), and therefore the MDEQ requested soil sampling be performed beneath the concrete sumps.

From 2001 through 2002, a series of phased investigations were performed at the former drum storage area to assess a potential release from the sumps. Concurrently, a RCRA Facility Investigation (RFI) and Groundwater Not In An Aquifer (GWNIAA) study was performed at the REALM former Peregrine property by others to characterize soil and ground water quality, and assess the potential presence of an aquifer at this property.

Based on the drum storage area investigations and the results of the RFI and GWNIAA study, an Addendum to the June 1999 Closure Certification Report documenting closure of the former Drum Storage Area is being submitted to the MDEQ in May 2003. This document demonstrates closure in accordance with the approved Closure Plan and Closure Plan Amendment.

2.3.2. Waste pile pad

This concrete pad was used as a temporary storage area for nonhazardous wastes prior to off site disposal. Drainage on the pad flowed to a sump, which discharged to the WWTP. The location of the waste pile pad with respect to the rest of the property is shown on Figure 1.

A small amount of miscellaneous non-hazardous debris was removed from the pad prior to the pad cleaning. This debris was transported for disposal at the Richfield Landfill in Genesee County, Michigan. The surface of the waste pile pad was decontaminated by triple rinsing with high-pressure water, scrubbing with detergent, and a final rinse. All wash and rinseate waters were treated in the on-site WWTP. The washwaters from the final rinse were sampled and analyzed in accordance with the Closure Plan and confirmed decontamination of this unit to the background cleanup requirements specified in the Closure Plan.

3. Analysis of potential exposure pathways

Analysis of potential exposure pathways, such as direct contact, migration to ground water and migration to surface water (wetlands) was conducted and approved by the MDEQ.

Ground water monitoring wells were installed in the uppermost perched water-bearing zone at the site. The objective of the monitoring program was to provide ground water quality analysis to evaluate the potential presence of hazardous waste constituents in the upper perched zone due to the former presence of contaminated sludge and construction activities as well as the presence of the on-site hazardous waste landfill and the RMA.

Semi-annual ground water monitoring has been performed since June 1995 and the results have indicated levels below site specific background cleanup criteria contained in the Post Closure Plan. As a result, three monitoring wells, located downgradient of the RMA and upgradient of the wetlands area, have been deleted from the monitoring plan as approved by the MDEQ. Ground water monitoring of the remaining wells has continued in accordance with the approved Post Closure Plan for the site.

The only sludges previously on-site have been placed in the RCRA hazardous waste landfill and a topsoil/vegetative cover was placed over the RMA. Therefore, runoff from over land flow entering the wetlands is not a concern. The ground water monitoring program has demonstrated that contaminant levels in ground water at the site do not exceed background levels.

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4. Summary of REALM Coldwater Road Landfill facility

Closure of the RCRA units, SWMUs and CAAs was completed in accordance with the 1992 Corrective Action Consent Order associated with the REALM Coldwater Road Landfill facility. Closure status of these RCRA units, SWMUs and CAAs are listed on Table 1. As outlined on Table 1, the RCRA regulated unit on the REALM former Peregrine property (former drum storage area) will be closed upon approval of the Addendum to the June 1999 Closure Certification Report being submitted to the MDEQ in May 2003.

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Tables

Table 1
Summary of Solid Waste Management Units
REALM Coldwater Road Landfill Facility
Flint, Michigan

I. Located On REALM Coldwater Road Landfill Facility	Unit/SWMU/ CAA	Work	Remediation Status	Closure Documentation
1. Settling Lagoons	RCRA	excavation	Closed*	Part I/II CCD
2. Sludge Drying Beds	RCRA	excavation	Closed*	Part II CCD
3. Former Landfarm Area	SWMU	excavation	Closed*	Part II CCD
4. Sludge Retention Basin	SWMU	excavation	Closed*	Part II CCD
5. Sludge Lakes	SWMU	excavation	Closed*	Part II CCD
6. Area North of the Sludge Lakes	SWMU	excavation	Closed*	Part II CCD
7. Decontamination Pits	SWMU	cleaned	Closed	Final CCD Package- Decontamination Pits and Sump, Chromium Reduction Basins at WWTP (Weston 9/98)
8. Chrome Reduction Basin	CAA	cleaned/ east wall removed	Closed**	Final Closure Certification Documentation 10/98 (Weston) & Subsurface Investigation of Decontamination Pits/Sumps and Chromium Reduction Basins (OBG 6/99)
9. Wetlands Area	CAA	excavation	Closed*	Part II CCD
10. Misc. Cleans Area	RMA	excavation	Closed*	Part I CCD
11. Stabilized Materials Area	RMA	excavation	Closed*	Part I CCD
12. Stockpiled Materials	RMA	excavation	Closed*	Part I CCD
13. Landfarm Area[1]	RMA	excavation	Closed*	Part I CCD
14. East and West Areas	RMA	excavation	Closed*	Part I CCD
15. Landfill (20 acres)	RCRA	construction	Closed*	Part II CCD
16. Haul Road Area	CAA	excavation	Closed*	Part I CCD
II. Located Off of REALM Coldwater Road Landfill facility and REALM former Peregrine Property				
1. Klein Street Right of Way	CAA	excavation	Closed*	Part II CCD
2. Daniel's Property	CAA	excavation	Closed*	Part II CCD
3. Railroad Area	CAA	excavation	Closed*	Part I CCD
III. Located On REALM Former Peregrine Property				
1. Drum Storage Area	RCRA	cleaned	Closed***	Final CCD Package- Drum Storage Area and Waste Pile Pad (Weston 6/99) and Addendum to the June 1999 Closure Certification Report for the Former Drum Storage Area (OBG 5/03)
2. Waste Pile Pad	SWMU	cleaned	Closed*	Final CCD Package- Drum Storage Area and Waste Pile Pad (Weston 6/99)

"CCD" indicates Closure Certification Documentation
"*" denotes closure pending approval of Closure Certification Documentation.
"**" denotes Chromium Reduction Basin east wall disposal data submitted to MDEQ on March 13, 2002.
"***" denotes closure pending approval of Addendum to the June 1999 Closure Certification Report.
RMA denotes Remaining Materials Area.
[1] indicates Construction-related Landfarm Area.

Figures

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STANLEY ROAD

WETLANDS AREA

FORMER LANDFARM AREA

DANIELS PROPERTY

KLEIN STREET RIGHT OF WAY

KLEIN

FORMER SLUDGE DRYING BEDS

HAUL ROAD

DELISTED MATERIAL RAILROAD AREA (EAST OF PROPERTY LINE)

CSX RAILROAD

DELISTED MATERIAL HAUL ROAD AREA (WEST OF PROPERTY LINE)

CONSTRUCTION RELATED LANDFARM AREA

STABILIZED MATERIALS

STOCKPILED MATERIALS

SLUDGE RETENTION BASIN

WEST AREA

MISC. CLEAN-UP

EAST AREA

DUNKIRK

GEORGE

CHRYSLER

HARTMAN

TEMPLE

MORRIS HILLS

DOWAGIAC

HORTON

I-475

DELISTED MATERIAL LAGOON BERM

PRIMARY LAGOON

SECONDARY LAGOON

FINAL LAGOON

SETTLING LAGOONS

DECONTAMINATION PITS

FORMER WASTE TREATMENT BUILDINGS (DEMOLISHED)

CHROMIUM REDUCTION BASINS

1

2

AREA NORTH OF SLUDGE LAKES

3

LAKE 5

SLUDGE LAKES

LAKE 1

LAKE 3

LAKE 2

LAKE 4

APPROX. OUTLINE OF LANDFILL

WASTE PILE PAD

CSX RAILROAD

FORMER DRUM STORAGE AREA

FORMER PEREGRINE MANUFACTURING BUILDING (DEMOLISHED)

FORMER BUILDING 63

LEGEND

CLOSED ACT 64/RCRA REGULATED UNITS
- FORMER SLUDGE DRYING BEDS
- DRUM STORAGE AREA (PENDING)
- SETTLING LAGOONS

CLOSED SWMUs
- FORMER LANDFARM AREA
- FORMER SLUDGE LAKES (INCLUDING AREA NORTH OF SLUDGE LAKES)
- DECONTAMINATION PITS
- WASTE PILE PAD
- SLUDGE RETENTION BASIN

REMAINING MATERIALS AREAS (RMA) CLOSED
- MISCELLANEOUS CLEAN-UP AREA
- STABILIZED MATERIALS
- STOCKPILED MATERIALS
- CONSTRUCTION RELATED LANDFARM AREA
- EAST AND WEST AREAS

OTHER CORRECTIVE ACTION AREAS CLOSED
- CHROME REDUCTION BASINS
- KLEIN STREET RIGHT OF WAY
- DANIELS PROPERTY
- HAUL ROAD AREA
- RAILROAD AREA

REALM COLDWATER ROAD LANDFILL FACILITY PROPERTY BOUNDARY

REALM FORMER PEREGRINE PROPERTY

APPROXIMATE LOCATION OF RAILROAD TRACKS

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IN CHARGE OF _____

DESIGNED BY _____ CHECKED BY _____

DRAWN BY _____

200 0 200 400

APPROXIMATE SCALE

NO.	DATE	REVISION	INIT.

O'BRIEN & GERE ENGINEERS, INC.

REALM
COLDWATER ROAD LANDFILL FACILITY

SITE PLAN

FILE NO. 32223-035

DATE APRIL 2003

FIG. 1

PLOT SCALE:200

MDEQ WMD letter to Peregrine (U.S.), Inc., dated March 26, 1998 – Remaining Closure Work (for the former Drum Storage Area)

STATE OF MICHIGAN

JOHN ENGLER, Governor
DEPARTMENT OF ENVIRONMENTAL QUALITY
"Better Service for a Better Environment"
HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973
INTERNET: www.deq.state.mi.us
RUSSELL J. HARDING, Director

REPLY TO:
WASTE MANAGEMENT DIVISION
PO BOX 30241
LANSING MI 48909-7741

March 26, 1998

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. David M. Rymph
Director, Environment, Health and Safety
Peregrine Incorporated
25200 Telegraph Road
Fourth Floor
Southfield, Michigan 48034

Dear Mr. Rymph:

SUBJECT: Letter of Warning
Financial Capability and Closure of Drum Storage Area
Peregrine U.S., Inc., Flint Plant; MIR 000 020 743

This is in response to your February 25, 1998 letter. In that letter, Peregrine Incorporated (Peregrine) asserts that the Drum Storage Area at the subject facility is closed and, therefore, that Peregrine is not obligated to demonstrate financial capability for the facility as requested in our February 5, 1998 letter. As explained in this letter, the Drum Storage Area is not closed, and Peregrine is in violation of the financial capability requirements under Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Until documentation of final closure of the Peregrine facility is submitted to and accepted by the Department of Environmental Quality (DEQ), Waste Management Division (WMD), Peregrine must comply with the financial capability requirements and submit the required financial capability demonstrations immediately.

Closure of Drum Storage Area

The closure plan for the General Motors Corporation (GM) Coldwater Road facility, which includes the Drum Storage Area that is now owned and operated by Peregrine, was approved on September 7, 1989. The closure plan requires the removal of the hazardous waste inventory, decontamination of the concrete floor and sump, and testing to ensure that the decontamination was adequate.

Sent By: WHG MID MICHIGAN; 8102367391; Nov-3-99 9:45AM; Page 2/4

Closure Certification

On November 7, 1994, GM submitted a draft closure certification documentation package. The certification is not acceptable because it is only in draft form and is not signed or sealed by GM (or Peregrine) or an independent registered professional engineer.

In addition, the closure is not complete. According to the draft certification, the inventory was removed, the concrete floor and sump were decontaminated, and the rinsate was analyzed to ensure proper decontamination, as required under the closure plan. The closure is not complete because GM and Peregrine have not fully addressed the sumps. As noted in the certification, GM discovered (and subsequently removed) a substantial accumulation of hazardous waste (approximately 10 cubic yards of gritty, oil sludges) in the sumps. This discovery constitutes an unexpected event under 40 CFR 265.112(c), and should have prompted some limited soil sampling beneath the concrete sumps. The draft certification does not address this unexpected event.

Remaining Closure Work

The soils beneath the concrete sumps at the Drum Storage Area must be sampled and analyzed to ensure that the accumulated wastes did not migrate beyond the containment system. The sampling and analysis must be done in accordance with Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA SW-846, 3rd Edition, Update III, published June 13, 1997, and the method detection limits published in the DEQ's MERA Operational Memorandum #6, Revision 3, on February 4, 1994. The soil must be characterized for the hazardous constituents managed in the Drum Storage Area, and shown to satisfy the Type B cleanup levels published in the DEQ's MERA Operational Memorandum #8, Revision 3, on February 4, 1994. Once the soils are characterized as satisfying the Type B cleanup levels, a closure certification report must be assembled, signed and sealed, and submitted to the WMD.

Financial Capability

Until the WMD accepts the closure certification for the facility, Peregrine must provide financial assurance for the remaining closure costs, and demonstrate financial responsibility for liability coverage. These requirements are explained more fully in R 299.9703 through R 299.9710 of the administrative rules under Part 111 of Act 451.

On or about December 31, 1996, Peregrine took ownership and operational control of the portion of the GM Coldwater Road facility which includes the Drum Storage Area. Under R 299.9522, all environmental obligations for the portion of the facility acquired by Peregrine were transferred to Peregrine on the effective date of transfer, and Peregrine had six months from the date of transfer to demonstrate financial capability as required under Part 111 of Act 451. To date, Peregrine has not demonstrated the required financial capability.

This letter does not preclude nor limit enforcement action under Part 111 of Act 451 for failure to demonstrate financial capability for the facility.

Please contact me if you have any questions regarding the financial capability requirements. If you have questions regarding closure, please contact Ms. Kimberly Tyson at 517-373-2487.

Sincerely,

Steven R. Sliver
Environmental Engineer
Waste Management Division
517-373-1976

cc: Mr. Robert Metcalf, GM
Ms. JoAnn Merrick, DEQ
Mr. Steve Buda, DEQ
Mr. Bill Yocum, DEQ-Shiawassee District Office
Ms. Kimberly Tyson, DEQ
Mr. Dave Slayton, DEQ
HWP/C&E File

APPENDIX C

MDEQ letter to REALM, dated June 27, 2000 - Closure Plan Amendment Approval (for the former Drum Storage Area)

REALM 4144.007 #2
cc: AJF, MBR, WVD, SLC
→ Attachment to MBR (1/11/98 MERA memo #6)

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

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INTERNET: www.deq.state.mi.us

RUSSELL J. HARDING, Director

REPLY TO: WASTE MANAGEMENT DIVISION
PO BOX 30241
LANSING MI 48909-7741

June 27, 2000

Mr. Scott L. Cormier
Senior Manager
O'Brien & Gere Engineers, Inc.
39830 Grand River Avenue, Suite B-2
Novi, Michigan 48375

Dear Mr. Cormier:

SUBJECT: Closure Plan Amendment Approval
General Motors/Remediation and Liability Management, Inc.
(GM/REALM); Coldwater Road Facility, Flint, Michigan
Drum Storage Area; MIR 000 020 743

The Department of Environmental Quality (DEQ), Waste Management Division (WMD) has completed its review of the closure plan amendment request for the subject facility submitted on February 16, 2000, by O'Brien & Gere Engineers Inc. on behalf of GM/REALM.

Based on this review, the DEQ concluded that this amendment does not constitute a major modification but instead clarifies the activities necessary to fulfill the requirements of the closure plan approved in August 1989. This amendment fulfills the additional closure requirements specified in the DEQ's March 26, 1998 letter to Peregrine US, Inc. The DEQ hereby approves the closure plan amendment subject to the enclosed "Conditions for Closure Plan Amendment Approval." The rationale for the modification is also provided.

In accordance with Title 40 of the Code of Federal Regulations (CFR) §265.112(d)(4), which is adopted by reference in R 299.11003 of the administrative rules promulgated under Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, the modified closure plan is the approved closure plan.

If GM/REALM wishes to deviate from the approved closure plan in any way, the modifications must be approved by the DEQ in advance, in writing. Formal procedure and substantive criteria for amending a closure plan are established in 40 CFR §265.112(c), which is adopted by reference in R 299.11003. The regulations stipulate

that a modification to an approved closure plan be requested, in writing, and proposes that a modification be submitted:

- 60 days prior to a change in facility design or operation;
- Within 60 days after an unexpected event that has affected the closure plan; and /or
- Within 30 days after an unexpected event during the closure period.

All closure plan amendments must be approved by the DEQ prior to implementation by GM/REALM.

Closure of interim status units does not release the company from any plant-wide corrective action responsibilities it may have under the federal Hazardous and Solid Waste Amendments of 1984 to the Resource Conservation and Recovery Act of 1976.

If you have any questions, please contact Mr. Suresh Thomas of the Hazardous Waste Program Section, WMD, at 517-241-2108, or you may contact me.

Sincerely,

Jim Sygo, Chief
Waste Management Division
517-373-9523

Enclosures

cc/enc: Mr. Stephen Buda, DEQ
Mr. William Yocum, DEQ – Shiawassee
Mr. John McCabe, DEQ
Mr. Suresh Thomas, DEQ
HWP/C&E File

CONDITIONS FOR CLOSURE PLAN APPROVAL
June 27, 2000

The following condition and the closure plan amendment submitted on February 16, 2000, constitute the approved closure plan.

The analytical methods for chromium VI shall be in accordance with or equivalent to the current United States Environmental Protection Agency SW-846 methodology. Approved methodologies are outlined in the November 16, 1998 Environmental Response Division Operational Memorandum #6, Revision 5 and subsequent revisions. A copy of the November 16, 1998 Environmental Response Division Operational Memorandum #6, Revision 5, is enclosed.

This modification is necessary to ensure that the General Motors/Remediation and Liability Management, Inc. use the appropriate Department of Environmental Quality approved analytical methods to analyze soil samples for the presence of contamination.

Enclosure

STATE OF MICHIGAN

JOHN ENGLER, Governor
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RUSSELL J. HARDING, Director

REPLY TO:

ENVIRONMENTAL RESPONSE DIVISION
KNAPPS CENTRE
PO BOX 30426
LANSING MI 48909-7926

June 2, 1999

TO: Environmental Response Division Staff

FROM: Alan J. Howard, Chief, Environmental Response Division

SUBJECT: Addendum to Operational Memorandum #6, Revision #5, Dated November 16, 1998

The following new target detection limit (TDL) replaces the previous TDL identified in the Environmental Response Division Operational Memorandum #6, Revision #5, dated November 16, 1998.

Parameter	CAS	Matrix	Old TDL ug/l	New TDL ug/l	Recommended Reference Methods
Methyl(tert)butylether (MTBE)	1634-04-4	Water	50	5	**8260** 8021 8240

This change is in response to a new aesthetic criterion, which is the most restrictive risk based criterion for this compound. This change allows for measurement that is appropriate in relation to the most restrictive criterion for MTBE.

Any question about this memorandum should be directed to Ralph Curtis, Support Services Unit, Field Operations Section, at 517-373-8389.

cc: Mr. Walt Roudebush, Michigan Environmental Laboratory Association
Mr. Jim Sygo, WMD
Mr. Paul Zugger, Acting Chief, STD
Mr. David Hamilton, SWQD
Mr. Harold Fitch, GSD
Mr. Ralph Curtis, ERD

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- US ENVIRONMENTAL PROTECTION AGENCY - OFFICE OF SOLID WASTE & EMERGENCY RESPONSE, EDITION: 3 41
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RUSSELL J. HARDING, Director

REPLY TO:

ENVIRONMENTAL RESPONSE DIVISION
KNAPPS CENTRE
PO BOX 30426
LANSING MI 48909-7926

November 16, 1998

TO: All Environmental Response Division (ERD) Staff

FROM: Alan J. Howard, Chief, Environmental Response Division

SUBJECT: Environmental Response Division Operational Memorandum #6, Revision 5, Analytical Method Detection Level Guidance for Environmental Contamination Response Activities under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 Public Act 451, as amended.

This Operational Memorandum replaces the September 13, 1995, MERA Operational Memorandum #6, Revision 4, on the above subject. The attached list includes new compounds, revised detection limits, and revised method recommendations.

PURPOSE

Environmental Response Division (ERD) staff will frequently be involved in the design, review, and approval of cleanup plans, monitoring plans, consent decrees, and similar documents where analytical methods and method detection limits are specified for final cleanups. Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and relevant administrative rules require remediation of environmental contamination sites according to cleanup criteria appropriate for various land use-based categories as listed in Section 20120a(1) or to site-specific criteria as provided for in Section 20120a(2). When cleanup criteria established for these categories do not exceed background levels or method detection limits for the substances in question, either the background levels or method detection limits become the cleanup criteria, as provided in Section 20120a(11) and R299.5707.

For Section 20120a(11) purposes, and because it is important to conduct site cleanup work consistently, Table 1 provides departmental derived detection limits for substances with cleanup criteria established under Part 201. These are referred to as Target Detection Limits, or TDLs. They were developed by reviewing the low level capabilities of methods published by government agencies, reported method detection limits published by state and commercial laboratories, and a survey of quantitation levels for commonly regulated analytes supplied by the Michigan Environmental Laboratory Association (MELA). Laboratory reported detection limits, on a dry weight basis, should be equal to or less than these TDLs to evaluate compliance with the most restrictive Part 201 criteria.

RECOMMENDED METHODS

Table 1 identifies analytical methods judged to be capable of achieving the Target Detection Limits, and recommended for use in Part 201. The source documents in which these methods were published are provided at the end of this document. The listing of recommended methods includes multiple methods in those cases where more than one method is appropriate to allow flexibility in method selection and use.

Revised Methods - Whenever possible recommended methods are listed without revision numbers to allow the most recent revision of the method to be used. The most recent revision of the method so listed in Table 1 is the recommended method. ERD staff and responsible parties should consult the latest published source documents and/or the agency responsible for that source document, to determine the most recent revision for the method. Laboratories should use the most recent revision of the method whenever possible even though the most recent version may not be specified in Table 1.

RECOMMENDED METHODS (continued)

Modified/Non-approved Methods - Methods resulting from minor modifications of recommended methods are acceptable if such modifications provide equal or better method performance. Addition of compounds to a recommended method, other than those listed in Table 1, or use of alternative methods are subject to ERD approval. Requests for the use of an alternative method should be presented in writing to ERD, prior to use in this program. Unless otherwise expressed in writing from ERD approval applies only to the specific remedial action plan where such methods are proposed. Questions regarding the applicability of methods should be directed to the ERD Field Operations Section, Support Services Unit.

Preferred Methods - Some methods, identified with bold type in Table 1, represent those designed to identify and quantify applicable contaminants in the types of samples encountered in environmental cleanup programs. ERD staff and responsible parties should specify such methods when data scrutiny will be highest, such as in final investigations or closure monitoring of sites. The use of "preferred" does not infer that only methods in bold are acceptable, it simply indicates a preference over other acceptable methods.

Out-Of-Date Methods - Those methods identified by underlining in Table 1 have been designated by the United States Environmental Protection Agency (USEPA) as out of date and may lack many of the necessary details and instructions included in more recent approved USEPA methods. These methods may be removed in future revisions of this memorandum. ERD staff and responsible parties should not specify these methods for future cleanups. Results from current and previously approved investigations will continue to be accepted.

COMPOUNDS WITHOUT METHODS OR TARGET DETECTION LIMITS

Table A lists compounds with cleanup criteria established under Part 201 for which there are neither methods nor TDL recommendations listed in Table 1. Future site investigations will likely produce other instances where methods and/or TDLs have not been established. In such instances, the development of appropriate methods, TDLs, and method performance is the obligation of the person proposing the remedial action plan. Laboratory expertise should be utilized to develop and propose applicable methodology and detection limits for approval by ERD. Responsibility for proposing and development of appropriate methods, and documenting method performance, remains with the person proposing the remedial action plan. When the proposed method is an alternative to a recommended method listed in Table 1, documentation of method performance should include a detailed description of the method as well as method performance validation information. When the proposed method is a recommended method listed in Table 1 and applied to a compound not listed in the published method, documentation of method performance should demonstrate reliable calibration, detection, and measurement with reasonable accuracy and precision. Documentation of method performance should include method detection limit information, as outlined in 40 CFR, Part 136, Appendix B. Proposals for use of alternative methods should be submitted to the appropriate ERD project manager, with a copy to the ERD Field Operations Section, Support Services Unit for technical review. Alternatively, if an ERD project manager has not been assigned to the site, the proposal should be submitted directly to the ERD Field Operations Section.

ELEVATION OF DETECTION LIMITS

Detection limits may be higher than normal because of matrix effects, interferences as a result of non-target analytes, high levels of other target analytes, or interferences from species native to the sample matrix under investigation. When detection levels are increased beyond cleanup levels as a result of such problems it may be necessary to evaluate the elevated detection limits based on the number of samples and the magnitude of the excursion above cleanup levels. This evaluation may also include a review of laboratory procedures to determine their appropriateness, reanalysis at another laboratory, further sample cleanup, modifications to the method, or other actions. Such problems will be evaluated during the review phase of the final cleanup documentation.

APPLICATION OF DETECTION LIMITS

The TDLs are necessary for measurement of the most restrictive cleanup criteria. Other detection limits may be acceptable for other criteria. For example, background levels or default background levels (see Operational Memorandum #15) for certain metals may be well above detection based levels; hence achieving TDLs may be unnecessary. Less sensitive methods (higher detection limits) may also be acceptable for other data usage purposes, such as in the case of preliminary site evaluation work or to determine off-site waste disposal requirements. Less sensitive methods are also acceptable when the sample concentration is within the analytical range of the selected less sensitive method, regardless of the particular target cleanup concentration. A laboratory s reported detection limits for compounds in soils, adjusted for their moisture content, may exceed the TDLs. This is acceptable as long as the action limits are not exceeded.

These TDLs are applicable to environmental investigations and monitoring performed pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 Act 451, as amended. These detection limits may not be applicable to environmental monitoring activities performed pursuant to other environmental statutes. Facilities subject to regulation under other environmental statutes should consult with the appropriate Department of Environmental Quality division for further information regarding appropriate analytical detection limits.

Use of TDLs and associated methods as outlined in this interoffice communication will be considered demonstration of compliance with Part 201 rules related to method detection limits. The procedure in 40 CFR, Part 136, Appendix B should be used to demonstrate that such levels can be attained. The list does not include all possible contaminants and will be updated as new methods and detection capabilities become available.

CHANGES TO MERA OPERATIONAL MEMORANDUM #6, REVISION 4

Changes/Additions in Methods

1. Revision numbers - References to revisions of methods in SW-846 were eliminated to allow laboratories to use the most recent version.
2. Preferred methods - Methods for projects where data scrutiny is expected to be highest are identified in bold type.
3. Non-approved methods - Methods proposed for withdrawal by the USEPA are underlined and may be withdrawn from the next revision of this operational memorandum.
4. Alcohols – Method 5031 as a sample preparation was added for some alcohols.
5. Lithium - Methods were added.
6. Selenium - Method 3114C was added.
7. Hexavalent chromium soil preparation - Method 3060A was recommended as the soil sample preparation method for hexavalent chromium.
8. Hexavalent chromium - Methods from ASTM and AOAC International were added.
9. White phosphorus - Method 7580 was added for white phosphorus.
10. Anions - Methods from ASTM and AOAC International were added.
11. Nitrogen compounds, sulfte and metals - Soil preparation procedures were included for analysis of metals, ammonia, nitrate, nitrite, sulfate, and Keldahl nitrogen.
12. Phenols – Method 8041 was added to some phenols and indicated as a preferred method for these analytes.
13. Methyl parathion – Methods were added.
14. Tebuthiuron – Method 8321 was added.
15. Methods for methane analysis were added.

Changes/Additions in Target Detection Limits

16. Aluminum - The soil TDL was increased from 700 to 1000 ug/Kg.
17. Arsenic - The water TDL was increased from 5 to 20 ug/L.
18. Barium – The water TDL was decreased from 200 to 100 ug/L to allow GSI criteria to be met.
19. Chromium (total) - The water TDL was decreased from 50 to 5 ug/L, and soil TDL was decreased from 2500 to 500 ug/L to ensure a determination whether hexavalent chromium critieria would be met.
20. Chromium VI – The soil TDL was increased from 200 to 500 ug/Kg as some laboratories indicated 200 ug/Kg is marginal if Method 3060A is used as the sample preparation.
21. Copper – A water TDL to satisfy GSI criteria was added.
22. Lithium – The water and soil TDLs were added.
23. Magnesium - The water TDL was increased from 30 to 100 ug/L for waters since 100 ug/L is more practical due to laboratory background levels.
24. Nickel – The water TDL was decreased from 50 to 25 ug/L to allow GSI criteria to be met.
25. Selenium - The soil TDL was decreased from 500 to 200 ug/Kg as the statewide background level is 410 ug/Kg and 200 ug/Kg is within the capabilities of commercial laboratories and recommended methods.
26. Silver – A water TDL to satisfy GSI criteria was added.
27. Diuron – The water TDL was added.
28. Formaldehyde - The soil TDL was increased from 500 to 2000 ug/Kg.
29. Benzidines - Water and soil TDLs to satisfy the most restrictive Part 201 criteria for benzidine and 3,3 -Dichlorobenzidine were added.
30. Benzene – The water TDL was decreased from 5 to 1 ug/L.
31. 1,2-Dibromo-3-chloropropane - Water and soil TDLs were changed to satisfy drinking water criteria and allow general investigations at higher levels.
32. Tetrahydrofuran – The water and soil TDLs were changed from 1,000 ug/L to 100 ug/L, and 10,000 ug/kg to 1,000 ug/Kg, respectively, based on new capabilities identified in Method 524.2 which allowed the most restrictive criteria to be met.
33. Methyl parathion – Soil and water TDLs were added.
34. 2,4,5-Trichlorophenol – The water TDL was decreased from 50 to 5 ug/L, and soil TDL was decreased from 1700 to 330 ug/Kg to be consistent with other phenol TDLs.
35. Tebuthiuron – TDLs for water and soil were added.
36. Methane – TDLs for methane in water were added.

Changes/Additions in Calculations

37. A reference for calculating toxicity equivalence factors for dioxins and furans was included.
38. A reference for dioxin and furan names and CAS numbers is provided.
39. The procedure for reporting and calculating chlordane was referenced.

Changes/Additions in Footnotes

40. Footnotes were added to clarify when some methods should be used and where to find target compound lists.

Changes in Terminology

41. The terminology "Target Method Detection Limits" was changed to "Target Detection Limits" to avoid confusion with method detection limits.

The Michigan Department of Environmental Quality, Environmental Response Division, Special Services Section, wishes to extend its thanks to the Michigan Environmental Laboratory Association, for providing comments and recommendations.

Questions about this memorandum should be directed to:
Mr. Arvine Ralph Curtis, Laboratory Specialist
Michigan Department of Environmental Quality
Environmental Response Division
Field Operations Section, Support Services Unit
PO Box 30426
Lansing, MI 48909

TEL 517-373-8389, FAX 517-335-3624

This memorandum is intended to provide guidance to division staff to foster consistent application of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and the relevant administrative rules promulgated thereunder. This document and matters addressed herein are subject to revision.

Attachments

rev. 5

cc: Air Quality Division
Environmental Response Division
Surface Water Quality Division
Underground Storage Tank Division
Waste Management Division

TABLE A – COMPOUNDS WITH ESTABLISHED RISK BASED CRITERIA, BUT WITHOUT TDL OR METHOD RECOMMENDATIONS

PARAMETER	CAS NO
Acrylic acid	79-10-7
Azobenzene	103-33-3
Camphene	79-92-5
Caprolactam	105-60-2
Diacetone alcohol	123-42-2
Diethylene glycol monobutyl ether	112-34-5
Diisopropylamine	108-18-9
N,N-Dimethylacetamide	127-19-5
N,N-Dimethylaniline	121-69-7
Dimethylformamide	68-12-2
Dimethylsulfoxide	67-68-5
Ethyl Acetate	141-78-6
Ethylene glycol acetate	542-59-6
Ethylene glycol monobutyl ether	111-76-2
1-Ethyl-2-methylbenzene	611-14-3
1-Formylpiperidine	2591-86-8
Gentian violet	548-62-9
n-Heptane	142-82-5
n-Hexane	110-54-3
2-Methoxyethanol	109-86-4
N-Methyl-morpholine	109-02-4
Oxamyl	23-13-5
Oxo-hexyl acetate	88230-35-7
2-Pentene	109-68-2
Piperidine	110-89-4
Propyl alcohol	71-23-8
Tributylamine	102-82-9
Triethanolamine	102-71-6
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1
2,2,4-Trimethyl-2-pentene	107-40-4

TABLE 1. Target Detection Limits and Recommended Methods for Environmental Contamination Response Activities.

Method numbers in **bold print** have technical advantages. Underlined methods identify those methods where USEPA approval has been withdrawn. Water units are in ug/L. Soil units are in ug/Kg on a dry weight basis. [1] *Italicized names indicate those that currently do not have Part 201 criteria.*

PARAMETERS	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Nitrogen Components [2]				
Ammonia	7664-41-7	WATER:	50	Use 350 or 4500-NH3 series, Color or Ion Specific Electrode Methods
		SOIL:	1000	(Ref. 1) (Ref. 2) then appropriate water methods
Nitrate	14797-55-8	WATER:	100	9056 300.0 4110B D-4327 993.30 4500-NO3-B 4500-NO3-D 4500-NO3-E 9200 352.1
		SOIL:	1000	(Ref. 1) (Ref. 4) then appropriate water methods
Nitrite	14797-65-0	WATER:	100	9056 300.0 4110B D-4327 993.30 353.1 353.2 353.3 4500-NO2-B 354.1
		SOIL:	1000	(Ref. 1) (Ref. 4) then appropriate water methods
Urea	57-13-6	WATER:	400	983.01
		SOIL:	20,000	983.01
Miscellaneous				
Chloride	16887-00-6	WATER:	10,000	9056 300.0 325.1 325.2 4110B 4500-Cl-B 4500-Cl-C 4500-Cl-D 4500-Cl-E 4500-Cl-F D-4327
		SOIL:	200,000	Prepare by Method 300.0-Section 11.7, or ASTM D-3987-85 [3] or Neutral 1312 followed by water methods.
Cyanide (Amenable To Chlorination)	57-12-5	WATER:	20	335.1 with 335.2 335.3 9014 9010 9012
		SOIL:	500	9014 9010
Cyanide (Total)	57-12-5	WATER:	5	335.2 335.3 9010 9012
		SOIL:	200	9010
Fluoride	7782-41-4	WATER:	100	9056 300.0 4110B D-4327 993.30 340.1 340.2 340.3 4500-F-C/D/E
		SOIL:	5000	(Ref. 3) then non-colorimetric water methods
Sulfate	14808-79-8	WATER:	1000	9056 300.0 4110B D-4327 993.30 375.1 375.2 375.4 4500SO4-E 9035 9036 9038
		SOIL:	50,000	(Ref. 1) (Ref. 5) then appropriate water methods
Sulfide (Dissolved and Acid Soluble)	18496-25-8	WATER:	200	9030 (376.1 above 1 mg/L) 376.2 4500-S2-A/B/C/D/E
		SOIL:	1000	9030 (9031-Solids, Oils and Matrices Not Amenable with 9030)

TABLE 1. Target Detection Limits and Recommended Methods for Environmental Contamination Cleanup Activities.

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PARAMETERS	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Organic Acids				
Acetic Acid	64-19-7	WATER:	18,000	5560B [4] 5560C [4] 1671
		SOIL:	900,000	5560B [4] 5560C [4] 1671
Formic Acid	64-18-6	WATER:	18,000	5560B [4] 5560C [4]
		SOIL:	900,000	5560B [4] 5560C [4]
Aldehydes [27]				
Formaldehyde	50-00-0	WATER:	100	8315
		SOIL:	2000	8315
Acetaldehyde	75-07-0	WATER:	500	8315
		SOIL:	2500	8315
Organics, Alcohols				
n-Butyl Alcohol	71-36-3	WATER:	800	**8260 8015** 5031/8260/8015
		SOIL:	4400	**8260 Leachates- 8015** 5031/8260/8015
t-Butyl Alcohol	75-65-0	WATER:	800	**8260 8015** 5031/8260/8015
		SOIL:	4400	**8260 Leachates- 8015** 5031/8260/8015
Ethyl Alcohol	64-17-5	WATER:	1000	**8260 8015** 5031/8260/8015
		SOIL:	4400	**8260 Leachates- 8015** 5031/8260/8015
Isobutyl Alcohol	78-83-1	WATER:	1000	**8260 8015** 5031/8260 8240 6210C 6210D 6220C
		SOIL:	4400	**8260 Leachates- 8015** 5031/8260/8015 8240
Isopropyl Alcohol	67-63-0	WATER:	400	**8260 8015** 5031/8260/8015
		SOIL:	4400	**8260 Leachates- 8015** 5031/8260/8015
Methyl Alcohol	67-56-1	WATER:	1000	**8260 8015** 5031/8260/8015
		SOIL:	4400	**8260 Leachates- 8015** 5031/8260/8015

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PARAMETERS	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Organics, Glycols				
Ethylene Glycol	107-21-1	WATER:	10000	8015 8430
		SOIL:	10000	WATER EXTRACT FOLLOWED BY 8015 8430
Propylene Glycol	57-55-6	WATER:	10000	8015
		SOIL:	10000	WATER EXTRACT FOLLOWED BY 8015 8430
Chlorinated Dioxins & Furans [5]				
HpCDD, HpCDF, HxCDD, HxCDF,		WATER:	0.00005	**8290** 1613
PeCDD, PeCDF		SOIL:	0.005	**8290**
OCDD, OCDF		WATER:	0.0001	**8290** 1613
		SOIL:	0.01	**8290**
2,3,7,8-TCDD		WATER:	0.00001	**8290** 1613
2,3,7,8-TCDF		SOIL:	0.001	**8290**
2,3,7,8-Tetrabromodibenzo-p-dioxin	50585-41-6	WATER:	0.0001	**8290** 1613
		SOIL:	0.01	**8290**
Inorganics, Metals [6,7]				
Aluminum	7429-90-5	WATER:	50	**6010 6020** 200.7 200.8 200.9 202.1 202.2 7020 1620-ICP CLP-SOW-ICP CLP-SOW-Mod-202.1 CLP-SOW-Mod-202.2 3111B 3111D 3113B 3120B
		SOIL:	1000	**6010 6020** 200.7 200.8 200.9 202.1 202.2 7020 CLP-SOW-ICP CLP-SOW-Mod-202.1 CLP-SOW-Mod-202.2
Antimony	7440-36-0	WATER:	5	**6010 6020** 200.7 200.8 200.9 204.2 1620-ICP 7041 CLP-SOW-Mod-204.2 3113B
		SOIL:	500	**6010 6020** 200.7 200.8 200.9 204.2 1620-ICP 7041 CLP-SOW-Mod-204.2
Arsenic	7440-38-2	WATER:	20	**6010 6020 7060** 200.7 200.8 200.9 206.2 206.3 206.4 1620-GFAA 7061 7062 7063 CLP-SOW-Mod-206.2 3113B 3114B
		SOIL:	100	**6010 6020 7060** 200.7 200.8 200.9 206.2 206.3 206.4 1620-GFAA 7061 7062 7063 CLP-SOW-Mod-206.2

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PARAMETERS	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Inorganics, Metals [6,7] (continued)				
Barium	7440-39-3	WATER:	100	**6010 6020** 200.7 200.8 200.9 208.1 208.2 7080 7081 CLP-SOW-Mod-208.1 CLP-SOW-Mod-208.2 CLP-SOW-ICP 1620-ICP 3111D 3113B 3120B
		SOIL:	1000	**6010 6020** 200.7 200.8 200.9 208.1 208.2 7080 7081 CLP-SOW-Mod-208.1 CLP-SOW-Mod-208.2
Beryllium	7440-41-7	WATER:	1	**6010 6020** 200.7 200.8 200.9 210.1 210.2 1620-GFAA 7091 CLP-SOW-Mod- 210.2 CLP-SOW-Mod-210.1 CLP-SOW-ICP 3113B 3120B
		SOIL:	200	**6010 6020** 200.7 200.8 200.9 210.1 210.2 1620-GFAA 7091 CLP-SOW-Mod- 210.2 CLP-SOW-Mod-210.1 CLP-SOW-ICP
Boron [8]	7440-42-8	WATER:	300	**6010** 200.7 200.8 1620-ICP CLP-SOW-ICP 3120B
		SOIL:	8000	**6010** 200.7 200.8 1620-ICP CLP-SOW-ICP
Cadmium	7440-43-9	WATER:	0.5	**6010 6020** 200.7 200.8 200.9 213.2 1620-GFAA 7131 CLP-SOW-Mod-213.2 200.10-(BRINES) 3113B
		SOIL:	50	**6020** 200.7 200.8 200.9 213.2 1620-GFAA 7131 CLP-SOW-Mod-213.2
Chromium (Total) [9]	7440-43-7	WATER:	5	**6010 6020** 200.7 200.8 200.9 218.1 218.2 218.3 1620-GFAA 1620-ICP 7190 7191 CLP-SOW-ICP CLP-SOW-Mod-218.1 CLP-SOW-Mod-218.2 3111B 3113B 3120B
		SOIL:	500	**6010 6020** 200.7 200.8 200.9 218.1 218.2 218.3 1620-GFAA 1620-ICP 7190 7191 CLP-SOW-ICP CLP-SOW-Mod-218.1 CLP-SOW-Mod-218.2
Chromium VI [9]	18540-29-9	WATER:	5	**7196 7199 D-5257 218.6 993.23** 218.4 218.5 7195 7197 7198 SM 3500-Cr-D,E
		SOIL:	500	**3060A/7196/7199** D-5257 993.23
Cobalt	7440-48-4	WATER:	10	**6010 6020** 200.7 200.8 200.9 219.2 7201 CLP-SOW-Mod-219.2 200.10-(BRINES) 3113B 3120B
		SOIL:	500	**6010 6020** 200.7 200.8 200.9 219.2 7201 CLP-SOW-Mod-219.2
Copper	7440-50-8	WATER:	25	**6010 6020** 200.7 200.8 200.9 220.1 220.2 7210 7211 CLP-SOW-ICP CLP-SOW-Mod-220.1 CLP-SOW-Mod-220.2 200.10-(BRINES) 1620-ICP 3111B 3113B 3120B
		SOIL:	1000	**6010 6020** 200.7 200.8 200.9 220.1 220.2 7210 7211 CLP-SOW-ICP CLP-SOW-Mod-220.1 CLP-SOW-Mod-220.2
Copper [10]		WATER:	5	**6010 6020** 200.7 200.8 200.9 220.1 220.2 7210 7211 CLP-SOW-ICP CLP-SOW-Mod-220.1 CLP-SOW-Mod-220.2 200.10-(BRINES) 1620-ICP 3111B 3113B 3120B

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PARAMETERS	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Inorganics, Metals [6,7] (continued)				
Iron	7439-89-6	WATER:	100	**6010 6020** 200.7 236.1 236.2 7380 7381 CLP-SOW-Mod-236.1 CLP-SOW-Mod-236.2 CLP-SOW-ICP 1620-ICP 3111B 3113B 3120B
		SOIL:	2000	**6010 6020** 200.7 236.1 236.2 7380 7381 CLP-SOW-Mod-236.1 CLP-SOW-Mod-236.2 CLP-SOW-ICP
Lead	7439-92-1	WATER:	3	**6010 6020** 200.7 200.8 200.9 239.2 1620-GFAA 7421 CLP-SOW-ICP CLP-SOW-Mod-239.2 200.10-(BRINES) 3113B
		SOIL:	1000	See (Ref. 9) **6010 6020** 200.7 200.8 200.9 239.2 1620-GFAA 7421 CLP-SOW-ICP CLP-SOW-Mod-239.2
Lithium	7439-93-2	WATER:	25	**6010 7430**
		SOIL:	400	**6010 7430**
Magnesium	7439-95-4	WATER:	100	**6010 6020** 200.7 242.1 7450 CLP-SOW-Mod-242.1 3111B
		SOIL:	3000	**6010 6020** 200.7 242.1 7450 CLP-SOW-Mod-242.1
Manganese	7439-96-5	WATER:	20	**6010 6020** 200.7 200.8 200.9 243.1 243.2 1620-ICP 7460 7461 CLP-SOW-ICP CLP-SOW-Mod-243.1 CLP-SOW-Mod-243.2 3111B 3113B 3120B
		SOIL:	2000	**6010 6020** 200.7 200.8 200.9 243.1 243.2 1620-ICP 7460 7461 CLP-SOW-ICP CLP-SOW-Mod-243.1 CLP-SOW-Mod-243.2
Mercury (Total)	7439-97-6	WATER:	0.2	**7470** 200.8 245.1 245.2 245.5 245.7 1620-CVAA CLP-SOW-Mod-245.1 CLP-SOW-Mod-245.2 3112B
		SOIL:	100	**7471** 3052/6020 245.5 1620-CVAA CLP-SOW-Mod-245.5
Molybdenum	7439-98-7	WATER:	10	**6010 6020** 200.7 200.8 200.9 246.2 7481 CLP-SOW-ICP 1620-ICP 3113B 3120B
		SOIL:	100	**6010 6020** 200.7 200.8 200.9 246.2 7481 CLP-SOW-ICP
Nickel	7440-02-0	WATER:	25	**6010 6020** 200.7 200.8 200.9 249.1 249.2 CLP-SOW-ICP CLP-SOW-Mod-249.1 CLP-SOW-Mod-249.2 200.10-(BRINES) 7520 1620-ICP 3111B 3113B 3120B
		SOIL:	1000	**6010 6020** 200.7 200.8 200.9 249.1 249.2 CLP-SOW-ICP CLP-SOW-Mod-249.1 CLP-SOW-Mod-249.2
Phosphorus (White)	7723-14-0	WATER:	0.005	**7580**
		SOIL:	100	**7580**

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PARAMETERS	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Inorganics, Metals [6,7] (continued)				
Selenium	7782-49-2	WATER:	5	**6010 6020** 200.7 200.8 200.9 270.2 270.3 1620-GFAA 7740 7741 CLP-SOW-ICP CLP-SOW-Mod-270.2 3113B 3114B
		SOIL:	200	**6010 6020** 200.7 200.8 200.9 270.2 270.3 1620-GFAA 7740 7741 CLP-SOW-ICP CLP-SOW-Mod-270.2
Silver	7440-22-4	WATER:	0.5	6010 **6020** 200.9 CLP-SOW-Mod-272.1 CLP-SOW-Mod-272.2
		SOIL:	500	**6010 6020** 200.7 200.9 272.1 272.2 7760 7761 CLP-SOW-Mod-272.1 CLP-SOW-Mod-272.2 1620-ICP
Silver [10]		WATER:	0.2	**6020 200.9**
Sodium	7440-23-5	WATER:	1000	**6010 6020** 200.7 200.8 273.1 273.2 7770 CLP-SOW-Mod-273.1 3111B 3120B 3500-Na-D
		SOIL:	10,000	**6010 6020** 200.7 200.8 273.1 273.2 7770 CLP-SOW-Mod-273.1 1620-ICP
Thallium	7440-28-0	WATER:	2	**6010 6020** 200.8 200.9 279.2 1620-GFAA 7841 CLP-SOW-Mod-279.1 CLP-SOW-Mod-279.2
		SOIL:	500	6010 **6020** 200.8 200.9 279.2 1620-GFAA 7841 CLP-SOW-Mod-279.1 CLP-SOW-Mod-279.2
Vanadium	7440-62-2	WATER:	20	**6010 6020** 200.7 200.8 200.9 286.2 7911 CLP-SOW-ICP CLP-SOW-Mod-286.2 200.10-(BRINES) 3120B
		SOIL:	1000	**6010 6020** 200.7 200.8 200.9 286.2 7911 CLP-SOW-ICP CLP-SOW-Mod-286.2 1620-ICP
Zinc	7440-66-6	WATER:	20	**6010 6020** 200.7 200.8 200.9 289.1 289.2 1620-ICP 7950 CLP-SOW-ICP CLP-SOW-Mod-289.1 CLP-SOW-Mod-289.2 3111B 3120B
		SOIL:	1000	**6010 6020** 200.7 200.8 200.9 289.1 289.2 1620-ICP 7950 CLP-SOW-ICP CLP-SOW-Mod-289.1 CLP-SOW-Mod-289.2
Organics, Semivolatiles, Polynuclear Aromatics [12]				
Acenaphthene	83-32-9	WATER:	5	**8270 8310** CLP-SOW CLP-LOW 1625 525 550 550.1 (610 Using HPLC) 625 6410 6440
		SOIL:	330	**8270 8310** CLP-SOW 1625
Acenaphthylene	208-96-8	WATER:	5	**8270 8310** CLP-SOW CLP-LOW 1625 525 525.2 550 550.1 (610 Using HPLC) 625 6410 6440
		SOIL:	330	**8270 8310** CLP-SOW 1625

TABLE 1. Target Detection Limits and Recommended Methods for Environmental Contamination Cleanup Activities.

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PARAMETERS	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Organics, Semivolatiles, Polynuclear Aromatics [12] (continued)				
Anthracene	120-12-7	WATER:	5	**8270 8310** CLP-SOW CLP-LOW 1625 525 550 550.1 (610 Using HPLC) 625 6410 6440
		SOIL:	330	**8270 8310** CLP-SOW 1625
Benzo(a)anthracene	56-55-3	WATER:	5	**8270 8310** CLP-SOW CLP-LOW 1625 525 550 550.1 (610 Using HPLC) 625 6410 6440
		SOIL:	330	**8270 8310** CLP-SOW 1625
Benzo(b)fluoranthene	205-99-2	WATER:	5	**8270 8310** CLP-SOW CLP-LOW 1625 525 550 550.1 (610 Using HPLC) 625 6410 6440
		SOIL:	330	**8270 8310** CLP-SOW 1625
Benzo(k)fluoranthene	207-08-9	WATER:	5	**8270 8310** CLP-SOW CLP-LOW 1625 525 550 550.1 (610 Using HPLC) 625 6410 6440
		SOIL:	330	**8270 8310** CLP-SOW 1625
Benzo(ghi)perylene	191-24-2	WATER:	5	**8270 8310** CLP-SOW CLP-LOW 1625 525 550 550.1 (610 Using HPLC) 625 6410 6440
		SOIL:	330	**8270 8310** CLP-SOW 1625
Benzo(a)pyrene	50-32-8	WATER:	5	**8270 8310** CLP-SOW CLP-LOW 1625 525 550 550.1 (610 Using HPLC) 625 6410 6440
		SOIL:	330	**8270 8310** CLP-SOW 1625
2-Chloronaphthalene	91-58-7	WATER:	5	**8270** CLP-SOW CLP-LOW 1625 625 6410
		SOIL:	330	**8270** CLP-SOW 1625
Chrysene	218-01-9	WATER:	5	**8270 8310** CLP-SOW CLP-LOW 1625 525 550 550.1 (610 Using HPLC) 625 6410 6440
		SOIL:	330	**8270 8310** CLP-SOW 1625
Dibenzo(ah)anthracene	53-70-3	WATER:	5	**8270 8310** CLP-SOW CLP-LOW 1625 525 550 550.1 (610 Using HPLC) 625 6410 6440
		SOIL:	330	**8270 8310** CLP-SOW 1625
Fluoranthene	206-44-0	WATER:	5	**8270 8310** CLP-SOW CLP-LOW 1625 525 550 550.1 (610 Using HPLC) 625 6410 6440
		SOIL:	330	**8270 8310** CLP-SOW 1625
Fluorene	86-73-7	WATER:	5	**8270 8310** CLP-SOW CLP-LOW 1625 525 550 550.1 (610 Using HPLC) 625 6410 6440
		SOIL:	330	**8270 8310** CLP-SOW 1625

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PARAMETERS	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Organics, Semivolatiles, Polynuclear Aromatics [12] (continued)				
Indeno(1,2,3-cd)pyrene	193-39-5	WATER:	5	**8270 8310** CLP-SOW CLP-LOW 1625 525 550 550.1 (610 Using HPLC) 625 6410 6440
		SOIL:	330	**8270 8310** CLP-SOW 1625
2-Methylnaphthalene [19]	91-57-6	WATER:	5	**8270** CLP-SOW 1625
		SOIL:	330	**8270** CLP-SOW 1625
Naphthalene [19]	91-20-3	WATER:	5	**8270 8310** 8021 8260 CLP-SOW CLP-LOW 1625 525 550 550.1 (610 Using HPLC) 625 6410 6440 6210C 6210D 6220C 8021 8260 503.1 524.2
		SOIL:	330	**8270 8310** 8021 8260 CLP-SOW 1625
Phenanthrene	85-01-8	WATER:	5	**8270 8310** CLP-SOW CLP-LOW 1625 525 550 550.1 (610 Using HPLC) 625 6410 6440
		SOIL:	330	**8270 8310** CLP-SOW 1625
Pyrene	129-00-0	WATER:	5	**8270 8310** CLP-SOW CLP-LOW 1625 525 550 550.1 (610 Using HPLC) 625 6410 6440
		SOIL:	330	**8270 8310** CLP-SOW 1625
Organics, Semivolatiles, Acid Extractables, Phenols [13]				
2-Chlorophenol	95-57-8	WATER:	5	**8270** 8041 1625 8040 CLP-SOW CLP-LOW 604 625 6410 6420
		SOIL:	330	**8270** 8041 1625 8040 CLP-SOW
3-Chlorophenol	108-43-0	WATER:	5	**8270 8041** 1625 8040 CLP-SOW CLP-LOW 604 625 6410 6420
		SOIL:	330	**8270 8041** 1625 8040 CLP-SOW
4-Chloro-3-methylphenol	59-50-7	WATER:	5	**8270 8041** 1625 8040 CLP-SOW CLP-LOW 604 625 6410 6420
		SOIL:	330	**8270 8041** 1625 8040 CLP-SOW
2,4-Dichlorophenol	120-83-2	WATER:	10	**8270 8041** 1625 8040 CLP-SOW CLP-LOW 604 625 6410 6420 552
		SOIL:	330	**8270 8041** 1625 8040 CLP-SOW
2,6-Dichlorophenol	87-65-0	WATER:	5	**8270 8041** 1625 8040
		SOIL:	330	**8270 8041** 1625 8040

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PARAMETERS	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Organics, Semivolatiles, Acid Extractables, Phenols [13] (continued)				
2,3-Dimethylphenol	526-75-0	WATER:	5	**8270 8041**
		SOIL:	330	**8270 8041**
2,4-Dimethylphenol	105-67-9	WATER:	5	**8270 8041** 1625 8040 CLP-SOW CLP-LOW 604 625 6410 6420
		SOIL:	330	**8270 8041** 1625 8040 CLP-SOW
2,6-Dimethylphenol	576-26-1	WATER:	5	**8270 8041**
		SOIL:	330	**8270 8041**
3,4-Dimethylphenol	95-65-8	WATER:	5	**8270 8041**
		SOIL:	330	**8270 8041**
3,5-Dimethylphenol	108-68-9	WATER:	5	**8270 8041**
		SOIL:	330	**8270 8041**
2-Methylphenol	95-48-7	WATER:	5	**8270 8041** 1625 CLP-SOW CLP-LOW
		SOIL:	330	**8270 8041** 1625 CLP-SOW
3-Methylphenol	108-39-4	WATER:	5	**8270 8041**
		SOIL:	330	**8270 8041**
4-Methylphenol	106-44-5	WATER:	5	**8270 8041** CLP-SOW CLP-LOW
		SOIL:	330	**8270 8041** CLP-SOW
2-Methyl-4,6-dinitrophenol	534-52-1	WATER:	20	**8270 8041** 1625 8040 CLP-SOW CLP-LOW 625 6410
		SOIL:	1700	**8270 8041** 1625 8040 CLP-SOW
2,4-Dinitrophenol	51-28-5	WATER:	20	**8270 8041** 1625 8040 CLP-SOW CLP-LOW 604 6420
		SOIL:	1700	**8270 8041** 1625 8040 CLP-SOW
2-Nitrophenol	88-75-5	WATER:	5	**8270** 1625 8040 CLP-SOW CLP-LOW 604 625 6410 6420
		SOIL:	330	**8270** 1625 8040 CLP-SOW
4-Nitrophenol	100-02-7	WATER:	20	**8270 8041** 8150 8151 1625 8040 CLP-SOW CLP-LOW 515.5 604 625 6410 6420
		SOIL:	1700	**8270 8041** 8150 8151 1625 8040 CLP-SOW

TABLE 1. Target Detection Limits and Recommended Methods for Environmental Contamination Cleanup Activities.

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PARAMETERS	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Organics, Semivolatiles, Acid Extractables, Phenols [13] (continued)				
Pentachlorophenol [28]	87-86-5	WATER:	1	**8151 8270 - Ion Trap Technology 8041** 8150 8270B 1625 CLP-LOW 515.1 525
Pentachlorophenol		WATER:	0.2	**8151 8270 - Ion Trap Technology 8041**
		SOIL:	1700	**8270 8151 8041** 8150 1625 CLP-SOW (4010-Screening/Estimate)
Pentachlorophenol [14]		WATER:	20	**8270 8151 8041** 8150 1625 CLP-SOW CLP-LOW (4010-Screening/Estimate) 515.1 525 604 625 6410 6420
		SOIL:	3400	**8270 8151 8041** 8150 1625 CLP-SOW (4010-Screening/Estimate)
Phenol	108-95-2	WATER:	5	**8270 8041** 1625 8040 CLP-SOW CLP-LOW 604 625 6410 6420
		SOIL:	330	**8270 8041** 1625 8040 CLP-SOW
2,4,5-Trichlorophenol	95-95-4	WATER:	5	**8270 8041** 1625 8040 CLP-SOW CLP-LOW
		SOIL:	330	**8270 8041** 1625 CLP-SOW
2,4,6-Trichlorophenol	88-06-2	WATER:	5	**8270 8041** 1625 8040 CLP-SOW CLP-LOW 552 604 625
		SOIL:	330	**8270 8041** 1625 8040 CLP-SOW
Organics, Semivolatiles, Phthalates [15]				
Bis(2-ethylhexyl)adipate	103-23-1	WATER:	5	**8270** 525
		SOIL:	330	**8270**
Bis(2-ethylhexyl)phthalate	117-81-7	WATER:	5	**8270** 8061 CLP-SOW CLP-LOW 1625 8060 506 525 606 625 6410
		SOIL:	330	**8270** 8061 CLP-SOW 1625 8060
Butyl benzyl phthalate	85-68-7	WATER:	5	**8270** 8061 CLP-SOW CLP-LOW 1625 8060 506 525 606 625 6410
		SOIL:	330	**8270** 8061 CLP-SOW 1625 8060
Dicyclohexyl phthalate	84-61-7	WATER:	5	**8270** 8061
		SOIL:	330	**8270** 8061
Diethyl phthalate	84-66-2	WATER:	5	**8270** 8061 CLP-SOW CLP-LOW 1625 8060 506 525 606 625 6410
		SOIL:	330	**8270** 8061 CLP-SOW 1625 8060
Dimethyl phthalate	131-11-3	WATER:	5	**8270** 8061 CLP-SOW CLP-LOW 1625 8060 506 525 606 625 6410
		SOIL:	330	**8270** 8061 CLP-SOW 1625 8060

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PARAMETERS	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Organics, Semivolatiles, Phthalates [15] (continued)				
Di-n-butyl phthalate	84-74-2	WATER:	5	**8270** 8061 CLP-SOW 1625 8060 506 525 606 625 6410
		SOIL:	330	**8270** 8061 CLP-SOW 1625 8060
Di-n-octyl phthalate	117-84-0	WATER:	5	**8270** 8061 CLP-SOW CLP-LOW 1625 8060 506 606 625 6410
		SOIL:	330	**8270** 8061 CLP-SOW 1625 8060
Organics, Semivolatiles, Anilines and Derivatives [16]				
Aniline	62-53-3	WATER:	20	**8270** 8131 1625 650
		SOIL:	1700	**8270** 8131 1625
4-Chloroaniline	106-47-8	WATER:	20	**8270** 8131 CLP-SOW CLP-LOW 1625 650
		SOIL:	1300	**8270** 8131 CLP-SOW 1625
2-Nitroaniline	88-74-4	WATER:	20	**8270** 8131 CLP-SOW 1625 650
		SOIL:	1700	**8270** 8131 CLP-SOW 1625
3-Nitroaniline	99-0-9	WATER:	20	**8270** 8131 CLP-SOW CLP-LOW 1625 650
		SOIL:	1700	**8270** 8131 CLP-SOW CLP-LOW 1625
4-Nitroaniline	100-01-6	WATER:	20	**8270** 8131 CLP-SOW CLP-LOW 1625 650
		SOIL:	1700	**8270** 8131 CLP-SOW CLP-LOW 1625
4,4'-Methylene-bis-2-chloroaniline	101-14-4	WATER:	1	**(Ref. 6)**
(MOCA)		SOIL:	50	**(Ref. 6)**
Organics, Semivolatiles, Nitrosoamines [17]				
N-Nitrosodi-di-n-propylamine	621-64-7	WATER:	5	**8270** 8070 CLP-SOW CLP-LOW 1625 8070
		SOIL:	330	**8270** 8070 CLP-SOW 1625 8070
N-Nitrosodimethylamine	62-75-9	WATER:	5	**8270** 8070 1625 607
		SOIL:	330	**8270** 8070 1625
N-Nitrosodiphenylamine	86-30-6	WATER:	5	**8270** 8070 CLP-SOW CLP-LOW 8070 625 6410
		SOIL:	330	**8270** 8070 CLP-SOW 8070

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PARAMETERS	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Organics, Semivolatiles, Benzidines [18]				
Benzidine	92-87-5	WATER:	0.3	**605**
		SOIL:	1000	**8270** 1625
Benzidine [14]		WATER:	50	**8270** 8325 1625 605 625 6410
3,3'-Dichlorobenzidine	91-94-1	WATER:	0.3	**605**
		SOIL:	2000	**8270** CLP-SOW 1625
3,3'-Dichlorobenzidine [14]		WATER:	20	**8270** 8325 CLP-SOW CLP-LOW 1625 605 625 6410
Organics, Semivolatiles				
Benzal Chloride	98-87-3	WATER:	10	**8270** 8121 8120
		SOIL:	330	**8270** 8121 8120
Benzoic Acid	65-85-0	WATER:	50	**8270** 1625
		SOIL:	3300	**8270** 1625
Benzotrichloride	98-07-7	WATER:	0.1	**8121** 8120
		SOIL:	20	**8121** 8120
Benzyl Alcohol	100-51-6	WATER:	50	**8270** 1625
		SOIL:	1300	**8270** 1625
Bis(2-chloroethoxy)ethane	112-26-5	WATER:	5	**8270** CLP-SOW CLP-LOW
		SOIL:	330	**8270** CLP-SOW
Bis(2-chloroethoxy)methane	111-91-1	WATER:	5	**8270** 1625 8110 6410 611 625
		SOIL:	330	**8270** 1625 8110
Bis(2-chloroethyl)ether	111-44-4	WATER:	5	**8270** 8430 CLP-SOW CLP-LOW 1625 8110 6410 611 625
		SOIL:	330	**8270** CLP-SOW 1625 8110
Bis(2-chloroisopropyl) ether	108-60-1	WATER:	5	**8270** CLP-SOW CLP-LOW 1625 8110 611 625 6410
		SOIL:	330	**8270** CLP-SOW 1625 8110
4-Bromophenyl phenylether	101-55-3	WATER:	5	**8270** CLP-SOW CLP-LOW 1625 8110 6410 611 625
		SOIL:	330	**8270** CLP-SOW 1625 8110

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PARAMETER	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Organics, Semivolatiles (continued)				
Carbazole	86-74-8	WATER:	10	**8270** 1625
		SOIL:	330	**8270** 1625
4-Chlorophenyl phenylether	7005-72-3	WATER:	5	**8270** CLP-SOW CLP-LOW 1625 8110 611 625 6410
		SOIL:	330	**8270** CLP-SOW 1625 8110
Decabromodiphenyl Ether	1163-19-5	WATER:	10	**8270**
		SOIL:	100	**8270**
Dibenzofuran	132-64-9	WATER:	5	**8270** CLP-SOW CLP-LOW 1625 6220C
		SOIL:	330	**8270** CLP-SOW 1625
1,3-Dinitrobenzene	99-65-0	WATER:	5	**8270** 8330 8090
		SOIL:	330	**8270** 8330 8090
2,4-Dinitrotoluene	121-14-2	WATER:	5	**8270** 8330 CLP-SOW CLP-LOW 1625 8090 609 625 6410
		SOIL:	330	**8270** 8330 CLP-SOW 1625 8090
2,6-Dinitrotoluene	606-20-2	WATER:	5	**8270** 8330 CLP-SOW CLP-LOW 1625 8090 609 625 6410
		SOIL:	330	**8270** 8330 CLP-SOW 1625 8090
1,2-Diphenylhydrazine	122-66-7	WATER:	5	**8270** 1625
		SOIL:	330	**8270** 1625
Hexabromobenzene	87-82-1	WATER:	10	**8270** 8081 8080 608 612
		SOIL:	330	**8270** 8081 8080
Hexachlorobenzene (C-66)	118-74-1	WATER:	0.1	**8121 8270 – Ion Trap Technology** 8120 505 508 525
		SOIL:	330	**8270** 8120 8121 CLP-SOW 1625
Hexachlorobenzene (C-66) [14]		WATER:	5	**8270** 8120 8121 CLP-SOW CLP-LOW 1625 505 508 525 625 6410
Hexachlorobutadiene (C-46)	87-68-3	WATER:	5	**8270** 8021 8120 8121 8260 CLP-SOW CLP-LOW 1625 502.2 503.1 524.2 612 625 6210C 6210D 6220C 6410
		SOIL:	330	**8270** 8021 8120 8121 8260 CLP-SOW 1625
Hexachlorocyclopentadiene (C-56)	77-47-4	WATER:	5	**8270** 8120 8121 CLP-SOW CLP-LOW 1625 525 612
		SOIL:	330	**8270** 8120 8121 CLP-SOW 1625
Hexachloroethane	67-72-1	WATER:	5	**8270** 8120 8121 CLP-SOW CLP-LOW 1625 612 625 6410
		SOIL:	330	**8270** 8120 8121 CLP-SOW 1625

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PARAMETER	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Organics, Semivolatiles (continued)				
Isophorone	78-59-1	WATER:	5	**8270** CLP-SOW CLP-LOW 1625 8090 625 6410
		SOIL:	330	**8270** CLP-SOW 1625 8090
Nitrobenzene	98-95-3	WATER:	5	**8270** 8330 CLP-SOW CLP-LOW 1625 8090 625 6410
		SOIL:	330	**8270** 8330 CLP-SOW 1625 8090
Octachlorocyclopentene (C-58)	706-78-5	WATER:	5	**8270** 8120 8121 612
		SOIL:	330	**8270** 8120 8121 612
Pentachlorobenzene	608-93-5	WATER:	5	**8270** 8120 8121 1625
		SOIL:	330	**8270** 8120 8121 1625
Pentachloronitrobenzene	82-68-8	WATER:	2	**8270** 1618 1656 608.1
		SOIL:	50	**8270** 1618 1656
Propionic Acid	79-09-4	WATER:	100	**8270**
		SOIL:	6700	**8270**
Pyridine	110-86-1	WATER:	20	**8270** 8015
		SOIL:	330	**8270** 8015 1625
1,2,3,4-Tetrachlorobenzene	634-66-2	WATER:	5	**8270** 8120 8121
		SOIL:	330	**8270** 8120 8121
1,2,3,5-Tetrachlorobenzene	634-90-2	WATER:	5	**8270** 8120 8121
		SOIL:	330	**8270** 8120 8121
1,2,4,5-Tetrachlorobenzene	95-94-3	WATER:	5	**8270** 8120 8121
		SOIL:	330	**8270** 8120 8121
p-Toluidine	106-49-0	WATER:	10	**8270**
		SOIL:	660	**8270**

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Organics, Volatiles, BTEX and MTBE				
Benzene [19]	71-43-2	WATER:	1	**8260** CLP-SOW CLP-LOW 8020 8021 8240 503.1 524.1 524.2 602 624 6210B 6210C 6210D 6220B 6220C 6220C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Ethylbenzene [19]	100-41-4	WATER:	1	**8260** 8020 8021 CLP-SOW CLP-LOW 8240 502.2 503.1 524.2 602 6210C 6210D 6220B 6220C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Methyl(tert)butylether (MTBE)	1634-04-4	WATER:	50	**8260** 8021 8240
		SOIL:	100	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	250	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Toluene [19]	108-88-3	WATER:	1	**8260** 8020 8021 CLP-SOW CLP-LOW 8240 502.2 503.1 524.1 524.2 602 6210C 6210D 6220B 6220C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Xylenes, Total [19,20]	1330-20-7	WATER:	3	**8260** 8020 8021 CLP-SOW CLP-LOW 8240 524.1 524.2
		SOIL:	30	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	150	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Organics, Volatiles				
Acetone [11]	67-64-1	WATER:	100	**8260** 5031/8260 CLP-SOW CLP-LOW 1624 8240 8015
		SOIL:	100	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	5000	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Acetonitrile [11]	75-05-8	WATER:	50	**8260** 5031/8260 8240 8015
		SOIL:	100	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	2500	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Acrolein	107-02-8	WATER:	5	**8260** 8316 1624 8230 8240 603
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	250	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation

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Organics, Volatiles (continued)				
Acrylamide	79-06-1	WATER:	0.5	**8032** 8316
		SOIL:	5	**8032** 8316
Acrylonitrile	107-13-1	WATER:	1	**8031 5035/8260** 8316 1624 8230 8240 603
		SOIL:	10	8031 **5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	2500	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Benzyl Chloride	100-44-7	WATER:	0.5	**8260** 8120 8121 8010 8240
		SOIL:	200	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	200	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Bromobenzene	108-86-1	WATER:	1	**8260** 8021 8010 8240 502.2 503.1 524.1 524.2 6210C 6210D 6220C 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Bromochloromethane	74-97-5	WATER:	1	**8260** 8021 CLP-LOW 8240 502.2 6210C 6210D 6230C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Bromodichloromethane	75-27-4	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 8010 8240 501.1 501.3 502.1 502.2 524.1 524.2 551 601 6210C 6210D 6230B 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Bromoform	75-25-2	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 8010 8240 501.1 501.3 502.1 502.2 524.1 524.2 551 601 6210C 6210D 6230B 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Bromomethane	74-83-9	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 1624 8010 8240 502.2 524.2 601 6210C 6210D 6230B 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	250	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation

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Organics, Volatiles (continued)				
2-Butanone (MEK)	78-93-3	WATER:	50	**8260** 5031/8260 8021 CLP-SOW CLP-LOW 1624 8240 8015
		SOIL:	100	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	2500	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
n-Butyl Acetate	123-86-4	WATER:	10	**8260** 8240 6210C 6210D 6220C
		SOIL:	20	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
n-Butylbenzene [19]	104-51-8	WATER:	1	**8260** 8021 8240 502.2 503.1 524.2
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
s-Butylbenzene [19]	135-98-8	WATER:	1	**8260** 8021 8240 502.2 503.1 524.2 6210C 6210D 6220C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
t-Butylbenzene [19]	98-06-6	WATER:	1	**8260** 8021 8240 502.2 503.1 524.2 6210C 6210D 6220C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Carbon Disulfide [11]	75-15-0	WATER:	5	**8260** CLP-SOW CLP-LOW 8240
		SOIL:	100	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	250	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Carbon Tetrachloride	56-23-5	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 8010 8240 502.1 502.2 524.1 524.2 551 601 6210C 6210D 6230B 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Chlorobenzene	108-90-7	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 8010 8240 502.1 502.2 503.1 524.1 524.2 601 602 6210C 6210D 6220C 6230B 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation

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Organics, Volatiles (continued)				
Chloroethane	75-00-3	WATER:	1	**8260** 8021 CLP-LOW 8010 8240 502.1 502.2 524.2 601 6210C 6210D 6230B 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	250	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
2-Chloroethylvinyl ether	110-75-8	WATER:	10	**8260** 1624 8010 8240 6230B 6230C 6230C
		SOIL:	100	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	5000	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Chloroform	67-66-3	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 8010 8240 501.1 501.3 502.2 524.1 524.2 551 601 624 6210B 6210C 6210D 6230B 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Chloromethane	74-87-3	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 1624 8010 8240 502.1 502.2 524.2 601 6210C 6210D 6230B 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	250	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
2-Chlorotoluene	95-49-8	WATER:	1	**8260** 8021 8240 503.1 524.2 6210C 6210D 6230C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
4-Chlorotoluene	106-43-4	WATER:	1	**8260** 8021 8240 524.2 6210C 6210D 6220C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Cyclohexanone	108-94-1	WATER:	50	**8260** 8240 8315
		SOIL:	100	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	2500	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
p-Cymen	99-87-6	WATER:	1	**8021** 503.1 524.2
		SOIL:	10	8021

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PARAMETER	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Organics, Volatiles (continued)				
1,2-Dibromo-3-chloropropane [28]	96-12-8	WATER:	0.1	**504.1 8260** 8010 8011 8021 CLP-LOW 8240 504 524.2 551 608.1
1,2-Dibromo-3-chloropropane [14]		WATER:	1.0	**8260 504.1** 8010 8011 8021 CLP-LOW 8240 504 524.2 551 608.1
1,2-Dibromo-3-chloropropane		SOIL:	4	**5035/8260 Low Level Procedures** 5035/8015/8021/8010
		SOIL:	250	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Dibromochloromethane	124-48-1	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 1624 8010 8240 501.1 501.3 502.1 502.2 524.1 524.2 551 601 6210C 6210D 6230B 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Dibromomethane	74-95-3	WATER:	5	**8260** 8021 8010 8240 502.2 524.1 524.2 6210C 6210D 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	250	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,2-Dichlorobenzene	95-50-1	WATER:	1	**8260** 8020 8021 8120 8121 CLP-LOW CLP-SOW 8010 8240 503.1 524.1 524.2 601 602 612 625 6210C 6210D 6220B 6220B 6220C 6230B 6230C 6410B
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,3-Dichlorobenzene	541-73-1	WATER:	1	**8260** 8020 8021 8120 8121 CLP-LOW CLP-SOW 8010 8240 503.1 524.2 601 602 612 625 6210C 6210D 6220B 6220C 6230B 6230C 6410B
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,4-Dichlorobenzene	106-46-7	WATER:	1	**8260** 8020 8021 8120 8121 CLP-LOW CLP-SOW 8010 8240 503.1 524.1 524.2 601 602 612 6210C 6210D 6220B 6220C 6230B 6230C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Dichlorodifluoromethane	75-71-8	WATER:	1	**8260** 8021 8010 8240 502.2 524.1 524.2 601 6210C 6210D 6230B 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation

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PARAMETER	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Organics, Volatiles (continued)				
1,1-Dichloroethane	75-34-3	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 1624 8010 8240 502.1 524.1 524.2 601 6210C 6210D 6230B 6230C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,2-Dichloroethane	107-06-2	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 1624 8010 8240 502.1 524.1 524.2 601 6210C 6210D 6230B 6230C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,1-Dichloroethylene	75-35-4	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 1624 8010 8240 502.1 524.1 524.2 601 6210C 6210D 6230B 6230C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,2-Dichloroethylene, cis	156-59-2	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 1624 8010 8240 502.1 524.1 524.2 601 6210C 6210D 6230B 6230C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,2-Dichloroethylene, trans	156-60-5	WATER:	1	**8260** 8021 CLP-LOW CLP-SOW 8010 8240 502.1 524.1 524.2 601 624 6210B 6210C 6210D 6230B 6230C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,2-Dichloropropane	78-87-5	WATER:	1	**8260** 8021 CLP-LOW 8010 8240 524.1 524.2 601 6210C 6210D 6230B 6230C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,3-Dichloropropane	142-28-9	WATER:	1	**8260** 8021 8240 524.1 524.2 6210C 6210D 6230C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
2,2-Dichloropropane	594-20-7	WATER:	1	**8260** 8240 524.2 6210C 6210D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation

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PARAMETER	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Organics, Volatiles (continued)				
1,1-Dichloropropene	563-58-6	WATER:	1	**8260** 8021 8240 524.2 6210C 6210D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,3-Dichloropropene, cis	10061-01-5	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 8010 8240 601 6230B
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,3-Dichloropropene, trans	10061-02-6	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 1624 8010 8240 601 6230B
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Diethoxymethane	462-95-3	WATER:	10	**8260** 8240
		SOIL:	100	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	500	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Diethylbenzene	141-93-5	WATER:	3	**8260** 8240 624
		SOIL:	30	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	150	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Diethyl ether [11]	60-29-7	WATER:	50	**8260** 1624 8015 8240
		SOIL:	100	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	2500	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,4-Dioxane [21]	123-91-1	WATER:	1	1624 (Ref. 7) (Ref. 8)
		WATER:	20	**5031/8260**
		SOIL:	1000	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Epibromohydrin	3132-64-7	WATER:	5	**8260** 8240
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	250	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Epifluorohydrin	503-09-3	WATER:	5	**8260** 8240
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	250	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation

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Organics, Volatiles (continued)				
Epichlorohydrin	106-89-8	WATER:	5	**8260** 8240
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	250	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Ethylene Dibromide	106-93-4	WATER:	1	**8260** 8011 8021 CLP-LOW 8240 502.1 502.2 504 524.1 524.2 551.1 618 6210C 6210D 6230C 6231C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	250	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Ethylene Oxide	75-21-8	WATER:	200	8015
		SOIL:	10000	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
2-Hexanone	591-78-6	WATER:	50	**8260** 8021 CLP-SOW CLP-LOW 8240
		SOIL:	100	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	2500	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Isopropylbenzene	98-82-8	WATER:	1	**8260** 8021 8240 503.1 524.2 6210C 6210D 6220C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Methane	74-82-8	WATER:	2000	SM 6211B 6211C 2720B 2720C
		SOIL:	NA	Use soil gas procedures approved by MDEQ.
4-Methyl-2-pentanone (MIBK) [11]	108-10-1	WATER:	50	**8260** 8021 CLP-SOW CLP-LOW 8240 8015
		SOIL:	100	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	2500	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Methylene Chloride [11]	75-09-2	WATER:	5	**8260** 8021 CLP-SOW CLP-LOW 1624 8010 8240 502.2 524.1 524.2 601 624 6210B 6210C 6210D 6230B 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	250	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Methylcyclopentane	96-37-7	WATER:	50	**8260** 8240
		SOIL:	500	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	2500	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation

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PARAMETER	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Organics, Volatiles (continued)				
Pentane	109-66-0	WATER:	100	**8260** 8240
		SOIL:	1000	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	5000	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
n-Propyl benzene [19]	103-65-1	WATER:	1	**8260** 8021 8240 502.2 503.1 524.2 6210C 6210D 6220C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Styrene	100-42-5	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 8240 502.2 503.1 524.1 524.2 6210C 6210D 6220C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,2,3-Trichlorobenzene	87-61-6	WATER:	5	**8270** 8260 8021 8121 8240 503.1 524.2 6210D 6220C
		SOIL:	330	**8270** 5035/8260
		SOIL:	330	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,2,4-Trichlorobenzene	120-82-1	WATER:	5	**8270** 8260 8021 8120 8121 CLP-SOW CLP-LOW 1625 8240 503.1 524.2 612 625 6210D 6220C 6410
		SOIL:	330	**8270 5035**/8260
		SOIL:	330	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,1,1,2-Tetrachloroethane	630-20-6	WATER:	1	**8260** 8010 8021 8240 524.2 6210C 6210D 6230C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,1,2,2-Tetrachloroethane	79-34-5	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 1624 8010 8240 524.1 524.2 601 6210C 6210D 6230B 6230C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Tetrachloroethylene	127-18-4	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 8010 8240 502.1 502.2 503.1 524.1 524.2 551 601 6210C 6210D 6220C 6230B 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation

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PARAMETER	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Organics, Volatiles (continued)				
Tetrahydrofuran	109-99-9	WATER:	100	**524.2** 8260 8240
		SOIL:	1,000	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	1,000	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,1,1-Trichloroethane	71-55-6	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 1624 8010 8240 502.1 524.1 524.2 551 601 6210C 6210D 6230B 6230C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,1,2-Trichloroethane	79-00-5	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 8010 8240 502.1 524.2 601 6210C 6210D 6230B 6230C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Trichloroethylene	79-01-6	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 8010 8240 502.1 502.2 503.1 524.1 524.2 551 601 6210B 6210C 6210D 6220C 6230B 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	50	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Trichlorofluoromethane	75-69-4	WATER:	1	**8260** 8021 8010 8240 502.2 524.1 524.2 601 6210C 6210D 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,2,3-Trichloropropane	96-18-4	WATER:	1	**8260** 8021 8010 8240 524.2 6210C 6210D 6230C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,2,4-Trimethylbenzene [19]	95-63-6	WATER:	1	**8260** 8021 8240 503.1 524.2 6210D 6220C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
1,3,5-Trimethylbenzene [19]	108-67-8	WATER:	1	**8260** 8021 8240 503.1 524.2 6210D 6220C
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation

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Organics, Volatiles (continued)				
2,2,4-Trimethylpentane [11]	540-84-1	WATER:	50	**8260** 8240
		SOIL:	500	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	2500	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Vinyl Acetate	108-05-4	WATER:	50	**8260** 8240
		SOIL:	100	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	2500	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Vinyl Chloride	75-01-4	WATER:	1	**8260** 8021 CLP-SOW CLP-LOW 1624 8010 8240 502.1 502.2 524.1 524.2 601 6210C 6210D 6230B 6230C 6230D
		SOIL:	10	**5035/8260 Low Level Procedures** 5035/8015/8021
		SOIL:	100	**5035/8260 Methanol Preservation** 5035/8015/8021 Methanol Preservation
Pesticides [24]				
Alachlor	15972-60-8	WATER:	1	**8081** 1656 505 507 645
		SOIL:	20	**8081** 1656
Aldrin	309-00-2	WATER:	0.01	**8081** 8080 CLP-SOW CLP-LOW 608 1618 1656 6630C 617
		SOIL:	20	**8081** 8080 CLP-SOW 1618 1656 680
Atrazine	1912-24-9	WATER:	1	1656 507 525 619
		SOIL:	50	1656
alpha-BHC	319-84-6	WATER:	0.01	**8081** 8080 CLP-SOW CLP-LOW 608 1618 1656 6630C
		SOIL:	20	**8081** 8080 CLP-SOW 1618 1656 680
beta-BHC	319-85-7	WATER:	0.01	**8081** 8080 CLP-SOW CLP-LOW 1618 1656 6630C 508 608
		SOIL:	20	**8081** 8080 CLP-SOW 1618 1656 680
delta-BHC	319-86-8	WATER:	0.01	**8081** 8080 CLP-SOW CLP-LOW 1618 1656 6630C 508 608
		SOIL:	20	**8081** 8080 CLP-SOW 1618 1656 680
gamma-BHC (Lindane)	58-89-9	WATER:	0.01	**8081** 8080 CLP-SOW CLP-LOW 1618 1656 6630C 505 508 608
		SOIL:	20	**8081** 8080 CLP-SOW 1618 1656 680
Chlordane [22]	57-74-9	WATER:	0.05	**8081** 8080 1618 1656 6630C 608
		SOIL:	25	**8081** 8080 1618 1656 680

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Pesticides [24] (continued)				
Chlorpyrifos, ethyl	2921-88-2	WATER:	0.2	**8081** 8141[23] 8140[23] 1618 1657 508 622
		SOIL:	10	**8081** 8141[23] 8140[23] 1618 1657
Cyanazine	21725-46-2	WATER:	10	629
		SOIL:	500	3550A/629
Dacthal	1861-32-1	WATER:	1	1656 608.2
		SOIL:	20	1656
Diallate	2303-16-4	WATER:	0.5	1618 1656
		SOIL:	20	1618 1656
4,4'-DDD	72-54-8	WATER:	0.02	**8081** 8080 CLP-SOW CLP-LOW 1618 1656 6630C 508 608 617
		SOIL:	20	**8081** 8080 CLP-SOW 1618 1656 680
4,4'-DDE	72-55-9	WATER:	0.02	**8081** 8080 CLP-SOW CLP-LOW 1618 1656 6630C 508 608 617
		SOIL:	20	**8081** 8080 CLP-SOW 1618 1656 680
4,4'-DDT	50-29-3	WATER:	0.02	**8081** 8080 CLP-SOW CLP-LOW 1618 1656 6630C 608 617
		SOIL:	20	**8081** 8080 CLP-SOW 1618 1656 680
Diazinon	333-41-5	WATER:	0.5	**8141**[23] 8140[23] 1618 1657 507 614 622
		SOIL:	10	**8141**[23] 8140[23] 1618 1657
Dichloran	99-30-9	WATER:	0.01	608.2
		SOIL:	0.1	3550A/608.2
Dichlorvos	62-73-7	WATER:	0.1	**8141**[23] 8140[23] 1618 1657 622
		SOIL:	50	**8141**[23] 8140[23] 1618 1657
Dieldrin	60-57-1	WATER:	0.02	**8081** 8080 CLP-SOW CLP-LOW 1618 1656 6630C 505 508 608 617
		SOIL:	20	**8081** 8080 CLP-SOW 1618 1656 680
Dinoseb	88-85-7	WATER:	5	**8270** 8151 8041 8150 8321 1658 8040 515.1 615
		SOIL:	200	**8270** 8151 8041 8150 1658 8040 1618
Diuron	330-54-1	WATER:	10	**8321 632 8325** 553
		SOIL:	NA	NA

TABLE 1. Target Detection Limits and Recommended Methods for Environmental Contamination Cleanup Activities.

Method numbers in **bold print** have technical advantages. Underlined methods indicate those that USEPA approval has been withdrawn. Water units are in ug/L. Soil units are in ug/Kg on a dry weight basis. [1] *Italicized names indicate those that currently do not have Part 201 criteria.*

PARAMETER	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Pesticides [24] (continued)				
Endosulfan I	959-98-8	WATER:	0.05	**8081** 8080 CLP-SOW CLP-LOW 1618 1656 6630C 508 608
		SOIL:	20	**8081** 8080 CLP-SOW 1618 1656
Endosulfan II	33213-65-9	WATER:	0.05	**8081** 8080 1618 508
		SOIL:	20	**8081** 8080 1618
Endosulfan Sulfate	1031-07-8	WATER:	0.05	**8081** 8080 CLP-SOW CLP-LOW 1618 1656 6630C 508 608
		SOIL:	20	**8081** 8080 CLP-SOW 1618 1656
Endothall	145-73-3	WATER:	20	548
		SOIL:	NA	NA
Endrin	72-20-8	WATER:	0.02	**8081** 8080 CLP-SOW CLP-LOW 1618 1656 6630C 508 608
		SOIL:	20	**8081** 8080 CLP-SOW 1618 1656 680
Endrin Aldehyde	7421-93-4	WATER:	0.02	**8081** 8080 CLP-SOW CLP-LOW 1618 1656 6630C 508 608
		SOIL:	20	**8081** 8080 CLP-SOW 1618 1656 680
Endrin Ketone	53494-70-5	WATER:	0.02	**8081** 8080 CLP-SOW CLP-LOW 1618 1656
		SOIL:	20	**8081** 8080 CLP-SOW 1618 1656
Heptachlor	76-44-8	WATER:	0.01	**8081** 8080 CLP-SOW CLP-LOW 1618 1656 6630C 505 508 608 617
		SOIL:	20	**8081** 8080 CLP-SOW 1618 1656 680
Heptachlor epoxide	1024-57-3	WATER:	0.01	**8081** 8080 CLP-SOW CLP-LOW 1618 1656 505 508 617
		SOIL:	20	**8081** 8080 CLP-SOW 1618 1656 680
Methoxychlor	72-43-5	WATER:	0.5	**8081** 8080 CLP-SOW CLP-LOW 1618 1656 680 505 508 525 608 608.2 617 6630C
		SOIL:	50	**8081** 8080 CLP-SOW 1618 1656 680
Metolachlor	51218-45-2	WATER:	10	507
		SOIL:	50	3550/507
Parathion, methyl	2980-00-0	WATER:	0.2	8141
		SOIL:	12	8141
Pendimethalin	40487-42-1	WATER:	0.1	1656
		SOIL:	20	1656

TABLE 1. Target Detection Limits and Recommended Methods for Environmental Contamination Cleanup Activities.

Method numbers in **bold print** have technical advantages. Underlined methods indicate those that USEPA approval has been withdrawn.
Water units are in ug/L. Soil units are in ug/Kg on a dry weight basis. [1] *Italicized names indicate those that currently do not have Part 201 criteria.*

PARAMETER	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Pesticides [24] (continued)				
Prometon	1610-18-0	WATER:	0.5	507 619
		SOIL:	20	3550/507 3550/619
Propachlor	1918-16-7	WATER:	1	8321 **508** 608.1
		SOIL:	20	8321 **3550/508** 3550/608.1
Propazine	139-40-2	WATER:	0.5	507 619
		SOIL:	20	3550/507 3550/619
Simazine	122-34-9	WATER:	1	1656 507 525 619
		SOIL:	40	1656
Tebuthiuron	34014-18-1	WATER:	1	**8321**
		SOIL:	50	**8321**
Toxaphene	8001-35-2	WATER:	1	**8081** 8080 CLP-SOW CLP-LOW 1618 1656 6630C 505 608
		SOIL:	170	**8081** 8080 CLP-SOW 1618 1656
Triallate	2303-17-5	WATER:	1	**8270** 1618 1656
		SOIL:	20	**8270** 1618 1656
tris(2,3-Dibromopropyl)phosphate	126-72-7	WATER:	10	**8081** 8321
		SOIL:	330	**8081** 8321
3-Trifluoromethyl-4-nitrophenol	88-30-2	WATER:	0.2	**8081** 8080 608
		SOIL:	20	**8081** 8080
Pesticides, Herbicides [25]				
Aldicarb	116-06-3	WATER:	2	**8318 8321** 531.1
		SOIL:	50	**8318 8321** 531.1
Aldicarb Sulfone	1646-88-4	WATER:	2	**8318 8321** 531.1
		SOIL:	50	**8318 8321** 531.1
Aldicarb Sulfoxide	1646-87-3	WATER:	2	**8318 8321** 531.1
		SOIL:	50	**8318 8321** 531.1

TABLE 1. Target Detection Limits and Recommended Methods for Environmental Contamination Cleanup Activities.

Method numbers in **bold print** have technical advantages. Underlined methods indicate those that USEPA approval has been withdrawn.
Water units are in ug/L. Soil units are in ug/Kg on a dry weight basis. [1] *Italicized names indicate those that currently do not have Part 201 criteria.*

PARAMETER	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Pesticides, Herbicides [25]				
Carbaryl	63-25-2	WATER:	20	**8318 8321 8325** 8270 531.1 632
		SOIL	200	**8151 8321** 8150 1658 1618
Carbofuran	1563-66-2	WATER	20	**8318 8321** 531.1 632
		SOIL:	200	**8318 8321** 531.1
2,4-D	94-75-7	WATER:	10	**8151 8321** 8150 1658 515.1 615
		SOIL:	200	**8151 8321** 8150 1658
Dalapon	75-99-0	WATER:	10	**8151 8321** 8150 1658 515.1 615
		SOIL:	100	**8151 8321** 8150 1658
Dicamba	1918-00-9	WATER:	1	**8151 8321** 8150 1658 515.1 615
		SOIL:	50	**8151 8321** 8150 1658 1618
Diquat	85-00-7	WATER:	1	549
		SOIL:	NA	NA
Glyphosate	1071-83-6	WATER:	100	547
		SOIL:	NA	NA
MCPA	94-74-6	WATER:	0.5	**8151** 8150 8321 1658
		SOIL:	100	**8151** 8150 8321 1658 1618
MCPP	93-65-2	WATER:	1	**8151 8321** 8150 1658
		SOIL:	100	**8151 8321** 8150 1658 1618
Picloram	1918-02-1	WATER:	10	**8151** 8150 515.1 644
		SOIL:	100	**8151** 8150
Silvex (2,4,5-TP)	93-72-1	WATER:	1	**8151** 8150 1658 515.1 615 6640B
		SOIL:	50	**8151** 8150 1658 1618
2,4,5-T	93-76-5	WATER:	1	**8151 8321** 8150 8321 1658 6640B 515.1 615
		SOIL:	50	**8151 8321** 8150 8321 1658 1618
Trifluralin	1582-09-8	WATER:	1	**8270** 8081 1618 1656 508 617 627
		SOIL:	50	**8270** 8081 1618 1656

TABLE 1. Target Detection Limits and Recommended Methods for Environmental Contamination Cleanup Activities.

Method numbers in **bold print** have technical advantages. Underlined methods indicate those that USEPA approval has been withdrawn.
Water units are in ug/L. Soil units are in ug/Kg on a dry weight basis. [1] *Italicized names indicate those that currently do not have Part 201 criteria.*

PARAMETER	CAS NO	MATRIX	TDL	RECOMMENDED METHOD
Polychlorinated biphenyls, PCBS [26]				
Aroclor 1016	12674-11-2	WATER:	0.2	**8082** 8081 8080A CLP-SOW CLP-LOW 1618 1656 6630C 505 608
		SOIL:	330	**8082** 8081 8080A CLP-SOW 1618 1656
Aroclor 1221	11104-28-2	WATER:	0.2	**8082** 8081 8080A CLP-SOW CLP-LOW 1618 1656 6630C 505 608
		SOIL:	330	**8082** 8081 8080A CLP-SOW 1618 1656
Aroclor 1232	11141-16-5	WATER:	0.4	**8082** 8081 8080A CLP-SOW CLP-LOW 1618 1656 6630C 505 608
		SOIL:	330	**8082** 8081 8080A CLP-SOW 1618 1656
Aroclor 1242	53469-21-9	WATER:	0.2	**8082** 8081 8080A CLP-SOW CLP-LOW 1618 1656 6630C 505 608
		SOIL:	330	**8082** 8081 8080A CLP-SOW 1618 1656
Aroclor 1248	12672-29-6	WATER:	0.2	**8082** 8081 8080A CLP-SOW CLP-LOW 1618 1656 6630C 505 608
		SOIL:	330	**8082** 8081 8080A CLP-SOW 1618 1656
Aroclor 1254	11097-69-1	WATER:	0.2	**8082** 8081 8080A CLP-SOW CLP-LOW 1618 1656 6630C 505 608
		SOIL:	330	**8082** 8081 8080A CLP-SOW 1618 1656
Aroclor 1260	11096-82-5	WATER:	0.2	**8082** 8081 8080A CLP-SOW CLP-LOW 1618 1656 6630C 505 608
		SOIL:	330	**8082** 8081 8080A CLP-SOW 1618 1656
Polybrominated biphenyls (as hexabromobiphenyl)	37324-23-5	WATER:	0.01	**8081** 8080A CLP-SOW CLP-LOW 1618 1656 6630C 505 608
		SOIL:	50	**8081** 8080A CLP-SOW

Footnotes in Table 1

1. Reporting Results based on Dry Weight - Results for soils must be expressed on a dry weight basis to omit variability caused by moisture levels.
2. Nitrogen – All potential sources of nitrate nitrogen must be added together and compared to nitrate criteria.
3. ASTM D3987-85 provides for reporting the leachable constituents in terms of the weight of the soils (mg/Kg). In order to use this soil leaching procedure for purposes of evaluating contaminant mobility and potential impact on groundwater, leachable contaminant levels must be reported in terms of the volume of the leaching fluid. This requirement mus be conveyed to the laboratory prior to sample analysis.
4. Organic Acids - Method measures total, low molecular weight, volatile, organic acids with one to six carbons. It is subject to interferences from other acids in the sample.
5. Dioxins – Specify the target compound list using the CAS numbers and specific cogeners published in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, Method 8290. Report individual results for congeners using the 89-TEF calculations given in Method 8290.
6. Metals Sample Preparation - To obtain a representative sample, the laboratory sample preparation procedure given in Ref. 1 should be used.
7. Use local background or default background levels (Operational Memo #15) if less restrictive than these criteria.
8. Boron - Non-borosilicate glass may be required to reach these TDLs.
9. Chromium - Total chromium measurements may be used to evaulate hexavalent criteria.
10. Use this TDL and method recommendations when GSI criteria are applicable and the most restrictive criteria.
11. Laboratory Solvent - Because this is a common laboratory solvent, positive instrument and field blanks may occur. Laboratory reported detection limits may vary depending upon the level of contamination on the day of analysis. TDLs for these chemicals have been elevated above the capabilities of what a "clean" laboratory can accomplish to reduce the chances of reporting false positives. If any of these chemicals are important site contaminants or are driving the clean-up, collect extra vial(s) to allow an additional analysis in the event unexpected instrument blanks occur, and have results provided by a laboratory which has demonstrated the absence of the chemical as a laboratory contaminant.
12. PNAs – Specify these compounds for remedial investigations and site characterization when PNAs are suspected or known contaminants. Method 8310 may provide usable data if 8270 data indicates matrix interference. The compounds 2-Chloronaphthalene and 2-Methylnaphthalene are not part of the target compound list for Method 8310. Method 8270 must be specified to include these compounds for analysis.
13. Phenols – When phenols are suspected or known contaminants, specifying the target compound list in Method 8041 will provide results for most of the compounds in this class found in the environment. This should be sufficient for most remedial investigations. If Method 8041 is used, specify dual column/detector for confirmation, or confirmation using 8270 for a select number of samples.
14. Investigative - This TDL is appropriate for remedial investigation purposes, but is not applicable to determining compliance with Part 201 as the TDL may not meet the most restrictive Part 201 criteria.
15. Phthalates – When phthalates are suspected or known contaminants, specifying the target compound list in Method 8061 will provide results for most of the compounds in this class found in the environment. This should be sufficient for most remedial investigations. Specify Method 8270 or 8061 if phthalates only are to be analyzed. If Method 8061 is specified, require dual column confirmation, or confirmation using 8270 for a select number of samples.

Footnotes in Table 1 (continued)

16. Anilines – When anilines are suspected or known contaminants, specifying the target compound list in Method 8131 will provide results for most of the compounds in this class found in the environment. This should be sufficient for most remedial investigations. Method 8270 or 8131 may be used. If 8131 is used, require dual column confirmation, or confirmation using 8270 for a select number of samples.
17. Nitrosoamines – When nitrosoamines are suspected or known contaminants, specifying the target compound list in Method 8070 will provide results for most of the compounds in this class found in the environment. This should be sufficient for most remedial investigations. If Method 8070 is specified, require confirmation of a select number of samples using 8270.
18. Benzidines - Specify Method 605 for waters to verify compliance with Part 201 criteria. This method is not widely available. Contact the Support Services Unit of ERD if unable to find a laboratory. Method 8325 and 8270 cannot meet the most restrictive Part 201 criteria; however, these methods may be useful for remedial investigation and site characterization.
19. Light Petroleum Parameters - Specify these compounds for cleanups involving gasoline spills and other light petroleum products.
20. Xylenes - Total xylenes are calculated by combining results for all three isomers.
21. 1,4-Dioxane - Specify 5031/8260 to meet current Part 201 criteria. Other criteria may require more sensitive procedures.
22. Chlordane - Follow guidance provided in Method 8081, Section 7.6.3, for calculation and reporting of chlordane.
23. Method 3550 - Ultrasonic extraction, is not recommended for sample preparation when 8140 and 8141 are used. If used, information must be provided to MDEQ that demonstrates acceptable accuracy and precision for the applicable compounds.
24. Pesticides - When pesticides are suspected or known contaminants, specifying the target compound list in Method 8081 will provide results for most of the compounds in this class found in the environment. This should be sufficient for most remedial investigations. Specify Method 8081 and the target compound list when pesticides only are to be determined. Method 8081 can be specified for both pesticides and PCBs for investigative purposes.
25. Herbicides – The target compound lists provided in Methods 8051 and 8318 are good references for analysis of these types of compounds, using these respective methods.
26. PCBs – When PCBs are suspected contaminants, the target compound list in Method 8082 for Aroclors should be specified. This should be sufficient for most remedial investigations. Procedures for identifying PCBs must be well documented. Contact the DWRP Environmental Laboratory for guidelines on PCB analyses. Report individual PCB levels and add together to report Total PCB.
27. When aldehydes are suspected or known contaminants, specifying the target compound list in Method 8315 will provide results for most of the compounds in this class found in the environment. This should be sufficient for most remedial investigations.
28. Drinking water criteria.

References in Table 1

(Ref. 1) The following laboratory sampling protocol should be used for preparation of soil samples for ammonia, nitrates, nitrites and sulfate in soils. The protocol should be used to prepare soil samples for metal analysis in those cases where the form of contamination makes it difficult to obtain a representative sample using conventional means. This includes urban areas where paint particles may exist, roadside samples, and areas contaminated from air borne particles. This procedure is designed to improve precision, and reduce the number of samples necessary for a reliable estimate of the mean. The procedure should also improve agreement with split samples analyzed by the State Environmental Laboratory.

The below protocol follows the procedures provided in a) USEPA Contract Laboratory Program Special Analytical Services (SAS) Preliminary Sampling Method, for metals, ammonia, nitrates, nitrites and sulfate in soils, b) Draft report by USEPA, EPA #747-R-92-006, May 1993, "Pb-Based Paint Laboratory Guidelines: Analysis of Pb in Paint, Dust, and Soil" c) Standard Operating Procedure, Sediment Drying Procedure for Metals, MDEQ Laboratory, SP-3.

PRELIMINARY PREPARATION PROCEDURE FOR THE ANALYSIS OF SOIL SAMPLES

1. Air dry a sufficiently large and representative aliquot of wet soil for all required analyses. Protect samples from ammonia contamination, if nitrate and/or ammonia are also to be tested.
2. Discard stones, rocks and extraneous twigs from samples.
3. Grind and mix all of the air dried sample so that sub-aliquots are representative and extractions are effective.
4. Grind to fine mesh so that the sample will pass through 1.9 mm sieve. Testing a portion of the sample is sufficient.
5. Mix thoroughly prior to analysis to avoid stratification.
6. Perform a percent solids (103 to 105° C overnight or for 16 hrs) determination.

(Ref. 2) USEPA SAS, method for ammonium in soils. See also (Ref. 4) below.
Use Method 350.2 distillation with following changes: Do not use micro-distillation. Add 10g of air dried soil to flask, add 50-100 ml ammonia free water, wait 10 min. or more, stir soil-water mixture and adjust pH to 9.2. Add mixture to distillation flask of EPA method 350.2 and bring to volume of approximately 500 ml with ammonia free water. Add borate buffer reagent (step 6.7 in Method 350.2), as required in section 7.3 of Method 350.2. Do not add so much pH 9.2 soil as to overload buffer.

(Ref. 3) USEPA SAS, sample distillation for fluoride in soils. Use the prelimiary distillation as given in Method 340.1 with the following changes: After the initial distillation, steps 6.1.1 to 6.1.4, cool to 90°C or below, add 5 g of original non-dried soil, and 300 mls water, mix thoroughly, and distill as before. Other volumes of water may be used depending upon the distillation apparatus and original sulfuric acid/water volumes used. Use fresh acid solution for each distillation. Do not use silver nitrate. Use Method 340.2 for determination. Do not use colorimetric methods. Determine percent solids using a separate aliquot.

(Ref. 4) Methods of Soil Analysis, Part 2, Number 9 in the Argonomy Series, 1982. Extraction of soils for nitrate/nitrite. This method can be used also for extracting ammonia, see Procedures for Handling and Chemical Analysis of Sediment and Water Samples, May 1981, Technical Report EPA/CE-81-1, Procedures for Sediment Samples (SID), p.3-154.

(Ref. 5)	USEPA SAS method for sulfate in soils available from MDEQ, ERD, Special Services Section.
(Ref. 6)	Contact MDEQ concerning this parameter.
(Ref. 7)	Purge and Trap Method for p-Dioxane Analysis, Michigan Department of Public Health, Laboratory and Epidemiological Services Bureau WP Code: D#1-PD Revision 1/88
(Ref. 8)	Standard Operating Procedure, 1,4-Dioxane, Ann Arbor Technical Services, Inc., 6540 Jackson Road, Ann Arbor, MI 48103
(Ref. 9)	Matrix spikes may not be reliable in validating method performance when high levels of lead in soils are present. When high amounts of soil lead are expected or known from historical data, laboratories should use a certified reference soil sample to verify acceptable accuracy. Ideally the certified level for lead will be near the regulating limit. This may apply to other metals that drive a cleanup.

Source Documents In Table 1

Guidelines Establishing Test Procedures for the Analysis of Pollutants, 40 CFR Part 136, Appendix A, Revised: July 1990

Method 601 – Purgeable Halocarbons
Method 602 – Purgeable Aromatics
Method 603 – Acrolein and Acrylonitrile
Method 604 – Phenols
Method 605 – Benzidines
Method 606 – Phthalate Esters
Method 607 – Nitrosamines
Method 608 – Organochlorine Pesticides and PCBs
Method 609 – Nitroaromatics and Isophorone
Method 610 – Polynuclear Aromatic Hydrocarbons
Method 611 – Haloethers
Method 612 - Chlorinated Hydrocarbons
Method 624 – Purgeables
Method 625 - Base/Neutrals and Acids

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods
US Environmental Protection Agency - Office of Solid Waste & Emergency Response, Edition: 3
NOTE: Method numbers herein may indicate the original method. The most recent revised method is recommended.

1312	Synthetic Precipitation Leaching Procedure
3060A	Alkaline Digestion for Hexavalent Chromium (Proposed for SW-846 Update III)
3550	Ultrasonic Extracton
4010	Screening For Pentachlorophenol By Immunoassay
5031	Azeotropic Microdistillation
6010	Inductively Coupled Plasma
6020	Inductively Coupled Plasma/Mass Spectrometry
7020	Aluminum (Atomic Absorption, Direct Aspiration)
7041	Antimony (Atomic Absorption, Furnace Technique)
7060	Arsenic (Atomic Absorption, Furnace Technique)
7061	Arsenic (Atomic Absorption, Gaseous Hydride)
7062	Arsenic (Atomic Absorption, Gaseous Hydride)
7080	Barium (Atomic Absorption, Direct Aspiration)
7081	Barium (Atomic Absorption, Furnace Technique)
7091	Beryllium (Atomic Absorption, Furnace Technique)
7131	Cadmium (Atomic Absorption, Furnace Technique)
7190	Chromium (Atomic Absorption, Direct Aspiration)
7191	Chromium (Atomic Absorption, Furnace Technique)
7195	Chromium Hexavalent, Coprecipitation
7196	Chromium, Hexavalent (Colorimetric)
7197	Chromium Hexavalent, Chelation/Extraction
7198	Chromium Hexavalent (Differential Pulse Polarography)
7199	Chromium VI by Ion Chromatography (Proposed for Update III)
7201	Cobalt (Atomic Absorption, Furnace Technique)
7210	Copper (Atomic Absorption, Direct Aspiration)
7211	Copper (Atomic Absorption, Furnace Technique)
7380	Iron (Atomic Absorption, Direct Aspiration)
7381	Iron (Atomic Absorption, Furnace Technique)

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7421	Lead (Atomic Absorption, Furnace Technique)
7450	Magnesium (Atomic Absorption, Direct Aspiration)
7460	Manganese (Atomic Absorption, Direct Aspiration)
7461	Manganese (Atomic Absorption, Furnace Technique)
7470	Mercury in Liquid Waste (Manual Cold-Vapor Technique)
7471	Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)
7481	Molybdenum (Atomic Absorption, Furnace Technique)
7520	Nickel (Atomic Absorption, Direct Aspiration)
7580	White Phosphorus by Solvent Extraction and Gas Chromatography (proposed for addition to SW-846 Update III)
7740	Selenium (Atomic Absorption, Furnace Technique)
7741	Selenium (Atomic Absorption, Gaseous Hydride)
7760	Silver (Atomic Absorption, Direct Aspiration)
7761	Silver (Atomic Absorption, Furnace Technique)
7770	Sodium (Atomic Absorption, Direct Aspiration)
7841	Thallium (Atomic Absorption, Furnace Technique)
7911	Vanadium (Atomic Absorption, Furnace Technique)
7950	Zinc (Atomic Absorption, Direct Aspiration)
8010	Halogenated Volatile Organics
8011	1,2-Dibromoethane and 1,2-Dibromo-3-chloropropane by Microextraction and Gas Chromatography
8015	Nonhalogenated Organics Using GC/FID
8020	Aromatic Volatile Organics by Gas Chromatography
8021	Halogenated and Aromatic Volatiles by Gas Chromatography using Electrolytic Conductivity and Photoionization Detectors in Series: Capillary Column Technique
8030	Acrolein and Acrylonitrile by Gas Chromatography
8031	Acrylonitrile by Gas Chromatography
8032	Acrylamide by Gas Chromatography
8040	Phenols by Gas Chromatography
8041	Phenols by Gas Chromatography
8060	Phthalate Esters
8061	Phthalate Esters by Capillary Gas Chromatography With Electron Capture Detector (GC/ECD)
8070	Nitrosamines by Gas Chromatography
8080	Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography
8081	Organochlorine Pesticides and PCBs as Aroclors by GC Capillary Column Technique - Revision 0, Nov 1990
8090	Nitroaromatics and Cyclic Ketones
8110	Haloethers by Gas Chromatography
8120	Chlorinated Hydrocarbons by Gas Chromatography
8121	Chlorinated Hydrocarbons by Gas Chromatography: Capillary Column Technique
8131	Aniline and Selected Derivatives by Gas Chromatography
8140	Organophosphorus Pesticides
8141	Organophosphorus Pesticides by Gas Chromatography: Capillary Column Technique
8150	Chlorinated Herbicides by Gas Chromatography
8151	Chlorinated Herbicides by GC Using Methylation or Pentafluorobenzylation, Derivation: Cap Col Technique
8240	Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS): Packed Column Technique
8260	Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS): Capillary Column Technique
8270	Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry, (GC/MS): Capillary Column Technique

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (continued)
US Environmental Protection Agency - Office of Solid Waste & Emergency Response, Edition: 3

8275	Thermal Chromatography/Mass Spectrometry (TC/MS) for Screening Semivolatile Organic Compounds
8290	Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans, (PCDFs) by HRGC/HRMS
8310	Polynuclear Aromatic Hydrocarbons [HPLC]
8315	Determination of Carbonyl Compounds by HPLC
8318	N-Methylcarbamates by HPLC
8321	Solvent Extractable Non-volatile Compounds by HPLC/MS or UV Detection
8330	Nitroaromatics and Nitramines by HPLC
9010	Total and Amenable Cyanide
9011	Cyanide Extraction Procedure for Solids and Oils
9012	Total and Amenable Cyanide (Chlorimetric, Automated UV)
9030	Acid-Soluble and Acid-Insoluble Sulfides
9031	Extractables Sulfides
9035	Sulfate (Colorimetric, Automated, Chloraniliate)
9036	Sulfate (Colorimetric, Automated, Methylthymol Blue, AAII)
9038	Sulfate (Turbidimetric)
9056	Determination of Inorganic Anions by Ion Chromatography
9200	Nitrate

Methods for the Determination of Organic Compounds in Drinking Water & Supplement I
USEPA, EMSL, Cincinnati, OH 45268, Edition: Dec 1988 & Jul 1990

501.1	The Analysis of Trihalomethanes in Finished Waters by the Purge and Trap Method
501.3	Measurement of Trihalomethanes in Drinking Water with GC/MS and Selected Ion Monitoring
502.1	Volatile Halogenated Organic Compounds in Water by Purge and Trap Gas Chromatography
502.2	Volatile Organic Compounds in Water by Purge and Trap Capilliary Column Gas Chromatography with Photoionization and Electrolytic Conductivity Detectors in Series
503.1	Volatile Aromatic and Unsaturated Organic Compounds in Water by Purge and Trap Gas Chromatography
504	1,2-Dibromoethane (EDB) and 1,2-Dibromo-3-chloropropane (DBCP) in Water by Microextraction and Gas Chromatography
505	Analysis of Organohalide Pesticides and Commercial Polychlorinated Biphenyl (PCB) Products in Water by Microextraction and Gas Chromatography
506	Determination of Phthalate and Adipate Esters in Drinking Water by Liquid-Liquid Extraction or Liquid-Solid Extraction and Gas Chromatography with Photoionization Detection
507	Determination of Nitrogen and Phosphorous-Containing Pesticides in Water by Gas Chromatography with a Nitrogen-Phosphorous Detector
508	Determination of Chlorinated Pesticides in Water by Gas Chromatography with an Electron Capture Detector
513	Determination of 2,3,7,8-Tetrachlorodibenzo-p-dioxin in Drinking Water by GC with High Resolution Mass Spectrometry
515.1	Determination of Chlorinated Acids in Water by Gas Chromatography with an Electron Capture Detector
524.1	Measurement of Purgeable Organic Compounds in Water by Packed Column Gas Chromatography/Mass Spectrometry
524.2	Measurement of Purgeable Organic Compounds in Water by Capilliary Column Gas Chromatography/Mass Spectrometry
525	Determination of Organic Compounds in Drinking Water by Liquid-Solid Extraction and Capilliary Column Gas Chromatography/Mass Spectrometry

Methods for the Determination of Organic Compounds in Drinking Water & Supplement I

531.1	Measurement of N-Methylcarbanoyloximes and N-Methylcarbamates in Water by Direct Aqueous Inj. HPLC with Post Col. Derivatization
547	Determination of Gylphosphate in Drinking Water by Direct-Aqueous-Injection HPLC, Post-Column Derivatization, and Fluorescence Detection
548	Determination of Endothall in Drinking Water by Aqueous Derivatization, Liquid Solid Extraction, and Gas Chromatography with Electron-Capture Detection
549	Determination of Diquat and Paraquat in Drinking Water by Liquid-Solid Extraction and HPLC with Ultraviolet Detection
550	Determination of Polycylic Aromatic Hydrocarbons in Drinking Water by Liquid-Liquid Extraction and HPLC with Coupled Ultraviolet and Fluorescence Detection
550.1	Determination of Polycylic Aromatic Hydrocarbons in Drinking Water by Liquid-Solid Extraction and HPLC with Coupled Ultraviolet and Fluorescence Detection
551	Determination of Chlorination Disinfection Byproducts and Chlorinated Solvents in Drinking Water by Liquid-Liquid Extraction and GC with Electron Capture Detection
552	Determination of Haloacetic Acids in Drinking Water by Liquid-Liquid Extraction, Derivatization, and GC with Electron Capture Detection
680	The Determination of Pesticides and PCBs in Water and Soil/Sediment by GC/MS

Methods for Chemical Analysis of Water and Wastes
USEPA, EMSL, Cincinnati. OH 45268, Edition: Mar 1983

NOTE: EPA is considering dropping these flame and furnace AA procedures as approved methods. These methods may not be recommended in the next revision of this memorandum.

200.7	ICP-AES Method for Trace Element Analysis of Water and Wastes
202.1	Aluminum (Atomic Absorption, Direct Aspiration)
202.2	Aluminum (Atomic Absorption, Furnace Technique)
204.2	Antimony (Atomic Absorption, Furnace Technique)
206.2	Arsenic (Atomic Absorption, Furnace Technique)
206.3	Arsenic (Atomic Absorption, Gaseous Hydride)
206.4	Arsenic (Spectrophotometric-SDDC)
208.1	Barium (Atomic Absorption, Direct Aspiration)
208.2	Barium (Atomic Absorption, Furnace Technique)
210.1	Beryllium (Atomic Absorption, Direct Aspiration)
210.2	Beryllium (Atomic Absorption, Furnace Technique)
213.2	Cadmium (Atomic Absorption, Furnace Technique)
218.1	Chromium (Atomic Absorption, Direct Aspiration)
218.2	Chromium (Atomic Absorption, Furnace Technique)
218.3	Chromium (Atomic Absorption, Chelation-Extraction)
218.4	Chromium Hexavalent (Atomic Absorption, Chelation-Extraction)
218.5	Chromium, Dissolved Hexavalent (Atomic Absorption, Furnace Technique)
219.1	Cobalt (Atomic Absorption, Direct Aspiration)
219.2	Cobalt (Atomic Absorption, Furnace Technique)
220.1	Copper (Atomic Absorption, Direct Aspiration)
220.2	Copper (Atomic Absorption, Furnace Technique)
236.1	Iron (Atomic Absorption, Direct Aspiration)
236.2	Iron (Atomic Absorption, Furnace Technique)
239.2	Lead (Atomic Absorption, Furnace Technique)
242.1	Magnesium (Atomic Absorption, Direct Aspiration)
243.1	Manganese (Atomic Absorption, Direct Aspiration)
243.2	Manganese (Atomic Absorption, Furnace Technique)
245.1	Mercury (Manual Cold Vapor Technique)
245.2	Mercury (Automated Cold Vapor Technique)

245.5 Mercury in Sediments (Manual cold Vapor Technique)

Methods for Chemical Analysis of Water and Wastes (continued)
USEPA, EMSL, Cincinnati. OH 45268, Edition: Mar 1983

NOTE: EPA is considering dropping these flame and furnace AA procedures as approved methods. These methods may not be recommended in the next revision of this memorandum.

246.2 Molybdenum (Atomic Absorption, Furnace Technique)
249.1 Nickel (Atomic Absorption, Direct Aspiration)
249.2 Nickel (Atomic Absorption, Furnance Technique)
270.3 Selenium (Atomic Absorption, Gaseous Hydride)
272.2 Silver (Atomic Absorption, Furnace Technique)
273.1 Sodium (Atomic Absorption, Direct Aspiration)
273.2 Sodium (Atomic Absorption, Furnace Technique)
279.2 Thallium (Atomic Absorption, Direct Aspiration)
286.2 Vanadium (Atomic Absorption, Furnace Technique)
289.1 Zinc (Atomic Absorption, Direct Aspiration)
289.2 Zinc (Atomic Absorption, Furnace Technique)
300.0 The Determination of Inorganic Anions in Water by Ion Chromatography -
325.1 Chloride (Colorimetric, Automated Ferricyanide, AAI)
325.2 Chloride (Colorimetric, Automated Ferricyanide, AAII)
335.1 Cyanides, Amenable to Chlorination
335.2 Cyanides, Total (Titrimetric, Spectrophotometric)
335.3 Cyanide, Total (Colorimetric, Automated UV)
340.1 Fluoride, Total
340.2 Fluoride (Potentiometric, Ion Selective Electrode)
340.3 Fluoride (Colorimetric, Automated Complexone)
350.1 Nitrogen, Ammonia (Colorimetric, Automated Phenate)
350.2 Nitrogen, Ammonia (Colorimetric; Titrimetric; Potentiometric – Distillation Procedure)
350.3 Nitrogen, Ammonia (Potentiometric, Ion Selective Electrode)
352.1 Nitrogen, Nitrate, Colorimetric, Brucine
353.1 Nitrogen, Nitrate-Nitrite, Colorimetric, Automated, Hydrazine Procedure
353.2 Nitrogen, Nitrate-Nitrite, Colorimetric, Automated, Cadmium Reduction
353.3 Nitrogen, Nitrate-Nitrite, Spectrophotometric, Cadmium Reduction
354.1 Nitrogen, Nitrite, Spectrophotometric
375.1 Sulfate (Colorimetric, Automated, Chloranilate)
375.2 Sulfate (Colorimetric, Automated, Methylthymol Blue, AAII)
375.4 Sulfate (Turbidimetric)
376.2 Sulfide (Colorimetric, Methylene Blue)

Methods for the Determination of Metals in Environmental Samples
USEPA, EMSL, Cincinnati, OH, 45268, Edition: Jun 1991

200.10 Determination of Trace Elements in Marine Waters by On-Line Chelation, -(BRINES), Preconcentration and ICP/MS
200.8 Determination of Trace Elements in Waters and Wastes by ICP-MS
200.9 Determination of Trace Elements by Stablized Temperature Graphite Furnace Atomic Absorption Spectrometry
218.6 Determination of Dissolved Cr VI in Drinking Water, Groundwater and Industrial Waste Water Effluents by Ion Chromatography
245.7 Determination of Mercury in Water by Semi-Automated Cold Vapor Atomic Fluorescence Spectrometry

ASTM Annual Book of Standards, Oct 21, 1985
Americal Society of Testing Materials

D-4327	Anions in Water by Ion Chromatography
D-5257	Dissolved Hexavalent Chromium in Water by Ion Chromatography
D3987 - 85	Standard Test Method for Shake Extraction of Solid Waste with Water

Methods for the Determination of Nonconventional Pesticides in Municipal and Industrial Wastewater
USEPA Office of Water, Engineering and Analysis Division, WH-552, Edition: Apr 1992

1656	The Determination of Organo-Halide Pesticides in Municipal and Industrial Wastewater
1657	The Determination of Organophosphorus Pesticides in Municipal and Industrial Wastewater
1658	The Determination of Phenoxy-Acid Herbicides in Municipal and Industrial Wastewater
608.1	The Determination of Organochlorine Pesticides in Municipal and Industrial Wastewater
608.2	The Determination of Certain Organochlorine Pesticides in Municipal and Industrial Wastewater
614	The Determination of Organophosphorus Pesticides in Municipal and Industrial Wastewater
615	The Determination of Chlorinated Herbicides in Municipal and Industrial Wastewater
617	The Determination of Organohalide Pesticides in Municipal and Industrial Wastewater
618	The Determination of Volatile Pesticides in Municipal and Industrial Wastewater
619	The Determination of Triazine Pesticides in Municipal and Industrial Wastewater
622	The Determination of Organophosphorus Pesticides in Municipal and Industrial Wastewater
627	The Determination of Dinitroaniline Pesticides in Municipal and Industrial Wastewater
629	The Determination of Cyanazine in Municipal and Industrial Wastewater
632	The Determination of Carbamate and Urea Pesticides in Municipal and Industrial Wastewater
644	The Determination of Picloram in Municipal and Industrial Wastewater
645	The Determination of Certain Amine Pesticides and Lethane in Municipal and Inductrial Wastewater

EPA: Volatile/Semivolatile Organic Compounds by Isotope Dilution GCMS
USEPA Office of Water Regulations and Standards, Ind. Tech. Div., Edition: Jun 1989

1624	Volatile Organic Compounds by Isotope Dilution GC/MS
1625	Semivolatile Organic Compounds by Isotope Dilution GC/MS

Method 1620: Metals by ICPAES and AAS, Draft Sep 1989
USEPA, Office of Water Regulations and Standards, Ind. Tech. Div., Office of Water, Draft: Sep 1989

1620	Metals by Inductively Coupled Plasma Atomic Emission Spectroscopy and Atomic Absorption Spectroscopy

Analytical Methods For the National Sludge Survey
US Environmental Protection Agency, Officer of Water (WH-585), Edition: Sep 1990

1613	Tetra-through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS, RevA
1618	Organo-Halide Pesticides, Organo-Phosphorus Pesticides, and Phenoxy Acid Herbicides by Wide Bore Capillary Column Gas Chromatography with Selective Detectors

Superfund, Environmental Protection Agency, Contract Laboratory Program, Edition: 10/92

CLP-LOW	Document Title - U.S. EPA Contract Laboratory Program (CLP), Statement of Work (SOW) for Low Concentration Water for Organic Analysis (10/92)
CLP-SOW	USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration (Document Number ILM01.0) Document Title - U.S. EPA Contract Laboratory Program (CLP), Statement of Work (SOW) for Multi-Media, Multi-Concentration Organic Analysis (Document Number OLMO1.8)

USEPA Method 650, Aniline and Selected Substituted Derivatives
US Environmental Protection Agency

Standard Methods For the Examination of Water and Wastewater
APHA-AWWA-WPCF, 19th Edition, 1995

3111B	Metals by Flame Atomic Absorption, Direct Air-Acetylene Flame Method
3111D	Metals by Flame Atomic Absorption, Direct Nitrous Oxide-Acetylene Flame Method
3112B	Cold-Vapor Atomic Absorption Spectrometric Method
3113B	Electrothermal Atomic Absorption Spectrometric Method
3114B	Manual Hydride Generation/Atomic Absorption Spectrometric Method (PROPOSED)
3120B	Metals by Plasma Emission Spectroscopy - ICP Method
3500-Na-D	Sodium - Flame Emission Photometric Method
4110B	Ion Chromatography with Chemical Suppression of Eluant Conductivity
4500-Cl-B	Chloride, Argentometric Method
4500-Cl-C	Chloride, Mercuric Nitrate Method
4500-Cl-D	Chloride, Potentiometric Method
4500-Cl-E	Chloride, Automatec Ferricyanide Method
4500-Cl-F	Chloride, Ion Chromatography Method (See 4110B)
4500-NH3	Nitrogen (Ammonia)
4500-NO2	Nitrogen (Nitrite)
4500-NO3	Nitrogen (Nitrate)
4500-S2-A	Sulfide, Introduction
4500-S2-B	Sulfide, Separation of Soluble and Insoluble Sulfides
4500-S2-C	Sulfide, Sample Pretreatment to Remove Interfering Substances or to Concentrate Sulfide
4500-S2-D	Sulfide, Methylene Blue Method
4500F-B	Fluoride - Preliminary Distillation Step
4500F-C	Fluoride (Ion-Selective Electrode)
4500F-D	Fluoride (SPADNS Method)
4500F-E	Fluoride (Complexone Method)
4500SO4-E	Sulfate - Turbidimetric Method
5560B	Organic & Volatile Acids, Chromatography [Column] Separation
5560C	Organic & Volatile Acids, Distillation
6210B	Purge and Trap Packed-Column, Gas Chromatographic/MS Method I
6210C	Purge and Trap Packed-Column, Gas Chromatographic/MS Method II
6210D	Purge and Trap Capillary-Column, Gas Chromatographic/MS Method
6211B	Methane - Combustible Gas Indicator Method
6211C	Methane - Volumetric Method
2720B	Methane – Purge and Trap Gas Chromatographic Method I
2720C	Methane – Purge and Trap Gas Chromatographic Method II
6220B	Purge and Trap Gas Chromatographic Method I

Standard Methods For the Examination of Water and Wastewater (continued)
APHA-AWWA-WPCF, 19th Edition, 1995

6220C	Purge and Trap Gas Chromatographic Method II
6230B	Purge and Trap Packed-Column, Gas Chromatographic/MS Method I
6230C	Purge and Trap Packed-Column, Gas Chromatographic/MS Method II
6230D	Purge and Trap Capillary-Column, Gas Chromatographic/MS Method
6231B	1,2-Dibromoethane (EDB) and 1,2-Dibromo-3-chloropropane (DBCP), Liq.-Liq Extraction GC Method
6231C	1,2-Dibromoethane (EDB) and 1,2-Dibromo-3-chloropropane (DBCP), Purge and Trap GC/MS Method
6410	Extractable Base/Neutrals and Acids, Liq-Liq Extraction, GC/MS Method
6420	Phenols, Liq-Liq Extraction, GC Method
6440	Polynuclear Aromatic Hydrocarbons
6630C	Organochlorine Pesticides, Liq-Liq Extraction GC Method II
6640B	Chlorinated Phenoxy Acid Herbicides

Official Methods of Analysis
Association of Official Analytical Chemists, Edition: 15 1990, and later.

993.30	Inorganic Anions in Water
983.01	Urea and Methyleneureas
993.23	Dissolved Hexavalent Chromium in Water

Methods of Soil Analysis

Part 2, Number 9 in the Agronomy Series, 1982

Pharmaceutical Industry Pollutants, USEPA, Engineering and Analysis Division, EPA 821 B-94-001

1671	Volatile Organic Compounds Specific to the Pharmaceutical Manufacturing Industry By GC/FID

APPENDIX D

Soil Boring Logs

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING DSA MW-1
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe/HS auger Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: at former GB-1 location Start Date: 5/10/02 End Date: 5/10/02
Boring Company: PROSONIC Corp. Foreman: Pete Goss Drill Rig: 66DT ATV track-mounted rig OBG Geologist: Mike Robison		Screen === Riser Sand Pack Bentonite Bent/cuttings #####

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	
0		0-2'	NA			Approx 4 ft of fill material (topsoil-grass surface) placed				
			NA			on top of former asphalt grade; began continuous sampling				
			NA			from 5 ft below grade.				
			NA							
2		2-4'	NA							
			NA							
			NA							
			NA							
4		4-6'	NA			asphalt	4'			
			NA			gravel base	4.5'			
	1		NA	full	NA	Mod. yellowish brown (10 YR 5/4), damp, stiff silty CLAY, little	5'		5.1	
			NA			gravel				
6		6-8'	NA							
			NA							
			NA			saa, gray mottling, very stiff	7'		9.9	
			NA							
8		8-10'	NA							*
			NA							
			NA							
			NA							
10	2	10-12'	NA	full	NA	Dark yellowish brown (10 YR 4/2), moist, fine-medium SAND	10'	===	0.4	
			NA			Mod. yellowish brown (10 YR 5/4), damp, stiff CLAY, little gravel	10'8"	===	1.1	
			NA					===		
			NA					===		
12		12-14'	NA					===		
			NA					===		
			NA					===		
			NA					===		
14		14-16'	NA					===		
			NA					===		
	3		NA	full	NA	Med. Dark gray (N 4), damp, stiff CLAY	15'		0.0	
			NA							
16		16-18'	NA							
			NA							
			NA							
			NA							
18		18-20'	NA							
			NA							
			NA							
			NA							
20	4	20-22'	NA	full	NA	Med. Dark gray (N 4), damp, stiff CLAY			0.0	
			NA							
			NA							
			NA							
22		22-24'	NA							
			NA							
			NA							
			NA							
24		24-26'	NA							*
			NA							
						EOB @ 25 fbg				
26										

Notes:
Subsequent to direct probe sampling, 4.25" ID hollow-stem augers were used to overdrill borehole to 25 fbg.
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
"saa" denotes "same as above"

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-1
Client: REALM Site: Coldwater Road Landfill Drum Storage Pad Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulically driven probe Sampler: 4' x 2" steel sampler Hammer: NA Fall: NA	Page 1 of 1 Location: Approx. 10 ft. west of sump house. Start Date: 8/1/00 End Date: 8/1/00
Boring Company: Environmental Quality Laboratories Foreman: Rob Schippert Drill Rig: 66DT ATV track-mounted rig OBG Geologist: Mike Robison		Screen =, Riser, Steel // Grout, Sand Pack, Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	
0		0-2'	NA			Asphalt/gravel				
			NA			Medium brown w/ orange mottling, damp, silty CLAY	6"		0.0	
			NA							
			NA							
2		2-4'	NA			Medium brown w/ orange mottling, damp, silty CLAY			0.0	
			NA							
			NA							
			NA							
4		4-6'	NA	NA	NA	Medium brown w/ orange mottling, moist, silty CLAY			0.0	
			NA							
			NA							
			NA							
6		6-8'	NA			Medium brown w/ orange mottling, moist, silty CLAY			0.0	
			NA							
			NA							
			NA							
8		8-10'	NA	NA	NA	Grey, moist, CLAY			0.0	
			NA							*
			NA							
			NA							
10	2	10-12'	NA			Grey, damp, CLAY			0.0	
			NA							
			NA							
			NA							
12				NA	NA	EOB @ 12 fbg				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
"saa" denotes "same as above"

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-2
Client: REALM Site: Coldwater Road Landfill Drum Storage Pad Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulically driven probe Sampler: 4' x 2" steel sampler Hammer: NA Fall: NA	Page 1 of 1 Location: Approx. 10 ft. north of sump house. Start Date: 8/1/00 End Date: 8/1/00
Boring Company: Environmental Quality Laboratories Foreman: Rob Schippert Drill Rig: 66DT ATV track-mounted rig OBG Geologist: Mike Robison		Screen = \ Grout Riser Sand Pack Steel // Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	
0		0-2'	NA			Asphalt/gravel				
			NA			Medium brown w/ orange mottling, damp, silty CLAY	6"		0.0	
			NA							
			NA							
2		2-4'	NA			Medium brown w/ orange mottling, damp, silty CLAY			0.0	
			NA							
			NA							
			NA							
4		4-6'	NA	NA	NA	Medium brown w/ orange mottling, moist, silty CLAY			0.0	
			NA							
			NA							
			NA							
6		6-8'	NA			Medium brown w/ orange mottling, moist, silty CLAY			0.0	
			NA							
			NA			Grey, moist, CLAY				
			NA							
8		8-10'	NA	NA	NA	Grey, moist, CLAY			0.0	
			NA							
			NA							*
			NA							
10	2	10-12'	NA			Grey, damp, CLAY			0.0	
			NA							
			NA							
			NA							
12				NA	NA	EOB @ 12 fbg				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
"saa" denotes "same as above"

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-3
Client: REALM Site: Coldwater Road Landfill Drum Storage Pad Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulically driven probe Sampler: 4' x 2" steel sampler Hammer: NA Fall: NA	Page 1 of 1 Location: Approx. 10 ft. east of east sump. Start Date: 8/1/00 End Date: 8/1/00
Boring Company: Environmental Quality Laboratories Foreman: Rob Schippert Drill Rig: 66DT ATV track-mounted rig OBG Geologist: Mike Robison		Screen =, Grout \ Riser, Sand Pack Steel //, Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	
0		0-2'	NA			Asphalt/gravel				
			NA			Medium brown w/ orange mottling, damp, silty CLAY	6"		0.0	
			NA							
			NA							
2		2-4'	NA			Medium brown w/ orange mottling, damp, silty CLAY			0.0	
			NA							
			NA							
			NA							
4		4-6'	NA	NA	NA	Medium brown w/ orange mottling, moist, silty CLAY			0.0	
			NA							
			NA							
			NA							
6		6-8'	NA			Medium brown w/ orange mottling, moist, silty CLAY			0.0	
			NA							
			NA							
			NA							
8		8-10'	NA	NA	NA	Grey, moist, CLAY			0.0	
			NA							
			NA							*
			NA							
10	2	10-12'	NA			Grey, damp, CLAY			0.0	
			NA							
			NA							
			NA							
12				NA	NA	EOB @ 12 fbg				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
"saa" denotes "same as above"

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-4
Client: REALM Site: Coldwater Road Landfill Drum Storage Pad Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulically driven probe Sampler: 4' x 2" steel sampler Hammer: NA Fall: NA	Page 1 of 1 Location: Approx. 10 ft west of sump house. Start Date: 8/1/00 End Date: 8/1/00
Boring Company: Environmental Quality Laboratories Foreman: Rob Schippert Drill Rig: 66DT ATV track-mounted rig OBG Geologist: Mike Robison		Screen =, Riser, Steel // Grout, Sand Pack, Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	
0		0-2'	NA			Concrete				
			NA			Brownish-orange, dry, fine-medium SAND (fill)	6"		0.0	
			NA							
			NA							
2		2-4'	NA			Brownish-orange, dry, fine-medium SAND (fill)			0.0	
			NA							
			NA							
			NA							
4		4-6'	NA	NA	NA	Brownish-orange, dry, fine-medium SAND (fill)			0.0	
			NA							
	1		NA			Medium brown w/ orange mottling, damp, silty CLAY				
			NA							
6		6-8'	NA			Medium brown w/ orange mottling, damp, silty CLAY			0.0	
			NA							
			NA							
			NA							
8		8-10'	NA	NA	NA	Medium brown w/ orange mottling, moist, silty CLAY			0.0	
			NA							
			NA							
			NA							
10	2	10-12'	NA			Medium brown w/ orange mottling, moist, silty CLAY			0.0	
			NA							
			NA							
			NA							
12		12-14'	NA	NA	NA	Medium brown w/ orange mottling, moist, silty CLAY			0.0	
			NA							
			NA			Grey, moist, CLAY				
			NA							
14		14-16'	NA			Grey, damp, CLAY			0.0	*
			NA							
	3		NA							
			NA							
16		16-18'	NA	NA	NA	Grey, damp, CLAY			0.0	
			NA							
17				NA	NA	EOB @ 17 fbg				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
"saa" denotes "same as above"

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-5
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: 10 ft west of MW-1/GB-1 Start Date: 5/10/02 End Date: 5/10/02
Boring Company: PROSONIC Corp. Foreman: Pete Goss Drill Rig: 66DT ATV track-mounted rig OBG Geologist: Mike Robison		Screen =, Riser, Steel //, Grout \, Sand Pack, Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	
0		0-2'	NA			Approx 4 ft of fill material (topsoil-grass surface) placed				
			NA			on top of former asphalt grade; began continuous sampling				
			NA			from 5 ft below grade.				
			NA							
2		2-4'	NA							
			NA							
			NA							
			NA							
4		4-6'	NA			asphalt	4'			
			NA			gravel base	4.5'			
	1		NA	full	NA	Mod. yellowish brown (10 YR 5/4), damp, stiff silty CLAY, little	5'		0.0	
			NA			gravel				
6		6-8'	NA							
			NA							
			NA							
			NA							
8		8-10'	NA							
			NA							
			NA							
			NA							
10	2	10-12'	NA	full	NA	Mod. yellowish brown (5 YR 5/4), moist, silty SAND, some gravel	10'		0.0	
			NA			Mod. Yellow brown (10 YR 5/4), damp, v. stiff silty CLAY, little	10.5'		0.0	
			NA			gravel				
			NA							
12		12-14'	NA							
			NA							
			NA			Medium dark gray (N 4), damp, stiff CLAY			0.0	
			NA							
14		14-16'	NA							*, #
			NA							
	3		NA	full	NA	saa	15'		0.0	
			NA							
16		16-18'	NA							
			NA							
			NA							
			NA							
18		18-20'	NA							
			NA							
			NA							*
			NA							
20						EOB @ 20 fbg				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
"#" denotes MS/MSD also collected at this interval, as well as MDEQ split sample.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
"saa" denotes "same as above"
I/novi/proj/4966/32223/5_rep/DSA Closure Report/DSA GB logs.xls

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-6
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: 10 ft north of DSA MW-1 Start Date: 5/10/02 End Date: 5/10/02
Boring Company: PROSONIC Corp. Foreman: Pete Goss Drill Rig: 66DT ATV track-mounted rig OBG Geologist: Mike Robison		Screen = Grout Riser Sand Pack Steel // Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	
0		0-2'	NA			Approx 4 ft of fill material (topsoil-grass surface) placed				
			NA			on top of former asphalt grade; began continuous sampling				
			NA			from 5 ft below grade.				
			NA							
2		2-4'	NA							
			NA							
			NA							
			NA							
4		4-6'	NA			asphalt	4'			
			NA			gravel base	4.5'			
	1		NA	full	NA	Mod. yellowish brown (10 YR 5/4), damp, stiff silty CLAY, little	5'		0.0	
			NA			gravel				
6		6-8'	NA							
			NA							
			NA							
			NA							
8		8-10'	NA							
			NA			Medium dark gray (N 4) w/ orange mottling, damp, stiff CLAY	9'		0.0	
			NA							
			NA							
10	2	10-12'	NA	full	NA	saa	10'		0.0	
			NA							
			NA							
			NA							
12		12-14'	NA			saa, no orange mottling				
			NA							
			NA							
			NA							
14		14-16'	NA							*, &
			NA							
	3		NA	full	NA	saa	15'		0.0	
			NA							
16		16-18'	NA							
			NA							
			NA							
			NA							
18		18-20'	NA							
			NA							
			NA							*
			NA							
20						EOB @ 20 fbg				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
"&" denotes field duplicate sample also collected at this interval.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
"saa" denotes "same as above"

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-7
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: 9 ft south of MW-1/GB-1 Start Date: 5/10/02 End Date: 5/10/02
Boring Company: PROSONIC Corp. Foreman: Pete Goss Drill Rig: 66DT ATV track-mounted rig OBG Geologist: Mike Robison		Screen [=] [\] Grout Riser [ ] [ ] Sand Pack Steel [//] [ ] Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	
0		0-2'	NA			Approx 4 ft of fill material (topsoil-grass surface) placed				
			NA			on top of former asphalt grade; began continuous sampling				
			NA			from 5 ft below grade.				
			NA							
2		2-4'	NA							
			NA							
			NA							
			NA							
4		4-6'	NA			asphalt	4'			
			NA			gravel base	4.5'			
	1		NA	full	NA	Mod. yellowish brown (10 YR 5/4), damp, v. stiff silty CLAY, little	5'		1.2	
			NA			gravel				
6		6-8'	NA				6'		0.0	
			NA							
			NA							
			NA			Mod. yellowish brown (10 YR 5/4), damp, v. stiff silty CLAY, little				
8		8-10'	NA			gravel				
			NA							
			NA							
			NA							
10	2	10-12'	NA	full	NA	Mod. yellowish brown (10 YR 5/4), damp, v. stiff silty CLAY, little			0.0	
			NA			gravel				
			NA							
			NA							
12		12-14'	NA			saa, no orange mottling				
			NA							
			NA							
			NA							
14		14-16'	NA							*
			NA							
	3		NA	full	NA	Medium dark gray (N 4), damp, stiff CLAY, trace gravel			0.0	
			NA							
16		16-18'	NA							
			NA							
			NA							
			NA							
18		18-20'	NA							
			NA							
			NA							*
			NA							
20						EOB @ 20 fbg				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.

Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
"saa" denotes "same as above"
I/novi/proj/4966/32223/5_rep/DSA Closure Report/DSA GB logs.xls

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-8
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: southeast of MW-1/GB-1 Start Date: 6/4/2002 End Date: 6/4/2002
Boring Company: Fibertech Foreman: Mike McCourtie Drill Rig: 66DT ATV track-mounted rig OBG Geologist: Tony Finch		Screen =, Riser, Steel // Grout, Sand Pack, Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	
0		0-2'	NA			concrete w/gravel base				
			NA							
			NA			medium grey (N5), damp stiff CLAY, trace silt	1'		0.0	
			NA							
2		2-4'	NA							
			NA						0.0	
			NA							
			NA			medium grey (N5), damp stiff CLAY, trace silt				
4		4-6'	NA							
			NA							
	1		NA	full	NA	medium grey (N5), damp stiff CLAY, trace silt			0.0	
			NA							
6		6-8'	NA							
			NA							
			NA							
			NA							
8		8-10'	NA			medium grey (N5), damp stiff CLAY, trace silt			0.0	
			NA							
			NA							
			NA							
10	2	10-12'	NA	full	NA	moderate yellowish brown (10YR 5/4) damp stiff silty CLAY			0.0	
			NA							
			NA							
			NA							
12		12-14'	NA							
			NA							
			NA			moderate yellowish brown (10YR 5/4) damp stiff silty CLAY			0.0	
			NA							
14		14-16'	NA							*
			NA							
	3		NA	full	NA	moderate yellowish brown (10YR 5/4) damp stiff silty CLAY			0.0	
			NA							
16		16-18'	NA							
			NA							
			NA							
			NA							
18		18-20'	NA			moderate yellowish brown (10YR 5/4) damp stiff silty CLAY			0.0	
			NA							
			NA							
			NA							
20						EOB @ 20 fbg				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-9
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: 9 ft south of MW-1/GB-1 Start Date: 6/4/2002 End Date: 6/4/2002
Boring Company: Fibertech Foreman: Mike McCourtie Drill Rig: 66DT ATV track-mounted rig OBG Geologist: Tony Finch		Screen = \ Grout Riser Sand Pack Steel // Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	
0		0-2'	NA			concrete w/gravel base				
			NA							
			NA			medium brown, damp silty CLAY				
			NA							
2		2-4'	NA			medium brown w/orange mottling, damp				
			NA			silty CLAY				
			NA							
			NA							
4		4-6'	NA			medium brown w/orange mottling, damp				
			NA			silty CLAY				
	1		NA	full	NA				1.2	
			NA							
6		6-8'	NA			medium brown, damp silty CLAY			0.0	
			NA							
			NA							
			NA							
8		8-10'	NA			medium brown, damp silty CLAY				
			NA							
			NA							
			NA							
10	2	10-12'	NA	full	NA	medium brown, damp silty CLAY			0.0	
			NA							
			NA							
			NA							
12		12-14'	NA			grey, damp CLAY little silt				
			NA							
			NA							
			NA							
14		14-16'	NA			grey, damp CLAY little silt				*
			NA							
	3		NA	full	NA	Medium dark gray (N 4), damp, stiff CLAY, trace gravel			0.0	
			NA							
16		16-18'	NA							
			NA							
			NA							
			NA							
18		18-20'	NA							
			NA							
			NA							*
			NA							
20						EOB @ 20 fbg				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
"saa" denotes "same as above"

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-10
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: 9 ft south of MW-1/GB-1 Start Date: 6/4/2002 End Date: 6/4/2002
Boring Company: Fibertech Foreman: Mike McCourtie Drill Rig: 66DT ATV track-mounted rig OBG Geologist: Tony Finch		Screen =, Riser, Steel // \ Grout Sand Pack Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	
0		0-2'	NA			concrete w/gravel base				
			NA							
			NA			medium brown, damp silty CLAY				
			NA							
2		2-4'	NA			medium brown w/orange mottling, damp				
			NA			silty CLAY				
			NA							
			NA							
4		4-6'	NA			medium brown w/orange mottling, damp				
			NA			silty CLAY				
	1		NA	full	NA				1.2	
			NA							
6		6-8'	NA			medium brown, damp silty CLAY			0.0	
			NA							
			NA							
			NA							
8		8-10'	NA			medium brown, damp silty CLAY				
			NA							
			NA							
			NA							
10	2	10-12'	NA	full	NA	medium brown, damp silty CLAY			0.0	
			NA							
			NA							
			NA							
12		12-14'	NA			grey, damp CLAY little silt				
			NA							
			NA							
			NA							
14		14-16'	NA			grey, damp CLAY little silt				*
			NA							
	3		NA	full	NA	Medium dark gray (N 4), damp, stiff CLAY, trace gravel			0.0	
			NA							
16		16-18'	NA							
			NA							
			NA							
			NA							
18		18-20'	NA							
			NA							
			NA							*
			NA							
20						EOB @ 20 fbg				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
"saa" denotes "same as above"

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-11
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: 9 ft south of MW-1/GB-1 Start Date: 6/4/2002 End Date: 6/4/2002
Boring Company: Fibertech Foreman: Mike McCourtie Drill Rig: 66DT ATV track-mounted rig OBG Geologist: Tony Finch		Screen = \ Grout Riser Sand Pack Steel // Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	
0		0-2'	NA			concrete w/gravel base				
			NA							
			NA			medium brown, damp silty CLAY				
			NA							
2		2-4'	NA			medium brown w/orange mottling, damp				
			NA			silty CLAY				
			NA							
			NA							
4		4-6'	NA			medium brown w/orange mottling, damp				
			NA			silty CLAY				
	1		NA	full	NA				1.2	
			NA							
6		6-8'	NA			medium brown, damp silty CLAY			0.0	
			NA							
			NA							
			NA							
8		8-10'	NA			medium brown, damp silty CLAY				
			NA							
			NA							
			NA							
10	2	10-12'	NA	full	NA	medium brown, damp silty CLAY			0.0	
			NA							
			NA							
			NA							
12		12-14'	NA			grey, damp CLAY little silt				
			NA							
			NA							
			NA							
14		14-16'	NA			grey, damp CLAY little silt				*
			NA							
	3		NA	full	NA	Medium dark gray (N 4), damp, stiff CLAY, trace gravel			0.0	
			NA							
16		16-18'	NA							
			NA							
			NA							
			NA							
18		18-20'	NA							
			NA							
			NA							*
			NA							
20						EOB @ 20 fbg				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
"saa" denotes "same as above"

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-12
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: 9 ft south of MW-1/GB-1 Start Date: 6/4/2002 End Date: 6/4/2002
Boring Company: Fibertech Foreman: Mike McCourtie Drill Rig: 66DT ATV track-mounted rig OBG Geologist: Tony Finch		Screen = \ Grout Riser Sand Pack Steel // Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	
0		0-2'	NA			concrete w/gravel base				
			NA							
			NA			medium brown, damp silty CLAY				
			NA							
2		2-4'	NA			medium brown w/orange mottling, damp				
			NA			silty CLAY				
			NA							
			NA							
4		4-6'	NA			medium brown w/orange mottling, damp				
			NA			silty CLAY				
	1		NA	full	NA				1.2	
			NA							
6		6-8'	NA			medium brown, damp silty CLAY			0.0	
			NA							
			NA							
			NA							
8		8-10'	NA			medium brown, damp silty CLAY				
			NA							
			NA							
			NA							
10	2	10-12'	NA	full	NA	medium brown, damp silty CLAY			0.0	
			NA							
			NA							
			NA							
12		12-14'	NA			grey, damp CLAY little silt				
			NA							
			NA							
			NA							
14		14-16'	NA			grey, damp CLAY little silt				*
			NA							
	3		NA	full	NA	Medium dark gray (N 4), damp, stiff CLAY, trace gravel			0.0	
			NA							
16		16-18'	NA							
			NA							
			NA							
			NA							
18		18-20'	NA							
			NA							
			NA							*
			NA							
20						EOB @ 20 fbg				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
"saa" denotes "same as above"

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-13
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: 9 ft south of MW-1/GB-1 Start Date: 6/4/2002 End Date: 6/4/2002
Boring Company: Fibertech Foreman: Mike McCourtie Drill Rig: 66DT ATV track-mounted rig OBG Geologist: Tony Finch		Screen = \ Grout Riser Sand Pack Steel // Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing PID (ppm)	
0		0-2'	NA			concrete w/gravel base				
			NA							
			NA			medium brown, damp silty CLAY				
			NA							
2		2-4'	NA			medium brown w/orange mottling, damp				
			NA			silty CLAY				
			NA							
			NA							
4		4-6'	NA			medium brown w/orange mottling, damp				
			NA			silty CLAY				
	1		NA	full	NA				1.2	
			NA							
6		6-8'	NA			medium brown, damp silty CLAY			0.0	
			NA							
			NA							
			NA							
8		8-10'	NA			medium brown, damp silty CLAY				
			NA							
			NA							
			NA							
10	2	10-12'	NA	full	NA	medium brown, damp silty CLAY			0.0	
			NA							
			NA							
			NA							
12		12-14'	NA			grey, damp CLAY little silt				
			NA							
			NA							
			NA							
14		14-16'	NA			grey, damp CLAY little silt				*
			NA							
	3		NA	full	NA	Medium dark gray (N 4), damp, stiff CLAY, trace gravel			0.0	
			NA							
16		16-18'	NA							
			NA							
			NA							
			NA							
18		18-20'	NA							
			NA							
			NA							*
			NA							
20						EOB @ 20 fbg				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
"saa" denotes "same as above"

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-14
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: NE of MW-1 Start Date: 11/26/2002 End Date: 11/26/2002
Boring Company: Prosonic Foreman: Pete Drill Rig: 66DT ATV track-mounted rig OBG Scientist: John O'Neill		Screen =, Riser, Steel // \ Grout, Sand Pack, Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing odors/ staining
0		0-5'	NA			fill			
			NA						
			NA						
			NA			asphalt over concrete	1'6"		
2			NA						
			NA						
			NA			light brown (5YR 5/6)CLAY, trace silt and pebbles	3'		
			NA						
4			NA						
	1		NA	60"/28"	NA				none
		5-10'	NA						
			NA						
6			NA						
			NA						
			NA						
			NA						
8			NA						
			NA						
			NA						
	2		NA	60"/60"	NA				none
10		10-14'	NA			same as above grading to damp medium gray (N5) CLAY			
			NA						
			NA						
			NA						
12			NA						
			NA						
			NA						
	3		NA	48"/48"	NA				none
14						EOB 14'			

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
PID failure due to cold weather, observations of odors or visible staining are noted.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-15
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: NE of MW-1 Start Date: 11/26/2002 End Date: 11/26/2002
Boring Company: Prosonic Foreman: Pete Drill Rig: 66DT ATV track-mounted rig OBG Scientist: John O'Neill		Screen [=] [\] Grout Riser [ ] [ ] Sand Pack Steel [//] [ ] Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing odors/ staining
0		0-2'6"	NA			fill			
			NA						
			NA						
			NA			asphalt over concrete	1'6"		
2			NA	NA					
		2'6"-7'6"	NA			light brown (5YR 5/6) CLAY, trace silt and pebbles	2'6"		
			NA						
			NA						
4			NA						
			NA						
			NA						
			NA						
6			NA						
			NA						
	1		NA	60"/60"	NA				none
		7'6"-12'6"	NA						
8			NA						
			NA						
			NA						
			NA						
10			NA						
			NA						
			NA						
			NA			same as above grading to damp medium gray (N5) CLAY			
12	2		NA	60"/60"	NA				none
						EOB 12'6"			

Notes:
"4" denotes top of discrete soil sample interval collected for laboratory submittal.
PID failure due to cold weather, observations of odors or visible staining are noted.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
NA denotes not applicable

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-16
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: NE of MW-1 Start Date: 11/26/2002 End Date: 11/26/2002
Boring Company: Prosonic Foreman: Pete Drill Rig: 66DT ATV track-mounted rig OBG Scientist: John O'Neill		Screen = \ Grout Riser Sand Pack Steel // Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing odors/ staining	
0		0-2'	NA			fill				
			NA							
			NA			asphalt over concrete	1'			
			NA	NA						
2		2-7'	NA			light brown (5YR 5/6) CLAY, trace silt and pebbles	2'			
			NA							
			NA							
			NA							
4			NA							
			NA							
			NA							*
			NA							
6			NA							
	1		NA	60"/60"					none	
		7-12'	NA			same as above but damp				
			NA							
8			NA			same as above but dry				
			NA							
			NA							
			NA							
10			NA							*
			NA			same as above grading to damp medium gray (N5) CLAY				
			NA							
	2		NA	60"/60"					none	
12						EOB 12'				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
PID failure due to cold weather, observations of odors or visible staining are noted.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
NA denotes not applicable
I/novi/proj/4966/32223/5_rep/DSA Closure Report/DSA GB logs.xls

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-17
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: NE of MW-1 Start Date: 11/26/2002 End Date: 11/26/2002
Boring Company: Prosonic Foreman: Pete Drill Rig: 66DT ATV track-mounted rig OBG Scientist: John O'Neill		Screen | = | \ Grout Riser | | Sand Pack Steel | // | Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing odors/ staining
0		0-2'6"	NA			fill			
			NA						
			NA						
			NA			asphalt over concrete	1'6"		
2			NA	NA					
		2'6"-7'6"	NA			damp light brown (5YR 5/6) sandy SILT	2'6"		
			NA			light brown (5YR 5/6) CLAY, trace silt and pebbles	2'10"		
			NA						
4			NA						
			NA						
			NA						
			NA						
6			NA						
			NA						
	1		NA	60"/60"					none
		7'6"-12'6"	NA						
8			NA			damp light brown (5YR 5/6) SAND, little pebbles	8'		
			NA			light brown (5YR 5/6) CLAY, trace silt	8'4"		
			NA						
			NA						
10			NA			same as above grading to damp gray (N5) CLAY			
			NA						
			NA						
			NA						
12	2			60"/60"					none
						EOB 12'6"			

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
PID failure due to cold weather, observations of odors or visible staining are noted.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
NA denotes not applicable
I/novi/proj/4966/32223/5_rep/DSA Closure Report/DSA GB logs.xls

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-18
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: NE of MW-1 Start Date: 11/26/2002 End Date: 11/26/2002
Boring Company: Prosonic Foreman: Pete Drill Rig: 66DT ATV track-mounted rig OBG Scientist: John O'Neill		Screen = \ Grout Riser Sand Pack Steel // Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing odors/ staining	
0		0-2'6"	NA			fill				
			NA							
			NA							
			NA			asphalt over concrete	1'6"			
2			NA	NA						
		2'6"-7'6"	NA			fill SAND	2'6"			
			NA			light brown (5YR 5/6) CLAY, trace silt	3'			
			NA							
4			NA							
			NA							
			NA							*
			NA							
6			NA							
			NA							
	1		NA	60"/60"					none	
		7'6"-12'6"	NA							
8			NA							
			NA							
			NA							
			NA							
10			NA							*
			NA							
			NA			stiff gray (N5) CLAY				
			NA							
12	2			60"/60"					none	
						EOB 12'6"				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
PID failure due to cold weather, observations of odors or visible staining are noted.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
NA denotes not applicable
I/novi/proj/4966/32223/5_rep/DSA Closure Report/DSA GB logs.xls

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-19
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: NE of MW-1 Start Date: 11/26/2002 End Date: 11/26/2002
Boring Company: Prosonic Foreman: Pete Drill Rig: 66DT ATV track-mounted rig OBG Scientist: John O'Neill		Screen = \ Grout Riser Sand Pack Steel // Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing odors/ staining	
0		0-1'	NA			asphalt over concrete				
			NA							
		1-6'	NA			fill SAND	1'			
			NA			damp light brown (5YR 5/6) CLAY, trace silt	1'8"			
2			NA							
			NA							
			NA							*
			NA							
4			NA							
			NA							
			NA							
	1		NA	60"/60"					none	
6		6-10'	NA							
			NA							
			NA							
			NA							
8			NA							*
			NA							
			NA							
	2		NA	48"/48"					none	
10						EOB 10'				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
PID failure due to cold weather, observations of odors or visible staining are noted.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
NA denotes not applicable
I/novi/proj/4966/32223/5_rep/DSA Closure Report/DSA GB logs.xls

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING GB-20
Client: REALM Site: Coldwater Road Landfill Drum Storage Area Proj. Loc: Flint, MI File No.:4144.007	Drill Method: hydraulic probe Sampler: 5 ft acetate lined sampler Hammer: NA Fall: NA	Page 1 of 1 Location: NE of MW-1 Start Date: 11/26/2002 End Date: 11/26/2002
Boring Company: Prosonic Foreman: Pete Drill Rig: 66DT ATV track-mounted rig OBG Scientist: John O'Neill		Screen = \ Grout Riser Sand Pack Steel // Bentonite

Depth Below Grade	No.	Depth (feet)	Blows /6"	Penetr/ Recovery	"N" Value	Sample Description	Stratum Change General Descript	Equip. Installed	Field Testing odors/ staining	
0		0-3'	NA			fill				
			NA							
			NA							
			NA			asphalt over concrete	1'6"			
2			NA							
			NA	NA						
		3-5'	NA			no recovery	3'			
			NA							
4			NA							
	1		NA	24"/0"						
		5-10'	NA			light brown (5YR 5/6) CLAY, little silt and pebbles	5'			*
			NA							
6			NA							
			NA							
			NA							
			NA							
8			NA							
			NA							
			NA							
	2		NA	60"/60"		yellowish/orange (10YR 7/6) medium SAND	9'10"		none	
10		10-15'	NA			damp light brown (5YR 5/6) CLAY, some silt	10'			*
			NA			wet light brown (5YR 5/6) medium SAND	10'4"			
			NA			light brown (5YR 5/6) CLAY, some silt	10'8"			
			NA							
12			NA			stiff gray (N5) CLAY				
			NA							
			NA							
			NA							
14			NA							
	3			60"/60"					none	
15						EOB 15'				

Notes:
"*" denotes top of discrete soil sample interval collected for laboratory submittal.
PID failure due to cold weather, observations of odors or visible staining are noted.
Subsequent to soil sampling activities the borehole was backfilled with soil cuttings mixed with bentonite.
5 ft hydraulic probe macro core sampler used, therefore no blow counts.
NA denotes not applicable
I/novi/proj/4966/32223/5_rep/DSA Closure Report/DSA GB logs.xls

APPENDIX E

Data Validation Report
August 2000 Soil Samples

DATA VALIDATION REPORT

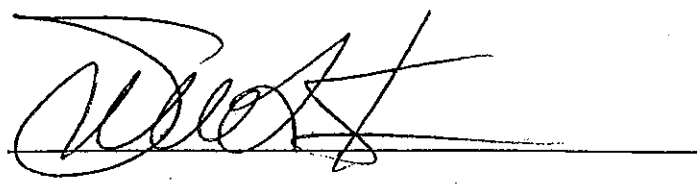
Former Drum Storage Area
at the Former Peregrine, U.S., Inc. Property
at the Coldwater Road Facility
G-1245 East Coldwater Road
Flint, Michigan
(EPA I.D. No. MIR 000 020 743)

February 2001

4144.007.030.330

DATA VALIDATION REPORT
SOIL SAMPLES

Former Drum Storage Area at the
Former Peregrine U.S., Inc. Property at the
Coldwater Road Facility
Flint, Michigan
(EPA I.D. No. MIR 000 020 743)



Swiatoslav W. Kaczmar, Ph.D., C.I.H.
Vice President, Environmental Toxicology
and Industrial Hygiene

February 2001

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A. USEPA method sample results for: Volatile Organics, Total Chromium, Total Lead, Hexavalent Chromium, Trivalent Chromium, Mercury, and Cyanide

Executive summary

This data validation report addresses data quality for soil samples collected from the former Drum Storage Area at the Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Facility, 1245 Coldwater Road, Flint, Michigan (formerly the Peregrine, U.S., Inc. property). Sample collection activities were conducted by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) on 8/1/00.

The environmental samples, matrix spike, matrix spike duplicate (MS/MSD), field duplicate, equipment blank, and trip blank collected for this investigation were submitted to Fire & Environmental Consulting Laboratories, Inc. of East Lansing, Michigan for analysis of volatile organic compounds (VOCs), total chromium, total lead, mercury, hexavalent chromium, trivalent chromium, and cyanide using United States Environmental Protection Agency (USEPA) Methods. The analytical data generated for this investigation were evaluated by O'Brien & Gere using the quality assurance/quality control (QA/QC) criteria established in the USEPA Methods and the *Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP)* (O'Brien & Gere 1999). Excursions from the QA/QC criteria were qualified based on guidance provided in the *United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines For Organic Data Review* (USEPA 1994a), and the *USEPA CLP National Functional Guidelines For Inorganic Data Review* (USEPA 1994b).

As a result of the data validation process the VOCs, total chromium, total lead, mercury, hexavalent chromium, trivalent chromium, and cyanide data for the soil samples analyzed were determined to be 100% usable for qualitative and quantitative purposes.

1. Introduction

This data validation report addresses the results of a data quality evaluation for soil samples, matrix spike, matrix spike duplicate (MS/MSD), field duplicate, equipment blank, and one trip blank collected from the former Drum Storage Area at the Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Facility, 1245 Coldwater Road, Flint, Michigan (formerly the Peregrine, U.S., Inc. property). Sample collection activities were conducted by O'Brien & Gere on 8/1/00. The environmental samples, MS/MSD sample, field duplicate, equipment blank, and trip blank collected for this investigation were submitted to Fire & Environmental Consulting Laboratories, Inc. of East Lansing, Michigan for analysis of volatile organic compounds (VOCs), total chromium, total lead, mercury, hexavalent chromium, trivalent chromium, and cyanide using United States Environmental Protection Agency (USEPA) Methods listed in Table 1-1. The quantity and types of samples that were submitted for data validation are presented in Table 1-1 below.

- USEPA. 1996. Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), 3rd Edition. Washington DC.

- O'Brien & Gere Engineers, Inc. 1999. *Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP),* Syracuse, New York.

Excursions from the QA/QC criteria were qualified based on guidance provided in the following documents:

- USEPA. 1994a. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review,* EPA-540/R-94/012. Washington D.C.

- USEPA. 1994b. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review,* EPA-540/R-94/013. Washington D.C.

1.2. Analytical methods

The environmental samples, MS/MSD, field duplicate, and trip blank collected for this investigation were submitted to Fire & Environmental Consulting Laboratories, Inc. of East Lansing, Michigan for analysis of VOCs, total chromium, total lead, mercury, hexavalent chromium, trivalent chromium, and cyanide using USEPA Methods listed in Table 1-1.

The following chapters of this document address distinct aspects of the validation process. Chapter 2 lists the data QA/QC protocols used to validate the sample data. Specific QA/QC deviations and qualifications performed on the sample data are discussed in Chapter 3. Finally, data completeness and usability are discussed in Chapter 4.

The annotated analytical results generated by this validation are presented in Appendix A.

2. Data validation protocols

2.1. Sample analyses parameters

The validation of organic and inorganic analyses for this project followed the requirements presented in the analytical methodology and the data validation guidelines. Qualification of sample data was based on the validation guidelines. The following QA/QC parameters were evaluated for organic analyses where applicable:

1. Holding times and sample preservation
2. Percent solids
3. Initial calibration
4. Continuing calibration
5. Blank analysis
6. Surrogate analysis
7. MS/MSD analysis
8. Duplicate analysis
9. Laboratory control sample (LCS) analysis
10. Internal standard performance
11. Gas chromatograph/mass spectrometry (GC/MS) tune performance
12. Field duplicate sample analysis
13. Target identification
14. Compound quantitation and reported detection limit
15. System performance
16. Documentation completeness

The following QA/QC parameters were evaluated for inorganic analyses where applicable:

1. Holding Times and sample preservation
2. Percent solids
3. Calibration
4. Inductively coupled plasma (ICP)/MS tuning
5. Blank analysis
6. Internal standard performance
7. ICP interference check sample
8. MS/MSD analysis
9. Laboratory duplicate analysis
10. LCS analysis
11. ICP serial dilution analysis

3. Data quality evaluation

3.1. Background

This chapter summarizes the quality assurance/quality control QA/QC parameters, validation criteria, and qualifications performed on the sample data when the QA/QC parameters specified in Chapter 2 did not meet criteria. Samples that required qualification are described in the following sections, and are identified by the description documented on the sample chain-of-custody records as listed in Table 1-1. The data quality evaluation resulted in only one qualifier for an individual sample result. QA/QC excursions which did not result in the qualification of a target analyte result or additional qualification if the target analyte result was previously qualified are not discussed. In a case when several qualifiers are applied to one target analyte result, the cumulative effect of the various excursions were employed in assigning the final data qualifier.

3.2. VOC analyses

3.2.1. Criteria compliance

The QA/QC parameters presented in Section 2.1 for VOCs were applied to samples listed in Table 1-1. The following QA/QC parameters were found to meet validation criteria:

- Holding times and sample preservation
- Percent solids
- Initial calibration
- Surrogate analysis
- Duplicate analysis
- LCS analysis
- Internal standard performance
- GC/MS tune performance
- Field duplicate sample analysis
- Target identification
- Compound quantitation and reported detection limit
- System performance

Table 3-2. *Continuing calibration excursion for VOC analyses*

Continuing Calibration ID	Analyte	Excursion	Affected Sample	Action
8/07/00 8:37	1,2,3-trichlorobenzene	52.7 %D	GB-1(9-11') GB-2(9-11') Field Duplicate[GB-2(9-11')] GB-3(9-11') GB-4(14-16')	UJ

Note: %D indicates percent drift.

3.2.4. MS/MSD analysis

The recovery for analytes in the matrix spike and matrix spike duplicate samples GB-1(9-11') and GB-3 (9-11') were outside of the laboratory criteria. As a result of the MS/MSD excursions, the affected analytes in the unspiked samples were qualified as approximate (UJ, J). The samples qualified as a result of the MS/MSD excursions is summarized in the following table:

Table 3-3. *MS/MSD excursions for VOC analyses*

MS/MSD ID	Analyte	Excursion	Affected sample	Action
GB-1 (9-11')	Trichloroethene	131 %R	GB-1(9-11')	J
	Bromomethane	23.6 %R, 21.5 %R		UJ
	Chloroethane	20.1 %R, 20.2 %R		UJ
	Trichlorofluoromethane	16.6 %R		UJ
GB-3 (9-11')	Bromomethane	17.5 %R, 18.7 %R	GB-3(9-11')	UJ
	Chloroethane	15.2 %R, 16.1 %R		UJ
	Trichlorofluoromethane	22.2 %R, 18.3 %R		UJ

Note: %R indicates percent recovery.

3.2.5. Documentation completeness

The following compounds were included in the target compound list in the QAPP (O'Brien & Gere 1999), but were not included in the sample target compound list: 2-chlorotoluene, and 4-chlorotoluene.

The detection limits listed in the data package for methylene chloride (0.3 mg/Kg) and 2-butanone (0.5 mg/Kg) exceeded the limits listed in the QAPP for methylene chloride (0.25 mg/Kg) and 2-butanone (0.25 mg/Kg).

Encore® samplers were used to collect soil samples during this sampling event and the soil samples were analyzed using the medium level soil analysis as preferred by the Michigan Department of Environmental Quality (MDEQ).

3.3.2. ICP serial dilution analyses

The serial dilution recovery for total chromium in sample GB-1(9-11') was greater than the 10%D criterion for analytes with concentrations greater than 10 times the IDL. In accordance with the USEPA data validation guidelines, the results for total chromium in the associated samples were qualified as approximate (J). The ICP serial dilution excursion is summarized in the following table:

Table 3-4. *ICP serial dilution excursion for metal analyses*

Serial dilution ID	Analyte	Excursion	Affected samples	Action
GB-1(9-11')	Total chromium	12 %D	GB-1(9-11') GB-2(9-11') Field Duplicate [GB-2(9-11')] GB-3(9-11') GB-4(14-16')	J

Note:
%D indicates percent difference.

4. Summary and data usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process.

The soil samples, MS/MSD, field duplicate, equipment blank, and trip blank collected from the former Drum Storage Area at the REALM Coldwater Road Facility, were evaluated based on QA/QC criteria established by USEPA Methods as listed in Section 1-2, the QAPP (O'Brien & Gere 1999), and the USEPA National Functional data validation guidelines. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data is considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate. Identification of a data point as approximate indicates uncertainty in the reported concentration of the chemical, but not its assigned identity. The use of approximated analytical data for quantitative uses is consistent with the guidance presented in the *USEPA Risk Assessment Guidance for Superfund* (USEPA 1992).

The following paragraphs present the precision, sensitivity, accuracy, representativeness, comparability, and completeness (PSARCC) parameters used in the evaluation of the sample data.

Precision is measured through the evaluation of field duplicate samples and MS/MSD samples.

Sensitivity is established by reported detection limits, which represent measurable concentrations of analytes, which can be determined with a designated level of confidence. Sensitivity requirements were met for the sample data in this project.

Matrix spike samples, internal standard recoveries, surrogate recoveries, LCS recoveries, and initial and continuing calibration criteria indicate the accuracy of the data.

Holding times, sample preservation, blank analysis, and compound identification and quantification are indicators of the representativeness of the analytical data.

References

O'Brien & Gere Engineers, Inc. 1999. *Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP),* Syracuse, New York.

U.S. Environmental Protection Agency (USEPA). 1983. *Methods for Chemical Analysis of Water & Wastes,* Cincinnati, Ohio.

U.S. Environmental Protection Agency (USEPA). 1992. *USEPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A),* 540/1-891002. Washington D.C.

U.S. Environmental Protection Agency (USEPA). 1994a. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review,* EPA-540/R-94/012. Washington D.C.

U.S. Environmental Protection Agency (USEPA). 1994b. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review,* EPA-540/R-94/013. Washington D.C.

U.S. Environmental Protection Agency (USEPA). 1996. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846),* 3rd Edition. Washington DC.

APPENDIX A

Summary of validated USEPA method analytical results

Analytical Laboratory Report

Lab Sample ID: S02733.01
Sample Tag: GB1 (9-11')
Collected Date/Time: 08/01/2000 08:55
Matrix: Soil
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	3886
1	4oz. Glass	None	Yes	4	3886

Analysis	Qual	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics									
Total Solids		87.6	%	1	160.3	08/04/00	TJG		
Chromium VI		Not detected	mg/kg	1	7197	08/02/00	KJT	7440-47-3	
Cyanide		Not detected	mg/kg	0.5	9010	08/08/00	JDP		
Metals									
Digestion		Completed			varies	08/08/00	EMIL		
Chromium	J	11.1	mg/kg	1.0	6020	08/09/00	EMIL	7440-47-3	
Chromium III		11.1	mg/kg	1.0	6020	08/09/00	EMIL	7440-47-3	
Lead		7.6	mg/kg	1.0	6020	08/09/00	EMIL	7439-92-1	
Mercury		Not detected	mg/kg	0.10	7471M	08/08/00	EMIL	7439-97-6	
Organics									
GC/MS for Volatile Organics 5035									
Benzene		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	71-43-2	
Bromobenzene		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	108-86-1	
Bromochloromethane		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-97-5	
Bromodichloromethane		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-27-4	
Bromoform		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-25-2	
Bromomethane	UJ	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-83-9	
n-Butylbenzene		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	104-51-8	
sec-Butylbenzene		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	135-98-8	
tert-Butylbenzene		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	98-06-6	
Carbon tetrachloride		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	56-23-5	
Chlorobenzene		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	108-90-7	
Chloroethane	UJ	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-00-3	
Chloroform		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	67-66-3	
Chloromethane		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-87-3	
Dibromochloromethane		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	124-48-1	
1,2-Dibromo-3-chloropropane		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	96-12-8	
1,2-Dibromoethane		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	106-93-4	
Dibromomethane		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-95-3	
1,2-Dichlorobenzene		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	95-50-1	
1,3-Dichlorobenzene		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	541-73-1	
1,4-Dichlorobenzene	U	0.05	mg/kg	0.05	5035/8260	08/08/00	VFM	106-46-7	B
Dichlorodifluoromethane		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-71-8	
1,1-Dichloroethane		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-34-3	
1,2-Dichloroethane		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	107-06-2	
1,1-Dichloroethene		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-35-4	
cis-1,2-Dichloroethene		0.82	mg/kg	0.05	5035/8260	08/08/00	VFM	156-59-2	
trans-1,2-Dichloroethene		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	156-60-5	
1,2-Dichloropropane		Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	78-87-5	

B-Compound also found in method blank.

Analytical Laboratory Report

Lab Sample ID: S02733.02
Sample Tag: GB2 (9-11')
Collected Date/Time: 08/01/2000 09:25
Matrix: Soil
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	3886
1	4oz. Glass	None	Yes	4	3886

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	87.7	%	1	160.3	08/04/00	TJG		
Chromium VI	Not detected	mg/kg	1	7197	08/02/00	KJT	7440-47-3	
Cyanide	Not detected	mg/kg	0.5	9010	08/08/00	JDP		
Metals								
Digestion	Completed			varies	08/08/00	EMIL		
Chromium	J 11.9	mg/kg	1.0	6020	08/09/00	EMIL	7440-47-3	
Chromium III	11.9	mg/kg	1.0	6020	08/09/00	EMIL	7440-47-3	
Lead	7.8	mg/kg	1.0	6020	08/09/00	EMIL	7439-92-1	
Mercury	Not detected	mg/kg	0.10	7471M	08/08/00	EMIL	7439-97-6	
Organics								
GC/MS for Volatile Organics 5035								
Benzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	71-43-2	
Bromobenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-27-4	
Bromoform	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-25-2	
Bromomethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-83-9	
n-Butylbenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	104-51-8	
sec-Butylbenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	98-06-6	
Carbon tetrachloride	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	108-90-7	
Chloroethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-00-3	
Chloroform	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	67-66-3	
Chloromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-87-3	
Dibromochloromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	124-48-1	
1,2-Dibromo-3-chloropropane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	106-93-4	
Dibromomethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-95-3	
1,2-Dichlorobenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	95-50-1	
1,3-Dichlorobenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	541-73-1	
1,4-Dichlorobenzene	U 0.05	mg/kg	0.05	5035/8260	08/08/00	VFM	106-46-7	B
Dichlorodifluoromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-71-8	
1,1-Dichloroethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-34-3	
1,2-Dichloroethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	107-06-2	
1,1-Dichloroethene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-35-4	
cis-1,2-Dichloroethene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	156-59-2	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	156-60-5	
1,2-Dichloropropane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	78-87-5	

B-Compound also found in method blank.

Analytical Laboratory Report

Lab Sample ID: S02733.03
Sample Tag: Field Dup
Collected Date/Time: 08/01/2000 :
Matrix: Soil
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	3886
1	4oz. Glass	None	Yes	4	3886

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	88.3	%	1	160.3	08/04/00	TJG		
Chromium VI	Not detected	mg/kg	1	7197	08/02/00	KJT	7440-47-3	
Cyanide	Not detected	mg/kg	0.5	9010	08/08/00	JDP		
Metals								
Digestion	Completed			varies	08/08/00	EMIL		
Chromium	11.6	mg/kg	1.0	6020	08/09/00	EMIL	7440-47-3	
Chromium III	11.6	mg/kg	1.0	6020	08/09/00	EMIL	7440-47-3	
Lead	7.4	mg/kg	1.0	6020	08/09/00	EMIL	7439-92-1	
Mercury	Not detected	mg/kg	0.10	7471M	08/08/00	EMIL	7439-97-6	
Organics								
GC/MS for Volatile Organics 5035								
Benzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	71-43-2	
Bromobenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-27-4	
Bromoform	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-25-2	
Bromomethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-83-9	
n-Butylbenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	104-51-8	
sec-Butylbenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	98-06-6	
Carbon tetrachloride	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	108-90-7	
Chloroethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-00-3	
Chloroform	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	67-66-3	
Chloromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-87-3	
Dibromochloromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	124-48-1	
1,2-Dibromo-3-chloropropane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	106-93-4	
Dibromomethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-95-3	
1,2-Dichlorobenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	95-50-1	
1,3-Dichlorobenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	541-73-1	
1,4-Dichlorobenzene	0.05	mg/kg	0.05	5035/8260	08/08/00	VFM	106-46-7	B
Dichlorodifluoromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-71-8	
1,1-Dichloroethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-34-3	
1,2-Dichloroethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	107-06-2	
1,1-Dichloroethene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-35-4	
cis-1,2-Dichloroethene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	156-59-2	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	156-60-5	
1,2-Dichloropropane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	78-87-5	

B-Compound also found in method blank.

Analytical Laboratory Report

Lab Sample ID: S02733.04
Sample Tag: GB3 (9-11')
Collected Date/Time: 08/01/2000 10:05
Matrix: Soil
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	3886
1	4oz. Glass	None	Yes	4	3886

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	88.2	%	1	160.3	08/04/00	TJG		
Chromium VI	Not detected	mg/kg	1	7197	08/02/00	KJT	7440-47-3	
Cyanide	Not detected	mg/kg	0.5	9010	08/08/00	JDP		
Metals								
Digestion	Completed			varies	08/08/00	EMIL		
Chromium	12.0	mg/kg	1.0	6020	08/09/00	EMIL	7440-47-3	
Chromium III	12.0	mg/kg	1.0	6020	08/09/00	EMIL	7440-47-3	
Lead	7.7	mg/kg	1.0	6020	08/09/00	EMIL	7439-92-1	
Mercury	Not detected	mg/kg	0.10	7471M	08/08/00	EMIL	7439-97-6	
Organics								
GC/MS for Volatile Organics 5035								
Benzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	71-43-2	
Bromobenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-27-4	
Bromoform	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-25-2	
Bromomethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-83-9	
n-Butylbenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	104-51-8	
sec-Butylbenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	98-06-6	
Carbon tetrachloride	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	108-90-7	
Chloroethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-00-3	
Chloroform	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	67-66-3	
Chloromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-87-3	
Dibromochloromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	124-48-1	
1,2-Dibromo-3-chloropropane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	106-93-4	
Dibromomethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-95-3	
1,2-Dichlorobenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	95-50-1	
1,3-Dichlorobenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	541-73-1	
1,4-Dichlorobenzene	0.05	mg/kg	0.05	5035/8260	08/08/00	VFM	106-46-7	B
Dichlorodifluoromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-71-8	
1,1-Dichloroethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-34-3	
1,2-Dichloroethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	107-06-2	
1,1-Dichloroethene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-35-4	
cis-1,2-Dichloroethene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	156-59-2	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	156-60-5	
1,2-Dichloropropane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	78-87-5	

B-Compound also found in method blank.

Analytical Laboratory Report

Lab Sample ID: S02733.07
Sample Tag: GB4 (14-16')
Collected Date/Time: 08/01/2000 11:30
Matrix: Soil
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	3886
1	4oz. Glass	None	Yes	4	3886

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	87.3	%	1	160.3	08/04/00	TJG		
Chromium VI	Not detected	mg/kg	1	7197	08/02/00	KJT	7440-47-3	
Cyanide	Not detected	mg/kg	0.5	9010	08/08/00	JDP		
Metals								
Digestion	Completed			varies	08/08/00	EMIL		
Chromium	12.5	mg/kg	1.0	6020	08/09/00	EMIL	7440-47-3	
Chromium III	12.5	mg/kg	1.0	6020	08/09/00	EMIL	7440-47-3	
Lead	7.0	mg/kg	1.0	6020	08/09/00	EMIL	7439-92-1	
Mercury	Not detected	mg/kg	0.10	7471M	08/08/00	EMIL	7439-97-6	
Organics								
GC/MS for Volatile Organics 5035								
Benzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	71-43-2	
Bromobenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-27-4	
Bromoform	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-25-2	
Bromomethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-83-9	
n-Butylbenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	104-51-8	
sec-Butylbenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	98-06-6	
Carbon tetrachloride	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	108-90-7	
Chloroethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-00-3	
Chloroform	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	67-66-3	
Chloromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-87-3	
Dibromochloromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	124-48-1	
1,2-Dibromo-3-chloropropane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	106-93-4	
Dibromomethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	74-95-3	
1,2-Dichlorobenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	95-50-1	
1,3-Dichlorobenzene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	541-73-1	
1,4-Dichlorobenzene	0.05	mg/kg	0.05	5035/8260	08/08/00	VFM	106-46-7	
Dichlorodifluoromethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-71-8	
1,1-Dichloroethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-34-3	
1,2-Dichloroethane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	107-06-2	
1,1-Dichloroethene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	75-35-4	
cis-1,2-Dichloroethene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	156-59-2	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	156-60-5	
1,2-Dichloropropane	Not detected	mg/kg	0.05	5035/8260	08/08/00	VFM	78-87-5	

B-Compound also found in method blank.

O'BRIEN & GERE ENGINEERS, INC.

Job No. 4144/21487

Sheet 1 of 1

Office: NOVI

Address: 39830 GRAND RIVER

Phone: 248-426-8970

ATTN: MIKE ROBISON

(* DRUM STORAGE PAD)

CHAIN OF CUSTODY

* LEVEL III DATA DELIVERABLE

CLIENT: GM REALM (DRUM STORAGE PAD)

LOCATION: COLDWATER RD

COLLECTED BY: MIKE ROBISON / CHAD KRISTER

(Signature)

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
GB1 (9'-11')	8/1/00	0855	SOIL	GRAB	2	VOCs 8260, CN- 9010, LEAD 6020, HEX CHROM 3060A/7196
GB2 (9'-11')	8/1/00	0925	SOIL	GRAB	2	MERCURY 7471, + TRIVALENT CHROM
FIELD DUP	8/1/00		SOIL/QC	GRAB	2	" " "
GB3 (9'-11')	8/1/00	1005	SOIL	GRAB	2	" " "
(GB3) MS (MATRIX SPIKE)	8/1/00	1005	SOIL/QC	GRAB	2	AS
(GB3) MSD (MATRIX SPIKE DUP)	8/1/00	1005	SOIL/QC	GRAB	2	ABOVE
GB4 (9'-16')	8/1/00	1130	SOIL	GRAB	2	" "
EB (EQUIPMENT BLANK)	8/1/00	1200	DI H2O/QC	QA/QC	5	" "
TRIP BLANK	7/31/00	—	LAB DI H2O	QA/QC	1	" "
						* ATTN: MAYA MUSHAK
						LEVEL III DATA
						DELIVERABLE,
						NORMAL TAT

[1] Matrix = water, wastewater, air, sludge, sediment, etc.

[2] Type = grab, composite

4°C

Relinquished by:	Date	Time	Received by:	Date	Time
of: OBRIEN & GERE	8/1/00	1205	of: FEC	8-1-00	1:00
Relinquished by:	Date	Time	Received by:	Date	Time
of: FEC	8/1/00	2:32	of: FEC		1130
Relinquished by:	Date	Time	Received by:	Date	Time
of:			of:		
Use this space if shipped via courier (e.g., Fed Ex): Relinquished by:	Date	Time	Courier Name:	Date	Time
of:			*Attach delivery/courier receipt to Chain of Custody		
Relinquished by:	Date	Time	Received by:	Date	Time
of:			of:		

s:\forms\qam\custody.wpd

APPENDIX F

Data Validation Report
May 2002 Soil Samples

DATA VALIDATION REPORT

Former Drum Storage Area at the Former Peregrine, U.S. Inc. Property at the Coldwater Road Facility G-1245 East Coldwater Road Flint, Michigan (EPA I.D. No. MIR 000 020 743)

September 2002

4144.007.202.303

DATA VALIDATION REPORT

Soil Samples Collected May 2002
Former Drum Storage Area at the Former Peregrine U.S., Inc. Property at the Coldwater Road Facility Flint, Michigan
(EPA I.D. No. MIR 000 020 743)

Swiatoslav W. Kaczmar, Ph.D., C.I.H.
Vice President, Environmental Toxicology
and Industrial Hygiene

September 2002

O'BRIEN & GERE
ENGINEERS, INC.

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Executive summary

This data validation report addresses data quality for soil samples collected from the former Drum Storage Area at the Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Facility, 1245 Coldwater Road, Flint, Michigan (formerly the Peregrine, U.S., Inc. property). Sample collection activities were conducted by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) on 5/10/02.

The environmental samples, matrix spike, matrix spike duplicate (MS/MSD), field duplicate, equipment blank, and trip blank collected for this investigation were submitted to Merit Laboratories, Inc. of East Lansing, Michigan for analysis of volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Methods. The analytical data generated for this investigation were evaluated by O'Brien & Gere using the quality assurance/quality control (QA/QC) criteria established in the following documents:

- United States Environmental Protection Agency (USEPA) Methods
- Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP) (O'Brien & Gere 1999).

Excursions from the QA/QC criteria were qualified based on guidance provided in the following document:

- United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines For Organic Data Review, EPA-540/R-96/008 (USEPA 1999).

As a result of the data validation process the VOCs data for the soil samples analyzed were determined to be 100% usable for qualitative and quantitative purposes.

1. Introduction

1.1. Program summary

This data validation report addresses the results of a data quality evaluation for soil samples, matrix spike, matrix spike duplicate (MS/MSD), field duplicate, equipment blank, and one trip blank collected from the former Drum Storage Area at the Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Facility, 1245 Coldwater Road, Flint, Michigan (formerly the Peregrine, U.S., Inc. property). Sample collection activities were conducted by O'Brien & Gere on 5/10/02. The environmental samples, MS/MSD sample, field duplicate, equipment blank, and trip blank collected for this investigation were submitted to Merit Laboratories, Inc. of East Lansing, Michigan for analysis of volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Methods listed in Table 1-1. The quantity and types of samples that were submitted for data validation are presented in Table 1-1 below.

Table 1-1. ***Sample cross reference list***

Laboratory Package ID	Date Collected	Sample Identification		Analysis Requested	Reference
		Client ID	Laboratory ID		
S09131	5/10/02	DSA MW-1 (24'-25')	S09131.01	Volatile organic compounds by 8260B	1
		GB-5 (14'-15') MS MSD	S09131.02 S09131.04 S09131.05	Volatile organic compounds by 8260B	1
		GB-5 (19'-20')	S09131.03	Volatile organic compounds by 8260B	1
		GB-6 (14'-15')	S09131.06	Volatile organic compounds by 8260B	1
		GB-6 (19'-20')	S09131.07	Volatile organic compounds by 8260B	1
		GB-7 (14'-15')	S09131.08	Volatile organic compounds by 8260B	1
		GB-7 (19'-20')	S09131.09	Volatile organic compounds by 8260B	1
		Duplicate [GB-6 (14'-15')]	S09131.10	Volatile organic compounds by 8260B	1
		Equipment Blank	S09131.12	Volatile organic compounds by 8260B	1
		Trip Blank	S09131.11	Volatile organic compounds by 8260B	1
		DSA MW-1 (8'-10')	*	Volatile organic compounds by 8260B	1

Note:
MS indicates matrix spike sample.
MSD indicates matrix spike duplicate sample.
The sample identification in brackets indicates the field duplicate sampling location.
* indicates that the sample was place on hold by the Project Manager.
Reference:
1- USEPA. 1996. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846,* 3rd Edition. Washington D.C.

1.2. Data validation protocols

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Data validation is essentially a three-step process in which the analytical data's quality assurance/quality control (QA/QC) information is first compared to a series of QA/QC criteria. Based on the results of this comparison, the analytical data are then assigned qualifiers, which provide an indication of the data's usability. Finally, an overall evaluation of the data's usability is performed. These three steps are described in the following sections.

1.2.1. Comparison to QA/QC criteria

In this report, the analytical data's QA/QC information is compared to the applicable QA/QC criteria provided in the following documents:

- USEPA. 1996. Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), 3rd Edition. Washington DC.

- O'Brien & Gere Engineers, Inc. 1999. Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP), Syracuse, New York.

Full data validation was performed on the soil sample data. Full data validation consists of a review of data summary forms and raw analytical data that were provided in the data packages. The following QA/QC information was included in the review for VOC analyses:

- Chain-of-custody records
- Holding times, sample preservation, and percent solids
- Calibrations
- Blank analysis
- Matrix spike/matrix spike duplicate (MS/MSD) analysis
- Laboratory control sample (LCS) analysis
- Field duplicate analysis
- Surrogate recovery
- Internal standards performance
- Gas chromatography/mass spectrometry (GC/MS) instrument performance check
- Target analyte quantitation, identification, and reported detection limits
- System performance
- Documentation completeness, and
- Overall data assessment.

1.2.2. Assignment of qualifiers

Excursions from the QA/QC criteria were qualified based on guidance provided in the following document:

- USEPA 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA-540/R-96/008. Washington D.C.

In accordance with the USEPA guidance, the following qualifiers are used in data validation:

J Indicates that the analyte concentration should be considered approximate. This qualifier is used when the data validation process identifies a minor deficiency in the data generation process.

UJ Indicates that the analyte reporting limit should be considered approximate. This qualifier is used when the data validation process identifies a minor deficiency in the data generation process.

The following guidelines are used regarding the assignment of qualifiers and the use of qualified data:

The data quality evaluation results in only one qualifier for each analyte; in a case when several qualifiers are applicable to the same analyte, the cumulative effect of the various QA/QC excursions is employed in assigning the final data qualifiers.

QA/QC excursions which do not result in the qualification of an analyte, or which result in additional qualification if the analyte was previously qualified, are not discussed.

The quantitative use of approximated analytical data is consistent with the guidance presented in the USEPA Risk Assessment Guidance for Superfund (USEPA 1992).

1.2.3. Data usability evaluation

Based on the QA/QC information review and the qualifiers assigned to the analytical data, an overall evaluation of the data's usability is performed. This evaluation considers the data parameters of precision, sensitivity, accuracy, representativeness, comparability, and completeness (known as PSARCC parameters), which are described as follows:

- Precision is evaluated through the review of field duplicate samples and MS/MSD samples.

- Sensitivity is evaluated through the review of reported detection limits.

- Accuracy is evaluated through the review of MS/MSD samples, internal standards, surrogate recoveries, LCS recoveries, calibration, and instrument performance check.

- Representativeness is evaluated through the review of holding times, sample preservation and preparation, blank analysis and target compound identification and quantification.

- Comparability is evaluated through the review of the analytical methods and reporting procedures for consistency.

- Completeness is defined as the percentage of sample results that are determined to be usable.

1.2.4. Analytical methods

The soil samples collected for this investigation were analyzed by Merit Laboratories, Inc. (Merit Labs) of East Lansing, Michigan for volatile organic compounds (VOCs) using the methods presented in Table 1-2.

Table 1-2. *Analytical method reference*

Parameter	Method	Reference
VOCs	USEPA Method 5030B/5035/8260B	1

Note:
1. USEPA. 1996 *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846)*, 3rd Edition. Washington DC.

VOC indicates volatile organic compounds.

The following chapters of this document address distinct aspects of the validation process. Specific QA/QC excursions and qualifications performed on the sample data are discussed in Section 2. Data completeness and usability are discussed in Section 3.

The annotated analytical results generated by this validation are presented in Appendix A.

2. Data quality evaluation

2.1. Soil samples

2.1.1. Documentation completeness

- The chain-of-custody associated with soil samples collected 5/10/02 was incomplete. The preservation code, refrigeration requirement and bottle type were not completed on the document. The Project Manager confirmed that Encore® samplers were used to collect soil samples during this sampling event, refrigeration was required and preservation was not added to the soil samples. Preservation was added to the trip blank and equipment blank.

- The soil detection limits listed in the data package for methylene chloride (0.3 mg/Kg), 2-butanone (0.5 mg/Kg), and bromomethane (0.3 mg/Kg) exceeded the limits listed in the QAPP for methylene chloride (0.25 mg/Kg), 2-butanone (0.25 mg/Kg), and bromomethane (0.05 mg/Kg). The aqueous detection limits listed in the data package for methylene chloride (0.005 mg/L) exceeded the limit listed in the QAPP for methylene chloride (0.001 mg/L).

Encore® samplers were used to collect soil samples during this sampling event and the soil samples were analyzed using the medium level soil analysis as preferred by the Michigan Department of Environmental Quality (MDEQ).

The following data package information was requested and received during the validation process since the data packages were incomplete:

- Revised sample result sheets which included correction for percent solids
- The evaluation of the entire list of target analytes for the calibrations
- Initial calibration curves
- Correction for LCS recovery results
- MS summary forms
- Bar graph spectra for instrument performance checks
- Mass spectra for a method blank
- Explanation of the spike traceability information

2.1.2. VOC analyses of soil samples by GC/MS

Criteria compliance

The following QA/QC parameters met validation criteria or did not result in additional qualification of sample results:

- Chain-of-custody records
- Holding times, sample preservation, and percent solids
- Calibrations
- Blank analysis
- Field duplicate analysis
- Surrogate recovery
- Internal standards performance
- GC/MS instrument performance check
- Target analyte quantitation, identification, and reported detection limits, and
- System performance

Excursions from QA/QC criteria presented in Section 1.2 and additional observations are summarized below.

MS/MSD analysis

The percent recovery for chloroethane in MS/MSD field sample GB-5 (14'-15') analyzed for this investigation was less than the lower laboratory control limit, indicating matrix influence or low instrument response. Analysis of the laboratory batch MS/MSD sample (GB-5 (14'-15') confirmed the recovery results. As a result of the MS/MSD excursions, the result in the unspiked sample was qualified as approximate (UJ) to indicate a minor recovery excursion. The following table presents the sample qualified as a result of the MS/MSD excursions:

Table 2.3 *MD/MSD excursions for VOC analyses of soil samples*

MS/MSD ID		Excursion	Affected Samples	Action
GB-5 (14'-15')	Chloroethane	27.9%R, 27.7%R	GB-5 (14'-15')	UJ

Note: %R indicates percent recovery.

LCS analysis

The percent recovery for chloroethane in the LCS analyses performed for this sampling event was outside of the laboratory control limits. Since the recovery for chloromethane in LCS analysis 5/11/02 was less than the lower control limit, the results for chloromethane in samples associated with the LCS were qualified as approximate (UJ), indicating a minor recovery excursion. The LCS excursions are summarized in the following table:

Table 2-4. *LCS excursion for VOC analyses of soil samples*

LCS ID	Analyte	Excursion	Affected Samples	Action
LCS 5/11/02	Chloroethane	21.6 %R	DSA MW-1 (24'-25') GB-5 (14'-15') GB-5 (19'-20') GB-6 (14'-15') GB-6 (19'-20') GB-7 (14'-15') GB-7 (19'-20') Duplicate [GB-6 (14'-15')] Equipment Blank Trip Blank	UJ

Note:
%R indicates percent recovery.

3. Summary and data usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process.

The soil samples, MS/MSD, field duplicate, equipment blank, and trip blank collected from the former Drum Storage Area at the REALM Coldwater Road Facility, were evaluated based on QA/QC criteria established by USEPA Methods as listed in Section 1.2, the QAPP (O'Brien & Gere 1999), and the USEPA National Functional data validation guidelines. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data is considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate. Identification of a data point as approximate indicates uncertainty in the reported concentration of the chemical, but not its assigned identity. The use of approximated analytical data for quantitative uses is consistent with the guidance presented in the USEPA Risk Assessment Guidance for Superfund (USEPA 1992).

A discussion of the data quality with regard to the parameters follows:

Precision: Data usability with respect to precision is 100 percent for volatile organic compound soil data.

For the soil samples, none of the data were rejected for precision excursions.

Sensitivity: With the exceptions of the elevated detection limits noted in Section 2, sensitivity requirements were met for the sample data in this project.

Accuracy: Data usability with respect to accuracy is 100 percent for volatile organic compound soil data.

For the soil samples, none of the data were rejected for accuracy excursions.

Representativeness: Data usability with respect to representativeness is 100 percent for volatile organic compound soil data.

For the soil samples, none of the data were rejected for representativeness excursions.

Comparability: Data usability with respect to comparability is 100 percent, as standardized analytical methods, reporting limits, reference materials, and data deliverables were used throughout the data generation process for this project.

Completeness: Overall, 100 percent of the volatile organic compound soil data were determined to be usable for qualitative and quantitative purposes. Therefore, the completeness objective of 90 percent for this investigation, as presented in the QAPP, was met.

References

O'Brien & Gere Engineers, Inc. 1999. Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP), Syracuse, New York.

United States Environmental Protection Agency (USEPA). 1992. USEPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A), 540/1-891002. Washington D.C.

United States Environmental Protection Agency (USEPA). 1996. Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), 3rd Edition. Washington DC.

United States Environmental Protection Agency (USEPA). 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA-540/R-96/008. Washington D.C.

APPENDIX A

A summary of validated analytical results

Lab Sample ID: S09131.01
Sample Tag: ~~MW-1 (24'-25')~~ DSA MW-1 (24'-25')
Collected Date/Time: 05/10/2002 09:45
Matrix: Soil
COC Reference: 007157

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	87.9	%	1	160.3	05/13/02	BRP		
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/kg	0.3	5035/8260B	05/11/02	JGH	78-93-3	
Benzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-27-4	
Bromoform	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-25-2	
Bromomethane	Not detected	mg/kg	0.3	5035/8260B	05/11/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	108-90-7	
Chloroethane UJ	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-00-3	
Chloroform	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	67-66-3	
Chloromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	98-82-8	

Lab Sample ID: S09131.01 (continued)
Sample Tag: ~~MW-1 (24'-25')~~ DSA MW-1 (24'-25')

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Methylene chloride	Not detected	mg/kg	0.3	5035/8260B	05/11/02	JGH	75-09-2	
Naphthalene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	103-65-1	
Styrene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	100-42-5	
1,1,1,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	127-18-4	
Toluene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-01-4	
o-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	106-42-3	

Lab Sample ID: S09131.02
Sample Tag: GB5 (14'-15')
Collected Date/Time: 05/10/2002 12:00
Matrix: Soil
COC Reference: 007157

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	87.4	%	1	160.3	05/13/02	BRP		
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/kg	0.3	5035/8260B	05/11/02	JGH	78-93-3	
Benzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-27-4	
Bromoform	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-25-2	
Bromomethane	Not detected	mg/kg	0.3	5035/8260B	05/11/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	108-90-7	
Chloroethane UJ	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-00-3	
Chloroform	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	67-66-3	
Chloromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	98-82-8	

Lab Sample ID: S09131.02 (continued)
Sample Tag: GB5 (14'-15')

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Methylene chloride	Not detected	mg/kg	0.3	5035/8260B	05/11/02	JGH	75-09-2	
Naphthalene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	103-65-1	
Styrene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	100-42-5	
1,1,1,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	127-18-4	
Toluene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-01-4	
o-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	106-42-3	

Lab Sample ID: S09131.03
Sample Tag: GB5 (19'-20')
Collected Date/Time: 05/10/2002 12:15
Matrix: Soil
COC Reference: 007157

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	88.1	%	1	160.3	05/13/02	BRP		
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/kg	0.3	5035/8260B	05/11/02	JGH	78-93-3	
Benzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-27-4	
Bromoform	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-25-2	
Bromomethane	Not detected	mg/kg	0.3	5035/8260B	05/11/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	108-90-7	
Chloroethane UJ	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-00-3	
Chloroform	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	67-66-3	
Chloromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	98-82-8	

Lab Sample ID: S09131.03 (continued)
Sample Tag: GB5 (19'-20')

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Methylene chloride	Not detected	mg/kg	0.3	5035/8260B	05/11/02	JGH	75-09-2	
Naphthalene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	103-65-1	
Styrene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	100-42-5	
1,1,1,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	127-18-4	
Toluene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	75-01-4	
o-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/11/02	JGH	106-42-3	

Lab Sample ID: S09131.04
Sample Tag: MS (GB5 14'-15')
Collected Date/Time: 05/10/2002 12:00
Matrix: Soil
COC Reference: 007157

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	87.5	%	1	160.3	05/13/02	BRP		
Organics								
Volatile Organics								
2-Butanone (MEK)	1.5	mg/kg	0.3	5035/8260B	05/11/02	JGH	78-93-3	1N
Benzene	1.60	mg/kg	0.05	5035/8260B	05/11/02	JGH	71-43-2	1N
n-Butylbenzene	1.73	mg/kg	0.05	5035/8260B	05/11/02	JGH	104-51-8	1N
Bromobenzene	1.38	mg/kg	0.05	5035/8260B	05/11/02	JGH	108-86-1	1N
Bromochloromethane	1.50	mg/kg	0.05	5035/8260B	05/11/02	JGH	74-97-5	1N
Bromodichloromethane	1.44	mg/kg	0.05	5035/8260B	05/11/02	JGH	75-27-4	1N
Bromoform	0.97	mg/kg	0.05	5035/8260B	05/11/02	JGH	75-25-2	1N
Bromomethane	1.2	mg/kg	0.3	5035/8260B	05/11/02	JGH	74-83-9	1N
sec-Butylbenzene	1.74	mg/kg	0.05	5035/8260B	05/11/02	JGH	135-98-8	1N
tert-Butylbenzene	1.64	mg/kg	0.05	5035/8260B	05/11/02	JGH	98-06-6	1N
2-Chlorotoluene	1.63	mg/kg	0.05	5035/8260B	05/11/02	JGH	95-49-8	1N
4-Chlorotoluene	1.56	mg/kg	0.05	5035/8260B	05/11/02	JGH	106-43-4	1N
Carbon tetrachloride	1.40	mg/kg	0.05	5035/8260B	05/11/02	JGH	56-23-5	1N
Chlorobenzene	1.51	mg/kg	0.05	5035/8260B	05/11/02	JGH	108-90-7	1N
Chloroethane	0.35	mg/kg	0.05	5035/8260B	05/11/02	JGH	75-00-3	1N
Chloroform	1.65	mg/kg	0.05	5035/8260B	05/11/02	JGH	67-66-3	1N
Chloromethane	1.96	mg/kg	0.05	5035/8260B	05/11/02	JGH	74-87-3	1N
1,1-Dichloroethane	1.58	mg/kg	0.05	5035/8260B	05/11/02	JGH	75-34-3	1N
1,1-Dichloroethene	1.60	mg/kg	0.05	5035/8260B	05/11/02	JGH	75-35-4	1N
1,1-Dichloropropene	1.73	mg/kg	0.05	5035/8260B	05/11/02	JGH	563-58-6	1N
1,2-Dibromo-3-chloropropane	1.08	mg/kg	0.05	5035/8260B	05/11/02	JGH	96-12-8	1N
1,2-Dibromoethane	1.36	mg/kg	0.05	5035/8260B	05/11/02	JGH	106-93-4	1N
1,2-Dichlorobenzene	1.55	mg/kg	0.05	5035/8260B	05/11/02	JGH	95-50-1	1N
1,2-Dichloroethane	1.67	mg/kg	0.05	5035/8260B	05/11/02	JGH	107-06-2	1N
1,2-Dichloropropane	1.56	mg/kg	0.05	5035/8260B	05/11/02	JGH	78-87-5	1N
1,3-Dichlorobenzene	1.44	mg/kg	0.05	5035/8260B	05/11/02	JGH	541-73-1	1N
1,3-Dichloropropane	1.70	mg/kg	0.05	5035/8260B	05/11/02	JGH	142-28-9	1N
1,4-Dichlorobenzene	1.55	mg/kg	0.05	5035/8260B	05/11/02	JGH	106-46-7	1N
2,2-Dichloropropane	1.73	mg/kg	0.05	5035/8260B	05/11/02	JGH	594-20-7	1N
cis-1,2-Dichloroethene	1.68	mg/kg	0.05	5035/8260B	05/11/02	JGH	156-59-2	1N
cis-1,3-Dichloropropene	1.56	mg/kg	0.05	5035/8260B	05/11/02	JGH	10061-01-5	1N
Dibromochloromethane	1.18	mg/kg	0.05	5035/8260B	05/11/02	JGH	124-48-1	1N
Dibromomethane	1.39	mg/kg	0.05	5035/8260B	05/11/02	JGH	74-95-3	1N
Dichlorodifluoromethane	2.21	mg/kg	0.05	5035/8260B	05/11/02	JGH	75-71-8	1N
trans-1,2-Dichloroethene	1.57	mg/kg	0.05	5035/8260B	05/11/02	JGH	156-60-5	1N
Ethylbenzene	1.48	mg/kg	0.05	5035/8260B	05/11/02	JGH	100-41-4	1N
p-Isopropyltoluene	1.76	mg/kg	0.05	5035/8260B	05/11/02	JGH	99-87-6	1N

1-spiked at 25ppb * 50 (dilution factor) N-No correction for total solids.

Lab Sample ID: S09131.04 (continued)
Sample Tag: MS (GB5 14'-15')

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Isopropylbenzene	1.59	mg/kg	0.05	5035/8260B	05/11/02	JGH	98-82-8	1N
Methylene chloride	1.6	mg/kg	0.3	5035/8260B	05/11/02	JGH	75-09-2	1N
Naphthalene	1.07	mg/kg	0.05	5035/8260B	05/11/02	JGH	91-20-3	1N
n-Propylbenzene	1.61	mg/kg	0.05	5035/8260B	05/11/02	JGH	103-65-1	1N
Styrene	1.65	mg/kg	0.05	5035/8260B	05/11/02	JGH	100-42-5	1N
1,1,1,2-Tetrachloroethane	1.30	mg/kg	0.05	5035/8260B	05/11/02	JGH	630-20-6	1N
1,1,1-Trichloroethane	1.65	mg/kg	0.05	5035/8260B	05/11/02	JGH	71-55-6	1N
1,1,2,2-Tetrachloroethane	1.39	mg/kg	0.05	5035/8260B	05/11/02	JGH	79-34-5	1N
1,1,2-Trichloroethane	1.63	mg/kg	0.05	5035/8260B	05/11/02	JGH	79-00-5	1N
1,2,3-Trichlorobenzene	0.88	mg/kg	0.05	5035/8260B	05/11/02	JGH	87-61-6	1N
1,2,3-Trichloropropane	1.34	mg/kg	0.05	5035/8260B	05/11/02	JGH	96-18-4	1N
1,2,4-Trichlorobenzene	1.13	mg/kg	0.05	5035/8260B	05/11/02	JGH	120-82-1	1N
1,2,4-Trimethylbenzene	1.51	mg/kg	0.05	5035/8260B	05/11/02	JGH	95-63-6	1N
1,3,5-Trimethylbenzene	1.62	mg/kg	0.05	5035/8260B	05/11/02	JGH	108-67-8	1N
Tetrachloroethene	1.37	mg/kg	0.05	5035/8260B	05/11/02	JGH	127-18-4	1N
Toluene	1.66	mg/kg	0.05	5035/8260B	05/11/02	JGH	108-88-3	1N
Trichloroethene	1.52	mg/kg	0.05	5035/8260B	05/11/02	JGH	79-01-6	1N
Trichlorofluoromethane	1.73	mg/kg	0.05	5035/8260B	05/11/02	JGH	75-69-4	1N
Vinyl chloride	1.88	mg/kg	0.05	5035/8260B	05/11/02	JGH	75-01-4	1N
o-Xylene	1.73	mg/kg	0.05	5035/8260B	05/11/02	JGH	95-47-6	1N
p,m-Xylene	3.38	mg/kg	0.05	5035/8260B	05/11/02	JGH	106-42-3	1N

1-spiked at 25ppb * 50 (dilution factor) N-No correction for total solids.

Lab Sample ID: S09131.05
Sample Tag: MSD (GB5 14'-15')
Collected Date/Time: 05/10/2002 12:00
Matrix: Soil
COC Reference: 007157

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	87.3	%	1	160.3	05/13/02	BRP		
Organics								
Volatile Organics								
2-Butanone (MEK)	1.2	mg/kg	0.3	5035/8260B	05/11/02	JGH	78-93-3	1N
Benzene	1.52	mg/kg	0.05	5035/8260B	05/11/02	JGH	71-43-2	1N
n-Butylbenzene	1.73	mg/kg	0.05	5035/8260B	05/11/02	JGH	104-51-8	1N
Bromobenzene	1.22	mg/kg	0.05	5035/8260B	05/11/02	JGH	108-86-1	1N
Bromochloromethane	1.35	mg/kg	0.05	5035/8260B	05/11/02	JGH	74-97-5	1N
Bromodichloromethane	1.23	mg/kg	0.05	5035/8260B	05/11/02	JGH	75-27-4	1N
Bromoform	0.84	mg/kg	0.05	5035/8260B	05/11/02	JGH	75-25-2	1N
Bromomethane	1.1	mg/kg	0.3	5035/8260B	05/11/02	JGH	74-83-9	1N
sec-Butylbenzene	1.70	mg/kg	0.05	5035/8260B	05/11/02	JGH	135-98-8	1N
tert-Butylbenzene	1.57	mg/kg	0.05	5035/8260B	05/11/02	JGH	98-06-6	1N
2-Chlorotoluene	1.50	mg/kg	0.05	5035/8260B	05/11/02	JGH	95-49-8	1N
4-Chlorotoluene	1.49	mg/kg	0.05	5035/8260B	05/11/02	JGH	106-43-4	1N
Carbon tetrachloride	1.36	mg/kg	0.05	5035/8260B	05/11/02	JGH	56-23-5	1N
Chlorobenzene	1.38	mg/kg	0.05	5035/8260B	05/11/02	JGH	108-90-7	1N
Chloroethane	0.35	mg/kg	0.05	5035/8260B	05/11/02	JGH	75-00-3	1N
Chloroform	1.50	mg/kg	0.05	5035/8260B	05/11/02	JGH	67-66-3	1N
Chloromethane	1.82	mg/kg	0.05	5035/8260B	05/11/02	JGH	74-87-3	1N
1,1-Dichloroethane	1.50	mg/kg	0.05	5035/8260B	05/11/02	JGH	75-34-3	1N
1,1-Dichloroethene	1.54	mg/kg	0.05	5035/8260B	05/11/02	JGH	75-35-4	1N
1,1-Dichloropropene	1.65	mg/kg	0.05	5035/8260B	05/11/02	JGH	563-58-6	1N
1,2-Dibromo-3-chloropropane	0.98	mg/kg	0.05	5035/8260B	05/11/02	JGH	96-12-8	1N
1,2-Dibromoethane	1.17	mg/kg	0.05	5035/8260B	05/11/02	JGH	106-93-4	1N
1,2-Dichlorobenzene	1.48	mg/kg	0.05	5035/8260B	05/11/02	JGH	95-50-1	1N
1,2-Dichloroethane	1.48	mg/kg	0.05	5035/8260B	05/11/02	JGH	107-06-2	1N
1,2-Dichloropropane	1.41	mg/kg	0.05	5035/8260B	05/11/02	JGH	78-87-5	1N
1,3-Dichlorobenzene	1.39	mg/kg	0.05	5035/8260B	05/11/02	JGH	541-73-1	1N
1,3-Dichloropropane	1.41	mg/kg	0.05	5035/8260B	05/11/02	JGH	142-28-9	1N
1,4-Dichlorobenzene	1.50	mg/kg	0.05	5035/8260B	05/11/02	JGH	106-46-7	1N
2,2-Dichloropropane	1.62	mg/kg	0.05	5035/8260B	05/11/02	JGH	594-20-7	1N
cis-1,2-Dichloroethene	1.56	mg/kg	0.05	5035/8260B	05/11/02	JGH	156-59-2	1N
cis-1,3-Dichloropropene	1.34	mg/kg	0.05	5035/8260B	05/11/02	JGH	10061-01-5	1N
Dibromochloromethane	0.98	mg/kg	0.05	5035/8260B	05/11/02	JGH	124-48-1	1N
Dibromomethane	1.08	mg/kg	0.05	5035/8260B	05/11/02	JGH	74-95-3	1N
Dichlorodifluoromethane	2.02	mg/kg	0.05	5035/8260B	05/11/02	JGH	75-71-8	1N
trans-1,2-Dichloroethene	1.51	mg/kg	0.05	5035/8260B	05/11/02	JGH	156-60-5	1N
Ethylbenzene	1.41	mg/kg	0.05	5035/8260B	05/11/02	JGH	100-41-4	1N
p-Isopropyltoluene	1.74	mg/kg	0.05	5035/8260B	05/11/02	JGH	99-87-6	1N

1-spiked at 25ppb * 50 (dilution factor) N-No correction for total solids.

Lab Sample ID: S09131.05 (continued)
Sample Tag: MSD (GB5 14'-15')

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Isopropylbenzene	1.48	mg/kg	0.05	5035/8260B	05/11/02	JGH	98-82-8	1N
Methylene chloride	1.5	mg/kg	0.3	5035/8260B	05/11/02	JGH	75-09-2	1N
Naphthalene	1.09	mg/kg	0.05	5035/8260B	05/11/02	JGH	91-20-3	1N
n-Propylbenzene	1.51	mg/kg	0.05	5035/8260B	05/11/02	JGH	103-65-1	1N
Styrene	1.52	mg/kg	0.05	5035/8260B	05/11/02	JGH	100-42-5	1N
1,1,1,2-Tetrachloroethane	1.13	mg/kg	0.05	5035/8260B	05/11/02	JGH	630-20-6	1N
1,1,1-Trichloroethane	1.57	mg/kg	0.05	5035/8260B	05/11/02	JGH	71-55-6	1N
1,1,2,2-Tetrachloroethane	1.20	mg/kg	0.05	5035/8260B	05/11/02	JGH	79-34-5	1N
1,1,2-Trichloroethane	1.34	mg/kg	0.05	5035/8260B	05/11/02	JGH	79-00-5	1N
1,2,3-Trichlorobenzene	0.92	mg/kg	0.05	5035/8260B	05/11/02	JGH	87-61-6	1N
1,2,3-Trichloropropane	1.14	mg/kg	0.05	5035/8260B	05/11/02	JGH	96-18-4	1N
1,2,4-Trichlorobenzene	1.10	mg/kg	0.05	5035/8260B	05/11/02	JGH	120-82-1	1N
1,2,4-Trimethylbenzene	1.47	mg/kg	0.05	5035/8260B	05/11/02	JGH	95-63-6	1N
1,3,5-Trimethylbenzene	1.54	mg/kg	0.05	5035/8260B	05/11/02	JGH	108-67-8	1N
Tetrachloroethene	1.32	mg/kg	0.05	5035/8260B	05/11/02	JGH	127-18-4	1N
Toluene	1.53	mg/kg	0.05	5035/8260B	05/11/02	JGH	108-88-3	1N
Trichloroethene	1.40	mg/kg	0.05	5035/8260B	05/11/02	JGH	79-01-6	1N
Trichlorofluoromethane	1.65	mg/kg	0.05	5035/8260B	05/11/02	JGH	75-69-4	1N
Vinyl chloride	1.88	mg/kg	0.05	5035/8260B	05/11/02	JGH	75-01-4	1N
o-Xylene	1.56	mg/kg	0.05	5035/8260B	05/11/02	JGH	95-47-6	1N
p,m-Xylene	3.15	mg/kg	0.05	5035/8260B	05/11/02	JGH	106-42-3	1N

1-spiked at 25ppb * 50 (dilution factor) N-No correction for total solids.

Lab Sample ID: S09131.06
Sample Tag: GB6 (14'-15')
Collected Date/Time: 05/10/2002 13:00
Matrix: Soil
COC Reference: 007157

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	86.5	%	1	160.3	05/13/02	BRP		
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/kg	0.3	5035/8260B	05/12/02	JGH	78-93-3	
Benzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-27-4	
Bromoform	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-25-2	
Bromomethane	Not detected	mg/kg	0.3	5035/8260B	05/12/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-90-7	
Chloroethane UJ	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-00-3	
Chloroform	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	67-66-3	
Chloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	98-82-8	

Lab Sample ID: S09131.06 (continued)
Sample Tag: GB6 (14'-15')

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Methylene chloride	Not detected	mg/kg	0.3	5035/8260B	05/12/02	JGH	75-09-2	
Naphthalene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	103-65-1	
Styrene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	100-42-5	
1,1,1,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	127-18-4	
Toluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-01-4	
o-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-42-3	

Lab Sample ID: S09131.07
Sample Tag: GB6 (19'-20')
Collected Date/Time: 05/10/2002 13:15
Matrix: Soil
COC Reference: 007157

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	86.1	%	1	160.3	05/13/02	BRP		
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/kg	0.3	5035/8260B	05/12/02	JGH	78-93-3	
Benzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-27-4	
Bromoform	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-25-2	
Bromomethane	Not detected	mg/kg	0.3	5035/8260B	05/12/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-90-7	
Chloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-00-3	
Chloroform	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	67-66-3	
Chloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	98-82-8	

Lab Sample ID: S09131.07 (continued)
Sample Tag: GB6 (19'-20')

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Methylene chloride	Not detected	mg/kg	0.3	5035/8260B	05/12/02	JGH	75-09-2	
Naphthalene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	103-65-1	
Styrene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	100-42-5	
1,1,1,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	127-18-4	
Toluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-01-4	
o-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-42-3	

Lab Sample ID: S09131.08
Sample Tag: GB7 (14'-15')
Collected Date/Time: 05/10/2002 14:00
Matrix: Soil
COC Reference: 007157

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Extraction / Prep.								
Acid Rain Zero Headspace Extract	Completed			1312	05/17/02	ARH		
Acid Rain Zero Headspace Extract (Replicate 01)	Completed			1312	05/22/02	ARH		
Inorganics								
Total Solids	85.2	%	1	160.3	05/13/02	BRP		
Organics								
Trichloroethene	0.019	mg/L	0.001	8260B	05/23/02	JGH	79-01-6	
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/kg	0.3	5035/8260B	05/12/02	JGH	78-93-3	
Benzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-27-4	
Bromoform	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-25-2	
Bromomethane	Not detected	mg/kg	0.3	5035/8260B	05/12/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-90-7	
Chloroethane UJ	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-00-3	
Chloroform	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	67-66-3	
Chloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	594-20-7	
cis-1,2-Dichloroethene	0.30	mg/kg	0.06	5035/8260B	05/12/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	124-48-1	

Lab Sample ID: S09131.08 (continued)
Sample Tag: GB7 (14'-15')

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Dibromomethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	98-82-8	
Methylene chloride	Not detected	mg/kg	0.3	5035/8260B	05/12/02	JGH	75-09-2	
Naphthalene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	103-65-1	
Styrene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	100-42-5	
1,1,1,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	127-18-4	
Toluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-88-3	
Trichloroethene	1.51	mg/kg	0.06	5035/8260B	05/12/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-01-4	
o-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-42-3	
Volatile Organics (Replicate 01)								
2-Butanone (MEK)	Not detected	mg/kg	0.3	5035/8260B	05/13/02	JGH	78-93-3	
Benzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	75-27-4	
Bromoform	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	75-25-2	
Bromomethane	Not detected	mg/kg	0.3	5035/8260B	05/13/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	108-90-7	
Chloroethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	75-00-3	
Chloroform	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	67-66-3	
Chloromethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	96-12-8	

Lab Sample ID: S09131.08 (continued)
Sample Tag: GB7 (14'-15')

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (Replicate 01) (continued)								
1,2-Dibromoethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	594-20-7	
cis-1,2-Dichloroethene	0.37	mg/kg	0.06	5035/8260B	05/13/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	98-82-8	
Methylene chloride	Not detected	mg/kg	0.3	5035/8260B	05/13/02	JGH	75-09-2	
Naphthalene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	103-65-1	
Styrene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	100-42-5	
1,1,1,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	127-18-4	
Toluene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	108-88-3	
Trichloroethene	1.95	mg/kg	0.06	5035/8260B	05/13/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	75-01-4	
o-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	106-42-3	

Lab Sample ID: S09131.09
Sample Tag: GB7 (19'-20')
Collected Date/Time: 05/10/2002 14:15
Matrix: Soil
COC Reference: 007157

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	88.2	%	1	160.3	05/13/02	BRP		
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/kg	0.3	5035/8260B	05/12/02	JGH	78-93-3	
Benzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-27-4	
Bromoform	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-25-2	
Bromomethane	Not detected	mg/kg	0.3	5035/8260B	05/12/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-90-7	
Chloroethane UJ	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-00-3	
Chloroform	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	67-66-3	
Chloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	98-82-8	

Lab Sample ID: S09131.09 (continued)
Sample Tag: GB7 (19'-20')

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Methylene chloride	Not detected	mg/kg	0.3	5035/8260B	05/12/02	JGH	75-09-2	
Naphthalene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	103-65-1	
Styrene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	100-42-5	
1,1,1,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	127-18-4	
Toluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-01-4	
o-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-42-3	
Volatile Organics (Replicate 01)								
2-Butanone (MEK)	Not detected	mg/kg	0.3	5035/8260B	05/13/02	JGH	78-93-3	
Benzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	75-27-4	
Bromoform	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	75-25-2	
Bromomethane	Not detected	mg/kg	0.3	5035/8260B	05/13/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	108-90-7	
Chloroethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	75-00-3	
Chloroform	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	67-66-3	
Chloromethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	142-28-9	

Lab Sample ID: S09131.09 (continued)
Sample Tag: GB7 (19'-20')

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (Replicate 01) (continued)								
1,4-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	98-82-8	
Methylene chloride	Not detected	mg/kg	0.3	5035/8260B	05/13/02	JGH	75-09-2	
Naphthalene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	103-65-1	
Styrene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	100-42-5	
1,1,1,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	127-18-4	
Toluene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	75-01-4	
o-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/13/02	JGH	106-42-3	

Lab Sample ID: S09131.10
Sample Tag: Dup
Collected Date/Time: 05/10/2002 :
Matrix: Soil
COC Reference: 007157

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	86.8	%	1	160.3	05/13/02	BRP		
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/kg	0.3	5035/8260B	05/12/02	JGH	78-93-3	
Benzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-27-4	
Bromoform	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-25-2	
Bromomethane	Not detected	mg/kg	0.3	5035/8260B	05/12/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-90-7	
Chloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-00-3	
Chloroform	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	67-66-3	
Chloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	98-82-8	

Lab Sample ID: S09131.10 (continued)
Sample Tag: Dup

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Methylene chloride	Not detected	mg/kg	0.3	5035/8260B	05/12/02	JGH	75-09-2	
Naphthalene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	103-65-1	
Styrene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	100-42-5	
1,1,1,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	127-18-4	
Toluene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	75-01-4	
o-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/kg	0.06	5035/8260B	05/12/02	JGH	106-42-3	

Lab Sample ID: S09131.11
Sample Tag: Trip Blank
Collected Date/Time: 05/06/2002 :
Matrix: Liquid
COC Reference: 007157

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40 ml Glass	HCL	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/L	0.05	8260B	05/12/02	JGH	78-93-3	
Benzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	75-27-4	
Bromoform	Not detected	mg/L	0.001	8260B	05/12/02	JGH	75-25-2	
Bromomethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/L	0.001	8260B	05/12/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	108-90-7	
Chloroethane UJ	Not detected	mg/L	0.001	8260B	05/12/02	JGH	75-00-3	
Chloroform	Not detected	mg/L	0.001	8260B	05/12/02	JGH	67-66-3	
Chloromethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	98-82-8	
Methylene chloride	Not detected	mg/L	0.005	8260B	05/12/02	JGH	75-09-2	
Naphthalene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	103-65-1	
Styrene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	100-42-5	

Lab Sample ID: S09131.11 (continued)
Sample Tag: Trip Blank

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
1,1,1,2-Tetrachloroethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	127-18-4	
Toluene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/L	0.001	8260B	05/12/02	JGH	75-01-4	
o-Xylene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	106-42-3	

Lab Sample ID: S09131.12
Sample Tag: EB
Collected Date/Time: 05/10/2002 14:30
Matrix: Liquid
COC Reference: 007157

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40 ml Glass	HCL	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/L	0.05	8260B	05/12/02	JGH	78-93-3	
Benzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	75-27-4	
Bromoform	Not detected	mg/L	0.001	8260B	05/12/02	JGH	75-25-2	
Bromomethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/L	0.001	8260B	05/12/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	108-90-7	
Chloroethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	75-00-3	
Chloroform	Not detected	mg/L	0.001	8260B	05/12/02	JGH	67-66-3	
Chloromethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	98-82-8	
Methylene chloride	Not detected	mg/L	0.005	8260B	05/12/02	JGH	75-09-2	
Naphthalene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	103-65-1	
Styrene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	100-42-5	

Lab Sample ID: S09131.12 (continued)
Sample Tag: EB

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
1,1,1,2-Tetrachloroethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	127-18-4	
Toluene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/L	0.001	8260B	05/12/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/L	0.001	8260B	05/12/02	JGH	75-01-4	
o-Xylene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/L	0.001	8260B	05/12/02	JGH	106-42-3	

APPENDIX G

Data Validation Report
May 2002 SPLP Analysis Sample

DATA VALIDATION REPORT

Former Drum Storage Area at the Former Peregrine, U.S. Inc. Property at the Coldwater Road Facility G-1245 East Coldwater Road Flint, Michigan (EPA I.D. No. MIR 000 020 743)

September 2002

4144.007.202.303

DATA VALIDATION REPORT

Spoil SPLP Sample Collected May 2002
Former Drum Storage Area at the Former Peregrine U.S., Inc. Property at the Coldwater Road Facility Flint, Michigan
(EPA I.D. No. MIR 000 020 743)

Swiatoslav W. Kaczmar, Ph.D., C.I.H.
Vice President, Environmental Toxicology
and Industrial Hygiene

September 2002

O'BRIEN & GERE
ENGINEERS, INC.

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A USEPA Method 8260B sample result for trichloroethene

Executive summary

This data validation report addresses data quality for one soil sample collected from the former Drum Storage Area at the Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Facility, 1245 Coldwater Road, Flint, Michigan (formerly the Peregrine, U.S., Inc. property). Sample collection activities were conducted by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) on 5/10/02.

The environmental sample collected for this investigation was submitted to Merit Laboratories, Inc. of East Lansing, Michigan for preparation by synthetic precipitation leaching procedure (SPLP) and consequent analysis for trichloroethene using United States Environmental Protection Agency (USEPA) Methods. The analytical data generated for this investigation were evaluated by O'Brien & Gere using the quality assurance/quality control (QA/QC) criteria established in the following documents:

- United States Environmental Protection Agency (USEPA) Methods
- Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP) (O'Brien & Gere 2000).
- Remedial Investigation Coldwater Road Facility, REALM, Quality Assurance Project Plan (QAPP) Addendum (O'Brien & Gere 2002).

Excursions from the QA/QC criteria were qualified based on guidance provided in the following document:

- United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines For Organic Data Review, EPA-540/R-96/008 (USEPA 1999).

As a result of the data validation process the trichloroethene data for the soil sample analyzed was determined to be 100% usable for qualitative and quantitative purposes.

1. Introduction

1.1. Program summary

This data validation report addresses the results of a data quality evaluation for one soil sample collected from the former Drum Storage Area at the Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Facility, 1245 Coldwater Road, Flint, Michigan (formerly the Peregrine, U.S., Inc. property). Sample collection activities were conducted by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) on 5/10/02. The environmental sample collected for this investigation was submitted to Merit Laboratories, Inc. of East Lansing, Michigan for analysis of trichloroethene using United States Environmental Protection Agency (USEPA) Methods listed in Table 1-2. The sample that was submitted for data validation is presented in Table 1-1 below.

Table 1-1. ***Sample cross reference list***

Laboratory Package ID	Date Collected	Sample Identification		Analysis Requested	Reference
		Client ID	Laboratory ID		
S09131	5/10/02	GB-7 (14'-15')	S09131.08	Trichloroethene by SPLP	1

Reference:
1- USEPA. 1996. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846,* 3rd Edition. Washington D.C.

1.2. Data validation protocols

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Data validation is essentially a three-step process in which the analytical data's quality assurance/quality control (QA/QC) information is first compared to a series of QA/QC criteria. Based on the results of this comparison, the analytical data are then assigned qualifiers, which provide an indication of the data's usability. Finally, an overall evaluation of the data's usability is performed. These three steps are described in the following sections.

1.2.1. Comparison to QA/QC criteria

In this report, the analytical data's QA/QC information is compared to the applicable QA/QC criteria provided in the following documents:

- USEPA. 1996. Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), 3rd Edition. Washington DC.

- O'Brien & Gere Engineers, Inc. 1999. Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP), Syracuse, New York.

- O'Brien & Gere Engineers, Inc. 2002. Remedial Investigation Coldwater Road Facility, REALM, Quality Assurance Project Plan (QAPP) Addendum, Syracuse, New York.

Full data validation was performed on the soil sample data. Full data validation consists of a review of data summary forms and raw analytical data that were provided in the data packages. The following QA/QC information was included in the review for trichloroethene analyses:

- Chain-of-custody records
- Holding times and sample preservation
- Calibrations
- Blank analysis
- Matrix spike/matrix spike duplicate (MS/MSD) analysis
- Laboratory control sample (LCS) analysis
- Field duplicate analysis
- Surrogate recovery
- Internal standards performance
- Gas chromatography/mass spectrometry (GC/MS) instrument performance check
- Target analyte quantitation, identification, and reported detection limits
- System performance
- Documentation completeness, and
- Overall data assessment.

1.2.2. Assignment of qualifiers

Excursions from the QA/QC criteria were qualified based on guidance provided in the following document:

- USEPA 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA-540/R-94/012. Washington D.C.

In accordance with the USEPA guidance, the following qualifiers are used in data validation:

J Indicates that the analyte concentration should be considered approximate. This qualifier is used when the data validation process identifies a minor deficiency in the data generation process.

UJ Indicates that the analyte reporting limit should be considered approximate. This qualifier is used when the data validation process identifies a minor deficiency in the data generation process.

The following guidelines are used regarding the assignment of qualifiers and the use of qualified data:

The data quality evaluation results in only one qualifier for each analyte; in a case when several qualifiers are applicable to the same analyte, the cumulative effect of the various QA/QC excursions is employed in assigning the final data qualifiers.

QA/QC excursions which do not result in the qualification of an analyte, or which result in additional qualification if the analyte was previously qualified, are not discussed.

The quantitative use of approximated analytical data is consistent with the guidance presented in the USEPA Risk Assessment Guidance for Superfund (USEPA 1992).

1.2.3. Data usability evaluation

Based on the QA/QC information review and the qualifiers assigned to the analytical data, an overall evaluation of the data's usability is performed. This evaluation considers the data parameters of precision, sensitivity, accuracy, representativeness, comparability, and completeness (known as PSARCC parameters), which are described as follows:

- Precision is evaluated through the review of field duplicate samples and MS/MSD samples.
- Sensitivity is evaluated through the review of reported detection limits.
- Accuracy is evaluated through the review of MS/MSD samples, internal standards, surrogate recoveries, LCS recoveries, calibration, and instrument performance check.
- Representativeness is evaluated through the review of holding times, sample preservation and preparation, blank analysis and target compound identification and quantification.

- Comparability is evaluated through the review of the analytical methods and reporting procedures for consistency.

- Completeness is defined as the percentage of sample results that are determined to be usable.

1.2.4. Analytical methods

The soil sample collected for this investigation was analyzed by Merit Laboratories, Inc. (Merit Labs) of East Lansing, Michigan for trichloroethene using the methods presented in Table 1-2.

Table 1-2. *Analytical method reference*

Parameter	Method	Reference
Trichloroethene	USEPA Methods 1312/5030B/8260B	1

Note:
1. USEPA. 1996 *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846)*, 3rd Edition. Washington DC.

The following chapters of this document address distinct aspects of the validation process. Specific QA/QC issues are discussed in Section 2. Data completeness and usability are discussed in Section 3.

The annotated analytical results generated by this validation are presented in Appendix A.

2. Data quality evaluation

2.1. Soil sample

2.1.1. Documentation completeness

Encore® samplers were used to collect the soil sample during this sampling event.

The following data package information was requested and received during the validation process since the data packages were incomplete:

- The evaluation of the target analyte for the calibrations
- Initial calibration curves
- Bar graph spectra for instrument performance checks
- Explanation of the spike traceability information

2.1.2. Trichloroethene analyses of SPLP soil sample by GC/MS

Criteria compliance

The following QA/QC parameters met validation criteria or did not result in additional qualification of sample results:

- Chain-of-custody records
- Holding times and sample preservation
- Calibrations
- Blank analysis
- MS/MSD analysis
- LCS analysis
- Field duplicate analysis
- Surrogate recovery
- Internal standards performance
- GC/MS instrument performance check
- Target analyte quantitation, identification, and reported detection limits
- System performance

Excursions from QA/QC criteria presented in Section 1.2 were not detected in the data presented for this sample. Therefore, qualification of sample data was not required.

3. Summary and data usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process.

The soil sample collected from the former Drum Storage Area at the REALM Coldwater Road Facility, was evaluated based on QA/QC criteria established by USEPA Methods as listed in Section 1.2, the QAPP (O'Brien & Gere 2002), and the USEPA National Functional data validation guidelines. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data is considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process would have resulted in some sample data being characterized as approximate.

A discussion of the data quality with regard to the parameters follows:

Precision: Data usability with respect to precision is 100 percent for volatile organic compound soil data.

For the soil sample, none of the data were rejected for precision excursions.

Sensitivity: With the exceptions of the elevated detection limits noted in Section 2, sensitivity requirements were met for the sample data in this project.

Accuracy: Data usability with respect to accuracy is 100 percent for volatile organic compound soil data.

For the soil sample, none of the data were rejected for accuracy excursions.

Representativeness: Data usability with respect to representativeness is 100 percent for volatile organic compound soil data.

For the soil sample, none of the data were rejected for representativeness excursions.

Comparability: Data usability with respect to comparability is 100 percent, as standardized analytical methods, reporting limits, reference materials, and data deliverables were used throughout the data generation process for this project.

Completeness: Overall, 100 percent of the trichloroethene soil data were determined to be usable for qualitative and quantitative purposes. Therefore, the completeness objective of 90 percent for this investigation, as presented in the QAPP, was met.

References

O'Brien & Gere Engineers, Inc. 1999. Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP), Syracuse, New York.

O'Brien & Gere Engineers, Inc. 2002. Remedial Investigation Coldwater Road Facility, REALM, Quality Assurance Project Plan (QAPP) Addendum, Syracuse, New York.

United States Environmental Protection Agency (USEPA). 1996. Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), 3rd Edition. Washington DC.

United States Environmental Protection Agency (USEPA). 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA-540/R-96/008. Washington D.C.

Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S09131.08
Sample Tag: GB7 (14'-15')
Collected Date/Time: 05/10/2002 14:00
Matrix: Soil
COC Reference: 007157

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Extraction / Prep.								
Acid Rain Zero Headspace Extract	Completed			1312	05/17/02	ARH		
Acid Rain Zero Headspace Extract (Replicate 01)	Completed			1312	05/22/02	ARH		
Organics, SPLP								
Trichloroethene	0.019	mg/L	0.001	8260B	05/23/02	JGH	79-01-6	

APPENDIX H

Monitoring Well Construction Details

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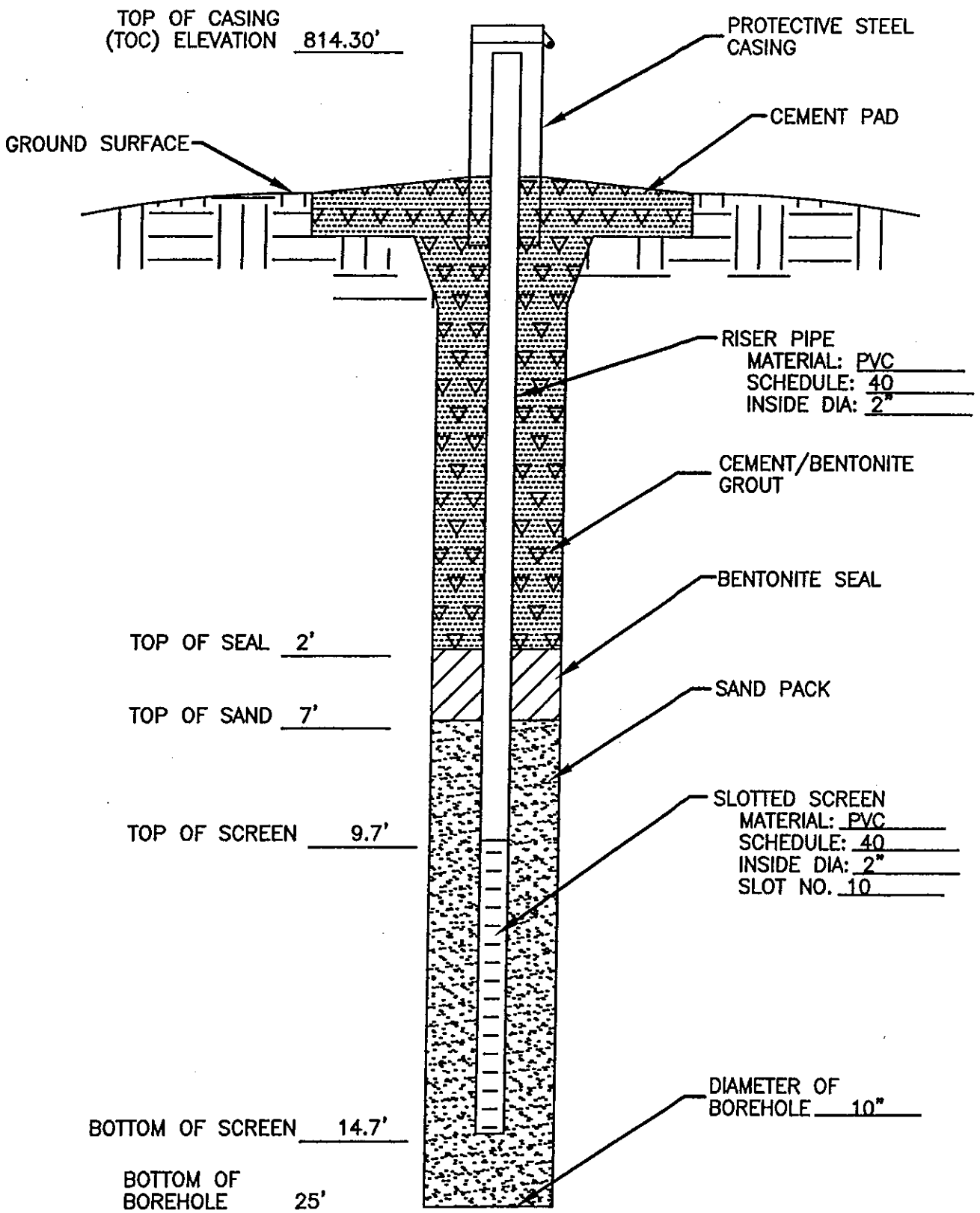

REALM–Coldwater Road
Flint, Michigan
MONITORING WELL DSA MW–1

I/nov/proj/4144.007/DSP/mwdetmw1.dwg

APPENDIX I

Data Validation Report- July 2002
Ground Water Samples

DATA VALIDATION REPORT

Former Drum Storage Area at the Former Peregrine, U.S. Inc. Property at the Coldwater Road Facility G-1245 East Coldwater Road Flint, Michigan (EPA I.D. No. MIR 000 020 743)

September 2002

4144.007.202.303

DATA VALIDATION REPORT

Water Samples Collected July 2002
Former Drum Storage Area at the Former Peregrine U.S., Inc. Property at the Coldwater Road Facility Flint, Michigan
(EPA I.D. No. MIR 000 020 743)

Swiatoslav W. Kaczmar, Ph.D., C.I.H.
Vice President, Environmental Toxicology
and Industrial Hygiene

September 2002

O'BRIEN & GERE
ENGINEERS, INC.

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A USEPA Method 8260B sample results for volatile organic compounds

Executive summary

This data validation report addresses data quality for water samples collected from the former Drum Storage Area at the Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Facility, 1245 Coldwater Road, Flint, Michigan (formerly the Peregrine, U.S., Inc. property). Sample collection activities were conducted by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) on 7/23/02.

The environmental samples, matrix spike, matrix spike duplicate (MS/MSD), field duplicate, equipment blank, and trip blank collected for this investigation were submitted to Merit Laboratories, Inc. of East Lansing, Michigan for analysis of volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Methods. The analytical data generated for this investigation were evaluated by O'Brien & Gere using the quality assurance/quality control (QA/QC) criteria established in the following documents:

- United States Environmental Protection Agency (USEPA) Methods
- Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP) (O'Brien & Gere 1999).

Excursions from the QA/QC criteria were qualified based on guidance provided in the following document:

- United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines For Organic Data Review, EPA-540/R-96/008 (USEPA 1999).

As a result of the data validation process the VOCs data for the water samples analyzed were determined to be 100% usable for qualitative and quantitative purposes.

1. Introduction

1.1. Program summary

This data validation report addresses the results of a data quality evaluation for water samples, matrix spike, matrix spike duplicate (MS/MSD), field duplicate, equipment blank, and one trip blank collected from the former Drum Storage Area at the Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Facility, 1245 Coldwater Road, Flint, Michigan (formerly the Peregrine, U.S., Inc. property). Sample collection activities were conducted by O'Brien & Gere on 7/23/02. The environmental samples, MS/MSD sample, field duplicate, equipment blank, and trip blank collected for this investigation were submitted to Merit Laboratories, Inc. of East Lansing, Michigan for analysis of volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Methods listed in Table 1-2. The quantity and types of samples that were submitted for data validation are presented in Table 1-1 below.

Table 1-1. ***Sample cross reference list***

Laboratory Package ID	Date Collected	Sample Identification		Analysis Requested	Reference
		Client ID	Laboratory ID		
S09904	7/23/02	DSA MW-1 MS MSD	S09904.01 S09904.02 S09904.03	Volatile organic compounds by 8260B	1
		Duplicate [DSA MW-1]	S09094.04	Volatile organic compounds by 8260B	1
		Equipment Blank	S09904.05	Volatile organic compounds by 8260B	1
		Trip Blank	S09904.06	Volatile organic compounds by 8260B	1

Note:
MS indicates matrix spike sample.
MSD indicates matrix spike duplicate sample.
The sample identification in brackets indicates the field duplicate sampling location.

Reference:
1- USEPA. 1996. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846,* 3rd Edition. Washington D.C.

1.2. Data validation protocols

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Data validation is essentially a three-step process in which the analytical data's quality assurance/quality control (QA/QC) information is first compared to a

series of QA/QC criteria. Based on the results of this comparison, the analytical data are then assigned qualifiers, which provide an indication of the data's usability. Finally, an overall evaluation of the data's usability is performed. These three steps are described in the following sections.

1.2.1. Comparison to QA/QC criteria

In this report, the analytical data's QA/QC information is compared to the applicable QA/QC criteria provided in the following documents:

- USEPA. 1996. Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), 3rd Edition. Washington DC.

- O'Brien & Gere Engineers, Inc. 1999. Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP), Syracuse, New York.

Full data validation was performed on the water sample data. Full data validation consists of a review of data summary forms and raw analytical data that were provided in the data packages. The following QA/QC information was included in the review for VOC analyses:

- Chain-of-custody records
- Holding times and sample preservation
- Calibrations
- Blank analysis
- Matrix spike/matrix spike duplicate (MS/MSD) analysis
- Laboratory control sample (LCS) analysis
- Field duplicate analysis
- Surrogate recovery
- Internal standards performance
- Gas chromatography/mass spectrometry (GC/MS) instrument performance check
- Target analyte quantitation, identification, and reported detection limits
- System performance
- Documentation completeness, and
- Overall data assessment.

1.2.2. Assignment of qualifiers

Excursions from the QA/QC criteria were qualified based on guidance provided in the following document:

- USEPA 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA-540/R-96/008. Washington D.C.

In accordance with the USEPA guidance, the following qualifiers are used in data validation:

J Indicates that the analyte concentration should be considered approximate. This qualifier is used when the data validation process identifies a minor deficiency in the data generation process.

UJ Indicates that the analyte reporting limit should be considered approximate. This qualifier is used when the data validation process identifies a minor deficiency in the data generation process.

The following guidelines are used regarding the assignment of qualifiers and the use of qualified data:

The data quality evaluation results in only one qualifier for each analyte; in a case when several qualifiers are applicable to the same analyte, the cumulative effect of the various QA/QC excursions is employed in assigning the final data qualifiers.

QA/QC excursions which do not result in the qualification of an analyte, or which result in additional qualification if the analyte was previously qualified, are not discussed.

The quantitative use of approximated analytical data is consistent with the guidance presented in the USEPA Risk Assessment Guidance for Superfund (USEPA 1992).

1.2.3. Data usability evaluation

Based on the QA/QC information review and the qualifiers assigned to the analytical data, an overall evaluation of the data's usability is performed. This evaluation considers the data parameters of precision, sensitivity, accuracy, representativeness, comparability, and completeness (known as PSARCC parameters), which are described as follows:

- Precision is evaluated through the review of field duplicate samples and MS/MSD samples.
- Sensitivity is evaluated through the review of reported detection limits.
- Accuracy is evaluated through the review of MS/MSD samples, internal standards, surrogate recoveries, LCS recoveries, calibration, and instrument performance check.

- Representativeness is evaluated through the review of holding times, sample preservation and preparation, blank analysis and target compound identification and quantification.

- Comparability is evaluated through the review of the analytical methods and reporting procedures for consistency.

- Completeness is defined as the percentage of sample results that are determined to be usable.

1.2.4. Analytical methods

The water samples collected for this investigation were analyzed by Merit Laboratories, Inc. (Merit Labs) of East Lansing, Michigan for volatile organic compounds (VOCs) using the methods presented in Table 1-2.

Table 1-2. *Analytical method reference*

Parameter	Method	Reference
VOCs	USEPA Method 5030B/5035/8260B	1

Note:
1. USEPA. 1996 *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846)*, 3rd Edition. Washington DC.

VOC indicates volatile organic compounds.

The following chapters of this document address distinct aspects of the validation process. Specific QA/QC excursions and qualifications performed on the sample data are discussed in Section 2. Data completeness and usability are discussed in Section 3.

The annotated analytical results generated by this validation are presented in Appendix A.

2. Data quality evaluation

2.1. Water samples

2.1.1. Documentation completeness

- The aqueous detection limits listed in the data package for methylene chloride (0.005 mg/L) exceeded the limit listed in the QAPP for methylene chloride (0.001 mg/L).

The following data package information was requested and received during the validation process since the data packages were incomplete:

- The evaluation of the entire list of target analytes for the calibrations
- Initial calibration curves
- MS summary forms
- Bar graph spectra for instrument performance checks
- Explanation of the spike traceability information

2.1.2. VOC analyses of water samples by GC/MS

Criteria compliance

The following QA/QC parameters met validation criteria or did not result in additional qualification of sample results:

- Chain-of-custody records
- Holding times and sample preservation
- Calibrations
- Blank analysis
- LCS analysis
- Field duplicate analysis
- Surrogate recovery
- Internal standards performance
- GC/MS instrument performance check, and
- Target analyte quantitation and identification

Excursions from QA/QC criteria presented in Section 1.2 and additional observations are summarized below.

MS/MSD analysis

The percent recovery for trichloroethene in the dilution analysis of MS/MSD field sample DSA MW-1 analyzed for this investigation was

greater than the upper laboratory control limit, indicating matrix influence or high instrument response. As a result of the MS/MSD excursions, the result in the unspiked sample was qualified as approximate (J) to indicate a minor recovery excursion. The following table presents the sample qualified as a result of the MS/MSD excursions:

Table 2.3. *MS/MSD excursions for VOC analyses of ground water samples*

MS/MSD ID		Excursion	Affected Samples	Action
DSA MW-1	Trichloroethene	168.7%R, 1239%R	DSA MW-1	J

Note: %R indicates percent recovery.

Target analyte reported detection limits and system performance

Since concentrations of trichloroethene and cis-1,2-dichloroethene that were greater than the upper calibration range were detected during the initial analysis of the water samples, a 1:20 dilution analysis was performed. The results from the dilution analysis for trichloroethene and cis-1,2-dichloroethene and the undiluted results for the remaining analytes were reported.

The laboratory reported that, during the initial analysis, laboratory contamination of the LCS was detected. Therefore, a re-analysis of the associated quality control samples, equipment blank and trip blank was performed and the results reported from the re-analyses.

3. Summary and data usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process.

The water samples, MS/MSD, field duplicate, equipment blank, and trip blank collected from the former Drum Storage Area at the REALM Coldwater Road Facility, were evaluated based on QA/QC criteria established by USEPA Methods as listed in Section 1.2, the QAPP (O'Brien & Gere 1999), and the USEPA National Functional data validation guidelines. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data is considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate. Identification of a data point as approximate indicates uncertainty in the reported concentration of the chemical, but not its assigned identity. The use of approximated analytical data for quantitative uses is consistent with the guidance presented in the USEPA Risk Assessment Guidance for Superfund (USEPA 1992).

A discussion of the data quality with regard to the parameters follows:

Precision: Data usability with respect to precision is 100 percent for volatile organic compound water data.

For the water samples, none of the data were rejected for precision excursions.

Sensitivity: With the exceptions of the elevated detection limits noted in Section 2, sensitivity requirements were met for the sample data in this project.

Accuracy: Data usability with respect to accuracy is 100 percent for volatile organic compound water data.

For the water samples, none of the data were rejected for accuracy excursions.

Representativeness: Data usability with respect to representativeness is 100 percent for volatile organic compound water data.

For the water samples, none of the data were rejected for representativeness excursions.

Comparability: Data usability with respect to comparability is 100 percent, as standardized analytical methods, reporting limits, reference materials, and data deliverables were used throughout the data generation process for this project.

Completeness: Overall, 100 percent of the volatile organic compound water data were determined to be usable for qualitative and quantitative purposes. Therefore, the completeness objective of 90 percent for this investigation, as presented in the QAPP, was met.

References

O'Brien & Gere Engineers, Inc. 1999. Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP), Syracuse, New York.

United States Environmental Protection Agency (USEPA). 1992. USEPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A), 540/1-891002. Washington D.C.

United States Environmental Protection Agency (USEPA). 1996. Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), 3rd Edition. Washington DC.

United States Environmental Protection Agency (USEPA). 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA-540/R-96/008. Washington D.C.

APPENDIX A

A summary of validated analytical results

Merit Laboratories, Inc.

Analytical Laboratory Report

Revised Report

Lab Sample ID: S09904.01
Sample Tag: ~~DSP-1~~ DSA MW4
Collected Date/Time: 07/23/2002 08:45
Matrix: Groundwater
COC Reference: 010676

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40 ml VOAs	HCl	Yes	4	5462

Dup

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/L	0.05	8260B	08/01/02	JGH	78-93-3	
Benzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-27-4	
Bromoform	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-25-2	
Bromomethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/L	0.001	8260B	08/01/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	108-90-7	
Chloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-00-3	
Chloroform	Not detected	mg/L	0.001	8260B	08/01/02	JGH	67-66-3	
Chloromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	74-87-3	
1,1-Dichloroethane	0.013	mg/L	0.001	8260B	08/01/02	JGH	75-34-3	
1,1-Dichloroethene	0.003	mg/L	0.001	8260B	08/01/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	594-20-7	
cis-1,2-Dichloroethene	0.65J 0.528	mg/L	~~0.001~~ 0.02	8260B	08/01/02	JGH	156-59-2	E
cis-1,3-Dichloropropene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-71-8	
trans-1,2-Dichloroethene	0.018	mg/L	0.001	8260B	08/01/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	98-82-8	
Methylene chloride	Not detected	mg/L	0.005	8260B	08/01/02	JGH	75-09-2	
Naphthalene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	103-65-1	

E-Target value estimated due to exceeding calibration range.

Lab Sample ID: S09904.01 (continued)
Sample Tag: ~~DSP-1~~ DSA Mw1 Dup

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Styrene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	100-42-5	
1,1,1,2-Tetrachloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	127-18-4	
Toluene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	108-88-3	
Trichloroethene	0.809 J 1.42	mg/L	0.001 0.02	8260B	08/01/02	JGH	79-01-6	E
Trichlorofluoromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-01-4	
o-Xylene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	106-42-3	
Volatile Organics (Replicate 01)								
2-Butanone (MEK)	Not detected	mg/L	1	8260B	08/01/02	JGH	78-93-3	C
Benzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	71-43-2	C
n-Butylbenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	104-51-8	C
Bromobenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	108-86-1	C
Bromochloromethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	74-97-5	C
Bromodichloromethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	75-27-4	C
Bromoform	Not detected	mg/L	0.02	8260B	08/01/02	JGH	75-25-2	C
Bromomethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	74-83-9	C
sec-Butylbenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	135-98-8	C
tert-Butylbenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	98-06-6	C
2-Chlorotoluene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	95-49-8	C
4-Chlorotoluene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	106-43-4	C
Carbon tetrachloride	Not detected	mg/L	0.02	8260B	08/01/02	JGH	56-23-5	C
Chlorobenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	108-90-7	C
Chloroethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	75-00-3	C
Chloroform	Not detected	mg/L	0.02	8260B	08/01/02	JGH	67-66-3	C
Chloromethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	74-87-3	C
1,1-Dichloroethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	75-34-3	C
1,1-Dichloroethene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	75-35-4	C
1,1-Dichloropropene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	563-58-6	C
1,2-Dibromo-3-chloropropane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	96-12-8	C
1,2-Dibromoethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	106-93-4	C
1,2-Dichlorobenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	95-50-1	C
1,2-Dichloroethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	107-06-2	C
1,2-Dichloropropane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	78-87-5	C
1,3-Dichlorobenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	541-73-1	C
1,3-Dichloropropane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	142-28-9	C
1,4-Dichlorobenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	106-46-7	C

E-Target value estimated due to exceeding calibration range.
C-Higher detection limit due to high target concentration.

Lab Sample ID: S09904.01 (continued)
Sample Tag: ~~DSP-I~~ DSA MW1

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (Replicate 01) (continued)								
2,2-Dichloropropane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	594-20-7	C
cis-1,2-Dichloroethene	0.65	mg/L	0.02	8260B	08/01/02	JGH	156-59-2	C
cis-1,3-Dichloropropene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	10061-01-5	C
Dibromochloromethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	124-48-1	C
Dibromomethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	74-95-3	C
Dichlorodifluoromethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	75-71-8	C
trans-1,2-Dichloroethene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	156-60-5	C
Ethylbenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	100-41-4	C
p-Isopropyltoluene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	99-87-6	C
Isopropylbenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	98-82-8	C
Methylene chloride	Not detected	mg/L	0.1	8260B	08/01/02	JGH	75-09-2	C
Naphthalene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	91-20-3	C
n-Propylbenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	103-65-1	C
Styrene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	100-42-5	C
1,1,1,2-Tetrachloroethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	630-20-6	C
1,1,1-Trichloroethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	71-55-6	C
1,1,2,2-Tetrachloroethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	79-34-5	C
1,1,2-Trichloroethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	79-00-5	C
1,2,3-Trichlorobenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	87-61-6	C
1,2,3-Trichloropropane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	96-18-4	C
1,2,4-Trichlorobenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	120-82-1	C
1,2,4-Trimethylbenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	95-63-6	C
1,3,5-Trimethylbenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	108-67-8	C
Tetrachloroethene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	127-18-4	C
Toluene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	108-88-3	C
Trichloroethene	J 1.42	mg/L	0.02	8260B	08/01/02	JGH	79-01-6	C
Trichlorofluoromethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	75-69-4	C
Vinyl chloride	Not detected	mg/L	0.02	8260B	08/01/02	JGH	75-01-4	C
o-Xylene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	95-47-6	C
p,m-Xylene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	106-42-3	C

C-Higher detection limit due to high target concentration.

Merit Laboratories, Inc.

Analytical Laboratory Report

Revised Report

Lab Sample ID: S09904.02
Sample Tag: MS
Collected Date/Time: 07/23/2002 08:45
Matrix: Groundwater
COC Reference: 010676

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40 ml VOAs	HCl	Yes	4	5462

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Volatile Organics								
2-Butanone (MEK)	0.026	mg/L	0.05	8260B	08/01/02	JGH	78-93-3	1J
Benzene	0.029	mg/L	0.001	8260B	08/01/02	JGH	71-43-2	1
n-Butylbenzene	0.029	mg/L	0.001	8260B	08/01/02	JGH	104-51-8	1
Bromobenzene	0.026	mg/L	0.001	8260B	08/01/02	JGH	108-86-1	1
Bromochloromethane	0.026	mg/L	0.001	8260B	08/01/02	JGH	74-97-5	1
Bromodichloromethane	0.028	mg/L	0.001	8260B	08/01/02	JGH	75-27-4	1
Bromoform	0.024	mg/L	0.001	8260B	08/01/02	JGH	75-25-2	1
Bromomethane	0.035	mg/L	0.001	8260B	08/01/02	JGH	74-83-9	1
sec-Butylbenzene	0.027	mg/L	0.001	8260B	08/01/02	JGH	135-98-8	1
tert-Butylbenzene	0.026	mg/L	0.001	8260B	08/01/02	JGH	98-06-6	1
2-Chlorotoluene	0.026	mg/L	0.001	8260B	08/01/02	JGH	95-49-8	1
4-Chlorotoluene	0.025	mg/L	0.001	8260B	08/01/02	JGH	106-43-4	1
Carbon tetrachloride	0.026	mg/L	0.001	8260B	08/01/02	JGH	56-23-5	1
Chlorobenzene	0.030	mg/L	0.001	8260B	08/01/02	JGH	108-90-7	1
Chloroethane	0.029	mg/L	0.001	8260B	08/01/02	JGH	75-00-3	1
Chloroform	0.029	mg/L	0.001	8260B	08/01/02	JGH	67-66-3	1
Chloromethane	0.028	mg/L	0.001	8260B	08/01/02	JGH	74-87-3	1
1,1-Dichloroethane	0.038	mg/L	0.001	8260B	08/01/02	JGH	75-34-3	1
1,1-Dichloroethene	0.029	mg/L	0.001	8260B	08/01/02	JGH	75-35-4	1
1,1-Dichloropropene	0.028	mg/L	0.001	8260B	08/01/02	JGH	563-58-6	1
1,2-Dibromo-3-chloropropane	0.026	mg/L	0.001	8260B	08/01/02	JGH	96-12-8	1
1,2-Dibromoethane	0.026	mg/L	0.001	8260B	08/01/02	JGH	106-93-4	1
1,2-Dichlorobenzene	0.031	mg/L	0.001	8260B	08/01/02	JGH	95-50-1	1
1,2-Dichloroethane	0.029	mg/L	0.001	8260B	08/01/02	JGH	107-06-2	1
1,2-Dichloropropane	0.027	mg/L	0.001	8260B	08/01/02	JGH	78-87-5	1
1,3-Dichlorobenzene	0.028	mg/L	0.001	8260B	08/01/02	JGH	541-73-1	1
1,3-Dichloropropane	0.029	mg/L	0.001	8260B	08/01/02	JGH	142-28-9	1
1,4-Dichlorobenzene	0.029	mg/L	0.001	8260B	08/01/02	JGH	106-46-7	1
2,2-Dichloropropane	0.023	mg/L	0.001	8260B	08/01/02	JGH	594-20-7	1
cis-1,2-Dichloroethene	0.539	mg/L	0.001	8260B	08/01/02	JGH	156-59-2	1E
cis-1,3-Dichloropropene	0.027	mg/L	0.001	8260B	08/01/02	JGH	10061-01-5	1
Dibromochloromethane	0.025	mg/L	0.001	8260B	08/01/02	JGH	124-48-1	1
Dibromomethane	0.029	mg/L	0.001	8260B	08/01/02	JGH	74-95-3	1
Dichlorodifluoromethane	0.027	mg/L	0.001	8260B	08/01/02	JGH	75-71-8	1
trans-1,2-Dichloroethene	0.043	mg/L	0.001	8260B	08/01/02	JGH	156-60-5	1
Ethylbenzene	0.025	mg/L	0.001	8260B	08/01/02	JGH	100-41-4	1
p-Isopropyltoluene	0.029	mg/L	0.001	8260B	08/01/02	JGH	99-87-6	1
Isopropylbenzene	0.026	mg/L	0.001	8260B	08/01/02	JGH	98-82-8	1
Methylene chloride	0.026	mg/L	0.005	8260B	08/01/02	JGH	75-09-2	1
Naphthalene	0.033	mg/L	0.001	8260B	08/01/02	JGH	91-20-3	1

1-Spiked at 25ppb J-Value detected below reporting limit.
E-Target value estimated due to exceeding calibration range.

Lab Sample ID: S09904.02 (continued)
Sample Tag: MS

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
n-Propylbenzene	0.025	mg/L	0.001	8260B	08/01/02	JGH	103-65-1	1
Styrene	0.027	mg/L	0.001	8260B	08/01/02	JGH	100-42-5	1
1,1,1,2-Tetrachloroethane	0.027	mg/L	0.001	8260B	08/01/02	JGH	630-20-6	1
1,1,1-Trichloroethane	0.028	mg/L	0.001	8260B	08/01/02	JGH	71-55-6	1
1,1,2,2-Tetrachloroethane	0.027	mg/L	0.001	8260B	08/01/02	JGH	79-34-5	1
1,1,2-Trichloroethane	0.031	mg/L	0.001	8260B	08/01/02	JGH	79-00-5	1
1,2,3-Trichlorobenzene	0.031	mg/L	0.001	8260B	08/01/02	JGH	87-61-6	1
1,2,3-Trichloropropane	0.028	mg/L	0.001	8260B	08/01/02	JGH	96-18-4	1
1,2,4-Trichlorobenzene	0.031	mg/L	0.001	8260B	08/01/02	JGH	120-82-1	1
1,2,4-Trimethylbenzene	0.027	mg/L	0.001	8260B	08/01/02	JGH	95-63-6	1
1,3,5-Trimethylbenzene	0.027	mg/L	0.001	8260B	08/01/02	JGH	108-67-8	1
Tetrachloroethene	0.028	mg/L	0.001	8260B	08/01/02	JGH	127-18-4	1
Toluene	0.029	mg/L	0.001	8260B	08/01/02	JGH	108-88-3	1
Trichloroethene	0.815	mg/L	0.001	8260B	08/01/02	JGH	79-01-6	1E
Trichlorofluoromethane	0.028	mg/L	0.001	8260B	08/01/02	JGH	75-69-4	1
Vinyl chloride	0.026	mg/L	0.001	8260B	08/01/02	JGH	75-01-4	1
o-Xylene	0.026	mg/L	0.001	8260B	08/01/02	JGH	95-47-6	1
p,m-Xylene	0.051	mg/L	0.001	8260B	08/01/02	JGH	106-42-3	1
Volatile Organics (Replicate 01)								
2-Butanone (MEK)	0.62	mg/L	1	8260B	08/01/02	JGH	78-93-3	2CJ
Benzene	0.58	mg/L	0.02	8260B	08/01/02	JGH	71-43-2	2C
n-Butylbenzene	0.61	mg/L	0.02	8260B	08/01/02	JGH	104-51-8	2C
Bromobenzene	0.61	mg/L	0.02	8260B	08/01/02	JGH	108-86-1	2C
Bromochloromethane	0.54	mg/L	0.02	8260B	08/01/02	JGH	74-97-5	2C
Bromodichloromethane	0.56	mg/L	0.02	8260B	08/01/02	JGH	75-27-4	2C
Bromoform	0.54	mg/L	0.02	8260B	08/01/02	JGH	75-25-2	2C
Bromomethane	0.52	mg/L	0.02	8260B	08/01/02	JGH	74-83-9	2C
sec-Butylbenzene	0.56	mg/L	0.02	8260B	08/01/02	JGH	135-98-8	2C
tert-Butylbenzene	0.60	mg/L	0.02	8260B	08/01/02	JGH	98-06-6	2C
2-Chlorotoluene	0.61	mg/L	0.02	8260B	08/01/02	JGH	95-49-8	2C
4-Chlorotoluene	0.58	mg/L	0.02	8260B	08/01/02	JGH	106-43-4	2C
Carbon tetrachloride	0.52	mg/L	0.02	8260B	08/01/02	JGH	56-23-5	2C
Chlorobenzene	0.63	mg/L	0.02	8260B	08/01/02	JGH	108-90-7	2C
Chloroethane	0.52	mg/L	0.02	8260B	08/01/02	JGH	75-00-3	2C
Chloroform	0.60	mg/L	0.02	8260B	08/01/02	JGH	67-66-3	2C
Chloromethane	0.52	mg/L	0.02	8260B	08/01/02	JGH	74-87-3	2C
1,1-Dichloroethane	0.55	mg/L	0.02	8260B	08/01/02	JGH	75-34-3	2C
1,1-Dichloroethene	0.53	mg/L	0.02	8260B	08/01/02	JGH	75-35-4	2C
1,1-Dichloropropene	0.57	mg/L	0.02	8260B	08/01/02	JGH	563-58-6	2C
1,2-Dibromo-3-chloropropane	0.60	mg/L	0.02	8260B	08/01/02	JGH	96-12-8	2C
1,2-Dibromoethane	0.53	mg/L	0.02	8260B	08/01/02	JGH	106-93-4	2C
1,2-Dichlorobenzene	0.68	mg/L	0.02	8260B	08/01/02	JGH	95-50-1	2C
1,2-Dichloroethane	0.58	mg/L	0.02	8260B	08/01/02	JGH	107-06-2	2C
1,2-Dichloropropane	0.56	mg/L	0.02	8260B	08/01/02	JGH	78-87-5	2C
1,3-Dichlorobenzene	0.61	mg/L	0.02	8260B	08/01/02	JGH	541-73-1	2C

1-Spiked at 25ppb
E-Target value estimated due to exceeding calibration range.
2-Spiked at 25ppb * 20 (Dilution Factor) C-Higher detection limit due to high target concentration. J-Value detected below reporting limit.

Lab Sample ID: S09904.02 (continued)
Sample Tag: MS

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (Replicate 01) (continued)								
1,3-Dichloropropane	0.59	mg/L	0.02	8260B	08/01/02	JGH	142-28-9	1C
1,4-Dichlorobenzene	0.63	mg/L	0.02	8260B	08/01/02	JGH	106-46-7	1C
2,2-Dichloropropane	0.56	mg/L	0.02	8260B	08/01/02	JGH	594-20-7	1C
cis-1,2-Dichloroethene	1.34	mg/L	0.02	8260B	08/01/02	JGH	156-59-2	1C
cis-1,3-Dichloropropene	0.54	mg/L	0.02	8260B	08/01/02	JGH	10061-01-5	1C
Dibromochloromethane	0.52	mg/L	0.02	8260B	08/01/02	JGH	124-48-1	1C
Dibromomethane	0.57	mg/L	0.02	8260B	08/01/02	JGH	74-95-3	1C
Dichlorodifluoromethane	0.45	mg/L	0.02	8260B	08/01/02	JGH	75-71-8	1C
trans-1,2-Dichloroethene	0.56	mg/L	0.02	8260B	08/01/02	JGH	156-60-5	1C
Ethylbenzene	0.54	mg/L	0.02	8260B	08/01/02	JGH	100-41-4	1C
p-Isopropyltoluene	0.60	mg/L	0.02	8260B	08/01/02	JGH	99-87-6	1C
Isopropylbenzene	0.58	mg/L	0.02	8260B	08/01/02	JGH	98-82-8	1C
Methylene chloride	0.5	mg/L	0.1	8260B	08/01/02	JGH	75-09-2	1C
Naphthalene	0.68	mg/L	0.02	8260B	08/01/02	JGH	91-20-3	1C
n-Propylbenzene	0.57	mg/L	0.02	8260B	08/01/02	JGH	103-65-1	1C
Styrene	0.64	mg/L	0.02	8260B	08/01/02	JGH	100-42-5	1C
1,1,1,2-Tetrachloroethane	0.57	mg/L	0.02	8260B	08/01/02	JGH	630-20-6	1C
1,1,1-Trichloroethane	0.57	mg/L	0.02	8260B	08/01/02	JGH	71-55-6	1C
1,1,2,2-Tetrachloroethane	0.65	mg/L	0.02	8260B	08/01/02	JGH	79-34-5	1C
1,1,2-Trichloroethane	0.65	mg/L	0.02	8260B	08/01/02	JGH	79-00-5	1C
1,2,3-Trichlorobenzene	0.63	mg/L	0.02	8260B	08/01/02	JGH	87-61-6	1C
1,2,3-Trichloropropane	0.64	mg/L	0.02	8260B	08/01/02	JGH	96-18-4	1C
1,2,4-Trichlorobenzene	0.65	mg/L	0.02	8260B	08/01/02	JGH	120-82-1	1C
1,2,4-Trimethylbenzene	0.62	mg/L	0.02	8260B	08/01/02	JGH	95-63-6	1C
1,3,5-Trimethylbenzene	0.60	mg/L	0.02	8260B	08/01/02	JGH	108-67-8	1C
Tetrachloroethene	0.57	mg/L	0.02	8260B	08/01/02	JGH	127-18-4	1C
Toluene	0.58	mg/L	0.02	8260B	08/01/02	JGH	108-88-3	1C
Trichloroethene	2.26	mg/L	0.02	8260B	08/01/02	JGH	79-01-6	1C
Trichlorofluoromethane	0.54	mg/L	0.02	8260B	08/01/02	JGH	75-69-4	1C
Vinyl chloride	0.50	mg/L	0.02	8260B	08/01/02	JGH	75-01-4	1C
o-Xylene	0.60	mg/L	0.02	8260B	08/01/02	JGH	95-47-6	1C
p,m-Xylene	1.15	mg/L	0.02	8260B	08/01/02	JGH	106-42-3	1C

1-Spiked at 25ppb * 20 (Dilution Factor) C-Higher detection limit due to high target concentration.

Lab Sample ID: S09904.03
Sample Tag: MSD
Collected Date/Time: 07/23/2002 08:45
Matrix: Groundwater
COC Reference: 010676

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40 ml VOAs	HCl	Yes	4	5462

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Volatile Organics								
2-Butanone (MEK)	0.025	mg/L	0.05	8260B	08/01/02	JGH	78-93-3	1J
Benzene	0.028	mg/L	0.001	8260B	08/01/02	JGH	71-43-2	1
n-Butylbenzene	0.026	mg/L	0.001	8260B	08/01/02	JGH	104-51-8	1
Bromobenzene	0.025	mg/L	0.001	8260B	08/01/02	JGH	108-86-1	1
Bromochloromethane	0.026	mg/L	0.001	8260B	08/01/02	JGH	74-97-5	1
Bromodichloromethane	0.027	mg/L	0.001	8260B	08/01/02	JGH	75-27-4	1
Bromoform	0.024	mg/L	0.001	8260B	08/01/02	JGH	75-25-2	1
Bromomethane	0.034	mg/L	0.001	8260B	08/01/02	JGH	74-83-9	1
sec-Butylbenzene	0.025	mg/L	0.001	8260B	08/01/02	JGH	135-98-8	1
tert-Butylbenzene	0.025	mg/L	0.001	8260B	08/01/02	JGH	98-06-6	1
2-Chlorotoluene	0.025	mg/L	0.001	8260B	08/01/02	JGH	95-49-8	1
4-Chlorotoluene	0.025	mg/L	0.001	8260B	08/01/02	JGH	106-43-4	1
Carbon tetrachloride	0.026	mg/L	0.001	8260B	08/01/02	JGH	56-23-5	1
Chlorobenzene	0.029	mg/L	0.001	8260B	08/01/02	JGH	108-90-7	1
Chloroethane	0.029	mg/L	0.001	8260B	08/01/02	JGH	75-00-3	1
Chloroform	0.028	mg/L	0.001	8260B	08/01/02	JGH	67-66-3	1
Chloromethane	0.027	mg/L	0.001	8260B	08/01/02	JGH	74-87-3	1
1,1-Dichloroethane	0.037	mg/L	0.001	8260B	08/01/02	JGH	75-34-3	1
1,1-Dichloroethene	0.028	mg/L	0.001	8260B	08/01/02	JGH	75-35-4	1
1,1-Dichloropropene	0.027	mg/L	0.001	8260B	08/01/02	JGH	563-58-6	1
1,2-Dibromo-3-chloropropane	0.026	mg/L	0.001	8260B	08/01/02	JGH	96-12-8	1
1,2-Dibromoethane	0.026	mg/L	0.001	8260B	08/01/02	JGH	106-93-4	1
1,2-Dichlorobenzene	0.029	mg/L	0.001	8260B	08/01/02	JGH	95-50-1	1
1,2-Dichloroethane	0.028	mg/L	0.001	8260B	08/01/02	JGH	107-06-2	1
1,2-Dichloropropane	0.027	mg/L	0.001	8260B	08/01/02	JGH	78-87-5	1
1,3-Dichlorobenzene	0.027	mg/L	0.001	8260B	08/01/02	JGH	541-73-1	1
1,3-Dichloropropane	0.028	mg/L	0.001	8260B	08/01/02	JGH	142-28-9	1
1,4-Dichlorobenzene	0.027	mg/L	0.001	8260B	08/01/02	JGH	106-46-7	1
2,2-Dichloropropane	0.022	mg/L	0.001	8260B	08/01/02	JGH	594-20-7	1
cis-1,2-Dichloroethene	0.498	mg/L	0.001	8260B	08/01/02	JGH	156-59-2	1E
cis-1,3-Dichloropropene	0.026	mg/L	0.001	8260B	08/01/02	JGH	10061-01-5	1
Dibromochloromethane	0.025	mg/L	0.001	8260B	08/01/02	JGH	124-48-1	1
Dibromomethane	0.027	mg/L	0.001	8260B	08/01/02	JGH	74-95-3	1
Dichlorodifluoromethane	0.026	mg/L	0.001	8260B	08/01/02	JGH	75-71-8	1
trans-1,2-Dichloroethene	0.042	mg/L	0.001	8260B	08/01/02	JGH	156-60-5	1
Ethylbenzene	0.024	mg/L	0.001	8260B	08/01/02	JGH	100-41-4	1
p-Isopropyltoluene	0.027	mg/L	0.001	8260B	08/01/02	JGH	99-87-6	1
Isopropylbenzene	0.025	mg/L	0.001	8260B	08/01/02	JGH	98-82-8	1
Methylene chloride	0.026	mg/L	0.005	8260B	08/01/02	JGH	75-09-2	1
Naphthalene	0.031	mg/L	0.001	8260B	08/01/02	JGH	91-20-3	1

1-Spiked at 25ppb J-Value detected below reporting limit.
E-Target value estimated due to exceeding calibration range.

Lab Sample ID: S09904.03 (continued)
Sample Tag: MSD

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
n-Propylbenzene	0.022	mg/L	0.001	8260B	08/01/02	JGH	103-65-1	1
Styrene	0.026	mg/L	0.001	8260B	08/01/02	JGH	100-42-5	1
1,1,1,2-Tetrachloroethane	0.026	mg/L	0.001	8260B	08/01/02	JGH	630-20-6	1
1,1,1-Trichloroethane	0.028	mg/L	0.001	8260B	08/01/02	JGH	71-55-6	1
1,1,2,2-Tetrachloroethane	0.028	mg/L	0.001	8260B	08/01/02	JGH	79-34-5	1
1,1,2-Trichloroethane	0.030	mg/L	0.001	8260B	08/01/02	JGH	79-00-5	1
1,2,3-Trichlorobenzene	0.029	mg/L	0.001	8260B	08/01/02	JGH	87-61-6	1
1,2,3-Trichloropropane	0.027	mg/L	0.001	8260B	08/01/02	JGH	96-18-4	1
1,2,4-Trichlorobenzene	0.027	mg/L	0.001	8260B	08/01/02	JGH	120-82-1	1
1,2,4-Trimethylbenzene	0.025	mg/L	0.001	8260B	08/01/02	JGH	95-63-6	1
1,3,5-Trimethylbenzene	0.025	mg/L	0.001	8260B	08/01/02	JGH	108-67-8	1
Tetrachloroethene	0.027	mg/L	0.001	8260B	08/01/02	JGH	127-18-4	1
Toluene	0.027	mg/L	0.001	8260B	08/01/02	JGH	108-88-3	1
Trichloroethene	0.768	mg/L	0.001	8260B	08/01/02	JGH	79-01-6	1E
Trichlorofluoromethane	0.027	mg/L	0.001	8260B	08/01/02	JGH	75-69-4	1
Vinyl chloride	0.026	mg/L	0.001	8260B	08/01/02	JGH	75-01-4	1
o-Xylene	0.025	mg/L	0.001	8260B	08/01/02	JGH	95-47-6	1
p,m-Xylene	0.049	mg/L	0.001	8260B	08/01/02	JGH	106-42-3	1
Volatile Organics (Replicate 01)								
2-Butanone (MEK)	0.51	mg/L	1	8260B	08/01/02	JGH	78-93-3	2CJ
Benzene	0.55	mg/L	0.02	8260B	08/01/02	JGH	71-43-2	2C
n-Butylbenzene	0.54	mg/L	0.02	8260B	08/01/02	JGH	104-51-8	2C
Bromobenzene	0.52	mg/L	0.02	8260B	08/01/02	JGH	108-86-1	2C
Bromochloromethane	0.49	mg/L	0.02	8260B	08/01/02	JGH	74-97-5	2C
Bromodichloromethane	0.51	mg/L	0.02	8260B	08/01/02	JGH	75-27-4	2C
Bromoform	0.44	mg/L	0.02	8260B	08/01/02	JGH	75-25-2	2C
Bromomethane	0.50	mg/L	0.02	8260B	08/01/02	JGH	74-83-9	2C
sec-Butylbenzene	0.51	mg/L	0.02	8260B	08/01/02	JGH	135-98-8	2C
tert-Butylbenzene	0.52	mg/L	0.02	8260B	08/01/02	JGH	98-06-6	2C
2-Chlorotoluene	0.54	mg/L	0.02	8260B	08/01/02	JGH	95-49-8	2C
4-Chlorotoluene	0.53	mg/L	0.02	8260B	08/01/02	JGH	106-43-4	2C
Carbon tetrachloride	0.49	mg/L	0.02	8260B	08/01/02	JGH	56-23-5	2C
Chlorobenzene	0.57	mg/L	0.02	8260B	08/01/02	JGH	108-90-7	2C
Chloroethane	0.50	mg/L	0.02	8260B	08/01/02	JGH	75-00-3	2C
Chloroform	0.56	mg/L	0.02	8260B	08/01/02	JGH	67-66-3	2C
Chloromethane	0.46	mg/L	0.02	8260B	08/01/02	JGH	74-87-3	2C
1,1-Dichloroethane	0.50	mg/L	0.02	8260B	08/01/02	JGH	75-34-3	2C
1,1-Dichloroethene	0.50	mg/L	0.02	8260B	08/01/02	JGH	75-35-4	2C
1,1-Dichloropropene	0.53	mg/L	0.02	8260B	08/01/02	JGH	563-58-6	2C
1,2-Dibromo-3-chloropropane	0.46	mg/L	0.02	8260B	08/01/02	JGH	96-12-8	2C
1,2-Dibromoethane	0.48	mg/L	0.02	8260B	08/01/02	JGH	106-93-4	2C
1,2-Dichlorobenzene	0.59	mg/L	0.02	8260B	08/01/02	JGH	95-50-1	2C
1,2-Dichloroethane	0.54	mg/L	0.02	8260B	08/01/02	JGH	107-06-2	2C
1,2-Dichloropropane	0.51	mg/L	0.02	8260B	08/01/02	JGH	78-87-5	2C
1,3-Dichlorobenzene	0.53	mg/L	0.02	8260B	08/01/02	JGH	541-73-1	2C

1-Spiked at 25ppb
E-Target value estimated due to exceeding calibration range.
2-Spiked at 25ppb * 20 (Dilution Factor) C-Higher detection limit due to high target concentration. J-Value detected below reporting limit.

Lab Sample ID: S09904.03 (continued)
Sample Tag: MSD

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (Replicate 01) (continued)								
1,3-Dichloropropane	0.54	mg/L	0.02	8260B	08/01/02	JGH	142-28-9	1C
1,4-Dichlorobenzene	0.56	mg/L	0.02	8260B	08/01/02	JGH	106-46-7	1C
2,2-Dichloropropane	0.53	mg/L	0.02	8260B	08/01/02	JGH	594-20-7	1C
cis-1,2-Dichloroethene	1.19	mg/L	0.02	8260B	08/01/02	JGH	156-59-2	1C
cis-1,3-Dichloropropene	0.50	mg/L	0.02	8260B	08/01/02	JGH	10061-01-5	1C
Dibromochloromethane	0.45	mg/L	0.02	8260B	08/01/02	JGH	124-48-1	1C
Dibromomethane	0.51	mg/L	0.02	8260B	08/01/02	JGH	74-95-3	1C
Dichlorodifluoromethane	0.41	mg/L	0.02	8260B	08/01/02	JGH	75-71-8	1C
trans-1,2-Dichloroethene	0.52	mg/L	0.02	8260B	08/01/02	JGH	156-60-5	1C
Ethylbenzene	0.50	mg/L	0.02	8260B	08/01/02	JGH	100-41-4	1C
p-Isopropyltoluene	0.54	mg/L	0.02	8260B	08/01/02	JGH	99-87-6	1C
Isopropylbenzene	0.52	mg/L	0.02	8260B	08/01/02	JGH	98-82-8	1C
Methylene chloride	0.5	mg/L	0.1	8260B	08/01/02	JGH	75-09-2	1C
Naphthalene	0.55	mg/L	0.02	8260B	08/01/02	JGH	91-20-3	1C
n-Propylbenzene	0.50	mg/L	0.02	8260B	08/01/02	JGH	103-65-1	1C
Styrene	0.57	mg/L	0.02	8260B	08/01/02	JGH	100-42-5	1C
1,1,1,2-Tetrachloroethane	0.50	mg/L	0.02	8260B	08/01/02	JGH	630-20-6	1C
1,1,1-Trichloroethane	0.54	mg/L	0.02	8260B	08/01/02	JGH	71-55-6	1C
1,1,2,2-Tetrachloroethane	0.50	mg/L	0.02	8260B	08/01/02	JGH	79-34-5	1C
1,1,2-Trichloroethane	0.56	mg/L	0.02	8260B	08/01/02	JGH	79-00-5	1C
1,2,3-Trichlorobenzene	0.52	mg/L	0.02	8260B	08/01/02	JGH	87-61-6	1C
1,2,3-Trichloropropane	0.50	mg/L	0.02	8260B	08/01/02	JGH	96-18-4	1C
1,2,4-Trichlorobenzene	0.54	mg/L	0.02	8260B	08/01/02	JGH	120-82-1	1C
1,2,4-Trimethylbenzene	0.54	mg/L	0.02	8260B	08/01/02	JGH	95-63-6	1C
1,3,5-Trimethylbenzene	0.54	mg/L	0.02	8260B	08/01/02	JGH	108-67-8	1C
Tetrachloroethene	0.54	mg/L	0.02	8260B	08/01/02	JGH	127-18-4	1C
Toluene	0.55	mg/L	0.02	8260B	08/01/02	JGH	108-88-3	1C
Trichloroethene	2.04	mg/L	0.02	8260B	08/01/02	JGH	79-01-6	1C
Trichlorofluoromethane	0.51	mg/L	0.02	8260B	08/01/02	JGH	75-69-4	1C
Vinyl chloride	0.45	mg/L	0.02	8260B	08/01/02	JGH	75-01-4	1C
o-Xylene	0.53	mg/L	0.02	8260B	08/01/02	JGH	95-47-6	1C
p,m-Xylene	1.06	mg/L	0.02	8260B	08/01/02	JGH	106-42-3	1C

1-Spiked at 25ppb * 20 (Dilution Factor) C-Higher detection limit due to high target concentration.

Merit Laboratories, Inc.

Analytical Laboratory Report

Revised Report

Lab Sample ID: S09904.04
Sample Tag: DUP
Collected Date/Time: 07/23/2002 08:45
Matrix: Groundwater
COC Reference: 010676

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40 ml VOAs	HCl	Yes	4	5462

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/L	0.05	8260B	08/01/02	JGH	78-93-3	
Benzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-27-4	
Bromoform	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-25-2	
Bromomethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/L	0.001	8260B	08/01/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	108-90-7	
Chloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-00-3	
Chloroform	Not detected	mg/L	0.001	8260B	08/01/02	JGH	67-66-3	
Chloromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	74-87-3	
1,1-Dichloroethane	0.013	mg/L	0.001	8260B	08/01/02	JGH	75-34-3	
1,1-Dichloroethene	0.003	mg/L	0.001	8260B	08/01/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	594-20-7	
cis-1,2-Dichloroethene	0.544	mg/L	0.001	8260B	08/01/02	JGH	156-59-2	E
cis-1,3-Dichloropropene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-71-8	
trans-1,2-Dichloroethene	0.019	mg/L	0.001	8260B	08/01/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	98-82-8	
Methylene chloride	Not detected	mg/L	0.005	8260B	08/01/02	JGH	75-09-2	
Naphthalene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	103-65-1	

E-Target value estimated due to exceeding calibration range.

Lab Sample ID: S09904.04 (continued)
Sample Tag: DUP

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Styrene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	100-42-5	
1,1,1,2-Tetrachloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	127-18-4	
Toluene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	108-88-3	
Trichloroethene	0.805	mg/L	0.001	8260B	08/01/02	JGH	79-01-6	E
Trichlorofluoromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-01-4	
o-Xylene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	106-42-3	
Volatile Organics (Replicate 01)								
2-Butanone (MEK)	Not detected	mg/L	1	8260B	08/01/02	JGH	78-93-3	C
Benzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	71-43-2	C
n-Butylbenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	104-51-8	C
Bromobenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	108-86-1	C
Bromochloromethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	74-97-5	C
Bromodichloromethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	75-27-4	C
Bromoform	Not detected	mg/L	0.02	8260B	08/01/02	JGH	75-25-2	C
Bromomethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	74-83-9	C
sec-Butylbenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	135-98-8	C
tert-Butylbenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	98-06-6	C
2-Chlorotoluene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	95-49-8	C
4-Chlorotoluene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	106-43-4	C
Carbon tetrachloride	Not detected	mg/L	0.02	8260B	08/01/02	JGH	56-23-5	C
Chlorobenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	108-90-7	C
Chloroethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	75-00-3	C
Chloroform	Not detected	mg/L	0.02	8260B	08/01/02	JGH	67-66-3	C
Chloromethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	74-87-3	C
1,1-Dichloroethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	75-34-3	C
1,1-Dichloroethene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	75-35-4	C
1,1-Dichloropropene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	563-58-6	C
1,2-Dibromo-3-chloropropane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	96-12-8	C
1,2-Dibromoethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	106-93-4	C
1,2-Dichlorobenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	95-50-1	C
1,2-Dichloroethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	107-06-2	C
1,2-Dichloropropane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	78-87-5	C
1,3-Dichlorobenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	541-73-1	C
1,3-Dichloropropane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	142-28-9	C
1,4-Dichlorobenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	106-46-7	C

E-Target value estimated due to exceeding calibration range.
C-Higher detection limit due to high target concentration.

Lab Sample ID: S09904.04 (continued)
Sample Tag: DUP

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (Replicate 01) (continued)								
2,2-Dichloropropane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	594-20-7	C
cis-1,2-Dichloroethene	0.80	mg/L	0.02	8260B	08/01/02	JGH	156-59-2	C
cis-1,3-Dichloropropene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	10061-01-5	C
Dibromochloromethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	124-48-1	C
Dibromomethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	74-95-3	C
Dichlorodifluoromethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	75-71-8	C
trans-1,2-Dichloroethene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	156-60-5	C
Ethylbenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	100-41-4	C
p-Isopropyltoluene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	99-87-6	C
Isopropylbenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	98-82-8	C
Methylene chloride	Not detected	mg/L	0.1	8260B	08/01/02	JGH	75-09-2	C
Naphthalene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	91-20-3	C
n-Propylbenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	103-65-1	C
Styrene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	100-42-5	C
1,1,1,2-Tetrachloroethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	630-20-6	C
1,1,1-Trichloroethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	71-55-6	C
1,1,2,2-Tetrachloroethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	79-34-5	C
1,1,2-Trichloroethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	79-00-5	C
1,2,3-Trichlorobenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	87-61-6	C
1,2,3-Trichloropropane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	96-18-4	C
1,2,4-Trichlorobenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	120-82-1	C
1,2,4-Trimethylbenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	95-63-6	C
1,3,5-Trimethylbenzene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	108-67-8	C
Tetrachloroethene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	127-18-4	C
Toluene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	108-88-3	C
Trichloroethene	1.83	mg/L	0.02	8260B	08/01/02	JGH	79-01-6	C
Trichlorofluoromethane	Not detected	mg/L	0.02	8260B	08/01/02	JGH	75-69-4	C
Vinyl chloride	Not detected	mg/L	0.02	8260B	08/01/02	JGH	75-01-4	C
o-Xylene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	95-47-6	C
p,m-Xylene	Not detected	mg/L	0.02	8260B	08/01/02	JGH	106-42-3	C

C-Higher detection limit due to high target concentration.

Lab Sample ID: S09904.05
Sample Tag: Equipment Blank
Collected Date/Time: 07/23/2002 08:45
Matrix: Groundwater
COC Reference: 010676

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40 ml VOAs	HCl	Yes	4	5462

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/L	0.05	8260B	08/01/02	JGH	78-93-3	
Benzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-27-4	
Bromoform	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-25-2	
Bromomethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/L	0.001	8260B	08/01/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	108-90-7	
Chloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-00-3	
Chloroform	Not detected	mg/L	0.001	8260B	08/01/02	JGH	67-66-3	
Chloromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	98-82-8	
Methylene chloride	Not detected	mg/L	0.005	8260B	08/01/02	JGH	75-09-2	
Naphthalene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	103-65-1	
Styrene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	100-42-5	

Lab Sample ID: S09904.05 (continued)
Sample Tag: Equipment Blank

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
1,1,1,2-Tetrachloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	127-18-4	
Toluene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	108-88-3	
Trichloroethene	0.003	mg/L	0.001	8260B	08/01/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-01-4	
o-Xylene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	106-42-3	

Lab Sample ID: S09904.06
Sample Tag: Trip Blank
Collected Date/Time: 07/23/2002 08:45
Matrix: Groundwater
COC Reference: 010676

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40 ml VOAs	HCl	Yes	4	5462

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/L	0.05	8260B	08/01/02	JGH	78-93-3	
Benzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-27-4	
Bromoform	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-25-2	
Bromomethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/L	0.001	8260B	08/01/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	108-90-7	
Chloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-00-3	
Chloroform	Not detected	mg/L	0.001	8260B	08/01/02	JGH	67-66-3	
Chloromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	98-82-8	
Methylene chloride	Not detected	mg/L	0.005	8260B	08/01/02	JGH	75-09-2	
Naphthalene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	103-65-1	
Styrene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	100-42-5	

Lab Sample ID: S09904.06 (continued)
Sample Tag: Trip Blank

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
1,1,1,2-Tetrachloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	127-18-4	
Toluene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/L	0.001	8260B	08/01/02	JGH	75-01-4	
o-Xylene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/L	0.001	8260B	08/01/02	JGH	106-42-3	

MDEQ Ground Water Sample Results

MDEQ ENVIRONMENTAL LABORATORY ANALYTICAL REPORT

Work Order #: 0207235-01POX

Date Collected: 7/23/2002

Date Analyzed: 7/26/2002 by KCL

Test Code: WPS
Test Name: 8260 Plus - Water
Sample ID: DRUM STORAGE AREA

CAS #	COMPOUND	RESULTS ug/L	REMARK	REPORTING LIMIT	DILUTION FACTOR
75-71-8	Dichlorodifluoromethane	ND		5.0	1
74-87-3	Chloromethane	ND		5.0	1
75-01-4	Vinyl chloride	ND		1.0	1
74-83-9	Bromomethane	ND		5.0	1
75-00-3	Chloroethane	ND		5.0	1
75-69-4	Trichlorofluoromethane	ND		1.0	1
67-64-1	Acetone	ND		20	1
60-29-7	Diethyl ether	ND		5.0	1
75-35-4	1,1-Dichloroethylene	3.0		1.0	1
74-88-4	Methyl iodide	ND		1.0	1
107-13-1	Acrylonitrile	ND		5.0	1
75-09-2	Methylene chloride	ND		5.0	1
75-15-0	Carbon disulfide	ND		1.0	1
156-60-5	trans-1,2-Dichloroethylene	19		1.0	1
1634-04-4	Methyltertbutylether (MTBE)	ND		1.0	1
75-34-3	1,1-Dichloroethane	13		1.0	1
78-93-3	2-Butanone (MEK)	ND		5.0	1
156-59-2	cis-1,2-Dichloroethylene	920		50	50
67-66-3	Chloroform	ND		1.0	1
109-99-9	Tetrahydrofuran	ND		5.0	1
74-97-5	Bromochloromethane	ND		1.0	1
71-55-6	1,1,1-Trichloroethane	ND		1.0	1
107-06-2	1,2-Dichloroethane	ND		1.0	1
71-43-2	Benzene	ND		1.0	1
56-23-5	Carbon tetrachloride	ND		1.0	1
78-87-5	1,2-Dichloropropane	ND		1.0	1
79-01-6	Trichloroethylene	2200		50	50
74-95-3	Dibromomethane	ND		1.0	1
75-27-4	Bromodichloromethane	ND		1.0	1
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		5.0	1
10061-01-5	cis-1,3-Dichloropropene	ND		1.0	1
10061-02-6	trans-1,3-Dichloropropene	ND		1.0	1
108-88-3	Toluene	ND		1.0	1
79-00-5	1,1,2-Trichloroethane	ND		1.0	1
591-78-6	2-Hexanone	ND		5.0	1

MDEQ ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

CAS #	COMPOUND	RESULTS ug/L	REMARK	REPORTING LIMIT	DILUTION FACTOR
124-48-1	Dibromochloromethane	ND		1.0	1
106-93-4	1,2-Dibromoethane	ND		1.0	1
127-18-4	Tetrachloroethene	ND		1.0	1
108-90-7	Chlorobenzene	ND		1.0	1
630-20-6	1,1,1,2-Tetrachloroethane	ND		1.0	1
100-41-4	Ethylbenzene	ND		1.0	1
108383,106423	m & p-Xylene	ND		2.0	1
75-25-2	Bromoform	ND		1.0	1
100-42-5	Styrene	ND		1.0	1
95-47-6	o-Xylene	ND		1.0	1
79-34-5	1,1,2,2-Tetrachloroethane	ND		1.0	1
96-18-4	1,2,3-Trichloropropane	ND		1.0	1
110-57-6	trans-1,4-Dichloro-2-butene	ND		5.0	1
98-82-8	Isopropylbenzene	ND		1.0	1
108-86-1	Bromobenzene	ND		1.0	1
103-65-1	n-Propylbenzene	ND		1.0	1
108-67-8	1,3,5-Trimethylbenzene	ND		1.0	1
98-06-6	tert-Butylbenzene	ND		1.0	1
95-63-6	1,2,4-Trimethylbenzene	ND		1.0	1
135-98-8	sec-Butylbenzene	ND		1.0	1
541-73-1	1,3-Dichlorobenzene	ND		1.0	1
106-46-7	1,4-Dichlorobenzene	ND		1.0	1
99-87-6	p-Isopropyl toluene	ND		1.0	1
95-50-1	1,2-Dichlorobenzene	ND		1.0	1
104-51-8	n-Butylbenzene	ND		1.0	1
67-72-1	Hexachloroethane	ND		5.0	1
96-12-8	1,2-Dibromo-3-chloropropane	ND		5.0	1
120-82-1	1,2,4-Trichlorobenzene	ND		5.0	1
91-20-3	Naphthalene	ND		5.0	1
87-61-6	1,2,3-Trichlorobenzene	ND		5.0	1
91-57-6	2-Methylnaphthalene	ND		5.0	1

ND = not detected at the specified reporting limit. NM = not measured.
Reference method is 8260/624.
USEPA Methods 8260 and 624 are used to quantitate volatile organic compounds that have boiling points below 200°C. 2-Methylnaphthalene and naphthalene are compounds with boiling points above 200°C and are better suited to quantitation by USEPA Methods 8270 or 625 as semivolatile organic compounds.

APPENDIX K

Data Validation Report – June 2002 Soil Samples

DATA VALIDATION REPORT

Former Drum Storage Area at the Former Peregrine, U.S. Inc. Property at the Coldwater Road Facility G-1245 East Coldwater Road Flint, Michigan (EPA I.D. No. MIR 000 020 743)

September 2002

4144.007.202.303

DATA VALIDATION REPORT

Soil Samples Collected June 2002
Former Drum Storage Area at the Former Peregrine U.S., Inc. Property at the Coldwater Road Facility Flint, Michigan
(EPA I.D. No. MIR 000 020 743)

Swiatoslav W. Kaczmar, Ph.D., C.I.H.
Vice President, Environmental Toxicology
and Industrial Hygiene

September 2002

O'BRIEN & GERE
ENGINEERS, INC.

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A USEPA Method 8260B sample results for volatile organic compounds

Executive summary

This data validation report addresses data quality for soil samples collected from the former Drum Storage Area at the Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Facility, 1245 Coldwater Road, Flint, Michigan (formerly the Peregrine, U.S., Inc. property). Sample collection activities were conducted by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) on 6/4/02.

The environmental samples, matrix spike, matrix spike duplicate (MS/MSD), field duplicate, equipment blank, and trip blank collected for this investigation were submitted to Merit Laboratories, Inc. of East Lansing, Michigan for analysis of volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Methods. The analytical data generated for this investigation were evaluated by O'Brien & Gere using the quality assurance/quality control (QA/QC) criteria established in the following documents:

- United States Environmental Protection Agency (USEPA) Methods
- Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP) (O'Brien & Gere 1999).

Excursions from the QA/QC criteria were qualified based on guidance provided in the following document:

- United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines For Organic Data Review, EPA-540/R-96/008 (USEPA 1999).

As a result of the data validation process the VOCs data for the soil samples analyzed were determined to be 100% usable for qualitative and quantitative purposes.

1. Introduction

1.1. Program summary

This data validation report addresses the results of a data quality evaluation for soil samples, matrix spike, matrix spike duplicate (MS/MSD), field duplicate, equipment blank, and one trip blank collected from the former Drum Storage Area at the Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Facility, 1245 Coldwater Road, Flint, Michigan (formerly the Peregrine, U.S., Inc. property). Sample collection activities were conducted by O'Brien & Gere on 6/4/02. The environmental samples, MS/MSD sample, field duplicate, equipment blank, and trip blank collected for this investigation were submitted to Merit Laboratories, Inc. of East Lansing, Michigan for analysis of volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Methods listed in Table 1-2. The quantity and types of samples that were submitted for data validation are presented in Table 1-1 below.

Table 1-1. ***Sample cross reference list***

Laboratory Package ID	Date Collected	Sample Identification		Analysis Requested	Reference
		Client ID	Laboratory ID		
S09369	6/4/02	GB-8 (14'-15')	S09369.01	Volatile organic compounds by 8260B	1
		GB-9 (14'-15') MS MSD	S09369.02 S09369.04 S09369.05	Volatile organic compounds by 8260B	1
		GB-10 (14'-15')	S09369.03	Volatile organic compounds by 8260B	1
		GB-11 (14'-15')	*	Volatile organic compounds by 8260B	1
		GB-12 (14'-15')	*	Volatile organic compounds by 8260B	1
		GB-13 (14'-15')	*	Volatile organic compounds by 8260B	1
		Duplicate [GB-10 (14'-15')]	S09369.06	Volatile organic compounds by 8260B	1
		Equipment Blank	S09369.07	Volatile organic compounds by 8260B	1
		Trip Blank	S09369.08	Volatile organic compounds by 8260B	1

Note:
MS indicates matrix spike sample.
MSD indicates matrix spike duplicate sample.
The sample identification in brackets indicates the field duplicate sampling location.
* indicates that the sample was place on hold by the Project Manager.
Reference:
1- USEPA. 1996. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846,* 3rd Edition. Washington D.C.

1.2. Data validation protocols

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Data validation is essentially a three-step process in which the analytical data's quality assurance/quality control (QA/QC) information is first compared to a series of QA/QC criteria. Based on the results of this comparison, the analytical data are then assigned qualifiers, which provide an indication of the data's usability. Finally, an overall evaluation of the data's usability is performed. These three steps are described in the following sections.

1.2.1. Comparison to QA/QC criteria

In this report, the analytical data's QA/QC information is compared to the applicable QA/QC criteria provided in the following documents:

- USEPA. 1996. Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), 3rd Edition. Washington DC.

- O'Brien & Gere Engineers, Inc. 1999. Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP), Syracuse, New York.

Full data validation was performed on the soil sample data. Full data validation consists of a review of data summary forms and raw analytical data that were provided in the data packages. The following QA/QC information was included in the review for VOC analyses:

- Chain-of-custody records
- Holding times, sample preservation, and percent solids
- Calibrations
- Blank analysis
- Matrix spike/matrix spike duplicate (MS/MSD) analysis
- Laboratory control sample (LCS) analysis
- Field duplicate analysis
- Surrogate recovery
- Internal standards performance
- Gas chromatography/mass spectrometry (GC/MS) instrument performance check
- Target analyte quantitation, identification, and reported detection limits
- System performance
- Documentation completeness, and
- Overall data assessment.

1.2.2. Assignment of qualifiers

Excursions from the QA/QC criteria were qualified based on guidance provided in the following document:

- USEPA 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA-540/R-96/008. Washington D.C.

In accordance with the USEPA guidance, the following qualifiers are used in data validation:

J Indicates that the analyte concentration should be considered approximate. This qualifier is used when the data validation process identifies a minor deficiency in the data generation process.

UJ Indicates that the analyte reporting limit should be considered approximate. This qualifier is used when the data validation process identifies a minor deficiency in the data generation process.

The following guidelines are used regarding the assignment of qualifiers and the use of qualified data:

The data quality evaluation results in only one qualifier for each analyte; in a case when several qualifiers are applicable to the same analyte, the cumulative effect of the various QA/QC excursions is employed in assigning the final data qualifiers.

QA/QC excursions which do not result in the qualification of an analyte, or which result in additional qualification if the analyte was previously qualified, are not discussed.

The quantitative use of approximated analytical data is consistent with the guidance presented in the USEPA Risk Assessment Guidance for Superfund (USEPA 1992).

1.2.3. Data usability evaluation

Based on the QA/QC information review and the qualifiers assigned to the analytical data, an overall evaluation of the data's usability is performed. This evaluation considers the data parameters of precision, sensitivity, accuracy, representativeness, comparability, and completeness (known as PSARCC parameters), which are described as follows:

- Precision is evaluated through the review of field duplicate samples and MS/MSD samples.
- Sensitivity is evaluated through the review of reported detection limits.
- Accuracy is evaluated through the review of MS/MSD samples, internal standards, surrogate recoveries, LCS recoveries, calibration, and instrument performance check.
- Representativeness is evaluated through the review of holding times, sample preservation and preparation, blank analysis and target compound identification and quantification.
- Comparability is evaluated through the review of the analytical methods and reporting procedures for consistency.
- Completeness is defined as the percentage of sample results that are determined to be usable.

1.2.4. Analytical methods

The soil samples collected for this investigation were analyzed by Merit Laboratories, Inc. (Merit Labs) of East Lansing, Michigan for volatile organic compounds (VOCs) using the methods presented in Table 1-2.

Table 1-2. *Analytical method reference*

Parameter	Method	Reference
VOCs	USEPA Method 5030B/5035/8260B	1

Note:
1. USEPA. 1996 *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846)*, 3rd Edition. Washington DC.

VOC indicates volatile organic compounds.

The following chapters of this document address distinct aspects of the validation process. Specific QA/QC excursions and qualifications performed on the sample data are discussed in Section 2. Data completeness and usability are discussed in Section 3.

The annotated analytical results generated by this validation are presented in Appendix A.

2. Data quality evaluation

2.1. Soil samples

2.1.1. Documentation completeness

- The soil detection limits listed in the data package for methylene chloride (0.3 mg/Kg), 2-butanone (0.5 mg/Kg), and bromomethane (0.3 mg/Kg) exceeded the limits listed in the QAPP for methylene chloride (0.25 mg/Kg), 2-butanone (0.25 mg/Kg), and bromomethane (0.05 mg/Kg). The aqueous detection limits listed in the data package for methylene chloride (0.005 mg/L) exceeded the limit listed in the QAPP for methylene chloride (0.001 mg/L).

Encore® samplers were used to collect soil samples during this sampling event and the soil samples were analyzed using the medium level soil analysis as preferred by the Michigan Department of Environmental Quality (MDEQ).

The following data package information was requested and received during the validation process since the data packages were incomplete:

- Revised sample result sheets which included correction for percent solids
- The evaluation of the entire list of target analytes for the calibrations
- Initial calibration curves
- Explanation of the change in sample preparation technique
- Correction for LCS recovery results
- MS summary forms
- Bar graph spectra for instrument performance checks
- Explanation of the spike traceability information

2.1.2. VOC analyses of soil samples by GC/MS

<u>Criteria compliance</u>

The following QA/QC parameters met validation criteria or did not result in additional qualification of sample results:

- Chain-of-custody records
- Holding times, sample preservation, and percent solids
- Calibrations
- Blank analysis

- Field duplicate analysis
- Surrogate recovery
- Internal standards performance
- GC/MS instrument performance check
- Target analyte quantitation, identification, and reported detection limits, and
- System performance

Excursions from QA/QC criteria presented in Section 1.2.2 and additional observations are summarized below.

MS/MSD analysis

The percent recovery for chloroethane in MS/MSD field sample GB-9 (14'-15') analyzed for this investigation was less than the lower laboratory control limit, indicating matrix influence or low instrument response. As a result of the MS/MSD excursions, the result in the unspiked sample was qualified as approximate (UJ) to indicate a minor recovery excursion. The following table presents the sample qualified as a result of the MS/MSD excursions:

Table 2-3. *MS/MSD excursions for VOC analysis of soil samples*

MS/MSD ID		Excursion	Affected Samples	Action
GB-9 (14-15')	Chloroethane	19.6%R, 17.7%R	GB-9 (14'15')	UJ

Note: %R indicates percent recovery.

LCS analysis

The percent recoveries for chloroethane, bromoform, and 1,2-dibromo-3-chloropropane in the LCS analyses performed for this sampling event were outside of the laboratory control limits. Since the recoveries were less than the lower control limits, the results for the analytes in samples associated with the LCSs were qualified as approximate (UJ), indicating minor recovery excursions. The LCS excursions are summarized in the following table:

Table 2-4. *LCS excursion for VOC analyses of soil samples*

LCS ID	Analyte	Excursion	Affected Samples	Action
LCS 6/11/02	Chloroethane	17.1 %R	GB-8 (14'-15')	UJ
	Bromoform	49.1 %R	GB-9 (14'-15')	
	1,2-Dibromo-3-chloropropane	45.5 %R	GB-10 (14'-15')	
			Duplicate [GB-10 (14'-15')]	

Note:
%R indicates percent recovery.

3. Summary and data usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process.

The soil samples, MS/MSD, field duplicate, equipment blank, and trip blank collected from the former Drum Storage Area at the REALM Coldwater Road Facility, were evaluated based on QA/QC criteria established by USEPA Methods as listed in Section 1.2, the QAPP (O'Brien & Gere 1999), and the USEPA National Functional data validation guidelines. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data is considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate. Identification of a data point as approximate indicates uncertainty in the reported concentration of the chemical, but not its assigned identity. The use of approximated analytical data for quantitative uses is consistent with the guidance presented in the *USEPA Risk Assessment Guidance for Superfund* (USEPA 1992).

A discussion of the data quality with regard to the parameters follows:

Precision: Data usability with respect to precision is 100 percent for volatile organic compound soil data.

For the soil samples, none of the data were rejected for precision excursions.

Sensitivity: With the exceptions of the elevated detection limits noted in Section 2, sensitivity requirements were met for the sample data in this project.

Accuracy: Data usability with respect to accuracy is 100 percent for volatile organic compound soil data.

For the soil samples, none of the data were rejected for accuracy excursions.

Representativeness: Data usability with respect to representativeness is 100 percent for volatile organic compound soil data.

For the soil samples, none of the data were rejected for representativeness excursions.

Comparability: Data usability with respect to comparability is 100 percent, as standardized analytical methods, reporting limits, reference materials, and data deliverables were used throughout the data generation process for this project.

Completeness: Overall, 100 percent of the volatile organic compound soil data were determined to be usable for qualitative and quantitative purposes. Therefore, the completeness objective of 90 percent for this investigation, as presented in the QAPP, was met.

References

O'Brien & Gere Engineers, Inc. 1999. *Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP),* Syracuse, New York.

United States Environmental Protection Agency (USEPA). 1992. *USEPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A),* 540/1-891002. Washington D.C.

United States Environmental Protection Agency (USEPA). 1996. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846),* 3rd Edition. Washington DC.

United States Environmental Protection Agency (USEPA). 1999. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review,* EPA-540/R-96/008. Washington D.C.

APPENDIX A

A summary of validated analytical results

Lab Sample ID: S09369.01
Sample Tag: GB-8 (14-15')
Collected Date/Time: 06/04/2002 09:10
Matrix: Soil
COC Reference: 008217

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	86.5	%	1	160.3	06/06/02	MKH		
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/kg	0.3	5035/8260B	06/12/02	JGH	78-93-3	
Benzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-27-4	
Bromoform UJ	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-25-2	
Bromomethane	Not detected	mg/kg	0.3	5035/8260B	06/12/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	108-90-7	
Chloroethane UJ	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-00-3	
Chloroform	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	67-66-3	
Chloromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane UJ	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	98-82-8	

Lab Sample ID: S09369.01 (continued)
Sample Tag: GB-8 (14-15')

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Methylene chloride	Not detected	mg/kg	0.3	5035/8260B	06/12/02	JGH	75-09-2	
Naphthalene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	103-65-1	
Styrene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	100-42-5	
1,1,1,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	127-18-4	
Toluene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-01-4	
o-Xylene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	106-42-3	

Lab Sample ID: S09369.02
Sample Tag: GB-9 (14-15')
Collected Date/Time: 06/04/2002 09:40
Matrix: Soil
COC Reference: 008217

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	88.1	%	1	160.3	06/06/02	MKH		
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/kg	0.3	5035/8260B	06/12/02	JGH	78-93-3	
Benzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-27-4	
Bromoform UJ	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-25-2	
Bromomethane	Not detected	mg/kg	0.3	5035/8260B	06/12/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	108-90-7	
Chloroethane UJ	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-00-3	
Chloroform	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	67-66-3	
Chloromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane UJ	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	98-82-8	

Lab Sample ID: S09369.02 (continued)
Sample Tag: GB-9 (14-15')

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Methylene chloride	Not detected	mg/kg	0.3	5035/8260B	06/12/02	JGH	75-09-2	
Naphthalene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	103-65-1	
Styrene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	100-42-5	
1,1,1,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	127-18-4	
Toluene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-01-4	
o-Xylene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	106-42-3	

Lab Sample ID: S09369.03
Sample Tag: GB-10 (14-15')
Collected Date/Time: 06/04/2002 10:10
Matrix: Soil
COC Reference: 008217

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	87.7	%	1	160.3	06/06/02	MKH		
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/kg	0.3	5035/8260B	06/12/02	JGH	78-93-3	
Benzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-27-4	
Bromoform	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-25-2	
Bromomethane	Not detected	mg/kg	0.3	5035/8260B	06/12/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	108-90-7	
Chloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-00-3	
Chloroform	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	67-66-3	
Chloromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	98-82-8	

Lab Sample ID: S09369.03 (continued)
Sample Tag: GB-10 (14-15')

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Methylene chloride	Not detected	mg/kg	0.3	5035/8260B	06/12/02	JGH	75-09-2	
Naphthalene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	103-65-1	
Styrene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	100-42-5	
1,1,1,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	127-18-4	
Toluene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-01-4	
o-Xylene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	106-42-3	

Lab Sample ID: S09369.04
Sample Tag: MS (GB-9 14-15')
Collected Date/Time: 06/04/2002 09:40
Matrix: Soil
COC Reference: 008217

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	88.8	%	1	160.3	06/06/02	MKH		
Organics								
Volatile Organics								
2-Butanone (MEK)	1.1	mg/kg	0.3	5035/8260B	06/11/02	JGH	78-93-3	1N
Benzene	1.32	mg/kg	0.05	5035/8260B	06/11/02	JGH	71-43-2	1N
n-Butylbenzene	1.81	mg/kg	0.05	5035/8260B	06/11/02	JGH	104-51-8	1N
Bromobenzene	1.14	mg/kg	0.05	5035/8260B	06/11/02	JGH	108-86-1	1N
Bromochloromethane	1.23	mg/kg	0.05	5035/8260B	06/11/02	JGH	74-97-5	1N
Bromodichloromethane	1.14	mg/kg	0.05	5035/8260B	06/11/02	JGH	75-27-4	1N
Bromoform	0.75	mg/kg	0.05	5035/8260B	06/11/02	JGH	75-25-2	1N
Bromomethane	1.1	mg/kg	0.3	5035/8260B	06/11/02	JGH	74-83-9	1N
sec-Butylbenzene	1.74	mg/kg	0.05	5035/8260B	06/11/02	JGH	135-98-8	1N
tert-Butylbenzene	1.53	mg/kg	0.05	5035/8260B	06/11/02	JGH	98-06-6	1N
2-Chlorotoluene	1.38	mg/kg	0.05	5035/8260B	06/11/02	JGH	95-49-8	1N
4-Chlorotoluene	1.33	mg/kg	0.05	5035/8260B	06/11/02	JGH	106-43-4	1N
Carbon tetrachloride	1.23	mg/kg	0.05	5035/8260B	06/11/02	JGH	56-23-5	1N
Chlorobenzene	1.31	mg/kg	0.05	5035/8260B	06/11/02	JGH	108-90-7	1N
Chloroethane	0.25	mg/kg	0.05	5035/8260B	06/11/02	JGH	75-00-3	1N
Chloroform	1.41	mg/kg	0.05	5035/8260B	06/11/02	JGH	67-66-3	1N
Chloromethane	1.51	mg/kg	0.05	5035/8260B	06/11/02	JGH	74-87-3	1N
1,1-Dichloroethane	1.39	mg/kg	0.05	5035/8260B	06/11/02	JGH	75-34-3	1N
1,1-Dichloroethene	1.38	mg/kg	0.05	5035/8260B	06/11/02	JGH	75-35-4	1N
1,1-Dichloropropene	1.53	mg/kg	0.05	5035/8260B	06/11/02	JGH	563-58-6	1N
1,2-Dibromo-3-chloropropane	0.72	mg/kg	0.05	5035/8260B	06/11/02	JGH	96-12-8	1N
1,2-Dibromoethane	1.20	mg/kg	0.05	5035/8260B	06/11/02	JGH	106-93-4	1N
1,2-Dichlorobenzene	1.39	mg/kg	0.05	5035/8260B	06/11/02	JGH	95-50-1	1N
1,2-Dichloroethane	1.32	mg/kg	0.05	5035/8260B	06/11/02	JGH	107-06-2	1N
1,2-Dichloropropane	1.31	mg/kg	0.05	5035/8260B	06/11/02	JGH	78-87-5	1N
1,3-Dichlorobenzene	1.38	mg/kg	0.05	5035/8260B	06/11/02	JGH	541-73-1	1N
1,3-Dichloropropane	1.26	mg/kg	0.05	5035/8260B	06/11/02	JGH	142-28-9	1N
1,4-Dichlorobenzene	1.37	mg/kg	0.05	5035/8260B	06/11/02	JGH	106-46-7	1N
2,2-Dichloropropane	1.44	mg/kg	0.05	5035/8260B	06/11/02	JGH	594-20-7	1N
cis-1,2-Dichloroethene	1.44	mg/kg	0.05	5035/8260B	06/11/02	JGH	156-59-2	1N
cis-1,3-Dichloropropene	1.13	mg/kg	0.05	5035/8260B	06/11/02	JGH	10061-01-5	1N
Dibromochloromethane	0.98	mg/kg	0.05	5035/8260B	06/11/02	JGH	124-48-1	1N
Dibromomethane	1.03	mg/kg	0.05	5035/8260B	06/11/02	JGH	74-95-3	1N
Dichlorodifluoromethane	1.82	mg/kg	0.05	5035/8260B	06/11/02	JGH	75-71-8	1N
trans-1,2-Dichloroethene	1.43	mg/kg	0.05	5035/8260B	06/11/02	JGH	156-60-5	1N
Ethylbenzene	1.35	mg/kg	0.05	5035/8260B	06/11/02	JGH	100-41-4	1N
p-Isopropyltoluene	1.77	mg/kg	0.05	5035/8260B	06/11/02	JGH	99-87-6	1N

1-spiked at 25ppb * 50 (dilution factor) N-No correction for total solids.

Lab Sample ID: S09369.04 (continued)
Sample Tag: MS (GB-9 14-15')

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Isopropylbenzene	1.44	mg/kg	0.05	5035/8260B	06/11/02	JGH	98-82-8	1N
Methylene chloride	1.3	mg/kg	0.3	5035/8260B	06/11/02	JGH	75-09-2	1N
Naphthalene	1.15	mg/kg	0.05	5035/8260B	06/11/02	JGH	91-20-3	1N
n-Propylbenzene	1.48	mg/kg	0.05	5035/8260B	06/11/02	JGH	103-65-1	1N
Styrene	1.41	mg/kg	0.05	5035/8260B	06/11/02	JGH	100-42-5	1N
1,1,1,2-Tetrachloroethane	1.05	mg/kg	0.05	5035/8260B	06/11/02	JGH	630-20-6	1N
1,1,1-Trichloroethane	1.44	mg/kg	0.05	5035/8260B	06/11/02	JGH	71-55-6	1N
1,1,2,2-Tetrachloroethane	1.10	mg/kg	0.05	5035/8260B	06/11/02	JGH	79-34-5	1N
1,1,2-Trichloroethane	1.17	mg/kg	0.05	5035/8260B	06/11/02	JGH	79-00-5	1N
1,2,3-Trichlorobenzene	0.96	mg/kg	0.05	5035/8260B	06/11/02	JGH	87-61-6	1N
1,2,3-Trichloropropane	1.10	mg/kg	0.05	5035/8260B	06/11/02	JGH	96-18-4	1N
1,2,4-Trichlorobenzene	1.13	mg/kg	0.05	5035/8260B	06/11/02	JGH	120-82-1	1N
1,2,4-Trimethylbenzene	1.43	mg/kg	0.05	5035/8260B	06/11/02	JGH	95-63-6	1N
1,3,5-Trimethylbenzene	1.51	mg/kg	0.05	5035/8260B	06/11/02	JGH	108-67-8	1N
Tetrachloroethene	1.10	mg/kg	0.05	5035/8260B	06/11/02	JGH	127-18-4	1N
Toluene	1.31	mg/kg	0.05	5035/8260B	06/11/02	JGH	108-88-3	1N
Trichloroethene	1.29	mg/kg	0.05	5035/8260B	06/11/02	JGH	79-01-6	1N
Trichlorofluoromethane	1.37	mg/kg	0.05	5035/8260B	06/11/02	JGH	75-69-4	1N
Vinyl chloride	1.64	mg/kg	0.05	5035/8260B	06/11/02	JGH	75-01-4	1N
o-Xylene	1.45	mg/kg	0.05	5035/8260B	06/11/02	JGH	95-47-6	1N
p,m-Xylene	2.91	mg/kg	0.05	5035/8260B	06/11/02	JGH	106-42-3	1N

1-spiked at 25ppb * 50 (dilution factor) N-No correction for total solids.

Lab Sample ID: S09369.05
Sample Tag: MSD (GB-9 14-15')
Collected Date/Time: 06/04/2002 09:40
Matrix: Soil
COC Reference: 008217

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	86.7	%	1	160.3	06/06/02	MKH		
Organics								
Volatile Organics								
2-Butanone (MEK)	1.2	mg/kg	0.3	5035/8260B	06/11/02	JGH	78-93-3	1N
Benzene	1.26	mg/kg	0.05	5035/8260B	06/11/02	JGH	71-43-2	1N
n-Butylbenzene	1.67	mg/kg	0.05	5035/8260B	06/11/02	JGH	104-51-8	1N
Bromobenzene	1.07	mg/kg	0.05	5035/8260B	06/11/02	JGH	108-86-1	1N
Bromochloromethane	1.27	mg/kg	0.05	5035/8260B	06/11/02	JGH	74-97-5	1N
Bromodichloromethane	1.08	mg/kg	0.05	5035/8260B	06/11/02	JGH	75-27-4	1N
Bromoform	0.68	mg/kg	0.05	5035/8260B	06/11/02	JGH	75-25-2	1N
Bromomethane	1.1	mg/kg	0.3	5035/8260B	06/11/02	JGH	74-83-9	1N
sec-Butylbenzene	1.60	mg/kg	0.05	5035/8260B	06/11/02	JGH	135-98-8	1N
tert-Butylbenzene	1.42	mg/kg	0.05	5035/8260B	06/11/02	JGH	98-06-6	1N
2-Chlorotoluene	1.27	mg/kg	0.05	5035/8260B	06/11/02	JGH	95-49-8	1N
4-Chlorotoluene	1.24	mg/kg	0.05	5035/8260B	06/11/02	JGH	106-43-4	1N
Carbon tetrachloride	1.12	mg/kg	0.05	5035/8260B	06/11/02	JGH	56-23-5	1N
Chlorobenzene	1.17	mg/kg	0.05	5035/8260B	06/11/02	JGH	108-90-7	1N
Chloroethane	0.22	mg/kg	0.05	5035/8260B	06/11/02	JGH	75-00-3	1N
Chloroform	1.41	mg/kg	0.05	5035/8260B	06/11/02	JGH	67-66-3	1N
Chloromethane	1.51	mg/kg	0.05	5035/8260B	06/11/02	JGH	74-87-3	1N
1,1-Dichloroethane	1.36	mg/kg	0.05	5035/8260B	06/11/02	JGH	75-34-3	1N
1,1-Dichloroethene	1.32	mg/kg	0.05	5035/8260B	06/11/02	JGH	75-35-4	1N
1,1-Dichloropropene	1.46	mg/kg	0.05	5035/8260B	06/11/02	JGH	563-58-6	1N
1,2-Dibromo-3-chloropropane	0.67	mg/kg	0.05	5035/8260B	06/11/02	JGH	96-12-8	1N
1,2-Dibromoethane	1.05	mg/kg	0.05	5035/8260B	06/11/02	JGH	106-93-4	1N
1,2-Dichlorobenzene	1.32	mg/kg	0.05	5035/8260B	06/11/02	JGH	95-50-1	1N
1,2-Dichloroethane	1.25	mg/kg	0.05	5035/8260B	06/11/02	JGH	107-06-2	1N
1,2-Dichloropropane	1.27	mg/kg	0.05	5035/8260B	06/11/02	JGH	78-87-5	1N
1,3-Dichlorobenzene	1.31	mg/kg	0.05	5035/8260B	06/11/02	JGH	541-73-1	1N
1,3-Dichloropropane	1.19	mg/kg	0.05	5035/8260B	06/11/02	JGH	142-28-9	1N
1,4-Dichlorobenzene	1.27	mg/kg	0.05	5035/8260B	06/11/02	JGH	106-46-7	1N
2,2-Dichloropropane	1.43	mg/kg	0.05	5035/8260B	06/11/02	JGH	594-20-7	1N
cis-1,2-Dichloroethene	1.45	mg/kg	0.05	5035/8260B	06/11/02	JGH	156-59-2	1N
cis-1,3-Dichloropropene	1.09	mg/kg	0.05	5035/8260B	06/11/02	JGH	10061-01-5	1N
Dibromochloromethane	0.88	mg/kg	0.05	5035/8260B	06/11/02	JGH	124-48-1	1N
Dibromomethane	0.96	mg/kg	0.05	5035/8260B	06/11/02	JGH	74-95-3	1N
Dichlorodifluoromethane	1.65	mg/kg	0.05	5035/8260B	06/11/02	JGH	75-71-8	1N
trans-1,2-Dichloroethene	1.42	mg/kg	0.05	5035/8260B	06/11/02	JGH	156-60-5	1N
Ethylbenzene	1.22	mg/kg	0.05	5035/8260B	06/11/02	JGH	100-41-4	1N
p-Isopropyltoluene	1.61	mg/kg	0.05	5035/8260B	06/11/02	JGH	99-87-6	1N

1-spiked at 25ppb * 50 (dilution factor) N-No correction for total solids.

Lab Sample ID: S09369.05 (continued)
Sample Tag: MSD (GB-9 14-15')

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Isopropylbenzene	1.34	mg/kg	0.05	5035/8260B	06/11/02	JGH	98-82-8	1N
Methylene chloride	1.3	mg/kg	0.3	5035/8260B	06/11/02	JGH	75-09-2	1N
Naphthalene	1.06	mg/kg	0.05	5035/8260B	06/11/02	JGH	91-20-3	1N
n-Propylbenzene	1.37	mg/kg	0.05	5035/8260B	06/11/02	JGH	103-65-1	1N
Styrene	1.32	mg/kg	0.05	5035/8260B	06/11/02	JGH	100-42-5	1N
1,1,1,2-Tetrachloroethane	0.97	mg/kg	0.05	5035/8260B	06/11/02	JGH	630-20-6	1N
1,1,1-Trichloroethane	1.42	mg/kg	0.05	5035/8260B	06/11/02	JGH	71-55-6	1N
1,1,2,2-Tetrachloroethane	1.03	mg/kg	0.05	5035/8260B	06/11/02	JGH	79-34-5	1N
1,1,2-Trichloroethane	1.09	mg/kg	0.05	5035/8260B	06/11/02	JGH	79-00-5	1N
1,2,3-Trichlorobenzene	0.87	mg/kg	0.05	5035/8260B	06/11/02	JGH	87-61-6	1N
1,2,3-Trichloropropane	0.98	mg/kg	0.05	5035/8260B	06/11/02	JGH	96-18-4	1N
1,2,4-Trichlorobenzene	1.02	mg/kg	0.05	5035/8260B	06/11/02	JGH	120-82-1	1N
1,2,4-Trimethylbenzene	1.33	mg/kg	0.05	5035/8260B	06/11/02	JGH	95-63-6	1N
1,3,5-Trimethylbenzene	1.39	mg/kg	0.05	5035/8260B	06/11/02	JGH	108-67-8	1N
Tetrachloroethene	1.05	mg/kg	0.05	5035/8260B	06/11/02	JGH	127-18-4	1N
Toluene	1.24	mg/kg	0.05	5035/8260B	06/11/02	JGH	108-88-3	1N
Trichloroethene	1.21	mg/kg	0.05	5035/8260B	06/11/02	JGH	79-01-6	1N
Trichlorofluoromethane	1.28	mg/kg	0.05	5035/8260B	06/11/02	JGH	75-69-4	1N
Vinyl chloride	1.50	mg/kg	0.05	5035/8260B	06/11/02	JGH	75-01-4	1N
o-Xylene	1.36	mg/kg	0.05	5035/8260B	06/11/02	JGH	95-47-6	1N
p,m-Xylene	2.68	mg/kg	0.05	5035/8260B	06/11/02	JGH	106-42-3	1N

1-spiked at 25ppb * 50 (dilution factor) N-No correction for total solids.

Lab Sample ID: S09369.06
Sample Tag: DUP
Collected Date/Time: 06/04/2002 :
Matrix: Soil
COC Reference: 008217

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	88.0	%	1	160.3	06/06/02	MKH		
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/kg	0.3	5035/8260B	06/12/02	JGH	78-93-3	
Benzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-27-4	
Bromoform UJ	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-25-2	
Bromomethane	Not detected	mg/kg	0.3	5035/8260B	06/12/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	108-90-7	
Chloroethane UJ	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-00-3	
Chloroform	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	67-66-3	
Chloromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane UJ	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	98-82-8	

Lab Sample ID: S09369.06 (continued)
Sample Tag: DUP

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
Methylene chloride	Not detected	mg/kg	0.3	5035/8260B	06/12/02	JGH	75-09-2	
Naphthalene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	103-65-1	
Styrene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	100-42-5	
1,1,1,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	127-18-4	
Toluene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	75-01-4	
o-Xylene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/kg	0.06	5035/8260B	06/12/02	JGH	106-42-3	

Lab Sample ID: S09369.07
Sample Tag: EB
Collected Date/Time: 06/04/2002 12:00
Matrix: Liquid
COC Reference: 008217

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40 ml Glass	HCL	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/L	0.05	8260B	06/12/02	JGH	78-93-3	
Benzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	75-27-4	
Bromoform	Not detected	mg/L	0.001	8260B	06/12/02	JGH	75-25-2	
Bromomethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/L	0.001	8260B	06/12/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	108-90-7	
Chloroethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	75-00-3	
Chloroform	Not detected	mg/L	0.001	8260B	06/12/02	JGH	67-66-3	
Chloromethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	98-82-8	
Methylene chloride	Not detected	mg/L	0.005	8260B	06/12/02	JGH	75-09-2	
Naphthalene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	103-65-1	
Styrene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	100-42-5	

Lab Sample ID: S09369.07 (continued)
Sample Tag: EB

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
1,1,1,2-Tetrachloroethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	127-18-4	
Toluene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/L	0.001	8260B	06/12/02	JGH	75-01-4	
o-Xylene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	106-42-3	

Lab Sample ID: S09369.08
Sample Tag: TB
Collected Date/Time: 06/04/2002 :
Matrix: Liquid
COC Reference: 008217

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40 ml Glass	HCL	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Volatile Organics								
2-Butanone (MEK)	Not detected	mg/L	0.05	8260B	06/12/02	JGH	78-93-3	
Benzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	71-43-2	
n-Butylbenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	104-51-8	
Bromobenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	108-86-1	
Bromochloromethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	74-97-5	
Bromodichloromethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	75-27-4	
Bromoform	Not detected	mg/L	0.001	8260B	06/12/02	JGH	75-25-2	
Bromomethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	74-83-9	
sec-Butylbenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	135-98-8	
tert-Butylbenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	98-06-6	
2-Chlorotoluene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	95-49-8	
4-Chlorotoluene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	106-43-4	
Carbon tetrachloride	Not detected	mg/L	0.001	8260B	06/12/02	JGH	56-23-5	
Chlorobenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	108-90-7	
Chloroethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	75-00-3	
Chloroform	Not detected	mg/L	0.001	8260B	06/12/02	JGH	67-66-3	
Chloromethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	74-87-3	
1,1-Dichloroethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	75-34-3	
1,1-Dichloroethene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	75-35-4	
1,1-Dichloropropene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	563-58-6	
1,2-Dibromo-3-chloropropane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	96-12-8	
1,2-Dibromoethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	106-93-4	
1,2-Dichlorobenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	95-50-1	
1,2-Dichloroethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	107-06-2	
1,2-Dichloropropane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	78-87-5	
1,3-Dichlorobenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	541-73-1	
1,3-Dichloropropane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	142-28-9	
1,4-Dichlorobenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	106-46-7	
2,2-Dichloropropane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	594-20-7	
cis-1,2-Dichloroethene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	156-59-2	
cis-1,3-Dichloropropene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	10061-01-5	
Dibromochloromethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	124-48-1	
Dibromomethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	74-95-3	
Dichlorodifluoromethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	75-71-8	
trans-1,2-Dichloroethene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	156-60-5	
Ethylbenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	100-41-4	
p-Isopropyltoluene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	99-87-6	
Isopropylbenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	98-82-8	
Methylene chloride	Not detected	mg/L	0.005	8260B	06/12/02	JGH	75-09-2	
Naphthalene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	91-20-3	
n-Propylbenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	103-65-1	
Styrene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	100-42-5	

Lab Sample ID: S09369.08 (continued)
Sample Tag: TB

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics (continued)								
Volatile Organics (continued)								
1,1,1,2-Tetrachloroethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	630-20-6	
1,1,1-Trichloroethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	71-55-6	
1,1,2,2-Tetrachloroethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	79-34-5	
1,1,2-Trichloroethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	79-00-5	
1,2,3-Trichlorobenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	87-61-6	
1,2,3-Trichloropropane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	96-18-4	
1,2,4-Trichlorobenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	120-82-1	
1,2,4-Trimethylbenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	95-63-6	
1,3,5-Trimethylbenzene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	108-67-8	
Tetrachloroethene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	127-18-4	
Toluene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	108-88-3	
Trichloroethene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	79-01-6	
Trichlorofluoromethane	Not detected	mg/L	0.001	8260B	06/12/02	JGH	75-69-4	
Vinyl chloride	Not detected	mg/L	0.001	8260B	06/12/02	JGH	75-01-4	
o-Xylene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	95-47-6	
p,m-Xylene	Not detected	mg/L	0.001	8260B	06/12/02	JGH	106-42-3	

Appendix L

Data Validation Report – November 2002 Soil Samples

DATA VALIDATION REPORT

Former Drum Storage Area at the Former Peregrine, U.S., Inc. Property at the Coldwater Road Facility G-1245 East Coldwater Road Flint, Michigan (EPA I.D. No. MIR 000 020 743)

Remediation and Liability Management Company , Inc.

January 2003

DATA VALIDATION REPORT

Soil Samples Collected November 2002
Former Drum Storage Area at the
Former Peregrine U.S., Inc. Property at the
Coldwater Road Facility
Flint, Michigan
(EPA I.D. No. MIR 000 020 743)

General Motors

Swiatoslav W. Kaczmar, Ph.D., C.I.H.
Vice President

January 2003

O'BRIEN & GERE
ENGINEERS, INC.

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Executive summary

This data validation report addresses data quality for soil samples collected from the former Drum Storage Area at the Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Facility, 1245 Coldwater Road, Flint, Michigan (formerly the Peregrine, U.S., Inc. property). Sample collection activities were conducted by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) on 11/26/02.

The environmental samples, matrix spike, matrix spike duplicate (MS/MSD), field duplicate, equipment blank, and trip blank collected for this investigation were submitted to Merit Laboratories, Inc. of East Lansing, Michigan for analysis of volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Methods. The analytical data generated for this investigation were evaluated by O'Brien & Gere using the quality assurance/quality control (QA/QC) criteria established in the following documents:

- United States Environmental Protection Agency (USEPA) Methods
- Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP) (O'Brien & Gere 2000).

Excursions from the QA/QC criteria were qualified based on guidance provided in the following document:

- United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines For Organic Data Review, EPA-540/R-96/008 (USEPA 1999).

As a result of the data validation process the VOCs data for the soil samples analyzed were determined to be 100% usable for qualitative and quantitative purposes.

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1. Introduction

1.1. Program summary

This data validation report addresses the results of a data quality evaluation for soil samples, matrix spike, matrix spike duplicate (MS/MSD), field duplicate, equipment blank, and one trip blank collected from the former Drum Storage Area at the Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Facility, 1245 Coldwater Road, Flint, Michigan (formerly the Peregrine, U.S., Inc. property). Sample collection activities were conducted by O'Brien & Gere on 11/26/02. The environmental samples, MS/MSD sample, field duplicate, equipment blank, and trip blank collected for this investigation were submitted to Merit Laboratories, Inc. of East Lansing, Michigan for analysis of volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Methods listed in Table 1-1. The samples that were submitted for data validation are presented in Table 1-1 below.

Table 1-1. ***Sample cross reference list***

Laboratory Package ID	Date Collected	Sample Identification		Analysis Requested	Reference
		Client ID	Laboratory ID		
S11215.01	11/26/02	GB-14 (10-12')	11215.01	Trichloroethene by 8260B	1
		GB-15 (5-7')	11215.02	Trichloroethene by 8260B	1
		GB-16 (5-7'), MS, MSD	11215.03, .06, .07	Trichloroethene by 8260B	1
		GB-17 (5-7')	11215.04	Trichloroethene by 8260B	1
		Duplicate [GB-14(10-12')]	11215.05	Trichloroethene by 8260B	1
		Equipment Blank	11215.08	Trichloroethene by 8260B	1
		Trip Blank	11215.09	Trichloroethene by 8260B	1

Note:
MS indicates matrix spike sample.
MSD indicates matrix spike duplicate sample.
The sample identification in brackets indicates the field duplicate sampling location.

Reference:
1 USEPA. 1996. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846*, 3rd Edition. Washington D.C.

1.2. Data validation protocols

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Data validation is essentially a three-step process in which the analytical data's quality assurance/quality control (QA/QC) information is first compared to a series of QA/QC criteria. Based on the results of this comparison, the analytical data are then assigned qualifiers, which provide an indication of the data's usability. Finally, an overall evaluation of the data's usability is performed. These three steps are described in the following sections.

1.2.1. Comparison to QA/QC criteria

In this report, the analytical data's QA/QC information is compared to the applicable QA/QC criteria provided in the following documents:

- USEPA. 1996. Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), 3rd Edition. Washington DC.

- O'Brien & Gere Engineers, Inc. 1999. Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP), Syracuse, New York.

Full data validation was performed on the soil sample data. Full data validation consists of a review of data summary forms and raw analytical data that were provided in the data packages. The following QA/QC information was included in the review for VOC analyses:

- Chain-of-custody records
- Holding times and sample preservation
- Calibrations
- Blank analysis
- Matrix spike/matrix spike duplicate (MS/MSD) analysis
- Laboratory control sample (LCS) analysis
- Field duplicate analysis
- Surrogate recovery
- Internal standards performance
- Gas chromatography/mass spectrometry (GC/MS) instrument performance check
- Target analyte quantitation, identification, and reported detection limits
- System performance
- Documentation completeness, and
- Overall data assessment.

1.2.2. Assignment of qualifiers

Excursions from the QA/QC criteria were qualified based on guidance provided in the following document:

- USEPA 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA-540/R-94/012. Washington D.C.

In accordance with the USEPA guidance, the following qualifiers are used in this type of data validation:

J Indicates that the analyte concentration should be considered approximate. This qualifier is used when the data validation process identifies a minor deficiency in the data generation process.

UJ Indicates that the analyte reporting limit should be considered approximate. This qualifier is used when the data validation process identifies a minor deficiency in the data generation process.

The following guidelines are used regarding the assignment of qualifiers and the use of qualified data:

The data quality evaluation results in only one qualifier for each analyte; in a case when several qualifiers are applicable to the same analyte, the cumulative effect of the various QA/QC excursions is employed in assigning the final data qualifiers.

QA/QC excursions which do not result in the qualification of an analyte, or which result in additional qualification if the analyte was previously qualified, are not discussed.

The quantitative use of approximated analytical data is consistent with the guidance presented in the USEPA Risk Assessment Guidance for Superfund (USEPA 1992).

1.2.3. Data usability evaluation

Based on the QA/QC information review and the qualifiers assigned to the analytical data, an overall evaluation of the data's usability is performed. This evaluation considers the data parameters of precision, sensitivity, accuracy, representativeness, comparability, and completeness (known as PSARCC parameters), which are described as follows:

- Precision is evaluated through the review of field duplicate samples and MS/MSD samples.

- Sensitivity is evaluated through the review of reported detection limits.

- Accuracy is evaluated through the review of MS/MSD samples, internal standards, surrogate recoveries, LCS recoveries, calibration, and instrument performance check.

- Representativeness is evaluated through the review of holding times, sample preservation and preparation, blank analysis and target compound identification and quantification.

- Comparability is evaluated through the review of the analytical methods and reporting procedures for consistency.

- Completeness is defined as the percentage of sample results that are determined to be usable.

1.2.4. Analytical methods

The soil samples collected for this investigation were analyzed by Merit Laboratories, Inc. (Merit Labs) of East Lansing, Michigan for volatile organic compounds (VOCs) using the method presented in Table 1-2.

Table 1-2. *Analytical method reference*

Parameter	Method	Reference
Trichloroethene	USEPA Method 5030B/5035/8260B	1

Note:
1. USEPA. 1996 *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846)*, 3rd Edition. Washington DC.

The following chapters of this document address distinct aspects of the validation process. Specific QA/QC excursions and qualifications performed on the sample data are discussed in Section 2. Data completeness and usability are discussed in Section 3.

The annotated analytical results generated by this validation are presented in Appendix A.

2. Data quality evaluation

2.1. Soil samples

2.1.1. VOC analysis of soil samples by GM/MS

Criteria compliance

The following QA/QC parameters met validation criteria or did not result in additional qualification of sample results:

- Chain-of-custody records
- Holding times and sample preservation
- Calibrations
- Blank analysis
- MS/MSD analysis
- LCS analysis
- Field duplicate analysis
- Surrogate recovery
- Internal standards performance
- GC/MS instrument performance check
- Target analyte quantitation, identification, and reported detection limits
- System performance
- Documentation completeness, and
- Overall data assessment.

Excursions from QA/QC criteria presented in Section 1.2.2 were not noted during the validation process. Therefore, sample data were not qualified.

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3. Summary and data usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process.

The soil samples, MS/MSD, field duplicate, equipment blank, and trip blank collected from the former Drum Storage Area at the REALM Coldwater Road Facility, were evaluated based on QA/QC criteria established by USEPA Methods as listed in Section 1.2, the QAPP (O'Brien & Gere 1999), and the USEPA National Functional data validation guidelines. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data is considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process would have resulted in some sample data being characterized as approximate. Identification of a data point as approximate indicates uncertainty in the reported concentration of the chemical, but not its assigned identity. The use of approximated analytical data for quantitative uses is consistent with the guidance presented in the USEPA Risk Assessment Guidance for Superfund (USEPA 1992).

A discussion of the data quality with regard to the parameters follows:

Precision: Data usability with respect to precision is 100 percent for volatile organic compound soil data.

For the soil samples, none of the data were rejected for precision excursions.

Sensitivity: With the exceptions of the elevated detection limits noted in Section 2, sensitivity requirements were met for the sample data in this project.

Accuracy: Data usability with respect to accuracy is 100 percent for volatile organic compound soil data.

For the soil samples, none of the data were rejected for accuracy excursions.

Representativeness: Data usability with respect to representativeness is 100 percent for volatile organic compound soil data.

For the soil samples, none of the data were rejected for representativeness excursions.

Comparability: Data usability with respect to comparability is 100 percent, as standardized analytical methods, reporting limits, reference materials, and data deliverables were used throughout the data generation process for this project.

Completeness: Overall, 100 percent of the trichloroethene soil data were determined to be usable for qualitative and quantitative purposes. Therefore, the completeness objective of 90 percent for this investigation, as presented in the QAPP, was met.

References

O'Brien & Gere Engineers, Inc. 1999. Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP), Syracuse, New York.

United States Environmental Protection Agency (USEPA). 1992. USEPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A), 540/1-891002. Washington D.C.

United States Environmental Protection Agency (USEPA). 1996. Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), 3rd Edition. Washington DC.

United States Environmental Protection Agency (USEPA). 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA-540/R-96/008. Washington D.C.

APPENDIX A

A summary of validated analytical results

Analytical Laboratory Report

Report ID: S11215.01(01)
Generated on 12/04/2002

Report to

Attention: Mr. Tony Finch
O'Brien & Gere Engineers, Inc.
33469 West 14 Mile Road Suite 150
Farmington Hills. Michigan 48331

Phone: 248-661-3745 X 14 FAX: 248-661-4057

Report produced by

Merit
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S11215.01-S11215.09
Project: Realm Coldwater Rd., DSA
Submitted Date/Time: 11/26/2002 18:30
Sampled by: AF/JON
P.O. #:

Report Notes

Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
Results relate only to items tested.
Report shall not be reproduced except in full, without the written approval of Merit.

Violetta F. Murshak

Violetta F. Murshak
Laboratory Director

Analytical Laboratory Report

Lab Sample ID: S11215.01
Sample Tag: GB-14 (10-12')
Collected Date/Time: 11/26/2002 09:50
Matrix: Soil
COC Reference: 013838

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	86.9	%	1	160.3	12/01/02	MKH		
Organics								
Trichloroethene	Not detected	ug/kg	60	8260B	12/03/02	JGH	79-01-6	

Analytical Laboratory Report

Lab Sample ID: S11215.02
Sample Tag: GB-15 (5-7')
Collected Date/Time: 11/26/2002 10:10
Matrix: Soil
COC Reference: 013838

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	87.5	%	1	160.3	12/01/02	MKH		
Organics								
Trichloroethene	Not detected	ug/kg	60	8260B	12/04/02	JGH	79-01-6	

Analytical Laboratory Report

Lab Sample ID: S11215.03
Sample Tag: GB-16 (5-7')
Collected Date/Time: 11/26/2002 10:30
Matrix: Soil
COC Reference: 013838

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	87.5	%	1	160.3	12/01/02	MKH		
Organics								
Trichloroethene	Not detected	ug/kg	60	8260B	12/04/02	JGH	79-01-6	

Analytical Laboratory Report

Lab Sample ID: S11215.04
Sample Tag: GB-17 (5-7')
Collected Date/Time: 11/26/2002 11:10
Matrix: Soil
COC Reference: 013838

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	86.7	%	1	160.3	12/01/02	MKH		
Organics								
Trichloroethene	Not detected	ug/kg	60	8260B	12/04/02	JGH	79-01-6	

Analytical Laboratory Report

Lab Sample ID: S11215.05
Sample Tag: Dup
Collected Date/Time: 11/26/2002 :
Matrix: Soil
COC Reference: 013838

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	87.3	%	1	160.3	12/01/02	MKH		
Organics								
Trichloroethene	Not detected	ug/kg	60	8260B	12/04/02	JGH	79-01-6	

Analytical Laboratory Report

Lab Sample ID: S11215.06
Sample Tag: MS [GB-16 (5-7')]
Collected Date/Time: 11/26/2002 10:30
Matrix: Soil
COC Reference: 013839

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	86.5	%	1	160.3	12/01/02	MKH		
Organics								
Trichloroethene	1180	ug/kg	60	8260B	12/04/02	JGH	79-01-6	1N

1-Spiked at 25ppb * 50 (dilution factor) N-No correction for total solids.

Analytical Laboratory Report

Lab Sample ID: S11215.07
Sample Tag: MSD [GB-16 (5-7')]
Collected Date/Time: 11/26/2002 10:30
Matrix: Soil
COC Reference: 013839

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	4	4025
1	4oz. Glass	None	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	87.3	%	1	160.3	12/01/02	MKH		
Organics								
Trichloroethene	1100	ug/kg	60	8260B	12/04/02	JGH	79-01-6	1N

1-Spiked at 25ppb * 50 (dilution factor) N-No correction for total solids.

Analytical Laboratory Report

Lab Sample ID: S11215.08
Sample Tag: EB
Collected Date/Time: 11/26/2002 15:15
Matrix: Liquid
COC Reference: 013839

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40 ml Glass	HCL	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Trichloroethene	Not detected	ug/l	1	8260B	12/04/02	JGH	79-01-6	

Analytical Laboratory Report

Lab Sample ID: S11215.09
Sample Tag: TB
Collected Date/Time: 11/26/2002 :
Matrix: Liquid
COC Reference: 013839

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40 ml Glass	HCL	Yes	4	4025

Analysis	Results	Units	RDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Trichloroethene	Not detected	ug/l	1	8260B	12/04/02	JGH	79-01-6	

APPENDIX M

Former Drum Storage Area Waste Characterization Analytical Data Sheets

REPUBLIC SERVICES, INC.

Office Use Only
Approval Number: _____
Expiration Date: _____

SPECIAL WASTE PROFILE

Information utilized for completion of this form must originate from an authorized representative of the generator of the waste material. The information on this form must be COMPLETE, LEGIBLE, and the form must be SIGNED.

A. GENERATOR INFORMATION

1. Generator Name: GM Former Fiero plant
2. Address: 1245 E. Coldwater Rd.
   City: Flint County: Genesee
   State: MI Zip: 48505
3. Site Location (if different): Former Fiero Plant, Coldwater Rd Facility
4. Contact Name: Cheryl Hiatt
5. Phone Number: 248-753-5799
6. Fax Number: 248-753-5829

B. CUSTOMER/BILLING INFORMATION

1. Billing Name: Realm Pontiac Center Point Campus Central
2. Address: 2000 Center Point MAIL CODE 483-520-190
   City: Pontiac County:
   State: MI Zip: 48341-3147
3. Contact Name: Cheryl Hiatt
4. Phone Number: 248-753-5799
5. Fax Number: 248-753-5829
6. Is there a service agreement on file? ☐ YES ☐ NO

C. TRANSPORTER INFORMATION

1. Name: TBA
2. Street Address:
   City: State: Zip:
3. Phone Number:
4. Fax Number:
5. Contact Name:

D. AGENT/CONSULTANT INFORMATION

1. Name: CRA
2. Street Address: 561 Fareham Gate 651 Colby Dr.
   City: Waterloo State: ON Zip: N2V 1C2 CANADA
3. Phone Number: 519 884 0510
4. Fax Number: 519-884-0525
5. Contact Name: Sylvie Eastman
6. Is there a Letter of Authorization on file? ☒ YES ☐ NO

E. WASTE STREAM INFORMATION

1. Common Name of Waste: Non haz sand soil and debris
2. Detailed Description of Process: removal of sediments below concrete surface pad, sediments may be oily /have oily residue and soils from additional excavations around pads
3. Physical State at 70°F ☒ Solid ☐ Semi-Solid ☐ Liquid ☐ Powder ☐ Other
4. Odor: ☒ None ☒ Mild ☐ Significant: (describe)
5. Color: Brown and black
6. Flash Point: >200 °F NOT TESTED >93 °C (SOIL-GENERATOR KNOWLEDGE)
7. Reactive: ☒ NO ☐ YES with NOT TESTED
8. pH Range: na
9. Heat Generating Waste ☒ NO ☐ YES
10. Free Liquid: ☒ NO ☐ YES
11. Water Content: na % by water
12. Does the waste contain radioactive or U.S.D.O.T. hazardous materials, PCB's, or asbestos? ☐ NO ☒ YES
13. Does the waste contain any etiological agents or untreated medical waste? ☒ NO ☐ YES
14. Is the waste proposed for management a hazardous waste as defined by Federal or State regulations? ☒ NO ☐ YES

F. SUPPLEMENTAL INFORMATION

1. Attached Document(s): ☐ None ☐ MSDS ☒ Certified Analytical Report ☐ Memo/Letter ☐ Process Knowledge
2. If analytical data is attached, is the data derived from testing a representative sample in accordance with 40 CFR 261 and/or other applicable laws? ☒ YES ☐ NO

G. SHIPPING INFORMATION

1. Packaging: ☒ Bulk Solids ☐ Bulk Liquids ☐ Drums ☐ Roll-Off ☐ Dump Truck ☐ Tank Truck ☐ Other:
2. Estimated Volume: 5000 ☐ Tons ☐ Cubic Yards ☐ Drums ☐ Gallons ☐ Other:
3. Shipping Frequency: 125 per ☐ One Time ☐ Month ☐ Year ☐ Other:
4. Designated Landfill(s): Brentwood
5. Disposal Method: ☒ Landfill ☐ Solidification ☐ Bioremediation ☐ Other:

H. Generator's Certification Statement:

I hereby certify that the above and attached information is complete and accurate to the best of my ability, that no deliberate information was omitted, that all known and suspected hazards have been disclosed, and that the waste is not a regulated hazardous waste by government or local authority, and does not contain PCB's regulated by TSCA or any other regulatory authority. If any of the above information changes, I agree to notify Republic Services prior to offering the waste for shipment or management.

I, CHERYL HIATT (NAME, PLEASE PRINT) am employed by GENERAL MOTORS CORP. (COMPANY NAME) and am authorized to sign this request for

COMPANY NAME: GENERAL MOTORS CORP PRINTED NAME: CHERYL HIATT
DATE: 3/16/04 SIGNATURE: [signature]

Form SW01 (2003)

REPUBLIC SERVICES, INC.

Office Use Only
Approval Number:
Expiration Date:

SPECIAL WASTE PROFILE

Information utilized for completion of this form must originate from an authorized representative of the generator of the waste material. The information on this form must be COMPLETE, LEGIBLE, and the form must be SIGNED.

A. GENERATOR INFORMATION
1. Generator Name: GM Powertrain-Pengrine
2. Address: 1245 E. Coldwater Rd.
City: Flint County: Genesee
State: MI Zip: 48505
3. Site Location (if different): FORMER PEREGRINE COLDWATER RD SITE
4. Contact Name: Cheryl Hiatt
5. Phone Number: 248-753-5799
6. Fax Number: 248-753-5829

B. CUSTOMER/BILLING INFORMATION
1. Billing Name: Realm Pontiac Center Point Campus Central
2. Address: 2010 Center Point MAIL CODE 483-520-190
City: Pontiac County:
State: MI Zip: 48341-3147
3. Contact Name: Cheryl Hiatt
4. Phone Number: 248-753-5799
5. Fax Number: 248-753-5829
6. Is there a service agreement on file? ☐ YES ☐ NO

C. TRANSPORTER INFORMATION
1. Name: TBA
2. Street Address:
City: State: Zip:
3. Phone Number:
4. Fax Number:
5. Contact Name:

D. AGENT/CONSULTANT INFORMATION
1. Name: CRA
2. Street Address: ~~900 Long Hamilton~~ 651 COLBY DR.
City: WATERLOO State: ONTARIO Zip: N2V 1C0
3. Phone Number: 519 884 0510
4. Fax Number: 519-884-0525
5. Contact Name: Sylvia Eastman
6. Is there a Letter of Authorization on file? ☒ YES ☐ NO

E. WASTE STREAM INFORMATION
1. Common Name of Waste: Non haz concrete and debris
2. Detailed Description of Process: removal of oil stained concrete pad at former GM Coldwater Rd. Facility
3. Physical State at 70°F: ☒ Solid ☐ Semi-Solid ☐ Liquid ☐ Powder ☐ Other
4. Odor: ☒ None ☐ Mild ☐ Significant (describe)
5. Color: White gray
6. Flash Point: >200°F °C CONCRETE - NOT TESTED
7. Reactive: ☒ NO ☐ YES with NOT TESTED
8. pH Range: na
9. Heat Generating Waste: ☒ NO ☐ YES
10. Free Liquid: ☒ NO ☐ YES
11. Water Content: na % by water
12. Does the waste contain radioactive or U.S.D.O.T. hazardous materials, PCB's, or asbestos? ☒ NO ☐ YES
13. Does the waste contain any etiological agents or untreated medical waste? ☒ NO ☐ YES
14. Is the waste proposed for management a hazardous waste as defined by Federal or State regulations? ☒ NO ☐ YES

F. SUPPLEMENTAL INFORMATION
1. Attached Document(s): ☐ None ☐ MSDS ☒ Certified Analytical Report ☐ Memo/Letter ☐ Process Knowledge
2. If analytical data is attached, is the data derived from testing a representative sample in accordance with 40 CFR 261 and/or other applicable laws? ☒ YES ☐ NO

G. SHIPPING INFORMATION
1. Packaging: ☒ Bulk Solids ☐ Bulk Liquids ☐ Drums ☒ Roll-Off ☒ Dump Truck ☐ Tank Truck ☐ Other:
2. Estimated Volume: 5000 ☐ Tons ☐ Cubic Yards ☐ Drums ☐ Gallons ☐ Other:
3. Shipping Frequency: 125 per ☒ One Time ☐ Month ☐ Year ☐ Other:
4. Designated Landfill(s): Brent run
5. Disposal Method: ☒ Landfill ☐ Solidification ☐ Bioremediation ☐ Other:

H. Generator's Certification Statement:
I hereby certify that the above and attached information is complete and accurate to the best of my ability, that no deliberate information was omitted, that all known and suspected hazards have been disclosed, and that the waste is not a regulated hazardous waste by government or local authority, and does not contain PCB's regulated by TSCA or any other regulatory authority. If any of the above information changes, I agree to notify Republic Services prior to offering the waste for shipment or management.

I, CHERYL HIATT (NAME, PLEASE PRINT) am employed by GENERAL MOTORS CORP (COMPANY NAME) and am authorized to sign this request for

COMPANY NAME: GENERAL MOTORS CORP PRINTED NAME: CHERYL HIATT
DATE: 3/16/04 SIGNATURE: Cheryl Hiatt

Form SW01 (2003)

SGS CT&E Environmental Services Inc.
Michigan Division

Laboratory Report

Project:	**Former Peregrine (Coldwater Rd) #12636**
CT&E Work Order:	**3041189** **#12636 Former Peregrine**
Client:	**Conestoga-Rovers & Associates** **14496 Sheldon Road** **Suite 200** **Plymouth, MI 48170**
Attention:	**Paul Wiseman**

Certification:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, other than the conditions noted on the sample data sheet(s) and/or the case narrative. This certification applies only to the tested parameters and the specific sample(s) received at the laboratory.

Respectfully submitted,

Jason A Arbogast for

4/2/2004
Date

Denise Heckler, Project Manager
CT&E Environmental Services Inc.
Michigan Division
1200 Conrad Industrial Drive
Ludington, MI 49431
Phone: 231.843.1877
Fax: 231.845.9942
E-mail: dheckler@sgsenvironmental.com

This report contains _____ **pages**

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Report Order

Report Legend
Laboratory Report
Chain-of-Custody Record
Log-In Check List
Preservation Check List
Report Addenda

Laboratory Report Legend

The laboratory holds the following certifications:

National Environmental Laboratory Accreditation Program (NELAP), Accreditation No. 100433 (State of Illinois)
State of Alaska UST, Approval No. UST-048
State of Indiana, Certification No. C-MI-01
State of Maryland, Certification No. 266
State of Michigan, Certification No. 0021
State of Wisconsin, Certification No. 999959180
United States Army Corps of Engineers

Container Identification (ID)

The unique container ID is comprised of the CT&E Sample ID plus a "-" and the number found in the Cont. ID column.

Qualifiers (located next to the Result column)

ND	Not detected
B	Blank contaminant
D	Dilution
J	Estimated result
M	Matrix interference
N	Presumptive evidence by GC/MS library search
E	Concentration exceeds calibration range
U	Not detected

Footnotes

(1) Parameter analyzed according to method; this combination of method and / or parameter has not been evaluated by NELAP

SGS CT&E Environmental Services Inc.
Michigan Division

Workorder: 3041189 Conestoga-Rovers & Associates Reported: 4/2/2004

CT&E Sample ID:	3041189002	Matrix:	Solid
Client Sample ID:	S-12636-033004-SDM-029	Location:	
Collected:	03/30/2004 10:00	Project:	Former Peregrine (Coldwater Rd) #12636
Received:	03/31/2004 09:15	Sampled By:	JY

Comments: Results reported on Dry Weight basis.
PCB: Multiple cleanups performed for hydrocarbons (SW-846 Method 3620 Florisil Column and SW-846 Method 3665 Sulfuric Acid).
PCB: Sample clean-up performed for hydrocarbons (SW-846 Method 3630C Silica Gel)

Test Description	Result	Allowable Limit	Unit	Reporting Detection Limit	Method Analysis / Preparation	Prepared Date / Time	Analyzed Date / Time	Analyst	Cont. ID
GENERAL CHEMISTRY ANALYSIS									
Reactive Cyanide	ND		mg/Kg	60	SW-846 7.3.3.2[1]	03/31/04 10:40	03/31/04 13:35	JB	1
Reactive Sulfide	ND		mg/Kg	60	SW-846 7.3.4.2[1]	03/31/04 10:37	04/01/04 10:41	JB	1
PHYSICAL PROPERTY ANALYSIS									
Corrosivity pH Analysis	Non				SW-846 9045C[1]		04/01/04 09:00	SKP	1
Flashpoint Fahrenheit	>200		deg F		SW-846 1010		04/02/04 10:45	WD	1
pH	8.94		S.U.		SW-846 9045C		04/01/04 09:00	SKP	1
Total Solids	85.9		%	0.10	SM19 2540G[1]		04/01/04 08:14	SKP	
GC SEMIVOLATILE ORGANIC ANALYSIS									
Aroclor-1016	ND		ug/Kg	39	SW-846 8082 / SW-846 3550B	03/31/04 13:19	04/01/04 17:29	JL	1
Aroclor-1221	ND		ug/Kg	39	SW-846 8082 / SW-846 3550B	03/31/04 13:19	04/01/04 17:29	JL	1
Aroclor-1232	ND		ug/Kg	39	SW-846 8082 / SW-846 3550B	03/31/04 13:19	04/01/04 17:29	JL	1
Aroclor-1242	ND		ug/Kg	39	SW-846 8082 / SW-846 3550B	03/31/04 13:19	04/01/04 17:29	JL	1
Aroclor-1248	ND		ug/Kg	39	SW-846 8082 / SW-846 3550B	03/31/04 13:19	04/01/04 17:29	JL	1
Aroclor-1254	ND		ug/Kg	39	SW-846 8082 / SW-846 3550B	03/31/04 13:19	04/01/04 17:29	JL	1
Aroclor-1260	ND		ug/Kg	39	SW-846 8082 / SW-846 3550B	03/31/04 13:19	04/01/04 17:29	JL	1
TCLP METAL ANALYSIS SW-846 Method 1311									
Arsenic	ND	5	mg/L	0.010	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 18:57	SRO	1
Barium	0.78	100	mg/L	0.020	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 18:57	SRO	1
Cadmium	ND	1	mg/L	0.0020	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 18:57	SRO	1
Chromium	ND	5	mg/L	0.020	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 18:57	SRO	1
Mercury	ND	0.2	mg/L	0.0020	SW-846 7470A	04/01/04 13:00	04/01/04 18:53	PSK	1
Lead	ND	5	mg/L	0.020	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 18:57	SRO	1
Selenium	ND	1	mg/L	0.040	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 18:57	SRO	1
Silver	ND	5	mg/L	0.0040	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 18:57	SRO	1

SGS CT&E Environmental Services Inc.
Michigan Division

Workorder: *3041189* Conestoga-Rovers & Associates *Reported:* *4/2/2004*

CT&E Sample ID:	3041189002	**Matrix:**	Solid
Client Sample ID:	S-12636-033004-SDM-029	**Location:**	
Collected:	03/30/2004 10:00	**Project:**	Former Peregrine (Coldwater Rd) #12636
Received:	03/31/2004 09:15	**Sampled By:**	JY

Test Description	Result	Allowable Limit	Unit	Reporting Detection Limit	Method Analysis / Preparation	Prepared Date / Time	Analyzed Date / Time	Analyst	Cont. ID
TCLP METAL ANALYSIS SW-846 Method 1311									
TCLP VOLATILES SW-846 Method 1311									
1,1-Dichloroethene	ND	0.7	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:15	JEH	1
1,2-Dichloroethane	ND	0.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:15	JEH	1
1,4-Dichlorobenzene	ND	7.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:15	JEH	1
2-Butanone (M E K)	ND	200	mg/L	0.050	SW-846 8260B	04/01/04 11:00	04/01/04 16:15	JEH	1
Benzene	ND	0.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:15	JEH	1
Carbon tetrachloride	ND	0.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:15	JEH	1
Chlorobenzene	ND	100	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:15	JEH	1
Chloroform	ND	6	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:15	JEH	1
Tetrachloroethene	ND	0.7	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:15	JEH	1
Trichloroethene	ND	0.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:15	JEH	1
Vinyl chloride	ND	0.2	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:15	JEH	1
TCLP SEMI-VOLATILES SW1311									
2,4,5-Trichlorophenol	ND	400	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/01/04 23:16	ESA	1
2,4,6-Trichlorophenol	ND	2	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/01/04 23:16	ESA	1
2,4-Dinitrotoluene	ND	0.13	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/01/04 23:16	ESA	1
2-Methylphenol (o-Cresol)	ND	200	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/01/04 23:16	ESA	1
3&4-Methylphenol (p&m-Cresol)	ND	200	mg/L	0.020	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/01/04 23:16	ESA	1
Hexachlorobenzene	ND	0.13	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/01/04 23:16	ESA	1
Hexachlorobutadiene	ND	0.5	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/01/04 23:16	ESA	1
Hexachloroethane	ND	3	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/01/04 23:16	ESA	1
Nitrobenzene	ND	2	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/01/04 23:16	ESA	1
Pentachlorophenol	ND	100	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/01/04 23:16	ESA	1
Pyridine	ND	5	mg/L	0.020	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/01/04 23:16	ESA	1

SGS CT&E Environmental Services Inc.
Michigan Division

Workorder: 3041189 Conestoga-Rovers & Associates Reported: 4/2/2004

CT&E Sample ID:	3041189003	**Matrix:**	Solid
Client Sample ID:	S-12636-033004-SDM-030	**Location:**	
Collected:	03/30/2004 10:15	**Project:**	Former Peregrine (Coldwater Rd) #12636
Received:	03/31/2004 09:15	**Sampled By:**	JY

Comments: Results reported on Dry Weight basis.
PCB: Multiple cleanups performed for hydrocarbons (SW-846 Method 3620 Florisil Column and SW-846 Method 3665 Sulfuric Acid).

Test Description	Result	Allowable Limit	Unit	Reporting Detection Limit	Method Analysis / Preparation	Prepared Date / Time	Analyzed Date / Time	Analyst	Cont. ID
GENERAL CHEMISTRY ANALYSIS									
Reactive Cyanide	ND		mg/Kg	60	SW-846 7.3.3.2'	03/31/04 10:40	03/31/04 13:35	JB	1
Reactive Sulfide	ND		mg/Kg	60	SW-846 7.3.4.2'	03/31/04 10:37	04/01/04 10:41	JB	1
PHYSICAL PROPERTY ANALYSIS									
Corrosivity pH Analysis	Non				SW-846 9045C'		04/01/04 09:00	SKP	1
Flashpoint Fahrenheit	>200		deg F		SW-846 1010		04/02/04 10:45	WD	1
pH	9.20		S.U.		SW-846 9045C		04/01/04 09:00	SKP	1
Total Solids	81.2		%	0.10	SM19 2540G'		04/01/04 08:14	SKP	
GC SEMIVOLATILE ORGANIC ANALYSIS									
Aroclor-1016	ND		ug/Kg	41	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 16:07	JL	1
Aroclor-1221	ND		ug/Kg	41	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 16:07	JL	1
Aroclor-1232	ND		ug/Kg	41	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 16:07	JL	1
Aroclor-1242	ND		ug/Kg	41	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 16:07	JL	1
Aroclor-1248	ND		ug/Kg	41	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 16:07	JL	1
Aroclor-1254	ND		ug/Kg	41	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 16:07	JL	1
Aroclor-1260	ND		ug/Kg	41	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 16:07	JL	1
TCLP METAL ANALYSIS SW-846 Method 1311									
Arsenic	ND	5	mg/L	0.010	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:02	SRO	1
Barium	0.26	100	mg/L	0.020	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:02	SRO	1
Cadmium	ND	1	mg/L	0.0020	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:02	SRO	1
Chromium	ND	5	mg/L	0.020	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:02	SRO	1
Mercury	ND	0.2	mg/L	0.0020	SW-846 7470A	04/01/04 13:00	04/01/04 18:56	PSK	1
Lead	ND	5	mg/L	0.020	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:02	SRO	1
Selenium	ND	1	mg/L	0.040	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:02	SRO	1
Silver	ND	5	mg/L	0.0040	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:02	SRO	1

SGS CT&E Environmental Services Inc.
Michigan Division

Workorder: 3041189 Conestoga-Rovers & Associates Reported: 4/2/2004

CT&E Sample ID:	3041189003	**Matrix:**	Solid
Client Sample ID:	S-12636-033004-SDM-030	**Location:**	
Collected:	03/30/2004 10:15	**Project:**	Former Peregrine (Coldwater Rd) #12636
Received:	03/31/2004 09:15	**Sampled By:**	JY

Comments: Results reported on Dry Weight basis.
PCB: Multiple cleanups performed for hydrocarbons (SW-846 Method 3620 Florisil Column and SW-846 Method 3665 Sulfuric Acid).

Test Description	Result	Allowable Limit	Unit	Reporting Detection Limit	Method Analysis / Preparation	Prepared Date / Time	Analyzed Date / Time	Analyst	Cont. ID
TCLP VOLATILES SW-846 Method 1311									
1,1-Dichloroethene	ND	0.7	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:48	JEH	1
1,2-Dichloroethane	ND	0.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:48	JEH	1
1,4-Dichlorobenzene	ND	7.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:48	JEH	1
2-Butanone (M E K)	ND	200	mg/L	0.050	SW-846 8260B	04/01/04 11:00	04/01/04 16:48	JEH	1
Benzene	ND	0.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:48	JEH	1
Carbon tetrachloride	ND	0.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:48	JEH	1
Chlorobenzene	ND	100	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:48	JEH	1
Chloroform	ND	6	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:48	JEH	1
Tetrachloroethene	ND	0.7	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:48	JEH	1
Trichloroethene	ND	0.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:48	JEH	1
Vinyl chloride	ND	0.2	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 16:48	JEH	1
TCLP SEMI-VOLATILES SW1311									
2,4,5-Trichlorophenol	ND	400	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:48	ESA	1
2,4,6-Trichlorophenol	ND	2	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:48	ESA	1
2,4-Dinitrotoluene	ND	0.13	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:48	ESA	1
2-Methylphenol (o-Cresol)	ND	200	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:48	ESA	1
3&4-Methylphenol (p&m-Cresol)	ND	200	mg/L	0.020	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:48	ESA	1
Hexachlorobenzene	ND	0.13	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:48	ESA	1
Hexachlorobutadiene	ND	0.5	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:48	ESA	1
Hexachloroethane	ND	3	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:48	ESA	1
Nitrobenzene	ND	2	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:48	ESA	1
Pentachlorophenol	ND	100	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:48	ESA	1
Pyridine	ND	5	mg/L	0.020	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:48	ESA	1

SGS CT&E Environmental Services Inc.
Michigan Division

Workorder: 3041189 Conestoga-Rovers & Associates Reported: 4/2/2004

CT&E Sample ID:	3041189004	Matrix:	Solid
Client Sample ID:	S-12636-033004-SDM-031	Location:	
Collected:	03/30/2004 10:30	Project:	Former Peregrine (Coldwater Rd) #12636
Received:	03/31/2004 09:15	Sampled By:	JY

Comments: Results reported on Dry Weight basis.
PCB: Multiple cleanups performed for hydrocarbons (SW-846 Method 3620 Florisil Column and SW-846 Method 3665 Sulfuric Acid).

Test Description	Result	Allowable Limit	Unit	Reporting Detection Limit	Method Analysis / Preparation	Prepared Date / Time	Analyzed Date / Time	Analyst	Cont. ID
GENERAL CHEMISTRY ANALYSIS									
Reactive Cyanide	ND		mg/Kg	60	SW-846 7.3.3.2[1]	03/31/04 10:40	03/31/04 13:35	JB	1
Reactive Sulfide	ND		mg/Kg	60	SW-846 7.3.4.2[1]	03/31/04 10:37	04/01/04 10:41	JB	1
PHYSICAL PROPERTY ANALYSIS									
Corrosivity pH Analysis	Non				SW-846 9045C[1]		04/01/04 09:00	SKP	1
Flashpoint Fahrenheit	>200		deg F		SW-846 1010		04/02/04 10:45	WD	1
pH	9.50		S.U.		SW-846 9045C		04/01/04 09:00	SKP	1
Total Solids	78.4		%	0.10	SM19 2540G[1]		04/01/04 08:14	SKP	
GC SEMIVOLATILE ORGANIC ANALYSIS									
Aroclor-1016	ND		ug/Kg	42	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 16:38	JL	1
Aroclor-1221	ND		ug/Kg	42	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 16:38	JL	1
Aroclor-1232	ND		ug/Kg	42	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 16:38	JL	1
Aroclor-1242	ND		ug/Kg	42	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 16:38	JL	1
Aroclor-1248	ND		ug/Kg	42	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 16:38	JL	1
Aroclor-1254	ND		ug/Kg	42	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 16:38	JL	1
Aroclor-1260	ND		ug/Kg	42	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 16:38	JL	1
TCLP METAL ANALYSIS SW-846 Method 1311									
Arsenic	ND	5	mg/L	0.010	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:44	SRO	1
Barium	0.28	100	mg/L	0.020	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:44	SRO	1
Cadmium	ND	1	mg/L	0.0020	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:44	SRO	1
Chromium	ND	5	mg/L	0.020	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:44	SRO	1
Mercury	ND	0.2	mg/L	0.0020	SW-846 7470A	04/01/04 13:00	04/01/04 18:59	PSK	1
Lead	ND	5	mg/L	0.020	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:44	SRO	1
Selenium	ND	1	mg/L	0.040	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:44	SRO	1
Silver	ND	5	mg/L	0.0040	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:44	SRO	1

SGS CT&E Environmental Services Inc.
Michigan Division

Workorder: 3041189 Conestoga-Rovers & Associates Reported: 4/2/2004

CT&E Sample ID:	3041189004	**Matrix:**	Solid
Client Sample ID:	S-12636-033004-SDM-031	**Location:**	
Collected:	03/30/2004 10:30	**Project:**	Former Peregrine (Coldwater Rd) #12636
Received:	03/31/2004 09:15	**Sampled By:**	JY

Comments: Results reported on Dry Weight basis.
PCB: Multiple cleanups performed for hydrocarbons (SW-846 Method 3620 Florisil Column and SW-846 Method 3665 Sulfuric Acid).

Test Description	Result	Allowable Limit	Unit	Reporting Detection Limit	Method Analysis / Preparation	Prepared Date / Time	Analyzed Date / Time	Analyst	Cont. ID
TCLP VOLATILES SW-846 Method 1311									
1,1-Dichloroethene	ND	0.7	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:20	JEH	1
1,2-Dichloroethane	ND	0.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:20	JEH	1
1,4-Dichlorobenzene	ND	7.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:20	JEH	1
2-Butanone (M E K)	ND	200	mg/L	0.050	SW-846 8260B	04/01/04 11:00	04/01/04 17:20	JEH	1
Benzene	ND	0.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:20	JEH	1
Carbon tetrachloride	ND	0.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:20	JEH	1
Chlorobenzene	ND	100	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:20	JEH	1
Chloroform	ND	6	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:20	JEH	1
Tetrachloroethene	ND	0.7	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:20	JEH	1
Trichloroethene	ND	0.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:20	JEH	1
Vinyl chloride	ND	0.2	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:20	JEH	1
TCLP SEMI-VOLATILES SW1311									
2,4,5-Trichlorophenol	ND	400	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:03	ESA	1
2,4,6-Trichlorophenol	ND	2	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:03	ESA	1
2,4-Dinitrotoluene	ND	0.13	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:03	ESA	1
2-Methylphenol (o-Cresol)	ND	200	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:03	ESA	1
3&4-Methylphenol (p&m-Cresol)	ND	200	mg/L	0.020	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:03	ESA	1
Hexachlorobenzene	ND	0.13	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:03	ESA	1
Hexachlorobutadiene	ND	0.5	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:03	ESA	1
Hexachloroethane	ND	3	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:03	ESA	1
Nitrobenzene	ND	2	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:03	ESA	1
Pentachlorophenol	ND	100	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:03	ESA	1
Pyridine	ND	5	mg/L	0.020	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 00:03	ESA	1

SGS CT&E Environmental Services Inc.
Michigan Division

Workorder: 3041189 Conestoga-Rovers & Associates Reported: 4/2/2004

CT&E Sample ID:	3041189005	Matrix:	Solid
Client Sample ID:	S-12636-033004-SDM-032	Location:	
Collected:	03/30/2004 10:43	Project:	Former Peregrine (Coldwater Rd) #12636
Received:	03/31/2004 09:15	Sampled By:	JY

Comments: Results reported on Dry Weight basis.
PCB: Multiple cleanups performed for hydrocarbons (SW-846 Method 3620 Florisil Column and SW-846 Method 3665 Sulfuric Acid).

Test Description	Result	Allowable Limit	Unit	Reporting Detection Limit	Method Analysis / Preparation	Prepared Date / Time	Analyzed Date / Time	Analyst	Cont. ID
GENERAL CHEMISTRY ANALYSIS									
Reactive Cyanide	ND		mg/Kg	60	SW-846 7.3.3.2[1]	03/31/04 10:40	03/31/04 13:35	JB	1
Reactive Sulfide	ND		mg/Kg	60	SW-846 7.3.4.2[1]	03/31/04 10:37	04/01/04 10:41	JB	1
PHYSICAL PROPERTY ANALYSIS									
Corrosivity pH Analysis	Non				SW-846 9045C[1]		04/01/04 09:00	SKP	1
Flashpoint Fahrenheit	>200		deg F		SW-846 1010		04/02/04 10:45	WD	1
pH	9.13		S.U.		SW-846 9045C		04/01/04 09:00	SKP	1
Total Solids	88.6		%	0.10	SM19 2540G[1]		04/01/04 08:14	SKP	
GC SEMIVOLATILE ORGANIC ANALYSIS									
Aroclor-1016	ND		ug/Kg	38	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 17:08	JL	1
Aroclor-1221	ND		ug/Kg	38	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 17:08	JL	1
Aroclor-1232	ND		ug/Kg	38	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 17:08	JL	1
Aroclor-1242	ND		ug/Kg	38	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 17:08	JL	1
Aroclor-1248	ND		ug/Kg	38	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 17:08	JL	1
Aroclor-1254	ND		ug/Kg	38	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 17:08	JL	1
Aroclor-1260	ND		ug/Kg	38	SW-846 8082 / SW-846 3550B	03/31/04 13:19	03/31/04 17:08	JL	1
TCLP METAL ANALYSIS SW-846 Method 1311									
Arsenic	ND	5	mg/L	0.010	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:49	SRO	1
Barium	0.63	100	mg/L	0.020	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:49	SRO	1
Cadmium	ND	1	mg/L	0.0020	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:49	SRO	1
Chromium	ND	5	mg/L	0.020	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:49	SRO	1
Mercury	ND	0.2	mg/L	0.0020	SW-846 7470A	04/01/04 13:00	04/01/04 19:02	PSK	1
Lead	ND	5	mg/L	0.020	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:49	SRO	1
Selenium	ND	1	mg/L	0.040	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:49	SRO	1
Silver	ND	5	mg/L	0.0040	SW-846 6020 / SW-846 3010A	04/01/04 09:40	04/01/04 19:49	SRO	1

SGS CT&E Environmental Services Inc.
Michigan Division

Workorder: *3041189* Conestoga-Rovers & Associates *Reported:* *4/2/2004*

CT&E Sample ID:	3041189005	**Matrix:**	Solid
Client Sample ID:	S-12636-033004-SDM-032	**Location:**	
Collected:	03/30/2004 10:43	**Project:**	Former Peregrine (Coldwater Rd) #12636
Received:	03/31/2004 09:15	**Sampled By:**	JY

Comments: Results reported on Dry Weight basis.
PCB: Multiple cleanups performed for hydrocarbons (SW-846 Method 3620 Florisil Column and SW-846 Method 3665 Sulfuric Acid).

Test Description	Result	Allowable Limit	Unit	Reporting Detection Limit	Method Analysis / Preparation	Prepared Date / Time	Analyzed Date / Time	Analyst	Cont. ID
TCLP VOLATILES SW-846 Method 1311									
1,1-Dichloroethene	ND	0.7	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:53	JEH	1
1,2-Dichloroethane	ND	0.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:53	JEH	1
1,4-Dichlorobenzene	ND	7.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:53	JEH	1
2-Butanone (M E K)	ND	200	mg/L	0.050	SW-846 8260B	04/01/04 11:00	04/01/04 17:53	JEH	1
Benzene	ND	0.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:53	JEH	1
Carbon tetrachloride	ND	0.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:53	JEH	1
Chlorobenzene	ND	100	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:53	JEH	1
Chloroform	ND	6	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:53	JEH	1
Tetrachloroethene	ND	0.7	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:53	JEH	1
Trichloroethene	ND	0.5	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:53	JEH	1
Vinyl chloride	ND	0.2	mg/L	0.010	SW-846 8260B	04/01/04 11:00	04/01/04 17:53	JEH	1
TCLP SEMI-VOLATILES SW1311									
2,4,5-Trichlorophenol	ND	400	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 10:01	ESA	1
2,4,6-Trichlorophenol	ND	2	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 10:01	ESA	1
2,4-Dinitrotoluene	ND	0.13	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 10:01	ESA	1
2-Methylphenol (o-Cresol)	ND	200	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 10:01	ESA	1
3&4-Methylphenol (p&m-Cresol)	ND	200	mg/L	0.020	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 10:01	ESA	1
Hexachlorobenzene	ND	0.13	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 10:01	ESA	1
Hexachlorobutadiene	ND	0.5	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 10:01	ESA	1
Hexachloroethane	ND	3	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 10:01	ESA	1
Nitrobenzene	ND	2	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 10:01	ESA	1
Pentachlorophenol	ND	100	mg/L	0.010	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 10:01	ESA	1
Pyridine	ND	5	mg/L	0.020	SW-846 8270C / SW-846 3510C	04/01/04 13:10	04/02/04 10:01	ESA	1

3091189

CRA
CONESTOGA-ROVERS & ASSOCIATES, INC.
14496 Sheldon Road, Suite 200
Plymouth, MI 48170 • (734) 453-5123

SHIPPED TO (Laboratory Name): STL

CHAIN OF CUSTODY RECORD

REFERENCE NUMBER: 12636 - [redacted]

PROJECT NAME: former Peregrine

SAMPLER'S SIGNATURE: [signature] PRINTED NAME: John York

SEQ: No.	DATE	TIME		SAMPLE TYPE	No. OF CONTAINERS	PARAMETERS: TCLP metals	TCLP VOCs	TCLP SVOCs	PCBs	RCI	REMARKS
1	3-30-04	0935	L-12636-033004-SDM-028	liquid	12	✓	✓	✓	✓	✓	Rush 3 Day TAT
2		1000	S-12636-033004-SDM-029	soil	1	✓	✓	✓	✓	✓	
3		1015	" " 030		1	✓	✓	✓	✓	✓	
4		1030	" " 031		1	✓	✓	✓	✓	✓	
5		1043	" " 032		1	✓	✓	✓	✓	✓	
			TOTAL NUMBER OF CONTAINERS		16						

RELINQUISHED BY: 1. Shawn McLean	DATE: 3-30-04 TIME: 1200	RECEIVED BY: 1. [signature]	DATE: 3-30-04 TIME: 1900
RELINQUISHED BY: 2.	DATE: TIME:	RECEIVED BY: 2.	DATE: TIME:
RELINQUISHED BY: 3.	DATE: TIME:	RECEIVED BY: 1.	DATE: TIME:

METHOD OF SHIPMENT: UPS Ground AIR BILL No.

White -Fully Executed Copy
Yellow -Receiving Laboratory Copy
Pink -Shipper Copy
Goldenrod -Sampler Copy

26004

SAMPLE TEAM: York, Sam

RECEIVED FOR LABORATORY BY: A Shellhorn 6°C

DATE: 3-31-04 TIME: 9:15 am

1001 (FORMS)-APRIL 29, 93-REV.0-(C)(F-01)

Attach to the COC and include with the final report.

SES

Environmental Services
Michigan Division

Login Checklist

Project Number: 3041189 Date Logged In: 3/31/04 Login Person Initials: QS

This section to be completed when corrective action is required:

Client: CRA Project Name: _____
Client Contact: _____ Phone Number: _____

		YES	NO
	If no to any, notify the project manager and project manager documents client response below.		
1.	Were custody seals/original packing tape intact?	✓	
2.	Are the samples in good condition, i.e. not broken or leaking?	✓	
3.	Are samples within holding times?	✓	
4.	Were the samples received on ice (ice in direct contact with the samples)? *If yes, and Wisconsin samples, do not record the sample temperature.*	✓	
5.	Is the temperature of the samples between 2-6°C? *NOTE: Samples not between 2-6°C that are received at the laboratory on the day of sample collections do not require client notification.*	✓	
6.	Do the samples match the COC?	✓	
7.	Were the proper containers used?	✓	
8	Were the samples collected in CT&E Environmental Services containers? *No corrective action required.*	✓	
9.	Is there adequate sample volume for requested analyses and QC?	✓	
10.	Do water VOC samples contain headspace less than the size of a pea?	—	
11.	Are samples preserved to the proper pH? *(attach Preservative Check Sheet)* *If no, identify sample bottle and preservative, adjust to the proper pH, and note below.*	—	
12.	Is the chain of custody signed?	✓	
13.	Is sub-sampling required? *(note bottles created and preserved below)*	—	✓
14.	Were proper sample weights met for Wisconsin soil samples?	—	

COMMENTS/CORRECTIVE ACTION

Containers Created

40 mL vial	1 Liter amber	250 mL plastic	500 mL plastic	1 Liter plastic	2 oz. glass	4 oz. glass	8 oz. glass	other	Samp. No.
									1
									2
									3
									4
									5
									6
									7
									8
									9
									0

Preservative code: A = MeOH, B = HNO_3, C = H_2SO_4, D = NaOH, E = HCl

CLIENT RESPONSE (Provide date/time of contact, client response and project manager initials)

APPENDIX N

Former Drum Storage Area Excavation Concrete and Soil Waste Manifests and Weight Tickets

DSA
OB6-1

REPUBLIC SERVICES
OF MICHIGAN I, LLC

Manifest Number: 103847

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

Car #

GENERATOR:

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cuyds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven Mclean on behalf of GM — Steven McLean — 11-13-04
Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name: Aldridge Trucking DOT #

Address Truck Number: 42

Billy Yuker — Billy Yuker — Date Delivered
Driver's Name — Signature

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature — Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

---

REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 77966
Date/Time: 04/13/2004 - 13:44

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BALD42-GT	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	159460	Trailer:	
Tare Weight:	54620	Rate:	
Net Weight:	104840	Amount:	
Tons:	52.42	Comment:	103847
Yards:	40		
Origin:	GENESEE / GENESEE		

Drivers Signature

OBG1.

REPUBLIC SERVICES
OF MICHIGAN I, LLC

Manifest Number: 103848

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car #

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cuyds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Steven McLean — 4-13-04
Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name: Aldridge Trucking DOT #:

Address: Truck Number:

Billy Yoker — Billy Yoker — 4-13-04
Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature — Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

---

REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 78015
Date/Time: 04/13/2004 - 15:18

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117 -
Truck:	BALD42-GT	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	146420	Trailer:	
Tare Weight:	54620	Rate:	
Net Weight:	91800	Amount:	
Tons:	45.90	Comment:	103848
Yards:	40		

Drivers Signature

OBG-1

REPUBLIC SERVICES
OF MICHIGAN I, LLC

Manifest Number: 103849

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

Car # _____

GENERATOR:

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
~~Non-haz concrete, debris~~ ~~Non-haz soil, debris~~	~~Approval # 402116~~ ~~Approval # 402117~~	40	cu. yds	DT

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM Steven McLean 4-15-04

Generator Authorized Agent Name Signature Date Shipped

TRANSPORTER:

Transporter Name: Aldridge Trucking DOT #: _____

Address: 5135 N Gale Davison Truck Number: 46

Erik Derbyshire Erik Derbyshire 4-15-04

Driver's Name Signature Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd. Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent Signature Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

---

REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 78410
Date/Time: 04/15/2004 - 09:27

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
		Generator:	GM- PEREGR
Truck:	BALD46-40G	Work Order #:	
Waste:	BRS-CONT	Trailer:	
Gross Weight:	159180	Rate:	
Tare Weight:	55160	Amount:	
Net Weight:	104020	Comment:	103849
Tons:	52.01		
Yards:	40		

Drivers Signature

REPUBLIC SERVICES
OF MICHIGAN I, LLC

Manifest Number: 103850

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

Car # _____

GENERATOR:

Generator Name WFG Environmental Services Group Remediation Team US EPA ID # MID005356860

Billing Address Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address 1245 East Coldwater Road Flint, MI

County of Origin Genesee Phone (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
~~Non-haz concrete, debris~~ ~~Non-haz soil, debris~~	~~Approval # 402116~~ ~~Approval # 402117~~	40	cuyds	DT

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Steven McLean — 4-15-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name Aldridge Trucking DOT # _____

Address _____ Truck Number 46

Erik Derbyshire — Erik Derbyshire

Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name Brent Run, RDF Phone Number 810-639-3077

Address 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature — Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

---

REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 78462
Date/Time: 04/15/2004 - 11:19

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
		Generator:	GM- PEREGR
Truck:	BALD46-40G	Work Order #:	
Waste:	BRS-CONT	Trailer:	
Gross Weight:	163880	Rate:	
Tare Weight:	55160	Amount:	
Net Weight:	108720	Comment:	103850
Tons:	54.36		
Yards:	40		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

06-5-1

Manifest Number: 103944

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

Car # _____

GENERATOR:

Generator Name WFG Environmental Services Group Remediation Team US EPA ID # MID005356860

Billing Address Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address 1245 East Coldwater Road Flint, MI

County of Origin Genesee Phone (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cuyds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven Mclean on behalf of GM Steven Mclean 4-8-04

Generator Authorized Agent Name Signature Date Shipped

TRANSPORTER:

Transporter Name Matousek Trucking DOT # 300206

Address 256 State Park Dr Bay City, MI Truck Number 74

LeRoy Sherman LeRoy Sherman 4 8 04

Driver's Name Signature Date Delivered

DISPOSAL FACILITY:

Site Name Brent Run, RDF Phone Number 810-639-3077

Address 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials. Brandon Mills 4-8-04

Name of Authorized Agent Signature Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

---

REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76905
Date/Time: 04/08/2004 - 09:53

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BGMAT74	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	142800	Trailer:	
Tare Weight:	51640	Rate:	
Net Weight:	91160	Amount:	
Tons:	45.58	Comment:	103944
Yards:	40		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103945

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

Car # _____

GENERATOR:

Generator Name WFG Environmental Services Group Remediation Team US EPA ID # MID005356860

Billing Address Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address 1245 East Coldwater Road Flint, MI

County of Origin Genesee Phone (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cu. yds.	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Steven McLean — 4-8-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name ALDRIDGE TRUCKING DOT # 14666

Address 5135 W. Gale Rd Davison, MI. Truck Number 34

John C — 4/8/04

Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name Brent Run, RDF Phone Number 810-639-3077

Address 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Amanda — 4-8-04

Name of Authorized Agent — Signature — Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76896
Date/Time: 04/08/2004 - 09:42

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BALD34-GT	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	156220	Trailer:	
Tare Weight:	55200	Rate:	
Net Weight:	101020	Amount:	
Tons:	50.51	Comment:	103945
Yards:	40		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103805

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car #

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris Non-haz soil, debris	Approval # 402116 Approval # 402117	40	cuyds	DT

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM / Steven McLean / 4-8-04

Generator Authorized Agent Name / Signature / Date Shipped

TRANSPORTER:

Transporter Name: MIDRIDGE TRUCKING DOT #: 44666

Address: 5135 N. Gale Rd DAVISON, MI. Truck Number:

Tim Schimmel / Signature / 4/8/04

Driver's Name / Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent / Signature / 4.8.04 Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76891
Date/Time: 04/08/2004 - 09:35

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BALD31-GT	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	140620	Trailer:	
Tare Weight:	53500	Rate:	
Net Weight:	87120	Amount:	
Tons:	43.56	Comment:	103805
Yards:	40		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103946

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car # _____

Generator Name WFG Environmental Services Group Remediation Team US EPA ID # MID005356860

Billing Address Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt ~~Mailcode: 483-520-190~~

Site Address 1245 East Coldwater Road Flint, MI

County of Origin Genesee Phone (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cuyds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM | Steven Mclean | 4-8-04

Generator Authorized Agent Name | Signature | Date Shipped

TRANSPORTER:

Transporter Name MORRIDGE TRUCKING DOT # 14666

Address 5135 N. Gale Rd DAVISON, MI Truck Number 33

Dennis Raleigh | | 4-8-04

Driver's Name | Signature | Date Delivered

DISPOSAL FACILITY:

Site Name Brent Run, RDF Phone Number 810-639-3077

Address 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent | Signature | Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76884
Date/Time: 04/08/2004 - 09:17

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
		Generator:	GM- PEREGR
Truck:	BALD33-GT	Work Order #:	
Waste:	BRS-CONT	Trailer:	
Gross Weight:	143380	Rate:	
Tare Weight:	53340	Amount:	
Net Weight:	90040	Comment:	103946
Tons:	45.02		
Yards:	40		

Drivers Signature

REPUBLIC SERVICES
OF MICHIGAN I, LLC

Manifest Number: 103804

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI)
☐ Whitefeather (Pinconning, MI)

GENERATOR: Car # _____

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	C.yds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Steven McLean — 4-8-04
Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name: ALDRIDGE Trucking DOT #: 14666

Address: 5135 N. Gale Rd Davison, MI Truck Number: 35

Brian Anderson — 04-08-04
Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Amanda — 4-8-04
Name of Authorized Agent — Signature — Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76873
Date/Time: 04/08/2004 - 08:55

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
		Generator:	GM- PEREGR
Truck:	BALD35-GT	Work Order #:	
Waste:	BRS-CONT	Trailer:	
Gross Weight:	146860	Rate:	
Tare Weight:	51880	Amount:	
Net Weight:	94980	Comment:	103804
Tons:	47.49		
Yards:	40		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

OBB-1

Manifest Number: 103803

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

Car # _____

GENERATOR:

Generator Name WFG Environmental Services Group Remediation Team US EPA ID # MID005356860

Billing Address Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address 1245 East Coldwater Road Flint, MI

County of Origin Genesee Phone (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cu yds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Steven McLean — 4-8-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name AIDRIDGE Trucking DOT # 14666

Address 5135 W. Oak Rd DAVISON, MI. Truck Number 47

Driver's Name — Paul C. Nooded — 4-8-04

Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name Brent Run, RDF Phone Number 810-639-3077

Address 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Amanda — 4-8-04

Name of Authorized Agent — Signature — Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(~~810~~) ~~639~~-3077

Ticket: 76871
Date/Time: 04/08/2004 - 08:44

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BALD47/GT	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	141960	Trailer:	
Tare Weight:	53220	Rate:	
Net Weight:	88740	Amount:	
Tons:	44.37	Comment:	103803
Yards:	40		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

OB6-1

Manifest Number: 103839

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car #

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cuyds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Steven McLean — 4-8-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name: AIDRIDGE TRUCKING DOT #: 14666

Address: 5135 N. Gale DAVISON, MI Truck Number: 46

Erik Derbyshire — Erik Derbyshire — 4-8-04

Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature: Amanda — Date Received: 4-8-04

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76866

Date/Time: 04/08/2004 - 08:32

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
		Generator:	GM- PEREGR
Truck:	BALD46-40G	Work Order #:	
Waste:	BRS-CONT	Trailer:	
Gross Weight:	165740	Rate:	
Tare Weight:	55160	Amount:	
Net Weight:	110580	Comment:	103839
Tons:	55.29		
Yards:	40		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

089-1 Manifest Number: 103823

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car #

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
~~Non-haz concrete, debris~~ ~~Non-haz soil, debris~~	~~Approval # 402116~~ ~~Approval # 402117~~	40	cuyds	DT

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of Tom — Steven McLean — 4-8-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name: Matonek Trucking DOT #: 300906

Address: 256 State Park Dr. Bay City, MI. Truck Number: 69

Dave Beyer — David J Beyer — 4/8/04

Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature: Amanda — 4-8-04 Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76862
Date/Time: 04/08/2004 - 08:23

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BGMAT69	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	146200	Trailer:	
Tare Weight:	52480	Rate:	
Net Weight:	93720	Amount:	
Tons:	46.86	Comment:	103823
Yards:	40		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103821

#21

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car #

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
~~Non-haz concrete, debris~~	~~Approval # 402116~~	40	cuyds	DT
~~Non-haz soil, debris~~	~~Approval # 402117~~			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Generator Authorized Agent Name

Steven McLean — Signature

4-7-04 — Date Shipped

TRANSPORTER:

Transporter Name: Matousek Trucking DOT #: 300906

Address: 256 State Park DR. Bay City, MI. Truck Number: 74

Kirby Sherman — Driver's Name

Kirby Sherman — Signature

4 8 04 — Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent

Brandon Mills — Signature

4.8.04 — Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76837
Date/Time: 04/08/2004 - 07:34

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BGMAT74	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	155500	Trailer:	
Tare Weight:	51640	Rate:	
Net Weight:	103860	Amount:	
Tons:	51.93	Comment:	103821
Yards:	40		

Drivers Signature

REPUBLIC SERVICES
OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103817

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

Car # _____

GENERATOR:

Generator Name WFG Environmental Services Group Remediation Team US EPA ID # MID005356860

Billing Address Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address 1245 East Coldwater Road Flint, MI

County of Origin Genesee Phone (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
~~Non-haz concrete, debris~~ ~~Non-haz soil, debris~~	~~Approval # 402116~~ ~~Approval # 402117~~	40	cu yds	DT

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of WFG — Steven McLean — 4-7-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name Matonek Trucking DOT # 300906

Address 256 State Park Dr. Bay City, MI. Truck Number 77

Dick Davies — Date Delivered 4/7/04

Driver's Name — Signature

DISPOSAL FACILITY:

Site Name Brent Run, RDF Phone Number 810-639-3077

Address 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature: Amanda — Date Received 4-7-04

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76750
Date/Time: 04/07/2004 - 14:33

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BGMAT77	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	160420	Trailer:	
Tare Weight:	52140	Rate:	
Net Weight:	108280	Amount:	
Tons:	54.14	Comment:	103817
Yards:	40		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC OBG-1 Manifest Number: 103818

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car # _____

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-526-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cuyds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM Steven McLean 4-7-04
Generator Authorized Agent Name Signature Date Shipped

TRANSPORTER:

Transporter Name: Matonek Trucking DOT #: 300906

Address: 256 State Park Dr. Bay City, MI. Truck Number: 69

Dave Beyer David J Beyer 4/7/04
Driver's Name Signature Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent Signature: Amanda Date Received: 4-7-04

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76767
Date/Time: 04/07/2004 - 15:07

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
		Generator:	GM- PEREGR
Truck:	BGMAT69	Work Order #:	
Waste:	BRS-CONT	Trailer:	
Gross Weight:	159740	Rate:	
Tare Weight:	52480	Amount:	
Net Weight:	107260	Comment:	103818
Tons:	53.63		
Yards:	40		

Drivers Signature

REPUBLIC SERVICES
OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103819

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car # _____

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cuyds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Steven McLean — 4-7-04
Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name: Matonek Trucking DOT #: 14666

Address: 256 State Park Dr Bay City, MI Truck Number: 73

Ron Thoms — Ronald Thoms — 4-7-04
Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Monrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature — Date Received: 4-7-04

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76774

Date/Time: 04/07/2004 - 15:16

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BGMAT73	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	162200	Trailer:	
Tare Weight:	52600	Rate:	
Net Weight:	109600	Amount:	
Tons:	54.80	Comment:	103819
Yards:	40		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103958

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

Car # _____

GENERATOR:

Generator Name WFG Environmental Services Group Remediation Team US EPA ID # MID005356860

Billing Address Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address 1245 East Coldwater Road Flint, MI

County of Origin Genesee Phone (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	CU yds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Signature — 4-7-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name Matonek Trucking DOT # 300906

Address 256 State Park Dr. Bay City, Mi. Truck Number 76

Ray Zissler — Signature — 4-7-04

Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name Brent Run, RDF Phone Number 810-639-3077

Address 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Amanda — 4-7-04

Name of Authorized Agent — Signature — Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76675
Date/Time: 04/07/2004 - 12:27

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BGMAT76	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	160480	Trailer:	
Tare Weight:	53500 Manual Weight	Rate:	
Net Weight:	106980	Amount:	
Tons:	53.49	Comment:	103958
Yards:	40		

Drivers Signature

REPUBLIC SERVICES
OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103822

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

Car # _____

GENERATOR:

Generator Name WFG Environmental Services Group Remediation Team US EPA ID # MID005356860

Billing Address Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address 1245 East Coldwater Road Flint, MI

County of Origin Genesee Phone (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cu yds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Steven McLean — 4-7-04
Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name AIDRIDGE TRUCKING DOT # 14666

Address 5635 N. Gale Rd DAVISON, MI Truck Number 28

Sam Dicks — Sam Dicks — 4-7-04
Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name Brent Run, RDF Phone Number 810-639-3077

Address 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Amanda — 4-7-04
Name of Authorized Agent — Signature — Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76788
Date/Time: 04/07/2004 - 15:44

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
		Generator:	GM- PEREGR
Truck:	BALD28-40G	Work Order #:	
Waste:	BRS-CONT	Trailer:	
Gross Weight:	144060	Rate:	
Tare Weight:	51820	Amount:	
Net Weight:	92240	Comment:	103822
Tons:	46.12		
Yards:	40		

Drivers Signature

REPUBLIC SERVICES
OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103820

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car #

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cu yds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Steven McLean — 4-7-04
Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name: AIDRIDGE TRUCKING DOT #: 14666

Address: 5435 N. Gale Rd Davison, MI. Truck Number: 146

Erik Derbyshire — Erik Derbyshire — 4-7-04
Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature — 4-7-04 Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76779
Date/Time: 04/07/2004 - 15:29

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BALD46-40G	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	154380	Trailer:	
Tare Weight:	55160	Rate:	
Net Weight:	99220	Amount:	
Tons:	49.61	Comment:	103820
Yards:	40		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103960

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

Car #

GENERATOR: WFG Environmental Services Group Remediation Team

Generator Name ~~Pontiac Centerpoint Campus-Central~~, 2000 Centerpoint Parkway, Pontiac, MI US EPA ID # MID005356860

Billing Address 1245 East Coldwater Road Flint, MI Attn: Cheryl Hiatt ~~Mailcode: 483-520-190~~

Site Address ~~Genesee~~

County of Origin Phone (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116			
Non-haz soil, debris	Approval # 402117	40	cu.yds.	DT

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Steven McLean — 4-7-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name Midwest Trucking DOT # 300906

Address 256 State Park Dr Bay City, MI Truck Number 77

Dick Daniels — Dick Daniels — 4/7/04

Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY: Brent Run, RDF

Site Name 8335 W. Vienna Rd Montrose, MI 48457 Phone Number 810-639-3077

Address

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature — 4.7.04 Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76548
Date/Time: 04/07/2004 - 08:36

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402116
		Generator:	GM- PEREGR
Truck:	BGMAT77	Work Order #:	
Waste:	BRC&DT	Trailer:	
Gross Weight:	169680	Rate:	
Tare Weight:	52140	Amount:	
Net Weight:	117540	Comment:	103960
Tons:	58.77		
Yards:	40		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103802

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

Car # _____

GENERATOR:

Generator Name WFG Environmental Services Group Remediation Team US EPA ID # MID005356860

Billing Address Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address 1245 East Coldwater Road Flint, MI

County of Origin Genesee Phone (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cu yds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Steven McLean — 4-7-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name ALDRIDGE Trucking DOT # 14666

Address #5135 N. Gale Rd, DAVISON, MI. Truck Number 146

Eric Derbyshire — Eric A Derbyshire — 4-7-04

Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name Brent Run, RDF Phone Number 810-639-3077

Address 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

_____ — Amanda — 4-7-01

Name of Authorized Agent — Signature — Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:~~(810)~~ 639-3077

Ticket: 76555
Date/Time: 04/07/2004 - 08:48

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
		Generator:	GM- PEREGR
Truck:	BALD46-40G	Work Order #:	
Waste:	BRS-CONT	Trailer:	
Gross Weight:	155080	Rate:	
Tare Weight:	55160	Amount:	
Net Weight:	99920	Comment:	103802
Tons:	49.96		
Yards:	40		

_____

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

OB6-1 Manifest Number: 103950

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car # _____

Generator Name WFG Environmental Services Group Remediation Team US EPA ID # MID005356860

Billing Address Pontiac Centerpoint Campus-Central; 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address 1245 East Coldwater Road Flint, MI

County of Origin Genesee Phone (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cu yds.	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of WFG Steven McLean 4-7-04

Generator Authorized Agent Name Signature Date Shipped

TRANSPORTER:

Transporter Name J. Matousek Trucking DOT # 300906

Address 256 State Park Dr. Bay City, MI Truck Number _____

Ray Zissler Ray Zissler 4-7-04

Driver's Name Signature Date Delivered

DISPOSAL FACILITY:

Site Name Brent Run, RDF Phone Number 810-639-3077

Address 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

_____ Amanda 4-7-04

Name of Authorized Agent Signature Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76571
Date/Time: 04/07/2004 - 09:15

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BGMAT76	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	169500	Trailer:	
Tare Weight:	53500 Manual Weight	Rate:	
Net Weight:	116000	Amount:	
Tons:	58.00	Comment:	103950
Yards:	40		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103952

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

Car # _____

GENERATOR:

Generator Name WFG Environmental Services Group Remediation Team US EPA ID # MID005356860

Billing Address Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address 1245 East Coldwater Road Flint, MI

County of Origin Genesee Phone (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cu.yds.	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of BM — Steven McLean — 4-7-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name MATONEK TRUCKING DOT # 300906

Address 256 State Park DR BAY City, MI. Truck Number 77

DICK DANIELS — Signature — 4/7/04

Driver's Name — Date Delivered

DISPOSAL FACILITY:

Site Name Brent Run, RDF Phone Number 810-639-3077

Address 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature — 4.7.04 Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76594
Date/Time: 04/07/2004 - 10:01

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402116
Truck:	BGMAT77	Generator:	GM- PEREGR
Waste:	BRC&DT	Work Order #:	
Gross Weight:	159120	Trailer:	
Tare Weight:	52140	Rate:	
Net Weight:	106980	Amount:	
Tons:	53.49	Comment:	103952
Yards:	40		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

DBG-1

Manifest Number: 103949

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car #

Generator Name: WEG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	Cu Yds.	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Steven McLean — 4-7-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name: Matonek Trucking DOT #: 300906

Address: 256 State Park Dr Bay City, MI Truck Number: 69

Dave Beyer — David Beyer — 4/7/04

Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature — Date Received: 4-7-04

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76610
Date/Time: 04/07/2004 - 10:36

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BGMAT69	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	142240 Manual Weight	Trailer:	
Tare Weight:	52480	Rate:	
Net Weight:	89760	Amount:	
Tons:	44.88	Comment:	103949
Yards:	40		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103954

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car #

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cu. yds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven Mclean on behalf of GM — Steven McLean — 4-7-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name: Matonek Trucking DOT #: 300906

Address: 256 State Park Dr. Bay City, MI. Truck Number: 76

Ray Zissler — Ray Zissler — 4-7-04

Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Brandon Mclson — 4-7-04

Signature — Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76622
Date/Time: 04/07/2004 - 10:51

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402116
		Generator:	GM- PEREGR
Truck:	BGMAT76	Work Order #:	
Waste:	BRC&DT	Trailer:	
Gross Weight:	157120	Rate:	
Tare Weight:	61120	Amount:	
Net Weight:	96000	Comment:	103954
Tons:	48.00		
Yards:	40		
Origin:	NA / NA		

Drivers Signature

REPUBLIC SERVICES
OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103956

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car # _____

Generator Name WFG Environmental Services Group Remediation Team US EPA ID # MID005356860

Billing Address Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address 1245 East Coldwater Road Flint, MI

County of Origin Genesee Phone (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cu.yds.	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Steven McLean — 4-7-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name Matonek Trucking DOT # 300906

Address 256 State Park Dr Bay City, MI. Truck Number 77

DICK DANIELS — Date Delivered 7/7/04

Driver's Name — Signature

DISPOSAL FACILITY:

Site Name Brent Run, RDF Phone Number 810-639-3077

Address 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature — Amanda — 4-7-04 Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76640
Date/Time: 04/07/2004 - 11:29

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
		Generator:	GM- PEREGR
Truck:	BGMAT77	Work Order #:	
Waste:	BRS-CONT	Trailer:	
Gross Weight:	153920	Rate:	
Tare Weight:	52140	Amount:	
Net Weight:	101780	Comment:	103956
Tons:	50.89		
Yards:	40		

Drivers Signature

REPUBLIC SERVICES
OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103957

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR:

Car #

Generator Name: WFG Environmental Services Group Remediation Team — US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI — Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee — Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
~~Non-haz concrete, debris~~ ~~Non-haz soil, debris~~	~~Approval # 402116~~ ~~Approval # 402117~~	40 @	cu yds	DT

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Steven McLean — 4-7-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name: Matonek Trucking — DOT #: 300906

Address: 256 State Park Dr. Bay City MI. — Truck Number: 69

Dave Beyer — David Beyer — 4/7/04

Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF — Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature: Amanda — 4-7-04 Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76645
Date/Time: 04/07/2004 - 11:38

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
		Generator:	GM- PEREGR
Truck:	BGMAT69		
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	149640	Trailer:	
Tare Weight:	52480	Rate:	
Net Weight:	97160	Amount:	
Tons:	48.58	Comment:	103957
Yards:	40		
Origin:	GENESEE / GENESEE		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103953

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car # _____

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
~~Non-haz concrete, debris~~ ~~Non-haz soil, debris~~	~~Approval # 402116~~ ~~Approval # 402117~~	40	cuyds	DT

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven Mclean on behalf of GM — Steven Mclean — 4-7-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name: AIDRIDGE Trucking DOT #: 14666

Address: 5135 N. Gale Rd DAVISON, MI Truck Number: 46

Erik Derbyshire — Erik Derbyshire — 4-7-04

Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

_____ — Brandon Miller — 4.7.04

Name of Authorized Agent — Signature — Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76600
Date/Time: 04/07/2004 - 10:10

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BALD46-40G	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	150100	Trailer:	
Tare Weight:	55160	Rate:	
Net Weight:	94940	Amount:	
Tons:	47.47	Comment:	103953
Yards:	40		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103814

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car #

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cu.yds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven Mclean on behalf of — Signature — 4-7-04

Generator Authorized Agent Name / Signature / Date Shipped

TRANSPORTER:

Transporter Name: Matonek Trucking DOT #: 300906

Address: 256 State Park Dr. Bay City, MI. Truck Number: 77

DICK DANIELS — Signature — 4/7/04

Driver's Name / Signature / Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature — 4-7-04

Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

---

REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76688
Date/Time: 04/07/2004 - 12:58

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BGMAT77	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	156400	Trailer:	
Tare Weight:	52140	Rate:	
Net Weight:	104260	Amount:	
Tons:	52.13	Comment:	103814
Yards:	40		

Drivers Signature

REPUBLIC SERVICES
OF MICHIGAN I, LLC

OB6-1

Manifest Number: 103815

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car # _____

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5789

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cuyds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of Com — Steven McLean — 4-7-04
Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name: Matonek Trucking DOT #: 300906

Address: 256 State Park Dr. Bay City, MI. Truck Number: 69

Driver's Name: Dave Beyer Signature: David Beyer Date Delivered: 4/7/04

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature: Amanda — Date Received: 4-7-04

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

---

REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76702
Date/Time: 04/07/2004 - 13:17

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BGMAT69	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	136140	Trailer:	
Tare Weight:	52480	Rate:	
Net Weight:	83660	Amount:	
Tons:	41.83	Comment:	103815
Yards:	40		
Origin:			

Drivers Signature

REPUBLIC SERVICES
OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103816

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR:

Car # _____

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cuyds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Steven McLean — 4-7-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name: AIDRIDGE Trucking DOT #: 14666

Address: 5735 N. Gale Rd, DAVISON, MI Truck Number: 46

Erik Derkash — Erik Derkash — 4-7-04

Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature — 4.7.04 Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

---

REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76724
Date/Time: 04/07/2004 - 13:46

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402116
		Generator:	GM- PEREGR
Truck:	BALD46-40G	Work Order #:	
Waste:	BRC&DT	Trailer:	
Gross Weight:	154500	Rate:	
Tare Weight:	55160	Amount:	
Net Weight:	99340	Comment:	103816
Tons:	49.67		
Yards:	40		
Origin:			

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103955

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car #

Generator Name WFG Environmental Services Group Remediation Team US EPA ID # MID005356860

Billing Address Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address 1245 East Coldwater Road Flint, MI

County of Origin Genesee Phone (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40 TONS	CU YDS	D.T.
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven Mclean on behalf of GM — Steven McLean — 4-7-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name Matonek Trucking DOT # 300906

Address 266 State Park Dr. Bay City, MI. Truck Number 73

Ron Thoms — Ronald Thoms — 4-7-04

Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name Brent Run, RDF Phone Number 810-639-3077

Address 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature — Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

---

REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76634
Date/Time: 04/07/2004 - 11:20

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
Truck:	BGMAT73	Generator:	GM- PEREGR
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	151340	Trailer:	
Tare Weight:	52600	Rate:	
Net Weight:	98740	Amount:	
Tons:	49.37	Comment:	103955
Yards:	40		
Origin:	GENESEE / GENESEE		

Drivers Signature

REPUBLIC SERVICES OF MICHIGAN I, LLC

OBG-1

Manifest Number: 103951

NON-HAZARDOUS WASTE MANIFEST

DELIVER TO: ☐ Carleton Farms (New Boston, MI) ☒ Brent Run (Montrose, MI) ☐ Whitefeather (Pinconning, MI)

GENERATOR: Car #

Generator Name: WFG Environmental Services Group Remediation Team US EPA ID #: MID005356860

Billing Address: Pontiac Centerpoint Campus-Central, 2000 Centerpoint Parkway, Pontiac, MI Attn: Cheryl Hiatt Mailcode: 483-520-190

Site Address: 1245 East Coldwater Road Flint, MI

County of Origin: Genesee Phone: (248) 753-5799

Description of Waste	Approval Number	Total Quantity	Unit of Measure	Container Type
Non-haz concrete, debris	Approval # 402116	40	cuyds	DT
Non-haz soil, debris	Approval # 402117			

Special Handling Instructions:

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR 261 or any applicable state law. Further, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Steven McLean on behalf of GM — Steven McLean — 4-7-04

Generator Authorized Agent Name — Signature — Date Shipped

TRANSPORTER:

Transporter Name: Midwest Truckers DOT #: 308906

Address: 256 State Park Dr Bay City, MI. Truck Number: 73

RON THOMS — Ronald Thom — 4-7-04

Driver's Name — Signature — Date Delivered

DISPOSAL FACILITY:

Site Name: Brent Run, RDF Phone Number: 810-639-3077

Address: 8335 W. Vienna Rd Montrose, MI 48457

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent — Signature — 4.7.04 Date Received

White: Generator Canary: Transporter Pink: Disposal Facility Gold: Generator

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REPUBLIC SERVICES, INC.

BRENT RUN LANDFILL
PHONE:(810) 639-3077

Ticket: 76603

Date/Time: 04/07/2004 - 10:14

Customer:	401310 / - REALM INC. 2000 Central Pointe Pontiac , MI -	Approval #:	402117
		Generator:	GM- PEREGR
Truck:	BGMAT73		
Waste:	BRS-CONT	Work Order #:	
Gross Weight:	162380	Trailer:	
Tare Weight:	52600	Rate:	
Net Weight:	109780	Amount:	
Tons:	54.89	Comment:	103951
Yards:	40		
Origin:	GENESEE / GENESEE		

Drivers Signature

APPENDIX O

Data Validation Report – April 2004 VSR Soil Samples

DATA VALIDATION REPORT

Soil Samples Collected April 2004 Former Drum Storage Area at the Former Peregrine U.S. Inc. Property at the Coldwater Road Facility Flint, Michigan (EPA I.D. No. MIR 000 020 743)

June 2004

4966/32223

DATA VALIDATION REPORT

Soil Samples Collected April 2004
Former Drum Storage Area
at the Former Peregrine U.S. Inc. Property
at the Coldwater Road Facility
Flint, Michigan (EPA I.D. No. MIR 000 020 743)

Stuart J. Spiegel
Sr. Managing Scientist

June 2004

O'BRIEN & GERE
ENGINEERS, INC.

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Executive summary

This data validation report addresses data quality for soil samples collected from the former Drum Storage Area at the Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Facility, 1245 Coldwater Road, Flint, Michigan (formerly the Peregrine, U.S., Inc. property). Sample collection activities were conducted by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) in April 2004.

The environmental samples, matrix spike, matrix spike duplicate (MS/MSD), field duplicate, equipment blanks, and trip blanks collected for this investigation were submitted to Merit Laboratories, Inc. of East Lansing, Michigan for analysis of volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Methods. The analytical data generated for this investigation were evaluated by O'Brien & Gere using the quality assurance/quality control (QA/QC) criteria established in the USEPA methods and the following document:

- *Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP)* (O'Brien & Gere 1999).

Excursions from the QA/QC criteria were qualified based on guidance provided in the following document:

- United States Environmental Protection Agency (USEPA). 1999a. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review,* EPA-540/R-96/008. Washington D.C.

As a result of the data validation process the VOCs data for the soil samples analyzed were determined to be 100% usable for qualitative and quantitative purposes.

1. Introduction

1.1. Program summary

This data validation report addresses the results of a data quality evaluation for soil samples, matrix spike, matrix spike duplicate (MS/MSD), field duplicate, equipment blanks, and trip blanks collected from the former Drum Storage Area at the Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Facility, 1245 Coldwater Road, Flint, Michigan (formerly the Peregrine, U.S., Inc. property). Sample collection activities were conducted by O'Brien & Gere in April 2004.

The environmental samples, MS/MSD samples, field duplicate, equipment blanks, and trip blanks collected for this investigation were submitted to Merit Laboratories, Inc. of East Lansing, Michigan for analysis of volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Methods listed in Table 1-1. The samples that were submitted for data validation are presented in Table 1-1 below.

Table 1-1. ***Sample cross reference list***

Laboratory Package ID	Date Collected	Sample Identification		Analysis Requested	Reference
		Client ID	Laboratory ID		
S16643	4/8/04	DSA-Sump-F1, MS/MSD	16643.01/.02/.03	Trichloroethene by 8260B	1
		DSA-Sump-F2	16643.04	Trichloroethene by 8260B	1
		DUP [DSA-Sump-F2]	16643.05	Trichloroethene by 8260B	1
		DSA-Pipe-1	16643.06	Trichloroethene by 8260B	1
		DSA-North-SW2	16643.07	Trichloroethene by 8260B	1
		DSA-North-F1	16643.08	Trichloroethene by 8260B	1
		DSA-North-SW1	16643.09	Trichloroethene by 8260B	1
		Equipment Blank	16643.10	Trichloroethene by 8260B	1
		Trip Blank	16643.11	Trichloroethene by 8260B	1
		DSA-Pipe-2	16643.12	Trichloroethene by 8260B	1
S16671	4/13/04	DSA-North-SW-3	16671.01	Trichloroethene by 8260B	1
		DSA-North-SW-4	16671.02	Trichloroethene by 8260B	1
		Equipment Blank	16671.03	Trichloroethene by 8260B	1
		Trip Blank	16671.04	Trichloroethene by 8260B	1

Table 1-1. *Sample cross reference list*

Laboratory Package ID	Date Collected	Sample Identification		Analysis Requested	Reference
		Client ID	Laboratory ID		
S16718	4/15/04	DSA-North-SW-5	16718.01	Trichloroethene by 8260B	1
		DSA-North-SW-6	16718.02	Trichloroethene by 8260B	1
		Equipment Blank	16718.03	Trichloroethene by 8260B	1
		Trip Blank	16718.04	Trichloroethene by 8260B	1

Note:
MS indicates matrix spike sample.
MSD indicates matrix spike duplicate sample.
The sample identification in brackets indicates the field duplicate sampling location.

Reference:
USEPA. 1996. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846,* 3rd Edition. Washington D.C.

1.2. Data validation protocols

1.2.1. Process description

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Data validation is essentially a three-step process in which the analytical data's quality assurance/quality control (QA/QC) information is first compared to a series of QA/QC criteria. Based on the results of this comparison, the analytical data are then assigned qualifiers, which provide an indication of the data's usability. Finally, an overall evaluation of the data's usability is performed. These three steps are described in the following sections.

1.2.2. Comparison to QA/QC criteria

In this report, the analytical data's QA/QC information is compared to the applicable QA/QC criteria provided in the following documents:

- United States Environmental Protection Agency (USEPA). 1996. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846),* 3rd Edition. Washington, D.C., 1986 as updated through December 1996.

- O'Brien & Gere Engineers, Inc. 1999. *Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP),* Syracuse, New York.

Full data validation was performed on the soil sample data. Full data validation consists of a review of data summary forms and raw analytical data that were provided in the data packages. The following QA/QC information was included in the review for VOC analyses:

- Chain-of-custody records
- Holding times and sample preservation
- Calibrations
- Blank analysis
- Matrix spike/matrix spike duplicate (MS/MSD) analysis
- Laboratory control sample (LCS) analysis
- Field duplicate analysis
- Surrogate recovery
- Internal standards performance
- Gas chromatography/mass spectrometry (GC/MS) instrument performance check
- Target analyte quantitation, identification, and reported detection limits
- System performance
- Documentation completeness.

1.2.3. Assignment of qualifiers

Excursions from the QA/QC criteria were qualified based on guidance provided in the following document:

- United States Environmental Protection Agency (USEPA). 1999. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review,* EPA-540/R-96/008. Washington D.C.

In accordance with the USEPA guidance, and utilizing professional judgment, the following qualifiers are used to qualify sample results in this type of data validation:

"R" Indicates that the reporting limit or sample result has been determined to be unusable due to a major deficiency in the data generation process. The data should not be used for any qualitative or quantitative purposes.

"U" Indicates that the analyte was analyzed for, but was not detected. The sample quantitation limit is presented.

"J" Indicates that concentration of the result should be considered approximate. This qualifier is used when the data validation process identifies a deficiency in the data generation process.

The following guidelines are used regarding the assignment of qualifiers and the use of qualified data:

The data quality evaluation results in only one qualifier for each analyte; in a case when several qualifiers are applicable to the same analyte, the cumulative effect of the various QA/QC excursions is employed in assigning the final data qualifiers.

QA/QC excursions which do not result in the qualification of an analyte, or which result in additional qualification if the analyte was previously qualified, are not discussed.
The quantitative use of approximated analytical data is consistent with the guidance presented in the USEPA Risk Assessment Guidance for Superfund (USEPA 1992).

1.2.4. Data usability evaluation

Based on the QA/QC information review and the qualifiers assigned to the analytical data, an overall evaluation of the data's usability is performed. This evaluation considers the data parameters of precision, sensitivity, accuracy, representativeness, comparability, and completeness (known as PSARCC parameters), which are described as follows:

- Precision is evaluated through the review of field duplicate samples and MS/MSD samples.
- Sensitivity is evaluated through the review of reported detection limits.
- Accuracy is evaluated through the review of MS/MSD samples, internal standards, surrogate recoveries, LCS recoveries, calibration, and instrument performance check.
- Representativeness is evaluated through the review of holding times, sample preservation and preparation, blank analysis and target compound identification and quantification.
- Comparability is evaluated through the review of the analytical methods and reporting procedures for consistency.
- Completeness is defined as the percentage of sample results that are determined to be usable.

1.2.5. Analytical methods

The soil samples collected for this investigation were analyzed by were analyzed by Merit Laboratories, Inc. (Merit Labs) of East Lansing, Michigan for volatile organic compounds (VOCs) using the method presented in Table 1-2.

Table 1-2. *Analytical method reference*

Parameter	Method	Reference
Trichloroethene	USEPA Method 5035*/8260B	1

Note:
1. USEPA. 1996 *Test Methods for Evaluating Solid Waste Physical/Chemical*

Table 1-2. *Analytical method reference*

Parameter	Method	Reference
	Methods (SW-846), 3rd Edition. Washington DC.	
*	Indicates that the samples collected for trichloroethene analysis were analyzed using the methanol preparation technique.	

The following chapters of this document address distinct aspects of the validation process. Specific QA/QC excursions and qualifications performed on the sample data are discussed in Section 2. Data completeness and usability are discussed in Section 3.

The annotated analytical results generated by this validation are presented in Appendix A.

2. Data quality evaluation

2.1. Soil samples

2.1.1. VOC analysis of soil samples by GM/MS

Criteria compliance

The following QA/QC parameters met validation criteria or did not result in additional qualification of sample results:

- Holding times
- Calibrations
- Blank analysis
- LCS analysis
- Field duplicate analysis
- Surrogate recovery
- Internal standards performance
- GC/MS instrument performance check
- Target analyte quantitation, identification, and reported detection limits
- System performance
- Documentation completeness.

The following sections present observations made during the validation process. Excursions from the remaining QA/QC criteria presented in Section 1.2.2 were not detected during the validation process. Therefore, sample data were not qualified.

Chain-of-custody records

The following chain-of-custody observation was made during the validation process:

- A time gap was detected in the chain-of-custody record associated with samples collected 4/15/04. During the initial transfer of the samples, the cooler was relinquished on 4/15/04 at 12:20 and the received next party recorded 4/5/04 at 12:20 on the chain-of-custody record. Subsequently the transfer was correctly documented as the laboratory receiving the samples on 4/15/04 at 16:00. The Project Manager was informed of the chain-of-custody record issue.

Sample preservation

The cooler temperature for the samples collected 4/13/04 was recorded at 8 °C and the cooler temperature for the samples collected 4/15/04 was 12 °C. Sample preservation requirements for cooler temperatures are established at 4 °C± 2 °C. The laboratory did not inform the Project Manager of the cooler temperature issues. In both cases, the samples were analyzed within one day of sample receipt. Therefore, since validation guidelines do not address this issue, sample results were not qualified due to the cooler temperature issues.

MS/MSD analysis

The laboratory utilized sample DSA-Sump-F2 to perform the MS/MSD analysis rather than sample DSA-Sump-F1 collected for that purpose. Data quality was not impacted by this issue and sample results were not qualified.

3. Summary and data usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process.

The soil samples, MS/MSD, field duplicate, equipment blanks, and trip blanks collected from the former Drum Storage Area at the REALM Coldwater Road Facility, were evaluated based on QA/QC criteria established by USEPA Methods as listed in Section 1.2, the QAPP (O'Brien & Gere 1999), and the USEPA data validation guidelines. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data is considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process would have resulted in some sample data being characterized as approximate. Identification of a data point as approximate indicates uncertainty in the reported concentration of the chemical, but not its assigned identity. The use of approximated analytical data for quantitative uses is consistent with the guidance presented in the USEPA Risk Assessment Guidance for Superfund (USEPA 1992).

A discussion of the data quality with regard to the parameters follows:

Precision: Data usability with respect to precision is 100 percent for volatile organic compound soil data.

For the soil samples, none of the data were rejected for precision excursions.

Sensitivity: Methanol preparation was utilized for sample preparation for this project. Sensitivity requirements utilizing methanol preparation for soil samples were met for the sample data in this project.

Accuracy: Data usability with respect to accuracy is 100 percent for volatile organic compound soil data.

For the soil samples, none of the data were rejected for accuracy excursions.

Representativeness: Data usability with respect to representativeness is 100 percent for volatile organic compound soil data.

For the soil samples, none of the data were rejected for representativeness excursions.

Comparability: Data usability with respect to comparability is 100 percent, as standardized analytical methods, reporting limits, reference materials, and data deliverables were used throughout the data generation process for this project.

Completeness: Overall, 100 percent of the trichloroethene soil data were determined to be usable for qualitative and quantitative purposes. Therefore, the completeness objective of 90 percent for this investigation, as presented in the QAPP, was met.

References

O'Brien & Gere Engineers, Inc. 1999. *Coldwater Road Facility Remedial Investigation, REALM, Quality Assurance Project Plan (QAPP),* Syracuse, New York.

United States Environmental Protection Agency (USEPA). 1992. *USEPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual* (Part A), 540/1-891002. Washington D.C.

United States Environmental Protection Agency (USEPA). 1996. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846),* 3rd Edition. Washington, D.C., 1986 as updated through December 1996.

United States Environmental Protection Agency (USEPA). 1999. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review,* EPA-540/R-96/008. Washington D.C.

APPENDIX A

USEPA Method 8260B Sample Results for Volatile Organic Compounds

Lab Sample ID: S16643.01
Sample Tag: DSA - Sump - F1
Collected Date/Time: 04/08/2004 10:40
Matrix: Soil
COC Reference: 020406

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	None	Yes	3	3
1	20g EnCore	None	Yes	3	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Inorganics								
Total Solids	86	%	1	160.3	04/10/04 13:07	JSP		
Organics								
Trichloroethene	Not detected	mg/kg	0.06	8260B	04/08/04 23:25	JGH	79-01-6	

Merit Laboratories, Inc.

Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S16643.02
Sample Tag: DSA - Sump - F1 - MS
Collected Date/Time: 04/08/2004 10:40
Matrix: Soil
COC Reference: 020406

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	None	Yes	3	3
1	20g EnCore	None	Yes	3	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Inorganics								
Total Solids	86	%	1	160.3	04/10/04 13:07	JSP		
Organics								
Trichloroethene	1.28	mg/kg	0.05	8260B	04/08/04 20:07	JGH	79-01-6	1T

1-Spiked at 1.25 mg/Kg T-No correction for total solids

Merit Laboratories, Inc.

Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S16643.03
Sample Tag: DSA - Sump - F1 - MSD
Collected Date/Time: 04/08/2004 10:40
Matrix: Soil
COC Reference: 020406

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	None	Yes	3	3
1	20g EnCore	None	Yes	3	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Inorganics								
Total Solids	86	%	1	160.3	04/10/04 13:07	JSP		
Organics								
Trichloroethene	1.22	mg/kg	0.05	8260B	04/08/04 20:40	JGH	79-01-6	1T

1-Spiked at 1.25 mg/Kg T-No correction for total solids

Lab Sample ID: S16643.04
Sample Tag: DSA - Sump - F2
Collected Date/Time: 04/08/2004 10:30
Matrix: Soil
COC Reference: 020406

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	None	Yes	3	3
1	20g EnCore	None	Yes	3	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Inorganics								
Total Solids	86	%	1	160.3	04/10/04 13:07	JSP		
Organics								
Trichloroethene	Not detected	mg/kg	0.06	8260B	04/09/04 00:31	JGH	79-01-6	

Lab Sample ID: S16643.05
Sample Tag: Dup
Collected Date/Time: 04/08/2004 :
Matrix: Soil
COC Reference: 020406

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	None	Yes	3	3
1	20g EnCore	None	Yes	3	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Inorganics								
Total Solids	86	%	1	160.3	04/10/04 13:07	JSP		
Organics								
Trichloroethene	Not detected	mg/kg	0.06	8260B	04/09/04 01:04	JGH	79-01-6	

Lab Sample ID: S16643.06
Sample Tag: DSA - Pipe - 1
Collected Date/Time: 04/08/2004 11:00
Matrix: Soil
COC Reference: 020406

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	None	Yes	3	3
1	20g EnCore	None	Yes	3	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Inorganics								
Total Solids	87	%	1	160.3	04/10/04 13:07	JSP		
Organics								
Trichloroethene	Not detected	mg/kg	0.06	8260B	04/09/04 01:36	JGH	79-01-6	

Analytical Laboratory Report

Merit Laboratories, Inc.

Lab Sample ID: S16643.07
Sample Tag: DSA - North - SW2
Collected Date/Time: 04/08/2004 11:10
Matrix: Soil
COC Reference: 020406

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	None	Yes	3	3
1	20g EnCore	None	Yes	3	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Inorganics								
Total Solids	82	%	1	160.3	04/10/04 13:07	JSP		
Organics								
Trichloroethene	Not detected	mg/kg	0.06	8260B	04/09/04 02:10	JGH	79-01-6	

Lab Sample ID: S16643.08
Sample Tag: DSA - North - F1
Collected Date/Time: 04/08/2004 11:15
Matrix: Soil
COC Reference: 020406

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	None	Yes	3	3
1	20g EnCore	None	Yes	3	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Inorganics								
Total Solids	83	%	1	160.3	04/10/04 13:07	JSP		
Organics								
Trichloroethene	Not detected	mg/kg	0.06	8260B	04/09/04 02:43	JGH	79-01-6	

Lab Sample ID: S16643.09
Sample Tag: DSA - North - SW1
Collected Date/Time: 04/08/2004 11:20
Matrix: Soil
COC Reference: 020406

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	None	Yes	3	3
1	20g EnCore	None	Yes	3	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Inorganics								
Total Solids	85	%	1	160.3	04/10/04 13:07	JSP		
Organics								
Trichloroethene	0.47	mg/kg	0.06	8260B	04/09/04 03:16	JGH	79-01-6	

Lab Sample ID: S16643.10
Sample Tag: EB
Collected Date/Time: 04/08/2004 11:50
Matrix: Groundwater
COC Reference: 020406

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40 ml Glass	HCL	Yes	3	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Organics								
Trichloroethene	Not detected	mg/l	0.001	8260B	04/12/04 15:56	JGH	79-01-6	

Lab Sample ID: S16643.11
Sample Tag: TB
Collected Date/Time: 04/08/2004 :
Matrix: Groundwater
COC Reference: 020406

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40 ml Glass	HCL	Yes	3	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Organics								
Trichloroethene	Not detected	mg/l	0.001	8260B	04/12/04 16:30	JGH	79-01-6	

Analytical Laboratory Report

Merit Laboratories, Inc.

Lab Sample ID: S16643.12
Sample Tag: DSA - Pipe - 2
Collected Date/Time: 04/08/2004 11:25
Matrix: Soil
COC Reference: 020406

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	None	Yes	3	3
1	20g EnCore	None	Yes	3	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Inorganics								
Total Solids	83	%	1	160.3	04/10/04 13:07	JSP		
Organics								
Trichloroethene	Not detected	mg/kg	0.05	8260B	04/09/04 14:01	JGH	79-01-6	1
Trichloroethene (Replicate 01)	Not detected	mg/kg	0.06	8260B	04/12/04 15:12	JGH	79-01-6	

1-Scan run

Merit Laboratories, Inc.

Analytical Laboratory Report

Lab Sample ID: S16671.01
Sample Tag: DSA - North - SW - 3
Collected Date/Time: 04/13/2004 12:45
Matrix: Soil
COC Reference: 020408

Sample Containers #	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	8	3
1	4oz. Glass	None	Yes	8	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Inorganics								
Total Solids	87.6	%	1	160.3	04/13/04 17:00	JGH		
Organics								
Trichloroethene	0.47	mg/kg	0.06	8260B	04/13/04 18:36	JGH	79-01-6	

Merit Laboratories, Inc.

Analytical Laboratory Report

Lab Sample ID: S16671.02
Sample Tag: DSA - North - SW - 4
Collected Date/Time: 04/13/2004 13:00
Matrix: Soil
COC Reference: 020408

Sample Containers #	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	8	3
1	4oz. Glass	None	Yes	8	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Inorganics								
Total Solids	86.1	%	1	160.3	04/13/04 17:00	JGH		
Organics								
Trichloroethene	Not detected	mg/kg	0.06	8260B	04/13/04 19:42	JGH	79-01-6	

Merit Laboratories, Inc.

Analytical Laboratory Report

Lab Sample ID: S16671.03
Sample Tag: EB
Collected Date/Time: 04/13/2004 13:15
Matrix: Groundwater
COC Reference: 020408

Sample Containers #	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40 ml Glass	HCL	Yes	8	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Organics								
Trichloroethene	Not detected	mg/l	0.001	8260B	04/14/04 06:08	JGH	79-01-6	

Merit Laboratories, Inc.

Analytical Laboratory Report

Lab Sample ID: S16671.04
Sample Tag: TB
Collected Date/Time: 04/13/2004 :
Matrix: Water
COC Reference: 020408

Sample Containers #	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40 ml Glass	HCL	Yes	8	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Organics								
Trichloroethene	Not detected	mg/l	0.001	8260B	04/14/04 06:41	JGH	79-01-6	

Analytical Laboratory Report

Merit Laboratories, Inc.

Lab Sample ID: S16718.01
Sample Tag: DSA - North - SW - 5
Collected Date/Time: 04/15/2004 11:00
Matrix: Soil
COC Reference: 017859

Sample Containers #	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	12	3
1	4oz. Glass	None	Yes	12	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Inorganics								
Total Solids	87	%	1	160.3	04/16/04 7:56	JSP		
Organics								
Trichloroethene	Not detected	mg/kg	0.06	8260B	04/16/04 12:11	JGH	79-01-6	

Merit Laboratories, Inc.

Analytical Laboratory Report

Lab Sample ID: S16718.02
Sample Tag: DSA - North - SW - 6
Collected Date/Time: 04/15/2004 11:05
Matrix: Soil
COC Reference: 017859

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	20g EnCore	None	Yes	12	3
1	4oz. Glass	None	Yes	12	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Inorganics								
Total Solids	87	%	1	160.3	04/16/04 7:56	JSP		
Organics								
Trichloroethene	Not detected	mg/kg	0.06	8260B	04/16/04 12:44	JGH	79-01-6	

Merit Laboratories, Inc.

Analytical Laboratory Report

Lab Sample ID: S16718.03
Sample Tag: EB
Collected Date/Time: 04/15/2004 11:10
Matrix: Water
COC Reference: 017859

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40 ml Glass	MeOH	Yes	12	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Organics								
Trichloroethene	Not detected	mg/l	0.001	8260B	04/16/04 13:43	JGH	79-01-6	

Lab Sample ID: S16718.04
Sample Tag: TB
Collected Date/Time: 04/15/2004 :
Matrix: Water
COC Reference: 017859

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40 ml Glass	MeOH	Yes	12	3

Analysis	Results	Units	RDL	Method	Run Date/Time	Analyst	CAS #	Flags
Organics								
Trichloroethene	Not detected	mg/l	0.001	8260B	04/16/04 14:16	JGH	79-01-6	

APPENDIX P

Excavation Backfill Material Analytical Data Sheets

Soil from Summerfield
12636

CONESTOGA ROVERS & ~~ASSOC.~~, INC.

Client Sample ID: S-12636-021604-SSH-501

GC/MS Volatiles

Lot-Sample #...: A4B170164-001 Work Order #...: F9NX61AA Matrix.....: SO
Date Sampled...: 02/16/04 Date Received..: 02/17/04
Prep Date.....: 02/17/04 Analysis Date..: 02/17/04
Prep Batch #...: 4049490
Dilution Factor: 0.8
% Moisture.....: 15 Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acetone	ND	700	ug/kg
Benzene	ND	47	ug/kg
Bromodichloromethane	ND	94	ug/kg
Bromoform	ND	94	ug/kg
Bromomethane	ND	230	ug/kg
2-Butanone	ND	700	ug/kg
Carbon disulfide	ND	230	ug/kg
Carbon tetrachloride	ND	47	ug/kg
Chlorobenzene	ND	47	ug/kg
Chloroethane	ND	230	ug/kg
Chloroform	ND	47	ug/kg
Chloromethane	ND	230	ug/kg
Cyclohexane	ND	1100	ug/kg
Dibromochloromethane	ND	47	ug/kg
1,2-Dibromo-3-chloro-propane	ND	230	ug/kg
1,2-Dibromoethane	ND	230	ug/kg
1,2-Dichlorobenzene	ND	94	ug/kg
1,3-Dichlorobenzene	ND	94	ug/kg
1,4-Dichlorobenzene	ND	94	ug/kg
Dichlorodifluoromethane	ND	94	ug/kg
1,1-Dichloroethane	ND	47	ug/kg
1,2-Dichloroethane	ND	47	ug/kg
1,1-Dichloroethene	ND	47	ug/kg
cis-1,2-Dichloroethene	ND	47	ug/kg
trans-1,2-Dichloroethene	ND	47	ug/kg
1,2-Dichloropropane	ND	47	ug/kg
cis-1,3-Dichloropropene	ND	47	ug/kg
trans-1,3-Dichloropropene	ND	47	ug/kg
Ethylbenzene	ND	47	ug/kg
2-Hexanone	ND	2300	ug/kg
Isopropylbenzene	ND	230	ug/kg
Methyl acetate	ND	1100	ug/kg
Methylene chloride	ND	230	ug/kg
Methylcyclohexane	ND	1100	ug/kg
4-Methyl-2-pentanone	ND	2300	ug/kg
Methyl tert-butyl ether	ND	230	ug/kg
Styrene	ND	47	ug/kg

(Continued on next page)

CONESTOGA ROVERS & ASSOC.,INC.

Client Sample ID: S-12636-021604-SSH-501

GC/MS Volatiles

Lot-Sample #...: A4B170164-001 Work Order #...: F9NX61AA Matrix.....: SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,1,2,2-Tetrachloroethane	ND	94	ug/kg
Tetrachloroethene	ND	47	ug/kg
Toluene	ND	94	ug/kg
1,2,4-Trichloro-benzene	ND	230	ug/kg
1,1,1-Trichloroethane	ND	47	ug/kg
1,1,2-Trichloroethane	ND	47	ug/kg
Trichloroethene	ND	47	ug/kg
Trichlorofluoromethane	ND	94	ug/kg
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	230	ug/kg
Vinyl chloride	ND	94	ug/kg
Xylenes (total)	ND	140	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	66	(59 - 138)
1,2-Dichloroethane-d4	64	(61 - 130)
Toluene-d8	71	(60 - 143)
4-Bromofluorobenzene	70	(47 - 158)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

CONESTOGA ROVERS & ASSOC.,INC.

Client Sample ID: S-12636-021604-SSH-501

GC/MS Semivolatiles

Lot-Sample #...: A4B170164-001 Work Order #...: F9NX61AD Matrix.....: SO
Date Sampled...: 02/16/04 Date Received..: 02/17/04
Prep Date.....: 02/17/04 Analysis Date..: 02/18/04
Prep Batch #...: 4048408
Dilution Factor: 1
% Moisture.....: 15 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	390	ug/kg
Acenaphthylene	ND	390	ug/kg
Acetophenone	ND	390	ug/kg
Anthracene	ND	390	ug/kg
Atrazine	ND	390	ug/kg
Benzo(a)anthracene	ND	390	ug/kg
Benzo(a)pyrene	ND	390	ug/kg
Benzo(b)fluoranthene	ND	390	ug/kg
Benzo(ghi)perylene	ND	390	ug/kg
Benzo(k)fluoranthene	ND	390	ug/kg
Benzaldehyde	ND	390	ug/kg
1,1'-Biphenyl	ND	390	ug/kg
bis(2-Chloroethoxy) methane	ND	390	ug/kg
bis(2-Chloroethyl)-ether	ND	390	ug/kg
bis(2-Ethylhexyl) phthalate	ND	390	ug/kg
4-Bromophenyl phenyl ether	ND	390	ug/kg
Butyl benzyl phthalate	ND	390	ug/kg
Caprolactam	ND	390	ug/kg
Carbazole	ND	390	ug/kg
4-Chloroaniline	ND	2000	ug/kg
4-Chloro-3-methylphenol	ND	390	ug/kg
2-Chloronaphthalene	ND	390	ug/kg
2-Chlorophenol	ND	390	ug/kg
4-Chlorophenyl phenyl ether	ND	390	ug/kg
Chrysene	ND	390	ug/kg
Dibenz(a,h)anthracene	ND	390	ug/kg
Dibenzofuran	ND	390	ug/kg
3,3'-Dichlorobenzidine	ND	2300	ug/kg
2,4-Dichlorophenol	ND	390	ug/kg
Diethyl phthalate	ND	390	ug/kg
2,4-Dimethylphenol	ND	390	ug/kg
Dimethyl phthalate	ND	390	ug/kg
Di-n-butyl phthalate	ND	390	ug/kg

(Continued on next page)

CONESTOGA ROVERS & ASSOC.,INC.

Client Sample ID: S-12636-021604-SSH-501

GC/MS Semivolatiles

Lot-Sample #...: A4B170164-001 Work Order #...: F9NX61AD Matrix.....: SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS
4,6-Dinitro-2-methylphenol	ND	2000	ug/kg
2,4-Dinitrophenol	ND	2000	ug/kg
2,4-Dinitrotoluene	ND	390	ug/kg
2,6-Dinitrotoluene	ND	390	ug/kg
Di-n-octyl phthalate	ND	390	ug/kg
Fluoranthene	ND	390	ug/kg
Fluorene	ND	390	ug/kg
Hexachlorobenzene	ND	390	ug/kg
Hexachlorobutadiene	ND	390	ug/kg
Hexachlorocyclopentadiene	ND	390	ug/kg
Hexachloroethane	ND	390	ug/kg
Indeno(1,2,3-cd)pyrene	ND	390	ug/kg
Isophorone	ND	390	ug/kg
2-Methylnaphthalene	ND	390	ug/kg
2-Methylphenol	ND	390	ug/kg
4-Methylphenol	ND	390	ug/kg
Naphthalene	ND	390	ug/kg
2-Nitroaniline	ND	2000	ug/kg
3-Nitroaniline	ND	2000	ug/kg
4-Nitroaniline	ND	2000	ug/kg
Nitrobenzene	ND	390	ug/kg
2-Nitrophenol	ND	390	ug/kg
4-Nitrophenol	ND	2000	ug/kg
N-Nitrosodi-n-propylamine	ND	390	ug/kg
N-Nitrosodiphenylamine	ND	390	ug/kg
2,2'-oxybis(1-Chloropropane)	ND	390	ug/kg
Pentachlorophenol	ND	940	ug/kg
Phenanthrene	ND	390	ug/kg
Phenol	ND	390	ug/kg
Pyrene	ND	390	ug/kg
2,4,5-Trichlorophenol	ND	390	ug/kg
2,4,6-Trichlorophenol	ND	390	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	57	(42 - 110)
2-Fluorobiphenyl	60	(43 - 110)
Terphenyl-d14	74	(37 - 137)
Phenol-d5	56	(25 - 115)
2-Fluorophenol	58	(11 - 116)
2,4,6-Tribromophenol	62	(35 - 116)

(Continued on next page)

CONESTOGA ROVERS & ASSOC.,INC.

Client Sample ID: S-12636-021604-SSH-501

GC/MS Semivolatiles

Lot-Sample #...: A4B170164-001 Work Order #...: F9NX61AD Matrix.....: SO

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

CONESTOGA ROVERS & ASSOC.,INC.

Client Sample ID: S-12636-021604-SSH-501

GC Semivolatiles

Lot-Sample #...: A4B170164-001 Work Order #...: F9NX61A7 Matrix.....: SO
Date Sampled...: 02/16/04 Date Received..: 02/17/04
Prep Date.....: 02/17/04 Analysis Date..: 02/21/04
Prep Batch #...: 4048405
Dilution Factor: 1
% Moisture.....: 15 Method.....: SW846 8081A

PARAMETER	RESULT	REPORTING LIMIT	UNITS
alpha-BHC	ND	2.0	ug/kg
beta-BHC	ND	2.0	ug/kg
delta-BHC	ND	2.0	ug/kg
gamma-BHC (Lindane)	ND	2.0	ug/kg
Heptachlor	ND	2.0	ug/kg
Aldrin	ND	2.0	ug/kg
Heptachlor epoxide	ND	2.0	ug/kg
Endosulfan I	ND	2.0	ug/kg
Dieldrin	ND	2.0	ug/kg
4,4'-DDE	ND	2.0	ug/kg
Endrin	ND	2.0	ug/kg
Endosulfan II	ND	2.0	ug/kg
4,4'-DDD	ND	2.0	ug/kg
Endosulfan sulfate	ND	2.0	ug/kg
4,4'-DDT	ND	2.0	ug/kg
Methoxychlor	ND	3.9	ug/kg
Endrin ketone	ND	2.0	ug/kg
Endrin aldehyde	ND	2.0	ug/kg
alpha-Chlordane	ND	2.0	ug/kg
gamma-Chlordane	ND	2.0	ug/kg
Toxaphene	ND	79	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	73	(31 - 131)
Decachlorobiphenyl	71	(18 - 145)

NOTE(S):
Results and reporting limits have been adjusted for dry weight.

CONESTOGA ROVERS & ASSOC., INC.

Client Sample ID: S-12636-021604-SSH-501

GC Semivolatiles

Lot-Sample #...: A4B170164-001 Work Order #...: F9NX61CA Matrix.....: SO
Date Sampled...: 02/16/04 Date Received..: 02/17/04
Prep Date.....: 02/17/04 Analysis Date..: 02/19/04
Prep Batch #...: 4048406
Dilution Factor: 1
% Moisture.....: 15 Method.....: SW846 8082

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Aroclor 1016	ND	390	ug/kg
Aroclor 1221	ND	390	ug/kg
Aroclor 1232	ND	390	ug/kg
Aroclor 1242	ND	390	ug/kg
Aroclor 1248	ND	390	ug/kg
Aroclor 1254	ND	390	ug/kg
Aroclor 1260	ND	390	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	92	(31 - 127)
Decachlorobiphenyl	67	(23 - 141)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

CONESTOGA ROVERS & ASSOC.,INC.

Client Sample ID: S-12636-021604-SSH-501

GC Semivolatiles

Lot-Sample #...: A4B170164-001 Work Order #...: F9NX61A8 Matrix.....: SO
Date Sampled...: 02/16/04 Date Received..: 02/17/04
Prep Date.....: 02/17/04 Analysis Date..:
Prep Batch #...: 4048404
Dilution Factor: 1
% Moisture.....: 15 Method.....: SW846 8151A

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-D		94	ug/kg
2,4,5-TP (Silvex)		23	ug/kg
2,4,5-T		23	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dichlorophenylacetic acid		(37 - 110)

CONESTOGA ROVERS & ASSOC.,INC.

Client Sample ID: S-12636-021604-SSH-501

GC Semivolatiles

Lot-Sample #...: A4B170164-001 Work Order #...: F9NX62A8 Matrix.....: SO
Date Sampled...: 02/16/04 Date Received..: 02/17/04
Prep Date.....: 02/19/04 Analysis Date..:
Prep Batch #...: 4050185
Dilution Factor: 1
% Moisture.....: 15 Method.....: SW846 8151A

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-D		94	ug/kg
2,4,5-TP (Silvex)		23	ug/kg
2,4,5-T		23	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dichlorophenylacetic acid		(37 - 110)

CONESTOGA ROVERS & ASSOC.,INC.

Client Sample ID: S-12636-021604-SSH-501

TOTAL Metals

Lot-Sample #...: A4B170164-001 Matrix.....: SO
Date Sampled...: 02/16/04 Date Received..: 02/17/04
% Moisture.....: 15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 4049096						
Arsenic	4.3	0.12 Dilution Factor: 1	mg/kg	SW846 6020	02/18-02/20/04	F9NX61A1
Cadmium	0.083	0.059 Dilution Factor: 1	mg/kg	SW846 6020	02/18-02/20/04	F9NX61A2
Selenium	ND	0.23 Dilution Factor: 1	mg/kg	SW846 6020	02/18-02/20/04	F9NX61A3
Thallium	0.14 J	0.12 Dilution Factor: 1	mg/kg	SW846 6020	02/18-02/20/04	F9NX61A4
Prep Batch #...: 4049097						
Silver	ND	0.59 Dilution Factor: 1	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AU
Aluminum	5390 J	23.5 Dilution Factor: 1	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AE
Barium	29.7	1.2 Dilution Factor: 1	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AG
Beryllium	0.15 B	0.23 Dilution Factor: 1	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AH
Calcium	50700 J	587 Dilution Factor: 1	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AJ
Cobalt	4.9	0.59 Dilution Factor: 1	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AK
Chromium	9.1 J	0.59 Dilution Factor: 1	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61A0
Copper	10.6	1.2 Dilution Factor: 1	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AL
Iron	14900	11.7 Dilution Factor: 1	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AM

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CONESTOGA ROVERS & ASSOC.,INC.

Client Sample ID: S-12636-021604-SSH-501

TOTAL Metals

Lot-Sample #...: A4B170164-001 Matrix.....: SO

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Potassium	1200 J	587	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AT
		Dilution Factor: 1				
Magnesium	18400 J	587	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AP
		Dilution Factor: 1				
Manganese	449 J	1.2	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AQ
		Dilution Factor: 1				
Sodium	ND	587	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AV
		Dilution Factor: 1				
Nickel	12.6	1.2	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AR
		Dilution Factor: 1				
Lead	5.9	0.35	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AN
		Dilution Factor: 1				
Antimony	0.75	0.59	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AF
		Dilution Factor: 1				
Vanadium	14.4	1.2	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AW
		Dilution Factor: 1				
Zinc	42.2	2.3	mg/kg	SW846 6010B	02/18-02/19/04	F9NX61AX
		Dilution Factor: 1				
Mercury	0.028 B,J	0.12	mg/kg	SW846 7471A	02/18/04	F9NX61A5
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

CONESTOGA ROVERS & ASSOC.,INC.

Client Sample ID: S-12636-021604-SSH-501

General Chemistry

Lot-Sample #...: A4B170164-001 Work Order #...: F9NX6 Matrix.....: SO
Date Sampled...: 02/16/04 Date Received..: 02/17/04
% Moisture.....: 15

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Cyanide, Total	ND	0.23	mg/kg	SW846 9012A	02/20/04	4051342
	Dilution Factor: 1					
Percent Solids	85.1	10.0	%	MCAWW 160.3 MOD	02/17-02/18/04	4048428
	Dilution Factor: 1					

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

CRA
CONESTOGA-ROVERS & ASSOCIATES, INC.
14496 Sheldon Road, Suite 200
Plymouth, MI 48170 • (734) 453-5123

CHAIN OF CUSTODY RECORD

SHIPPED TO (Laboratory Name): SME

REFERENCE NUMBER: 12636-50

PROJECT NAME: MI. Morris Site

SAMPLER'S SIGNATURE: [signature] PRINTED NAME: Steven S. Howemayer

SEQ: No.	DATE	TIME		SAMPLE TYPE	No. OF CONTAINERS	PARAMETERS: Mat. Org. Gas. Tx / Gran. Size / Atterberg Limits / Soil Class	REMARKS
1	2/6/04		S-12636-021604-SSH-S01	soil		X X X X	
			TOTAL NUMBER OF CONTAINERS				

RELINQUISHED BY: 1. [signature]	DATE: 2/16/04 TIME: 1100	RECEIVED BY: 1. M. Hitchcock	DATE: 2-16-04 TIME: 11:00
RELINQUISHED BY: 2.	DATE: TIME:	RECEIVED BY: 2.	DATE: TIME:
RELINQUISHED BY: 3.	DATE: TIME:	RECEIVED BY: 1.	DATE: TIME:

METHOD OF SHIPMENT: hand delivery AIR BILL No.

White -Fully Executed Copy Pink -Shipper Copy
Yellow -Receiving Laboratory Copy Goldenrod -Sampler Copy

21602

SAMPLE TEAM: SSH

RECEIVED FOR LABORATORY BY: [signature]

DATE: 2-16-04 TIME: 2:30pm

1001 (FORMS)-APRIL 29, 93-REV.0-(C)(F-01)