

Environmental Restoration Program  
Former Service Station Site #E828143  
8264 Ridge Road West  
Town of Clarkson  
Monroe County, New York

## Remedial Investigation / Alternatives Analysis Report

Prepared For:



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*I, Susan A. Hilton, certify that I am currently a NYS registered professional engineer and that this Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.*

**July 2011**

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## Executive Summary

Lu Engineers has prepared this report, on behalf of the Town of Clarkson (the “Town”), to present findings of the Remedial Investigation (RI) at the Former Service Station Site #E828143 (the “Site”), located at 8264 Ridge Road West in the Town of Clarkson, Monroe County, New York.

The Site was historically used as an automotive service and gasoline station for at least 50 years and contained four (4) abandoned underground storage tanks (USTs). All structures and USTs were removed in May 2009 as interim remedial measures (IRMs) during this investigation. IRM activities are summarized in the *Construction Completion Report* (Lu Engineers, February 2011). A total of 368 tons of petroleum-impacted soil was removed from the tank pits for off-site disposal. Clean cover material was placed over impacted surface soils and drainage ditch sediments to prevent human contact and migration of contaminants.

The RI included a geophysical survey, surface soil sampling, soil borings, test pits, installation of four (4) groundwater monitoring wells, and groundwater sampling to determine the extent of impacted soils and groundwater. Contaminants detected above applicable soil cleanup objectives (SCOs) in soil and sediment at the Site include polynuclear aromatic hydrocarbons (PAHs) and metals. The source of these contaminants appears to be from historic fill material and/or deposition of run-off from upgradient roadways and drainage areas. Areas of surface soil and sediment in exceedance of Commercial Use SCOs were covered as an IRM during the investigation.

Petroleum-related compounds (benzene, ethylbenzene, toluene, and xylene) were detected above NYS Ambient Groundwater Standards in three (3) on-Site wells (MW-1, MW-2 and MW-4), located on the southwest portion of the Site. The highest concentrations were found in MW-4, located downgradient from the former USTs. Groundwater flow is generally to the north, toward Lake Ontario. Based on the results of this investigation, groundwater impacts appear to be limited to the former tank area and have not migrated off-site.

No potential soil vapor intrusion pathways were identified during this investigation; therefore, vapor intrusion sampling was not conducted.

The planned future use of the Site is for a Veteran’s Memorial Park. This would be a passive use park with a paved walking trail, benches, plantings, a memorial, and parking lot. Public water is supplied to the Site and surrounding area.

The following alternatives were evaluated to address soil, sediment, and groundwater contamination remaining at the Site:

- No Further Action
- No Further Action with Institutional Controls
- Long-Term Monitoring with Institutional Controls
- Unrestricted Use Option- Soil Removal and Disposal with Two-Phase Vacuum Extraction

No further action with institutional controls is the recommended remedial alternative, based on the selection criteria presented in Section 8.1.2. This alternative would satisfy the remedial action objectives developed for the Site and render the Site suitable for commercial use, including passive recreational uses. Additional remediation or long-term groundwater monitoring do not justify the additional costs, considering that all exposure pathways can be eliminated through institutional controls while still allowing full intended use of the Site.

## **1.0 Introduction**

Lu Engineers has prepared this report for the Town of Clarkson (the Town) for submission to the New York State Department of Environmental Conservation (NYSDEC) Region 8 Division of Environmental Remediation (DER). This report has been prepared in accordance with the "Municipal Assistance for Environmental Restoration Projects" Procedures Handbook and DER-10 "Technical Guidance for Site Investigation and Remediation."

The Town has received a State Assistance Contract (SAC) under the NYSDEC 1996 Clean Water/Clean Air Bond Act - Environmental Restoration Program (ERP) for the former Service Station Site #E828143 (the "Site") located in Town of Clarkson. The Town used these funds to complete investigative work and interim remedial measures (IRMs) as described in the NYSDEC-approved *Remedial Investigation Work Plan* and *Interim Remedial Measures Work Plan* (Lu Engineers, January 2009), and the *IRM Work Plan Addendum* letter, dated September 2, 2010.

The IRMs completed during this investigation are detailed in the *Construction Completion Report* (Lu Engineers, January 2011) submitted under separate cover.

### **1.1 Purpose of Report**

The purpose of this report is to present findings of the remedial investigation (RI) conducted by Lu Engineers at the Site. This report also provides an evaluation of alternatives for addressing environmental impacts.

### **1.2 Site Description**

The Site contains a 0.71-acre parcel located at 8264 Ridge Road West (NYS Route 104) in the Town of Clarkson, Monroe County, New York ('the Site', Figure 1). The Site is located on the north side of Ridge Road West, just east of the Hamlet of Clarkson.

The southern portion of the Site contained a masonry body shop/garage, a wooden office/storage building, two (2) storage trailers, and a paved parking lot. The northern portion of the property is wooded, former agricultural land. All structures have been demolished as part of the IRM, and the Site is currently vacant.

The Site is bordered by Ridge Road West (NYS Route 104) to the south; commercial property and a drainage creek to the west; a residence to the east; and undeveloped land to the north.

### **1.3 Site History**

The Site was used as an automotive service station for at least 50 years. Based on review of property deed records and aerial photographs, the Site was used as a retail gasoline station from approximately 1930 until the early 1970s. The masonry body shop/garage was constructed in the 1930s or 1940s and was used for vehicle maintenance operations until the late 1990s.

It was reported that Webaco Oil Company, Inc. owned the Site from 1953 to 1974. According to tax assessment records, the Site was purchased by Charles C. Thomas in 1974 and the most recent office/storage building was constructed. Mr. Thomas reportedly leased the Site to several tenants including 104 Enterprises, 104 Communications, 104 Collision, Spurr Auto Dealership; and it was used for vehicle repair and associated commercial sales until the late 1990s.

The Site was purchased by Commercial Property Holdings, LLC in 2002 and has been unoccupied since. The Town of Clarkson obtained the property through foreclosure in April 2008 and is the current owner.

### **1.4 Previous Investigations**

A Phase I Environmental Site Assessment (ESA), dated February 2, 2007, was performed by Lu Engineers for the Town in order to assess Recognized Environmental Conditions (RECs) at the Site.

Several RECs were identified at that time, including:

- past use as a gasoline and service station for over 50 years with no records of waste disposal;
- the presence of an abandoned unregistered underground storage tank (UST) of unknown size and age (at least 30 years) containing between 1,500 and 3,000 gallons of gasoline and water near the southwest corner of the Site;
- the presence of an abandoned 275-gallon aboveground storage tank (AST) with approximately 20 gallons of residual fuel oil located on the west side of the body shop/garage;
- the presence of an abandoned 55-gallon drum containing unknown material, located adjacent to the southwest corner of the body shop/garage and other miscellaneous hazardous materials containers;
- an apparent vent pipe located on the northeast corner of the office/storage building and two vent pipes observed on the north side of the body shop/garage, which may indicate additional USTs on the property;
- the presence of an in-ground hydraulic lift system (i.e., oil reservoir, piping) that likely contained hydraulic oil and is assumed to be at least 30 years old;

- the likely presence of a septic system on the property and potential discharge of petroleum products or other vehicle fluids from the body shop/garage;
- a 4-inch polyvinyl chloride (PVC) pipe outfall in a creek, west of the property, possibly associated with the on-Site septic system; and
- old tires, scrap metal, and drums located on the northern portion of the Site.

## 1.5 Report Organization

This report is organized into sections based on the suggested report format provided in the *NYSDEC Municipal Assistance for Environmental Restoration Projects Procedures Handbook (July 2004)*. Sections 1.0 through 7.0 are associated with the remedial investigation portion of the project. Sections 8.0 and 9.0 contain an evaluation of remedial alternatives for addressing environmental impacts that exist at the Site. These sections are summarized as follows.

Section 1.0 – Introduction: This section provides the purpose and objective of the RI and presents Site background information including Site history and previous investigations.

Section 2.0 – Investigation Activities: This section of the report presents the investigative work conducted as part of this project, as well as any modifications made to the scope of work outlined in the approved Work Plan.

Section 3.0 – Physical Site Characteristics: This section describes the physical characteristics such as surficial features, geology, surface and subsurface hydrology, demography, and land/water use.

Section 4.0 – Nature and Extent of Contamination: This section of the report presents the sample analytical results of the various sampling activities discussed in Section 2.0.

Section 5.0 – Contaminant Fate and Transport: This section contains information on the fate and transport of contaminants detected at the Site. This includes a discussion of potential routes of migration, contaminant persistence, and contaminant migration.

Section 6.0 - Exposure Assessment: This section provides a qualitative public exposure assessment for the constituents of concern discussed in Section 4.0.

Section 7.0 – Summary and Conclusions: This section summarizes the findings of the investigative work that was conducted as a part of this project and provides recommendations for additional work, if necessary.

Section 8.0 – Identification and Development of Alternatives: This section of the report discusses the alternatives intended to address environmental impacts at the Site. The constituents of interest and remediation goals are also identified in this section.

Section 9.0 - Detailed Evaluation of Alternatives: This section of the report presents a detailed evaluation of the remedial alternatives for addressing the environmental impacts at the Site. The recommended alternative is also identified.

## **2.0 Investigation Activities**

The remedial investigation included the following tasks:

- A Site survey;
- Hazardous materials inventory and waste characterization;
- Asbestos Pre-demolition Survey;
- Private well survey;
- Collection of six (6) surface soil samples;
- Collection four (4) sediment samples;
- Geophysical survey;
- Thirteen (13) test pit excavations;
- Floor drain and sub-slab investigation;
- Installation of twenty (20) soil borings;
- Installation, development, and sampling of four (4) groundwater monitoring wells;  
and
- Aquifer testing.

Activities were performed in accordance with the approved *Remedial Investigation Work Plan* (Lu Engineers, January 2009), as described below.

### **2.1 Site Survey**

A Lu Engineers' NYS Licensed Surveyor conducted a Site survey to identify property boundaries, existing features, and monitoring wells. This information was used to create a base map of the Site using the NAD 83 UTM Zone 18 (NYTM) coordinate system to show locations of all sample points. All other sample locations, including test pits and soil boring locations, were located using a Trimble GeoXT Global Positioning System (GPS) unit, capable of achieving sub-meter accuracy, and plotted on the survey map.

### **2.2 Building Survey and Sampling**

An asbestos and hazardous materials survey was completed by Lu Engineers in January and February 2009, prior to building demolition. The survey included both the garage and the main building. Results of the asbestos survey were provided in the *Main Building Pre-Demolition Asbestos Survey Report* (Lu Engineers, February 2009) and the *Garage Pre-Demolition Asbestos Survey Report* (Lu Engineers, February 2009), provided in the *Construction Completion Report* (Lu Engineers, January 2011).

The survey identified asbestos-containing window glazing and roofing materials in the garage. Asbestos-containing linoleum and roof sealant was identified in the office/storage building. Asbestos abatement is described in the *Construction Completion Report* (Lu Engineers, January 2011), provided under separate cover.

An inventory of hazardous materials was conducted in February 2009 to identify and quantify suspected hazardous materials and to characterize the materials for proper disposal. One waste characterization sample (CS-WC-1) was collected from the 55-gallon drum of unknown material

located adjacent to the garage. Lab results identified the drum contents as styrene and it was sent for off-site disposal as part of the IRMs. Hazardous waste disposal documentation is included in the *Construction Completion Report* (Lu Engineers, January 2011).

### 2.3 Surface Soil Sampling

A total of six (6) surface soil samples (SS-01 through SS-06) were collected from fill areas on April 27, 2009. Sample SS-06 was collected in the area where rusty drums were found, at the rear of the property. Sample locations are shown of Figure 2 – Sample Location Plan.

Samples were collected from 0-2 inches below the vegetative cover using a pre-cleaned stainless steel spoon or hand trowel to transfer soil into glass sample jars. Surface Soil Sample Logs are included in Appendix B. Samples were stored on ice in a cooler prior to submittal to Paradigm Environmental Services, Inc. (Paradigm), an ELAP-approved subcontracted laboratory. The samples were analyzed for the following parameters:

- Target Compound List (TCL) Volatile Organic Compounds (VOCs) (EPA Method 8260)
- TCL Semi-Volatile Organic Compounds (SVOCs) (EPA Method 8270);
- Target Analyte List (TAL) Metals; and
- PCBs (EPA Method 8082).

In addition, samples SS-01, SS-04, and SS-06 were also analyzed for Pesticides (EPA Method 8081). Results of the sampling are discussed in Section 4.0.

### 2.4 Sediment Sampling

Three (3) sediment samples were collected from the drainage creek located along the western edge of the Site on April 27, 2009. One sample was collected from creek bed sediments near the outfall of the unknown PVC pipe (SD-01), one sample from down-gradient sediments (SD-02), and one sample from an up-gradient location (SD-03). A sediment sample (SD-04) was also collected from the bottom of the oil/water separator discovered during the test pit investigation. Sample locations are shown on Figure 2.

All sediment samples were submitted to Paradigm for analysis of TCL VOCs, TCL SVOCs, Metals, and PCBs. In addition, sample SD-02 was also analyzed for Pesticides.

Results of the sampling are discussed in Section 4.0.

### 2.5 Interim Remedial Measures (IRMs)

IRMs were completed during the RI to facilitate investigation beneath the buildings, remove potential contaminant sources associated with USTs and petroleum-impacted soil, and mitigate potential human exposures and off-site migration of contaminated surface soils and sediments. The IRM portion of this project consisted of the following:

- Hazardous material removal/disposal;
- Asbestos abatement;

- Building demolition, slab removal, and hydraulic lift removal;
- Pump island removal;
- Removal of a 250-gallon fuel oil AST;
- Removal of three (3) 2,000-gallon and one (1) 1,000-gallon gasoline USTs;
- Excavation and disposal of 368 tons of petroleum-impacted soil; and
- Placement of cover material over impacted surface soil and sediments.

These actions are described in the *Construction Completion Report* (Lu Engineers, January 2011), provided under separate cover.

A total of eight (8) tank closure samples (TC-01 through TC-08) were collected from excavation sidewalls during the IRM. Sample locations are shown on Figure 2. Analytical results are summarized in Table 3-3. Laboratory reports are included in Appendix C, as well as the *Construction Completion Report*.

## **2.6 Floor Drain and Sub-Slab Investigation**

Prior to slab demolition, Lu Engineers conducted dye testing in an attempt to locate the source of the PVC discharge pipe identified in the drainage creek. The restroom and floor drains in the garage were not found to discharge to the unknown pipe. Sanitary waste from the restroom discharged to a septic tank located north of the garage building. All floor drains were clogged with sediment and could not be dye tested.

During slab removal, Lu Engineers observed and screened sub-slab soils with a MiniRAE 2000 photoionization detector (PID). All floor drains were traced and removed during slab demolition. A floor drain located in the center of the garage was traced to an oil/water separator pit located between the two former buildings (see Figure 2). The outfall of the oil/water separator pit could not be determined during this investigation.

A second floor drain, located in the southeast corner of the former garage, ran east and appeared to discharge just outside the building. A sample was collected from sediments in the floor drain to determine if hazardous materials may have been discharged to the drain. The “floor drain pipe” sample was submitted for analysis of VOCs, SVOCs, RCRA Metals, and PCBs. No evidence of contamination was detected in the sample. The laboratory analytical report is included in Appendix C.

A 1,000-gallon gasoline UST (Tank 004) was discovered partially beneath the former office/storage building, as shown on Figure 2. An apparent former service pit was also discovered beneath the western portion of the office/storage building (see Photo No. 4).

A test excavation was completed beneath the basement slab in the former office building to assess sub-slab soil conditions (see Photo No. 5). Two soil samples (TP-01A and TP-01B) were collected directly beneath the slab, at a depth of approximately 7-8 feet below grade. Sample locations are indicated on Figure 2. Groundwater was observed seeping into the test excavation and a slight sheen was noted on the water. The samples were submitted to Paradigm for

analysis of VOCs, SVOCs, Metals, PCBs, and Pesticides. Analytical results are summarized in Tables 3-1 and 3-2 and in Section 4.0.

## **2.7 Geophysical Survey**

On June 9, 2009, Lu Engineers utilized a Geonics EM-61 Mark II magnetometer and a Mala Geoscience, Inc. Easy Locator ground penetrating radar (GPR) unit to survey the Site for USTs, drainage structures, and other subsurface anomalies. The survey included five grids covering accessible areas of the southern portion of the property. Data generated during the survey was stored by the instrument and later downloaded to a computer for contouring using Surfer 8 by Golden Software, Inc. The resulting geophysical maps are presented on Figure 3.

Twelve (12) significant anomalies were identified by the geophysical survey, as summarized below.

Grid 1 – located on the southwestern portion of the property; included a portion of the footprint of the former office/storage building. Anomaly #1 was a large anomaly, including three (3) fill pipes, identified on the southwestern boundary of the Site. Anomaly #2 was associated with the catch basin grate and drainage line. Anomaly #13 was identified on the northern edge of the grid, which was later determined to be related to a fourth UST located beneath the former building.

Grid 2 – located in the south-central portion of the Site, between the two (2) former buildings. Anomaly #3 was a strong anomaly in the right-of-way caused by metal in the concrete pump island foundation. Anomaly #4 was determined to be underground electrical conduit.

Grid 3 – located on the southeastern portion of the Site including the footprint of the former garage building. Four (4) anomalies were identified: Anomaly #5 was caused by the water shut-off valve in the right-of-way; Anomaly #6 was associated with an underground hydraulic lift in the central portion of the former garage building; Anomaly #7 was related to a floor drain, and Anomaly #14 on the north edge of the grid was later found to be caused by an underground hydraulic oil reservoir, as indicated on Figure 3.

Grid 4 – located north of the former buildings, in the fill area. Anomaly #8 identified the location of a septic tank; Anomaly #9 was due to interference from an aboveground drum; Anomaly #10 indicated the location of an oil/water separator pit; and Anomaly #15 was later determined to be caused by buried scrap metal.

Grid 5 – located north of Grid 4, in the fill area. A cluster of anomalies (identified as Anomaly #11) were found along the eastern edge of the grid. Test pits later revealed that reinforced concrete debris was buried in this area. Anomaly #12 was a series of anomalies on the southwest portion of the Grid 5, and also on Grid 4. Test pits uncovered buried metal car parts in this area.



## **2.8 Test Pits**

A total of 12 test pits (TP-1 through TP-12) were excavated by Town of Clarkson municipal forces with guidance from Lu Engineers. The purpose of the test pits was to investigate anomalies identified by the geophysical survey. Test pit locations are shown on Figure 2 – Sample Location Plan.

On June 19, 2009, nine test pits (TP-1 thru TP-9) were excavated by Town forces using a conventional backhoe. Lu Engineers screened excavated materials with a PID and recorded observations on Test Pit Logs (Appendix B). TP-1 identified three 2,000-gallon USTs on the southwest corner of the property, as depicted on Figure 2. TP-3 uncovered a septic tank, which serviced the garage restroom and appeared to be in good condition with no evidence of contamination (i.e., sheen, odors). An apparent oil/water separator pit was discovered at location TP-4 (see Photo No. 6). The pit consists of a concrete box with a PVC inlet and outlet pipe.

An additional test pit, TP-10, was completed during the tank removal IRM on July 1, 2009 to investigate soils beneath the former service pit, described in Section 2.6 above. A sample (TP-10-08) was collected from a depth of 6-8 feet below grade where strong petroleum odors and elevated PID readings were observed (see Test Pit Log – Appendix B). Analytical results are summarized in Tables 3-1 and 3-2 and discussed in Section 4.0.

On July 14, 2009, test pits TP-11 and TP-12 were excavated in the drum area at the rear of the property, as indicated on Figure 2. No buried objects or evidence of contamination was observed.

## **2.9 Monitoring Well Installation and Sampling**

Four (4) groundwater monitoring wells (MW-1 through MW-4) were installed to evaluate the extent of impacted groundwater. Monitoring well locations are shown on Figure 2 and Well Construction Diagrams are included in Appendix B.

### **2.9.1 Well Installation**

Groundwater monitoring wells were installed by Nothnagle Drilling, Inc., with oversight by Lu Engineers, on August 10-12, 2009. Wells MW-1, MW-2 and MW-4 were installed as two-inch diameter flush-mounted monitoring wells. MW-3, located at the north end of the property, was installed as a two-inch diameter monitoring well with an above grade protective steel casing.

All well borings were advanced using 4.25-inch inner diameter hollow-stem augers to refusal on bedrock. Upon reaching competent bedrock, boreholes were advanced using rotary techniques and coring equipment to reach the total well depth, which ranged from 16 to 23 feet. A two-inch diameter Schedule 40 PVC well screen was placed in each boring, approximately five feet below the water table. Wells were installed with screens set within the inferred range of seasonal groundwater elevation change to facilitate detection of potential floating hydrocarbons. Wells MW-1, MW-2, and MW-4 were screened across the bedrock/overburden interface. MW-3 was screened entirely

in bedrock. Specific well details are shown on the Well Construction Diagrams (Appendix B).

Sub-surface soil samples were collected from each of the well borings at four-foot intervals and screened for VOCs with a PID. Soils were classified and recorded on well boring logs, included in Appendix B. One soil sample was collected from the top of the water table at each well boring and submitted to Paradigm for analysis of VOCs (EPA Method 8260) and SVOCs (EPA Method 8270). Analytical results are summarized in Table 3-1 and in Section 4.0.

Soils brought to the surface during the drilling process were placed on the ground surface, beneath the demarcation layer and soil cover, as directed by NYSDEC.

### **2.9.2 Monitoring Well Development**

The newly installed monitoring wells were developed using a submersible Whale pump on August 13, 2009. Development consisted of gentle surging followed by pumping the wells to draw sediments out of the sand pack and into the well for removal. Development efforts continued until turbidity improved, or the well was purged dry repeatedly. MW-2 recharged very slowly and produced little water.

Well development activities were recorded on Well Development Logs, provided in Appendix B. Water generated from the development of the wells was discharged to the ground surface in the vicinity of the monitoring wells with the permission of the NYSDEC.

### **2.9.3 Groundwater Sampling**

Groundwater samples were collected from each of the four newly installed monitoring wells on September 14-15, 2009. All samples were obtained using peristaltic pumps with dedicated ¼-inch polyethylene tubing, in accordance with Low Flow - Minimal Drawdown Groundwater Sampling Procedures (Puls and Barcelona, 1995). Sampling data was recorded on Low Flow Groundwater Sampling Field Records, provided in Appendix B.

Prior to sampling, the water level at each well was measured with reference to the inner casing elevation and recorded. Field parameters including pH, conductivity, dissolved oxygen, and temperature were measured periodically using a Horriba, Inc. U-22 water quality meter with flow-through cell. Turbidity was measured with a LaMotte, Inc. 2020e turbidity meter. Once keyparameters stabilized, a sample was collected and immediately placed on ice in preparation for delivery to Paradigm.

Groundwater samples were analyzed for the following parameters:

- TCL VOCs (EPA Method 8260)
- TCL SVOCs (EPA Method 8270)
- TAL Metals
- PCBs (EPA Method 8082)

In addition, MW-1, MW-2 and MW-3 were also analyzed for pesticides (EPA Method 8081). Results of the sampling are discussed in Section 4.0 and summarized in Table 4.

## 2.10 Soil Borings and Sampling

Twenty (20) soil borings (designated as GP-01 through GP-20) were completed on February 8-9, 2010. The borings were performed by Trec Environmental, Inc. using a track-mounted Geoprobe® Model 54LT. Borings GP-13, GP-17, GP-18, and GP-20 were located off-site, within the Route 104 right-of-way (ROW). Boring locations are shown on Figure 2. A highway work permit was obtained from the NYSDOT for investigative work within the ROW.

Soil samples were collected at 4-foot intervals until bedrock refusal was reached, at a depth of 4.5 to 11 feet below ground surface (bgs). Shallow bedrock was encountered at 4.5 to 6 feet bgs on the northern portion of the Site. On the southern portion of the Site, refusal occurred at approximately 9 to 11 feet bgs. Lu Engineers screened soil samples for the presence of VOCs with a RAE, Inc. MiniRAE 2000 PID and recorded subsurface soil descriptions on boring logs (Appendix B). Soil conditions are described in Section 3.4.

The following ten (10) samples were selected for laboratory analysis based on PID readings, soil observations, and sample location relative to other samples or significant Site features:

<u>Sample ID</u>	<u>Depth</u>
GP-01	1-3 ft.
GP-04	1-2 ft.
GP-07	5-7 ft.
GP-11	8-10 ft.
GP-12	8-9.4 ft.
GP-13	8-10 ft.
GP-16	7.5-8.5 ft.
GP-18	4.5-7 ft.
GP-19	8-10 ft.
GP-20	8-9.3 ft.

Soil samples were stored on ice in a cooler for shipment to Paradigm. A total of ten (10) subsurface soil boring samples were submitted for analysis of VOCs (EPA Method 8260), SVOCs (EPA Method 8270), and Metals. In addition, six samples were analyzed for PCBs (EPA Method 8082) and four samples were analyzed for Pesticides (EPA Method 8081). Analytical results are presented in Tables 3-1, 3-2, and discussed in Section 4.2.

## 2.11 Aquifer Testing

Hydraulic conductivity testing was conducted at all four monitoring wells on March 26, 2010. This testing was conducted in accordance with the protocols outlined in the approved Work Plan. Pertinent information and data are included in Appendix B.

The hydraulic conductivity testing included the placement of a pressure transducer (In-Situ, Inc. Level Troll 700) and disposable bailer (1 liter slug) into each well and allowing the groundwater surface to reach static level prior to initiating the test. The bailer (slug) was then rapidly removed while the pressure transducer remained in place near the bottom of the well, monitoring the resulting rise in water level data over time. Data was collected by the Level Troll 700 pressure transducer four times per second and stored in a handheld "rugged reader" PDA. The data was later downloaded and used to calculate the hydraulic conductivity for each well using AQTESOLV, Inc. 3.5 computer software.

Once the well returned to static level the test was initiated via the Rugged Reader, logging the data transmitted from the Level Troll transducer to determine the hydraulic conductivity and transmissivity of the soils in the immediate vicinity of each well screen. The slug (bailer) was rapidly withdrawn from the well, evacuating 1 liter of water. As the water level in the well rose back to static level the transducer measured the change in water displacement to the nearest 0.001 of a foot. The rising head data was recorded until the water level returned to approximately 90% of its initial static level.

A rising head test was selected because any water displaced in the well by introducing a solid slug would favorably saturate the unsaturated portion of the sand pack, resulting in erroneous data.

Hydraulic conductivities were calculated using the Bouwer and Rice Method (1976) for unconfined aquifers. Logarithmic graphs for the slug tests are included in Appendix B. Results of the aquifer testing are provided in Section 3.5.

Groundwater monitoring well elevation data and static groundwater level data collected during groundwater sampling (September 2009) were used to calculate groundwater elevations for each well. The groundwater elevations were then used to develop a groundwater potentiometric map, included on Figure 7. A description of the Site hydrogeology is provided in Section 3.5.

## **2.12 Private Well Survey**

As part of the groundwater investigation, a private well survey was performed to locate any private/public water supply wells within ½-mile of the Site. This was completed by contacting the local health department and Town of Clarkson for information. No private wells were identified within a ½-mile of the Site.

## **2.13 Soil Vapor Intrusion Evaluation**

No potential soil vapor intrusion pathways were identified during this investigation; therefore, vapor intrusion sampling was not conducted. The Site is planned for future use as a Veteran's Memorial Park with no buildings.

### **3.0 Physical Characteristics of the Study Area**

Physical characteristics of the study area based on information obtained during investigation activities at the Site are described below.

#### **3.1 Surface Features**

The Site is a 0.71-acre parcel with two buildings that were demolished as IRMs during this investigation. The Site is currently vacant with no remaining structures. The northern portion of the Site is wooded and mainly grass covered. Disturbed areas on the southern portion of the Site are covered with new topsoil and grass.

The topography slopes to the north, towards Lake Ontario. Topographic relief is approximately 429 to 412 feet above mean sea level. The local area is generally flat with the exception of a moderate northward slope immediately north of Ridge Road West (NYS Route 104). This slope is the primary topographic feature of the Site.

#### **3.2 Surface Water Hydrogeology**

A 24-inch diameter culvert pipe and drainage creek are located along the western edge of the Site. This creek is an intermittent stream that flows to the north and dissipates at the northwest property corner. Stormwater runoff from Ridge Road West flows into a catch basin located on the southwest corner of the Site (see Figure 2). This catch basin discharges to the culvert below and flows into the drainage creek. The creek also receives stormwater runoff from residential developments to the north of Ridge Road West.

Stormwater from the Site flows north/northwest into the wooded area and eventually into the drainage creek located on the western edge of the property.

#### **3.3 Geology**

The overburden generally consists of imported fill material, glacial till, and silty soil resulting from weathered shaly bedrock. Ridge Road/Route 104 was the edge of the former Lake Iroquois, a proglacial lake that formed at the end of the last ice age. Lake Iroquois was larger than the current Lake Ontario due to an ice dam in the St. Lawrence River that prevented water from flowing out of the lake. The Site is located near the former shoreline of Lake Iroquois.

The bedrock underlying the Site consists of Queenston Shale of the Upper Ordovician Queenston Shale Formation, approximately 800 feet thick (Fisher, 1970), which was deposited approximately 450 million years ago. The depth to bedrock is approximately 4.5 to 11 feet bgs. Competent rock consists of soft to medium hard red-green shale exhibiting medium to massive bedding and no apparent water-bearing zones within the upper 15 feet of the formation at the Site. The water bearing zone consists of highly weathered shale above competent bedrock.

Two geologic cross sections (A-A' and B-B') were developed for the Site and are included as Figures 5b and 5c, respectively. Cross section A-A' trends north to south and cross section B-B' trends northwest to southeast, as shown on Figure 5a. The cross sections illustrate the lithology

identified in test borings and wells that were advanced as part of this investigation. Cross section A-A' also includes off-site subsurface features within the Route 104 ROW.

### 3.4 Soils

The United States Department of Agriculture (USDA) Soil Conservation Service Soil Survey Geographic Database<sup>1</sup> (SSURGO) indicates that the soil classification at the Site is composed of Cazenovia gravelly loam on the southern portion and Lairdsville silt loam on the northern portion. Cazenovia gravelly loam soils consist of deep, well-drained and moderately well-drained soils that have a medium textured surface layer and moderately fine textured subsoil. Cazenovia soils formed along the perimeter of and within glacial lakebeds. Lairdsville silt loam soil consists of moderately deep, gently sloping, well drained to moderately well-drained soils that have a medium-textured surface layer and a fine textured to moderately fine textured subsoil. Lairdsville soil series formed primarily from the underlying red Queenston Shale. They are predominantly just north of the old Lake Iroquois beach ridge (Route 104/ Ridge Road West) and are evident at the Site.

The southern portion of the Site contains a layer of fill materials varying from one to five feet in thickness, composed of silt, sand, gravel, and some pieces of concrete and asphalt.

As described in the boring logs (Appendix B) and shown on the cross-sections (Figures 5b, 5c), the soils present at the Site consist primarily of silt with lesser amounts of gravel, sand, and clay. The dominant soil type is reddish-brown silt, formed from the shale bedrock underlying the Site.

The lowest layers of soil consist of highly weathered shale bedrock in a silty matrix. The underlying bedrock in this zone has weathered in to soft clasts ranging from medium sand to cobble-size material. This layer is the zone of highest permeability observed on the Site.

### 3.5 Hydrogeology

This section describes the groundwater flow patterns and hydraulic conductivity data for the Site, based on groundwater elevation data and hydraulic conductivity (K) data obtained during slug testing. Slug testing was completed in all four (4) permanent Site monitoring wells (MW-1 through MW-4) in March 2010.

Figure 7 illustrates groundwater elevation contours generated using measurements collected in September 2009 during groundwater sampling and are considered to represent a seasonal low groundwater condition. As shown, groundwater appears to generally flow to the northeast. Groundwater elevations are highest on the southwestern portion of the property near MW-1 and MW-4, and lowest at the northeast property corner, nearest MW-3.

Hydraulic gradients were calculated across two areas of the site, including the Site maximum gradient and across the southwest portion of the Site. Based on the March 2010 groundwater elevations, the maximum hydraulic gradient was calculated between wells MW-4 and MW-3

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<sup>1</sup> United States Department of Agriculture National Resource Conservation Service Web Soil Survey  
<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

from southwest to northeast across the Site and determined to be approximately 0.042 ft/ft. Due to the variability in topography across the site the hydraulic gradient in the southwest portion, where the former USTs and pump island existed, was calculated to represent the hydrogeological conditions in the area where subsurface impacts were detected. This gradient was calculated between wells MW-1 and MW-2, from south to north, and determined to be approximately 0.019 ft/ft.

Rising head slug tests were used to calculate hydraulic conductivity (K) and groundwater velocities. Hydraulic conductivity (the relative mobility of groundwater through soils) values were obtained using the Bouwer and Rice Method (1976) and AQTESOLV for Windows 3.5.

Hydraulic conductivities for the wells tested ranged between  $3.88 \times 10^{-4}$  ft/sec at MW-3 and  $7.22 \times 10^{-5}$  ft/sec at MW-2. Through the analysis of the rising head slug tests conducted on the four monitoring wells, the average hydraulic conductivity for the Site was determined to be approximately  $1.37 \times 10^{-4}$  ft/sec. Hydraulic conductivity data and logarithmic graphs resulting from the slug testing are summarized in Appendix B.

Groundwater velocity, the rate at which groundwater moves across the Site, was calculated from south to north across the Site using the K and hydraulic gradient values derived above. This maximum groundwater velocity calculation was determined by using the Site average hydraulic conductivity value of  $1.37 \times 10^{-4}$  ft/sec, multiplying by the hydraulic gradient between wells and dividing by the average porosity of the Site soils ( $V = K \times I/n$ ). Based on observations made during the installation of soil borings across the Site, the assumed porosity of the soils was estimated to be 0.3.

The Site maximum groundwater velocity calculation was performed between MW-4 and MW-3. This represents the maximum groundwater gradient on Site.. Based on the maximum determined groundwater gradient of 0.042 ft/ft in March 2010, the maximum groundwater velocity across this portion of the Site was calculated to be approximately  $3.0 \times 10^{-5}$  ft/sec (2.59 ft/day).

The groundwater velocity calculated between wells MW-1 and MW-2 in southwest portion of the Site more accurately depicts the velocity in the area in which subsurface contaminants were detected. The slope of the groundwater surface in this portion of the Site dropped gently from south to north, with relief of approximately 0.93 feet vertically over a horizontal distance of 48.4 feet (0.019 ft/ft) in March 2010. The velocity across this portion of the Site was calculated to be approximately  $3.74 \times 10^{-6}$  ft/sec (0.32 ft/day).

Hydraulic conductivity and groundwater level data collected during the RI have indicated the following:

- The soils present at the Site consist primarily of silt with lesser amounts of gravel, sand, and clay.
- Based on groundwater elevations collected in September 2009 the average depth to groundwater across the Site was approximately 12 feet bgs. Based on groundwater elevations collected in March 2010 the average depth to groundwater across the Site was approximately 6 feet bgs. It is inferred that these represent likely seasonal low and high groundwater levels, respectively.

- Hydraulic conductivity measurements for monitoring wells MW-1 thru MW-4 averaged  $1.37 \times 10^{-4}$  ft/sec.
- Maximum groundwater velocity across the Site was calculated to be approximately  $3.0 \times 10^{-5}$  ft/sec (2.59 ft/day).

Slug test data, hydraulic conductivity data, hydraulic gradient and groundwater velocity calculations are provided in Appendix B.

### 3.6 Demography, Land Use, and Water Use

The Site is located in a mainly residential area on the north side of Ridge Road West (NYS Route 104) in the Town of Clarkson, New York. According to 2000 census data published by the U.S. Census Bureau, the Town of Clarkson had a population of 6,072. The local area is occupied by a combination of residential and commercial properties along Ridge Road West. There are no listed schools, daycares, or medical facilities within a half-mile radius of the Site.

The Site is currently zoned for commercial use by the Town of Clarkson and is located within the Suburban Residential, RS-10, zoning district. The intent of the RS-10 zoning district is “to permit the complete suburbanization of the central area of the Town of Clarkson at densities suitable to fully serviced areas”. This allows for farm uses and single-family residences. Special permit uses in this district may also include: multi-family dwellings, office buildings, congregate housing, community and recreational use buildings, farm stands, tree nurseries and greenhouses, public buildings and grounds, animal hospital and/or kennel, day care centers, and seasonal ice cream stands.

The Town of Clarkson Comprehensive Plan indicates planned future use of the Site as a Veteran’s Memorial Park. This would be a passive use park with a paved walking trail, benches, plantings, a memorial, and parking lot. The Town has stated that no buildings will be constructed on the Site.

Public water is available at the Site and to buildings along Ridge Road West.

### 4.0 Nature and Extent of Contamination

In this section laboratory analytical results are compared to the appropriate published standards, criteria, or guidance values (SCGs), as indicated below.

**Soils.** Analytical results are compared to the NYSDEC Soil Cleanup Objectives (SCOs) in 6 NYCRR Part 375-6.8(a) and (b) (effective December 14, 2006). Commercial Use Cleanup Objectives are most applicable to future use of the Site as a Veteran’s Memorial Park. Commercial Use, as defined by the regulation, “includes passive recreational uses, which are public uses with limited potential for soil contact”.

**Groundwater.** Analytical results are compared to the NYS Class GA Ambient Groundwater Quality Standards in 6 NYCRR Parts 700-705 (NYS, 1999b), as well as to guidance values in the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 (NYSDEC, 1998).



A summary of the validated analytical detections are included on Tables 1 through 3. Laboratory reports are included in Appendix C. All Category B data deliverables are provided on disc, and a third-party Data Usability Summary Report (DUSR) is provided in Appendix D.

#### **4.1 Surface Soil**

Surface soil samples were collected at six locations (SS-1 through SS-6), as indicated in Section 2.3. Tabulated analytical results are shown on Table 1. The following is a summary of the results:

- No VOCs were detected above Unrestricted Use SCOs.
- SVOCs were detected above Industrial Use SCOs at SS-02 and SS-04, as shown on Table 1. The SVOCs detected are polycyclic aromatic hydrocarbons (PAHs). PAHs occur from the incomplete combustion of fossil fuels such as coal or oil, and are often found in fill material containing ash, cinders, soot, or creosote. Historic fill material from an unknown source was present on much of the southern portion of the Site, including the locations SS-02 and SS-04. PAH-contaminated surface soils were covered with clean fill during the IRM.
- Barium was detected above Commercial Use SCOs in SS-01, which is located in the area covered with clean fill during the IRM. Barium was also detected above Residential Use SCOs in SS-06, located on the northern portion of the Site. The source of barium detected in surface soil samples is unknown, but has been documented as occurring at sites with historic past uses including automotive painting.
- Other metals including chromium, lead, copper, selenium, and zinc were detected in surface soils above Unrestricted Use, but below Commercial Use SCOs as shown on Table 1. Locations SS-01 through SS-05 were covered with a minimum of one foot clean cover material as an IRM during this investigation.
- No PCBs were detected in the surface soil samples.
- Pesticides 4,4'-DDT and 4,4'-DDE were detected above Unrestricted Use SCOs in sample SS-06, located on the northern portion of the Site. DDE is a breakdown component of DDT, which was once used as an insecticide, but has been banned in the U.S. since the early 1970s. The presence of these compounds in surface soils may be attributed to past agricultural use on the northern portion of the Site.

#### **4.2 Sediment**

Sediment samples were collected at four locations (SD-01 through SD-04), as indicated in Section 2.4. Tabulated analytical results are shown on Table 2. The following is a summary of the results:

- Acetone was detected above the Unrestricted Use SCO in samples SD-02 and SD-03 (81.6 ppb and 71.2 ppb, respectively). Acetone is commonly used in analytical laboratories and often detected in samples as a laboratory artifact.

- PAHs were detected above Industrial Use SCOs in all sediment samples collected. The highest concentrations were present in SD-03, the down-gradient sediment sample. As stated above, PAHs occur as a byproduct of incomplete combustion and are often found in fill material containing ash, cinders, soot, or creosote. They also occur in coal tar-based sealcoats used in parking lots and driveways. The source of PAHs in sediments may also be attributed to run-off of surface soils on the Site containing elevated levels of PAHs, run-off of deteriorated asphalt on the southern portion of the Site, or surface run-off from up-gradient off-site locations, including NYS Route 104. All impacted sediments have been covered with a minimum of one foot of stone or soil cover material as an IRM during this investigation.
- Arsenic was detected in SD-01 above the Industrial Use SCO. Elevated levels of arsenic were not detected in any other sediment samples. Sample location SD-01 was covered with stone during the IRM. Arsenic is commonly associated with historic use of pesticides.
- Copper, lead, and zinc were detected at levels above Unrestricted Use SCOs in sediment samples, as shown on Table 2. All sediment sample locations were covered during the IRM. Each of these contaminants are typically associated with soils and sediments in developed areas.
- No PCBs or Pesticides were detected in the sediment samples.

#### 4.3 Sub-Surface Soils

A total of 27 sub-surface samples were collected during this investigation: three (3) test pit samples, ten (10) Geoprobe® samples, four (4) well boring samples, and ten (10) closure samples collected during the IRM. Tabulated analytical results are shown on Tables 3-1, 3-2, and 3-3. The following is a summary of the results:

- Residual petroleum impacts remain to the south and west of the main tank pit (TC-01 and TC-02) and beneath the former pump island (PI-01) within the Route 104 right-of-way. Elevated PID readings were observed in soils from 7 to 9 feet below grade in the main tank pit, and 4 feet below grade beneath the pump island. Petroleum-related compounds detected above Unrestricted Use SCOs include: 1,2,4-trimethylbenzene, benzene, ethylbenzene, xylene, and naphthalene. All VOCs detected were below Commercial Use SCOs.
- Acetone and methylene chloride were detected above Unrestricted Use SCOs in several soil samples, as shown on Tables 3-1 and 3-3. These compounds are commonly used in analytical laboratories and were detected in the associated blank; therefore, the concentrations detected in the soil samples are considered to be laboratory artifacts.
- Benzo(b)fluoranthene, a PAH, was detected above the Commercial Use SCO in sample TP-01A collected from beneath the former basement slab, at a depth of approximately eight feet below grade. A nearby sample, TP-01B, showed benzo(b)fluoranthene below the Unrestricted Use SCO. The compound was not detected in any other sub-surface soil samples. The former basement was filled during the IRM and the area has been covered with clean soil.

- Several metals were detected above Commercial Use SCOs in sub-slab samples TP-01A and TP-01B, as shown on Table 3-2. Mercury was detected above Industrial Use SCOs in both samples. The metals detected in sub-slab soils may be attributed to the presence of fill material placed on-site prior to building construction.
- Barium was detected above the Commercial Use SCO in samples GP-18, TP-01A, TP-01B, and PI-01; and above the Residential Use SCO in samples GP-01 and GP-20. Elevated levels of barium were also detected in surface soil samples SS-01 and SS-06. The source of barium in Site soils is unknown, but has been documented as occurring at sites with historic past uses including automotive painting.
- No PCBs were detected above Unrestricted Use SCOs.
- The pesticide 4,4'-DDD was detected above the Unrestricted Use SCO in samples GP-18, and sub-slab samples TP-01A and TP-01B. Additional pesticides including 4,4-DDE, 4,4-DDT, dieldrin, and endrin were detected above Unrestricted Use SCOs in the basement sub-slab samples TP-01A and TP-01B. All pesticides detected were below Commercial Use SCOs.

#### 4.4 Groundwater

Four (4) groundwater samples were collected from the Site, as previously indicated in Section 2.10. Tabulated analytical results are shown on Table 4. The following is a summary of the results:

- Benzene was detected above NYS Groundwater Standards in MW-1, MW-2 and MW-4. The highest levels were detected in MW-4 which is immediately down-gradient from the former USTs. Other petroleum-related VOCs were also detected above NYS Groundwater Standards in MW-4, as shown on Table 4. Petroleum impacts appear to be limited to the southern portion of the Site, in the vicinity of former USTs and associated piping. Low-level benzene (2.09 ug/L) was detected in MW-2 located down-gradient from the tanks. Impacted groundwater does not appear to have migrated off-site.
- 1,1,2-Trichloroethane (1,1,2-TCA) was detected above the NYS Groundwater Standard in MW-4. It was not detected in any other groundwater samples; however, low-levels were detected in soil borings GP-07, GP-13, GP-18, and in basement sub-slab sample TP-01B. 1,1,2-TCA is used as an industrial solvent and its presence may be attributed to previous vehicle maintenance activities at the Site.
- No SVOCs were detected above NYS Groundwater Standards.
- Metals including: barium, iron, magnesium, manganese, sodium, and thallium were detected above NYS Groundwater Standards, as shown on Table 4. These compounds are commonly found in groundwater and are most likely attributed to naturally occurring water hardness. The metal concentrations detected are not considered to be of concern to the Site at this time.
- No PCBs were detected in the groundwater samples.

- Dieldrin was detected above the NYS Groundwater Standard in both of the samples analyzed for pesticides, MW-01 and MW-03 (0.039 and 0.036 ug/L, respectfully). This may be an indication of elevated background groundwater concentrations, since it was detected at similar levels throughout the Site.
- Aldrin and endrin, pesticides chemically similar to dieldrin, were also detected above NYS Groundwater Standards in MW-01. Aldrin and dieldrin were commonly used insecticides on agricultural crops such as corn and fruit in the 1950s to early 1970s. EPA banned the use of these pesticides in 1974. Pesticide concentrations detected in groundwater are likely attributed to historical agricultural use of the Site and surrounding area.

## **5.0 Contaminant Fate and Transport**

This Section includes an evaluation of contaminant fate and transport for the Site including identifying potential routes of migration, contaminant persistence, and contaminant migration.

### **5.1 Potential Routes of Migration**

Potential routes of migration identified for the Site include:

- Petroleum-related VOCs migrating off-site in a dissolved groundwater plume;
- Contaminants in sub-surface soils impacting the groundwater;
- Volatilization of VOCs in sub-surface soil and groundwater;
- If impacted soils or groundwater were to be disturbed, indirect migration pathways may include: transport on construction equipment, evaporation, etc.

### **5.2 Contaminant Persistence**

Contamination at the Site is identified as primarily consisting of petroleum-related VOCs in sub-surface soil and groundwater; PAHs and metals in surface soil, sediments, and sub-slab soil; and pesticides in groundwater. Petroleum-related VOCs are degraded aerobically and anaerobically by microorganisms found naturally in the subsurface. PAHs, metals, and pesticides are more persistent in the environment and would not be expected to degrade readily in the sub-surface. The chemical characteristics and fate of contaminants detected above applicable SCGs are summarized in the following table.

Chemical of Concern	Physical Properties	Uses	Reaction with Water	Reaction with Air	Reaction with Soil
<b>Petroleum-related VOCs</b>					
Benzene <sup>1</sup>	Colorless liquid with a sweet odor; flammable	Natural part of gasoline and crude oil.	Highly soluble in water; does not readily adsorb to sediments. May biodegrade in water with a half-life of 103 days.	Highly volatile; half-life in air is 2-20 days.	High mobility in soil; biodegrades in presence of microorganisms
Toluene <sup>1</sup>	Colorless liquid with a pungent odor.	Occurs naturally in crude oil; found in gasoline, paint thinners & lacquers.	Will not readily adsorb to sediments or solid particles. Biodegrades in water with a half-life of 100-1,386 days.	Evaporates quickly into air from soil and water. Half-life in air is 3 days.	Relatively mobile in soil. Readily broken down by microorganisms in soil with a half-life of several hours to 71 days.
Ethylbenzene <sup>1</sup>	Colorless liquid; flammable	Naturally occurring in petroleum. Used in paints and inks	May adsorb to sediments or suspended solids in water. Breaks down in water by reacting with other chemicals. Half-life in water is 10-16 days.	Volatilizes easily into air from soil or water. Takes approximately 55 hours to break down in air.	Moderately mobile in soil. Breaks down by aerobic bacteria in the soil.
Xylene <sup>1</sup>	Colorless liquid with a sweet smell; flammable	Naturally occurring in petroleum. Used as a solvent & paint thinner	Breaks down by microorganisms in groundwater.	Evaporates quickly into air; breaks down in air by sunlight with a half-life of 1-2 days.	Moderately mobile in soil and may leach to groundwater. Broken down by microorganisms in soil.
n-Propylbenzene	Colorless liquid	Found in petroleum and coal. Used as a solvent in textile dyeing and printing.	Biodegrades in water. Does not readily adsorb to suspended solids.	Frequently detected in the atmosphere. Half-life in air is 2 days.	Low mobility in soil. Breaks down by microorganisms in soil.
Isopropylbenzene	Colorless liquid with a sharp gasoline odor; also known as cumene	Used in the manufacture of acetone and phenol. Found in gasoline; natural component in plants.	Will biodegrade in water, but is slowed by adsorption to sediments and solid particles. Half-life in water is 107 days.	Volatile; degrades in atmosphere with a half-life of 2.5 days.	Low mobility in soil due to tendency to adsorb to soil particles. Biodegrades in soil.
1,2,4-Trimethylbenzene	Clear liquid; aromatic	Used as a solvent and paint thinner. Found in gasoline, coal tar, and vehicle emissions.	Does not adsorb to sediments or solid particles; volatilizes from water; biodegrades aerobically.	Volatilizes to air quickly. Breaks down in air with half-life of 12 hrs – 30 days.	Low mobility in soil. Breaks down in soil under aerobic conditions.
<b>Chlorinated VOCs</b>					
1,1,2-Trichloroethane	Clear liquid; pleasant odor	Used as a solvent for fats, oils, waxes, resins, etc. Degradation product of 1,1,2,2-tetrachloroethane	Will not readily adsorb to sediments or solids. Half-life in groundwater of 6 days-16 years. PAHs generally do not volatilize from water and are very stable.	Volatilizes to air; half-life in air is 50 days.	High-moderate mobility in soil. Aerobic degradation occurs slowly with a half-life of 6 mos – 1 year.
<b>PAHs</b>					
Polycyclic Aromatic Hydrocarbons (PAHs)	Colorless, white, or pale yellow-green solids.	Formed by incomplete burning of fossil fuels. Found in vehicle exhaust, creosote, and coal tar.	Do not easily dissolve in water. PAHs adsorb to suspended solids or sediments. Associated with particulate matter that has settled down into sediments	Adsorb to airborne particulates. Degraded in air by photochemical processes with a half-life of <1 day.	Low to no mobility in soil. Most PAHs are extremely stable and do not break down in soil.

Chemical of Concern	Physical Properties	Uses	Reaction with Water	Reaction with Air	Reaction with Soil
<b>Metals</b>					
Barium <sup>1</sup>	Silvery-white metal	Used by the oil and gas industries to make drilling muds. Also used to make paint, bricks, ceramics, glass and rubber.	Barium sulfate and barium carbonate, do not dissolve well in water. Barium chloride, barium nitrate, or barium hydroxide dissolve easily in water usually do not last in these forms for a long time in the environment.	Gets into the air during the mining, refining, and production of barium compounds, and from the burning of coal and oil.	Barium sulfate and barium carbonate, can last a long time in the environment. Barium chloride, barium nitrate, or barium hydroxide do not last in these forms for a long time in the environment.
Arsenic	Yellow, gray, or metallic solid. Mineral found in Earth's crust.	Used in alloys for semi-conductors, wood preservatives, herbicides/pesticides, paint, and coal burning.	Strongly sorbs to sediments. Does not volatilize. Some forms of arsenic are soluble and may travel with groundwater flow.	Adsorbs to airborne particulates.	Low mobility in clay soils; higher in sandy soils. More mobile in higher pH soils. Methylated by microorganisms in soil.
Copper	Reddish, malleable metal. Conducts electricity.	Smelting, piping, pesticides, wood preservatives, and electrical wiring. Found naturally in rock. Avg. concentration in shales is 45 ppm.	Associated with particulate matter that has settled down into sediments. Usually bonds with organic matter.	Absorbed to airborne particulates and may be removed through gravitational settling, dry deposition, in-cloud settling and washout.	Relatively immobile and can persist in soil for a long time. Usually bonds with organic matter.
Lead	Bluish-gray soft metal.	Used in solder, alloys, batteries, paints, and as a former gasoline additive.	Associated with particulate matter that has settled down into sediments. Generally insoluble.	Once released into the atmosphere, lead particles disperse and may be removed by wet or dry deposition.	Relatively immobile and can persist in soils for long periods of time. Adsorption is based on soil pH, type, size, organic matter, and other factors.
Mercury	Silver-white heavy liquid metal	Component in electrical, medical, and lab instruments. Found in pre-1991 paints.	Dissociates in water. Methylation by microorganisms can occur in sediments.	Can volatilize to air. Removed by deposition to land or water.	Dissociates in moist soil and relatively immobile once dissociated. Does not leach from soil with low pH. Binds to organic matter.
<b>Pesticides</b>					
Dieldrin, Aldrin, Enrin	Colorless, odorless solid	Insecticide/rodenticide used in agriculture prior to 1974.	Adsorbs to suspended solids and sediment. Broken down by hydrolysis with a half-life of >4 years.	Can volatilize from soil surface. Half-life in air of vapor phase is 42 hours. Particulate phase is removed by deposition.	Endrin and Aldrin break down to form Dieldrin, which is the most persistent. Half-life of dieldrin in soil is approx. 7 years.

<sup>1</sup> Source: National Library of Medicine, Hazardous Substance Data Bank (HSDB).  
<Toxnet.nlm.nih.gov>

In addition to biodegradation, VOC concentrations in the groundwater would presumably decrease as the distance from the source area is increased due to processes such as advection, dispersion, sorption, and diffusion.

### **5.3 Contaminant Migration**

Contaminant migration patterns are further described in this section. Primary constituents at the Site detected above regulatory criteria are petroleum-related VOCs in groundwater; PAHs and metals in surface soil, sediments, and sub-slab soil.

The source of the VOC contamination appears to be from former USTs and associated piping located on the southern (developed) portion of the Site. It is evident that past releases of gasoline from USTs have migrated downward through the soils and impacted groundwater. Groundwater impacts are most significant in the area of MW-4, located north of the former USTs. Dissolved-phase VOCs appear to have migrated with groundwater flow to the northeast, as evidenced by low-level benzene detected in MW-2. No indication of off-site groundwater contaminant migration was found during this investigation.

Surface soil and sediment impacts were addressed during the IRM by placement of approved cover material to prevent migration of contaminants and potential human contact. PAHs and metals identified in Site soils have relatively low mobility in the subsurface and would not be expected to impact the underlying groundwater.

#### **5.3.1 Factors Affecting Contaminant Migration**

Factors affecting contaminant migration include advection, dispersion, molecular diffusion, adsorption of constituents onto soil particles, microbial and chemical degradation, and partitioning of constituents between soil, groundwater, and air.

Groundwater contamination present at the Site generally consists of petroleum-related VOCs. These compounds are typically soluble in water and do not adsorb to sediments or solid particles, therefore, they are relatively mobile in the environment. Natural breakdown and dispersion of petroleum compounds in the subsurface limits the extent of contaminant migration.

Groundwater flow at the Site is toward the north, however, it does not appear that contamination has migrated off-site since only very low levels were detected in the down-gradient well MW-2. Hydraulic conductivities calculated for the Site range between  $3.88 \times 10^{-4}$  ft/sec and  $7.22 \times 10^{-5}$  ft/sec. Groundwater velocities on the Site vary from approximately  $3.74 \times 10^{-6}$  ft/sec to  $3.0 \times 10^{-5}$  ft/sec (0.32 ft/day to 2.59 ft/day, respectively).

### **6.0 Exposure Assessment**

The purpose of this exposure assessment is to qualitatively evaluate the contaminants of concern and the affected media with respect to potential exposure pathways and human receptors. This assessment is done to evaluate the potential for exposure routes to be present in order to facilitate the development of a remedial action plan.

The following exposure pathways were evaluated:

- Ingestion of impacted soil and/or groundwater;
- Inhalation of vapors and/or dust; and
- Direct contact with impacted soil/groundwater.

Potential human receptors in the vicinity of the Site include:

- Residents that live nearby;
- Visitors to the Site; and
- Construction workers or Town forces involved with excavation in impacted areas.

### **6.1 Qualitative Public Exposure Assessment**

The following is an evaluation of the exposure pathways and their status with respect to the Site.

#### Ingestion of Contaminated Soil and/or Groundwater

Impacted soils are present at a depth of at least four feet below the surface, thus making ingestion of soils an unlikely exposure pathway. Impacted sediments in the drainage ditch have been covered with a 12-inch layer of cobbles to prevent direct contact.

There are currently no drinking water wells on the Site or within a 1/10-mile radius and a public water supply is available. Deed restrictions may be necessary to restrict future use of groundwater at the Site. Groundwater sample results do not indicate that contaminated groundwater is migrating off-site since very low levels were detected in the on-site down-gradient well MW-2.

#### Inhalation of Vapors

The potential exists for volatilization of petroleum-related VOCs from impacted groundwater and sub-surface soil. Exposure to soil vapor could occur during excavation or disruption of soils. Onsite workers could be exposed to VOCs during future development if excavation of impacted soils (8-12 feet bgs) were to occur. Potential future exposures can be mitigated through implementation of a Site Management Plan.

Soil vapor intrusion is not a concern since there are no buildings on the Site and no plans for future structures. Soil and groundwater sample results do not indicate the potential for migration of vapors to adjacent residences.

Inhalation of vapors could be a concern for utility workers if excavation were to occur within the right-of-way in the vicinity of the former pump island, where petroleum impacts were noted. Excavation of soils in the former pump island area is not anticipated.

#### Direct Contact with Impacted Soils and/or Groundwater

There is currently no direct contact with impacted soil and/or groundwater at the Site because the Site is vacant and impacted surface soils and sediments were covered with a minimum of two feet clean cover material.



The potential exists for future exposures if workers come into contact with impacted media during excavation or Site development activities. A demarcation layer was placed on top of impacted surface soils prior to placement of clean fill to identify the depth of contaminated soils. If impacted soils must be disturbed, a Soils Management Plan will outline how to properly handle the soils. All work should be performed in accordance with an approved Health and Safety Plan (HASP), knowledge of Site conditions, and associated documentation. Therefore, the risk for direct contact is considered low.

Direct contact with groundwater is unlikely since groundwater is present at an average depth of 6-12 feet below the surface and public water is available.

## **6.2 Environmental Exposure Assessment**

Information regarding rare or state-listed animals and plants, significant natural communities, and other significant habitats in the vicinity of the Site was obtained from the New York Natural Heritage Program database (Appendix E). The threatened Pawpaw, a vascular plant, was listed in the vicinity of the Site. A Lu Engineers' senior environmental scientist surveyed the Site and found no occurrence of the threatened species. Furthermore, no appropriate habitat for endangered species is present at the Site.

The Fish and Wildlife Resources Impact Analysis (FWRIA) Decision Key was completed for the Site, as outlined in DER-10, and is included as Appendix E. It was determined that no FWRIA is needed since the Site is not a habitat for endangered, threatened, or special concern species; and the investigation does not indicate that groundwater contamination has migrated off-site.

## **7.0 Summary and Conclusions**

### **7.1 Investigation Summary**

Investigations performed as part of this project included:

- Evaluation of surface soil conditions;
- Evaluation of sediment conditions;
- Evaluation of sub-slab soil conditions;
- Evaluation of subsurface soil conditions;
- Evaluation of groundwater conditions; and
- Evaluation of building materials for the presence of asbestos or other hazardous materials.

The investigation included laboratory analysis of six (6) surface soil, four (4) sediment, sixteen (16) subsurface soil including two sub-slab soils, and four (4) groundwater samples. Field screening with real-time instruments was used to supplement the laboratory data.

IRMs were completed during the investigation, including: asbestos abatement and demolition of all onsite structures; removal of four (4) USTs, an underground hydraulic lift, a catch basin,

septic system, former pump island, and 368 tons of petroleum-impacted soils; placement of approximately 1,000 cubic yards of clean cover material over impacted surface soils; and placement of stone cover over drainage ditch sediments.

Off-site investigation included completion of four (4) soil borings within the adjacent Route 104 right-of-way. A former concrete pump island was also removed from the right-of-way.

#### **7.1.1 Nature and Extent of Contamination**

Primary contaminants detected in groundwater at the Site include petroleum-related VOCs. The source of VOCs appears to be from former USTs and associated piping located on the southwest corner of the Site. The highest VOC concentrations in groundwater were detected in MW-4, located just north of the former USTs, as shown on Figure 6. Groundwater flow is generally toward the northeast. Low-level benzene was detected in wells MW-1 and MW-2; however, it does not appear that groundwater contamination has migrated off-site.

Petroleum-impacted soils in the source area were removed during the IRM; however, residual impacted soils remain off-site to the south and west of the main tank pit at a depth of approximately 7-9 feet bgs, and beneath the former pump island in the Route 104 right-of-way at a depth of approximately 4 feet bgs. Sample analytical results show that all VOCs detected in subsurface soils were below Residential Use SCOs.

Heavy metals and PAHs were detected at levels above Industrial Use SCOs in surface soils and drainage creek sediments. Impacted surface soil/sediments were covered with clean cover material during the IRM. Placement of cover over impacted soils/sediments was performed to limit off-site migration of contaminants and prevent human contact with impacted soils.

PAHs and heavy metals were also detected above Commercial Use SCOs beneath the basement slab of the former building (approximately 9 feet bgs). The basement was filled with concrete pieces and clean soil during the IRM. PAH compounds are commonly found in fill material and are most likely attributed to the presence of imported fill material beneath the basement slab.

Concentrations of barium were detected above Commercial Use SCOs in subsurface soils at a depth of seven feet bgs at location GP-18, at a depth of four feet bgs below the former pump island, in one surface soil sample (SS-01), and in three groundwater wells on the southern portion of the property (MW-01, MW-02, and MW-04). The source of the detected barium is not known, but may be related to former automotive painting.

#### **7.1.2 Fate and Transport**

Potential routes of migration identified for the Site include:

- Petroleum-related VOCs migrating off-site in a dissolved groundwater plume;
- Contaminants in sub-surface soils impacting the groundwater;
- Volatilization of VOCs in sub-surface soil and groundwater;

- If impacted soils or groundwater were to be disturbed, indirect migration pathways may include: transport on construction equipment, evaporation, etc.

Surface soil and sediment contaminants were addressed during the IRM by placement of approved cover material to prevent migration of contaminants and potential human contact. PAHs and metals identified in Site soils have relatively low mobility in the subsurface and would not be expected to impact underlying groundwater.

Petroleum-related VOCs are degraded aerobically and anaerobically by microorganisms and other processes in the subsurface. In addition to biodegradation, VOC concentrations in groundwater would presumably decrease as the distance from the source area is increased due to processes such as advection, dispersion, sorption, and diffusion. Groundwater flow is generally toward the northeast, as shown on Figure 6. Groundwater impacts appear to be limited to the Site, as only low-level benzene (2.09  $\mu\text{g/L}$ ) was detected above NYS Groundwater Standards in the on-site down-gradient well MW-2.

## 7.2 Conclusions

Future migration of impacted groundwater is not anticipated since the contaminant source (i.e., USTs and impacted soil) was removed as an IRM during this investigation, and existing contaminant concentrations in groundwater are expected to decrease due to natural attenuation in the subsurface.

Residual soil/sediment contamination should not impede future planned use of the Site as a Veteran's Memorial Park. Human exposures and contaminant migration are not a concern provided that the cover material placed onsite as an IRM is adequately maintained. If future Site redevelopment involves excavation or disturbance of the impacted soil, there is a potential for human exposures or contaminant migration. Potential future exposures shall be addressed by the final Site remedy. This can be controlled through implementation of a Site Management Plan, including protocols for proper handling of impacted soils.

Contaminants detected off-site were below Residential Use SCOs, with the exception of barium, and appear to be limited to the Route 104 right-of-way in the vicinity of the former pump island, at a depth of at least four feet below grade.

### 7.2.1 Data Limitations and Recommendations for Future Work

No significant analytical data limitations were identified during the data usability review. Analytical results are estimated for groundwater samples, TP-01A, TP-01B, TC-01, TC-02, TC-03, and well boring samples MW-1 through MW-4 since the sample cooler temperature was received out of range (i.e.,  $>6^{\circ}\text{C}$ ). Validated results are shown on the attached Tables. Data Usability Summary Reports (DUSRs) were prepared by Vali-Data of WNY, LLC and are included as Appendix D.

## 8.0 Identification and Development of Alternatives

This section of the report presents the identification and development of remedial action objectives and alternative remedies to address contamination identified during the RI.

### 8.1 Remedial Action Objectives

Remedial Action Objectives (RAOs) are objectives for the protection of public health and the environment and are developed based on contaminant-specific standards and guidance to address contamination at the Site. Based on the RI findings, the following RAOs have been developed:

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards;
- Prevent ingestion and direct contact with impacted soils and sediments;
- Prevent contact with, or inhalation of, VOCs from petroleum-impacted groundwater at the Site; and
- Prevent migration of contamination that would result in impacts to surface water or groundwater.

#### 8.1.1 Contaminants of Concern

A 'contaminant of concern' is a contaminant that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are considered contaminants of concern. The contaminants of concern identified at this Site are primarily petroleum-related VOCs in groundwater; PAHs in sediments and surface soils; and metals in sediments, surface soil, and subsurface soil. The applicable standards, criteria, and guidance values (SCGs) for the Site are listed below.

**Soil-** NYSDEC SCOs in 6 NYCRR Part 375-6.8(a) and (b) (effective December 14, 2006). Commercial Use Cleanup Objectives are most applicable to future use of the Site, based on planned passive recreational use as a Veteran's Memorial Park. Compounds detected above Commercial Use SCOs are listed below and summarized in the attached Tables.

<u>PAHs</u>	<u>Metals</u>
benzo(a)anthracene	barium
benzo(a)pyrene	arsenic
benzo(b)fluoranthene	copper
dibenzo(a,h)anthracene	lead
	mercury

**Groundwater-** NYS Class GA Groundwater Quality Standards listed in 6 NYCRR Parts 700-705 (NYS, 1999b) and, in the absence of a standard, guidance values in the NYSDEC Technical and Operational Guidance Series 1.1.1 (NYSDEC, 1998). These standards are based on groundwater as a drinking water source. Compounds of concern detected above applicable groundwater standards or guidance values are listed below and summarized in Table 4.

<u>VOCs</u>
1,2,4-trimethylbenzene
benzene
ethylbenzene
isopropylbenzene
n-propylbenzene
toluene
1,1,2-trichloroethane
xylene

A more complete presentation of analytical results is provided in Sections 4 and 5 of this report.

#### **8.1.2 Development of Remediation Goals**

The process of defining the goals of a proposed remedial action is based on an engineering analysis of the expected benefits of the remedial effort as defined in the context of various evaluation criteria. As required in 6 NYCRR Part 375, the following criteria are used to evaluate the effectiveness of remedial alternatives for the Site:

Protection of Public Health and the Environment. This criterion is an evaluation of the remedy's ability to eliminate or mitigate risks to human health and the environment during and after implementation of the remedy. This goal must be met in order for an alternative to be considered for selection.

Compliance with Standards, Criteria, and Guidance. This criterion addresses whether the selected remedial alternative will ultimately result in compliance with environmental laws, regulations, and other standards and criteria. In addition, this includes the consideration of guidance which the NYSDEC determine to be applicable on a case-specific basis. This criteria must be satisfied in order for an alternative to be considered for selection.

Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedy after implementation. This includes remaining risk to public health or the environment, adequacy and reliability of controls over time, and the ability to meet RAOs in the future.

Reduction of Toxicity, Mobility, or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility, and volume of the wastes at the Site.

Short-term Impacts and Effectiveness. This is an evaluation of the potential short-term adverse impacts and risks of the remedy upon the community, site workers, and the environment during implementation of the remedy. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Implementability. The implementability criterion evaluates the technical and administrative feasibility of implementing a remedy. Technical feasibility includes the difficulties associated with construction and the ability to monitor the effectiveness of the remedy. Administrative feasibility relates to the availability of necessary personnel and materials, ability to obtain approvals, access, etc.

Cost Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. This criteria is used to select a remedy where cost of the remedy is proportional to overall effectiveness. Cost is generally the last criteria to be evaluated.

Land Use. This criterion considers the current, intended, and reasonably anticipated future use of the Site in the selection of the soil remedy.

Community Acceptance. This criterion evaluates the public's comments, concerns, and overall perception of the remedy. Community acceptance will be evaluated after the public comment period, as part of the final remedy selection and approval.

## **8.2 General Response Actions**

General response actions are media-specific procedures used to meet established RAOs for the Site. These procedures involve remediation approaches that consist of various technologies and process options. General response actions for environmental media commonly include treatment, containment, extraction and/or disposal, and institutional actions (i.e., deed restrictions).

Interim remedial actions conducted in 2010 removed the source of the groundwater contamination (i.e., USTs and petroleum-contaminated soil). In addition, soil and stone cover material was placed over contaminated surface soils and drainage ditch sediments to mitigate potential exposures and prevent migration of contaminants. These actions are detailed in the *Construction Completion Report* (February 2011) submitted under separate cover.

This analysis recognizes the completed interim remedial actions and will evaluate response actions (i.e., institutional controls) to address remaining soil and sediment contaminants exceeding Commercial Use SCOs and VOC contamination in groundwater above NYS Groundwater Standards.

As required by regulation 6 NYCRR Part 375-4.8(d)(2), this analysis will also consider an alternative to achieve the Unrestricted Use SCOs in 6 NYCRR Part 375-6.8(a), which are considered to be representative of pre-disposal conditions at the Site. This option would allow any property use including the raising of livestock; although it should be noted that current zoning and land use plans would preclude the Site from such use. Regardless, the unrestricted use option will be included as a comparison to evaluate other alternatives. The Unrestricted

Use evaluation will include response actions to address VOC contamination in groundwater above NYS Groundwater Standards, residual contamination in subsurface soil and sediments exceeding Unrestricted Use SCOs, and a small area of surface soil in the vicinity of SS-06 exceeding Unrestricted Use SCOs.

#### 8.2.1 Groundwater

Groundwater has been impacted by VOCs from former gasoline station operations. The extent of the plume appears to be limited to the southwest portion of the Site, near the former USTs (see Figure 6). As calculated using ArcGIS Spatial Analyst, the area of petroleum-impacted groundwater at the Site exceeding NYS Groundwater Standards is estimated to be 4,613 ft<sup>2</sup>. Assuming a target zone of 2.35 feet and a porosity of 30% based on RI findings, the volume of the plume is estimated at 24,327 gallons. As part of the preliminary screening process, presumptive/proven remedial technologies in DER-15 were considered, as shown in the following table.

**Preliminary Screening of Groundwater Remedial Actions**

Presumptive Remedy	Feasible	Rationale
Monitored Natural Attenuation	Yes	Petroleum compounds breakdown naturally over time.
Institutional Controls	Yes	Deed restrictions and implementation of a Site Management Plan can meet the RAOs for the Site.
In-Situ Chemical Oxidation/Bioremediation	No	Traditionally ineffective in fractured rock aquifers. May be feasible, but need more detailed characterization of bedrock at the Site to determine if this would be an effective remedial method.
Air Sparging	No	Largely ineffective in fractured rock aquifers due to the presence of preferential pathways.
Separate-Phase Recovery	No	No free product present.
Groundwater Extraction and Treatment	No	Water-bearing zone is too small to create capture zone for an effective pump & treat system.
Two-Phase Vacuum Extraction	Yes	Common remedial method for removing VOCs from groundwater in low yield formations.

No potential completed exposure pathways were identified in the exposure assessment. In addition, groundwater contamination does not appear to be migrating off-site. Therefore, the established RAOs can be met through implementation of institutional controls. For evaluation of the Unrestricted Use Option, additional remedial actions will be considered, as described in Section 8.3.2.

### 8.2.2 Soil

Surface soils impacted with PAHs and metals above Commercial Use SCOs were capped with a soil cover as an IRM, as shown on Figure 4. Contaminated soils remain beneath the clean cover material, at a depth of 2 to 3 feet below grade. The total volume of soil beneath the demarcation layer that exceeds Commercial Use SCOs is estimated to be 792 tons, assuming a removal thickness of 4.5 feet.

Mercury, lead, copper, barium, and a PAH compound were detected above Commercial Use SCOs in test pit samples collected from beneath the basement slab in the former office building, as shown on Figure 6. The basement was filled during the IRM and impacted soils occur beneath the concrete slab at a depth of approximately 8 to 11 feet below grade. The volume of sub-slab soil exceeding Commercial Use SCOs is estimated to be 35 tons.

Response actions were evaluated to ensure long-term effectiveness of the IRMs in meeting the remedial objectives for the Site. As part of the preliminary screening process, presumptive/proven remedial technologies in DER-15 were considered, as shown in the following table.

**Preliminary Screening of Soil Remedial Actions**

<b>Presumptive Remedy</b>	<b>Feasible</b>	<b>Rationale</b>
Soil Excavation and Disposal	Yes	Soils are presumed to be non-hazardous and acceptable for disposal as landfill cover.
In-Situ Chemical Oxidation/Bioremediation	No	Not an effective remedy for metals or PAH compounds.
Air Sparging/ Soil Vapor Extraction	No	Not an effective remedy for metals or PAH compounds.
Monitored Natural Attenuation	No	Heavy metals and PAHs are persistent in the subsurface and do not readily attenuate.
Institutional Controls	Yes	Deed restrictions and implementation of a Site Management Plan can meet the RAOs for the Site.
Stabilization	No	Contaminants too widespread across the Site and occurrence is inconsistent/sporadic.
Thermal Desorption	No	Not a proven remedy for metals contamination.

No potential completed exposure pathways were identified in the exposure assessment. In addition, contamination does not appear to be migrating off-site. Therefore, the established RAOs can be met through implementation of institutional controls.

For evaluation of the Unrestricted Use Option, additional remedial actions were considered to address impacted soils present beneath the demarcation layer, below the basement slab, residual petroleum-impacted soils in the vicinity of the former tanks and



pump island, and metals in the vicinity of GP-07, GP-01, and SS-06. Areas of impacted sub-surface soils are shown on Figure 6. As depicted on the figure, sub-surface soil impacts are present off-site within the Route 104 right-of-way. Assuming a weight of 1.5 tons/ cubic yard, the total volume of soil exceeding Unrestricted Use SCOs is estimated to be 1,483 tons.

### **8.2.3 Sediments**

Drainage ditch sediments were capped with a stone cover as an IRM (Figure 4). Response actions (i.e., institutional control measures) were evaluated to ensure long-term effectiveness of this IRM in meeting the remedial objectives for the Site.

For evaluation of the Unrestricted Use Option, removal and disposal of impacted sediments was evaluated.

## **8.3 Development of Alternatives**

This section describes the technology types and process options that are appropriate to conditions and the nature and extent of contamination at the Site.

After a preliminary screening, the following general response actions have been identified to address residual soil and groundwater contamination at the Site:

- No Further Action
- No Further Action with Institutional Controls
- Long-Term Monitoring with Institutional Controls
- Unrestricted Use Option- Soil Removal and Disposal with Two-Phase Vacuum Extraction

Two-Phase Vacuum Extraction (TPVE) to address dissolved-phase petroleum contamination is evaluated as the most appropriate remedial alternative for the Unrestricted Use Option.

### **8.3.1 Commercial Use Alternatives**

The commercial use category allows for the buying, selling or trading of merchandise or services including public uses with limited potential for soil contact. Based on the Town's plan for passive recreational use of the Site as a Veteran's Memorial Park, commercial use is the most applicable land use category for the Site.

#### No Further Action

The No Further Action alternative is included as a baseline to evaluate other alternatives. This alternative recognizes the tank/soil removal and placement of cover material already completed as an IRM, and proposes no additional remedial work. The Site condition would remain virtually as is and future use would not be limited.

#### No Further Action with Institutional Controls

This alternative recognizes the completed IRMs and relies on institutional controls (i.e., environmental easement, deed restrictions) to mitigate potential impacts to human health and the environment. An institutional control in the form of an environmental

easement would restrict groundwater use at the Site, limit land use and development of the Site, and require compliance with a Site Management Plan (SMP).

#### Long-Term Monitoring with Institutional Controls

Under this alternative, long-term groundwater monitoring would be conducted to track contaminant migration and degradation over time. In addition, institutional controls (e.g., deed restriction to control groundwater use) and development of a Site Management Plan (SMP), including a Soil Management Plan and Health and Safety Plan (HASP), would be implemented to mitigate exposures during future development or site use.

### **8.3.2 Unrestricted Use Alternative**

As required by regulation 6 NYCRR Part 375-4.8(d)(2), this analysis will consider an alternative to achieve the Unrestricted Use SCOs in 6 NYCRR Part 375-6.8(a), which are considered to be representative of pre-disposal conditions at the Site. This option would allow any property use including the raising of livestock; although it should be noted that current zoning would preclude the Site from such use. Regardless, the unrestricted use option will be included as a comparison to evaluate other alternatives.

The Unrestricted Use Alternative would involve additional excavation and off-site disposal of surface soil, sub-surface soil, and drainage ditch sediments with contaminant concentrations above Unrestricted Use SCOs and groundwater remediation to achieve the NYS Groundwater Standards. Preliminary screening deemed soil removal and disposal with a two-phase vacuum extraction system as the most appropriate remedy to attain the Unrestricted Use SCOs.

#### Soil Removal and Disposal with Two-Phase Vacuum Extraction (TPVE)

It is assumed that soil and sediment excavation work could be performed by the Town of Clarkson municipal forces. The total volume of soil exceeding Unrestricted Use SCOs is estimated to be 1,483 tons, assuming a soil weight of 1.5 tons/yd<sup>3</sup>. This includes onsite soils and off-site soil within the right-of-way, as shown on Figure 6. The total volume of drainage ditch sediments exceeding Unrestricted Use SCOs is estimated to be 56 tons, assuming a removal depth of one foot beneath the stone cover and a weight of 1.8 tons/yd<sup>3</sup>. Sediment excavation would require dewatering and/or diversion of run-off flowing into the ditch from the north.

Since the Unrestricted Use category does not allow for groundwater use restrictions on the property, groundwater treatment will be required to address residual petroleum impacts in the source area near MW-4. The area of petroleum-impacted groundwater requiring treatment is estimated to be 4,613 ft<sup>2</sup>, using ESRI's Spatial Analyst software.

TPVE is evaluated to remediate contamination above NYS Groundwater Standards. TPVE technology employs a high vacuum pump to extract both groundwater and soil vapor from an extraction well. The extracted groundwater would be stored in a tank and transported off-site for disposal. Soil vapor would be discharged to the air.

An SMP including operations and maintenance activities would also need to be implemented.

## 9.0 Detailed Development of Alternatives

The remedial alternatives identified above are further detailed in this section, and evaluated relative to the remediation goals presented in Section 8.1.2. Tables 4 and 5 include a summary of the costs associated with each alternative.

### 9.1 Individual Analysis of Alternatives

Each of the alternatives identified in Section 8.3 are further evaluated in detail in this section of the report.

#### 9.1.1 Commercial Use Options

##### No Further Action

Under this alternative, soil and groundwater would remain unremediated and future Site use and development would not be limited. This alternative may not be protective of human health since no institutional controls would be implemented to mitigate potential future exposures. Except for natural attenuation of VOCs, this alternative would not result in the measurable reduction of contaminant toxicity, mobility, or volume and may not attain compliance with NYS Groundwater Standards.

There would be no increased short-term risks associated with the No Action alternative since remedial activities are not implemented; however, the alternative may not be effective in the long-term and is not considered a permanent remedy.

Based on the findings of the investigation performed to date, it is anticipated that this alternative would not be acceptable to the community or appropriate in regards to potential future redevelopment of the Site.

The costs for this alternative are summarized below.

Capital Cost	\$0
Annual Cost	\$0
<b>Total Net Present Worth of Costs</b>	<b>\$0</b>

##### No Further Action with Institutional Controls

This alternative includes implementation of institutional controls in the form of an environmental easement, and development of a SMP (including HASP). The SMP would include procedures for properly handling and disposing of impacted soil should it be disturbed in the future.

The easement would require the following conditions:

- commercial use, which will also permit industrial use;
- maintenance of the site cover;
- compliance with an approved SMP;

- restricting the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH; and
- the property owner to submit an annual certification of institutional controls.

This alternative would also include development of a SMP which will include:

- an Excavation Plan outlining provisions for future excavations in areas of remaining contamination;
- a HASP to protect the health and safety of site workers;
- a provision to evaluate the potential for soil vapor intrusion should any buildings be developed on the Site; and
- describe the steps necessary for periodic review and certification of the institutional controls.

This alternative would be protective of human health and the environment since it will mitigate potential future exposures to groundwater and provide guidance for ground intrusive work that may disturb impacted soils beneath the demarcation layer (2-3 feet below grade) on the Site and in the right-of-way. The only additional reduction of contaminant toxicity, mobility, or mass would be a result of natural attenuation processes. There would be no increased short-term risks associated with this alternative since remedial activities are not implemented. The institutional action alternative should be effective in the long-term; however, it may not be a permanent remedy.

Based on the investigation findings to date, it is anticipated that this alternative would meet the criteria described in Section 8.1.2. It is technically feasible and relatively easy to implement. The costs for this alternative are summarized below and detailed in Table 4.

Capital Cost	\$6,000
Annual Costs (30 years)	\$850
<b>Total Net Present Worth of Costs</b>	<b>\$19,067</b>

#### Long-Term Monitoring with Institutional Controls

This alternative includes long-term groundwater monitoring, institutional controls (e.g., environmental easement), and development of a SMP including a groundwater monitoring plan. Groundwater monitoring would include annual sampling of all four wells using low-flow purging and sampling methods. A monitoring period of five years is used for this analysis. The actual duration of groundwater monitoring would be determined based on analytical results and approval by NYSDEC. Institutional controls described above would also be implemented.

Results of the annual groundwater sampling would be submitted to the NYSDEC and NYSDOH, along with a certification that the institutional controls are in place and able to protect public health and the environment.

This alternative would be protective of human health and the environment since it will mitigate potential future exposures to groundwater and provide guidance for ground intrusive work that may disturb impacted soils beneath the demarcation layer (2-3 feet below grade) on the Site and in the right-of-way. The only additional reduction of contaminant toxicity, mobility, or mass would be a result of natural attenuation processes. There would be no increased short-term risks associated with this alternative since remedial activities are not implemented. The monitoring and institutional action alternative should be effective in the long-term; however, it may not be a permanent remedy.

Based on the investigation findings to date, it is anticipated that this alternative would meet the criteria described in Section 8.1.2. It is technically feasible and relatively easy to implement. The costs for this alternative are summarized below and detailed in Table 4.

Capital Cost	\$6,000
Annual Costs (5 years)	\$3,850
Annual Costs (25 years)	\$850
<b>Total Net Present Worth of Costs</b>	<b>\$34,648</b>

#### 9.1.2 Unrestricted Use Option

##### Soil Removal and Disposal with Two-Phase Vacuum Extraction

Under this alternative, additional excavation and off-site disposal of soils and sediments with contaminant concentrations above Unrestricted Use SCOs would be required. It is assumed that Town forces could be utilized to complete the soil/sediment removal, staging, loading, and backfill activities. Transportation and disposal would be subcontracted. For purposes of this evaluation, it is estimated that 1,483 tons of soil and 56 tons of drainage ditch sediment would require removal and disposal. Based on analytical results, the excavated material would be classified as non-hazardous waste. Excavated material would be transported off-site to a permitted disposal facility (e.g. Mill Seat Landfill). Clean backfill material would be used to bring excavated areas back to existing grade.

To facilitate removal of drainage ditch sediments, discharges from the culvert pipe would have to be temporarily diverted. This would most likely be accomplished by placement of a basin to contain any flow and then pumping the water around the area being excavated. This work would be carefully planned in segments to allow for proper drainage of run-off. Trees would also need to be removed along the ditch to allow access for excavation equipment.

Removal of sub-slab soils would require excavation of the fill material in the former basement, and demolition of the concrete slab with a hoe ram or other equipment. Soils would be removed down to bedrock.

Excavation of soils within the Route 104 right-of-way would require modification of the highway work permit. The extent of excavation is limited by Route 104 to the south, a water line to the north, and catch basin to the west. Additional soil removal west of the main tank pit would be complicated by the presence of a 24-inch diameter underground culvert and associated bedding material.

Post-removal confirmatory samples will be collected to demonstrate successful removal of impacted materials. During excavation, air monitoring would be performed as specified in the Community Air Monitoring Plan (CAMP) and HASP.

In addition to the soil removal, TPVE would be utilized to treat groundwater concentrations above NYS Groundwater Standards. TPVE involves the installation of extraction wells in the plume area and the application of a high vacuum to remove both groundwater and soil vapor. The vacuum applied to the subsurface creates vapor-phase pressure gradients toward the extraction wells. These vapor-phase pressure gradients are also transmitted directly to groundwater, and will draw vapor and water toward the vacuum well in response to the imposed gradients. The higher the applied vacuum, the larger the radial influence on both vapor and liquid phases, and thus the greater the vapor and liquid recovery rates. The vacuum induced by this method serves both to hydraulically control groundwater migration and to cause vapor phase extraction of sorbed phase contaminants from the affected zone.

As part of the remedial design, a pilot test would be performed on a newly installed extraction well using a vac truck to determine effective radial vacuum influence. Data obtained from the pilot test would be used to determine the actual number and location of extraction wells in the plume area.

Extracted groundwater would either be treated and discharged onsite or pumped into a storage tank and transported off-site for disposal. For purposes of this evaluation, off-site disposal will be used. Based on previous analytical results, it is assumed that groundwater can be disposed of as non-hazardous petroleum contaminated water. Extracted soil vapor would be discharged directly to the atmosphere, or filtered prior to discharge.

The total contaminant mass removed would be measured for both groundwater and soil vapor. Concentration of the effluent would initially be measured daily, then weekly thereafter. Vacuum levels, groundwater depths, and other system data would be collected and recorded as part of system operation and maintenance. An operations and monitoring plan would be developed to verify system performance. The duration of TPVE would be determined based on groundwater contaminant concentrations, contaminant mass removal, and approval by NYSDEC. It is estimated that the plume area can be effectively remediated in approximately 90 days.

This alternative should be protective of human health and the environment, but may not address all subsurface contamination due to constraints posed by the presence of Route 104 and underground utilities. Therefore, institutional controls may be warranted to mitigate impacts of residual soil and/or groundwater contamination.

This alternative would result in reduction of the toxicity, mobility, and mass of contaminants by physical removal of the contamination from the Site and subsequently preventing off-site migration. It should be noted that contaminants would not be destroyed, but transferred from the soil vapor phase to the atmosphere. VOCs breakdown naturally in the atmosphere.

There would be an increase in short-term risks associated with soil/sediment excavation and installation of the TPVE system. These risks could be managed through implementation of a HASP. There is also the potential for human exposure to airborne contaminants in the vicinity of the TPVE system exhaust. The system would be engineered so as to minimize these exposures. This remedy would be permanent and effective in the long-term.

Based on investigation findings to date, it is anticipated that this alternative may meet the criteria described in Section 8.1.2; however, there are technical limitations, safety considerations, and the costs are relatively high.

The costs for this alternative are summarized below and detailed in Table 5.

Capital Cost	\$224,234
Annual Cost	\$4,000
Future Cost	\$15,000
<b>Total Net Present Worth of Costs</b>	<b>\$248,085</b>

## 9.2 Comparative Analysis

A comparative evaluation of the remedial alternatives is presented in the form of a matrix, provided in the table below.

**Comparison of Remedial Alternatives**

Criteria	Commercial Use Alternatives			Unrestricted Use Alternative
	No Further Action	No Further Action w/Institutional Controls	Long Term Monitoring w/ Institutional Controls	Soil/Sediment Removal & Two-Phase Vacuum Extraction
Protection of Public Health & Environment	Not adequately protective of human health or the environment.	Potential exposures are mitigated through use of institutional controls.	Potential exposures are mitigated through use of institutional controls and monitored for off-site migration of groundwater.	Most protective of human health and the environment.
Compliance with SCGs	Does not comply with NYS groundwater standards or Part 375 SCOs.	Concentrations exceed SCGs, but potential exposures controlled by deed restrictions and cover maintenance.	Concentrations exceed SCGs, but would be monitored and Site use would be restricted.	Will mitigate groundwater, soil, and sediment contamination.
Long-Term Effectiveness/Permanence	Not an effective or permanent long-term remedy.	Effective in the long-term; however, requires annual certification under a Site Management Plan (SMP).	Effective in the long-term; however, may not be a permanent remedy. Residual impacted soil and groundwater would need to be managed by SMP.	This is a permanent remedy; however, may be limited by existing site conditions such as soil permeability. Requires long-term O&M.
Reduction of Toxicity, Mobility, or Volume	Only natural attenuation of contaminants.	Only natural attenuation of contaminants.	Only natural attenuation of contaminants.	Soil and groundwater contaminants will be removed and off-site migration limited.
Short-Term Effectiveness/Permanence	No short-term risks or adverse impacts.	No short-term risks or adverse impacts.	No short-term risks or adverse impacts.	Increased risks during implementation need to be addressed by HASP and CAMP.
Implementability	Very easy	Easy	Easy	Moderate/Difficult
Land Use	Not a suitable remedy for intended use as a park.	Suitable remedy for intended use as a park.	Suitable remedy for intended use as a park.	Would allow any future land use, but may still require deed restrictions to address residual contamination.
Estimated Duration of Remedy	0 years	Unlimited (assume 30 years)	Monitoring: 5 years Institutional Controls: Unlimited (assume 30 years)	3 months O&M: 3 years
Estimated Net Present Worth of Costs	\$ 0	\$19,067	\$34,648	\$248,085



As shown in the matrix, the Unrestricted Use Alternative is the most permanent remedy, but also presents the greatest short-term risks to workers, is the most difficult to implement, and has the highest cost of all the alternatives evaluated.

The No Further Action alternative is not considered adequately protective of human health because it does not limit the use of Site groundwater as a drinking water source, or prevent excavation of subsurface soils/sediments exceeding Commercial Use SCOs. Institutional controls will be necessary to limit use of the Site.

The No Further Action with Long-Term Monitoring Alternative addresses potential future exposure concerns by tracking contaminant migration over time. This alternative accounts for the soil source removal and cover completed as an IRM and relies on natural attenuation over time to decrease groundwater concentrations. Based on groundwater results obtained to date, there is no indication of off-site migration of impacted groundwater. Concentrations would be expected to decrease since the source material has been removed and petroleum compounds will naturally attenuate over time. The increased cost of long-term monitoring provides relatively no added benefit to public health or the environment.

All of the alternatives may leave residual soil and groundwater contamination on the subject Site and adjacent right-of-way. Investigation results do not indicate any current exposure concerns with soil, sediment, or groundwater.

### **9.3 Recommended Remedy**

No further action with institutional controls is the recommended remedial alternative, based on the criteria in Section 8.1.2. This alternative would satisfy the RAOs developed for the Site and render the Site suitable for commercial use, including passive recreational uses. Additional remediation or long-term groundwater monitoring do not justify the additional costs, considering that all exposure pathways can be eliminated through institutional controls while still allowing full intended use of the Site.



Former Service Station Site (#E828143)  
Town of Clarkson  
Summary of Validated Analytical Results

**Table 1 - Surface Soil Results**

Detected Parameters	Unrestricted Use <sup>2</sup>	Residential Use <sup>3</sup>	Restricted-Residential Use <sup>3</sup>	Commercial Use <sup>3</sup>	Industrial Use <sup>3</sup>	SS-01	SS-02	SS-03	SS-04	SS-05	SS-06
Sample Date:						4/27/2009	4/27/2009	4/27/2009	4/27/2009	4/27/2009	4/27/2009
<b>EPA 8260 - Volatile Organics<sup>1</sup></b>											
1,2-Dichloroethane	20	2,300	3,100	30,000	60,000	ND	1.18 J	2.02 J	1.20 J	1.68 J	1.58 J
m/p-Xylenes	N/A	N/A	N/A	N/A	N/A	ND	1.76 J	ND	ND	ND	ND
Styrene	N/A	N/A	N/A	N/A	N/A	ND	ND	ND	5.63 J	2.20 J	1.81 J
Tetrachloroethene	1,300	5,500	19,000	150,000	300,000	17.1 J	11.6 J	6.28 J	5.35	14.0 J	ND
Toluene	700	100,000	100,000	500,000	1,000,000	ND	3.98 J	ND	ND	3.14 J	ND
Vinyl acetate	N/A	N/A	N/A	N/A	N/A	3.10 J	8.77 J	2.53 J	3.78 J	4.82 J	ND
Xylene (mixed)	260	100,000	100,000	500,000	1,000,000	ND	1.76 J	ND	ND	ND	ND
<b>EPA 8270 - Semi-Volatile Organics<sup>1</sup></b>											
Anthracene	100,000	100,000	100,000	500,000	1,000,000	ND	1,510 J	ND	406	ND	234 J
Benzo(a)anthracene	1,000	1,000	1,000	5,600	11,000	234 J	5,140	257 J	1,500	ND	ND
Benzo(a)pyrene	1,000	1,000	1,000	1,000	1,100	279 J	5,450	222 J	1,700	ND	ND
Benzo(b)fluoranthene	1,000	1,000	1,000	1,000	11,000	286 J	6,580	ND	1,910	ND	ND
Benzo(g,h,i)perylene	100,000	100,000	100,000	500,000	1,000,000	192 J	4,830	213 J	1,340	ND	ND
Benzo(k)fluoranthene	800	1,000	3,900	56,000	110,000	277 J	4,150	ND	1,370	ND	ND
Bis (2-ethylhexyl) phthalate	N/A	N/A	N/A	N/A	N/A	ND	1,510 J	357 J	260 J	ND	276 J
Butylbenzylphthalate	N/A	N/A	N/A	N/A	N/A	340 J	2,630	ND	853	296 J	372
Chrysene	1,000	1,000	3,900	56,000	110,000	321 J	5,980	263 J	1,730	ND	ND
Di-n-butyl phthalate	N/A	N/A	N/A	N/A	N/A	ND	ND	ND	ND	ND	195 J
Dibenzo (a,h) anthracene	330	330	330	560	1,100	ND	ND	ND	411	ND	ND
Fluoranthene	100,000	100,000	100,000	500,000	1,000,000	762	ND	604	4,550	ND	386
Indeno(1,2,3-cd)pyrene	500	500	500	5,600	11,000	ND	4,470	ND	1,260	ND	ND
Phenanthrene	100,000	100,000	100,000	500,000	1,000,000	386	6,630	230 J	1,730	ND	218 J
Pyrene	100,000	100,000	100,000	500,000	1,000,000	564 M	10,600	403 J	2,850	ND	303 J
<b>TAL Metals<sup>4</sup></b>											
Aluminum- Total	-	-	-	-	-	11,200	4,870	5,450	8,620	9,910	9,070
Antimony- Total	-	-	-	-	-	<7.93 M	<5.03	<7.72	<6.67	<6.87	<0.700
Arsenic- Total	13	16	16	16	16	6.62 M	2.89	3.60	4.13	6.36	7.36
Barium- Total	350	350	400	400	10,000	960	119	165	165	291	357
Beryllium- Total	7.2	14	72	590	2,700	<0.661 M	<0.420	<0.644	<0.555	<0.573	<0.584
Cadmium- Total	2.5	2.5	4.3	9.3	60	<0.661 M	1.54	0.807	<0.555	<0.573	<0.584
Calcium- Total	-	-	-	-	-	3,890	56,900	10,600	14,300	4,470	5,430
Chromium- Total	30	36	180	1,500	6,800	17.2 M	23.7	10.1	11.8	13.9	36.7
Cobalt- Total	-	-	-	-	-	7.12 M	4.28	4.39	5.44	6.68	9.12
Copper- Total	50	270	270	270	10,000	15.4 D,M	57.6	14.2	12.7	9.55	47.4
Iron- Total	-	-	-	-	-	17600 D	13,200	14,200	13,800	15,500	51,600
Lead- Total	63	400	400	1,000	3,900	606	150	117	77	69.5	121
Magnesium- Total	-	-	-	-	-	3100 D	20,300	3,710	6,110	3,480	3,360
Manganese- Total	1,600	2,000	2,000	10,000	10,000	613 M	325	356	388	47	810
Mercury- Total	0.18	0.81	0.81	2.8	5.7	0.139 D,M	0.101	0.0838	0.0651	0.071	0.104
Nickel- Total	30	140	310	310	10,000	15.5 D,M	14	13.3	12	14.9	25.2
Potassium- Total	-	-	-	-	-	2,080	1,010	1,430	1,550	2,000	1,820
Selenium- Total	3.9	36	180	1,500	6,800	4.63	<0.420	<0.644	<0.550	<0.573	<0.584
Silver- Total	2	36	180	1,500	6,800	<1.32 M	<0.840	<1.29	<1.11	<1.15	<1.17
Sodium- Total	-	-	-	-	-	138	343	204	145	<115	<117
Thallium- Total	-	-	-	-	-	<0.793 M	<0.503	<0.772	<0.667	<0.687	<0.700
Vandium- Total	-	-	-	-	-	26.4 M	13.6	15.6	19.5	20	21.6
Zinc- Total	109	2,200	10,000	10,000	10,000	271 M	278	135	83.1	75.2	152
<b>EPA 8082 - PCBs (none detected above laboratory detection limits)</b>											
<b>EPA 8081 - Pesticides<sup>1</sup></b>											
4,4'-DDD	3.3	2,600	13,000	92,000	180,000	<4.4			<4.1		<4.4
4,4'-DDE	3.3	1,800	8,900	62,000	120,000	3 J			3 J		9.9
4,4'-DDT	3.3	1,700	7,900	47,000	94,000	2 J			3 J		18

1 - values presented in micrograms per kilogram (ug/Kg).

2 - 6 NYCRR Part 375-6.8 - Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

3 - 6 NYCRR Part 375-6.8 - Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

4 - values presented in milligrams per kilogram (mg/kg)

ND- Not detected above reporting limit

J- value is estimated

D- duplicate results outside QC limits

M- matrix spike recoveries outside QC limits; matrix bias indicated

	Value Exceeds Unrestricted SCOs
	Value Exceeds Residential Use SCOs
	Value Exceeds Restricted-Residential SCOs
	Value Exceeds Commercial Use SCOs
	Value Exceeds Industrial Use SCOs

Former Service Station Site (#E828143)  
Town of Clarkson  
Summary of Validated Analytical Results

**Table 2 - Sediment Sample Results**

Detected Parameters	Unrestricted Use <sup>2</sup>	Residential Use <sup>3</sup>	Restricted-Residential Use <sup>3</sup>	Commercial Use <sup>3</sup>	Industrial Use <sup>3</sup>	SD-01	SD-02	SD-03	SD-04
Sample Date:						4/27/2009	4/27/2009	4/27/2009	4/27/2009
<b>EPA 8260 - Volatile Organics<sup>1</sup></b>									
1,1-Dichloroethene	330	100,000	100,000	500,000	1,000,000	3.50 J	15.4	4.58 J	ND
1,2,4-Trimethylbenzene	3,600	47,000	52,000	190,000	380,000	-	-	-	2.48 J
1,2-Dichloroethane	20	2,300	3,100	30,000	60,000	1.98 J	2.89 J	2.19 J	ND
Acetone	50	100,000	100,000	500,000	1,000,000	17.9 J	81.6 J	71.2 J	ND
m/p-Xylenes	-	-	-	-	-	ND	ND	ND	2.20 J
o-Xylene	-	-	-	-	-	ND	ND	ND	2.72 J
Styrene	-	-	-	-	-	1.58 J	2.48 J	ND	ND
Tetrachloroethene	1,300	5,500	19,000	150,000	300,000	ND	7.35 J	ND	ND
Toluene	700	100,000	100,000	500,000	1,000,000	ND	ND	ND	1.37 J
Xylene (mixed)	260	100,000	100,000	500,000	1,000,000	-	-	-	4.92 J
<b>EPA 8270 - Semi-Volatile Organics<sup>1</sup></b>									
2,6-Dinitrotoluene	-	-	-	-	-	-	-	-	691
Acenaphthene	20,000	100,000	100,000	500,000	1,000,000	ND	1450 J	ND	ND
Anthracene	100,000	100,000	100,000	500,000	1,000,000	2,090	4,780	6,230	384
Benzo(a)anthracene	1,000	1,000	1,000	5,600	11,000	5,990	1,550	17,600	1,310
Benzo(a)pyrene	1,000	1,000	1,000	1,000	1,100	5,970	16,000	17,700	1,290
Benzo(b)fluoranthene	1,000	1,000	1,000	1,000	11,000	7,680	18,200	20,900	1,280
Benzo(g,h,i)perylene	100,000	100,000	100,000	500,000	1,000,000	4,450	11,600	12,800	944
Benzo(k)fluoranthene	800	1,000	3,900	56,000	110,000	4,140	13,600	13,700	1,270
Bis (2-ethylhexyl) phthalate	-	-	-	-	-	ND	ND	ND	241 J
Butylbenzylphthalate	-	-	-	-	-	ND	ND	ND	1,250
Chrysene	1,000	1,000	3,900	56,000	110,000	7,350	19,700	21,900	1,440
Dibenzo (a,h) anthracene	330	330	330	560	1,100	1730 J	4,000	4490 J	ND
Dimethyl phthalate	-	-	-	-	-	ND	ND	ND	260 J
Fluoranthene	100,000	100,000	100,000	500,000	1,000,000	20,200	51,800	61,800	3,710
Fluorene	30,000	100,000	100,000	500,000	1,000,000	ND	1950 J	2450 J	ND
Indeno(1,2,3-cd)pyrene	500	500	500	5,600	11,000	3,870	11,100	12,300	892
N-Nitroso-di-n-propylamine	-	-	-	-	-	ND	ND	ND	324 J
Phenanthrene	100,000	100,000	100,000	500,000	1,000,000	11,700	29,100	35,900	1,800
Pyrene	100,000	100,000	100,000	500,000	1,000,000	12,400	34,900	36,300	2,630
<b>TAL Metals<sup>4</sup></b>									
Aluminum- Total	-	-	-	-	-	3,760	5,020	3,780	-
Arsenic- Total	13	16	16	16	16	19.60	2.95	2.06	5.78
Barium- Total	350	350	400	400	10,000	245	149	104	319
Cadmium- Total	2.5	2.5	4.3	9.3	60	ND	ND	ND	0.812
Calcium- Total	-	-	-	-	-	782,000	50,000	80,800	-
Chromium- Total	30	36	180	1,500	6,800	25.9	11.3	10.6	15.2
Cobalt- Total	-	-	-	-	-	6.97	3.61	3.53	-
Copper- Total	50	270	270	270	10,000	61.5	15.8	13.7	-
Iron- Total	-	-	-	-	-	133,000	11,200	12,200	-
Lead- Total	63	400	400	1,000	3,900	141	80.5	17.3	152
Magnesium- Total	-	-	-	-	-	8,310	8,790	18,700	-
Manganese- Total	1,600	2,000	2,000	10,000	10,000	943	201	502	-
Mercury- Total	0.18	0.81	0.81	2.8	5.7	0.0181	0.043	0.0263	0.0467
Nickel- Total	30	140	310	310	10,000	25.7	8.78	7.35	-
Potassium- Total	-	-	-	-	-	719	1,030	868	-
Sodium- Total	-	-	-	-	-	270	225	217	-
Vandium- Total	-	-	-	-	-	21.2	19.7	17.3	-
Zinc- Total	109	2,200	10,000	10,000	10,000	220	163	112	-
<b>EPA 8082/8081 - PCBs &amp; Pesticides (none detected above laboratory detection limit)</b>									

1 - values shown in micrograms per kilogram (µg/kg).

2 - 6 NYCRR Part 375-6.8 - Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

3 - 6 NYCRR Part 375-6.8 - Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

4 - values shown in milligrams per kilogram (mg/kg)

ND- Not detected above reporting limit

J- value is estimated

	Value Exceeds Unrestricted Use SCOs
	Value Exceeds Residential Use SCOs
	Value Exceeds Restricted-Residential Use SCOs
	Value Exceeds Commercial Use SCOs
	Value Exceeds Industrial Use SCOs

Table 3-1 Subsurface Soil Results - VOCs & SVOCs

	Unrestricted Use <sup>2</sup>	Residential Use <sup>3</sup>	Restricted- Residential Use <sup>3</sup>	Commercial Use <sup>3</sup>	Industrial Use <sup>3</sup>														MW-01* (8-10')	MW-02* (8-9.5')	MW-03* (2-4')	MW-04* (8-11')
Detected Parameters <sup>1</sup>						GP-01-03	GP-04-02	GP-07-07	GP-11-10	GP-12-09	GP-13-10	GP-16-8.5	GP-18-07	GP-19-10	GP-20-09	TP-01A*	TP-01B*	TP-10-08				
Sample Date:						2/8/2010	2/8/2010	2/8/2010	2/9/2010	2/9/2010	2/9/2010	2/8/2010	2/9/2010	2/9/2010	2/9/2010	5/27/2009	5/27/2009	7/1/2009	8/10/2009	8/11/2009	8/12/2009	8/12/2009
EPA 8260 - Volatile Organics																						
1,1,2,2-Tetrachloroethane	-	-	-	-	-	ND	ND	20.6 J	ND	ND	54.3	ND	ND	ND	ND	ND R	18.5 B	6.91	ND	ND	ND	ND
1,1,2-Trichloroethane	-	-	-	-	-	ND	ND	3.0 J	ND	ND	27.5	ND	5.6 J	ND	ND	ND R	69.7	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	3,600	47,000	52,000	190,000	380,000	ND	ND	2.0 J	ND	ND	ND	ND	ND	ND	ND	-	-	15.5	ND	ND	ND	ND
1,3,5-Trimethylbenzene	8,400	47,000	52,000	190,000	380,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	9.41	ND	ND	ND	ND
2-Butanone (MEK)	120	100,000	100,000	50,000	1,000,000	ND	ND	20.1 J	ND	4.0 J	11.2 J	ND	54.5	ND	5.8 J	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	-	-	-	-	-	ND	ND	8.2 J	ND	ND	71.8	ND	8.1 J	ND	ND	ND R	5.65 J,B	71.6 B	ND	ND	ND	ND
4-Methyl-2-pentanone	-	-	-	-	-	1.3 J	ND	ND	1.1 J	ND	ND	ND	5.9 J	1.3 J	ND	ND R	ND	ND	ND	ND	ND	ND
Acetone	50	100,000	100,000	500,000	1,000,000	ND	ND	78.0 J,B	17.2 J,B	43.4 J,B	60.1 J,B	ND	177 J,B	7.1 J,B	23.1 J,B	ND	41.4 J	32.0 J	ND	ND	ND	ND
Bromodichloromethane	-	-	-	-	-	ND	ND	ND	ND	ND	ND	ND	4.1 J	ND	ND	ND R	42.1	ND	ND	ND	ND	ND
Carbon disulfide	-	-	-	-	-	ND	ND	2.0 J	ND	ND	ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	ND	ND	10
Chloroform	370	10,000	49,000	350,000	700,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	17.7	24.6	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	250	59,000	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.64 J	3.26 J	ND	ND	ND	ND	ND
Cyclohexane	-	-	-	-	-	ND	1.9 J	ND	1.7 J	2.0 J	7.2 J	ND	9.4 J	2.0 J	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	1,000	30,000	41,000	390,000	780,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND R	ND	1.05 J	ND	ND	ND	ND
Isopropylbenzene	-	-	-	-	-	ND	ND	5.0 J	ND	ND	ND	ND	ND	ND	ND	-	-	4.20 J	ND	ND	ND	ND
Methyl acetate	-	-	-	-	-	ND	ND	ND	ND	ND	ND	ND	5.3 J	ND	1.3 J	ND	ND	ND	ND	ND	ND	ND
Methylcyclohexane	-	-	-	-	-	ND	ND	ND	ND	ND	7.3 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	50	51,000	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	20.87 J	17.8 J	ND	ND	ND	ND	ND
m/p-Xylenes	-	-	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND R	ND	3.25 J	ND	ND	ND	ND
n-Butylbenzene	12,000	100,000	100,000	500,000	1,000,000	ND	ND	4.0 J	ND	ND	18.6 J	ND	ND	ND	ND	-	-	10.8 J	ND	ND	ND	ND
n-Propylbenzene	3,900	100,000	100,000	500,000	1,000,000	ND	ND	2.76 J	ND	ND	ND	ND	ND	ND	ND	-	-	5.83	ND	ND	ND	ND
Naphthalene	12,000	100,000	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	7.09 J,B	ND	ND	ND	ND
n-Isopropyltoluene	-	-	-	-	-	ND	ND	ND	ND	ND	6.2 J	ND	ND	ND	ND	ND	ND	5.79 J	ND	ND	ND	ND
sec-Butylbenzene	11,000	100,000	100,000	500,000	1,000,000	ND	ND	2.56 J	ND	ND	18.9 J	ND	ND	ND	ND	-	-	2.66 J	ND	ND	ND	ND
Toluene	700	100,000	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.74	ND R	ND	ND	ND	ND	ND	ND
Xylene (mixed)	260	100,000	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	3.25	ND	ND	ND	ND
EPA 8270 - Semi-Volatile Organics																						
2,6-Dinitrotoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	630	-	-	-	-
Benzo(a)anthracene	1,000	1,000	1,000	5,600	11,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	818	602 J	ND	ND	ND	ND	ND
Benzo(a)pyrene	1,000	1,000	1,000	1,000	1,100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	894	587 J	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	1,000	1,000	1,000	1,000	11,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,160	756	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	100,000	100,000	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	888	536 J	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	800	1,000	3,900	56,000	110,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	667 J	422 J	ND	ND	ND	ND	ND
Bis (2-ethylhexyl) phthalate	-	-	-	-	-	ND	ND	525	ND	ND	ND	ND	ND	ND	ND	2,810	577 J	ND	ND	ND	ND	ND
Butylbenzylphthalate	-	-	-	-	-	ND	ND	977	ND	ND	ND	ND	ND	ND	ND	2,030	988	ND	ND	ND	ND	ND
Chrysene	1,000	1,000	3,900	56,000	110,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	950	674	ND	ND	ND	ND	ND
Di-n-butyl phthalate	-	-	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	894	ND	ND	ND	ND	ND	ND
Dimethyl phthalate	-	-	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	234 J	ND	ND	ND	ND
Fluoranthene	100,000	100,000	100,000	500,000	1,000,000	ND	ND	241 J	ND	ND	ND	360	ND	ND	ND	2,200	1,300	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	500	500	500	5,600	11,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	727 J	468 J	ND	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	-	-	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	689	274 J	ND	ND	ND	ND
Phenanthrene	100,000	100,000	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,020	452 J	ND	ND	ND	ND	ND
Pyrene	100,000	100,000	100,000	500,000	1,000,000	ND	ND	201 J	ND	ND	ND	ND	ND	ND	ND	1,510	965	ND	ND	ND	ND	ND

1 - All values presented in micrograms per kilogram (ug/Kg).  
2 - 6 NYCRR Part 375-6.8 - Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives  
3 - 6 NYCRR Part 375-6.8 - Table 375-6.8(b): Restricted Use Soil Cleanup Objectives  
ND- Not detected above laboratory detection limit  
J- value is estimated  
B- compound detected in an associated blank, as well as in the sample  
\* - all values are qualified as estimated  
R- result reject by data validator

Value Exceeds Unrestricted Use SCOs

Value Exceeds Residential Use SCOs

Value Exceeds Restricted-Residential Use SCOs

Value Exceeds Commercial Use SCOs

Value Exceeds Industrial Use SCOs

Former Service Station Site (#E828143)  
Town of Clarkson  
Summary of Validated Analytical Results

Table 3-2 Subsurface Soil Results - Metals, PCBs, Pesticides

	Unrestricted Use <sup>2</sup>	Residential Use <sup>3</sup>	Restricted- Residential Use <sup>3</sup>	Commercial Use <sup>3</sup>	Industrial Use <sup>3</sup>													
Detected Parameters						GP-01-03	GP-04-02	GP-07-07	GP-11-10	GP-12-09	GP-13-10	GP-16-8.5	GP-18-07	GP-19-10	GP-20-09	TP-01A**	TP-01B**	TP-10-08
Sample Date:						2/8/2010	2/8/2010	2/8/2010	2/9/2010	2/9/2010	2/9/2010	2/8/2010	2/9/2010	2/9/2010	2/9/2010	5/27/2009	5/27/2009	7/1/2009
TAL Metals <sup>1</sup>																		
Aluminum- Total	-	-	-	-	-	14900 D	16,900	8,380	13,100	11,800	15,500	8,500	8,240	13,800	10,800	786	6,330	-
Arsenic- Total	13	16	16	16	16	5.25 D,M	5.21	5.52	4.75	4.63	5.75	3.39	2.59	5.41	3.66 D,M	15.2	9.45	6.11
Barium- Total	350	350	400	400	10,000	400 D,M,N	224 N	281 N	292 N	142 N	99.7 N	217 N	936 N	121 N	368 N	1,450	1,290	229
Beryllium- Total	7.2	14	72	590	2,700	0.892 D,M	0.931	ND	0.662	0.598	0.814	0.370	ND	0.707	0.508 D,M	1.23	ND	-
Cadmium- Total	2.5	2.5	4.3	9.3	60	ND	ND	0.961 *	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.77
Calcium- Total	-	-	-	-	-	2,460 D,*	2,390 *	21,300 *	2,490 *	17,100 *	12,100 *	17,300 *	2,230 *	17,800 *	16,900 D,*	7500	4560	-
Chromium- Total	30	36	180	1,500	6,800	21.3 D,M,*	25.7 *	15.0 *	20.6 *	20.5 *	29.0 *	13.7 *	13.2 *	22.5 *	19.1 D,M,*	46.9	35.1	25.2
Cobalt- Total	-	-	-	-	-	10.9 D,M	14.2	6.95	13.0	12.1	15.4	7.05	6.72	12.9	8.28 M	6.24	4.45	-
Copper- Total	50	270	270	270	10,000	3.24 D,M,*	4.91 *	25.9 *	3.53 *	3.44 *	3.54 *	5.20 *	6.49 *	3.86 *	5.35 D,M,*	237	454	-
Iron- Total	-	-	-	-	-	26,200 D	34,100	14,900	20,400	27,000	32,800	17,300	17,700	31,000	20,800	44,800	23,700	-
Lead- Total	63	400	400	1,000	3,900	4.00 M	5.03	123	2.93	3.54	3.47	5.05	5.82	3.98	5.22 D,M	2,040	2,070	5.12
Magnesium- Total	-	-	-	-	-	5,180 D,M	6,330	6,170	6,430	6,300	7,690	4,990	2,880	7,270	4,740 D	3,840	1,850	-
Manganese- Total	1,600	2,000	2,000	10,000	10,000	296 D,M,N	338 N	577 N	356 N	383 N	398 N	348 N	296 N	375 N	392 M,N	1,360	447	-
Mercury- Total	0.18	0.81	0.81	2.8	5.7	0.0130 D	0.0067	0.0606	0.0038 J	0.0009 J	0.0008 J	0.0205	0.0303	0.0012 J	0.0116	26.5	56.8	0.0093
Nickel- Total	30	140	310	310	10,000	26.0 D,M	31.0	18.0	31.0	28.4	36.7	16.0	14.5	29.8	19.0 D,M	20.5	17.4	-
Potassium- Total	-	-	-	-	-	2,970 D,M,N	3,970 N	1,730 N	2,900 N	2,510 N	3,730 N	1,930 N	1,330 N	3,250 N	2,310 D,M,N	2,410	1,870	-
Selenium- Total	3.9	36	180	1,500	6,800	ND	ND	1.60 *	ND	ND	ND	ND	ND	ND	ND	5.1	ND	ND
Silver- Total	2	36	180	1,500	6,800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	18	3.34	ND
Sodium- Total	-	-	-	-	-	184 D	174	311	455	665	833	421	837	976	870	2,080	1,790	-
Thallium- Total	-	-	-	-	-	ND	0.580 *	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Vandium- Total	-	-	-	-	-	28.3 D,M	33.0	20.9	23.7	26.7	33.3	21.1	22.9	31.0	27.6 D,M	31	21	-
Zinc- Total	109	2,200	10,000	10,000	10,000	43.8 D,M,*	50.9 *	159 *	51.2 *	47.1 *	57.9 *	33.1 *	35.7 *	50.5 *	38.4 D,M,*	294	221	-
EPA 8082 - PCBs <sup>1</sup>																		
Aroclor-1016	0.1	1	1	1	25	0.012 J,B	0.014 J,B	0.027 J,B				0.009 J,B	0.038 B		0.015 J,B	ND	ND	ND
Aroclor-1260	0.1	1	1	1	25	ND	ND	0.094 J				ND	ND		ND	ND	ND	ND
EPA 8081 - Pesticides <sup>1</sup>																		
4,4'-DDD	0.0033	2.6	13	92	180	ND	ND						0.00416			0.32	0.34	
4,4-DDE	0.0033	1.8	8.9	62	120	ND	ND						ND			0.035	0.041	
4'4-DDT	0.0033	1.7	7.9	47	94	ND	ND						ND			0.14	0.12	
alpha-Chlordane	0.094	0.91	4.2	24	47	ND	ND						ND			0.012	0.029	
Dieldrin	0.005	0.039	0.2	1.4	2.8	ND	ND						ND			0.015	0.019	
Endosulfan II	2.4	4.8	24	200	920	ND	ND						0.00191 J			ND	ND	
Endrin	0.014	2.2	11	89	410	ND	ND						ND			0.017	0.018	
Endrin aldehyde	-	-	-	-	-	0.00189 J,B	0.00207 J,B						0.00345 B			ND	ND	
gamma-Chlordane	-	-	-	-	-	ND	ND						ND			0.021	0.027	

1 - all values presented in milligrams per kilogram (mg/Kg).  
2 - 6 NYCRR Part 375-6.8 - Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives  
3 - 6 NYCRR Part 375-6.8 - Table 375-6.8(b): Restricted Use Soil Cleanup Objectives  
ND- not detected above lab detection limit  
D- duplicate results outside QC limits.  
M- matrix spike recoveries outside QC limits; matrix bias indicated  
B- compound detected in an associated blank, as well as in the sample

N- compound was "tentatively identified"  
\*- LCS or LCSD exceeds the control limits  
\*\*- all values are qualified as estimated

Value Exceeds Unrestricted Use SCOs

Value Exceeds Residential Use SCOs

Value Exceeds Restricted-Residential Use SCOs

Value Exceeds Commercial Use SCOs

Value Exceeds Industrial Use SCOs

Former Service Station Site (#E828143)  
Town of Clarkson  
Summary of Validated Analytical Results

Table 3-3 IRM & Tank Closure Samples

Detected Parameters	Unrestricted Use <sup>2</sup>	Residential Use <sup>3</sup>	Restricted-Residential Use <sup>3</sup>	Commercial Use <sup>3</sup>	Industrial Use <sup>3</sup>	Pump Island PI-01	Lift Pit LP-01	TC-01-8*	TC-02-7*	TC-03-8*	TC-04-8	TC-05-8	TC-06-8	TC-07-8	TC-08-8
Sample Date:						7/2/2009	7/2/2009	7/13/2009	7/13/2009	7/13/2009	7/14/2009	7/14/2009	7/14/2009	7/14/2009	7/15/2009
<b>EPA 8260 - Volatile Organics<sup>1</sup></b>															
1,1,2,2-Tetrachloroethane	-	-	-	-	-	ND	5.85	222 B	301 B	3.54 J	6.85	122 B	11.6	ND	1.68 J
1,1,2-Trichloroethane	-	-	-	-	-	ND	6.35	1300	1960	ND	ND	99.1	8.81	ND	ND
1,2,4-Trimethylbenzene	3,600	47,000	52,000	190,000	380,000	24,100	7.7	5,080	4,440	ND	1.22 J	75.4 J	2.03 J	ND	ND
1,2-Dichlorobenzene	1,100	100,000	52,000	500,000	1,000,000	ND	ND R	ND	ND	ND	ND	ND	1.30 J	ND	1.77 J
1,2-Dichloroethane	20	2,300	3,100	30,000	60,000	ND	ND	15.5 J	ND	ND	ND	65.1	2.77 J	2.80 J	2.54 J
1,2-Dichloropropane	-	-	-	-	-	ND	ND	17.2 J	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	2,400	17,000	49,000	280,000	560,000	ND	ND R	ND	ND	ND	ND	ND	0.62 J	ND	0.73 J
1,3,5-Trimethylbenzene	8,400	47,000	52,000	190,000	380,000	4280	3.54 J	1,290	1,100	ND	1.68 J	148	10.7	ND	ND
1,4-Dichlorobenzene	1,800	9,800	13,000	130,000	250,000	ND	ND R	8.06 J	ND	ND	ND	ND	0.81 J	ND	ND
2-Butanone (MEK)	120	100,000	100,000	50,000	1,000,000	ND	ND	41.3 J	ND	ND	1.92 J	ND	3.36 J	ND	ND
2-Chloroethyl vinyl ether	-	-	-	-	-	ND	ND	64.6 J	165 J	ND	ND	ND	ND	ND	ND
2-Hexanone	-	-	-	-	-	ND	4.42 J,B	125	3670	1.72 J,B	70.9	210 J	11.3	1.46 J	ND
4-Methyl-2-pentanone	-	-	-	-	-	ND	11.9	80.7 J	71.0 J	ND	1.54 J	154 J,B	68.5 J	ND	1.06 J
Acetone	50	100,000	100,000	500,000	1,000,000	8090 J,B	27.6 J,B	250 J,B	941 J,B	590 J	12.8 J	ND	37.7 J	24.5 J,B	13.49 J
Benzene	60	2,900	4,800	44,000	89,000	ND	ND	216	699	ND	ND	ND	ND	ND	ND
Bromodichloromethane	-	-	-	-	-	ND	ND	ND	130 J	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	760	1,400	2,400	22,000	44,000	ND	ND	128	375 J	ND	ND	172 J	10.1 J	9.34 J	8.59 J
Chlorobenzene	1,100	100,000	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.01 J
Chloroform	370	10,000	49,000	350,000	700,000	ND	ND	81.7	84.7 J	ND	ND	ND	ND	ND	ND
Ethylbenzene	1,000	30,000	41,000	390,000	780,000	283 J	3.03 J	1,300	1,580	ND	ND	ND	ND	ND	ND
Isopropylbenzene	-	-	-	-	-	725	ND	169 J	174 J	ND	ND	39.4 J	1.44 J	ND	ND
Methylene chloride	50	51,000	100,000	500,000	1,000,000	ND	ND	140 J,B	365 J,B	31.68 J,B	ND	ND	9.49 J	ND	ND
m/p-Xylenes	-	-	-	-	-	1060 J	5.86 J	6,670	6,680	ND	ND	ND	1.74 J	ND	ND
n-Butylbenzene	12,000	100,000	100,000	500,000	1,000,000	ND	4.00 J	209 J,B	216 J,B	ND	7.22 J	180 J,B	24.2	ND	1.92 J
n-Propylbenzene	3,900	100,000	100,000	500,000	1,000,000	1,510	ND	601 B	584 B	ND	1.64 J	62.1 J,B	2.67 J	ND	0.97 J
Naphthalene	12,000	100,000	100,000	500,000	1,000,000	9240 J,B	8.74 J,B	2010 J,B	1660 J,B	3.15 J,B	3.27 J	398 J,B	46.3 J	1.31 J	ND
o-Xylene	-	-	-	-	-	151 J	6.33 J	1,920	2,110	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	-	-	-	-	-	544 J	ND	106 J	124 J	ND	3.25 J	86.5 J	8.78 J	ND	ND
sec-Butylbenzene	11,000	100,000	100,000	500,000	1,000,000	5275	ND	62.2 B	3180 B	ND	2.07 J	48.8 J,B	3.62 J	ND	1.04 J
Styrene	-	-	-	-	-	ND	ND	82.7 J,B	97.1 J,B	ND	ND	ND	1.36 J	ND	1.17 J
tert-Butylbenzene	5,900	100,000	100,000	500,000	1,000,000	ND	ND	ND	56.5 J	ND	1.35 J	ND	ND	ND	ND
Toluene	700	100,000	100,000	500,000	1,000,000	ND	2.20 J	432	626	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	-	-	-	-	-	ND	ND	ND	ND	7.08	2.10 J	ND	5.07	ND	ND
Vinyl acetate	-	-	-	-	-	ND	ND	4540 B	4170 B	3.05 J	2.71 J	73.7 J,B	3.60 J	3.10 J,B	2.57 J
Xylene (mixed)	260	100,000	100,000	500,000	1,000,000	ND	12.19 J	8,590	8,790	ND	ND	ND	ND	ND	ND
<b>EPA 8270 - Semi-Volatile Organics<sup>1</sup></b>															
2-Methylnaphthalene	-	-	-	-	-	33,400	ND	ND	ND	ND	ND	197 J	173 J	ND	ND
4-Chloroaniline	-	-	-	-	-	5,480	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	-	-	-	-	-	8,895	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	12,000	100,000	100,000	500,000	1,000,000	20,400	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>RCRA Metals<sup>4</sup></b>															
Arsenic- Total	13	16	16	16	16	2.70	2.48								
Barium- Total	350	350	400	400	10,000	655	178								
Cadmium- Total	2.5	2.5	4.3	9.3	60	ND	0.503								
Chromium- Total	30	36	180	1,500	6,800	11.4	11.2								
Lead- Total	63	400	400	1,000	3,900	9.07	6.19								
Mercury- Total	0.18	0.81	0.81	2.8	5.7	0.0192	0.0369								
<b>EPA 8082 - PCBs (none detected above laboratory detection limit)</b>															

1 - Values presented in micrograms per kilogram (ug/Kg).

2 - 6 NYCRR Part 375-6.8 - Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

3 - 6 NYCRR Part 375-6.8 - Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

4 - Values presented in milligrams per kilogram (mg/Kg).

ND- Not detected above laboratory detection limit

\* - all results are estimated

B- compound detected in the associated blank

R- result rejected by data validator

J- value is estimated

	Value Exceeds Unrestricted Use SCOs
	Value Exceeds Residential Use SCOs
	Value Exceeds Restricted-Residential Use SCOs
	Value Exceeds Commercial Use SCOs
	Value Exceeds Industrial Use SCOs

Former Service Station Site (#E828143)  
Town of Clarkson  
Summary of Validated Analytical Results

**Table 4 - Groundwater Results**

Detected Parameters <sup>1</sup>	Groundwater Standard <sup>2</sup>	MW-01 <sup>**</sup>	MW-02 <sup>**</sup>	MW-03 <sup>**</sup>	MW-04 <sup>**</sup>
		9/16/2009	9/16/2009	9/16/2009	9/16/2009
<b>EPA 8260 - Volatile Organics</b>					
1,2,4-Trimethylbenzene	5	ND	ND	0.76 J	16.0 J
Acetone	50*	ND	10.0 J	ND	78.7 J
Benzene	1	15.3	2.09	ND	353
Chloroform	7	ND	2.72	ND	ND
Ethylbenzene	5	ND	ND	ND	30.2
2-Hexanone	50*	ND	ND	4.23 J,B	ND
Isopropylbenzene	5	ND	ND	ND	10.0 J
m/p-Xylenes	N/A	ND	ND	ND	25.2
4-Methyl-2-pentanone	N/A	ND	ND	3.78 J,B	ND
m/p-Xylenes	N/A	ND	ND	ND	25.2
n-Propylbenzene	5	ND	ND	ND	8.00 J
Naphthalene	10*	1.04 J,B	ND	2.24 J,B	ND
o-Xylene	N/A	ND	ND	0.53 J	ND
Tetrachloroethene	5	2.83	ND	ND	ND
Toluene	5	ND	ND	ND	20.3
1,1,2-Trichloroethane	1	ND	ND	ND	26.0
Xylenes, Total	5	ND	ND	ND	25.2
<b>EPA 8270 - Semi-Volatile Organics</b>					
Phenol	1	ND	ND	ND	7.97 J
<b>TAL Metals</b>					
Aluminum	N/A	ND	11.8	ND	ND
Barium	1,000	1.06	1.38	0.856	1.51
Calcium	N/A	186	198	133	155
Chromium	50	ND	0.01	ND	ND
Iron	300	ND	16.1	ND	0.366
Lead	25	ND	0.009	ND	ND
Magnesium	35,000*	46.7	38.7	23.6	27.9
Manganese	300	0.58	1.3	ND	5.45
Potassium	N/A	35 N,M	20.9 N	10.7 N	19.5 N
Sodium	20,000	465	253	262	514
Thallium	0.5*	ND	ND	0.007	0.009
Vanadium	N/A	ND	0.022	ND	ND
<b>EPA 8082 - PCBs (none detected above laboratory detection limits)</b>					
<b>EPA 8081 - Pesticides</b>					
4,4'-DDD	0.3	0.069 J,B		ND	
4,4'-DDE	0.2	ND		0.055 J	
4,4'-DDT	0.2	0.083 J		0.072 J	
Aldrin	ND	0.053 J		ND	
alpha-Chlordane	0.1	0.041 J		ND	
Dieldrin	0.004	0.039 J		0.036 J	
Endosulfan II	N/A	ND		0.039 J,B	
Endosulfan Sulfate	N/A	0.049 J		ND	
Endrin	ND	0.034 J		ND	
Endrin aldehyde	5	0.061 J		ND	
gamma-BHC (Lindane)	N/A	0.033 J		ND	
gamma-Chlordane		0.088 J,B		0.075 J,B	
Methoxychlor	35	0.058 J,B		0.035 J,B	

1 all values shown in micrograms per liter (ug/L)

2- NYS Ambient Groundwater Standard (6 NYCRR Part 703.5)

\* - NYSDEC Guidance Value (TOGS 1.1.1)

J- value is estimated

B- compound detected in associated method blank

N- compound was "tentatively identified"

M- matrix spike recoveries outside QC limits; matrix bias indicated

~ value detected above NYS Ambient Groundwater Standard or applicable NYSDEC Guidance Value



**Table 5**

**Town of Clarkson, 8264 Ridge Road West, ERP Site #828143  
Estimated Remedial Costs  
Commercial Use Alternatives**

<b>Description</b>	<b>Est. Quantity</b>		<b>Unit Price</b>	<b>Est. Total</b>
<b>1. No Further Action w/ Institutional Controls</b>				
Negotiation & Filing of Deed Restrictions	1	@	\$3,000	\$3,000
Site Management Plan	1	@	\$3,000	\$3,000
Annual Engineer's Certification (30 years)	30	yrs	\$850	\$25,500
- site visit & certification letter				
			<b>TOTAL</b>	<b>\$31,500</b>
<b>TOTAL NET PRESENT WORTH OF COSTS (5% interest rate)</b>				<b>\$19,067</b>

<b>2. Long-Term Monitoring w/ Institutional Controls</b>				
Negotiation & Filing of Deed Restrictions	1	@	\$3,000	\$3,000
Site Management Plan	1	@	\$3,000	\$3,000
Annual Engineer's Certification (30 years)	30	yrs	\$850	\$25,500
- site visit & certification letter				
Annual Groundwater Monitoring (5 years)	5	yrs.	\$3,000	\$15,000
- 4 wells + QA/QC; 8260 VOCs & TAL Metals; annual reporting				
			<b>TOTAL</b>	<b>\$46,500</b>
<b>TOTAL NET PRESENT WORTH OF COSTS (5% interest rate)</b>				<b>\$34,648</b>

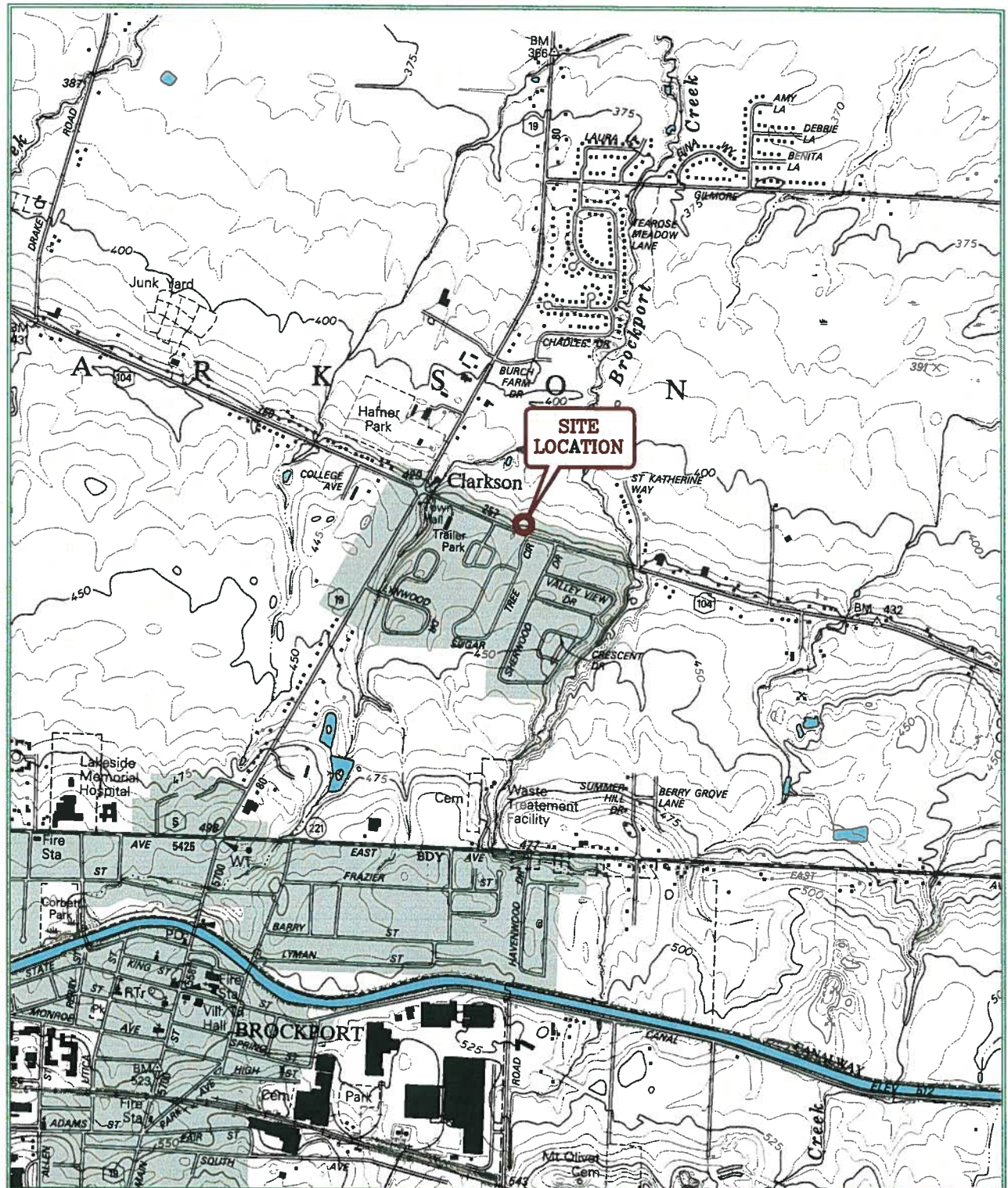
**Table 6**

**Town of Clarkson, 8264 Ridge Road West, ERP Site #828143  
Estimated Remedial Costs  
Unrestricted Use Alternative**

Description	Est. Quantity	Unit	Unit Price	Est. Total
Soil /Sediment Removal & Disposal				
Installation of temporary construction fence	1	@	\$500	\$500
Soil Excavation, Staging & Loading	10	days	\$1,700	\$17,000
Transportation & Disposal	1539	tons	\$48	\$73,872
Dewatering/Diversion of drainage ditch	1	@	\$10,000	\$10,000
Sediment Excavation & Loading	2	days	\$1,700	\$3,400
Confirmatory Sampling (analytical)	35	sample	\$315	\$11,025
Air Monitoring Equipment	12	days	\$300	\$3,600
Backfill	1000	yd <sup>3</sup>	\$8	\$8,000
Compaction & Site Restoration (topsoil & seed)	1	@	\$2,500	\$2,500
Waste Characterization	4	sample	\$300	\$1,200
Contingency (20%)	1	@	\$26,219	\$26,219
		SUBTOTAL		\$157,316
Two-Phase Vacuum Extraction				
Pilot Test (assume 1 day)	1	@	\$2,500	\$2,500
Installation of Extraction Wells	4	wells	\$1,350	\$5,400
Vacuum Extraction System rental (incl. generator)	3	months	\$3,200	\$9,600
Piping & Installation	1	@	\$2,500	\$2,500
Groundwater Storage	1	@	\$2,000	\$2,000
Transportation & Disposal	24,327	gals	\$1	\$24,327
Permitting (incl. sampling)	1	@	\$2,000	\$2,000
Initial system checks (daily)	7	days	\$400	\$2,800
Contingency (20%)	1	@	\$2,790	\$2,790
Periodic O&M (weekly)	11	weeks	\$500	\$5,500
Groundwater Monitoring (3 wells; biannually for 3 years)	3	years	\$4,000	\$12,000
		SUBTOTAL		\$53,917
Engineering				
Preparation of Remedial Action Work Plan	1	@	\$10,000	\$10,000
Oversight & Coordination	1	@	\$15,000	\$15,000
Final Engineering Report	1	@	\$15,000	\$15,000
		SUBTOTAL		\$40,000
TOTAL				\$251,234
TOTAL NET PRESENT WORTH OF COSTS (5% interest rate)				\$248,085

Notes: Soil/sediment removal and disposal costs based on use of Clarkson municipal forces  
 Assume 1.5 tons/yd<sup>3</sup> for soil and 1.8 tons/yd<sup>3</sup> for sediment  
 Soil/sediment disposal as non-hazardous  
 Estimate does not include air effluent treatment  
 All unit costs shown in 2011 dollars





SCALE: 1" = 2000'



NEW YORK  
QUADRANGLE LOCATION



# FIGURE 1. SITE LOCATION MAP

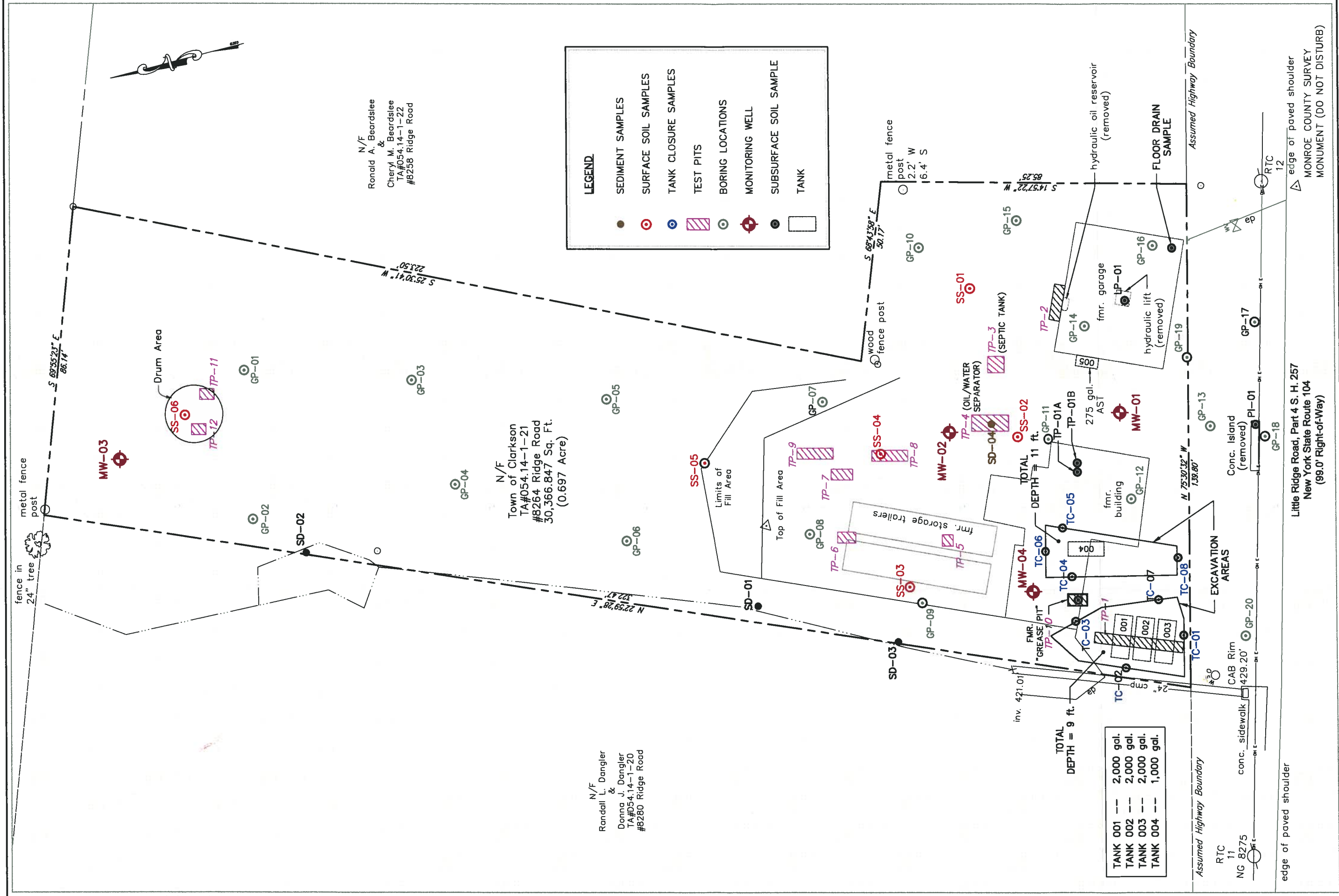
FMR. GAS STATION -- REMEDIAL INVESTIGATION  
8264 RIDGE ROAD WEST  
TOWN OF CLARKSON NEW YORK

DATE: JULY 2010

SCALE: 1:24,000

DRAWN BY: DLS

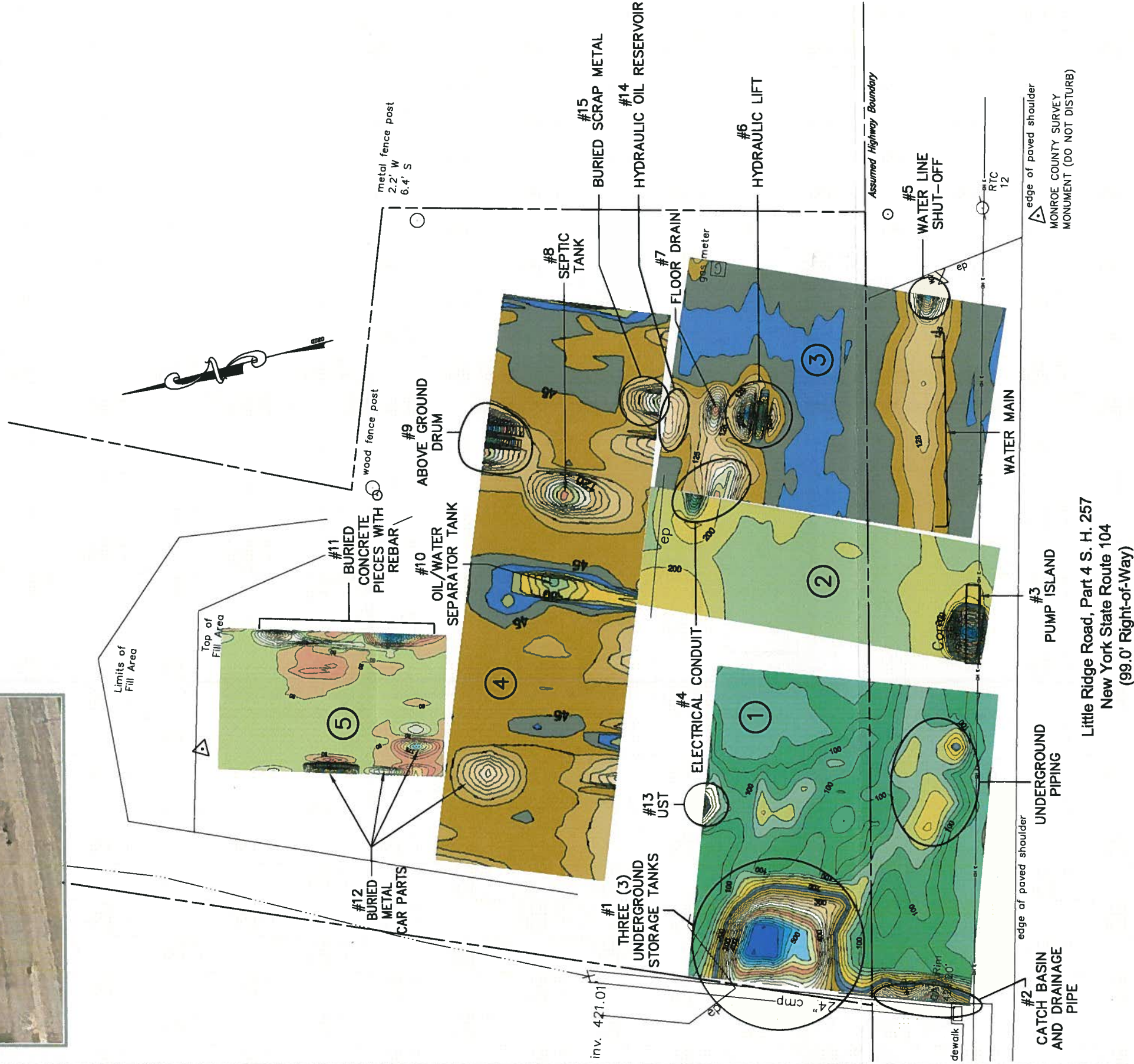
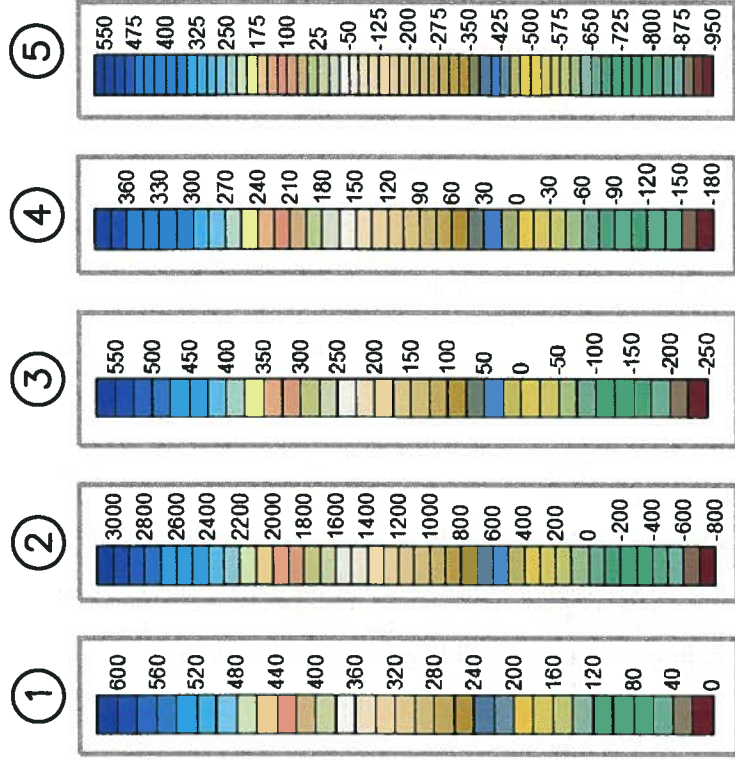
MAP SOURCE: NYS DOT RASTER QUADRANGLE  
BROCKPORT / MONROE COUNTY  
DOT EDITION DATE: 1997 / USGS CONTOUR DATA: 1971







GRID SCALES



Little Ridge Road, Part 4 S. H. 257  
New York State Route 104  
(99.0' Right-of-Way)



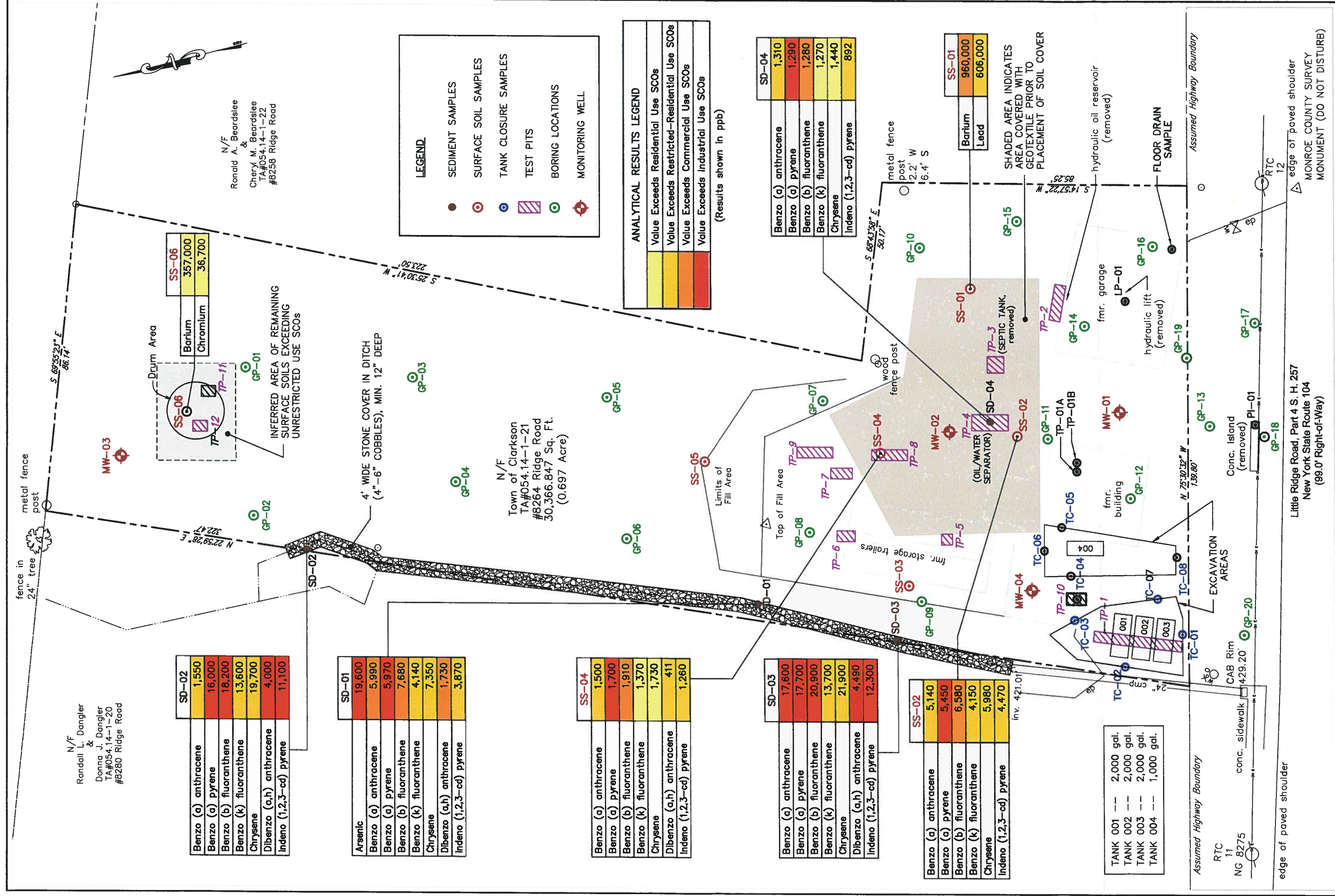
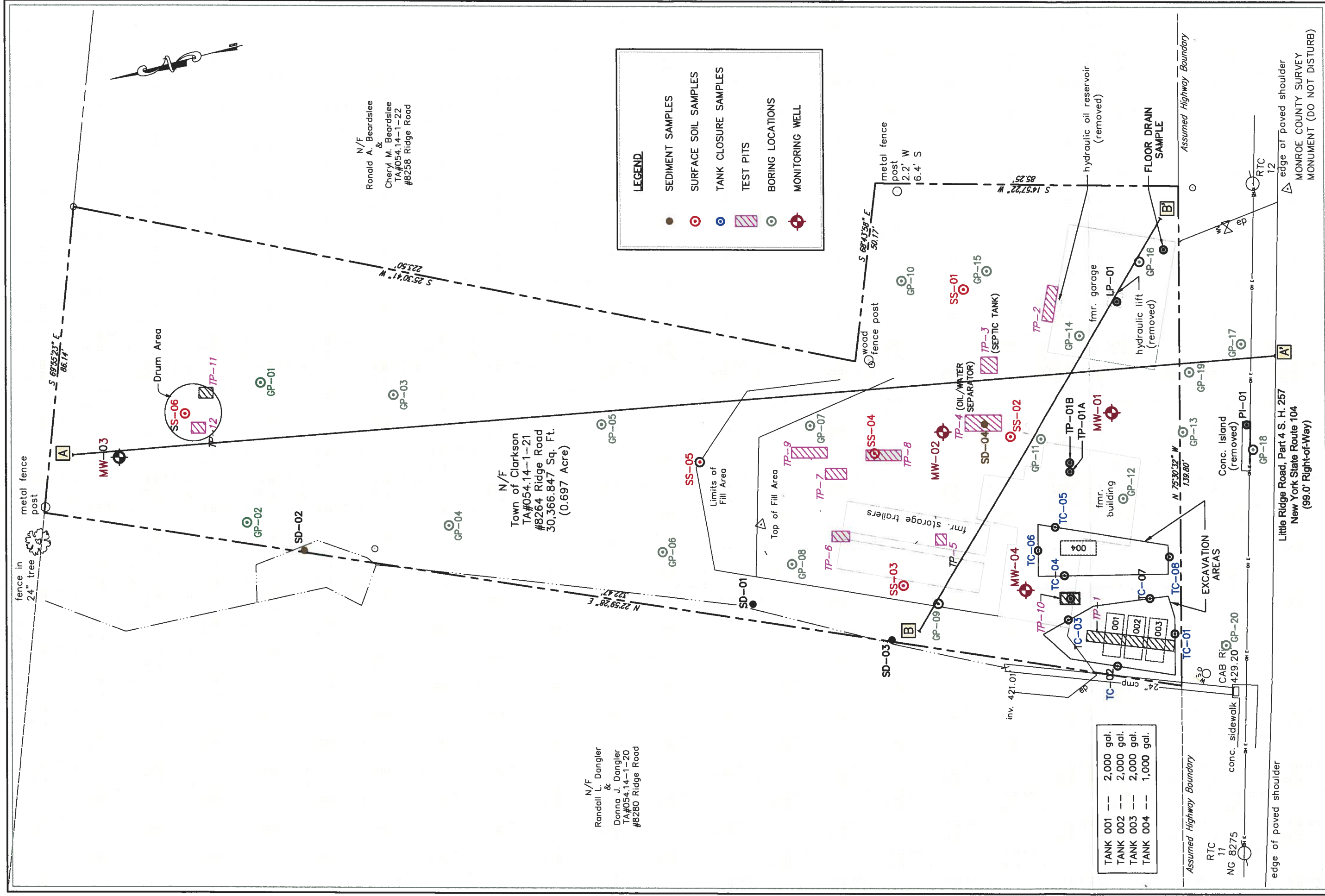


FIGURE 4.  
SURFACE SOIL & SEDIMENT SAMPLE RESULTS

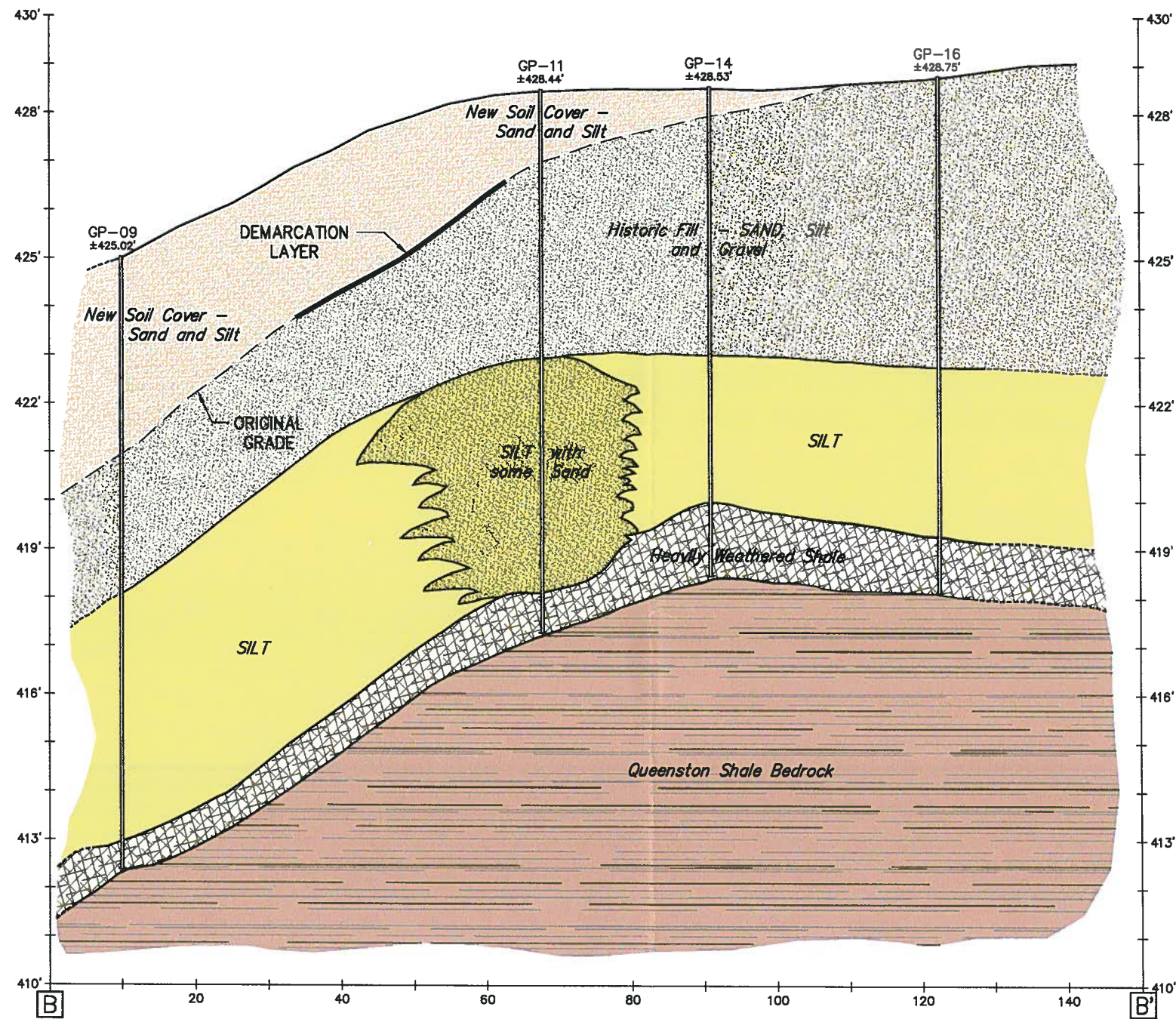
**FORMER GAS / SERVICE STATION  
REMEDIAL INVESTIGATION REPORT  
8284 RIDGE ROAD WEST**

DATE: JANUARY 2011  
SCALE: 1" = 25'  
DESIGNED/DRAWN/CHECKED  
P.N. 40503  
ERP Site# E828143  
LS/DS/GA





J:\Projects\40500 Clarkson\40503 Brownfield Inv-Cleanup\Cadd\RI Report\Fig.5b & 5c\_X-sections--NEW.dwg, 7/8/2011 7:41:10 AM, diane, AC2008



8263 RIDGE ROAD WEST  
FORMER GAS/SERVICE STATION  
SUBSURFACE SOIL CROSS SECTION  
SECTION LINE B-B'

POST-IRM

VERTICAL SCALE: 1" = 3'  
HORIZONTAL SCALE: 1" = 20'

FIGURE 5c.  
SOIL CROSS SECTION TRANSECT LINE B-B'

FORMER GAS / SERVICE STATION  
REMEDIAL INVESTIGATION REPORT

8264 RIDGE ROAD WEST  
TOWN OF CLARKSON | MONROE COUNTY | NEW YORK

DATE: JUNE 2011  
SCALE: AS SHOWN  
DESIGNED/DRAWN/CHECKED  
P.N. 40503  
ERP Site# E828143  
LS/DS/GA



j:\Projects\40500 Clarkson\40503 Brownfield Inv-Cleanup\Cadd\RI Report\Fig.5b & 5c\_X-sections-NEW.dwg, 7/14/2011 10:56:46 AM, diane, AC2008

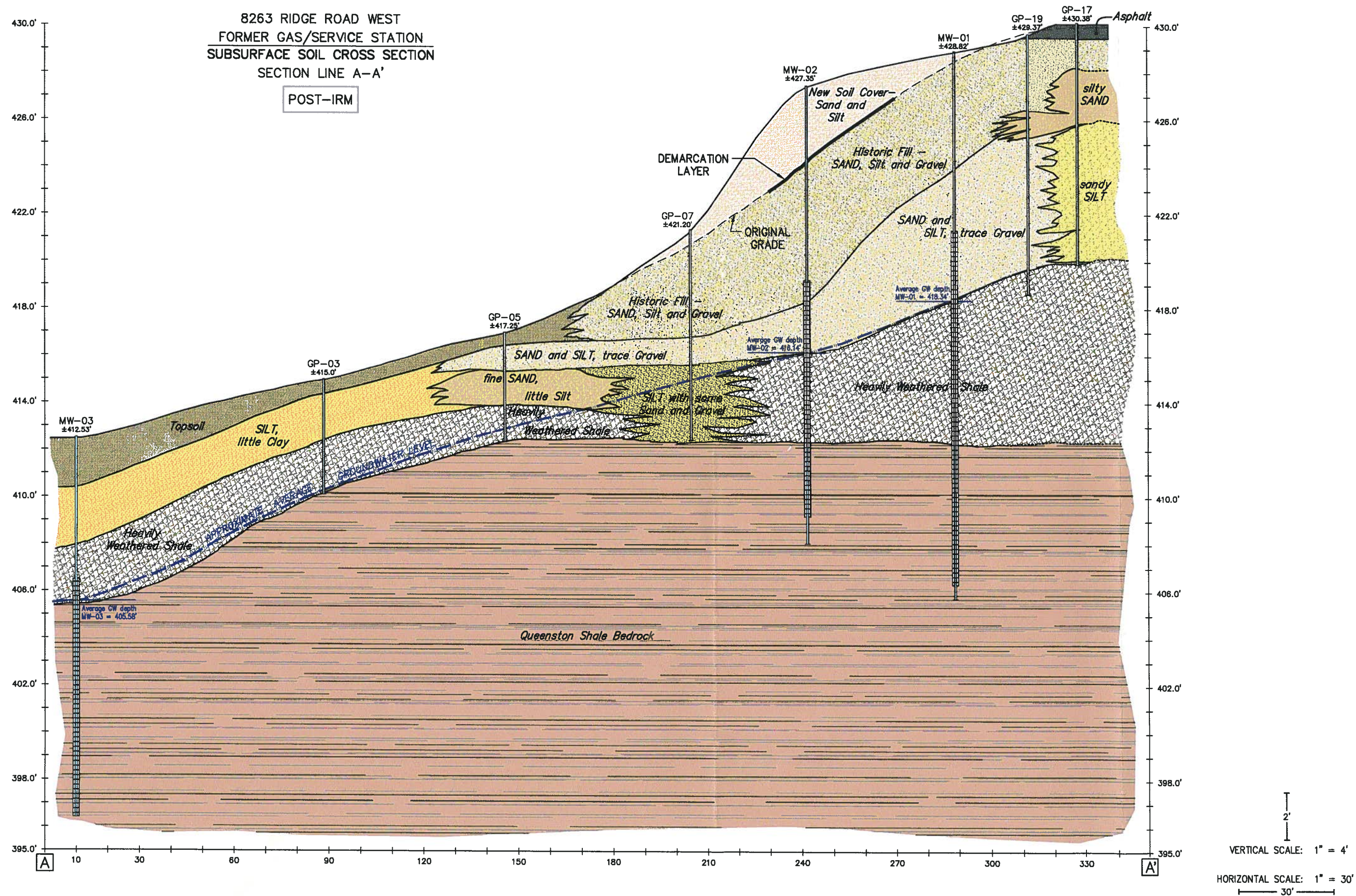


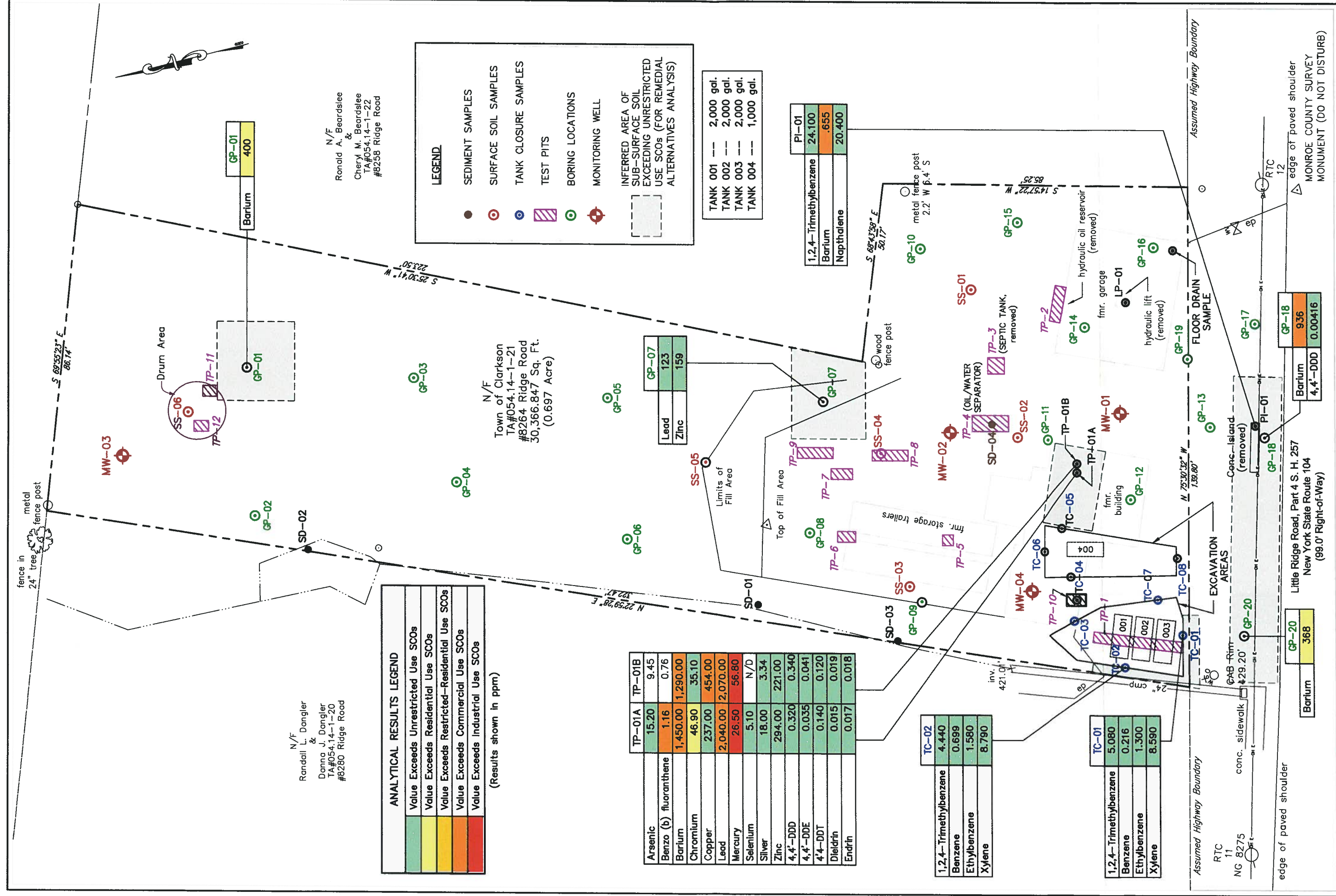
FIGURE 5b.  
SOIL CROSS SECTION TRANSECT LINE A-A'

FORMER GAS / SERVICE STATION  
REMEDIAL INVESTIGATION REPORT  
8264 RIDGE ROAD WEST

TOWN OF CLARKSON | MONROE COUNTY | NEW YORK

DATE: JUNE 2011  
SCALE: AS SHOWN  
DESIGNED/DRAWN/CHECKED: LS/DS/GA  
P.N.: 40503  
ERP Site#: E828143





ANALYTICAL RESULTS LEGEND	
	Value Exceeds Unrestricted Use SCO's
	Value Exceeds Residential Use SCO's
	Value Exceeds Restricted—Residential Use SCO's
	Value Exceeds Commercial Use SCO's
	Value Exceeds Industrial Use SCO's

	TP-01A	TP-01B
Arsenic	15.20	9.45
Benzo (b) fluoranthene	1.16	0.76
Barium	1,450.00	1,290.00
Chromium	46.90	35.10
Copper	237.00	454.00
Lead	2,040.00	2,070.00
Mercury	26.50	56.80
Selenium	5.10	N/D
Silver	18.00	3.34
Zinc	294.00	221.00
4,4'-DDD	0.320	0.340
4,4'-DDE	0.035	0.041
4,4'-DDT	0.140	0.120
Dieldrin	0.015	0.019
Endrin	0.017	0.018

1,2,4-Trimethylbenzene	4.440	TC-02
Benzene	0.699	
Ethylbenzene	1.580	
Xylene	8.790	

1,2,4-Trimethylbenzene	5.080	TC-01
Benzene	0.216	
Ethylbenzene	1.300	
Xylene	8.590	

GP-07	
Lead	123
Zinc	159

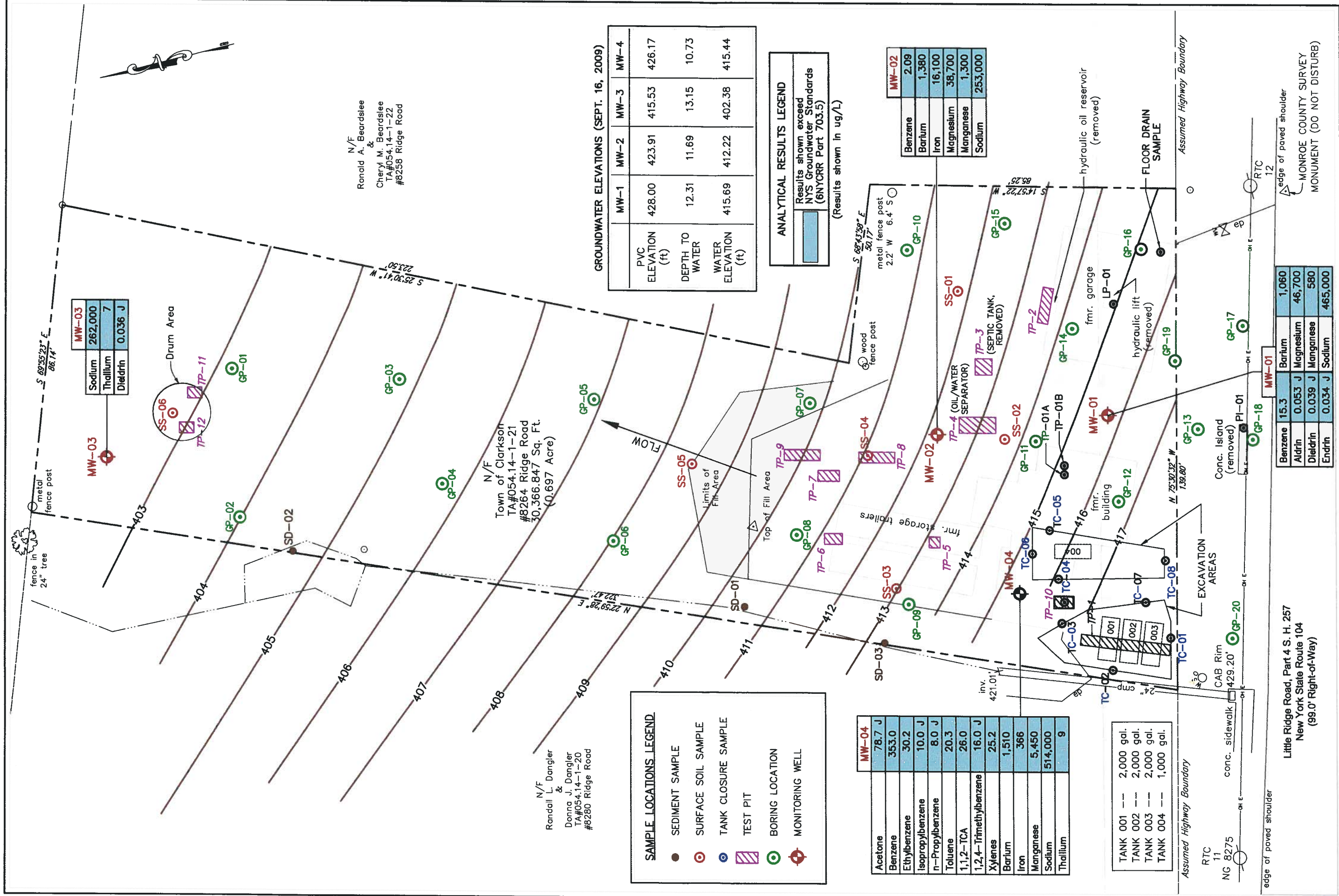
1,2,4-Trimethylbenzene	24.100	PI-01
Barium	.655	
Napthalene	20.400	

TANK 001	--	2,000 gal.
TANK 002	--	2,000 gal.
TANK 003	--	2,000 gal.
TANK 004	--	1,000 gal.

GP-20	368
Barium	

GP-18	936	0.00416
Barium		
4,4'-DDD		

FIGURE 6.  
SUB-SURFACE SOIL RESULTS



## Appendix A

### Site Photographs

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**Site Photographs**  
**Former Service Station #E828143**

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*Photo No. 1. View of Site prior to IRMs.*



*Photo No. 2. View of drainage ditch on western edge of the Site, facing north, at sampling location SD-01.*





*Photo No. 3. EM-61 geophysical survey.*



*Photo No. 4. Service pit located beneath former storage building.*





*Photo No. 5. TP-01A/B in basement of office building.*



*Photo No. 6. View of oil/water separator pit.*



**Site Photographs**  
**Former Service Station #E828143**

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*Photo No. 7. View of Geoprobe used for soil borings.*



*Photo No. 8. View of Site after completion of IRMs.*

## **Appendix B**

### **Boring Logs, Field Forms, and Hydrogeological Data**

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## Surface Soil Sample

Project: Clarkson ERP

Lu Project No.: 40503

Date: 4-27-09

Weather: sunny Temp.: 70° F

Field Engineer/Geologist: Laura Smith  
Mark Stein

SAMPLE ID: CS-SS-01 MS/MSD

Equipment Used: ss spoon

Surface Cover: sticks + leaves

Depth	PID Reading	Description
0-2"	0.0	Dark brown topsoil; silty SAND w/ organics, moist.

Remarks: sample @ 11:30 VOCs, SVOCs, metals, PCBs, Pesticides

SAMPLE ID: CS-SS-02

Equipment Used: ss spoon

Surface Cover: none

Depth	PID Reading	Description
0-2"	0.0	Dark brown silty SAND topsoil w/ organics.

Remarks: sample @ 11:50 (no pest. analysis)



## Surface Soil Sample

Project: Clarkson ERP Lu Project No.: 40503 Date: 4/27/09  
Weather: Sunny Temp.: 70° Field Engineer/Geologist: Laura / Mark  
12:05

SAMPLE ID: CS-SS-03

Equipment Used: SS Spoon

Surface Cover: Sticks

Depth	PID Reading	Description
0-2	0.0	st DE Brown Moist Silty Sand w/ organics

Remarks: Scrap metal, wood and other debris all ground.

SAMPLE ID: CS-SS-04 / CS-SS-04D

Equipment Used: SS Spoon 12:15

Surface Cover: None

Depth	PID Reading	Description
0-2	0.0	<sup>med.</sup> <del>st</del> Brown silty sand w/ organics / Fill

Remarks: sample @ 12:15 VOCs, SVOCs, Metals, PCBs, Pesticides



## Surface Soil Sample

Project: Clarkson ERP

Lu Project No.: 40503

Date: 4-27-09

Weather: Sunny

Temp.: 80° F

Field Engineer/Geologist: LMS/MS

SAMPLE ID: CS-SS-05

Equipment Used: SS spoon

Surface Cover: weeds + leaves

Depth	PID Reading	Description
0-2"	0.0	Dark brown silty SAND topsoil w/organics; dry.

Remarks: Sample @ 12:40 (no pest.)

SAMPLE ID: CS-SS-06

Equipment Used: trowel

Surface Cover: leaves + snail shells

Depth	PID Reading	Description
0-2"	0.0	Dark brown silty SAND topsoil w/organics; moist

Remarks: sample @ 12:50 VOCs, SVOCs, metals, PCBs, Pest.

\* Empty 20-gal. drums in area.



# Lu Engineers

## Test Pit Log

Test Pit No.: TP-1

Project: Clarkson ERP

Lu Project No.: 40503

Equipment Used: backhoe

Date: 6/19/09

Weather: overcast Temp.: 64°

Field Engineer/Geologist: L. Smith

Test Pit Dimensions: 25' x 3' x ~3'  
Length Width Depth

Depth	PID Reading	Description
2.5'		Encounter piping above USTs.
3'		3 USTs identified. South tank is full of water & is seeping into test pit.

### Comments

- ☒ No rock encountered; or  
☐ Rock encountered at \_\_\_\_\_ feet  
☐ Perch/Seepage water encountered at \_\_\_\_\_ feet  
☒ No groundwater encountered; or  
☐ Ground water encountered at \_\_\_\_\_ feet

Remarks:

Three 2,000-gal. USTs located ~ 3' bgs.



# Lu Engineers

## Test Pit Log

Test Pit No.: TP-2

Project: Clarkson ERP

Lu Project No.: 40503

Equipment Used: backhoe

Date: 6/19/09

Weather: overcast Temp.: 64°

Field Engineer/Geologist: L. Smith

Test Pit Dimensions: 10' x 3' x 5'  
Length Width Depth

Depth	PID Reading	Description
0-2'	0.0 ppm	Piece of scrap metal uncovered just below surface.

### Comments

- ☒ No rock encountered; or  
☐ Rock encountered at \_\_\_\_\_ feet  
☐ Perch/Seepage water encountered at \_\_\_\_\_ feet  
☒ No groundwater encountered; or  
☐ Ground water encountered at \_\_\_\_\_ feet

Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_





# Lu Engineers

## Test Pit Log

Test Pit No.: TP-3

Project: Clarkson ERP

Lu Project No.: 40503

Equipment Used: backhoe

Date: 6/19/09

Weather: overcast Temp.: 64 °

Field Engineer/Geologist: L. Smith

Test Pit Dimensions: \_\_\_\_\_ x \_\_\_\_\_ x <1'  
Length Width Depth

Depth	PID Reading	Description
<u>&lt;1'</u>		<u>septic tank cover</u>

### Comments

- ☐ No rock encountered; or
- ☐ Rock encountered at \_\_\_\_\_ feet
- ☐ Perch/Seepage water encountered at \_\_\_\_\_ feet
- ☐ No groundwater encountered; or
- ☐ Ground water encountered at \_\_\_\_\_ feet

Remarks:

Septic tank full of water. No sheen; no odors observed.





# Lu Engineers

## Test Pit Log

Test Pit No.: TP-4

Project: Clarkson ERP

Lu Project No.: 40503

Equipment Used: backhoe

Date: 6/19/09

Weather: overcast Temp.: 64°

Field Engineer/Geologist: L. Smith

Test Pit Dimensions: \_\_\_\_\_ x \_\_\_\_\_ x \_\_\_\_\_  
Length Width Depth

Depth	PID Reading	Description
2'	0.0ppm	PVC sewer drainage pipe runs into pit.
4'	0.0	Piece of broken clay drainage tile. PVC piping runs diagonally across <del>pit</del> excavation

### Comments

- ☒ No rock encountered; or  
☐ Rock encountered at \_\_\_\_\_ feet  
☐ Perch/Seepage water encountered at \_\_\_\_\_ feet  
☒ No groundwater encountered; or  
☐ Ground water encountered at \_\_\_\_\_ feet

Remarks:

Test pit TP-4 completed near oil/water separator pit.  
One PVC drainage line appears to run from fmr. garage  
bdg. into pit. A second PVC sewer drain line  
runs from fmr. wooden bldg. toward chicken coop.  
No metal objects found.



# Lu Engineers

## Test Pit Log

Test Pit No.: TP-5

Project: Clarkson ERP

Lu Project No.: 40503

Equipment Used: backhoe

Date: 6/19/09

Weather: overcast Temp.: 64°

Field Engineer/Geologist: L. Smith

Test Pit Dimensions: 3' x 3' x 3'  
Length Width Depth

Depth	PID Reading	Description
<u>2'</u>	<u>0.0ppm</u>	<u>Scrap metal encountered.</u> <u>Appears to be old truck grill.</u>

### Comments

- ☒ No rock encountered; or  
☐ Rock encountered at \_\_\_\_\_ feet  
☐ Perch/Seepage water encountered at \_\_\_\_\_ feet  
☒ No groundwater encountered; or  
☐ Ground water encountered at \_\_\_\_\_ feet

Remarks:

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# Lu Engineers

## Test Pit Log

Test Pit No.: TP-6

Project: Clarkson ERP

Lu Project No.: 40503

Equipment Used: backhoe

Date: 6/19/09

Weather: overcast Temp.: 64°

Field Engineer/Geologist: L. Smith

Test Pit Dimensions: 5' x 3' x 5'  
Length Width Depth

Depth	PID Reading	Description
3-5'	0.0ppm	buried concrete w/ re-bar in fill material. Sand/gravel fill.

### Comments

- ☒ No rock encountered; or  
☐ Rock encountered at \_\_\_\_\_ feet  
☐ Perch/Seepage water encountered at \_\_\_\_\_ feet  
☒ No groundwater encountered; or  
☐ Ground water encountered at \_\_\_\_\_ feet

Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# Lu Engineers

## Test Pit Log

Test Pit No.: TP-7

Project: Clarkson ERP

Lu Project No.: 40503

Equipment Used: backhoe

Date: 6/19/09

Weather: overcast Temp.: 64°

Field Engineer/Geologist: L. Smith

Test Pit Dimensions: 6' x 3' x 4.5'  
Length Width Depth

Depth	PID Reading	Description
1-2'	0.0ppm	buried gravel layer of fill.
3-4.5'	0.0	buried concrete; asphalt; plastic-coated wire; fill

### Comments

- ☒ No rock encountered; or  
☐ Rock encountered at \_\_\_\_\_ feet  
☐ Perch/Seepage water encountered at \_\_\_\_\_ feet  
☒ No groundwater encountered; or  
☐ Ground water encountered at \_\_\_\_\_ feet

Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# Lu Engineers

## Test Pit Log

Test Pit No.: TP-8

Project: Clarkson ERP

Lu Project No.: 40503

Equipment Used: backhoe

Date: 6/19/09

Weather: overcast Temp.: 64°

Field Engineer/Geologist: L. Smith

Test Pit Dimensions: 10' x 3' x 6'  
Length Width Depth

Depth	PID Reading	Description
2-3'	0.0 ppm	white plastic leach field lines with gravel backfill.
4-6'	0.0 ppm	concrete pieces; Fill.

### Comments

- ☒ No rock encountered; or  
☐ Rock encountered at \_\_\_\_\_ feet  
☐ Perch/Seepage water encountered at \_\_\_\_\_ feet  
☒ No groundwater encountered; or  
☐ Ground water encountered at \_\_\_\_\_ feet

Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# Lu Engineers

## Test Pit Log

Test Pit No.: TP-9

Project: Clarkson ERP

Lu Project No.: 40503

Equipment Used: backhoe

Date: 6/19/09

Weather: overcast Temp.: 64°

Field Engineer/Geologist: L. Smith

Test Pit Dimensions: 10' x 3' x 5'  
Length Width Depth

Depth	PID Reading	Description
0-5'	0.0 ppm	Sand/gravel FILL. No metal objects.

### Comments

- ☒ No rock encountered; or  
☐ Rock encountered at \_\_\_\_\_ feet  
☐ Perch/Seepage water encountered at \_\_\_\_\_ feet  
☒ No groundwater encountered; or  
☐ Ground water encountered at \_\_\_\_\_ feet

Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Lu Engineers

TP-01A/B

## Test Pit Log

Project: ~~DPSG Parcel B~~

Lu Project No.: ~~3627~~

Date: 5/27/09

Equipment Used: Badger - Rubber tire excavator

Weather: Sunny, Humid Temp.: 70°

Field Engineer/Geologist: B Bancroft

Test Pit Dimensions: 7 x 2.5 x 3  
Length Width Depth

Depth	PID Reading	Description
0-1	0.0 ppm	Slight odor - no reading on PID <i>Silt Loam soil texture with gravel inclusions. Possible fill.</i>
1-3	1-3 ppm	Low PID readings on soil. Groundwater seeping into test pit. Slight sheen on water surface, odor dissipated after initial excavation & PID readings fell to 0.0 ppm.

### Comments

- ☒ No rock encountered; or  
☐ Rock encountered at \_\_\_\_\_ feet  
☒ Perch/Seepage water encountered at 1 feet  
☐ No groundwater encountered; or  
☒ Ground water encountered at 1 feet

Remarks:

Soil samples CS-TP-01A & CS-TP-01B taken at 13:17.  
Matt Gillette (DEC) Present during test pit excavation & sampling.



# Lu Engineers

## Test Pit Log

Test Pit No.: TP-10

Project: Clarkson ERP

Lu Project No.: 40503

Equipment Used: excavator

Date: ~~6/19/09~~ 7/1/09

Weather: \_\_\_\_\_ Temp.: \_\_\_\_\_ °

Field Engineer/Geologist: G. Andrus

Test Pit Dimensions: \_\_\_\_\_ x 84' x 8'  
Length Width Depth

Depth	PID Reading	Description
	183 ppm	gasoline odor
7.0'	363 ppm	moist red-brown SILT and CLAY; Cobble-sized (glacial till) fragments of weathered shale.
8.0'		Strong petroleum odor.
		green/red weathered shale; friable

### Comments

- ☐ No rock encountered; or  
☒ Rock encountered at 8 feet  
☐ Perch/Seepage water encountered at \_\_\_\_\_ feet  
☐ No groundwater encountered; or  
☒ Ground water encountered at 6-7 feet

Remarks:

CS-TP-10-08 collected from 6-8' bgs





# Lu Engineers

## Test Pit Log

Test Pit No.: TP-11

Project: Clarkson ERP

Equipment Used: excavator

Lu Project No.: 40503

Weather: Sunny Temp.: 58°F

Date: 7/14/09

Field Engineer/Geologist: L. Smith

Test Pit Dimensions: 5' x 3' x 4'  
Length Width Depth

Depth	PID Reading	Description
0-4'	0.0ppm	Dark-brown silty SAND; moist; organics. No buried objects.

### Comments

- ☒ No rock encountered; or  
☐ Rock encountered at \_\_\_\_\_ feet  
☐ Perch/Seepage water encountered at \_\_\_\_\_ feet  
☒ No groundwater encountered; or  
☐ Ground water encountered at \_\_\_\_\_ feet

Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# Lu Engineers

## Test Pit Log

Test Pit No.: TP-12

Project: Clarkson ERP

Equipment Used: excavator

Lu Project No.: 40503

Weather: Sunny Temp.: 58°F

Date: 7/14/09

Field Engineer/Geologist: L. Smith


Test Pit Dimensions: 5' x 3' x 4'  
Length Width Depth


Depth	PID Reading	Description
0-3'	0.0 ppm	Reddish-brown to dark-brown SILT and SAND; moist; native soil.
3-4'	0.0 ppm	Reddish-brown tight SILT. No buried objects


### Comments


- ☒ No rock encountered; or  
☐ Rock encountered at \_\_\_\_\_ feet  
☐ Perch/Seepage water encountered at \_\_\_\_\_ feet  
☒ No groundwater encountered; or  
☐ Ground water encountered at \_\_\_\_\_ feet

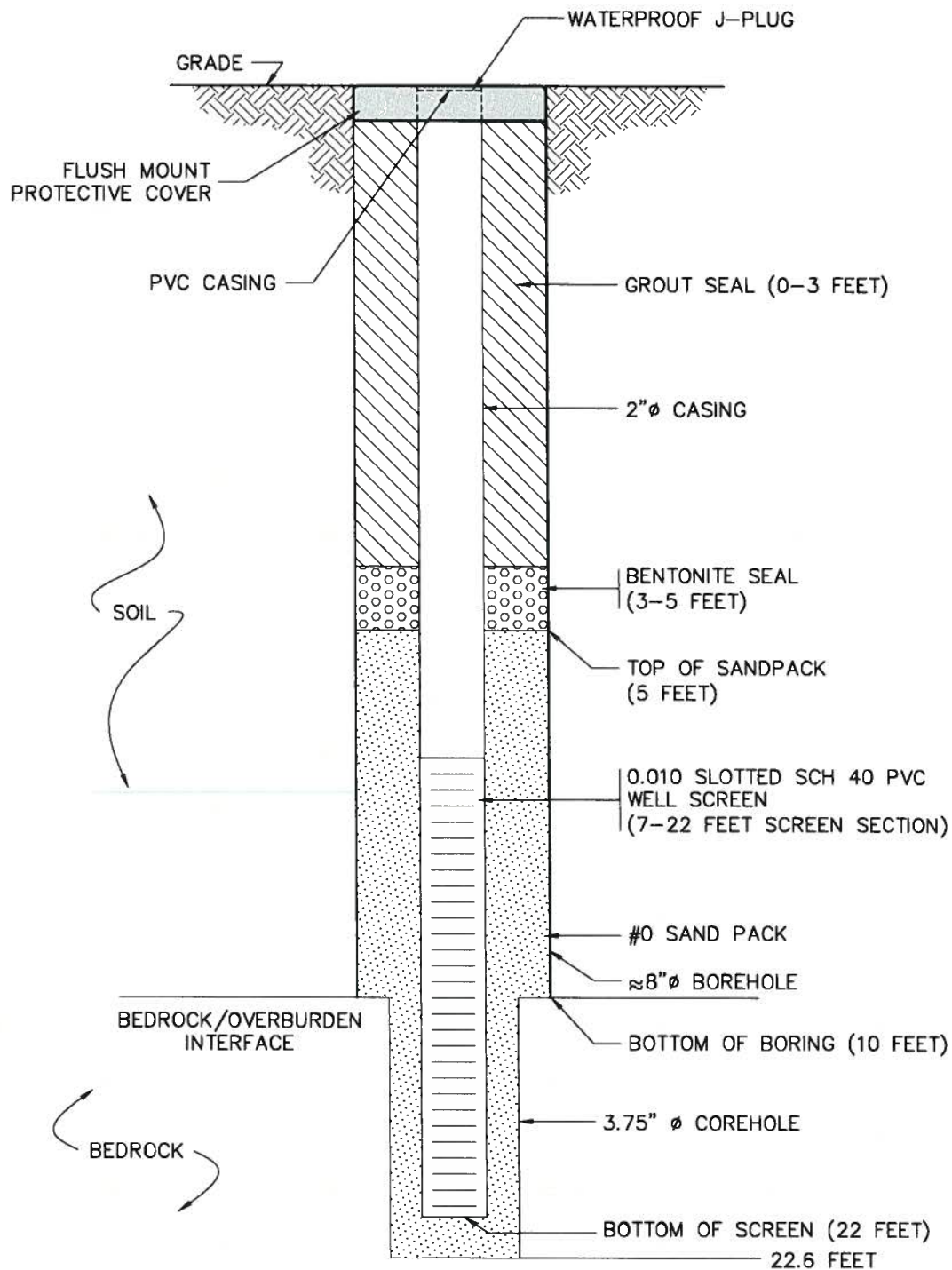
Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

		PROJECT		BORING MW-01					
		Clarkson EPR Site #E828143 8264 Ridge Road West		SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A					
CONTRACTOR: Nothnagle Drilling, Inc.		BORING LOCATION: SEE PLAN							
DRILLER: Jeff/ Tom		GROUND SURFACE ELEVATION: N/A		DATUM: N/A					
JCL GEOLOGIST: G. Andrus		START DATE: 8/10/2009		END DATE: 8/10/2009					
TYPE OF DRILL RIG: CME 75 CASING SIZE AND TYPE: 4.25" hollow-stem auger OVERBURDEN SAMPLING METHOD: Geoprobe tooling ROCK DRILLING METHOD: HQ core bit		WATER LEVEL DATA							
		DATE	TIME	WATER	CASING	REMARKS			
D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	P/D		
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)				
	N/A	1	0-4		20%			0-4' FILL: brown SILT and cmf SAND little CLAY, no odor, moist	0.0 ppm
	1								
	2								
	3								
	4								
		2	4-8		90%			4-4.5' FILL: same as above	
	5							4.5-8' red to red-brown CLAY and SILT (primarily weathered shale) cmf GRAVEL fine COBBLE, shale fragments, dry, no odor	0.0 ppm
	6								
	7								
	8								
		3	8-10					8-10' red similar soil as above, dry, no odor	0.0 ppm
	9								
	10							soil core barrel refusal @ 10'	
	11								
	12								
	13								
	14								
	15								
	16								
17									
18									
19									
20									
LEGEND S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE					soil core barrel refusal @ 10'. Augered through weathered shale to 15.9 feet HQ Core #1 - 15.9 - 18.9' HQ Core #2 - 18.9 - 22.6'				
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.									
BORING # MW-01									

		PROJECT		BORING MW-02			
		Clarkson EPR Site #E828143 8264 Ridge Road West		SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A			
CONTRACTOR: Nothnagle Drilling, Inc.		BORING LOCATION: SEE PLAN					
DRILLER: Jeff/ Tom		GROUND SURFACE ELEVATION: N/A		DATUM: N/A			
JCL GEOLOGIST: R. Freundshuh		START DATE: 8/11/2009		END DATE: 8/11/2009			
TYPE OF DRILL RIG: CME 75 CASING SIZE AND TYPE: 4.25" hollow-stem auger OVERBURDEN SAMPLING METHOD: Geoprobe tooling ROCK DRILLING METHOD: roller bit		WATER LEVEL DATA					
		DATE	TIME	WATER	CASING	REMARKS	
D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)		
	N/A	1	0-4		80%	0-4' FILL: Dark brown cmf SAND some SILT little GRAVEL, no odor, moist	0.0 ppm
	2					4-6' same as above	
		2	4-8		90%	6-8' Dark brown cmf SAND and SILT trace CLAY trace GRAVEL, no odor, moist	0.0 ppm
						8-9.5' similar soil, weathered bedrock, moist, no odor	0.0 ppm
		3	8-10			9.5-16' soft-medium hard red-green shale fragments	
					soil core barrel refusal @ 9.5'		

		PROJECT		BORING MW-03			
		Clarkson EPR Site #E828143 8264 Ridge Road West		SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A			
CONTRACTOR: Nothnagle Drilling, Inc.		BORING LOCATION: SEE PLAN					
DRILLER: Jeff/ Tom		GROUND SURFACE ELEVATION: N/A		DATUM: N/A			
JCL GEOLOGIST: R. Freundschuh		START DATE: 8/12/2009		END DATE: 8/12/2009			
TYPE OF DRILL RIG: CME 75 CASING SIZE AND TYPE: 4.25" hollow-stem auger OVERBURDEN SAMPLING METHOD: Geoprobe tooling ROCK DRILLING METHOD: HQ core bit		WATER LEVEL DATA					
		DATE	TIME	WATER	CASING	REMARKS	
D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)		
	N/A	1	0-4		95%	0-2' Top soil: dark brown SILT, medium dense, little CLAY, organic material, moist	0.0 ppm
	1						
	2					2-4' medium-brown SILT, medium dense, little CLAY, trace cmf SAND, moist	0.0 ppm
	3						
	4						
	5	2	4-8			soil core barrel refusal @ 4.5'	
	6					4.5-6' weathered shale	
	7						
	8					6-11' soft-medium hard red-green shale. Medium-massively bedded, no water bearing fractures observed. Estimate RQD 75+/-	
	9						
	10						
	11						
	12					11-16' medium hard red-green shale (same as above)	
	13						
	14						
	15						
	16						
	17					Total Depth = 16'	
	18						
19							
20							
LEGEND S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE					Sample collected from 2-4' bgs Augered thru weathered shale to 6 feet Core #1 - 6-11' Core #2 - 11-16'		
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.							
BORING # MW-03							

		PROJECT		BORING MW-04			
		Clarkson EPR Site #E828143 8264 Ridge Road West		SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A			
CONTRACTOR: Nothnagle Drilling, Inc.		BORING LOCATION: SEE PLAN					
DRILLER: Jeff/ Tom		GROUND SURFACE ELEVATION: N/A		DATUM: N/A			
JCL GEOLOGIST: R. Freundschuh		START DATE: 8/12/2009		END DATE: 8/12/2009			
TYPE OF DRILL RIG: CME 75 CASING SIZE AND TYPE: 4.25" hollow-stem auger OVERBURDEN SAMPLING METHOD: Geoprobe tooling ROCK DRILLING METHOD: HQ core bit		WATER LEVEL DATA					
		DATE	TIME	WATER	CASING	REMARKS	
D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)		
	N/A	1	0-4		55%	0-4' FILL: brown SILT and cmf SAND little CLAY, moist	0.0 ppm
	1						
	2						
	3						
	4					4-6' same as above	
		2	4-8		90%		
	5						
	6						
	7					6-8' medium-brown SILT little mf SAND little CLAY, moist  petroleum odor @ 7-8'	276 ppm
	8						
	9						
	10						
	11					8-10' similar soil w/ petroleum odor, moist	
		3	8-11		80		
	12						
	13						
	14					10-11' weathered shale bedrock, moist, petroleum odor  soil core barrel refusal @ 11'	1,500 ppm
	15						
	16						
17							
18					11-16 soft-medium hard red-green shale. Medium-massively bedded, no water bearing fractures observed. Estimate RQD 75+/-		
19							
20							
21							
22					16-18' medium hard red-green shale (same as above)		
23							
24							
25							
<b>LEGEND</b> S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE					collected sample from 8-11'  Core #1 - 11-16' (0.0 ppm) Core #2 - 16-18'		
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.							
BORING # MW-04							



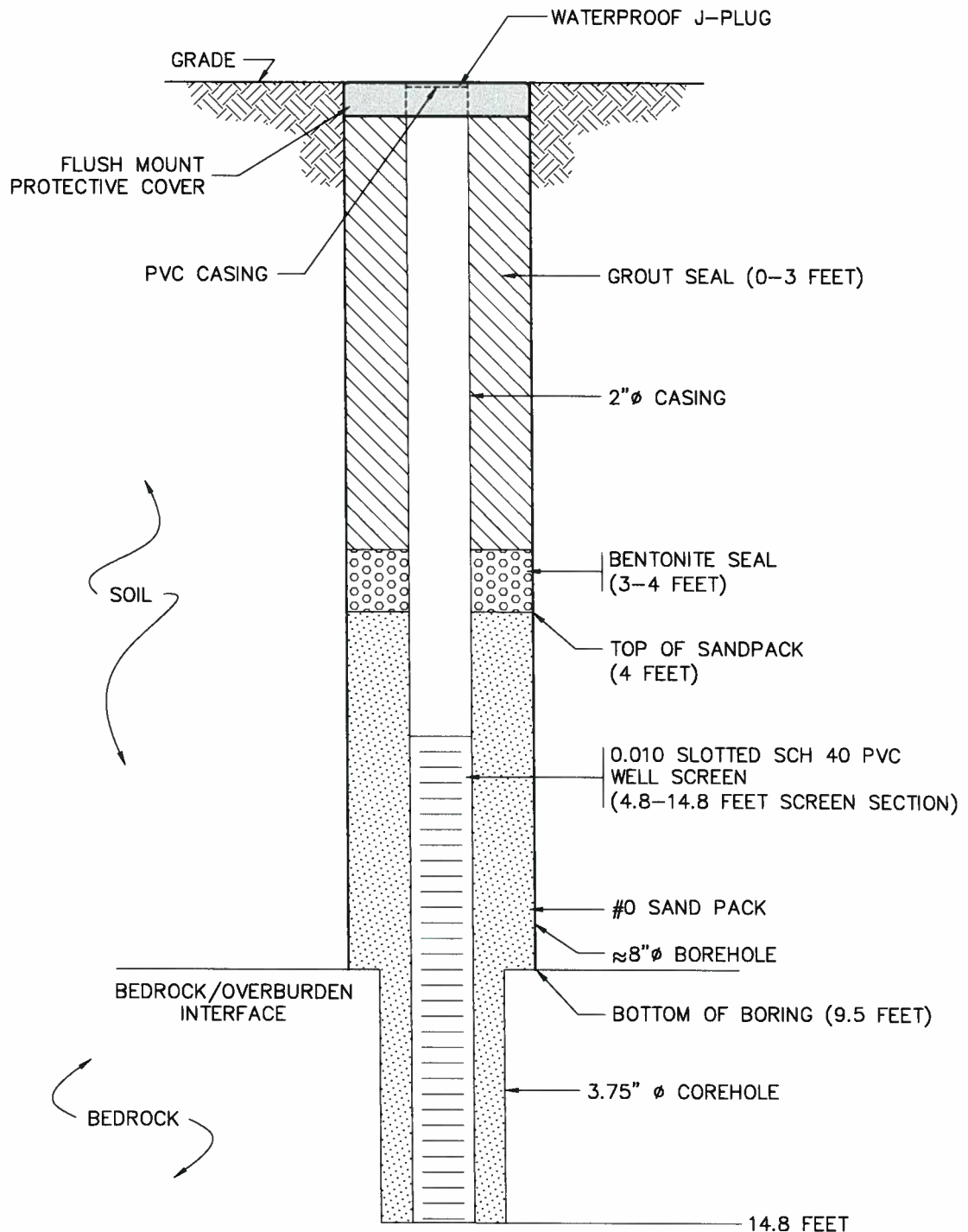
### MW-01 CONSTRUCTION DETAIL

NOT TO SCALE



**FLUSH MOUNT WELL DIAGRAM**  
**MONITORING WELL 01 -- FMR. GAS STATION**  
**ENVIRONMENTAL RESTORATION PROGRAM**  
**8264 RIDGE ROAD WEST**  
**TOWN OF CLARKSON NEW YORK**

DATE: SEPTEMBER 2009  
 SCALE: NONE  
 DRAWN/CHECKED: DLS/GLA  
 P.N.: 40503



### MW-02 CONSTRUCTION DETAIL

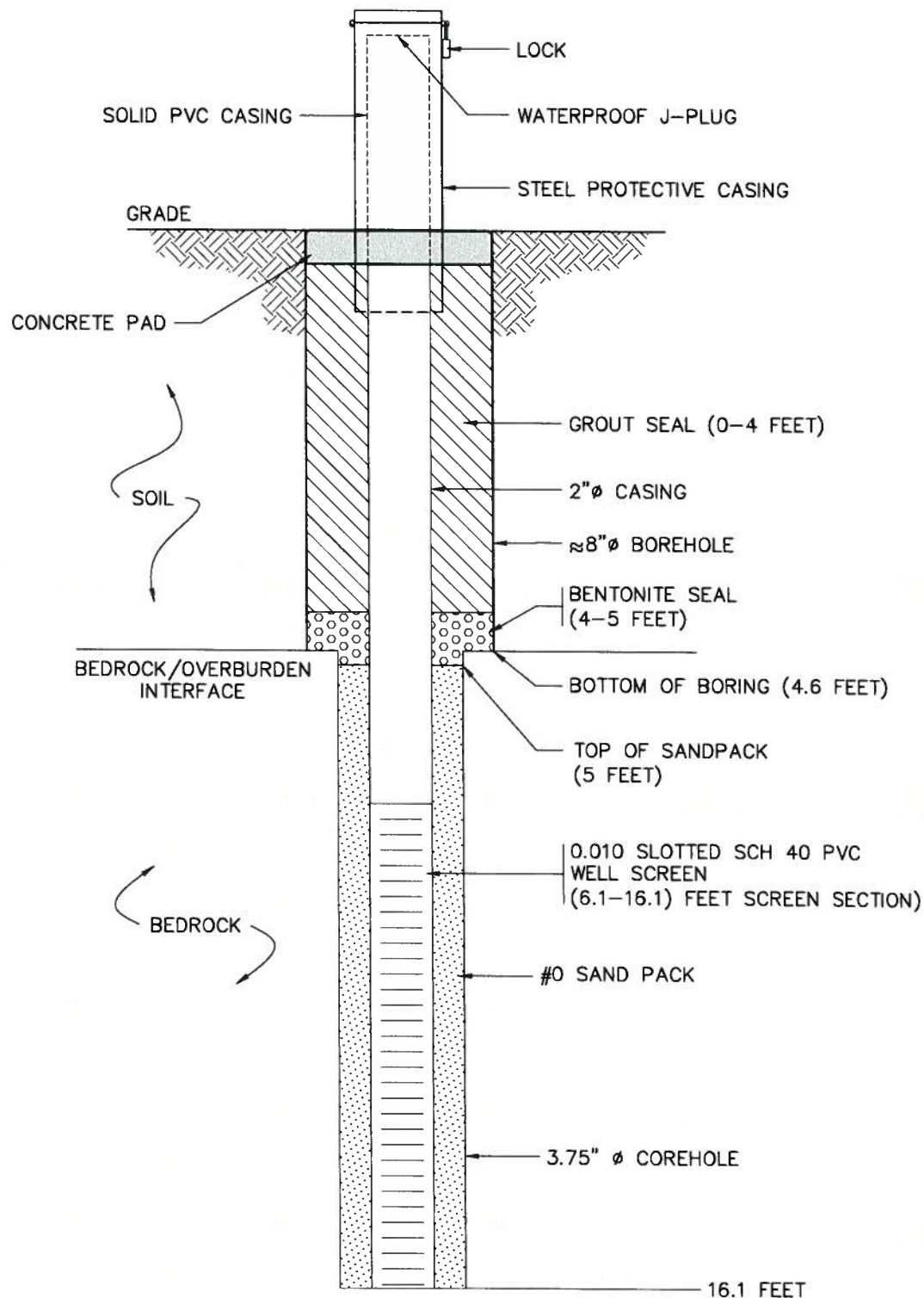
NOT TO SCALE



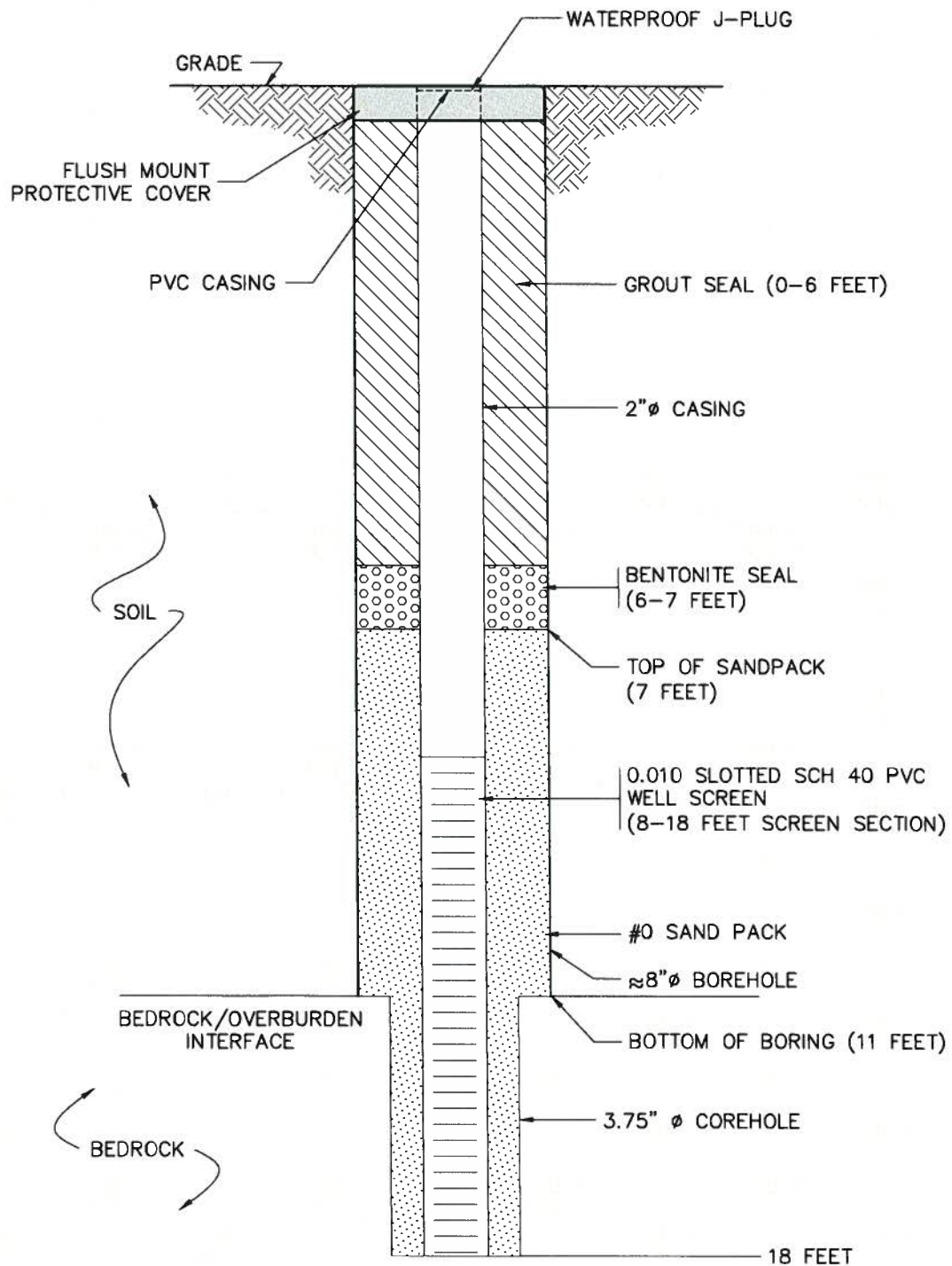
**FLUSH MOUNT WELL DIAGRAM**  
**MONITORING WELL 02 -- FMR. GAS STATION**  
**ENVIRONMENTAL RESTORATION PROGRAM**  
**8284 RIDGE ROAD WEST**  
**TOWN OF CLARKSON NEW YORK**

DATE: SEPTEMBER 2009  
 SCALE: NONE  
 DRAWN/CHECKED DLS/GLA  
 P.N. 40503





**MW-03 CONSTRUCTION DETAIL**  
NOT TO SCALE



**MW-04 CONSTRUCTION DETAIL**  
NOT TO SCALE



## Well Development Field Record

Project Name: Clarkson ERP  
Well ID: mw-01  
Logged by: RLF

Development Date: 8/13/09  
Installation Date: 8/10/09

Job # 40503  
Start Time: 11:30  
End Time: 2:01

Initial Depth to Water: 9.85  
Final Depth to Water: 21.99' 10.62  
Screen Length: 15 ft  
Well Volume: 1.98 gals

Measurement Point: TOR  
Well Depth before: 21.99'  
Well Depth after: 22.01'  
Sediment Depth Removed: .02'

Well Diameter: 2"  
Well Integrity:  
Cap ☒  
Casing ☒  
Locked ☐  
Collar ☒

(2" diameter = 0.163 gallons per foot of depth, 4" diameter = 0.653 gallons per foot of depth)

Protective casing stick-up: n/a

Casing/Well difference: \_\_\_\_\_

## WATER QUALITY PARAMETERS

Start Pump - 11:50

Time	Volume Purged (gals)	Purge Rate (gals/min)	Temp. (deg. C)	pH (units)	Dissolved O <sub>2</sub> (mg/L)	Turbidity (NTU)	Cond. (mS/cm)	Comments
11:54	5	~ #1	17.0	6.8		>1000		Very Turbid
12:03	10	~ .5	14.2	7.1		>1000		" "
12:13	15		14.6	7.2		>1000		
12:42	20		15.2	7.3		550		slight petroleum odor
12:51	25		15.2	7.1		>1000		
1:15	30		16.5	7.1		"		

Type of Water Quality Meter: LaMotte 8020 Turbidimeter, Hanna pHep

Purge Observations: \_\_\_\_\_

Purge Water Containerized: no

## EQUIPMENT DOCUMENTATION

- ☒ Submersible Pump  
☐ PVC Bailer  
☐ Surge Block  
☐ Other \_\_\_\_\_

Approximate Recharge Rate: \_\_\_\_\_

Total Gallons Removed: 45

Notes: \_\_\_\_\_  
- Slight petroleum odor once water from surrounding aquifer began to enter well.  
- Well goes dry, but recharges rather quickly  
- Final turbidity reading = 360 NTU @ 14:00

Signature: Rachel Trautenschuh  
Checked By: L. Neubauer





## Well Development Field Record

Project Name: Clarkson ERP  
Well ID: MW-02  
Logged by: RLF

Development Date: 8/13/09  
Installation Date: 8/11/09

Job # 40503  
Start Time: 2:31  
End Time: 4:00

Initial Depth to Water: 4.59  
Final Depth to Water: 13.81  
Screen Length: 10 ft  
Well Volume: 1.66 gals

Measurement Point: TOR  
Well Depth before: 14.75'  
Well Depth after: 14.79'  
Sediment Depth Removed: .04'

Well Diameter: 2"  
Well Integrity: ✓  
Cap ✓  
Casing ✓  
Locked ✓  
Collar ✓

(2" diameter = 0.163 gallons per foot of depth, 4" diameter = 0.653 gallons per foot of depth)

Protective casing stick-up: n/a

Casing/Well difference: \_\_\_\_\_

## WATER QUALITY PARAMETERS

Time	Volume Purged (gals)	Purge Rate (gals/min)	Temp. (deg. C)	pH (units)	Dissolved O2 (mg/L)	Turbidity (NTU)	Cond. (mS/cm)	Comments
2:42	5	~.5	18.0	7.6		>1000		Very turbid
3:09	~7		18.8	7.7		11		" "
4:00	~7.5		23.4	7.9		11		" "

Type of Water Quality Meter: LaMotte 2020 Turbid Meter, Hanna pHep  
Purge Observations: Very turbid  
Purge Water Containerized: no

## EQUIPMENT DOCUMENTATION

- ☒ Submersible Pump  
☐ PVC Bailer  
☐ Surge Block  
☐ Other \_\_\_\_\_

Approximate Recharge Rate: \_\_\_\_\_

Total Gallons Removed: ~7.5

Notes: - Well running dry, but recharging rather quickly  
- Recharge rate slowing down  
- Well making very little water  
- Only able to remove cpx. 7.5 gals after 1.5 hours

Signature: Rachel Trautman  
Checked By: L. Neubauer



Lu Engineers

## Well Development Field Record

Project Name: Clarkson ERP  
Well ID: MW-03  
Logged by: RLF

Development Date: 8/13/09  
Installation Date: 8/12/09

Job # 40503  
Start Time: 4:05  
End Time: 4:50

Initial Depth to Water: 9.52  
Final Depth to Water: 10.05  
Screen Length: 10'  
Well Volume: 1.6 gals

Measurement Point: TOR  
Well Depth before: 19.3'  
Well Depth after: 19.4'  
Sediment Depth Removed: .10'

Well Diameter: 2"  
Well Integrity: \_\_\_\_\_  
Cap ☒  
Casing ☒  
Locked ☒  
Collar ☐

(2" diameter = 0.163 gallons per foot of depth, 4" diameter = 0.653 gallons per foot of depth)

Protective casing stick-up: 3.4'

Casing/Well difference: \_\_\_\_\_

### WATER QUALITY PARAMETERS

Time	Volume Purged (gals)	Purge Rate (gals/min)	Temp. (deg. C)	pH (units)	Dissolved O2 (mg/L)	Turbidity (NTU)	Cond. (mS/cm)	Comments
4:10	5	~1	13.9	7.0		600		
4:16	10	"	13.5	7.1		340		
4:21	15	"	13.8	7.2		200		
4:31	20	"	13.3	7.1		130		
4:36	25	"	13.7	7.1		80		
4:43	30	"	13.6	7.2		"		

Type of Water Quality Meter: Lamotte 2020 Turbidimeter, Hanna pHep  
Purge Observations: very clear  
Purge Water Containerized: no

### EQUIPMENT DOCUMENTATION

- ☒ Submersible Pump  
☐ PVC Bailer  
☐ Surge Block  
☐ Other \_\_\_\_\_

Approximate Recharge Rate: \_\_\_\_\_

Total Gallons Removed: ~40

Notes: \_\_\_\_\_  
- Well producing a lot of water  
- Final turbidity reading = 33 NTU  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature: Rachel Tremschuk  
Checked By: L. Neubauer



Lu Engineers

## Well Development Field Record

Project Name: Chickson ERP  
Well ID: mw-04  
Logged by: RLF

Development Date: 8/13/09  
Installation Date: 8/12/09

Job # 40503  
Start Time: 5:02  
End Time: 6:00

Initial Depth to Water: 8.82  
Final Depth to Water: 14.20  
Screen Length: 10'  
Well Volume: 1.64 gals

Measurement Point: FS TOR  
Well Depth before: 18.91  
Well Depth after: 18.91  
Sediment Depth Removed: 0

Well Diameter: 2"  
Well Integrity:  
Cap ☒  
Casing ☒  
Locked ☐  
Collar ☒

(2" diameter = 0.163 gallons per foot of depth, 4" diameter = 0.653 gallons per foot of depth)

Protective casing stick-up: n/a

Casing/Well difference: \_\_\_\_\_

### WATER QUALITY PARAMETERS

Time	Volume Purged (gals)	Purge Rate (gals/min)	Temp. (deg. C)	pH (units)	Dissolved O2 (mg/L)	Turbidity (NTU)	Cond. (mS/cm)	Comments
5:15	~5		15.0	7.3		71000		very turbid
5:35	~8		14.3	7.2		"		" "
5:44	~10		14.4	7.1		"		Petroleum odor
5:50	~11		14.1	7.1		900		
6:00	~12		14.6	7.1		650		

Type of Water Quality Meter: Lamotte 2020 Turbidimeter, Hanna pHep  
Purge Observations: Turbid, petroleum odor  
Purge Water Containerized: no

### EQUIPMENT DOCUMENTATION

- ☒ Submersible Pump  
☐ PVC Bailer  
☐ Surge Block  
☐ Other \_\_\_\_\_

Approximate Recharge Rate: \_\_\_\_\_

Total Gallons Removed: apx. 12

Notes: \_\_\_\_\_  
- well running dry after apx. 2.5 gals.  
- strong petroleum odor  
- very slow recharge rate  
\_\_\_\_\_  
\_\_\_\_\_

Signature: Rachel Treumacher  
Checked By: L. Neubauer



# Low Flow Groundwater Sampling Field Record



Project Name Clarkson ERP Site

Location ID MW-01

Activity Time 12:13

Field Sample ID MW-01 MS + MSD

Sample Time 13:31

Job # 40503

Sampling Event # 01

Date 09/16/09

## SAMPLING NOTES

Initial Depth to Water 12.31 feet Measurement Point TOR Well Diameter 2"

Final Depth to Water 13.42 feet Well Depth 21.91 feet Well Integrity:

Screen Length 15 feet Pump Intake Depth 17 ft. bags Cap New

Total Volume Purged apx 7.5 gallons PID Well Head \_\_\_\_\_ Casing New

[purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter] Locked New

Volume of Water in casing - 2" diameter = 0.163 gallons per foot of depth, 4" diameter = 0.653 gallons per foot of depth Collar New

## PURGE DATA

Time	Depth to Water (ft)	Purge Rate (ml/min)	Temp. (deg. C)	pH (units)	Dissolved O2 (mg/L)	Turbidity (NTU)	Cond. (mS/cm)	ORP (mV)	Comments
12:26	13.22	450	18.2	7.27	2.81	12.7	7.08	2829	
12:33	13.42	400	17.3	8.04	1.52	9.15	4.57	83	
12:40	13.51	↓	18.1	8.19	.29	4.74	5.36	72	
12:45	13.55	↓	17.7	8.53	.21	5.03	8.14	63	
12:51	13.52	350	16.8	9.01	.26	7.17	8.47	56	
12:57	13.51	↓	16.6	9.31	.10	4.45	17.4	51	
13:02	13.50	↓	16.0	9.45	0.00	5.93	19.4	47	
13:06	13.51	↓	15.7	9.41	↓	5.57	17.7	45	
13:11	13.51	↓	15.2	9.53	↓	.70	17.2	43	
13:16	13.53	↓	15.1	9.52	↓	1.50	16.7	41	
13:22	13.54	↓	14.9	9.46	↓	1.83	15.9	38	
13:28	13.55	↓	14.8	9.46	↓	.38	15.3	36	

Purge Observations: very clear, slight petroleum odor

Purge Water Containerized: no

## EQUIPMENT DOCUMENTATION

Type of Pump: QED Bladder pump Geopump

Type of Tubing: 1/4" HDPE

Type of Water Quality Meter: Horiba U-22; LaMotte 2020

Calibrated: \_\_\_\_\_

## ANALYTICAL PARAMETERS

Parameter	Volumes	Sample Collected
VOCs	<u>8</u> x 40 ml	✓
SVOCs	<u>3</u> x 40 ml	✓
Metals	<u>3</u> x 250 ml	✓
Manganese	<u>3</u> x 12	✓
Iron	<u>3</u> x 12	✓

## LOCATION NOTES

Signature: \_\_\_\_\_

Checked By: X. Neuberger

# Low Flow Groundwater Sampling Field Record



Project Name Clarkson ERP Site

Location ID MW-02

Activity Time 12:44-13:24 well dry

Field Sample ID MW-2

Sample Time 10:50  
9/17/09

Job # 40503

Sampling Event # 01

Date 09/16/09

## SAMPLING NOTES

Initial Depth to Water 11.69 feet

Final Depth to Water 13.70 feet

Screen Length 10 feet

Total Volume Purged 1.0 gallons

Measurement Point TOR

Well Depth 14.69 feet

Pump Intake Depth 13.69

PID Well Head

Well Diameter 2"

Well Integrity:

Cap New

Casing New

Locked New

Collar New

[purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter]

Volume of Water in casing - 2" diameter = 0.163 gallons per foot of depth, 4" diameter = 0.653 gallons per foot of depth

## PURGE DATA

Time	Depth to Water (ft)	Purge Rate (ml/min)	Temp. (deg. C)	pH (units)	Dissolved O2 (mg/L)	Turbidity (NTU)	Cond. (mS/cm)	ORP (mV)	Comments
12:49	11.59								
12:56	12.35	150	14.4	7.55	9.99	118.0	1.65	111	
13:01	12.79	150	14.4	7.18	9.57	47.6	1.67	115	
13:06	13.38	150	14.3	6.92	9.82		1.79	109	
13:13	13.70	150	14.4	6.92	10.22	39.3	1.79	109	
13:15	X	X	14.6	6.91	10.40	40.4	1.79	109	
	Well Dry								
9/17/09									
10:50	collect sample								

Purge Observations:

Purge Water Containerized: no

## EQUIPMENT DOCUMENTATION

Type of Pump: QED Bladder pump Geopump

Type of Tubing: 1/4" HDPE

Type of Water Quality Meter: Horiba U-22; LaMotte 2020

Calibrated: \_\_\_\_\_

## ANALYTICAL PARAMETERS

Parameter	Volumes	Sample Collected
VOCs	<u>2 x 40 ml</u>	<u>✓</u>
<del>COV</del> SVOCs	<u>1 L</u>	<u>✓</u>
<del>TOC</del> Metals		
Manganese-PCBs	<u>1 L</u>	<u>✓</u>
Iron		

## LOCATION NOTES

Well produces very little water. Pumped dry during purging. Returned next day and collected sample. Unable to fill all bottles due to insufficient volume. lab to take metals from amber liter.

Signature: \_\_\_\_\_

Checked By: X. Neubauer



# Low Flow Groundwater Sampling Field Record



Lu Engineers

Project Name Clarkson ERPSite

Location ID MW-03

Activity Time 14:30

Field Sample ID MW-3

Sample Time 15:33

Job # 40503

Sampling Event # 01

Date 09/16/09

## SAMPLING NOTES

Initial Depth to Water 13.15 feet

Final Depth to Water 13.44 feet

Screen Length 10 feet

Total Volume Purged apx 9 IN gallons

[purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter]

Volume of Water in casing - 2" diameter = 0.163 gallons per foot of depth, 4" diameter = 0.653 gallons per foot of depth

Measurement Point TOR

Well Depth 19.32 feet

Pump Intake Depth 16.32 ft. mmp

PID Well Head -

Well Diameter 2"

Well Integrity:

Cap New

Casing New

Locked New

Collar New

## PURGE DATA

Time	Depth to Water (ft)	Purge Rate (ml/min)	Temp. (deg. C)	pH (units)	Dissolved O2 (mg/L)	Turbidity (NTU)	Cond. (mS/cm)	ORP (mV)	Comments
14:51	13.44	700	17.1	8.35	0.00	1.18	1.89	121	
14:56			13.8	8.72		0.18	2.30	114	
15:00			13.5	9.32		1.59	4.34	112	
15:04			13.4	9.84		0	5.67	109	
15:10			13.3	10.19			5.57	108	
15:15			13.4	10.67			5.23	104	
15:20			13.3	11.30			4.56	101	
15:25				11.67			3.70	97	
15:29				12.09			3.38	94	
15:32	↓	↓	↓		↓	↓	3.21	92	*pH reading on Horiba-U-22 seems incorrect*

Purge Observations: very clear, no odor, very fast recharge rate

Purge Water Containerized: no

## EQUIPMENT DOCUMENTATION

Type of Pump: QED Bladder pump Geopump

Type of Tubing: 1/4" HDPE

Type of Water Quality Meter: Horiba U-22; LaMotte 2020

Calibrated: \_\_\_\_\_

## ANALYTICAL PARAMETERS

Parameter Volumes Sample Collected

VOCs 2 x 40 ml ✓

~~COB~~ SVOC 1 L ✓

~~TOC~~ Metals 1 x 250 ml ✓

~~Manganese~~ PCB 1 L ✓

~~Iron~~ Vest. ✓

## LOCATION NOTES

Signature: \_\_\_\_\_

Checked By: X. Neubauer

# Low Flow Groundwater Sampling Field Record



Lu Engineers

Project Name Clarkson ERPSite

Location ID MW-04

Activity Time 13:22-15:05

Field Sample ID MW-04

Sample Time 14:26

Job # 40503

Sampling Event # 01

Date 09/16/09

## SAMPLING NOTES

Initial Depth to Water 10.73 feet

Final Depth to Water 12.77 feet

Screen Length 10 feet

Total Volume Purged 1.9 gallons

Measurement Point TOR

Well Depth 17.82 feet

Pump Intake Depth 14.32 ft. bys

PID Well Head

Well Diameter 2"

Well Integrity:

Cap New

Casing New

Locked New

Collar New

[purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter]

Volume of Water in casing - 2" diameter = 0.163 gallons per foot of depth, 4" diameter = 0.653 gallons per foot of depth

## PURGE DATA

Time	Depth to Water (ft)	Purge Rate (ml/min)	Temp. (deg. C)	pH (units)	Dissolved O2 (mg/L)	Turbidity (NTU)	Cond. (mS/cm)	ORP (mV)	Comments
13:31	10.72								
13:37	11.32	200	15.2	6.73	2.86	7.40	3.22	-34	
13:42	11.49	200	15.3	6.70	2.97	4.76	3.17	-35	
13:47	11.79	150	15.3	6.67	4.38	3.92	3.22	-35	
13:53	11.95	100	15.3	6.66	3.98	3.42	3.70	-36	
13:58	12.08	100	15.3	6.67	3.68	3.06	3.63	-36	
14:03	12.16	100	15.2	6.67	3.61	3.97	3.62	-38	
14:08	12.27	100	15.1	6.67	3.19	5.29	3.61	-41	
14:13	12.34	100	15.2	6.68	2.94	5.35	3.52	-44	
14:18	12.39	100	15.4	6.69	2.84	5.51	3.50	-44	
14:26	Sample Taken								

Purge Observations: \_\_\_\_\_

Purge Water Containerized: no

## EQUIPMENT DOCUMENTATION

Type of Pump: QED Bladder pump

Type of Tubing: 1/4" HDPE

Type of Water Quality Meter: Horiba U-22; LaMotte 2020

Calibrated: \_\_\_\_\_

## ANALYTICAL PARAMETERS

Parameter Volumes Sample Collected

VOCs 2 x 40 ml ✓

COD SVOC 1L ✓

TOC Metals 1x250ml ✓

Manganese PCBs 1L ✓

Iron \_\_\_\_\_

## LOCATION NOTES

Signature: \_\_\_\_\_

Checked By: L. Neubauer

## Groundwater Elevations

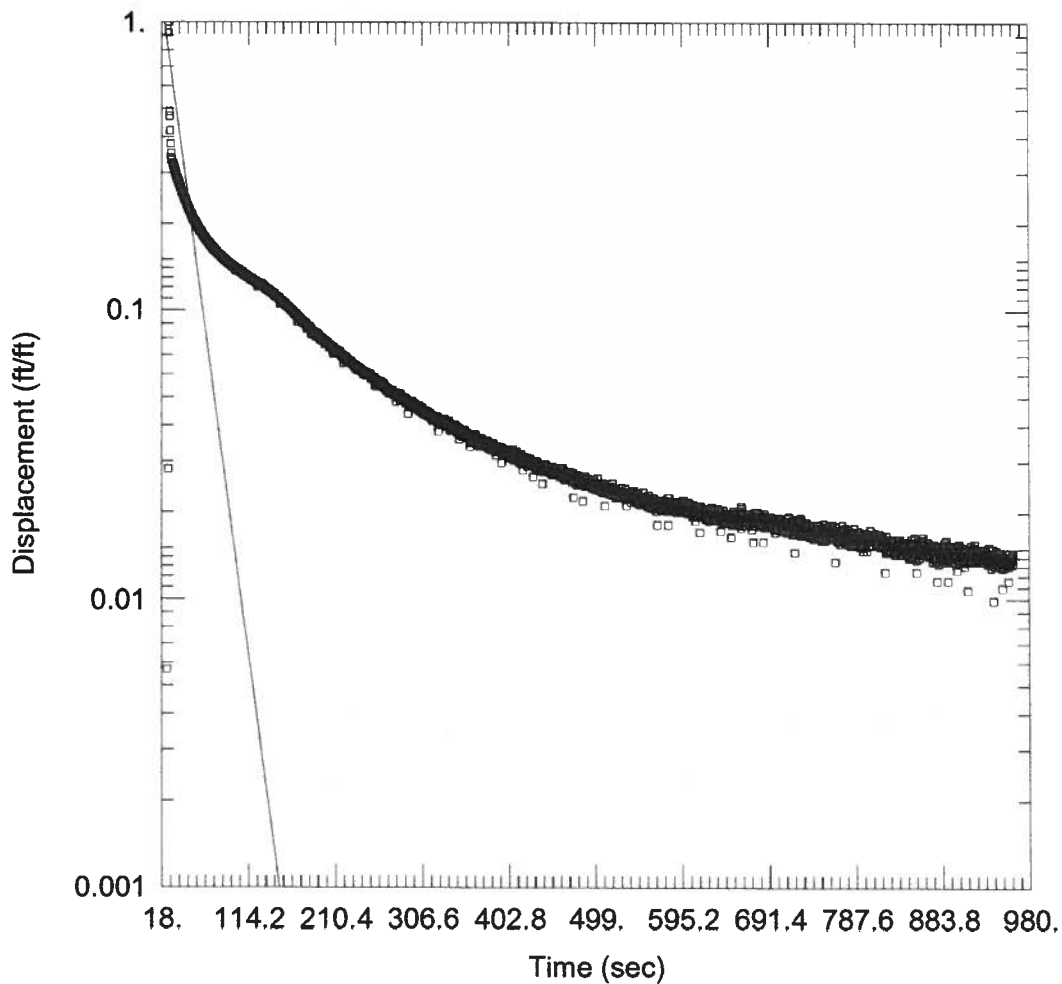
Former Service Station Site #E828143

**September 16, 2009**

	MW-1	MW-2	MW-3	MW-4
PVC Elevation (ft)	428.00	423.91	415.53	426.17
Depth to Water (ft)	12.31	11.69	13.15	10.73
Water Elevation (ft)	415.69	412.22	402.38	415.44

**March 26, 2010**

	MW-1	MW-2	MW-3	MW-4
PVC Elevation (ft)	428.00	423.91	415.53	426.17
Depth to Water (ft)	7.01	3.85	6.75	6.60
Water Elevation (ft)	420.99	420.06	408.78	419.57



### SLUG OUT

Data Set: J:\...\Clarkson MW-1.aqt  
 Date: 06/23/11

Time: 15:35:38

### PROJECT INFORMATION

Company: Lu Engineers  
 Client: Town of Clarkson  
 Project: 40503  
 Location: Clarkson Site  
 Test Well: MW-1  
 Test Date: 3/26/2010

### AQUIFER DATA

Saturated Thickness: 20. ft

Anisotropy Ratio ( $K_z/K_r$ ): 1.

### WELL DATA (MW-1)

Initial Displacement: -4.744 ft  
 Total Well Penetration Depth: 14.94 ft  
 Casing Radius: 0.083 ft

Static Water Column Height: 14.94 ft  
 Screen Length: 10. ft  
 Wellbore Radius: 0.33 ft

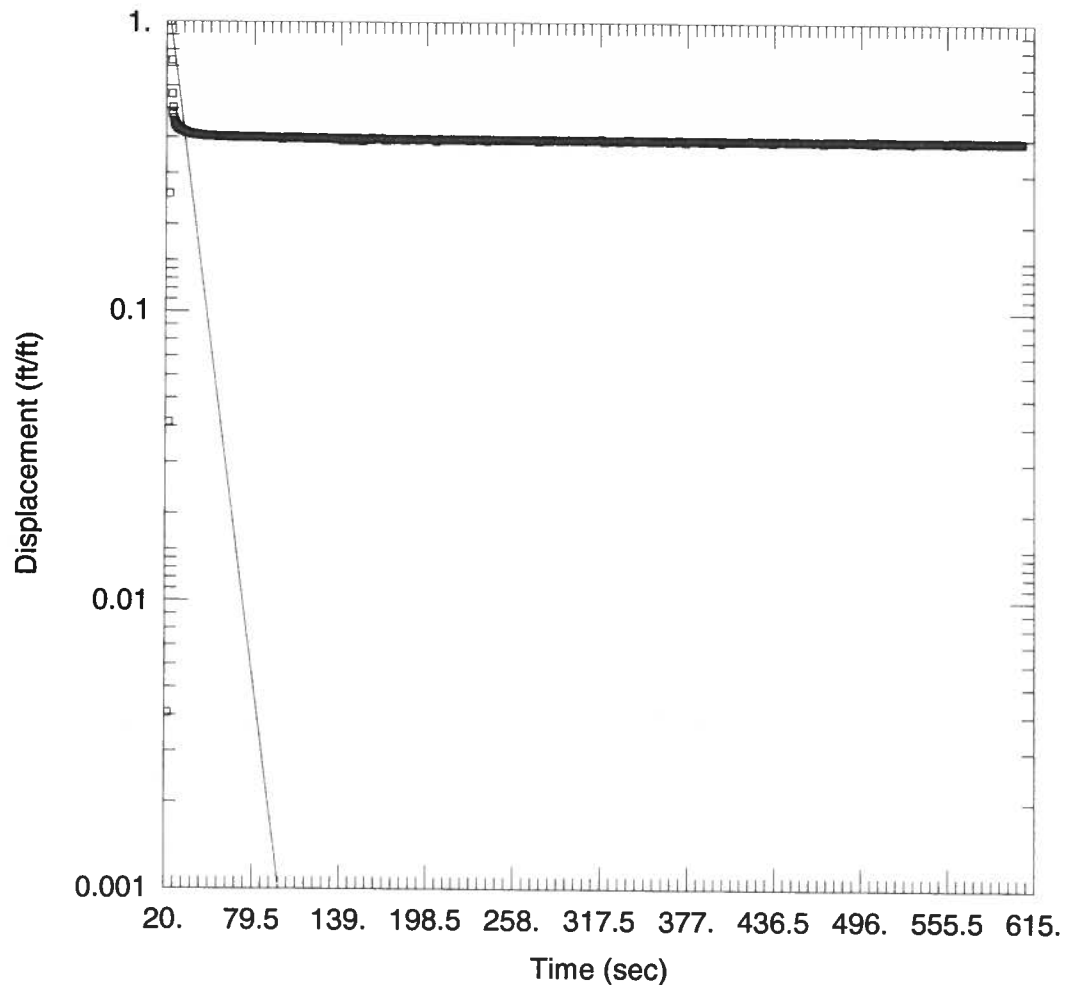
### SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 4.58E-5$  ft/sec

$y_0 = -14.61$  ft



### SLUG OUT

Data Set: J:\...\Clarkson MW-2.aqt  
 Date: 01/25/11

Time: 11:45:50

### PROJECT INFORMATION

Company: Lu Engineers  
 Client: Town of Clarkson  
 Project: 40503  
 Location: Clarkson Site  
 Test Well: MW-2  
 Test Date: 3/26/2010

### AQUIFER DATA

Saturated Thickness: 20. ft

Anisotropy Ratio ( $K_z/K_r$ ): 1.

### WELL DATA (MW-2)

Initial Displacement: -3.44 ft  
 Total Well Penetration Depth: 10.9 ft  
 Casing Radius: 0.083 ft

Static Water Column Height: 10.9 ft  
 Screen Length: 10. ft  
 Wellbore Radius: 0.33 ft

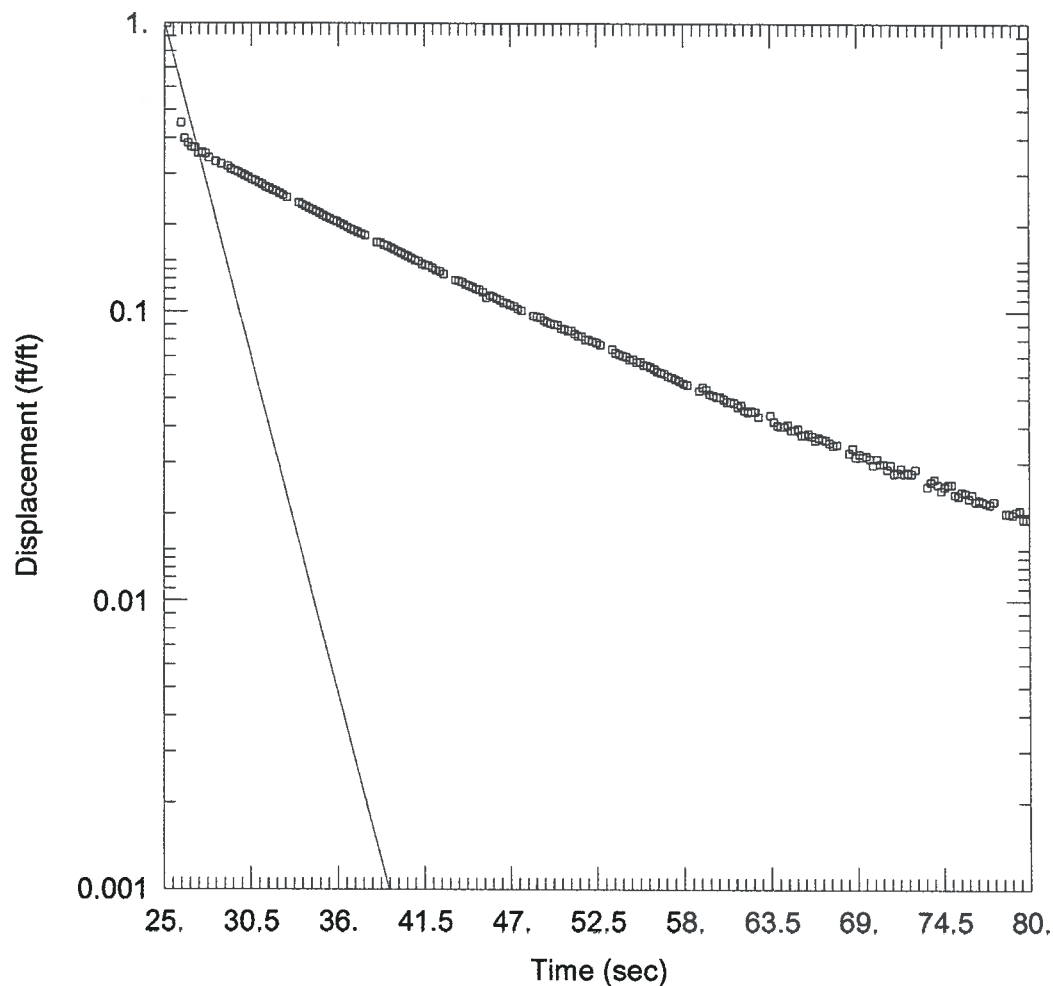
### SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 7.217E-5$  ft/sec

$y_0 = -27.8$  ft



### SLUG OUT

Data Set: J:\...\Clarkson MW-3.aqt  
 Date: 06/23/11

Time: 15:38:03

### PROJECT INFORMATION

Company: Lu Engineers  
 Client: Town of Clarkson  
 Project: 40503  
 Location: Clarkson Site  
 Test Well: MW-3  
 Test Date: 3/26/2010

### AQUIFER DATA

Saturated Thickness: 25 ft

Anisotropy Ratio ( $K_z/K_r$ ): 1

### WELL DATA (MW-3)

Initial Displacement: -4.03 ft  
 Total Well Penetration Depth: 12.65 ft  
 Casing Radius: 0.083 ft

Static Water Column Height: 12.65 ft  
 Screen Length: 10 ft  
 Wellbore Radius: 0.33 ft

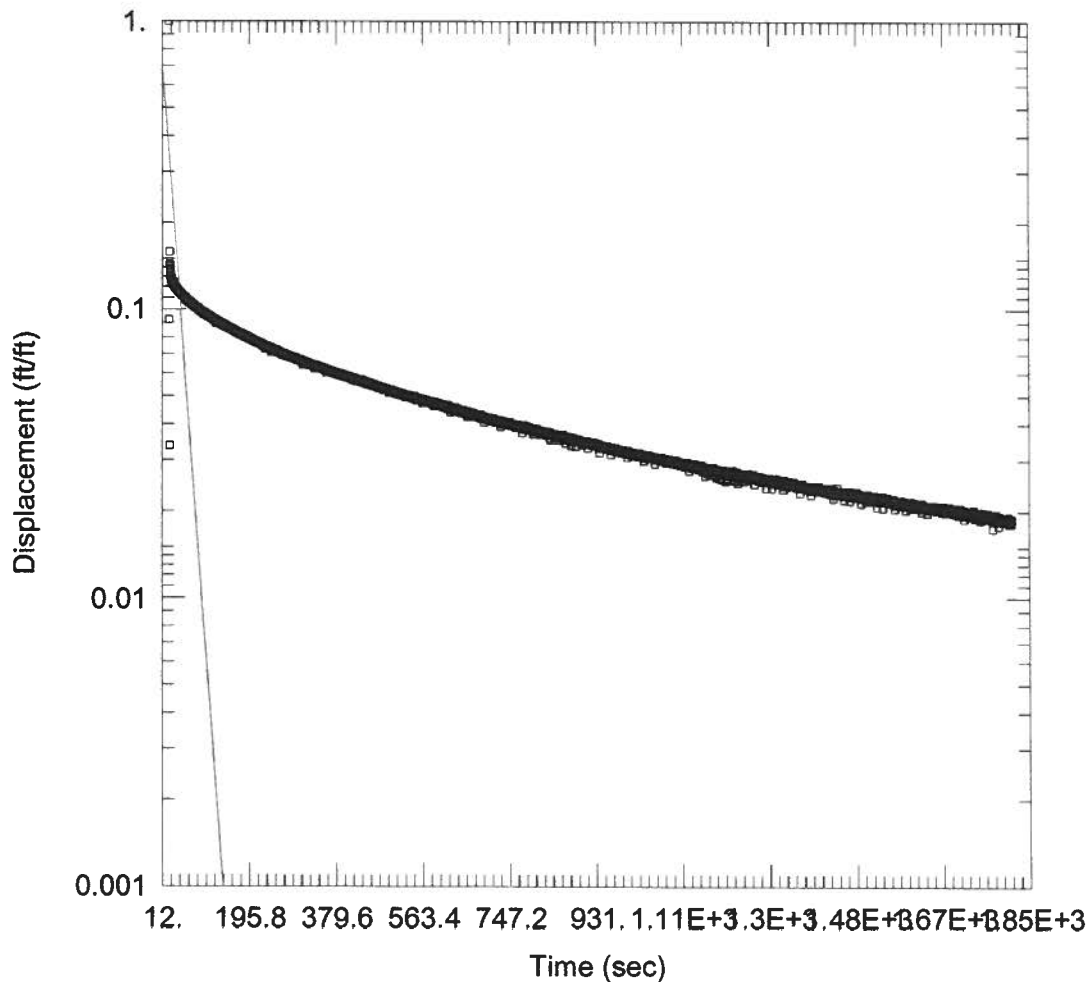
### SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 0.0003879$  ft/sec

$y_0 = -7.419E+5$  ft



### SLUG OUT

Data Set: J:\...\Clarkson MW-4.aqt  
Date: 06/23/11

Time: 15:38:29

### PROJECT INFORMATION

Company: Lu Engineers  
Client: Town of Clarkson  
Project: 40503  
Location: Clarkson Site  
Test Well: MW-4  
Test Date: 3/26/2010

### AQUIFER DATA

Saturated Thickness: 20. ft

Anisotropy Ratio ( $K_z/K_r$ ): 1.

### WELL DATA (MW-4)

Initial Displacement: -11. ft  
Total Well Penetration Depth: 11.3 ft  
Casing Radius: 0.083 ft

Static Water Column Height: 11.3 ft  
Screen Length: 10. ft  
Wellbore Radius: 0.33 ft

### SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 4.025E-5$  ft/sec

$y_0 = -14.19$  ft

**Town of Clarkson – Former Service Station Site**  
**Remedial Investigation/Alternatives Analysis Report**  
**NYSDEC ERP SITE#E826020**

**HYDROGEOLOGICAL CALCULATIONS**

**HYDRAULIC CONDUCTIVITY (K) VALUES\***

- MW-1: 0.0000458 ft/sec
- MW-2: 0.0000722 ft/sec
- MW-3: 0.0003879 ft/sec
- MW-4: 0.0000403 ft/sec  
0.0005462 ft/sec

**AVERAGE K (for 4 wells tested) =  $0.0005462/4 = 0.0001366$  ft/sec =  $1.37 \times 10^{-4}$  ft/sec**

**HYDRAULIC GRADIENT CALCULATIONS (March 2010 data)**


- MW-4 to MW-3:  $419.57 - 408.78 = 10.79$  ft /  $256$  ft =  $0.0421$  ft/ft  
(maximum site gradient, southwest to northeast across Site)
- MW-1 to MW-2:  $420.99 - 420.06 = 0.93$  ft /  $48.44$  ft =  $0.019$  ft/ft  
(former UST and pump island area gradient, south to north)


**GROUNDWATER VELOCITY CALCULATIONS (V= K x I/n)**

- MW-4 to MW-3:  $2.14 \times 10^{-4}$  ft/sec ( $0.0421$  ft/ft /  $0.30$ ) =  $3.00 \times 10^{-5}$  ft/sec =  $2.59$  ft/day  
(using average K for the two wells, southwest to northeast across Site)
- MW-1 to MW-2:  $5.9 \times 10^{-5}$  ft/sec ( $0.019$  ft/ft /  $0.30$ ) =  $3.74 \times 10^{-6}$  ft/sec =  $0.32$  ft/day  
(former UST and pump island area gradient, using average K for the two wells, south to north)

\* Hydraulic Conductivity (K) values were determined by using AQTESOLV for Windows Standard 3.5



		PROJECT		BORING GP-01				
		Clarkson EPR Site #E828143 8264 Ridge Road West		SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A				
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: C. Karas				BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 8, 2010    END DATE: February 8, 2010				
TYPE OF DRILL RIG: GeoProbe 54LT track-mounted CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a				WATER LEVEL DATA				
				DATE	TIME	WATER	CASING	REMARKS
D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID	
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)			
	1		0-4		95%	0-0.5' Dark brown topsoil, organics	0.0 ppm	
						0.5-3' Reddish-brown tight SILT some Clay with trace of Sand, moist		
	2							
	3					3-4.7' Reddish-brown highly weathered shale bedrock	0.0 ppm	
	4		4-4.7		20%			
						Total Depth = 4.7'		
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	13							
	14							
	15							
16								
17								
18								
19								
20								
LEGEND S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE					Refusal at 4.7' Sample CS-GP-01-03 + MS/MSD collected from 1-3' @ 11:35			
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.								
BORING # GP-01								

		PROJECT		BORING GP-02			
		Clarkson EPR Site #E828143 8264 Ridge Road West		SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A			
CONTRACTOR: Trec Environmental		BORING LOCATION: SEE PLAN					
DRILLER: Jim Agar		GROUND SURFACE ELEVATION: N/A      DATUM: N/A					
JCL GEOLOGIST: L. Neubauer		START DATE: February 8, 2010    END DATE: February 8, 2010					
TYPE OF DRILL RIG: GeoProbe 54LT track-mounted CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a		WATER LEVEL DATA					
		DATE	TIME	WATER	CASING	REMARKS	
D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)		
			0-4		100%	0-0.5' dark brown topsoil with organics	0.0 ppm
	1					0.5-1.5' dark brown SILT, some Clay, organics, moist	
	2					1.5-3.5' reddish-brown tight SILT, some Clay, trace fine Sand	0.0 ppm
	3						
	4					3.5-4' highly weathered reddish-brown shale bedrock fragments	0.0 ppm
			4-5.2			4-5.2' same as above; dry	
	5					Total Depth = 5.2'	
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
18							
19							
20							
LEGEND S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE					Refusal at 5.2'		
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.							
BORING # GP-02							

<div><div></div><div>Lu Engineers</div></div> <div>2230 PENFIELD ROAD PENFIELD, NEW YORK 14526</div>		PROJECT Clarkson EPR Site #E828143 8264 Ridge Road West		BORING GP-03 SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A			
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: C. Karas		BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 8, 2010    END DATE: February 8, 2010					
TYPE OF DRILL RIG: Geo Probe 54 LT Track Mount CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a		WATER LEVEL DATA					
		DATE	TIME	WATER	CASING	REMARKS	
DEPTH T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)		
			0-4		100%	0-0.5' dark brown topsoil with organics	0.0 ppm
1						0.5-2.5' reddish-brown tight SILT, some Clay, organics, moist	
2							0.0 ppm
3						2.5-4.0' highly weathered reddish-brown shale bedrock fragments	
4						highly weathered green rock @ 4'	0.0 ppm
			4-4.7			4.0-4.7' highly weathered reddish-brown bedrock; dry	
5						Total Depth = 4.7'	
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
<div>LEGEND</div> <div>S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE</div>						Refusal at 4.7'	
<div>GENERAL NOTES:</div> <div>1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.</div>							
BORING # GP-03							


<div><div></div><div>Lu Engineers</div></div> <div>2230 PENFIELD ROAD PENFIELD, NEW YORK 14526</div>		PROJECT Clarkson EPR Site #E828143 8264 Ridge Road West		BORING GP-04 SHEET 1 OF 1 JOB #: 40503 CHKD. BY:			
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: C. Karas		BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 8, 2010    END DATE: February 8, 2010					
TYPE OF DRILL RIG: Geo Probe 54 LT Track Mount CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a		WATER LEVEL DATA					
		DATE	TIME	WATER	CASING	REMARKS	
DEPTH D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)		
			0-4		100%	0-0.5' dark brown topsoil with organics	0.0 ppm
	1					0.5-2.5' reddish-brown SILT with Sand; wet (perched water)	
	2						0.0 ppm
	3					2.5-4.0' reddish-brown highly weathered shale bedrock fragments; dry	
	4		4-5.9'			4-5.9' same as above	0.0 ppm
	5						
	6						
	7					Total Depth = 5.9'	
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
19							
20							
<div>LEGEND</div> <div>S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE</div>					Refusal at 5.9' Sample CS-GP-04-02 collected from 1-2' bgs.		
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.							
BORING # GP-04							


<div><div></div><div>Lu Engineers</div></div> <div>2230 PENFIELD ROAD PENFIELD, NEW YORK 14526</div>		PROJECT Clarkson EPR Site #E828143 8264 Ridge Road West		BORING GP-05 SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A			
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: C. Karas		BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 8, 2010    END DATE: February 8, 2010					
TYPE OF DRILL RIG: Geo Probe 54 LT Track Mount CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a		WATER LEVEL DATA					
		DATE	TIME	WATER	CASING	REMARKS	
DEPTH T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)		
			0-4		90%	0-0.5' dark brown topsoil with organics	
1						0.5-1.5' medium-brown Silty SAND with trace Gravel, wet (perched water)	0.0 ppm
2						1.5-3.0' medium-brown fine SAND with little Silt	0.0 ppm
3							
4						3.0-4.0' reddish-brown highly weathered shale fragments	0.0 ppm
			4-4.5		40%	4.0-4.5' same as above	
5						Total Depth = 4.5'	
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
<div>LEGEND</div> <div>S- SPLIT SPOON SOIL SAMPLE</div> <div>U- UNDISTURBED SOIL SAMPLE</div> <div>C- ROCK CORE SAMPLE</div>						Refusal at 4.5'	
<div>GENERAL NOTES:</div> <div>1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.</div> <div>2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.</div>							
BORING # GP-05							

<div><div></div><div>Lu Engineers</div></div> <div>2230 PENFIELD ROAD PENFIELD, NEW YORK 14526</div>		PROJECT Clarkson EPR Site #E828143 8264 Ridge Road West		BORING GP-06 SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A			
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: C. Karas		BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 8, 2010    END DATE: February 8, 2010					
TYPE OF DRILL RIG: Geo Probe 54 LT Track Mount CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a		WATER LEVEL DATA					
		DATE	TIME	WATER	CASING	REMARKS	
DEPTH D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)		
			0-4		100%	0-0.5'      Dark brown topsoil with organics	0.0 ppm
1						0.5-2.0'      reddish-brown SILT and SAND some Clay, moist	
2						2.0-40'      reddish-brown highly weathered shale fragments; dry	0.0 ppm
3							
4							
			4-5.3		70%	4.0-5.3      reddish-brown highly weathered shale bedrock with pockets of weathered green rock	0.0 ppm
5						Total Depth = 5.3' bgs	
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
<div>LEGEND</div> <div>S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE</div>						Refusal at 5.3'	
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.							
BORING #    GP-06							





<div><div><div></div><div>Lu Engineers</div></div><div>2230 PENFIELD ROAD PENFIELD, NEW YORK 14526</div></div>		<div>PROJECT</div> <div>Clarkson EPR Site #E828143 8264 Ridge Road West</div>		<div>BORING GP-07</div> <div>SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A</div>			
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: L.Neubauer		BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 8, 2010    END DATE: February 8, 2010					
TYPE OF DRILL RIG: Geo Probe 54 LT Track Mount CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a		WATER LEVEL DATA					
		DATE	TIME	WATER	CASING	REMARKS	
DEPTH D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)		
			0-4		25%	0-4.0' Fill: medium-brown SAND and SILT, moist	0.0 ppm
	1						
	2						
	3						
	4		4-8		40%	4.0-5.0' medium-brown SILT and fine SAND some Gravel; saturated	0.0 ppm
	5					5.0-8.0' same as above with more Gravel, dark gray staining and a slight petroleum odor	0.0 ppm
	6						
	7					concrete piece @ 8' bgs	
	8		8-8.4		20%	8.0-8.4' medium-brown SILT some fine Sand, some Gravel, saturated faint petroleum odor @ 8.0'. Rock refusal at 8.4'	0.0 ppm
	9					Total Depth = 8.4'	
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
19							
20							
<div>LEGEND</div> <div>S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE</div>					Refusal at 8.4' Collected sample CS-GP-07-07 from 5-7' bgs		
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.							
BORING # GP-07							

		PROJECT		BORING GP-08				
		Clarkson EPR Site #E828143 8264 Ridge Road West		SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A				
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: C. Karas				BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 8, 2010    END DATE: February 8, 2010				
TYPE OF DRILL RIG: GeoProbe 54 LT Track Mounted CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a				WATER LEVEL DATA				
				DATE	TIME	WATER	CASING	REMARKS
DEPTH D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID	
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)			
1			0-4		85%	0-3.5'      Fill: medium-brown fine SAND	0.0 ppm	
2								
3								
4						3.5-4.0'      FILL: dark-brown SILT and SAND with organics; brick fragments	0.0 ppm	
			4-6.8		65%	4.0-4.5'      same as above		
5						4.5-6.5'      reddish-brown tight SILT, little Clay, trace fine Sand and Gravel	0.0 ppm	
6								
						6.5-6.8      reddish-brown highly weathered shale bedrock fragments	0.0 ppm	
7								
8						Total Depth = 6.8' bgs		
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
<u>LEGEND</u> S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE						Refusal at 6.8'		
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.								
BORING #    GP-08								


 <b>Lu Engineers</b> 2230 PENFIELD ROAD PENFIELD, NEW YORK 14526		<b>PROJECT</b> Clarkson EPR Site #E828143 8264 Ridge Road West		<b>BORING GP-09</b> SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A																										
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: C. Karas		BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 8, 2010    END DATE: February 8, 2010																												
TYPE OF DRILL RIG: Geo Probe 54 LT Track Mount CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a		<table border="1"> <tr><th colspan="5">WATER LEVEL DATA</th></tr> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>REMARKS</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>				WATER LEVEL DATA					DATE	TIME	WATER	CASING	REMARKS															
WATER LEVEL DATA																														
DATE	TIME	WATER	CASING	REMARKS																										
D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID																							
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)																									
1			0-4		75%	0.0-3.0'      Fill: medium - dark brown fine Sandy SILT	0.0 ppm																							
2																														
3																														
4						3.0-4.0'      reddish-brown tight SILT; dry																								
5			4-6.8		100%	4.0-5.0'      Same as above; wet @ 4.5'	0.0 ppm																							
6						5.0-8.0'      same as above; dry																								
7																														
8																														
9			8-8.6		35%	8.0-8.6'      reddish-brown SILT and shale fragments; saturated	0.0 ppm																							
10						Total Depth = 8.6' bgs																								
11																														
12																														
13																														
14																														
15																														
16																														
17																														
18																														
19																														
20																														
<b>LEGEND</b> S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE						Refusal at 8.6'																								
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.																														
BORING #    GP-09																														


<div><div></div><div>Lu Engineers</div></div> <div>2230 PENFIELD ROAD PENFIELD, NEW YORK 14526</div>		PROJECT Clarkson EPR Site #E828143 8264 Ridge Road West		BORING GP-10 SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A			
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: L.Neubauer		BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 8, 2010    END DATE: February 8, 2010					
TYPE OF DRILL RIG: GeoProbe 54 LT Track Mounted CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a		WATER LEVEL DATA					
		DATE	TIME	WATER	CASING	REMARKS	
DEPTH D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)		
			0-4		95%	0.0-0.5' med-brown topsoil	0.0 ppm
	1					0.5-1.5' med-brown SILT, some Gravel and c-f Sand with organics; moist	
	2					1.5-4.0' reddish-brown SILT, trace Clay, tightly compacted, well sorted	0.0 ppm
	3					4.0-8.0' reddish-brown highly weathered shale bedrock; dry	0.0 ppm
	4		4-8		90%		
	5						
	6						
	7						
	8					8.0-8.9' same as above.	
	8		8-8.9				
	9					Total Depth = 8.9' bgs.	
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
18							
19							
20							
<div>LEGEND</div> <div>S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE</div>					Refusal at 8.9'		
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.							
BORING # GP-10							

		PROJECT		BORING GP-11				
		Clarkson EPR Site #E828143 8264 Ridge Road West		SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A				
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: C. Karas				BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 9, 2010    END DATE: February 9, 2010				
TYPE OF DRILL RIG: Geo Probe 54 LT Track Mounted CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a				WATER LEVEL DATA				
				DATE	TIME	WATER	CASING	REMARKS
DEPTH D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID	
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)			
			0-4		40%	0.0-4.0'      Fill: reddish-dark brown SILT with some Gravel	0.0 ppm	
	1							
	2							
	3							
	4					wet at 3.7-4.0' (perched water)		
			4-8		100%	4.0-5.5'      reddish-brown SILT with some c-f Sand; wet	0.0 ppm	
	5							
	6					5.5-7.5'      Same as above; dry		
	7							
	8							
			8-9.8		50%	8.0-9.0'      Same as above	0.0 ppm	
	9					9.0-9.8'      reddish-brown highly weathered shale bedrock		
	10							
						Total Depth = 9.8' bgs		
	11							
	12							
	13							
	14							
	15							
16								
17								
18								
19								
20								
<u>LEGEND</u> S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE					Refusal at 9.6' Collected sample CS-GP-11-10 from 8-10' bgs			
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.								
BORING #    GP-11								

 <b>Lu Engineers</b> 2230 PENFIELD ROAD PENFIELD, NEW YORK 14526		<b>PROJECT</b> Clarkson EPR Site #E828143 8264 Ridge Road West		<b>BORING GP-12</b> SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A																																																	
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: L.Neubauer		BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 9, 2010    END DATE: February 9, 2010																																																			
TYPE OF DRILL RIG: Geo Probe 54 LT Track Mount CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a		<table border="1"> <tr><th colspan="5">WATER LEVEL DATA</th></tr> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>REMARKS</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>				WATER LEVEL DATA					DATE	TIME	WATER	CASING	REMARKS																																						
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DATE	TIME	WATER	CASING	REMARKS																																																	
D E P T H	<table border="1"> <tr> <th colspan="5">SAMPLE DATA</th> <th rowspan="2">SAMPLE DESCRIPTION</th> <th rowspan="2">PID</th> </tr> <tr> <th>BLOW /6"</th> <th>NO.</th> <th>DEPTH (FT.)</th> <th>N-VALUE /RQD(%)</th> <th>RECOVERY (%)</th> </tr> </table>					SAMPLE DATA					SAMPLE DESCRIPTION	PID	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)	<table border="1"> <tr> <td>0.0-1.0'</td> <td>Fill: reddish-brown SILT and SAND</td> <td>1.2 ppm</td> </tr> <tr> <td>1.0-1.7'</td> <td>Fill w/ concrete pieces</td> <td rowspan="3">0.0 ppm</td> </tr> <tr> <td>1.7-4.0'</td> <td>Fill: dark-brown SILT with some Clay and Gravel, trace Sand 1" rock fragment at 3.5'</td> </tr> <tr> <td>4.0-8.0'</td> <td>reddish-brown tight SILT with trace Gravel</td> <td>0.0 ppm</td> </tr> <tr> <td>8.0-9.4'</td> <td>reddish-brown tight SILT; dry</td> <td>0.0 ppm</td> </tr> <tr> <td colspan="2">Total Depth = 9.4' bgs</td> <td rowspan="10">0.0 ppm</td> </tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>	0.0-1.0'	Fill: reddish-brown SILT and SAND	1.2 ppm	1.0-1.7'	Fill w/ concrete pieces	0.0 ppm	1.7-4.0'	Fill: dark-brown SILT with some Clay and Gravel, trace Sand 1" rock fragment at 3.5'	4.0-8.0'	reddish-brown tight SILT with trace Gravel	0.0 ppm	8.0-9.4'	reddish-brown tight SILT; dry	0.0 ppm	Total Depth = 9.4' bgs		0.0 ppm																		
	SAMPLE DATA					SAMPLE DESCRIPTION	PID																																														
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)																																																
	0.0-1.0'	Fill: reddish-brown SILT and SAND	1.2 ppm																																																		
	1.0-1.7'	Fill w/ concrete pieces	0.0 ppm																																																		
	1.7-4.0'	Fill: dark-brown SILT with some Clay and Gravel, trace Sand 1" rock fragment at 3.5'																																																			
	4.0-8.0'	reddish-brown tight SILT with trace Gravel		0.0 ppm																																																	
	8.0-9.4'	reddish-brown tight SILT; dry	0.0 ppm																																																		
	Total Depth = 9.4' bgs		0.0 ppm																																																		
	<b>LEGEND</b> S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE					Refusal at 9.4' Collected sample CS-GP-12-09 from 8.0-9.4' bgs																																															
	GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.																																																				
	BORING # GP-12																																																				




		PROJECT		BORING GP-13				
		Clarkson EPR Site #E828143 8264 Ridge Road West		SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A				
CONTRACTOR: Trec Environmental		BORING LOCATION: SEE PLAN						
DRILLER: Jim Agar		GROUND SURFACE ELEVATION: N/A      DATUM: N/A						
JCL GEOLOGIST: L.Neubauer		START DATE: February 9, 2010    END DATE: February 9, 2010						
TYPE OF DRILL RIG: Geo Probe 54 LT Track Mount CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a		WATER LEVEL DATA						
		DATE	TIME	WATER	CASING	REMARKS		
D E P T H  1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20	SAMPLE DATA					SAMPLE DESCRIPTION	PID	
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)			
			0-4		80%	0.0-1.0'	Asphalt	0.0 ppm
						1.0-3.5'	reddish-brown SILT with some Sand and Gravel	3.5 ppm
							3" of black SAND @ 3.2'	0.0 ppm
						3.5-4.0'	reddish-brown Sandy SILT, moist	176 ppm
			4-8		90%	4.0-7.5'	same as above	
							wet @ 5.0-7.5' (perched water); slight petroleum odor	
						7.5-8.0'	reddish-brown tight SILT; moist	176 ppm
			8-10		90%	8.0-10.2'	reddish-brown tight SILT; dry	
							refusal on bedrock @ 10.2'	Total Depth = 10.2' bgs
<b>LEGEND</b> S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE					Refusal at 10.2' Collected sample CS-GP-13-10 from 8-10' bgs			
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.								
BORING # GP-13								

 <b>Lu Engineers</b> 2230 PENFIELD ROAD PENFIELD, NEW YORK 14526	<b>PROJECT</b> Clarkson EPR Site #E828143 8264 Ridge Road West		<b>BORING GP-14</b> SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A																									
	CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: C. Karas		BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: 2/8/2010      END DATE: 2/8/2010																									
	TYPE OF DRILL RIG: GeoProbe 54 LT Track Mount CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a		<table><tr><th colspan="5">WATER LEVEL DATA</th></tr><tr><th>DATE</th><th>TIME</th><th>WATER</th><th>CASING</th><th>REMARKS</th></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table>		WATER LEVEL DATA					DATE	TIME	WATER	CASING	REMARKS														
WATER LEVEL DATA																												
DATE	TIME	WATER	CASING	REMARKS																								
DEPTH	SAMPLE DATA					SAMPLE DESCRIPTION	PID																					
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)																							
1			0-4		60%	0-4'      Fill: medium-brown Silty SAND, dry	0.0 ppm																					
2																												
3																												
4			4-8		95%																							
5						4.0-5.0'      same as above	0.0 ppm																					
6						5.0-8.0'      reddish-brown SILT	0.0 ppm																					
7																												
8			8-9.6			8.0-8.5'      perched water at 7.5-8.0' very weathered reddish-brown shale bedrock	0.0 ppm																					
9						8.5-9.6'      same as above, dry.																						
10						Refusal @ 9.6'																						
11																												
12																												
13																												
14																												
15																												
16																												
17																												
18																												
19																												
20																												
<b>LEGEND</b> S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE						Refusal at 9.6'																						
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.																												
BORING #    GP-14																												


<div><div></div><div>Lu Engineers</div></div> <div>2230 PENFIELD ROAD PENFIELD, NEW YORK 14526</div>		PROJECT Clarkson EPR Site #E828143 8264 Ridge Road West		BORING GP-15 SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A			
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: L.Neubauer		BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 8,2010    END DATE: February 8,2010					
TYPE OF DRILL RIG: GeoProbe 54 LT Track Mount CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a		WATER LEVEL DATA					
		DATE	TIME	WATER	CASING	REMARKS	
DEPTH H 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	SAMPLE DATA					SAMPLE DESCRIPTION	PID
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)		
		1	0-4		75%	0.0-0.5' Medium-brown topsoil with organics	0.0 ppm
						0.5-1.5' Fill: red to medium-brown SILT, GRAVEL, and cmf SAND; moist	
						1.5-3.5' Reddish-brown SILT, trace Clay, tightly compacted, well sorted	0.0 ppm
						3.5-4.0' cobbles	0.0 ppm
		2	4-6		100%	4.0-6.0' Reddish-brown highly weathered shale, dry	
						Refusal at 6.0'	
<div>LEGEND</div> <div>S- SPLIT SPOON SOIL SAMPLE</div> <div>U- UNDISTURBED SOIL SAMPLE</div> <div>C- ROCK CORE SAMPLE</div>					Refusal at 6.0'		
<div>GENERAL NOTES:</div> <div>1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.</div> <div>2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.</div>							
BORING # GP-15							


<div><div></div><div>Lu Engineers</div></div> <div>2230 PENFIELD ROAD PENFIELD, NEW YORK 14526</div>		PROJECT Clarkson EPR Site #E828143 8264 Ridge Road West		BORING GP-16 SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A			
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: C. Karas		BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 8, 2010    END DATE: February 8, 2010					
TYPE OF DRILL RIG: GeoProbe 54 LT Track Mount CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a		WATER LEVEL DATA					
		DATE	TIME	WATER	CASING	REMARKS	
DEPTH D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)		
		1	0-4		30%	0.0-4.0'      Fill: medium-brown Silty SAND, some Gravel, trace brick and concrete	0.0 ppm
	1					4.0-6.0'      same as above	0.0 ppm
	2						
	3						
	4						
		2	4-8		40%		
	5					6.0-8.0'      Medium-brown SILT	0.0 ppm
	6						
	7						
	8					8.0-8.5'      perched water @ 7.5' same as above	0.0 ppm
		3	8-10.7				
	9					8.5-9.5'      Reddish-brown SILT	0.0 ppm
	10					9.5-10.7'      Reddish-brown weathered shale bedrock	Total Depth = 10.7'
	11						
	12						
	13						
	14						
	15						
	16						
17							
18							
19							
20							
<div>LEGEND</div> <div>S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE</div>					Refusal at 10.7'  sample CS-GP-16-8.5 collected from 7.5-8.5' bgs for VOC, SVOC, and Metals		
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.							
BORING #    GP-16							

 <b>Lu Engineers</b> 2230 PENFIELD ROAD PENFIELD, NEW YORK 14526		<b>PROJECT</b> Clarkson EPR Site #E828143 8264 Ridge Road West		BORING GP-17 SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A																										
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: C. Karas		BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 9, 2010    END DATE: February 9, 2010																												
TYPE OF DRILL RIG: GeoProbe 54 LT Track Mount CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a		<table border="1"> <tr><th colspan="5">WATER LEVEL DATA</th></tr> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>REMARKS</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>				WATER LEVEL DATA					DATE	TIME	WATER	CASING	REMARKS															
WATER LEVEL DATA																														
DATE	TIME	WATER	CASING	REMARKS																										
D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID																							
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)																									
1		1	0-4		100%	0.0-0.5' Asphalt	0.0 ppm																							
						0.5-1.5' Reddish-brown Silty SAND, little Gravel																								
2						1.5-3.0' Reddish-brown Silty SAND	0.0 ppm																							
3																														
4						3.0-3.5' Reddish-brown SAND																								
		2	4-8		100%	3.5-4.0' Reddish-brown tight SILT, trace Sand	0.0 ppm																							
						4.0-6.0' same as above																								
5																														
6																														
7						1" diameter rock fragment @ 6.0'																								
8																														
		3	8-9.7		70%	8.0-8.5' Reddish-brown tight SILT, wet	0.0 ppm																							
						8.5-9.7' same as above, dry																								
10						Total Depth = 9.7'																								
11																														
12																														
13																														
14																														
15																														
16																														
17																														
18																														
19																														
20																														
<b>LEGEND</b> S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE						Refusal at 9.7'																								
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.																														
BORING # GP-17																														

<div><div></div><div>Lu Engineers</div></div> <div>2230 PENFIELD ROAD PENFIELD, NEW YORK 14526</div>		PROJECT Clarkson EPR Site #E828143 8264 Ridge Road West		BORING GP-18 SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A			
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: C. Karas		BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 9, 2010    END DATE: February 9, 2010					
TYPE OF DRILL RIG: GeoProbe 54 LT Track Mount CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a		WATER LEVEL DATA					
		DATE	TIME	WATER	CASING	REMARKS	
DEPTH D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)		
		1	0-4		75%	0.0-0.5' Asphalt	0.0 ppm
						0.5-4.0' Fill: Reddish-brown Silty SAND, trace Gravel, dry	
	1						
	2						
	3						
	4						
		2	4-6		90%	4.0-7.0' same as above	0.0 ppm
	5					slight petroleum odor and staining @ 5.5-7.0'	0.0 ppm
	6						
	7						
						7.0-8.0' reddish-brown tight SILT, trace Gravel and green limestone fragments	0.0 ppm
	8						
		3	8-10.7		100%	8.0-9.0' same as above	0.0 ppm
	9					9.0-10.7' reddish-brown tight SILT and highly weathered shale bedrock	
	10						
	11	Total Depth = 10.7'					
	12						
	13						
	14						
15							
16							
17							
18							
19							
20							
<div>LEGEND</div> <div>S- SPLIT SPOON SOIL SAMPLE</div> <div>U- UNDISTURBED SOIL SAMPLE</div> <div>C- ROCK CORE SAMPLE</div>					Refusal at 10.7' Sampled CS-GP-18-07 and CS-GP-18-07D collected from 4.5-7.0'		
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.							
BORING # GP-18							



 <b>Lu Engineers</b> 2230 PENFIELD ROAD PENFIELD, NEW YORK 14526		PROJECT		BORING GP-19				
		Clarkson EPR Site #E828143 8264 Ridge Road West		SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A				
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: C. Karas				BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 9, 2010    END DATE: February 9, 2010				
TYPE OF DRILL RIG: GeoProbe 54 LT Track Mount CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a				WATER LEVEL DATA				
				DATE	TIME	WATER	CASING	REMARKS
D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID	
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)			
	1	1	0-4		70%	0.0-0.3' Asphalt	0.0 ppm	
						0.3-3.0' Fill: red to dark-brown SAND, some Gravel, asphalt pieces, moist		
	2							
	3							
	4					3.0-4.0' red to medium-brown SAND	0.0 ppm	
		2	4-8		95%	4.0-7.5' medium-brown SAND and SILT, trace Gravel, wet (perched water)		
	5							
	6							
	7							
	8					7.5-8.0' same as above; dry and tightly compacted	0.0 ppm	
		3	8-10.8		100%	8.0-10.8' same as above		
	9							
	10							
	11					Total Depth = 10.8'		
	12							
	13							
	14							
	15							
	16							
17								
18								
19								
20								
LEGEND S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE					Refusal at 10.8' Sample CS-GP-19-10 collected from 8-10'			
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.								
BORING # GP-19								

 <b>Lu Engineers</b> 2230 PENFIELD ROAD PENFIELD, NEW YORK 14526		<b>PROJECT</b> Clarkson EPR Site #E828143 8264 Ridge Road West		<b>BORING GP-20</b> SHEET 1 OF 1 JOB #: 40503 CHKD. BY: N/A																										
CONTRACTOR: Trec Environmental DRILLER: Jim Agar JCL GEOLOGIST: C. Karas		BORING LOCATION: SEE PLAN GROUND SURFACE ELEVATION: N/A      DATUM: N/A START DATE: February 9, 2010    END DATE: February 9, 2010																												
TYPE OF DRILL RIG: GeoProbe 54 LT Track Mount CASING SIZE AND TYPE: 2" OVERBURDEN SAMPLING METHOD: direct-push ROCK DRILLING METHOD: n/a		<table border="1"> <tr><th colspan="5">WATER LEVEL DATA</th></tr> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>REMARKS</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>				WATER LEVEL DATA					DATE	TIME	WATER	CASING	REMARKS															
WATER LEVEL DATA																														
DATE	TIME	WATER	CASING	REMARKS																										
DEPTH D E P T H	SAMPLE DATA					SAMPLE DESCRIPTION	PID																							
	BLOW /6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)																									
1		1	0-4		70%	0.0-0.5' Asphalt	0.0 ppm																							
						0.5-3.0' Fill: red to dark-brown Silty SAND																								
2						1" gravel layer @ 2.3'																								
3						3.0-3.5' Fill: medium-brown fine SAND	0.0 ppm																							
4		2	4-8		100%	3.5-4.0' reddish-brown tight SILT, wet (perched water)	0.0 ppm																							
						4.0-6.0' same as above																								
5							0.0 ppm																							
6						6.0-7.0' Same as above, dry																								
7																														
8		3	8-9.3			8.0-9.3' reddish-brown tight SILT, some Gravel; wet	0.0 ppm																							
9							Total Depth = 9.3'																							
10																														
11																														
12																														
13																														
14																														
15																														
16																														
17																														
18																														
19																														
20																														
<b>LEGEND</b> S- SPLIT SPOON SOIL SAMPLE U- UNDISTURBED SOIL SAMPLE C- ROCK CORE SAMPLE						Refusal at 9.3' Sampl CS-GP-20-09 collected from 8.0-9.3'																								
GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.																														
BORING # GP-20																														

## Appendix C

### Soil & Groundwater Analytical Data

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### Volatile Analysis Report for Soils/Solids/Sludges

Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5180

Client Job Number: 40503

Field Location: CS-SS-01

Field ID Number: N/A

Sample Type: Soil

Date Sampled: 04/27/2009

Date Received: 04/28/2009

Date Analyzed: 05/07/2009

Date Reissued: 05/20/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 4.82 <i>uS</i>
Bromomethane	ND< 4.82 <i>uS</i>
Bromoform	ND< 12.0 <i>R</i>
Carbon Tetrachloride	ND< 12.0 <i>uS</i>
Chloroethane	ND< 4.82
Chloromethane	ND< 4.82
2-Chloroethyl vinyl Ether	ND< 24.1
Chloroform	ND< 4.82
Dibromochloromethane	ND< 4.82 <i>uS</i>
1,1-Dichloroethane	ND< 4.82
1,2-Dichloroethane	ND< 4.82
1,1-Dichloroethene	ND< 4.82
cis-1,2-Dichloroethene	ND< 4.82
trans-1,2-Dichloroethene	ND< 4.82
1,2-Dichloropropane	ND< 4.82 <i>uS</i>
cis-1,3-Dichloropropene	ND< 4.82 <i>uS</i>
trans-1,3-Dichloropropene	ND< 4.82 <i>uS</i>
Methylene chloride	ND< 12.0 <i>uS</i>
1,1,2,2-Tetrachloroethane	ND< 4.82 <i>uS</i>
Tetrachloroethene	17.1 <i>J</i>
1,1,1-Trichloroethane	ND< 4.82 <i>uS</i>
1,1,2-Trichloroethane	ND< 4.82 <i>uS</i>
Trichloroethene	ND< 4.82 <i>uS</i>
Trichlorofluoromethane	ND< 4.82
Vinyl chloride	ND< 4.82

Aromatics	Results in ug / Kg
Benzene	ND< 4.82 <i>uS</i>
Chlorobenzene	ND< 4.82 <i>uS</i>
Ethylbenzene	ND< 4.82 <i>uS</i>
Toluene	M ND< 4.82 <i>uS</i>
m,p-Xylene	ND< 4.82 <i>uS</i>
o-Xylene	ND< 4.82 <i>uS</i>
Styrene	ND< 12.0 <i>uS</i>
1,2-Dichlorobenzene	ND< 12.0 <i>R</i>
1,3-Dichlorobenzene	ND< 12.0 <i>R</i>
1,4-Dichlorobenzene	ND< 4.82 <i>R</i>

Ketones	Results in ug / Kg
Acetone	ND< 24.1 <i>uS</i>
2-Butanone	ND< 24.1 <i>uS</i>
2-Hexanone	ND< 12.0 <i>uS</i>
4-Methyl-2-pentanone	ND< 12.0

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 4.82
Vinyl acetate	ND< 12.0 <i>3.10 J</i>

ELAP Number 10958

Method: EPA 8260B

Data File: V65513.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature:

  
Bruce Hoogesteger: Technical Director



**Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-1511**Lab Sample Number:** 5180**Client Job Number:** 40503**Field Location:** CS-SS-01**Date Sampled:** 04/27/2009**Field ID Number:** N/A**Date Received:** 04/28/2009**Sample Type:** Soil**Date Analyzed:** 05/07/2009**Date Reissued:** 05/20/2009

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
None Found	N/A	N/A	ND< 4.82	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V65513.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5181

Client Job Number: 40503

Field Location: CS-SS-02

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/07/2009

Date Reissued: 08/23/2010

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 4.67 <i>us</i>
Bromomethane	ND< 4.67 <i>us</i>
Bromoform	<del>ND&lt; 11.7</del> <i>R</i>
Carbon Tetrachloride	ND< 11.7 <i>us</i>
Chloroethane	ND< 4.67
Chloromethane	ND< 4.67
2-Chloroethyl vinyl Ether	ND< 23.3
Chloroform	ND< 4.67
Dibromochloromethane	ND< 4.67 <i>us</i>
1,1-Dichloroethane	ND< 4.67
1,2-Dichloroethane	<del>ND&lt; 4.67</del> <i>1.18 J</i>
1,1-Dichloroethene	ND< 4.67
cis-1,2-Dichloroethene	ND< 4.67
trans-1,2-Dichloroethene	ND< 4.67
1,2-Dichloropropane	ND< 4.67 <i>us</i>
cis-1,3-Dichloropropene	ND< 4.67 <i>us</i>
trans-1,3-Dichloropropene	ND< 4.67 <i>us</i>
Methylene chloride	J 11.4
1,1,2,2-Tetrachloroethane	ND< 4.67 <i>us</i>
Tetrachloroethene	11.6 <i>J</i>
1,1,1-Trichloroethane	ND< 4.67 <i>us</i>
1,1,2-Trichloroethane	ND< 4.67 <i>us</i>
Trichloroethene	ND< 4.67 <i>us</i>
Trichlorofluoromethane	ND< 4.67
Vinyl chloride	ND< 4.67

Aromatics	Results in ug / Kg
Benzene	ND< 4.67 <i>us</i>
Chlorobenzene	ND< 4.67 <i>us</i>
Ethylbenzene	ND< 4.67 <i>us</i>
Toluene	<del>ND&lt; 4.67</del> <i>3.98 J</i>
m,p-Xylene	<del>ND&lt; 4.67</del> <i>1.76 J</i>
o-Xylene	ND< 4.67 <i>us</i>
Styrene	ND< 11.7 <i>us</i>
1,2-Dichlorobenzene	<del>ND&lt; 11.7</del> <i>R</i>
1,3-Dichlorobenzene	<del>ND&lt; 11.7</del> <i>R</i>
1,4-Dichlorobenzene	<del>ND&lt; 4.67</del> <i>R</i>

Ketones	Results in ug / Kg
Acetone	ND< 23.3 <i>us</i>
2-Butanone	ND< 23.3 <i>us</i>
2-Hexanone	ND< 11.7 <i>us</i>
4-Methyl-2-pentanone	ND< 11.7

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 4.67
Vinyl acetate	<del>ND&lt; 11.7</del> <i>8.77 J</i>

ELAP Number 10958

Method: EPA 8260B

Data File: V65514.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

*[Handwritten signature]*

**Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5181

Client Job Number: 40503

Field Location: CS-SS-02

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/07/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	N/A	ND< 4.67	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V65514.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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091511V2.XLS





### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Client Job Number:** 40503

**Lab Sample Number:** 5182

**Field Location:** CS-SS-03

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/05/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 5.72 <i>uJ</i>
Bromomethane	ND< 5.72 <i>uJ</i>
Bromoform	ND< 14.3 <i>R</i>
Carbon Tetrachloride	ND< 14.3 <i>uJ</i>
Chloroethane	ND< 5.72
Chloromethane	ND< 5.72
2-Chloroethyl vinyl Ether	ND< 28.6
Chloroform	ND< 5.72
Dibromochloromethane	ND< 5.72 <i>uJ</i>
1,1-Dichloroethane	ND< 5.72
1,2-Dichloroethane	ND< 5.72 <i>2.02 J</i>
1,1-Dichloroethene	ND< 5.72
cis-1,2-Dichloroethene	ND< 5.72
trans-1,2-Dichloroethene	ND< 5.72
1,2-Dichloropropane	ND< 5.72 <i>uJ</i>
cis-1,3-Dichloropropene	ND< 5.72 <i>uJ</i>
trans-1,3-Dichloropropene	ND< 5.72 <i>uJ</i>
Methylene chloride	ND< 14.3 <i>uJ</i>
1,1,2,2-Tetrachloroethane	ND< 5.72 <i>uJ</i>
Tetrachloroethene	6.28 <i>J</i>
1,1,1-Trichloroethane	ND< 5.72 <i>uJ</i>
1,1,2-Trichloroethane	ND< 5.72 <i>uJ</i>
Trichloroethene	ND< 5.72 <i>uJ</i>
Trichlorofluoromethane	ND< 5.72
Vinyl chloride	ND< 5.72

Aromatics	Results in ug / Kg
Benzene	ND< 5.72 <i>uJ</i>
Chlorobenzene	ND< 5.72 <i>uJ</i>
Ethylbenzene	ND< 5.72 <i>uJ</i>
Toluene	ND< 5.72 <i>uJ</i>
m,p-Xylene	ND< 5.72 <i>uJ</i>
o-Xylene	ND< 5.72 <i>uJ</i>
Styrene	ND< 14.3 <i>uJ</i>
1,2-Dichlorobenzene	ND< 14.3 <i>R</i>
1,3-Dichlorobenzene	ND< 14.3 <i>R</i>
1,4-Dichlorobenzene	ND< 5.72 <i>R</i>

Ketones	Results in ug / Kg
Acetone	ND< 28.6 <i>uJ</i>
2-Butanone	ND< 28.6 <i>uJ</i>
2-Hexanone	ND< 14.3 <i>uJ</i>
4-Methyl-2-pentanone	ND< 14.3

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 5.72
Vinyl acetate	ND< 14.3 <i>2.53 J</i>

ELAP Number 10958

Method: EPA 8260B

Data File: V65451.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

**Signature:**
  
Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511V3.XLS



**Volatile Analysis Report for Soils/Solids/Sludges**Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5182

Client Job Number: 40503

Field Location: CS-SS-03

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/05/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	N/A	ND< 5.72	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V65451.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511V3.XLS



## Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5183

Client Job Number: 40503

Field Location: CS-SS-04

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/05/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 4.37
Bromomethane	ND< 4.37 <i>WT</i>
Bromoform	ND< 10.9 <i>R</i>
Carbon Tetrachloride	ND< 10.9
Chloroethane	ND< 4.37
Chloromethane	ND< 4.37
2-Chloroethyl vinyl Ether	ND< 21.9
Chloroform	ND< 4.37
Dibromochloromethane	ND< 4.37
1,1-Dichloroethane	ND< 4.37
1,2-Dichloroethane	ND< 4.37 <i>1.20 J</i>
1,1-Dichloroethene	ND< 4.37
cis-1,2-Dichloroethene	ND< 4.37
trans-1,2-Dichloroethene	ND< 4.37
1,2-Dichloropropane	ND< 4.37
cis-1,3-Dichloropropene	ND< 4.37
trans-1,3-Dichloropropene	ND< 4.37
Methylene chloride	ND< 10.9 <i>WT</i>
1,1,2,2-Tetrachloroethane	ND< 4.37
Tetrachloroethene	5.35
1,1,1-Trichloroethane	ND< 4.37
1,1,2-Trichloroethane	ND< 4.37
Trichloroethene	ND< 4.37
Trichlorofluoromethane	ND< 4.37
Vinyl chloride	ND< 4.37

Aromatics	Results in ug / Kg
Benzene	ND< 4.37
Chlorobenzene	ND< 4.37
Ethylbenzene	ND< 4.37
Toluene	ND< 4.37
m,p-Xylene	ND< 4.37
o-Xylene	ND< 4.37
Styrene	ND< 10.9 <i>5.63 J</i>
1,2-Dichlorobenzene	ND< 10.9 <i>2</i>
1,3-Dichlorobenzene	ND< 10.9 <i>R</i>
1,4-Dichlorobenzene	ND< 4.37 <i>R</i>

Ketones	Results in ug / Kg
Acetone	ND< 21.9 <i>WT</i>
2-Butanone	ND< 21.9 <i>WT</i>
2-Hexanone	ND< 10.9
4-Methyl-2-pentanone	ND< 10.9

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 4.37
Vinyl acetate	ND< 10.9 <i>3.78 J</i>

ELAP Number 10958

Method: EPA 8260B

Data File: V65452.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511V4.XLS

**Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-1511**Client Job Number:** 40503**Lab Sample Number:** 5183**Field Location:** CS-SS-04**Date Sampled:** 04/27/2009**Field ID Number:** N/A**Date Received:** 04/28/2009**Sample Type:** Soil**Date Analyzed:** 05/05/2009

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
None Found	N/A	N/A	ND< 4.37	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V65452.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511V4.XLS



### Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Client Job Number: 40503

Lab Sample Number: 5184

Field Location: CS-SS-04D

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/05/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 4.13 <i>uJ</i>
Bromomethane	ND< 4.13 <i>uJ</i>
Bromoform	ND< 10.3 <i>R</i>
Carbon Tetrachloride	ND< 10.3 <i>uJ</i>
Chloroethane	ND< 4.13
Chloromethane	ND< 4.13
2-Chloroethyl vinyl Ether	ND< 20.7
Chloroform	ND< 4.13
Dibromochloromethane	ND< 4.13 <i>uJ</i>
1,1-Dichloroethane	ND< 4.13
1,2-Dichloroethane	ND< 4.13 <i>1.26 J</i>
1,1-Dichloroethene	ND< 4.13
cis-1,2-Dichloroethene	ND< 4.13
trans-1,2-Dichloroethene	ND< 4.13
1,2-Dichloropropane	ND< 4.13 <i>uJ</i>
cis-1,3-Dichloropropene	ND< 4.13 <i>uJ</i>
trans-1,3-Dichloropropene	ND< 4.13 <i>uJ</i>
Methylene chloride	ND< 10.3 <i>uJ</i>
1,1,2,2-Tetrachloroethane	ND< 4.13 <i>uJ</i>
Tetrachloroethene	5.36 <i>J</i>
1,1,1-Trichloroethane	ND< 4.13 <i>uJ</i>
1,1,2-Trichloroethane	ND< 4.13 <i>uJ</i>
Trichloroethene	ND< 4.13 <i>uJ</i>
Trichlorofluoromethane	ND< 4.13
Vinyl chloride	ND< 4.13

Aromatics	Results in ug / Kg
Benzene	ND< 4.13 <i>uJ</i>
Chlorobenzene	ND< 4.13 <i>uJ</i>
Ethylbenzene	ND< 4.13 <i>uJ</i>
Toluene	ND< 4.13 <i>uJ</i>
m,p-Xylene	ND< 4.13 <i>uJ</i>
o-Xylene	ND< 4.13 <i>uJ</i>
Styrene	ND< 10.3 <i>3.24 J</i>
1,2-Dichlorobenzene	ND< 10.3 <i>R</i>
1,3-Dichlorobenzene	ND< 10.3 <i>R</i>
1,4-Dichlorobenzene	ND< 4.13 <i>R</i>

Ketones	Results in ug / Kg
Acetone	ND< 20.7 <i>uJ</i>
2-Butanone	ND< 20.7 <i>uJ</i>
2-Hexanone	ND< 10.3 <i>uJ</i>
4-Methyl-2-pentanone	ND< 10.3

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 4.13
Vinyl acetate	ND< 10.3 <i>3.24 J</i>

ELAP Number 10958

Method: EPA 8260B

Data File: V65453.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature:

  
Bruce Hoogesteger: Technical Director

**Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-1511**Client Job Number:** 40503**Lab Sample Number:** 5184**Field Location:** CS-SS-04D**Date Sampled:** 04/27/2009**Field ID Number:** N/A**Date Received:** 04/28/2009**Sample Type:** Soil**Date Analyzed:** 05/05/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	N/A	ND< 4.13	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V65453.D

**Comments:** ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

**Signature:**  
Bruce Hoggsteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511V5.XLS

### Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5185

Client Job Number: 40503

Field Location: CS-SS-05

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/05/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 4.42 <i>uJ</i>
Bromomethane	ND< 4.42 <i>uJ</i>
Bromoform	ND< 11.0 <i>R</i>
Carbon Tetrachloride	ND< 11.0 <i>uJ</i>
Chloroethane	ND< 4.42
Chloromethane	ND< 4.42
2-Chloroethyl vinyl Ether	ND< 22.1
Chloroform	ND< 4.42
Dibromochloromethane	ND< 4.42 <i>uJ</i>
1,1-Dichloroethane	ND< 4.42
1,2-Dichloroethane	ND< 4.42 <i>1.68 J</i>
1,1-Dichloroethene	ND< 4.42
cis-1,2-Dichloroethene	ND< 4.42
trans-1,2-Dichloroethene	ND< 4.42
1,2-Dichloropropane	ND< 4.42 <i>uJ</i>
cis-1,3-Dichloropropene	ND< 4.42 <i>uJ</i>
trans-1,3-Dichloropropene	ND< 4.42 <i>uJ</i>
Methylene chloride	ND< 11.0 <i>uJ</i>
1,1,2,2-Tetrachloroethane	ND< 4.42 <i>uJ</i>
Tetrachloroethene	14.0 <i>J</i>
1,1,1-Trichloroethane	ND< 4.42 <i>uJ</i>
1,1,2-Trichloroethane	ND< 4.42 <i>uJ</i>
Trichloroethene	ND< 4.42 <i>uJ</i>
Trichlorofluoromethane	ND< 4.42
Vinyl chloride	ND< 4.42

Aromatics	Results in ug / Kg
Benzene	ND< 4.42 <i>uJ</i>
Chlorobenzene	ND< 4.42 <i>uJ</i>
Ethylbenzene	ND< 4.42 <i>uJ</i>
Toluene	ND< 4.42 <i>3.14 J</i>
m,p-Xylene	ND< 4.42 <i>uJ</i>
o-Xylene	ND< 4.42 <i>uJ</i>
Styrene	ND< 11.0 <i>2.20 J</i>
1,2-Dichlorobenzene	ND< 11.0 <i>R</i>
1,3-Dichlorobenzene	ND< 11.0 <i>R</i>
1,4-Dichlorobenzene	ND< 4.42 <i>R</i>

Ketones	Results in ug / Kg
Acetone	ND< 22.1 <i>uJ</i>
2-Butanone	ND< 22.1 <i>uJ</i>
2-Hexanone	ND< 11.0 <i>uJ</i>
4-Methyl-2-pentanone	ND< 11.0

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 4.42
Vinyl acetate	ND< 11.0 <i>4.82 J</i>

ELAP Number 10958

Method: EPA 8260B

Data File: V65454.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature:

  
Bruce Hoogesteger: Technical Director





**Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Client Job Number: 40503

Lab Sample Number: 5185

Field Location: CS-SS-05

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/05/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	N/A	ND< 4.42	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V65454.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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091511V6.XLS



## Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5186

Client Job Number: 40503

Field Location: CS-SS-06

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/05/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 4.37 <i>u5</i>
Bromomethane	ND< 4.37 <i>u5</i>
Bromoform	ND< 10.9 <i>R</i>
Carbon Tetrachloride	ND< 10.9 <i>u5</i>
Chloroethane	ND< 4.37
Chloromethane	ND< 4.37
2-Chloroethyl vinyl Ether	ND< 21.8
Chloroform	ND< 4.37
Dibromochloromethane	ND< 4.37 <i>u5</i>
1,1-Dichloroethane	ND< 4.37
1,2-Dichloroethane	ND< 4.37 <i>1.58 J</i>
1,1-Dichloroethene	ND< 4.37
cis-1,2-Dichloroethene	ND< 4.37
trans-1,2-Dichloroethene	ND< 4.37
1,2-Dichloropropane	ND< 4.37 <i>u5</i>
cis-1,3-Dichloropropene	ND< 4.37 <i>u5</i>
trans-1,3-Dichloropropene	ND< 4.37 <i>u5</i>
Methylene chloride	ND< 10.9 <i>u5</i>
1,1,2,2-Tetrachloroethane	ND< 4.37 <i>u5</i>
Tetrachloroethene	ND< 4.37 <i>u5</i>
1,1,1-Trichloroethane	ND< 4.37 <i>u5</i>
1,1,2-Trichloroethane	ND< 4.37 <i>u5</i>
Trichloroethene	ND< 4.37 <i>u5</i>
Trichlorofluoromethane	ND< 4.37
Vinyl chloride	ND< 4.37

Aromatics	Results in ug / Kg
Benzene	ND< 4.37 <i>u5</i>
Chlorobenzene	ND< 4.37 <i>u5</i>
Ethylbenzene	ND< 4.37 <i>u5</i>
Toluene	ND< 4.37 <i>u5</i>
m,p-Xylene	ND< 4.37 <i>u5</i>
o-Xylene	ND< 4.37 <i>u5</i>
Styrene	ND< 10.9 <i>1.81 J</i>
1,2-Dichlorobenzene	ND< 10.9 <i>R</i>
1,3-Dichlorobenzene	ND< 10.9 <i>R</i>
1,4-Dichlorobenzene	ND< 4.37 <i>R</i>

Ketones	Results in ug / Kg
Acetone	ND< 21.8 <i>u5</i>
2-Butanone	ND< 21.8 <i>u5</i>
2-Hexanone	ND< 10.9 <i>u5</i>
4-Methyl-2-pentanone	ND< 10.9

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 4.37
Vinyl acetate	ND< 10.9

ELAP Number 10958

Method: EPA 8260B

Data File: V65455.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-1511**Lab Sample Number:** 5186**Client Job Number:** 40503**Field Location:** CS-SS-06**Date Sampled:** 04/27/2009**Field ID Number:** N/A**Date Received:** 04/28/2009**Sample Type:** Soil**Date Analyzed:** 05/05/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	N/A	ND< 4.37	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V65455.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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091511V7.XLS

**Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5187

Client Job Number: 40503

Field Location: CS-SD-01

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/05/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 4.57 <i>uJ</i>
Bromomethane	ND< 4.57 <i>uJ</i>
Bromoform	ND< 11.4 <i>uJ</i>
Carbon Tetrachloride	ND< 11.4 <i>uJ</i>
Chloroethane	ND< 4.57
Chloromethane	ND< 4.57
2-Chloroethyl vinyl Ether	ND< 22.8
Chloroform	ND< 4.57
Dibromochloromethane	ND< 4.57 <i>uJ</i>
1,1-Dichloroethane	ND< 4.57
1,2-Dichloroethane	ND< 4.57 <i>1.98 J</i>
1,1-Dichloroethene	ND< 4.57 <i>3.50 J</i>
cis-1,2-Dichloroethene	ND< 4.57
trans-1,2-Dichloroethene	ND< 4.57
1,2-Dichloropropane	ND< 4.57 <i>uJ</i>
cis-1,3-Dichloropropene	ND< 4.57 <i>uJ</i>
trans-1,3-Dichloropropene	ND< 4.57 <i>uJ</i>
Methylene chloride	ND< 11.4 <i>uJ</i>
1,1,2,2-Tetrachloroethane	ND< 4.57 <i>uJ</i>
Tetrachloroethene	ND< 4.57 <i>uJ</i>
1,1,1-Trichloroethane	ND< 4.57 <i>uJ</i>
1,1,2-Trichloroethane	ND< 4.57 <i>uJ</i>
Trichloroethene	ND< 4.57
Trichlorofluoromethane	ND< 4.57
Vinyl chloride	ND< 4.57

Aromatics	Results in ug / Kg
Benzene	ND< 4.57 <i>uJ</i>
Chlorobenzene	ND< 4.57 <i>uJ</i>
Ethylbenzene	ND< 4.57 <i>uJ</i>
Toluene	ND< 4.57 <i>uJ</i>
m,p-Xylene	ND< 4.57 <i>uJ</i>
o-Xylene	ND< 4.57 <i>uJ</i>
Styrene	ND< 11.4 <i>1.58 J</i>
1,2-Dichlorobenzene	ND< 11.4
1,3-Dichlorobenzene	ND< 11.4
1,4-Dichlorobenzene	ND< 4.57

Ketones	Results in ug / Kg
Acetone	ND< 22.8 <i>17.9 J</i>
2-Butanone	ND< 22.8 <i>uJ</i>
2-Hexanone	ND< 11.4 <i>uJ</i>
4-Methyl-2-pentanone	ND< 11.4

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 4.57
Vinyl acetate	ND< 11.4

ELAP Number 10958

Method: EPA 8260B

Data File: V65456.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511V8.XLS

**Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5187

Client Job Number: 40503

Field Location: CS-SD-01

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/05/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
Complex Hydrocarbon	N/A	9.092	27.0	N/A
Complex Hydrocarbon	N/A	9.82	78.0	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V65456.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511V8.XLS

### Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5188

Client Job Number: 40503

Field Location: CS-SD-02

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/05/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 7.84
Bromomethane	ND< 7.84 <i>u5</i>
Bromoform	ND< 19.6 <i>R</i>
Carbon Tetrachloride	ND< 19.6
Chloroethane	ND< 7.84
Chloromethane	ND< 7.84
2-Chloroethyl vinyl Ether	ND< 39.2
Chloroform	ND< 7.84
Dibromochloromethane	ND< 7.84
1,1-Dichloroethane	ND< 7.84
1,2-Dichloroethane	ND< 7.84 <i>2.89 J</i>
1,1-Dichloroethene	ND< 7.84 <i>15.4</i>
cis-1,2-Dichloroethene	ND< 7.84
trans-1,2-Dichloroethene	ND< 7.84
1,2-Dichloropropane	ND< 7.84
cis-1,3-Dichloropropene	ND< 7.84
trans-1,3-Dichloropropene	ND< 7.84
Methylene chloride	ND< 19.6 <i>u5</i>
1,1,2,2-Tetrachloroethane	ND< 7.84
Tetrachloroethene	ND< 7.84 <i>7.35 J</i>
1,1,1-Trichloroethane	ND< 7.84
1,1,2-Trichloroethane	ND< 7.84
Trichloroethene	ND< 7.84
Trichlorofluoromethane	ND< 7.84
Vinyl chloride	ND< 7.84

Aromatics	Results in ug / Kg
Benzene	ND< 7.84
Chlorobenzene	ND< 7.84
Ethylbenzene	ND< 7.84
Toluene	ND< 7.84
m,p-Xylene	ND< 7.84
o-Xylene	ND< 7.84
Styrene	ND< 19.6 <i>2.48 J</i>
1,2-Dichlorobenzene	ND< 19.6 <i>R</i>
1,3-Dichlorobenzene	ND< 19.6 <i>R</i>
1,4-Dichlorobenzene	ND< 7.84 <i>R</i>

Ketones	Results in ug / Kg
Acetone	81.6 <i>J</i>
2-Butanone	ND< 39.2 <i>u5</i>
2-Hexanone	ND< 19.6
4-Methyl-2-pentanone	ND< 19.6

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 7.84
Vinyl acetate	ND< 19.6

ELAP Number 10958

Method: EPA 8260B

Data File: V65457.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature:

  
Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511V9.XLS



**Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Client Job Number: 40503

Lab Sample Number: 5188

Field Location: CS-SD-02

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/05/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
Complex Hydrocarbon	N/A	2.665	78.4	N/A
Complex Hydrocarbon	N/A	2.96	20.0	N/A
Complex Hydrocarbon	N/A	6.37	36.5	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V65457.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511V9.XLS





## Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5189

Client Job Number: 40503

Field Location: CS-SD-03

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/05/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 5.90
Bromomethane	ND< 5.90 <i>u5</i>
Bromoform	ND< 14.7 <i>R</i>
Carbon Tetrachloride	ND< 14.7
Chloroethane	ND< 5.90
Chloromethane	ND< 5.90
2-Chloroethyl vinyl Ether	ND< 29.5
Chloroform	ND< 5.90
Dibromochloromethane	ND< 5.90
1,1-Dichloroethane	ND< 5.90
1,2-Dichloroethane	ND< 5.90 <i>2.19 J</i>
1,1-Dichloroethene	ND< 5.90 <i>4.58 J</i>
cis-1,2-Dichloroethene	ND< 5.90
trans-1,2-Dichloroethene	ND< 5.90
1,2-Dichloropropane	ND< 5.90
cis-1,3-Dichloropropene	ND< 5.90
trans-1,3-Dichloropropene	ND< 5.90
Methylene chloride	ND< 14.7 <i>u5</i>
1,1,2,2-Tetrachloroethane	ND< 5.90
Tetrachloroethene	ND< 5.90
1,1,1-Trichloroethane	ND< 5.90
1,1,2-Trichloroethane	ND< 5.90
Trichloroethene	ND< 5.90
Trichlorofluoromethane	ND< 5.90
Vinyl chloride	ND< 5.90

Aromatics	Results in ug / Kg
Benzene	ND< 5.90
Chlorobenzene	ND< 5.90
Ethylbenzene	ND< 5.90
Toluene	ND< 5.90
m,p-Xylene	ND< 5.90
o-Xylene	ND< 5.90
Styrene	ND< 14.7
1,2-Dichlorobenzene	ND< 14.7 <i>R</i>
1,3-Dichlorobenzene	ND< 14.7 <i>R</i>
1,4-Dichlorobenzene	ND< 5.90 <i>R</i>

Ketones	Results in ug / Kg
Acetone	71.2 <i>J</i>
2-Butanone	ND< 29.5 <i>u5</i>
2-Hexanone	ND< 14.7
4-Methyl-2-pentanone	ND< 14.7

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 5.90
Vinyl acetate	ND< 14.7

ELAP Number 10958

Method: EPA 8260B

Data File: V65458.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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091511W1.XLS

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**Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-1511**Lab Sample Number:** 5189**Client Job Number:** 40503**Field Location:** CS-SD-03**Date Sampled:** 04/27/2009**Field ID Number:** N/A**Date Received:** 04/28/2009**Sample Type:** Soil**Date Analyzed:** 05/05/2009

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
None Found	N/A	N/a	ND< 5.90	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V65458.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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091511W1.XLS

### Volatile Analysis Report for Non-potable Water

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5190

**Client Job Number:** 40503

**Field Location:** CS-SS-EB

**Field ID Number:** N/A

**Sample Type:** Water

**Date Sampled:** 04/27/2009

**Date Received:** 04/28/2009

**Date Analyzed:** 05/05/2009

**Date Reissued:** 05/15/2009

Halocarbons	Results in ug / L
Bromodichloromethane	ND< 2.00
Bromomethane	ND< 2.00
Bromoform	ND< 5.00
Carbon Tetrachloride	ND< 2.00
Chloroethane	ND< 2.00
Chloromethane	ND< 2.00
2-Chloroethyl vinyl Ether	ND< 10.0
Chloroform	ND< 2.00
Dibromochloromethane	ND< 2.00
1,1-Dichloroethane	ND< 2.00
1,2-Dichloroethane	ND< 2.00
1,1-Dichloroethene	ND< 2.00
cis-1,2-Dichloroethene	ND< 2.00
trans-1,2-Dichloroethene	ND< 2.00
1,2-Dichloropropane	ND< 2.00
cis-1,3-Dichloropropene	ND< 2.00
trans-1,3-Dichloropropene	ND< 2.00
Methylene chloride	ND< 5.00
1,1,2,2-Tetrachloroethane	ND< 2.00
Tetrachloroethene	ND< 2.00
1,1,1-Trichloroethane	ND< 2.00
1,1,2-Trichloroethane	ND< 2.00
Trichloroethene	ND< 2.00
Trichlorofluoromethane	ND< 2.00
Vinyl chloride	ND< 2.00

Aromatics	Results in ug / L
Benzene	ND< 0.700
Chlorobenzene	ND< 2.00
Ethylbenzene	ND< 2.00
Toluene	ND< 2.00
m,p-Xylene	ND< 2.00
o-Xylene	ND< 2.00
Styrene	ND< 5.00
1,2-Dichlorobenzene	ND< 2.00
1,3-Dichlorobenzene	ND< 2.00
1,4-Dichlorobenzene	ND< 2.00

Ketones	Results in ug / L
Acetone	ND< 10.0
2-Butanone	ND< 10.0
2-Hexanone	ND< 5.00
4-Methyl-2-pentanone	ND< 5.00

Miscellaneous	Results in ug / L
Carbon disulfide	ND< 5.00
Vinyl acetate	ND< 5.00

ELAP Number 10958

Method: EPA 8260B

Data File: V65459.D

all target analytes are unusable (R)

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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**Volatile Analysis Report for Non-potable Water****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-1511**Lab Sample Number:** 5190**Client Job Number:** 40503**Field Location:** CS-SS-EB**Date Sampled:** 04/27/2009**Field ID Number:** N/A**Date Received:** 04/28/2009**Sample Type:** Water**Date Analyzed:** 05/05/2009**Date Relssued:** 05/15/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
None Found	N/A	N/a	ND< 2.00	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V65459.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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091511x2.XLS

### Volatile Analysis Report for Non-potable Water

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site  
**Client Job Number:** 40503  
**Field Location:** CS-SS-EB Field Blank  
**Field ID Number:** N/A  
**Sample Type:** Water

**Lab Project Number:** 09-1511  
**Lab Sample Number:** 5191  
**Date Sampled:** 04/27/2009  
**Date Received:** 04/28/2009  
**Date Analyzed:** 05/05/2009  
**Date Reissued:** 05/15/2009

Halocarbons	Results in ug / L
Bromodichloromethane	ND< 2.00
Bromomethane	ND< 2.00 <i>u3</i>
Bromoform	ND< 5.00 <i>u3</i>
Carbon Tetrachloride	ND< 2.00
Chloroethane	ND< 2.00
Chloromethane	ND< 2.00 <i>.807 J</i>
2-Chloroethyl vinyl Ether	ND< 10.0
Chloroform	ND< 2.00
Dibromochloromethane	ND< 2.00
1,1-Dichloroethane	ND< 2.00
1,2-Dichloroethane	ND< 2.00 <i>.777 J</i>
1,1-Dichloroethene	ND< 2.00
cis-1,2-Dichloroethene	ND< 2.00
trans-1,2-Dichloroethene	ND< 2.00
1,2-Dichloropropane	ND< 2.00
cis-1,3-Dichloropropene	ND< 2.00
trans-1,3-Dichloropropene	ND< 2.00
Methylene chloride	ND< 5.00 <i>u3</i>
1,1,2,2-Tetrachloroethane	ND< 2.00
Tetrachloroethene	ND< 2.00
1,1,1-Trichloroethane	ND< 2.00
1,1,2-Trichloroethane	ND< 2.00
Trichloroethene	ND< 2.00
Trichlorofluoromethane	ND< 2.00
Vinyl chloride	ND< 2.00

Aromatics	Results in ug / L
Benzene	ND< 0.700
Chlorobenzene	ND< 2.00
Ethylbenzene	ND< 2.00
Toluene	ND< 2.00
m,p-Xylene	ND< 2.00
o-Xylene	ND< 2.00
Styrene	ND< 5.00
1,2-Dichlorobenzene	ND< 2.00
1,3-Dichlorobenzene	ND< 2.00
1,4-Dichlorobenzene	ND< 2.00

Ketones	Results in ug / L
Acetone	ND< 10.0 <i>u3</i>
2-Butanone	ND< 10.0 <i>u3</i>
2-Hexanone	ND< 5.00
4-Methyl-2-pentanone	ND< 5.00

Miscellaneous	Results in ug / L
Carbon disulfide	ND< 5.00
Vinyl acetate	ND< 5.00 <i>.610 J</i>

ELAP Number 10958

Method: EPA 8260B

Data File: V65460.D

Comments: ND denotes Non Detect  
 ug / L = microgram per Liter

**Signature:**
  
 Bruce Hoogesteger: Technical Director

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091511x3.xls

**Volatile Analysis Report for Non-potable Water****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-1511**Lab Sample Number:** 5191**Client Job Number:** 40503**Field Location:** CS-SS-EB Field Blank**Date Sampled:** 04/27/2009**Field ID Number:** N/A**Date Received:** 04/28/2009**Sample Type:** Water**Date Analyzed:** 05/05/2009**Date Reissued:** 05/15/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
None Found	N/A	N/a	ND< 2.00	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V65460.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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091511x3.xls

**Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: LRB

Client Job Number: 40503

Field Location: N/A

Date Sampled: N/A

Field ID Number: N/A

Date Received: N/A

Sample Type: Soil

Date Analyzed: 05/05/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 5.00
Bromomethane	ND< 5.00 <i>u3</i>
Bromoform	ND< 12.5 <i>u3</i>
Carbon Tetrachloride	ND< 12.5
Chloroethane	ND< 5.00
Chloromethane	ND< 5.00
2-Chloroethyl vinyl Ether	ND< 25.0
Chloroform	ND< 5.00
Dibromochloromethane	ND< 5.00
1,1-Dichloroethane	ND< 5.00
1,2-Dichloroethane	ND< 5.00
1,1-Dichloroethene	ND< 5.00
cis-1,2-Dichloroethene	ND< 5.00
trans-1,2-Dichloroethene	ND< 5.00
1,2-Dichloropropane	ND< 5.00
cis-1,3-Dichloropropene	ND< 5.00
trans-1,3-Dichloropropene	ND< 5.00
Methylene chloride	ND< 12.5 <i>u3</i>
1,1,2,2-Tetrachloroethane	ND< 5.00
Tetrachloroethene	ND< 5.00
1,1,1-Trichloroethane	ND< 5.00
1,1,2-Trichloroethane	ND< 5.00
Trichloroethene	ND< 5.00
Trichlorofluoromethane	ND< 5.00
Vinyl chloride	ND< 5.00

Aromatics	Results in ug / Kg
Benzene	ND< 5.00
Chlorobenzene	ND< 5.00
Ethylbenzene	ND< 5.00
Toluene	ND< 5.00
m,p-Xylene	ND< 5.00
o-Xylene	ND< 5.00
Styrene	ND< 12.5
1,2-Dichlorobenzene	ND< 12.5
1,3-Dichlorobenzene	ND< 12.5
1,4-Dichlorobenzene	ND< 5.00

Ketones	Results in ug / Kg
Acetone	ND< 25.0 <i>u3</i>
2-Butanone	ND< 25.0 <i>u3</i>
2-Hexanone	ND< 12.5
4-Methyl-2-pentanone	ND< 12.5 <i>2.10 J</i>

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 5.00
Vinyl acetate	ND< 12.5

ELAP Number 10958

Method: EPA 8260B

Data File: V65445.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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091511B1.XLS



### Volatile Analysis Report for Non-potable Water

Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: LRB

Client Job Number: 40503

Field Location: N/A

Field ID Number: N/A

Sample Type: Water

Date Sampled: N/A

Date Received: N/A

Date Analyzed: 05/07/2009

Date Reissued: 05/20/2009

Halocarbons	Results in ug / L
Bromodichloromethane	ND< 2.00
Bromomethane	ND< 2.00 <i>us</i>
Bromoform	ND< 5.00 <i>us</i>
Carbon Tetrachloride	ND< 2.00
Chloroethane	ND< 2.00
Chloromethane	ND< 2.00
2-Chloroethyl vinyl Ether	ND< 10.0
Chloroform	ND< 2.00
Dibromochloromethane	ND< 2.00
1,1-Dichloroethane	ND< 2.00
1,2-Dichloroethane	ND< 2.00
1,1-Dichloroethene	ND< 2.00
cis-1,2-Dichloroethene	ND< 2.00
trans-1,2-Dichloroethene	ND< 2.00
1,2-Dichloropropane	ND< 2.00
cis-1,3-Dichloropropene	ND< 2.00
trans-1,3-Dichloropropene	ND< 2.00
Methylene chloride	ND< 5.00 <i>us</i>
1,1,2,2-Tetrachloroethane	ND< 2.00
Tetrachloroethene	ND< 2.00
1,1,1-Trichloroethane	ND< 2.00
1,1,2-Trichloroethane	ND< 2.00
Trichloroethene	ND< 2.00
Trichlorofluoromethane	ND< 2.00
Vinyl chloride	ND< 2.00

Aromatics	Results in ug / L
Benzene	ND< 0.700
Chlorobenzene	ND< 2.00
Ethylbenzene	ND< 2.00
Toluene	ND< 2.00
m,p-Xylene	ND< 2.00
o-Xylene	ND< 2.00
Styrene	ND< 5.00
1,2-Dichlorobenzene	ND< 2.00
1,3-Dichlorobenzene	ND< 2.00
1,4-Dichlorobenzene	ND< 2.00

Ketones	Results in ug / L
Acetone	ND< 10.0 <i>us</i>
2-Butanone	ND< 10.0 <i>us</i>
2-Hexanone	ND< 5.00
4-Methyl-2-pentanone	ND< 5.00

Miscellaneous	Results in ug / L
Carbon disulfide	ND< 5.00
Vinyl acetate	ND< 5.00

ELAP Number 10958

Method: EPA 8260B

Data File: V65467.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature:

  
Bruce Hoogesteger, Technical Director

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091511B3.XLS



### Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: LRB

Client Job Number: 40503

Field Location: N/A

Date Sampled: N/A

Field ID Number: N/A

Date Received: N/A

Sample Type: Soil

Date Analyzed: 05/07/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 5.00
Bromomethane	ND< 5.00 <i>us</i>
Bromoform	ND< 12.5 <i>us</i>
Carbon Tetrachloride	ND< 12.5
Chloroethane	ND< 5.00
Chloromethane	ND< 5.00
2-Chloroethyl vinyl Ether	ND< 25.0
Chloroform	ND< 5.00
Dibromochloromethane	ND< 5.00
1,1-Dichloroethane	ND< 5.00
1,2-Dichloroethane	ND< 5.00
1,1-Dichloroethene	ND< 5.00
cis-1,2-Dichloroethene	ND< 5.00
trans-1,2-Dichloroethene	ND< 5.00
1,2-Dichloropropane	ND< 5.00
cis-1,3-Dichloropropene	ND< 5.00
trans-1,3-Dichloropropene	ND< 5.00
Methylene chloride	ND< 12.5 <i>us</i>
1,1,2,2-Tetrachloroethane	ND< 5.00
Tetrachloroethene	ND< 5.00
1,1,1-Trichloroethane	ND< 5.00
1,1,2-Trichloroethane	ND< 5.00
Trichloroethene	ND< 5.00
Trichlorofluoromethane	ND< 5.00
Vinyl chloride	ND< 5.00

Aromatics	Results in ug / Kg
Benzene	ND< 5.00
Chlorobenzene	ND< 5.00
Ethylbenzene	ND< 5.00
Toluene	ND< 5.00
m,p-Xylene	ND< 5.00
o-Xylene	ND< 5.00
Styrene	ND< 12.5
1,2-Dichlorobenzene	ND< 12.5
1,3-Dichlorobenzene	ND< 12.5
1,4-Dichlorobenzene	ND< 5.00

Ketones	Results in ug / Kg
Acetone	ND< 25.0 <i>us</i>
2-Butanone	ND< 25.0 <i>us</i>
2-Hexanone	ND< 12.5 <i>4.97</i> <i>us</i>
4-Methyl-2-pentanone	ND< 12.5 <i>2.78</i> <i>us</i>

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 5.00
Vinyl acetate	ND< 12.5

ELAP Number 10958

Method: EPA 8260B

Data File: V65512.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

Signature:

  
Bruce Hoogesteger: Technical Director

**Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: Solid M/L LRB

Client Job Number: 40503

Field Location: N/A

Field ID Number: N/A

Sample Type: Solid

Date Sampled: N/A

Date Received: N/A

Date Analyzed: 05/08/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 1,000
Bromomethane	ND< 1,000 <i>us</i>
Bromoform	ND< 2,500 <i>us</i>
Carbon Tetrachloride	ND< 2,500
Chloroethane	ND< 1,000
Chloromethane	ND< 1,000
2-Chloroethyl vinyl Ether	ND< 5,000
Chloroform	ND< 1,000
Dibromochloromethane	ND< 1,000
1,1-Dichloroethane	ND< 1,000
1,2-Dichloroethane	ND< 1,000
1,1-Dichloroethene	ND< 1,000
cis-1,2-Dichloroethene	ND< 1,000
trans-1,2-Dichloroethene	ND< 1,000
1,2-Dichloropropane	ND< 1,000
cis-1,3-Dichloropropene	ND< 1,000
trans-1,3-Dichloropropene	ND< 1,000
Methylene chloride	ND< 2,500 <i>us</i>
1,1,2,2-Tetrachloroethane	ND< 1,000
Tetrachloroethene	ND< 1,000
1,1,1-Trichloroethane	ND< 1,000
1,1,2-Trichloroethane	ND< 1,000
Trichloroethene	ND< 1,000
Trichlorofluoromethane	ND< 1,000
Vinyl chloride	ND< 1,000

Aromatics	Results in ug / Kg
Benzene	ND< 1,000
Chlorobenzene	ND< 1,000
Ethylbenzene	ND< 1,000
Toluene	ND< 1,000
m,p-Xylene	ND< 1,000
o-Xylene	ND< 1,000
Styrene	ND< 2,500 <i>432 J</i>
1,2-Dichlorobenzene	ND< 2,500
1,3-Dichlorobenzene	ND< 2,500
1,4-Dichlorobenzene	ND< 1,000

Ketones	Results in ug / Kg
Acetone	ND< 5,000 <i>us</i>
2-Butanone	ND< 5,000 <i>us</i>
2-Hexanone	2,650
4-Methyl-2-pentanone	ND< 2,500

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 1,000
Vinyl acetate	ND< 2,500

ELAP Number 10958

Method: EPA 8260B

Data File: V65575.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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091511B4.XLS

*Handwritten signature*

# Semi-Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

SDG Group: N/A

Client Job Number: 40503

Field Location: CS-SS-01

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/06/2009

Spiked Compound	Sample Results In ug / Kg	MS Spiked In ug / Kg	MS Results In ug / Kg	MS Percent Recovery	MSD Spiked In ug / Kg	MSD Results In ug / Kg	MSD Percent Recovery	MS / MSD % RPD
2-Chlorophenol	ND< 381	2,860	1,880	65.7	2,840	1,980	69.7	5.91
N-Nitroso-di-n-propylamine	ND< 381	1,910	1,150	60.2	1,900	1,240	65.3	8.13
Phenol	ND< 381	2,860	1,860	65.0	2,840	2,090	73.6	12.41
4-Chloro-3-methylphenol	ND< 381	2,860	1,940	67.8	2,840	2,130	75.0	10.08
Acenaphthene	ND< 381	1,910	1,260	66.0	1,900	1,370	72.1	8.83
2,4-Dinitrotoluene	ND< 381	1,910	1,220	63.9	1,900	1,310	68.9	7.53
4-Nitrophenol	ND< 954	2,860	1,750	61.2	2,840	2,040	71.8	15.94
Pentachlorophenol	ND< 954	2,860	2,250	78.7	2,840	2,540	89.4	12.73
Pyrene*	564	1,910	1,580	53.4 *	1,900	1,790	64.2	18.37
phenanthrene			330			301		
fluoranthene			650			635		
chrysene			261			254		
Benz(a)anthracene			221			224		
Butylbenzophthalate			341			398		
Benz(b)fluoranthene			253			202		
Benz(a)pyrene			263			244		
2-methyl naphthalene			—			575		

ELAP Number 10958

Data File: S45184.D

Data File: S45186.D

Method: EPA 8270C

\* = Outside QC Limits



## Semi-Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-15110

Lab Sample Number: 518031

Client Job Number: 40503

Field Location: CS-SS-01

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/06/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 381	Dibenz (a,h) anthracene	ND< 381
Anthracene	ND< 381	Fluoranthene	762
Benzo (a) anthracene	ND< 381 234 J	Fluorene	ND< 381
Benzo (a) pyrene	ND< 381 279 J	Indeno (1,2,3-cd) pyrene	ND< 381
Benzo (b) fluoranthene	ND< 381 286 J	Naphthalene	ND< 381
Benzo (g,h,i) perylene	ND< 381 192 J	Phenanthrene	386
Benzo (k) fluoranthene	ND< 381 277 J	Pyrene	564 M
Chrysene	ND< 381 321 J	Acenaphthylene	ND< 381
Diethyl phthalate	ND< 381	1,2-Dichlorobenzene	ND< 381
Dimethyl phthalate	ND< 954	1,3-Dichlorobenzene	ND< 381
Butylbenzylphthalate	ND< 381 340 J	1,4-Dichlorobenzene	ND< 381
Di-n-butyl phthalate	ND< 381	1,2,4-Trichlorobenzene	ND< 381
Di-n-octylphthalate	ND< 381	Nitrobenzene	ND< 381
Bis (2-ethylhexyl) phthalate	ND< 381	2,4-Dinitrotoluene	ND< 381
2-Chloronaphthalene	ND< 381	2,6-Dinitrotoluene	ND< 381
Hexachlorobenzene	ND< 381	Bis (2-chloroethyl) ether	ND< 381
Hexachloroethane	ND< 381	Bis (2-chloroisopropyl) ether	ND< 381
Hexachlorocyclopentadiene	ND< 381	Bis (2-chloroethoxy) methan.	ND< 381
Hexachlorobutadiene	ND< 381	4-Bromophenyl phenyl ether	ND< 381
N-Nitroso-di-n-propylamine	ND< 381	4-Chlorophenyl phenyl ether	ND< 381
N-Nitrosodiphenylamine	ND< 381	Benzidine	ND< 954
N-Nitrosodimethylamine	ND< 381	3,3'-Dichlorobenzidine	ND< 381
Isophorone	ND< 381	4-Chloroaniline	ND< 381
Benzyl alcohol	ND< 954	2-Nitroaniline	ND< 954
Dibenzofuran	ND< 381	3-Nitroaniline	ND< 954
2-Methylnaphthalene	ND< 381	4-Nitroaniline	ND< 954

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 381	2-Methylphenol	ND< 381
2-Chlorophenol	ND< 381	3&4-Methylphenol	ND< 381
2,4-Dichlorophenol	ND< 381	2,4-Dimethylphenol	ND< 381
2,6-Dichlorophenol	ND< 381	2-Nitrophenol	ND< 381
2,4,5-Trichlorophenol	ND< 954	4-Nitrophenol	ND< 954
2,4,6-Trichlorophenol	ND< 381	2,4-Dinitrophenol	ND< 381
Pentachlorophenol	ND< 954	4,6-Dinitro-2-methylphenol	ND< 954
4-Chloro-3-methylphenol	ND< 381	Benzoic acid	ND< 954

ELAP Number 10958

Method: EPA 8270C

Data File: S45184.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511S1.XLS

**Semi-Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-1511**Client Job Number:** 40503**Lab Sample Number:** 5180**Field Location:** CS-SS-01**Date Sampled:** 04/27/2009**Field ID Number:** N/A**Date Received:** 04/28/2009**Sample Type:** Soil**Date Analyzed:** 05/06/2009**Date Reissued:** 05/19/2009

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
Unknown Hydrocarbon	N/A	19.71	513	N/A
Unknown Hydrocarbon	N/A	19.85	389	N/A
Unknown Hydrocarbon	N/A	20.48	985	N/A
Unknown Hydrocarbon	N/A	20.90	974	N/A
Unknown Hydrocarbon	N/A	21.21	1,060	N/A
Unknown Hydrocarbon	N/A	21.98	700	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S45184.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

### Semi-Volatile Analysis Report for Soils/Solids/Sludges

 Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5181

Client Job Number: 40503

Field Location: CS-SS-02

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/07/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 1,950	Dibenz (a,h) anthracene	ND< 1,950
Anthracene	ND< 1,950 1510 J	Fluoranthene	16,200
Benzo (a) anthracene	5,140	Fluorene	ND< 1,950
Benzo (a) pyrene	5,450	Indeno (1,2,3-cd) pyrene	4,470
Benzo (b) fluoranthene	6,580	Naphthalene	ND< 1,950
Benzo (g,h,i) perylene	4,830	Phenanthrene	6,630
Benzo (k) fluoranthene	4,150	Pyrene	10,600
Chrysene	5,980	Acenaphthylene	ND< 1,950
Diethyl phthalate	ND< 1,950	1,2-Dichlorobenzene	ND< 1,950
Dimethyl phthalate	ND< 4,890	1,3-Dichlorobenzene	ND< 1,950
Butylbenzylphthalate	2,630	1,4-Dichlorobenzene	ND< 1,950
Di-n-butyl phthalate	ND< 1,950	1,2,4-Trichlorobenzene	ND< 1,950
Di-n-octylphthalate	ND< 1,950	Nitrobenzene	ND< 1,950
Bis (2-ethylhexyl) phthalate	ND< 1,950 1510 J	2,4-Dinitrotoluene	ND< 1,950
2-Chloronaphthalene	ND< 1,950	2,6-Dinitrotoluene	ND< 1,950
Hexachlorobenzene	ND< 1,950	Bis (2-chloroethyl) ether	ND< 1,950
Hexachloroethane	ND< 1,950	Bis (2-chloroisopropyl) ether	ND< 1,950
Hexachlorocyclopentadiene	ND< 1,950	Bis (2-chloroethoxy) methan	ND< 1,950
Hexachlorobutadiene	ND< 1,950	4-Bromophenyl phenyl ether	ND< 1,950
N-Nitroso-di-n-propylamine	ND< 1,950	4-Chlorophenyl phenyl ether	ND< 1,950
N-Nitrosodiphenylamine	ND< 1,950	Benzidine	ND< 4,890
N-Nitrosodimethylamine	ND< 1,950	3,3'-Dichlorobenzidine	ND< 1,950
Isophorone	ND< 1,950	4-Chloroaniline	ND< 1,950
Benzyl alcohol	ND< 4,890	2-Nitroaniline	ND< 4,890
Dibenzofuran	ND< 1,950	3-Nitroaniline	ND< 4,890
2-Methylnaphthalene	ND< 1,950	4-Nitroaniline	ND< 4,890

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 1,950	2-Methylphenol	ND< 1,950
2-Chlorophenol	ND< 1,950	3&4-Methylphenol	ND< 1,950
2,4-Dichlorophenol	ND< 1,950	2,4-Dimethylphenol	ND< 1,950
2,6-Dichlorophenol	ND< 1,950	2-Nitrophenol	ND< 1,950
2,4,5-Trichlorophenol	ND< 4,890	4-Nitrophenol	ND< 4,890
2,4,6-Trichlorophenol	ND< 1,950	2,4-Dinitrophenol	ND< 1,950
Pentachlorophenol	ND< 4,890	4,6-Dinitro-2-methylphenol	ND< 4,890
4-Chloro-3-methylphenol	ND< 1,950	Benzoic acid	ND< 4,890

ELAP Number 10958

Method: EPA 8270C

Data File: S45211.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature:

Bruce Hoogesteger, Technical Director

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091511S4.XLS



**Semi-Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Client Job Number: 40503

Lab Sample Number: 5181

Field Location: CS-SS-02

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/07/2009

Date Reissued: 05/19/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
Poly Aromatic Hydrocarbon	N/A	18.76	4,770	N/A
Unknown Hydrocarbon	N/A	19.80	3,770	N/A
Unknown Hydrocarbon	N/A	19.87	2,420	N/A
Unknown Hydrocarbon	N/A	21.13	3,030	N/A
Unknown Hydrocarbon	N/A	21.53	3,110	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S45211.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511u4.XLS

### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client: Lu Engineers**
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5182

**Client Job Number:** 40503

**Field Location:** CS-SS-03

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/08/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 424	Dibenz (a,h) anthracene	ND< 424
Anthracene	ND< 424	Fluoranthene	604
Benzo (a) anthracene	ND< 424 257 J	Fluorene	ND< 424
Benzo (a) pyrene	ND< 424 222 J	Indeno (1,2,3-cd) pyrene	ND< 424
Benzo (b) fluoranthene	ND< 424	Naphthalene	ND< 424
Benzo (g,h,i) perylene	ND< 424 213 J	Phenanthrene	ND< 424 230 J
Benzo (k) fluoranthene	ND< 424	Pyrene	ND< 424 403 J
Chrysene	ND< 424 263 J	Acenaphthylene	ND< 424
Diethyl phthalate	ND< 424	1,2-Dichlorobenzene	ND< 424
Dimethyl phthalate	ND< 1,060	1,3-Dichlorobenzene	ND< 424
Butylbenzylphthalate	ND< 424	1,4-Dichlorobenzene	ND< 424
Di-n-butyl phthalate	ND< 424	1,2,4-Trichlorobenzene	ND< 424
Di-n-octylphthalate	ND< 424	Nitrobenzene	ND< 424
Bis (2-ethylhexyl) phthalate	ND< 424 357 J	2,4-Dinitrotoluene	ND< 424
2-Chloronaphthalene	ND< 424	2,6-Dinitrotoluene	ND< 424
Hexachlorobenzene	ND< 424	Bis (2-chloroethyl) ether	ND< 424
Hexachloroethane	ND< 424	Bis (2-chloroisopropyl) ether	ND< 424
Hexachlorocyclopentadiene	ND< 424 u J	Bis (2-chloroethoxy) methan	ND< 424
Hexachlorobutadiene	ND< 424	4-Bromophenyl phenyl ether	ND< 424
N-Nitroso-di-n-propylamine	ND< 424	4-Chlorophenyl phenyl ether	ND< 424
N-Nitrosodiphenylamine	ND< 424	Benzidine	ND< 1,060
N-Nitrosodimethylamine	ND< 424	3,3'-Dichlorobenzidine	ND< 424
Isophorone	ND< 424	4-Chloroaniline	ND< 424
Benzyl alcohol	ND< 1,060	2-Nitroaniline	ND< 1,060
Dibenzofuran	ND< 424	3-Nitroaniline	ND< 1,060
2-Methylnaphthalene	ND< 424	4-Nitroaniline	ND< 1,060

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 424	2-Methylphenol	ND< 424
2-Chlorophenol	ND< 424	3&4-Methylphenol	ND< 424
2,4-Dichlorophenol	ND< 424	2,4-Dimethylphenol	ND< 424
2,6-Dichlorophenol	ND< 424	2-Nitrophenol	ND< 424
2,4,5-Trichlorophenol	ND< 1,060	4-Nitrophenol	ND< 1,060
2,4,6-Trichlorophenol	ND< 424	2,4-Dinitrophenol	ND< 424 u J
Pentachlorophenol	ND< 1,060	4,6-Dinitro-2-methylphenol	ND< 1,060 u J
4-Chloro-3-methylphenol	ND< 424	Benzoic acid	ND< 1,060

ELAP Number 10958

Method: EPA 8270C

Data File: S45229.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature:

Bruce Hoogesteger, Technical Director

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091511S5.XLS



### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5182

**Client Job Number:** 40503

**Field Location:** CS-SS-03

**Field ID Number:** N/A

**Sample Type:** Soil

**Date Sampled:** 04/27/2009

**Date Received:** 04/28/2009

**Date Analyzed:** 05/08/2009

**Date Reissued:** 05/19/2009

<u>Tentatively Identified Compounds</u>	<u>CAS Number</u>	<u>Retention Time</u>	<u>Results in ug / Kg</u>	<u>Percent Fit</u>
Unknown Organic Acid	N/A	13.87	466	N/A
Unknown Hydrocarbon	N/A	19.59	903	N/A
Unknown Hydrocarbon	N/A	19.64	1,300	N/A
Unknown Hydrocarbon	N/A	19.89	534	N/A
Unknown Hydrocarbon	N/A	20.42	1,380	N/A
Unknown Hydrocarbon	N/A	20.61	780	N/A
Unknown Hydrocarbon	N/A	20.68	471	N/A
Unknown Hydrocarbon	N/A	20.83	827	N/A
Unknown Hydrocarbon	N/A	21.88	835	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S45229.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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091511u5.xls



### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5183

**Client Job Number:** 40503

**Field Location:** CS-SS-04

**Field ID Number:** N/A

**Sample Type:** Soil

**Date Sampled:** 04/27/2009

**Date Received:** 04/28/2009

**Date Analyzed:** 05/06/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 343	Dibenz (a,h) anthracene	411
Anthracene	406	Fluoranthene	4,550
Benzo (a) anthracene	1,500	Fluorene	ND< 343
Benzo (a) pyrene	1,700	Indeno (1,2,3-cd) pyrene	1,260
Benzo (b) fluoranthene	1,910	Naphthalene	ND< 343
Benzo (g,h,i) perylene	1,340	Phenanthrene	1,730
Benzo (k) fluoranthene	1,370	Pyrene	2,850
Chrysene	1,730	Acenaphthylene	ND< 343
Diethyl phthalate	ND< 343	1,2-Dichlorobenzene	ND< 343
Dimethyl phthalate	ND< 859	1,3-Dichlorobenzene	ND< 343
Butylbenzylphthalate	833	1,4-Dichlorobenzene	ND< 343
Di-n-butyl phthalate	ND< 343	1,2,4-Trichlorobenzene	ND< 343
Di-n-octylphthalate	ND< 343	Nitrobenzene	ND< 343
Bis (2-ethylhexyl) phthalate	ND< 343 260 J	2,4-Dinitrotoluene	ND< 343
2-Chloronaphthalene	ND< 343	2,6-Dinitrotoluene	ND< 343
Hexachlorobenzene	ND< 343	Bis (2-chloroethyl) ether	ND< 343
Hexachloroethane	ND< 343	Bis (2-chloroisopropyl) ether	ND< 343
Hexachlorocyclopentadiene	ND< 343	Bis (2-chloroethoxy) methan	ND< 343
Hexachlorobutadiene	ND< 343	4-Bromophenyl phenyl ether	ND< 343
N-Nitroso-di-n-propylamine	ND< 343	4-Chlorophenyl phenyl ether	ND< 343
N-Nitrosodiphenylamine	ND< 343	Benzidine	ND< 859
N-Nitrosodimethylamine	ND< 343	3,3'-Dichlorobenzidine	ND< 343
Isophorone	ND< 343	4-Chloroaniline	ND< 343
Benzyl alcohol	ND< 859	2-Nitroaniline	ND< 859
Dibenzofuran	ND< 343	3-Nitroaniline	ND< 859
2-Methylnaphthalene	ND< 343	4-Nitroaniline	ND< 859

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 343	2-Methylphenol	ND< 343
2-Chlorophenol	ND< 343	3&4-Methylphenol	ND< 343
2,4-Dichlorophenol	ND< 343	2,4-Dimethylphenol	ND< 343
2,6-Dichlorophenol	ND< 343	2-Nitrophenol	ND< 343
2,4,5-Trichlorophenol	ND< 859	4-Nitrophenol	ND< 859
2,4,6-Trichlorophenol	ND< 343	2,4-Dinitrophenol	ND< 343
Pentachlorophenol	ND< 859	4,6-Dinitro-2-methylphenol	ND< 859
4-Chloro-3-methylphenol	ND< 343	Benzoic acid	ND< 859

ELAP Number 10958

Method: EPA 8270C

Data File: S45189.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
 Bruce Hoogesteger, Technical Director

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091511S6.XLS



### Semi-Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5183

Client Job Number: 40503

Field Location: CS-SS-04

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/06/2009

Date Reissued: 05/19/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
Unknown Hydrocarbon	N/A	13.77	354	N/A
Unknown Hydrocarbon	N/A	14.10	429	N/A
Unknown Hydrocarbon	N/A	15.22	429	N/A
Unknown Hydrocarbon	N/A	15.55	745	N/A
Unknown Hydrocarbon	N/A	15.65	405	N/A
Unknown Hydrocarbon	N/A	16.50	367	N/A
Unknown Hydrocarbon	N/A	16.56	519	N/A
Unknown Hydrocarbon	N/A	17.05	464	N/A
Unknown Hydrocarbon	N/A	17.55	347	N/A
Unknown Hydrocarbon	N/A	17.71	398	N/A
Unknown Hydrocarbon	N/A	18.01	361	N/A
Poly Aromatic Hydrocarbon	N/A	18.62	453	N/A
Unknown Hydrocarbon	N/A	18.78	378	N/A
Poly Aromatic Hydrocarbon	N/A	18.84	1,160	N/A
Unknown Hydrocarbon	N/A	19.69	680	N/A
Unknown Hydrocarbon	N/A	19.86	367	N/A
Unknown Hydrocarbon	N/A	20.00	598	N/A
Unknown Hydrocarbon	N/A	20.39	354	N/A
Unknown Hydrocarbon	N/A	20.46	436	N/A
Unknown Hydrocarbon	N/A	20.59	405	N/A
Unknown Hydrocarbon	N/A	20.88	525	N/A
Poly Aromatic Hydrocarbon	N/A	21.19	1,060	N/A
n,n' : n",n""Dibenzopyrene	N/A	21.26	385	N/A
Unknown Hydrocarbon	N/A	21.61	855	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S45189.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511u6.xls



### Semi-Volatile Analysis Report for Soils/Solids/Sludges

 Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5184

Client Job Number: 40503

Field Location: CS-SS-04D

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/06/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 347	Dibenz (a,h) anthracene	ND< 347
Anthracene	ND< 347 <i>226 J</i>	Fluoranthene	2,470
Benzo (a) anthracene	861	Fluorene	ND< 347
Benzo (a) pyrene	1,010	Indeno (1,2,3-cd) pyrene	760
Benzo (b) fluoranthene	1,220	Naphthalene	ND< 347
Benzo (g,h,i) perylene	893	Phenanthrene	900
Benzo (k) fluoranthene	716	Pyrene	1,590
Chrysene	995	Acenaphthylene	ND< 347
Diethyl phthalate	ND< 347	1,2-Dichlorobenzene	ND< 347
Dimethyl phthalate	ND< 868	1,3-Dichlorobenzene	ND< 347
Butylbenzylphthalate	442	1,4-Dichlorobenzene	ND< 347
Di-n-butyl phthalate	ND< 347	1,2,4-Trichlorobenzene	ND< 347
Di-n-octylphthalate	ND< 347	Nitrobenzene	ND< 347
Bis (2-ethylhexyl) phthalate	ND< 347 <i>177 J</i>	2,4-Dinitrotoluene	ND< 347
2-Chloronaphthalene	ND< 347	2,6-Dinitrotoluene	ND< 347
Hexachlorobenzene	ND< 347	Bis (2-chloroethyl) ether	ND< 347
Hexachloroethane	ND< 347	Bis (2-chloroisopropyl) ether	ND< 347
Hexachlorocyclopentadiene	ND< 347	Bis (2-chloroethoxy) methan	ND< 347
Hexachlorobutadiene	ND< 347	4-Bromophenyl phenyl ether	ND< 347
N-Nitroso-di-n-propylamine	ND< 347	4-Chlorophenyl phenyl ether	ND< 347
N-Nitrosodiphenylamine	ND< 347	Benzidine	ND< 868
N-Nitrosodimethylamine	ND< 347	3,3'-Dichlorobenzidine	ND< 347
Isophorone	ND< 347	4-Chloroaniline	ND< 347
Benzyl alcohol	ND< 868	2-Nitroaniline	ND< 868
Dibenzofuran	ND< 347	3-Nitroaniline	ND< 868
2-Methylnaphthalene	ND< 347	4-Nitroaniline	ND< 868

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 347	2-Methylphenol	ND< 347
2-Chlorophenol	ND< 347	3&4-Methylphenol	ND< 347
2,4-Dichlorophenol	ND< 347	2,4-Dimethylphenol	ND< 347
2,6-Dichlorophenol	ND< 347	2-Nitrophenol	ND< 347
2,4,5-Trichlorophenol	ND< 868	4-Nitrophenol	ND< 868
2,4,6-Trichlorophenol	ND< 347	2,4-Dinitrophenol	ND< 347
Pentachlorophenol	ND< 868	4,6-Dinitro-2-methylphenol	ND< 868
4-Chloro-3-methylphenol	ND< 347	Benzoic acid	ND< 868

ELAP Number 10958

Method: EPA 8270C

Data File: S45190.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

Bruce Hoogesteger, Technical Director

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091511S7.XLS



### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5184

**Client Job Number:** 40503

**Field Location:** CS-SS-04D

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/06/2009

**Date Reissued:** 05/19/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
Unknown Hydrocarbon	N/A	18.01	517	N/A
Poly Aromatic Hydrocarbon	N/A	18.62	559	N/A
Unknown Hydrocarbon	N/A	18.78	535	N/A
Poly Aromatic Hydrocarbon	N/A	18.84	1,120	N/A
Unknown Hydrocarbon	N/A	19.34	493	N/A
Unknown Hydrocarbon	N/A	19.69	1,210	N/A
Unknown Hydrocarbon	N/A	19.85	847	N/A
Unknown Hydrocarbon	N/A	19.94	424	N/A
Poly Aromatic Hydrocarbon	N/A	20.00	670	N/A
Poly Aromatic Hydrocarbon	N/A	20.38	861	N/A
Unknown Hydrocarbon	N/A	20.45	861	N/A
Poly Aromatic Hydrocarbon	N/A	20.51	500	N/A
Unknown Hydrocarbon	N/A	20.58	972	N/A
Unknown Hydrocarbon	N/A	20.88	788	N/A
Unknown Hydrocarbon	N/A	21.19	1,310	N/A
n,n' : n",n""-Dibenzopyrene	N/A	21.27	441	N/A
Unknown Hydrocarbon	N/A	21.30	385	N/A
Unknown Hydrocarbon	N/A	21.61	934	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S45190.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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091511u7.xls





### Semi-Volatile Analysis Report for Soils/Solids/Sludges

 Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5185

Client Job Number: 40503

Field Location: CS-SS-05

Field ID Number: N/A

Sample Type: Soil

Date Sampled: 04/27/2009

Date Received: 04/28/2009

Date Analyzed: 05/06/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 370	Dibenz (a,h) anthracene	ND< 370
Anthracene	ND< 370	Fluoranthene	ND< 370
Benzo (a) anthracene	ND< 370	Fluorene	ND< 370
Benzo (a) pyrene	ND< 370	Indeno (1,2,3-cd) pyrene	ND< 370
Benzo (b) fluoranthene	ND< 370	Naphthalene	ND< 370
Benzo (g,h,i) perylene	ND< 370	Phenanthrene	ND< 370
Benzo (k) fluoranthene	ND< 370	Pyrene	ND< 370
Chrysene	ND< 370	Acenaphthylene	ND< 370
Diethyl phthalate	ND< 370	1,2-Dichlorobenzene	ND< 370
Dimethyl phthalate	ND< 925	1,3-Dichlorobenzene	ND< 370
Butylbenzylphthalate	ND< 370	1,4-Dichlorobenzene	ND< 370
Di-n-butyl phthalate	ND< 370	1,2,4-Trichlorobenzene	ND< 370
Di-n-octylphthalate	ND< 370	Nitrobenzene	ND< 370
Bis (2-ethylhexyl) phthalate	ND< 370	2,4-Dinitrotoluene	ND< 370
2-Chloronaphthalene	ND< 370	2,6-Dinitrotoluene	ND< 370
Hexachlorobenzene	ND< 370	Bis (2-chloroethyl) ether	ND< 370
Hexachloroethane	ND< 370	Bis (2-chloroisopropyl) ether	ND< 370
Hexachlorocyclopentadiene	ND< 370	Bis (2-chloroethoxy) methan	ND< 370
Hexachlorobutadiene	ND< 370	4-Bromophenyl phenyl ether	ND< 370
N-Nitroso-di-n-propylamine	ND< 370	4-Chlorophenyl phenyl ether	ND< 370
N-Nitrosodiphenylamine	ND< 370	Benzidine	ND< 925
N-Nitrosodimethylamine	ND< 370	3,3'-Dichlorobenzidine	ND< 370
Isophorone	ND< 370	4-Chloroaniline	ND< 370
Benzyl alcohol	ND< 925	2-Nitroaniline	ND< 925
Dibenzofuran	ND< 370	3-Nitroaniline	ND< 925
2-Methylnaphthalene	ND< 370	4-Nitroaniline	ND< 925

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 370	2-Methylphenol	ND< 370
2-Chlorophenol	ND< 370	3&4-Methylphenol	ND< 370
2,4-Dichlorophenol	ND< 370	2,4-Dimethylphenol	ND< 370
2,6-Dichlorophenol	ND< 370	2-Nitrophenol	ND< 370
2,4,5-Trichlorophenol	ND< 925	4-Nitrophenol	ND< 925
2,4,6-Trichlorophenol	ND< 370	2,4-Dinitrophenol	ND< 370
Pentachlorophenol	ND< 925	4,6-Dinitro-2-methylphenol	ND< 925
4-Chloro-3-methylphenol	ND< 370	Benzoic acid	ND< 925

ELAP Number 10958

Method: EPA 8270C

Data File: S45191.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

Bruce Hoogesteger: Technical Director

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091511S8.XLS

**Semi-Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Client Job Number: 40503

Lab Sample Number: 5185

Field Location: CS-SS-05

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/06/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
Unknown Hydrocarbon	N/A	19.69	433	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S45191.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511s8.xls

### Semi-Volatile Analysis Report for Soils/Solids/Sludges

 Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5186

Client Job Number: 40503

Field Location: CS-SS-06

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/06/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 366	Dibenz (a,h) anthracene	ND< 366
Anthracene	ND< 366 234 J	Fluoranthene	386
Benzo (a) anthracene	ND< 366	Fluorene	ND< 366
Benzo (a) pyrene	ND< 366	Indeno (1,2,3-cd) pyrene	ND< 366
Benzo (b) fluoranthene	ND< 366	Naphthalene	ND< 366
Benzo (g,h,i) perylene	ND< 366	Phenanthrene	ND< 366 218 J
Benzo (k) fluoranthene	ND< 366	Pyrene	ND< 366 303 J
Chrysene	ND< 366	Acenaphthylene	ND< 366
Diethyl phthalate	ND< 366	1,2-Dichlorobenzene	ND< 366
Dimethyl phthalate	ND< 915	1,3-Dichlorobenzene	ND< 366
Butylbenzylphthalate	372	1,4-Dichlorobenzene	ND< 366
Di-n-butyl phthalate	ND< 366 195 J	1,2,4-Trichlorobenzene	ND< 366
Di-n-octylphthalate	ND< 366	Nitrobenzene	ND< 366
Bis (2-ethylhexyl) phthalate	ND< 366 276 J	2,4-Dinitrotoluene	ND< 366
2-Chloronaphthalene	ND< 366	2,6-Dinitrotoluene	ND< 366
Hexachlorobenzene	ND< 366	Bis (2-chloroethyl) ether	ND< 366
Hexachloroethane	ND< 366	Bis (2-chloroisopropyl) ether	ND< 366
Hexachlorocyclopentadiene	ND< 366	Bis (2-chloroethoxy) methan	ND< 366
Hexachlorobutadiene	ND< 366	4-Bromophenyl phenyl ether	ND< 366
N-Nitroso-di-n-propylamine	ND< 366	4-Chlorophenyl phenyl ether	ND< 366
N-Nitrosodiphenylamine	ND< 366	Benzidine	ND< 915
N-Nitrosodimethylamine	ND< 366	3,3'-Dichlorobenzidine	ND< 366
Isophorone	ND< 366	4-Chloroaniline	ND< 366
Benzyl alcohol	ND< 915	2-Nitroaniline	ND< 915
Dibenzofuran	ND< 366	3-Nitroaniline	ND< 915
2-Methylnaphthalene	ND< 366	4-Nitroaniline	ND< 915

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 366	2-Methylphenol	ND< 366
2-Chlorophenol	ND< 366	3&4-Methylphenol	ND< 366
2,4-Dichlorophenol	ND< 366	2,4-Dimethylphenol	ND< 366
2,6-Dichlorophenol	ND< 366	2-Nitrophenol	ND< 366
2,4,5-Trichlorophenol	ND< 915	4-Nitrophenol	ND< 915
2,4,6-Trichlorophenol	ND< 366	2,4-Dinitrophenol	ND< 366
Pentachlorophenol	ND< 915	4,6-Dinitro-2-methylphenol	ND< 915
4-Chloro-3-methylphenol	ND< 366	Benzoic acid	ND< 915

ELAP Number 10958

Method: EPA 8270C

Data File: S45192.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

Bruce Hoogesteger, Technical Director

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091511S9.XLS

**Semi-Volatile Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5186

**Client Job Number:** 40503

**Field Location:** CS-SS-06

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/06/2009

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
None Found	N/A	N/A	ND< 366	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S45192.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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091511s9.xls



### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client: Lu Engineers**
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5187

**Client Job Number:** 40503

**Field Location:** CS-SD-01

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/06/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 1,920	Dibenz (a,h) anthracene	ND< 1,920 1730
Anthracene	2,090	Fluoranthene	20,200
Benzo (a) anthracene	5,990	Fluorene	ND< 1,920
Benzo (a) pyrene	5,970	Indeno (1,2,3-cd) pyrene	3,870
Benzo (b) fluoranthene	7,680	Naphthalene	ND< 1,920
Benzo (g,h,i) perylene	4,450	Phenanthrene	11,700
Benzo (k) fluoranthene	4,140	Pyrene	12,400
Chrysene	7,350	Acenaphthylene	ND< 1,920
Diethyl phthalate	ND< 1,920	1,2-Dichlorobenzene	ND< 1,920
Dimethyl phthalate	ND< 4,800	1,3-Dichlorobenzene	ND< 1,920
Butylbenzylphthalate	ND< 1,920	1,4-Dichlorobenzene	ND< 1,920
Di-n-butyl phthalate	ND< 1,920	1,2,4-Trichlorobenzene	ND< 1,920
Di-n-octylphthalate	ND< 1,920	Nitrobenzene	ND< 1,920
Bis (2-ethylhexyl) phthalate	ND< 1,920	2,4-Dinitrotoluene	ND< 1,920
2-Chloronaphthalene	ND< 1,920	2,6-Dinitrotoluene	ND< 1,920
Hexachlorobenzene	ND< 1,920	Bis (2-chloroethyl) ether	ND< 1,920
Hexachloroethane	ND< 1,920	Bis (2-chloroisopropyl) ether	ND< 1,920
Hexachlorocyclopentadiene	ND< 1,920	Bis (2-chloroethoxy) methan	ND< 1,920
Hexachlorobutadiene	ND< 1,920	4-Bromophenyl phenyl ether	ND< 1,920
N-Nitroso-di-n-propylamine	ND< 1,920	4-Chlorophenyl phenyl ether	ND< 1,920
N-Nitrosodiphenylamine	ND< 1,920	Benzidine	ND< 4,800
N-Nitrosodimethylamine	ND< 1,920	3,3'-Dichlorobenzidine	ND< 1,920
Isophorone	ND< 1,920	4-Chloroaniline	ND< 1,920
Benzyl alcohol	ND< 4,800	2-Nitroaniline	ND< 4,800
Dibenzofuran	ND< 1,920	3-Nitroaniline	ND< 4,800
2-Methylnaphthalene	ND< 1,920	4-Nitroaniline	ND< 4,800

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 1,920	2-Methylphenol	ND< 1,920
2-Chlorophenol	ND< 1,920	3&4-Methylphenol	ND< 1,920
2,4-Dichlorophenol	ND< 1,920	2,4-Dimethylphenol	ND< 1,920
2,6-Dichlorophenol	ND< 1,920	2-Nitrophenol	ND< 1,920
2,4,5-Trichlorophenol	ND< 4,800	4-Nitrophenol	ND< 4,800
2,4,6-Trichlorophenol	ND< 1,920	2,4-Dinitrophenol	ND< 1,920
Pentachlorophenol	ND< 4,800	4,6-Dinitro-2-methylphenol	ND< 4,800
4-Chloro-3-methylphenol	ND< 1,920	Benzoic acid	ND< 4,800

ELAP Number 10958

Method: EPA 8270C

Data File: S45193.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

Bruce Hoogesteger: Technical Director

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091511T1.XLS



**Semi-Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-1511**Lab Sample Number:** 5187**Client Job Number:** 40503**Field Location:** CS-SD-01**Date Sampled:** 04/27/2009**Field ID Number:** N/A**Date Received:** 04/28/2009**Sample Type:** Soil**Date Analyzed:** 05/06/2009

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
Anthracenedione	000084-65-1	14.1	2,170	93
Poly Aromatic Hydrocarbon	N/A	18.84	4,990	N/A
Unknown Hydrocarbon	N/A	19.85	2,510	N/A
Unknown Hydrocarbon	N/A	20.00	1,980	N/A
n,n' : n",n""-Dibenzopyrene	N/A	21.19	1,940	N/A
Unknown Hydrocarbon	N/A	21.60	2,250	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S45193.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5188

**Client Job Number:** 40503

**Field Location:** CS-SD-02

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/06/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 2,850	Dibenz (a,h) anthracene	4,000
Anthracene	4,780	Fluoranthene	51,800
Benzo (a) anthracene	15,500	Fluorene	ND< 2,850
Benzo (a) pyrene	16,000	Indeno (1,2,3-cd) pyrene	11,100
Benzo (b) fluoranthene	18,200	Naphthalene	ND< 2,850
Benzo (g,h,i) perylene	11,600	Phenanthrene	29,100
Benzo (k) fluoranthene	13,600	Pyrene	34,900
Chrysene	19,700	Acenaphthylene	ND< 2,850
Diethyl phthalate	ND< 2,850	1,2-Dichlorobenzene	ND< 2,850
Dimethyl phthalate	ND< 7,130	1,3-Dichlorobenzene	ND< 2,850
Butylbenzylphthalate	ND< 2,850	1,4-Dichlorobenzene	ND< 2,850
Di-n-butyl phthalate	ND< 2,850	1,2,4-Trichlorobenzene	ND< 2,850
Di-n-octylphthalate	ND< 2,850	Nitrobenzene	ND< 2,850
Bis (2-ethylhexyl) phthalate	ND< 2,850	2,4-Dinitrotoluene	ND< 2,850
2-Chloronaphthalene	ND< 2,850	2,6-Dinitrotoluene	ND< 2,850
Hexachlorobenzene	ND< 2,850	Bis (2-chloroethyl) ether	ND< 2,850
Hexachloroethane	ND< 2,850	Bis (2-chloroisopropyl) ether	ND< 2,850
Hexachlorocyclopentadiene	ND< 2,850	Bis (2-chloroethoxy) methan	ND< 2,850
Hexachlorobutadiene	ND< 2,850	4-Bromophenyl phenyl ether	ND< 2,850
N-Nitroso-di-n-propylamine	ND< 2,850	4-Chlorophenyl phenyl ether	ND< 2,850
N-Nitrosodiphenylamine	ND< 2,850	Benzidine	ND< 7,130
N-Nitrosodimethylamine	ND< 2,850	3,3'-Dichlorobenzidine	ND< 2,850
Isophorone	ND< 2,850	4-Chloroaniline	ND< 2,850
Benzyl alcohol	ND< 7,130	2-Nitroaniline	ND< 7,130
Dibenzofuran	ND< 2,850	3-Nitroaniline	ND< 7,130
2-Methylnaphthalene	ND< 2,850	4-Nitroaniline	ND< 7,130

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 2,850	2-Methylphenol	ND< 2,850
2-Chlorophenol	ND< 2,850	3&4-Methylphenol	ND< 2,850
2,4-Dichlorophenol	ND< 2,850	2,4-Dimethylphenol	ND< 2,850
2,6-Dichlorophenol	ND< 2,850	2-Nitrophenol	ND< 2,850
2,4,5-Trichlorophenol	ND< 7,130	4-Nitrophenol	ND< 7,130
2,4,6-Trichlorophenol	ND< 2,850	2,4-Dinitrophenol	ND< 2,850
Pentachlorophenol	ND< 7,130	4,6-Dinitro-2-methylphenol	ND< 7,130
4-Chloro-3-methylphenol	ND< 2,850	Benzoic acid	ND< 7,130

ELAP Number 10958

Method: EPA 8270C

Data File: S45194.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature:

Bruce Hoogestege, Technical Director

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### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5188

**Client Job Number:** 40503

**Field Location:** CS-SD-02

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/06/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
Unknown Hydrocarbon	N/A	13.23	2,970	N/A
Unknown Hydrocarbon	N/A	13.76	4,170	99
9,10-Anthracenedione	000084-65-1	14.10	6,310	N/A
Poly Aromatic Hydrocarbon	N/A	18.62	3,820	N/A
Poly Aromatic Hydrocarbon	N/A	18.84	13,000	N/A
Unknown Hydrocarbon	N/A	20.00	4,220	N/A
Unknown Hydrocarbon	N/A	20.38	3,400	N/A
n,n' : n",n"-Dibenzopyrene	N/A	21.19	6,110	N/A
n,n' : n",n"-Dibenzopyrene	N/A	21.26	3,370	N/A
Unknown Hydrocarbon	N/A	21.59	6,960	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S45194.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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## Semi-Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5189

Client Job Number: 40503

Field Location: CS-SD-03

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Soil

Date Analyzed: 05/08/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 4,490	Dibenz (a,h) anthracene	ND< 4,490 <i>4490</i>
Anthracene	6,230	Fluoranthene	61,800
Benzo (a) anthracene	17,600	Fluorene	ND< 4,490 <i>2450</i>
Benzo (a) pyrene	17,700	Indeno (1,2,3-cd) pyrene	12,300
Benzo (b) fluoranthene	20,900	Naphthalene	ND< 4,490
Benzo (g,h,i) perylene	12,800	Phenanthrene	35,900
Benzo (k) fluoranthene	13,700	Pyrene	36,300
Chrysene	21,900	Acenaphthylene	ND< 4,490
Diethyl phthalate	ND< 4,490	1,2-Dichlorobenzene	ND< 4,490
Dimethyl phthalate	ND< 11,200	1,3-Dichlorobenzene	ND< 4,490
Butylbenzylphthalate	ND< 4,490	1,4-Dichlorobenzene	ND< 4,490
Di-n-butyl phthalate	ND< 4,490	1,2,4-Trichlorobenzene	ND< 4,490
Di-n-octylphthalate	ND< 4,490	Nitrobenzene	ND< 4,490
Bis (2-ethylhexyl) phthalate	ND< 4,490	2,4-Dinitrotoluene	ND< 4,490
2-Chloronaphthalene	ND< 4,490	2,6-Dinitrotoluene	ND< 4,490
Hexachlorobenzene	ND< 4,490	Bis (2-chloroethyl) ether	ND< 4,490
Hexachloroethane	ND< 4,490	Bis (2-chloroisopropyl) ether	ND< 4,490
Hexachlorocyclopentadiene	ND< 4,490 <i>us</i>	Bis (2-chloroethoxy) methan	ND< 4,490
Hexachlorobutadiene	ND< 4,490	4-Bromophenyl phenyl ether	ND< 4,490
N-Nitroso-di-n-propylamine	ND< 4,490	4-Chlorophenyl phenyl ether	ND< 4,490
N-Nitrosodiphenylamine	ND< 4,490	Benzidine	ND< 11,200
N-Nitrosodimethylamine	ND< 4,490	3,3'-Dichlorobenzidine	ND< 4,490
Isophorone	ND< 4,490	4-Chloroaniline	ND< 4,490
Benzyl alcohol	ND< 11,200	2-Nitroaniline	ND< 11,200
Dibenzofuran	ND< 4,490	3-Nitroaniline	ND< 11,200
2-Methylnaphthalene	ND< 4,490	4-Nitroaniline	ND< 11,200

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 4,490	2-Methylphenol	ND< 4,490
2-Chlorophenol	ND< 4,490	3&4-Methylphenol	ND< 4,490
2,4-Dichlorophenol	ND< 4,490	2,4-Dimethylphenol	ND< 4,490
2,6-Dichlorophenol	ND< 4,490	2-Nitrophenol	ND< 4,490
2,4,5-Trichlorophenol	ND< 11,200	4-Nitrophenol	ND< 11,200
2,4,6-Trichlorophenol	ND< 4,490	2,4-Dinitrophenol	ND< 4,490 <i>us</i>
Pentachlorophenol	ND< 11,200	4,6-Dinitro-2-methylphenol	ND< 11,200 <i>us</i>
4-Chloro-3-methylphenol	ND< 4,490	Benzoic acid	ND< 11,200

ELAP Number 10958

Method: EPA 8270C

Data File: S45230.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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091511T3.XLS

*Handwritten signature/initials*

### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5189

**Client Job Number:** 40503

**Field Location:** CS-SD-03

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/08/2009

<u>Tentatively Identified Compounds</u>	<u>CAS Number</u>	<u>Retention Time</u>	<u>Results in ug / Kg</u>	<u>Percent Fit</u>
Unknown Hydrocarbon	N/A	13.69	5,520	N/A
9,10-Anthracenedione	000084-65-1	14.03	7,810	99
Poly Aromatic Hydrocarbon	N/A	15.48	6,820	N/A
Poly Aromatic Hydrocarbon	N/A	15.58	4,890	N/A
Benzo[b]naphtho[n,n'-d]thiopene	N/A	16.42	4,800	N/A
Unknown Hydrocarbon	N/A	16.48	4,760	N/A
Unknown Hydrocarbon	N/A	16.97	5,070	N/A
Poly Aromatic Hydrocarbon	N/A	18.76	13,600	N/A
Poly Aromatic Hydrocarbon	N/A	19.94	4,580	N/A
n,n' : n'',n'''-Dibenzopyrene	N/A	21.15	6,060	N/A
Unknown Hydrocarbon	N/A	21.54	7,220	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S45230.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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09151113.xls



### Semi-Volatile Analysis Report for Non-potable Water

 Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5190

Client Job Number: 40503

Field Location: CS-SS-EB

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Water

Date Analyzed: 05/01/2009

Base / Neutrals	Results in ug / L	Base / Neutrals	Results in ug / L
Acenaphthene	ND< 10.0 R	Dibenz (a,h) anthracene	ND< 10.0
Anthracene	ND< 10.0 R	Fluoranthene	ND< 10.0 R
Benzo (a) anthracene	ND< 10.0	Fluorene	ND< 10.0 R
Benzo (a) pyrene	ND< 10.0	Indeno (1,2,3-cd) pyrene	ND< 10.0
Benzo (b) fluoranthene	ND< 10.0	Naphthalene	ND< 10.0 R
Benzo (g,h,i) perylene	ND< 10.0	Phenanthrene	ND< 10.0 R
Benzo (k) fluoranthene	ND< 10.0	Pyrene	ND< 10.0
Chrysene	ND< 10.0	Acenaphthylene	ND< 10.0
Diethyl phthalate	ND< 10.0 R	1,2-Dichlorobenzene	ND< 10.0
Dimethyl phthalate	ND< 25.0	1,3-Dichlorobenzene	ND< 10.0
Butylbenzylphthalate	ND< 10.0	1,4-Dichlorobenzene	ND< 10.0
Di-n-butyl phthalate	ND< 10.0 R	1,2,4-Trichlorobenzene	ND< 10.0
Di-n-octylphthalate	ND< 10.0	Nitrobenzene	ND< 10.0 R
Bis (2-ethylhexyl) phthalate	ND< 10.0	2,4-Dinitrotoluene	ND< 10.0 R
2-Chloronaphthalene	ND< 10.0	2,6-Dinitrotoluene	ND< 10.0 R
Hexachlorobenzene	ND< 10.0 R	Bis (2-chloroethyl) ether	ND< 10.0
Hexachloroethane	ND< 10.0	Bis (2-chloroisopropyl) ether	ND< 10.0
Hexachlorocyclopentadiene	ND< 10.0 R	Bis (2-chloroethoxy) methan	ND< 10.0 R
Hexachlorobutadiene	ND< 10.0 R	4-Bromophenyl phenyl ether	ND< 10.0 R
N-Nitroso-di-n-propylamine	ND< 10.0	4-Chlorophenyl phenyl ether	ND< 10.0 R
N-Nitrosodiphenylamine	ND< 10.0 R	Benzidine	ND< 25.0
N-Nitrosodimethylamine	ND< 10.0	3,3'-Dichlorobenzidine	ND< 10.0
Isophorone	ND< 10.0	4-Chloroaniline	ND< 10.0 R
Benzyl alcohol	ND< 25.0	2-Nitroaniline	ND< 25.0 R
Dibenzofuran	ND< 10.0 R	3-Nitroaniline	ND< 25.0 R
2-Methylnaphthalene	ND< 10.0 R	4-Nitroaniline	ND< 25.0 R

Acids	Results in ug / L	Acids	Results in ug / L
Phenol	ND< 10.0	2-Methylphenol	ND< 10.0
2-Chlorophenol	ND< 10.0	3&4-Methylphenol	ND< 10.0
2,4-Dichlorophenol	ND< 10.0 R	2,4-Dimethylphenol	ND< 10.0 R
2,6-Dichlorophenol	ND< 10.0	2-Nitrophenol	ND< 10.0 R
2,4,5-Trichlorophenol	ND< 25.0 R	4-Nitrophenol	ND< 25.0 R
2,4,6-Trichlorophenol	ND< 10.0 R	2,4-Dinitrophenol	ND< 10.0 R
Pentachlorophenol	ND< 25.0	4,6-Dinitro-2-methylphenol	ND< 25.0 R
4-Chloro-3-methylphenol	ND< 10.0 R	Benzoic acid	ND< 25.0

ELAP Number 10958

Method: EPA 8270C

Data File: S45124.D

 Comments: ND denotes Non Detect  
 ug / L = microgram per Liter

Signature:

  
 Bruce Hoogesteger, Technical Director

**Semi -Volatile Analysis Report for Non-potable Water**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Lab Sample Number: 5190

Client Job Number: 40503

Field Location: CS-SS-EB

Date Sampled: 04/27/2009

Field ID Number: N/A

Date Received: 04/28/2009

Sample Type: Water

Date Analyzed: 05/01/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
Unknown Hydrocarbon	N/A	11.61	14.5	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S45124.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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091511T4.XLS

### Semi -Volatile Analysis Report for Non-potable Water

 Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1511

Client Job Number: 40503

Lab Sample Number: PB

Field Location: N/A

Date Sampled: N/A

Field ID Number: N/A

Date Received: N/A

Sample Type: Water

Date Analyzed: 05/01/2009

Base / Neutrals	Results in ug / L	Base / Neutrals	Results in ug / L
Acenaphthene	ND< 10.0	Dibenz (a,h) anthracene	ND< 10.0
Anthracene	ND< 10.0	Fluoranthene	ND< 10.0
Benzo (a) anthracene	ND< 10.0	Fluorene	ND< 10.0
Benzo (a) pyrene	ND< 10.0	Indeno (1,2,3-cd) pyrene	ND< 10.0
Benzo (b) fluoranthene	ND< 10.0	Naphthalene	ND< 10.0
Benzo (g,h,i) perylene	ND< 10.0	Phenanthrene	ND< 10.0
Benzo (k) fluoranthene	ND< 10.0	Pyrene	ND< 10.0
Chrysene	ND< 10.0	Acenaphthylene	ND< 10.0
Diethyl phthalate	ND< 10.0	1,2-Dichlorobenzene	ND< 10.0
Dimethyl phthalate	ND< 25.0	1,3-Dichlorobenzene	ND< 10.0
Butylbenzylphthalate	ND< 10.0	1,4-Dichlorobenzene	ND< 10.0
Di-n-butyl phthalate	ND< 10.0	1,2,4-Trichlorobenzene	ND< 10.0
Di-n-octylphthalate	ND< 10.0	Nitrobenzene	ND< 10.0
Bis (2-ethylhexyl) phthalate	ND< 10.0	2,4-Dinitrotoluene	ND< 10.0
2-Chloronaphthalene	ND< 10.0	2,6-Dinitrotoluene	ND< 10.0
Hexachlorobenzene	ND< 10.0	Bis (2-chloroethyl) ether	ND< 10.0
Hexachloroethane	ND< 10.0	Bis (2-chloroisopropyl) ether	ND< 10.0
Hexachlorocyclopentadiene	ND< 10.0	Bis (2-chloroethoxy) methan	ND< 10.0
Hexachlorobutadiene	ND< 10.0	4-Bromophenyl phenyl ether	ND< 10.0
N-Nitroso-di-n-propylamine	ND< 10.0	4-Chlorophenyl phenyl ether	ND< 10.0
N-Nitrosodiphenylamine	ND< 10.0	Benzidine	ND< 25.0
N-Nitrosodimethylamine	ND< 10.0	3,3'-Dichlorobenzidine	ND< 10.0
Isophorone	ND< 10.0	4-Chloroaniline	ND< 10.0
Benzyl alcohol	ND< 25.0	2-Nitroaniline	ND< 25.0
Dibenzofuran	ND< 10.0	3-Nitroaniline	ND< 25.0
2-Methylnaphthalene	ND< 10.0	4-Nitroaniline	ND< 25.0

Acids	Results in ug / L	Acids	Results in ug / L
Phenol	ND< 10.0	2-Methylphenol	ND< 10.0
2-Chlorophenol	ND< 10.0	3&4-Methylphenol	ND< 10.0
2,4-Dichlorophenol	ND< 10.0	2,4-Dimethylphenol	ND< 10.0
2,6-Dichlorophenol	ND< 10.0	2-Nitrophenol	ND< 10.0
2,4,5-Trichlorophenol	ND< 25.0	4-Nitrophenol	ND< 25.0
2,4,6-Trichlorophenol	ND< 10.0	2,4-Dinitrophenol	ND< 10.0
Pentachlorophenol	ND< 25.0	4,6-Dinitro-2-methylphenol	ND< 25.0
4-Chloro-3-methylphenol	ND< 10.0	Benzoic acid	ND< 25.0

ELAP Number 10958

Method: EPA 8270C

Data File: S45122.D

 Comments: ND denotes Non Detect  
 ug / L = microgram per Liter

all target analytes are  
 unusable (R).

Signature:

  
 Bruce Hoogesteger: Technical Director

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091511R6.XLS

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**Semi-Volatile Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** PB

**Client Job Number:** 40503

**Field Location:** N/A

**Date Sampled:** N/A

**Field ID Number:** N/A

**Date Received:** N/A

**Sample Type:** Soil

**Date Analyzed:** 05/06/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 286	Dibenz (a,h) anthracene	ND< 286
Anthracene	ND< 286	Fluoranthene	ND< 286
Benzo (a) anthracene	ND< 286	Fluorene	ND< 286
Benzo (a) pyrene	ND< 286	Indeno (1,2,3-cd) pyrene	ND< 286
Benzo (b) fluoranthene	ND< 286	Naphthalene	ND< 286
Benzo (g,h,i) perylene	ND< 286	Phenanthrene	ND< 286
Benzo (k) fluoranthene	ND< 286	Pyrene	ND< 286
Chrysene	ND< 286	Acenaphthylene	ND< 286
Diethyl phthalate	ND< 286	1,2-Dichlorobenzene	ND< 286
Dimethyl phthalate	ND< 714	1,3-Dichlorobenzene	ND< 286
Butylbenzylphthalate	ND< 286	1,4-Dichlorobenzene	ND< 286
Di-n-butyl phthalate	ND< 286	1,2,4-Trichlorobenzene	ND< 286
Di-n-octylphthalate	ND< 286	Nitrobenzene	ND< 286
Bis (2-ethylhexyl) phthalate	ND< 286	2,4-Dinitrotoluene	ND< 286
2-Chloronaphthalene	ND< 286	2,6-Dinitrotoluene	ND< 286
Hexachlorobenzene	ND< 286	Bis (2-chloroethyl) ether	ND< 286
Hexachloroethane	ND< 286	Bis (2-chloroisopropyl) ether	ND< 286
Hexachlorocyclopentadiene	ND< 286	Bis (2-chloroethoxy) methan	ND< 286
Hexachlorobutadiene	ND< 286	4-Bromophenyl phenyl ether	ND< 286
N-Nitroso-di-n-propylamine	ND< 286	4-Chlorophenyl phenyl ether	ND< 286
N-Nitrosodiphenylamine	ND< 286	Benzidine	ND< 714
N-Nitrosodimethylamine	ND< 286	3,3'-Dichlorobenzidine	ND< 286
Isophorone	ND< 286	4-Chloroaniline	ND< 286
Benzyl alcohol	ND< 714	2-Nitroaniline	ND< 714
Dibenzofuran	ND< 286	3-Nitroaniline	ND< 714
2-Methylnaphthalene	ND< 286	4-Nitroaniline	ND< 714

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 286	2-Methylphenol	ND< 286
2-Chlorophenol	ND< 286	3&4-Methylphenol	ND< 286
2,4-Dichlorophenol	ND< 286	2,4-Dimethylphenol	ND< 286
2,6-Dichlorophenol	ND< 286	2-Nitrophenol	ND< 286
2,4,5-Trichlorophenol	ND< 714	4-Nitrophenol	ND< 714
2,4,6-Trichlorophenol	ND< 286	2,4-Dinitrophenol	ND< 286
Pentachlorophenol	ND< 714	4,6-Dinitro-2-methylphenol	ND< 714
4-Chloro-3-methylphenol	ND< 286	Benzoic acid	ND< 714

ELAP Number 10958

Method: EPA 8270C

Data File: S45182.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director



**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5180

**Client Job Number:** 40503

**Field Location:** CS-SS-01

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/07/2009

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.405
Aroclor 1221	ND< 0.405
Aroclor 1232	ND< 0.405
Aroclor 1242	ND< 0.405
Aroclor 1248	ND< 0.405
Aroclor 1254	ND< 0.405
Aroclor 1260	ND< 0.405

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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091511P2.XLS



**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5181

**Client Job Number:** 40503

**Field Location:** CS-SS-02

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/07/2009

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.398
Aroclor 1221	ND< 0.398
Aroclor 1232	ND< 0.398
Aroclor 1242	ND< 0.398
Aroclor 1248	ND< 0.398
Aroclor 1254	ND< 0.398
Aroclor 1260	ND< 0.398

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect

mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511P3.XLS



**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5182

**Client Job Number:** 40503

**Field Location:** CS-SS-03

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/07/2009

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.448
Aroclor 1221	ND< 0.448
Aroclor 1232	ND< 0.448
Aroclor 1242	ND< 0.448
Aroclor 1248	ND< 0.448
Aroclor 1254	ND< 0.448
Aroclor 1260	ND< 0.448

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect

mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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091511P4.XLS

**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5183

**Client Job Number:** 40503

**Field Location:** CS-SS-04

**Field ID Number:** N/A

**Sample Type:** Soil

**Date Sampled:** 04/27/2009

**Date Received:** 04/28/2009

**Date Analyzed:** 05/07/2009

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.361
Aroclor 1221	ND< 0.361
Aroclor 1232	ND< 0.361
Aroclor 1242	ND< 0.361
Aroclor 1248	ND< 0.361
Aroclor 1254	ND< 0.361
Aroclor 1260	ND< 0.361

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect

mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511P5.XLS

**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Client Job Number:** 40503

**Lab Sample Number:** 5184

**Field Location:** CS-SS-04D

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/07/2009

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.355
Aroclor 1221	ND< 0.355
Aroclor 1232	ND< 0.355
Aroclor 1242	ND< 0.355
Aroclor 1248	ND< 0.355
Aroclor 1254	ND< 0.355
Aroclor 1260	ND< 0.355

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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091511P6.XLS



**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5185

**Client Job Number:** 40503

**Field Location:** CS-SS-05

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/07/2009

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.392
Aroclor 1221	ND< 0.392
Aroclor 1232	ND< 0.392
Aroclor 1242	ND< 0.392
Aroclor 1248	ND< 0.392
Aroclor 1254	ND< 0.392
Aroclor 1260	ND< 0.392

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect

mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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091511P7.XLS



**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5186

**Client Job Number:** 40503

**Field Location:** CS-SS-06

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/07/2009

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.386
Aroclor 1221	ND< 0.386
Aroclor 1232	ND< 0.386
Aroclor 1242	ND< 0.386
Aroclor 1248	ND< 0.386
Aroclor 1254	ND< 0.386
Aroclor 1260	ND< 0.386

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect

mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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091511P8.XLS





**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5187

**Client Job Number:** 40503

**Field Location:** CS-SD-01

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/07/2009

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.406
Aroclor 1221	ND< 0.406
Aroclor 1232	ND< 0.406
Aroclor 1242	ND< 0.406
Aroclor 1248	ND< 0.406
Aroclor 1254	ND< 0.406
Aroclor 1260	ND< 0.406

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511P9.XLS



**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5188

**Client Job Number:** 40503

**Field Location:** CS-SD-02

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/07/2009

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.605
Aroclor 1221	ND< 0.605
Aroclor 1232	ND< 0.605
Aroclor 1242	ND< 0.605
Aroclor 1248	ND< 0.605
Aroclor 1254	ND< 0.605
Aroclor 1260	ND< 0.605

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511Q1.XLS



**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5189

**Client Job Number:** 40503

**Field Location:** CS-SD-03

**Date Sampled:** 04/27/2009

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Soil

**Date Analyzed:** 05/07/2009

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.467
Aroclor 1221	ND< 0.467
Aroclor 1232	ND< 0.467
Aroclor 1242	ND< 0.467
Aroclor 1248	ND< 0.467
Aroclor 1254	ND< 0.467
Aroclor 1260	ND< 0.467

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

  
Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

091511Q2.XLS



**PCB Analysis Report for Non-potable Water**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** 5190

**Client Job Number:** 40503

**Field Location:** CS-SS-EB

**Date Sampled:** 04/27/1990

**Field ID Number:** N/A

**Date Received:** 04/28/2009

**Sample Type:** Water

**Date Analyzed:** 05/04/2009

PCB Identification	Results in ug / L
Aroclor 1016	ND< 1.00
Aroclor 1221	ND< 1.00
Aroclor 1232	ND< 1.00
Aroclor 1242	ND< 1.00
Aroclor 1248	ND< 1.00
Aroclor 1254	ND< 1.00
Aroclor 1260	ND< 1.00

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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091511Q4.XLS



**PCB Analysis Report for Non-potable Water**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** Method Blank

**Client Job Number:** 40503

**Field Location:** N/A

**Date Sampled:** N/A

**Field ID Number:** N/A

**Date Received:** N/A

**Sample Type:** Water

**Date Analyzed:** 05/04/2009

PCB Identification	Results in ug / L
Aroclor 1016	ND< 1.00
Aroclor 1221	ND< 1.00
Aroclor 1232	ND< 1.00
Aroclor 1242	ND< 1.00
Aroclor 1248	ND< 1.00
Aroclor 1254	ND< 1.00
Aroclor 1260	ND< 1.00

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director



**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1511

**Lab Sample Number:** Method Blank

**Client Job Number:** 40503

**Field Location:** N/A

**Date Sampled:** N/A

**Field ID Number:** N/A

**Date Received:** N/A

**Sample Type:** Soil

**Date Analyzed:** 05/07/2009

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.300
Aroclor 1221	ND< 0.300
Aroclor 1232	ND< 0.300
Aroclor 1242	ND< 0.300
Aroclor 1248	ND< 0.300
Aroclor 1254	ND< 0.300
Aroclor 1260	ND< 0.300

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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*Handwritten initials*



**PARADIGM**  
ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

**Client:** Lu Engineers  
**Client Job Site:** Clarkson ERP Site  
**Client Job No.:** 40503  
**Field Location:** CS-SS-01  
**Field ID No.:** N/A

**Lab Project No.:** 09-1511  
**Lab Sample No.:** 5180  
**Sample Type:** Soil  
**Date Sampled:** 04/27/2009  
**Date Received:** 04/28/2009

**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/05/2009	SW846 6010	11200
Antimony	05/05/2009	SW846 6010	<7.93 M
Arsenic	05/05/2009	SW846 6010	6.62 M
Barium	05/05/2009	SW846 6010	960
Beryllium	05/05/2009	SW846 6010	<0.661 M
Cadmium	05/05/2009	SW846 6010	<0.661 M
Calcium	05/05/2009	SW846 6010	3890
Chromium	05/05/2009	SW846 6010	17.2 M
Cobalt	05/05/2009	SW846 6010	7.12 M
Copper	05/05/2009	SW846 6010	15.4 D,M
Iron	05/05/2009	SW846 6010	17600 D
Lead	05/05/2009	SW846 6010	606
Magnesium	05/05/2009	SW846 6010	3100 D
Manganese	05/05/2009	SW846 6010	613 M
Mercury	04/30/2009	SW846 7471	0.139 D,M
Nickel	05/05/2009	SW846 6010	15.5 D,M
Potassium	05/05/2009	SW846 6010	2080
Selenium	05/05/2009	SW846 6010	4.63
Silver	05/05/2009	SW846 6010	<1.32 M
Sodium	05/05/2009	SW846 6010	138
Thallium	05/05/2009	SW846 6010	<0.793 M
Vanadium	05/05/2009	SW846 6010	26.4 M
Zinc	05/05/2009	SW846 6010	271 M

ELAP ID No.:10958

Comments:

Approved By:   
Bruce Hoogesteger, Technical Director

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

**Client:** Lu Engineers
**Lab Project No.:** 09-1511

**Client Job Site:** Clarkson ERP Site

**Lab Sample No.:** 5181

**Client Job No.:** 40503

**Sample Type:** Soil

**Field Location:** CS-SS-02

**Date Sampled:** 04/27/2009

**Field ID No.:** N/A

**Date Received:** 04/28/2009

**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/05/2009	SW846 6010	4870
Antimony	05/05/2009	SW846 6010	<5.03
Arsenic	05/05/2009	SW846 6010	2.89
Barium	05/05/2009	SW846 6010	119
Beryllium	05/05/2009	SW846 6010	<0.420
Cadmium	05/05/2009	SW846 6010	1.54
Calcium	05/05/2009	SW846 6010	56900
Chromium	05/05/2009	SW846 6010	23.7
Cobalt	05/05/2009	SW846 6010	4.28
Copper	05/05/2009	SW846 6010	57.6
Iron	05/05/2009	SW846 6010	13200
Lead	05/05/2009	SW846 6010	150
Magnesium	05/05/2009	SW846 6010	20300
Manganese	05/05/2009	SW846 6010	325
Mercury	04/30/2009	SW846 7471	0.101
Nickel	05/05/2009	SW846 6010	14.0
Potassium	05/05/2009	SW846 6010	1010
Selenium	05/05/2009	SW846 6010	<0.420
Silver	05/05/2009	SW846 6010	<0.840
Sodium	05/05/2009	SW846 6010	343
Thallium	05/05/2009	SW846 6010	<0.503
Vanadium	05/05/2009	SW846 6010	13.6
Zinc	05/05/2009	SW846 6010	278

ELAP ID No.:10958

**Comments:**
**Approved By:**   
 Bruce Hoogesteger, Technical Director

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

<b>Client:</b>	<b><u>Lu Engineers</u></b>	<b>Lab Project No.:</b>	09-1511
		<b>Lab Sample No.:</b>	5182
<b>Client Job Site:</b>	Clarkson ERP Site	<b>Sample Type:</b>	Soil
<b>Client Job No.:</b>	40503	<b>Date Sampled:</b>	04/27/2009
<b>Field Location:</b>	CS-SS-03	<b>Date Received:</b>	04/28/2009
<b>Field ID No.:</b>	N/A		

**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/05/2009	SW846 6010	5450
Antimony	05/05/2009	SW846 6010	<7.72
Arsenic	05/05/2009	SW846 6010	3.60
Barium	05/05/2009	SW846 6010	165
Beryllium	05/05/2009	SW846 6010	<0.644
Cadmium	05/05/2009	SW846 6010	0.807
Calcium	05/05/2009	SW846 6010	10600
Chromium	05/05/2009	SW846 6010	10.1
Cobalt	05/05/2009	SW846 6010	4.39
Copper	05/05/2009	SW846 6010	14.2
Iron	05/05/2009	SW846 6010	14200
Lead	05/05/2009	SW846 6010	117
Magnesium	05/05/2009	SW846 6010	3710
Manganese	05/05/2009	SW846 6010	356
Mercury	04/30/2009	SW846 7471	0.0838
Nickel	05/05/2009	SW846 6010	13.3
Potassium	05/05/2009	SW846 6010	1430
Selenium	05/05/2009	SW846 6010	<0.644
Silver	05/05/2009	SW846 6010	<1.29
Sodium	05/05/2009	SW846 6010	204
Thallium	05/05/2009	SW846 6010	<0.772
Vanadium	05/05/2009	SW846 6010	15.6
Zinc	05/05/2009	SW846 6010	135

ELAP ID No.:10958

Comments:

Approved By: \_\_\_\_\_

  
 Bruce Hoogesteger, Technical Director

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

Client: Lu Engineers  
 Client Job Site: Clarkson ERP Site  
 Client Job No.: 40503  
 Field Location: CS-SS-04  
 Field ID No.: N/A

Lab Project No.: 09-1511  
 Lab Sample No.: 5183  
 Sample Type: Soil  
 Date Sampled: 04/27/2009  
 Date Received: 04/28/2009

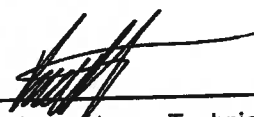
**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/05/2009	SW846 6010	8620
Antimony	05/05/2009	SW846 6010	<6.67
Arsenic	05/05/2009	SW846 6010	4.13
Barium	05/05/2009	SW846 6010	165
Beryllium	05/05/2009	SW846 6010	<0.555
Cadmium	05/05/2009	SW846 6010	<0.555
Calcium	05/05/2009	SW846 6010	14300
Chromium	05/05/2009	SW846 6010	11.8
Cobalt	05/05/2009	SW846 6010	5.44
Copper	05/05/2009	SW846 6010	12.7
Iron	05/05/2009	SW846 6010	13800
Lead	05/05/2009	SW846 6010	77.0
Magnesium	05/05/2009	SW846 6010	6110
Manganese	05/05/2009	SW846 6010	388
Mercury	04/30/2009	SW846 7471	0.0651
Nickel	05/05/2009	SW846 6010	12.0
Potassium	05/05/2009	SW846 6010	1550
Selenium	05/05/2009	SW846 6010	<0.555
Silver	05/05/2009	SW846 6010	<1.11
Sodium	05/05/2009	SW846 6010	145
Thallium	05/05/2009	SW846 6010	<0.667
Vanadium	05/05/2009	SW846 6010	19.5
Zinc	05/05/2009	SW846 6010	83.1

ELAP ID No.:10958

Comments:

Approved By: \_\_\_\_\_

  
 Bruce Hoogesteger, Technical Director

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

Client: Lu Engineers  
 Client Job Site: Clarkson ERP Site  
 Client Job No.: 40503  
 Field Location: CS-SS-04D  
 Field ID No.: N/A

Lab Project No.: 09-1511  
 Lab Sample No.: 5184  
 Sample Type: Soil  
 Date Sampled: 04/27/2009  
 Date Received: 04/28/2009

**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/05/2009	SW846 6010	7060
Antimony	05/05/2009	SW846 6010	<6.11
Arsenic	05/05/2009	SW846 6010	4.16
Barium	05/05/2009	SW846 6010	217
Beryllium	05/05/2009	SW846 6010	<0.509
Cadmium	05/05/2009	SW846 6010	<0.509
Calcium	05/05/2009	SW846 6010	15700
Chromium	05/05/2009	SW846 6010	11.1
Cobalt	05/05/2009	SW846 6010	5.05
Copper	05/05/2009	SW846 6010	12.1
Iron	05/05/2009	SW846 6010	13500
Lead	05/05/2009	SW846 6010	74.7
Magnesium	05/05/2009	SW846 6010	6590
Manganese	05/05/2009	SW846 6010	375
Mercury	04/30/2009	SW846 7471	0.0634
Nickel	05/05/2009	SW846 6010	11.1
Potassium	05/05/2009	SW846 6010	1430
Selenium	05/05/2009	SW846 6010	<0.509
Silver	05/05/2009	SW846 6010	<1.02
Sodium	05/05/2009	SW846 6010	135
Thallium	05/05/2009	SW846 6010	<0.611
Vanadium	05/05/2009	SW846 6010	17.7
Zinc	05/05/2009	SW846 6010	77.9

ELAP ID No.:10958

Comments:

Approved By: \_\_\_\_\_

  
 Bruce Hoogesteger, Technical Director

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

 Client: Lu Engineers

Lab Project No.: 09-1511

Lab Sample No.: 5185

Client Job Site: Clarkson ERP Site

Sample Type: Soil

Client Job No.: 40503

Date Sampled: 04/27/2009

Field Location: CS-SS-05

Date Received: 04/28/2009

Field ID No.: N/A


**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/05/2009	SW846 6010	9910
Antimony	05/05/2009	SW846 6010	<6.87
Arsenic	05/05/2009	SW846 6010	6.36
Barium	05/05/2009	SW846 6010	291
Beryllium	05/05/2009	SW846 6010	<0.573
Cadmium	05/05/2009	SW846 6010	<0.573
Calcium	05/05/2009	SW846 6010	4470
Chromium	05/05/2009	SW846 6010	13.9
Cobalt	05/05/2009	SW846 6010	6.68
Copper	05/05/2009	SW846 6010	9.55
Iron	05/05/2009	SW846 6010	15500
Lead	05/05/2009	SW846 6010	69.5
Magnesium	05/05/2009	SW846 6010	3480
Manganese	05/05/2009	SW846 6010	417
Mercury	04/30/2009	SW846 7471	0.0710
Nickel	05/05/2009	SW846 6010	14.9
Potassium	05/05/2009	SW846 6010	2000
Selenium	05/05/2009	SW846 6010	<0.573
Silver	05/05/2009	SW846 6010	<1.15
Sodium	05/05/2009	SW846 6010	<115
Thallium	05/05/2009	SW846 6010	<0.687
Vanadium	05/05/2009	SW846 6010	20.0
Zinc	05/05/2009	SW846 6010	75.2

ELAP ID No.:10958

Comments:

Approved By:

  
 Bruce Hoogesteger, Technical Director

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

Client: **Lu Engineers**  
 Client Job Site: Clarkson ERP Site  
 Client Job No.: 40503  
 Field Location: CS-SS-06  
 Field ID No.: N/A

Lab Project No.: 09-1511  
 Lab Sample No.: 5186  
 Sample Type: Soil  
 Date Sampled: 04/27/2009  
 Date Received: 04/28/2009

**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/05/2009	SW846 6010	9070
Antimony	05/05/2009	SW846 6010	<7.00
Arsenic	05/05/2009	SW846 6010	7.36
Barium	05/05/2009	SW846 6010	357
Beryllium	05/05/2009	SW846 6010	<0.584
Cadmium	05/05/2009	SW846 6010	<0.584
Calcium	05/05/2009	SW846 6010	5430
Chromium	05/05/2009	SW846 6010	36.7
Cobalt	05/05/2009	SW846 6010	9.12
Copper	05/05/2009	SW846 6010	47.4
Iron	05/05/2009	SW846 6010	51600
Lead	05/05/2009	SW846 6010	121
Magnesium	05/05/2009	SW846 6010	3360
Manganese	05/05/2009	SW846 6010	810
Mercury	04/30/2009	SW846 7471	0.104
Nickel	05/05/2009	SW846 6010	25.2
Potassium	05/05/2009	SW846 6010	1820
Selenium	05/05/2009	SW846 6010	<0.584
Silver	05/05/2009	SW846 6010	<1.17
Sodium	05/05/2009	SW846 6010	<117
Thallium	05/05/2009	SW846 6010	<0.700
Vanadium	05/05/2009	SW846 6010	21.6
Zinc	05/05/2009	SW846 6010	152

ELAP ID No.:10958

Comments:

Approved By:   
 Bruce Hoogesteger, Technical Director

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**PARADIGM**  
ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

Client: Lu Engineers

Lab Project No.: 09-1511

Lab Sample No.: 5187

Client Job Site: Clarkson ERP Site

Sample Type: Soil

Client Job No.: 40503

Date Sampled: 04/27/2009

Field Location: CS-SD-01

Date Received: 04/28/2009

Field ID No.: N/A

**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/05/2009	SW846 6010	3760
Antimony	05/05/2009	SW846 6010	<7.66
Arsenic	05/05/2009	SW846 6010	19.6
Barium	05/05/2009	SW846 6010	245
Beryllium	05/05/2009	SW846 6010	<0.639
Cadmium	05/05/2009	SW846 6010	<0.639
Calcium	05/05/2009	SW846 6010	78200
Chromium	05/05/2009	SW846 6010	25.9
Cobalt	05/05/2009	SW846 6010	6.97
Copper	05/05/2009	SW846 6010	61.5
Iron	05/05/2009	SW846 6010	133000
Lead	05/05/2009	SW846 6010	141
Magnesium	05/05/2009	SW846 6010	8310
Manganese	05/05/2009	SW846 6010	943
Mercury	04/30/2009	SW846 7471	0.0181
Nickel	05/05/2009	SW846 6010	25.7
Potassium	05/05/2009	SW846 6010	719
Selenium	05/05/2009	SW846 6010	<0.639
Silver	05/05/2009	SW846 6010	<1.28
Sodium	05/05/2009	SW846 6010	270
Thallium	05/05/2009	SW846 6010	<0.766
Vanadium	05/05/2009	SW846 6010	21.2
Zinc	05/05/2009	SW846 6010	220

ELAP ID No.:10958

Comments:

Approved By:   
Bruce Hoogesteger, Technical Director

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

 Client: Lu Engineers

Lab Project No.: 09-1511

Client Job Site: Clarkson ERP Site

Lab Sample No.: 5188

Client Job No.: 40503

Sample Type: Soil

Field Location: CS-SD-02

Date Sampled: 04/27/2009

Field ID No.: N/A

Date Received: 04/28/2009

**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/05/2009	SW846 6010	5020
Antimony	05/05/2009	SW846 6010	<8.78
Arsenic	05/05/2009	SW846 6010	2.95
Barium	05/05/2009	SW846 6010	149
Beryllium	05/05/2009	SW846 6010	<0.733
Cadmium	05/05/2009	SW846 6010	<0.733
Calcium	05/05/2009	SW846 6010	50000
Chromium	05/05/2009	SW846 6010	11.3
Cobalt	05/05/2009	SW846 6010	3.61
Copper	05/05/2009	SW846 6010	15.8
Iron	05/05/2009	SW846 6010	11200
Lead	05/05/2009	SW846 6010	80.5
Magnesium	05/05/2009	SW846 6010	8790
Manganese	05/05/2009	SW846 6010	201
Mercury	04/30/2009	SW846 7471	0.0430
Nickel	05/05/2009	SW846 6010	8.78
Potassium	05/05/2009	SW846 6010	1030
Selenium	05/05/2009	SW846 6010	<0.733
Silver	05/05/2009	SW846 6010	<1.46
Sodium	05/05/2009	SW846 6010	225
Thallium	05/05/2009	SW846 6010	<0.878
Vanadium	05/05/2009	SW846 6010	19.7
Zinc	05/05/2009	SW846 6010	163

ELAP ID No.:10958

Comments:

Approved By:

  
 Bruce Hoogesteger, Technical Director

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

**Client:** Lu Engineers

**Lab Project No.:** 09-1511

**Client Job Site:** Clarkson ERP Site

**Lab Sample No.:** 5189

**Client Job No.:** 40503

**Sample Type:** Soil

**Field Location:** CS-SD-03

**Date Sampled:** 04/27/2009

**Field ID No.:** N/A

**Date Received:** 04/28/2009

**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/05/2009	SW846 6010	3780
Antimony	05/05/2009	SW846 6010	<8.14
Arsenic	05/05/2009	SW846 6010	2.06
Barium	05/05/2009	SW846 6010	104
Beryllium	05/05/2009	SW846 6010	<0.679
Cadmium	05/05/2009	SW846 6010	<0.679
Calcium	05/05/2009	SW846 6010	80800
Chromium	05/05/2009	SW846 6010	10.6
Cobalt	05/05/2009	SW846 6010	3.53
Copper	05/05/2009	SW846 6010	13.7
Iron	05/05/2009	SW846 6010	12200
Lead	05/05/2009	SW846 6010	17.3
Magnesium	05/05/2009	SW846 6010	18700
Manganese	05/05/2009	SW846 6010	502
Mercury	04/30/2009	SW846 7471	0.0263
Nickel	05/05/2009	SW846 6010	7.35
Potassium	05/05/2009	SW846 6010	868
Selenium	05/05/2009	SW846 6010	<0.679
Silver	05/05/2009	SW846 6010	<1.36
Sodium	05/05/2009	SW846 6010	217
Thallium	05/05/2009	SW846 6010	<0.814
Vanadium	05/05/2009	SW846 6010	17.3
Zinc	05/05/2009	SW846 6010	112

ELAP ID No.:10958

**Comments:**
**Approved By:**
  
 Bruce Hoogesteger, Technical Director

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**PARADIGM**  
ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

Client: **Lu Engineers**

Lab Project No.: 09-1511

Lab Sample No.: 5190

Client Job Site: Clarkson ERP Site

Sample Type: Water

Client Job No.: 40503

Date Sampled: 04/27/2009

Field Location: CS-SS-EB Field Blank

Date Received: 04/28/2009

Field ID No.: N/A

**Laboratory Report for TAL Metals Analysis in Water**

Parameter	Date Analyzed	Analytical Method	Result (mg/L)
Aluminum	05/07/2009	SW846 6010	<0.200
Antimony	05/07/2009	SW846 6010	<0.060
Arsenic	05/07/2009	SW846 6010	<0.005
Barium	05/07/2009	SW846 6010	<0.020
Beryllium	05/07/2009	SW846 6010	<0.005
Cadmium	05/07/2009	SW846 6010	<0.005
Calcium	05/07/2009	SW846 6010	0.503
Chromium	05/07/2009	SW846 6010	<0.010
Cobalt	05/07/2009	SW846 6010	<0.010
Copper	05/07/2009	SW846 6010	<0.010
Iron	05/07/2009	SW846 6010	<0.100
Lead	05/07/2009	SW846 6010	<0.005
Magnesium	05/07/2009	SW846 6010	<0.050
Manganese	05/07/2009	SW846 6010	<0.010
Mercury	04/30/2009	SW846 7470	<0.0002
Nickel	05/07/2009	SW846 6010	<0.040
Potassium	05/07/2009	SW846 6010	<0.500
Selenium	05/07/2009	SW846 6010	<0.005
Silver	05/07/2009	SW846 6010	<0.010
Sodium	05/07/2009	SW846 6010	<1.00
Thallium	05/07/2009	SW846 6010	<0.006
Vanadium	05/07/2009	SW846 6010	<0.010
Zinc	05/07/2009	SW846 6010	0.020

ELAP ID No.:10958

Comments:

Approved By:   
Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional sample information, including compliance with sample condition requirements upon receipt. File ID:091511B.xls



## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CS-SS-01

Lab Name: AES, Inc. Contract: Paradigm  
 Lab Code: AES Case No.: PA0901 SAS No.: \_\_\_\_\_ SDG No.: CS-SS-01  
 Matrix (soil/water): SOIL Lab Sample ID: 090429019-001A  
 Sample wt/vol: 10.0 (g/mL) g Lab File ID: A1315  
 % Moisture: 25.5 Date Received: 4/29/09  
 Extraction: (Type) PFEX Date Extracted: 4/30/2009  
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 4/30/09  
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N pH: 6.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	ug/Kg
319-84-6	alpha-BHC	2.28	U
319-85-7	beta-BHC	2.28	U
319-86-8	delta-BHC	2.28	U
58-89-9	gamma-BHC (Lindane)	2.28	U
76-44-8	Heptachlor	2.28	U
309-00-2	Aldrin	2.28	U
1024-57-3	Heptachlor epoxide	2.28	U
959-98-8	Endosulfan I	2.28	U
60-57-1	Dieldrin	4.83	U
72-55-9	4,4'-DDE	3.5	J
72-20-8	Endrin	4.83	U
33213-65-9	Endosulfan II	4.83	U
72-54-8	4,4'-DDD	4.83	U
1031-07-8	Endosulfan sulfate	4.83	U
50-29-3	4,4'-DDT	2.4	JP
72-43-5	Methoxychlor	22.8	U
53494-70-5	Endrin ketone	4.83	U
7421-93-4	Endrin aldehyde	4.83	U
5103-71-9	alpha-Chlordane	2.28	U
5103-74-2	gamma-Chlordane	2.28	U
8001-35-2	Toxaphene	44.3	U

All target  
 analytes should be  
 "J" or "UJ"

## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CS-SS-04

Lab Name: AES, Inc.Contract: ParadigmLab Code: AESCase No.: PA0901

SAS No.: \_\_\_\_\_

SDG No.: CS-SS-01Matrix (soil/water): SOILLab Sample ID: 090429019-002ASample wt/vol: 10.0 (g/mL) gLab File ID: A1316% Moisture: 20.3Date Received: 4/29/09Extraction: (Type) PFEXDate Extracted: 4/30/2009Concentrated Extract Volume: 10000 (uL)Date Analyzed: 4/30/09Injection Volume: 1.0 (uL)Dilution Factor: 1.0GPC Cleanup: (Y/N) N pH: 7.27Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/Kg	
319-84-6	alpha-BHC		2.13	U
319-85-7	beta-BHC		2.13	U
319-86-8	delta-BHC		2.13	U
58-89-9	gamma-BHC (Lindane)		2.13	U
76-44-8	Heptachlor		2.13	U
309-00-2	Aldrin		2.13	U
1024-57-3	Heptachlor epoxide		2.13	U
959-98-8	Endosulfan I		2.13	U
60-57-1	Dieldrin		4.52	U
72-55-9	4,4'-DDE		2.9	JP
72-20-8	Endrin		4.52	U
33213-65-9	Endosulfan II		4.52	U
72-54-8	4,4'-DDD		4.52	U
1031-07-8	Endosulfan sulfate		4.52	U
50-29-3	4,4'-DDT		2.6	JP
72-43-5	Methoxychlor		21.3	U
53494-70-5	Endrin ketone		4.52	U
7421-93-4	Endrin aldehyde		4.52	U
5103-71-9	alpha-Chlordane		2.13	U
5103-74-2	gamma-Chlordane		2.13	U
8001-35-2	Toxaphene		41.4	U

All target  
analytes should be  
"J" or "UJ"

## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CS-SS-04D

Lab Name: AES, Inc.Contract: ParadigmLab Code: AESCase No.: PA0901

SAS No.: \_\_\_\_\_

SDG No.: CS-SS-01Matrix (soil/water): SOILLab Sample ID: 090429019-003ASample wt/vol: 10.0 (g/mL) gLab File ID: A1317% Moisture: 16.3Date Received: 4/29/09Extraction: (Type) PFEXDate Extracted: 4/30/2009Concentrated Extract Volume: 10000 (uL)Date Analyzed: 4/30/09Injection Volume: 1.0 (uL)Dilution Factor: 1.0GPC Cleanup: (Y/N) N pH: 7.87Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	ug/Kg Q
319-84-6	alpha-BHC	2.03	U
319-85-7	beta-BHC	2.03	U
319-86-8	delta-BHC	2.03	U
58-89-9	gamma-BHC (Lindane)	2.03	U
76-44-8	Heptachlor	2.03	U
309-00-2	Aldrin	2.03	U
1024-57-3	Heptachlor epoxide	2.03	U
959-98-8	Endosulfan I	2.03	U
60-57-1	Dieldrin	4.30	U
72-55-9	4,4'-DDE	2.2	JP
72-20-8	Endrin	4.30	U
33213-65-9	Endosulfan II	4.30	U
72-54-8	4,4'-DDD	4.30	U
1031-07-8	Endosulfan sulfate	4.30	U
50-29-3	4,4'-DDT	3.6	J
72-43-5	Methoxychlor	20.3	U
53494-70-5	Endrin ketone	4.30	U
7421-93-4	Endrin aldehyde	4.30	U
5103-71-9	alpha-Chlordane	2.03	U
5103-74-2	gamma-Chlordane	2.03	U
8001-35-2	Toxaphene	39.4	U

All target  
analytes should be  
"J" or "UJ"

## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CS-SS-06

Lab Name: AES, Inc.Contract: ParadigmLab Code: AESCase No.: PA0901

SAS No.: \_\_\_\_\_

SDG No.: CS-SS-01Matrix (soil/water): SOILLab Sample ID: 090429019-004ASample wt/vol: 10.0 (g/mL) gLab File ID: A1318% Moisture: 25.6Date Received: 4/29/09Extraction: (Type) PPEXDate Extracted: 4/30/2009Concentrated Extract Volume: 10000 (uL)Date Analyzed: 4/30/09Injection Volume: 1.0 (uL)Dilution Factor: 1.0GPC Cleanup: (Y/N) N pH: 7.33Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:		
		(ug/L or ug/Kg)	ug/Kg	Q
319-84-6	alpha-BHC		2.28	U
319-85-7	beta-BHC		2.28	U
319-86-8	delta-BHC		2.28	U
58-89-9	gamma-BHC (Lindane)		2.28	U
76-44-8	Heptachlor		2.28	U
309-00-2	Aldrin		2.28	U
1024-57-3	Heptachlor epoxide		2.28	U
959-98-8	Endosulfan I		2.28	U
60-57-1	Dieldrin		4.84	U
72-55-9	4,4'-DDE		9.5	
72-20-8	Endrin		4.84	U
33213-65-9	Endosulfan II		4.84	U
72-54-8	4,4'-DDD		4.84	U
1031-07-8	Endosulfan sulfate		4.84	U
50-29-3	4,4'-DDT		18	
72-43-5	Methoxychlor		22.8	U
53494-70-5	Endrin ketone		4.84	U
7421-93-4	Endrin aldehyde		4.84	U
5103-71-9	alpha-Chlordane		2.28	U
5103-74-2	gamma-Chlordane		2.28	U
8001-35-2	Toxaphene		44.4	U

All target  
analytes should be  
"J" or "UJ"

## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CS-SD-02

Lab Name: AES, Inc.Contract: ParadigmLab Code: AESCase No.: PA0901

SAS No.: \_\_\_\_\_

SDG No.: CS-SS-01Matrix (soil/water): SOILLab Sample ID: 090429019-005ASample wt/vol: 10.0 (g/mL) gLab File ID: A1319% Moisture: 39.5Date Received: 4/29/09Extraction: (Type) PFEXDate Extracted: 4/30/2009Concentrated Extract Volume: 10000 (uL)Date Analyzed: 4/30/09Injection Volume: 1.0 (uL)Dilution Factor: 1.0GPC Cleanup: (Y/N) N pH: 7.79Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:		
		(ug/L or ug/Kg)	ug/Kg	Q
319-84-6	alpha-BHC		2.81	U
319-85-7	beta-BHC		2.81	U
319-86-8	delta-BHC		2.81	U
58-89-9	gamma-BHC (Lindane)		2.81	U
76-44-8	Heptachlor		2.81	U
309-00-2	Aldrin		2.81	U
1024-57-3	Heptachlor epoxide		2.81	U
959-98-8	Endosulfan I		2.81	U
60-57-1	Dieldrin		5.95	U
72-55-9	4,4'-DDE		5.95	U
72-20-8	Endrin		5.95	U
33213-65-9	Endosulfan II		5.95	U
72-54-8	4,4'-DDD		5.95	U
1031-07-8	Endosulfan sulfate		5.95	U
50-29-3	4,4'-DDT		5.95	U
72-43-5	Methoxychlor		28.1	U
53494-70-5	Endrin ketone		5.95	U
7421-93-4	Endrin aldehyde		5.95	U
5103-71-9	alpha-Chlordane		2.81	U
5103-74-2	gamma-Chlordane		2.81	U
8001-35-2	Toxaphene		54.5	U

All target  
analytes should be  
"J" or "UJ"



## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CS-SS-EB

Lab Name: AES, Inc.Contract: ParadigmLab Code: AESCase No.: PA0901

SAS No.: \_\_\_\_\_

SDG No.: CS-SS-01Matrix (soil/water): WATERLab Sample ID: 090429019-006ASample wt/vol: 960.0 (g/mL) mLLab File ID: A1324

% Moisture: \_\_\_\_\_

Date Received: 4/29/09Extraction: (Type) SPEDate Extracted: 4/30/2009Concentrated Extract Volume: 10000 (uL)Date Analyzed: 4/30/09Injection Volume: 1.0 (uL)Dilution Factor: 1.0GPC Cleanup: (Y/N) N pH: \_\_\_\_\_Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	ug/L
319-84-6	alpha-BHC	0.052	U
319-85-7	beta-BHC	0.052	U
319-86-8	delta-BHC	0.052	U
58-89-9	gamma-BHC (Lindane)	0.052	U
76-44-8	Heptachlor	0.052	U
309-00-2	Aldrin	0.052	U
1024-57-3	Heptachlor epoxide	0.052	U
959-98-8	Endosulfan I	0.052	U
60-57-1	Dieldrin	0.104	U
72-55-9	4,4'-DDE	0.104	U
72-20-8	Endrin	0.104	U
33213-65-9	Endosulfan II	0.104	U
72-54-8	4,4'-DDD	0.104	U
1031-07-8	Endosulfan sulfate	0.104	U
50-29-3	4,4'-DDT	0.104	U
72-43-5	Mathoxychlor	0.521	U
53494-70-5	Endrin ketone	0.104	U
7421-93-4	Endrin aldehyde	0.104	U
5103-71-9	alpha-Chlordane	0.052	U
5103-74-2	gamma-Chlordane	0.052	U
8001-35-2	Toxaphene	1.04	U

All target  
analytes should be  
"J" or "UJ"



## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK01

Lab Name: AES, Inc.Contract: ParadigmLab Code: AESCase No.: PA0901

SAS No.: \_\_\_\_\_

SDG No.: CS-SS-01Matrix (soil/water): SOILLab Sample ID: MB-20884Sample wt/vol: 10.0 (g/mL) gLab File ID: A1313

% Moisture: \_\_\_\_\_

Date Received: \_\_\_\_\_

Extraction: (Type) PFEXDate Extracted: 4/30/2009Concentrated Extract Volume: 10000 (uL)Date Analyzed: 4/30/09Injection Volume: 1.0 (uL)Dilution Factor: 1.0GPC Cleanup: (Y/N) N pH: \_\_\_\_\_Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	ug/Kg
319-84-6	alpha-BHC	1.70	U
319-85-7	beta-BHC	1.70	U
319-86-8	delta-BHC	1.70	U
58-89-9	gamma-BHC (Lindane)	1.70	U
76-44-8	Heptachlor	1.70	U
309-00-2	Aldrin	1.70	U
1024-57-3	Heptachlor epoxide	1.70	U
959-98-8	Endosulfan I	1.70	U
60-57-1	Dieldrin	3.60	U
72-55-9	4,4'-DDE	3.60	U
72-20-8	Endrin	3.60	U
33213-65-9	Endosulfan II	3.60	U
72-54-8	4,4'-DDD	3.60	U
1031-07-8	Endosulfan sulfate	3.60	U
50-29-3	4,4'-DDT	3.60	U
72-43-5	Methoxychlor	17.0	U
53494-70-5	Endrin ketone	3.60	U
7421-93-4	Endrin aldehyde	3.60	U
5103-71-9	alpha-Chlordane	1.70	U
5103-74-2	gamma-Chlordane	1.70	U
8001-35-2	Toxaphene	33.0	U

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## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK02

Lab Name: AES, Inc.Contract: ParadigmLab Code: AESCase No.: PA0901

SAS No.: \_\_\_\_\_

SDG No.: CS-SS-01Matrix (soil/water): WATERLab Sample ID: MB-20895Sample wt/vol: 1000.0 (g/mL) mLLab File ID: A1323

% Moisture: \_\_\_\_\_

Date Received: \_\_\_\_\_

Extraction: (Type) SPEDate Extracted: 4/30/2009Concentrated Extract Volume: 10000 (uL)Date Analyzed: 4/30/09Injection Volume: 1.0 (uL)Dilution Factor: 1.0GPC Cleanup: (Y/N) N pH: \_\_\_\_\_Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	ug/L
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.100	U
72-55-9	4,4'-DDE	0.100	U
72-20-8	Endrin	0.100	U
33213-65-9	Endosulfan II	0.100	U
72-54-8	4,4'-DDD	0.100	U
1031-07-8	Endosulfan sulfate	0.100	U
50-29-3	4,4'-DDT	0.100	U
72-43-5	Methoxychlor	0.500	U
53494-70-5	Endrin ketone	0.100	U
7421-93-4	Endrin aldehyde	0.100	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	1.00	U

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## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CS-SS-01MS

Lab Name: AES, Inc. Contract: ParadigmLab Code: AES Case No.: PA0901 SAS No.: \_\_\_\_\_ SDG No.: CS-SS-01Matrix (soil/water): SOILLab Sample ID: 090429019-001AMSSample wt/vol: 10.0 (g/mL) gLab File ID: A1320% Moisture: 25.5Date Received: 4/29/09Extraction: (Type) PFEXDate Extracted: 4/30/2009Concentrated Extract Volume: 10000 (uL)Date Analyzed: 4/30/09Injection Volume: 1.0 (uL)Dilution Factor: 1.0GPC Cleanup: (Y/N) N pH: 6.4Sulfur Cleanup: (Y/N) N

## CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg)	ug/Kg	Q
319-84-6	alpha-BHC	2.28	U	
319-85-7	beta-BHC	2.28	U	
319-86-8	delta-BHC	2.28	U	
58-89-9	gamma-BHC (Lindane)	57		
76-44-8	Heptachlor	52		
309-00-2	Aldrin	60		
1024-57-3	Heptachlor epoxide	2.28	U	
959-98-8	Endosulfan I	2.28	U	
60-57-1	Dieldrin	110		
72-55-9	4,4'-DDE	4.0	J	
72-20-8	Endrin	120		
33213-65-9	Endosulfan II	4.83	U	
72-54-8	4,4'-DDD	4.83	U	
1031-07-8	Endosulfan sulfate	4.83	U	
50-29-3	4,4'-DDT	100		
72-43-5	Methoxychlor	22.8	U	
53494-70-5	Endrin ketone	4.83	U	
7421-93-4	Endrin aldehyde	4.83	U	
5103-71-9	alpha-Chlordane	2.28	U	
5103-74-2	gamma-Chlordane	2.28	U	
8001-35-2	Toxaphene	44.3	U	

## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CS-SS-01MSD

Lab Name: AES, Inc.Contract: ParadigmLab Code: AESCase No.: PA0901

SAS No.: \_\_\_\_\_

SDG No.: CS-SS-01Matrix (soil/water): SOILLab Sample ID: 090429019-001AMSDSample wt/vol: 10.0 (g/mL) gLab File ID: A1321% Moisture: 25.5Date Received: 4/29/09Extraction: (Type) PPEXDate Extracted: 4/30/2009Concentrated Extract Volume: 10000 (uL)Date Analyzed: 4/30/09Injection Volume: 1.0 (uL)Dilution Factor: 1.0GPC Cleanup: (Y/N) N pH: 6.4Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:		
		(ug/L or ug/Kg)	ug/Kg	Q
319-84-6	alpha-BHC		2.28	U
319-85-7	beta-BHC		2.28	U
319-86-8	delta-BHC		2.28	U
58-89-9	gamma-BHC (Lindane)		67	
76-44-8	Heptachlor		61	
309-00-2	Aldrin		73	
1024-57-3	Heptachlor epoxide		2.28	U
959-98-8	Endosulfan I		2.28	U
60-57-1	Dieldrin		120	
72-55-9	4,4'-DDE		4.3	J
72-20-8	Endrin		130	
33213-65-9	Endosulfan II		4.83	U
72-54-8	4,4'-DDD		4.83	U
1031-07-8	Endosulfan sulfate		4.83	U
50-29-3	4,4'-DDT		130	
72-43-5	Methoxychlor		22.8	U
53494-70-5	Endrin ketone		4.83	U
7421-93-4	Endrin aldehyde		4.83	U
5103-71-9	alpha-Chlordane		2.28	U
5103-74-2	gamma-Chlordane		2.28	U
8001-35-2	Toxaphene		44.3	U

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## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PMSB01

Lab Name: AES, Inc. Contract: Paradigm

Lab Code: AES Case No.: PA0901 SAS No.: \_\_\_\_\_ SDG No.: CS-SS-01

Matrix (soil/water): SOIL Lab Sample ID: LCS-20884

Sample wt/vol: 10.0 (g/mL) g Lab File ID: A1322

% Moisture: \_\_\_\_\_ Date Received: \_\_\_\_\_

Extraction: (Type) PFEX Date Extracted: 4/30/2009

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 4/30/09

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: \_\_\_\_\_ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	ug/Kg
319-84-6	alpha-BHC	1.70	U
319-85-7	beta-BHC	1.70	U
319-86-8	delta-BHC	1.70	U
58-89-9	gamma-BHC (Lindane)	42	
76-44-8	Heptachlor	41	
309-00-2	Aldrin	50	
1024-57-3	Heptachlor epoxide	1.70	U
959-98-8	Endosulfan I	1.70	U
60-57-1	Dieldrin	90	
72-55-9	4,4'-DDE	3.60	U
72-20-8	Endrin	96	
33213-65-9	Endosulfan II	3.60	U
72-54-8	4,4'-DDD	3.60	U
1031-07-8	Endosulfan sulfate	3.60	U
50-29-3	4,4'-DDT	87	
72-43-5	Methoxychlor	17.0	U
53494-70-5	Endrin ketone	3.60	U
7421-93-4	Endrin aldehyde	3.60	U
5103-71-9	alpha-Chlordane	1.70	U
5103-74-2	gamma-Chlordane	1.70	U
8001-35-2	Toxaphene	33.0	U

# PARADIGM

## CHAIN OF CUSTODY

1 of 2

### ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue  
Rochester, NY 14608  
(585) 647-2530 • (800) 724-1997  
FAX: (585) 647-3311

#### REPORT TO:

#### INVOICE TO:

PROJECT NAME/SITE NAME:  
**Clarkson ERP Site**

COMPANY: <b>Lu Engineers</b>		COMPANY: <b>Lu Engineers</b>		LAB PROJECT #:	CLIENT PROJECT #:
ADDRESS: <b>2730 Penfield Rd.</b>		ADDRESS: <b>2730 Penfield Rd.</b>		<b>09-1511</b>	<b>40503</b>
CITY: <b>Penfield</b>	STATE: <b>NY</b>	ZIP: <b>14526</b>	CITY: <b>Penfield</b>	STATE: <b>NY</b>	ZIP: <b>14526</b>
PHONE: <b>377-1450</b>	FAX: <b>377-1266</b>	PHONE: <b>377-1266</b>	FAX: <b>377-1266</b>	TURNAROUND TIME: (WORKING DAYS)	
ATTN: <b>Greg Andrus</b>	ATTN: <b>Greg Andrus</b>	QUOTE #:			
COMMENTS: <b>Pd# 088410 * ASP Oct. B deliverables w/ EDD</b>		<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 5 <input type="checkbox"/> OTHER			

#### REQUESTED ANALYSIS

Per B. Hoogester:

DATE	TIME	COMPOUND	SAMPLE LOCATION/FIELD ID	ANALYSIS	REMARKS	PARADIGM LAB
14/27/09	10:25	X	CS-WC-1	8260 TCL VOCs	Add VOCs to all samples (SS-O1 → SCEB) except per J. Dato/Asper G. Andrus 4/28	5179
2	11:30	X	CS-SS-D1	8270 TCL SVOCs		5180
3	11:40	X	CS-SS-D1-MS	TAL Metals		5180
4	11:45	X	CS-SS-D1-MSD	PCBs		5180
5	11:50	X	CS-SS-D2	Pesticides		5183
6	12:05	X	CS-SS-D3	Styrene, total		5184
7	12:15	X	CS-SS-D4			5185
8	12:15	X	CS-SS-D4D			5186
9	12:40	X	CS-SS-D5			5187
10	12:50	X	CS-SS-D6			5188

#### \*\*LAB USE ONLY BELOW THIS LINE\*\*

Sample Condition: Per NELAC/ELAP 210/241/242/243/244

Receipt Parameter	NELAC Compliance
Container Type:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Preservation:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Holding Time:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Temperature:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Comments:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N

Received By: **Jana M. Smith**

Date/Time: **4/27/09 18:00**

Total Cost:

for all above

Relinquished By: **[Signature]**

Date/Time: **4/28/09 8:30 AM**

P.L.F.

Received By: **Elizabeth A. Honck**

Date/Time: **4/28/09 1500**

P.L.F.

Comments: **40 Cited → from Temp Blank**

Date/Time

P.L.F.

# PARADIGM ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue  
Rochester, NY 14608  
(585) 647-2530 • (800) 724-1997  
FAX: (585) 647-3311

REPORT TO:

INVOICE TO:

PROJECT NAME/SITE NAME:  
**Clarkson ERP Site**

COMPANY: <b>Lu Engineers</b>		COMPANY: <b>Lu Engineers</b>		LAB PROJECT #:	CLIENT PROJECT #:
ADDRESS: <b>2230 Penfield Rd.</b>		ADDRESS: <b>2230 Penfield Rd.</b>		<b>09-1511</b>	<b>40503</b>
CITY: <b>Penfield, NY</b>	STATE: <b>14526</b>	CITY: <b>Penfield, NY</b>	STATE: <b>14526</b>	TURNAROUND TIME: (WORKING DAYS)	
PHONE: <b>377-1450</b>	FAX: <b>377-1266</b>	PHONE: <b>377-1450</b>	FAX: <b>377-1266</b>		
ATTN: <b>Gary Andrews</b>	ATTN: <b>Gary Andrews</b>				
COMMENTS: <b>FO# 088410 ASP. Oct. 3 deliverables w/ EDD</b>		QUOTE #: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 5 <input type="checkbox"/> OTHER			

DATE	TIME	C O M P O S I T E	G R A B	SAMPLE LOCATION/FIELD ID	per 55, per
------	------	-------------------	---------	--------------------------	---

\*\*LAB USE ONLY BELOW THIS LINE\*\*

Sample Condition: Per NELAC/ELAP 210/241/242/243/244

Receipt Parameter		NELAC Compliance	
Container Type:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Preservation:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Holding Time:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Temperature:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Comments:	4°C.iced → from temp bottle	Comments:	

Sampled By: <b>Joanna M. Smith</b>	Date/Time: <b>4/27/09 17:00</b>
Relinquished By: <b>[Signature]</b>	Date/Time: <b>4/28/09 8:30</b>
Received By: <b>Elizabeth A. Homick</b>	Date/Time: <b>4/28/09 1500</b>
Received @ Lab By:	Date/Time:
Total Cost:	


**PARADIGM**

ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

**Volatile Analysis Report for Soils/Solids/Sludges**

 Client: Lu Engineers

 Client Job Site: Clarkson  
 Client Job Number: 40503  
 Field Location: CS-SD-04  
 Field ID Number: N/A  
 Sample Type: Soil

 Lab Project Number: 09-2377  
 Lab Sample Number: 7644

 Date Sampled: 07/02/2009  
 Date Received: 07/06/2009  
 Date Analyzed: 07/09/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 4.98 <i>u5</i>
Bromomethane	ND< 4.98 <i>u5</i>
Bromoform	ND< 12.5 <i>u5</i>
Carbon Tetrachloride	ND< 12.5 <i>u5</i>
Chloroethane	ND< 4.98
Chloromethane	ND< 4.98
2-Chloroethyl vinyl Ether	ND< 24.9
Chloroform	ND< 4.98
Dibromochloromethane	ND< 4.98
1,1-Dichloroethane	ND< 4.98
1,2-Dichloroethane	ND< 4.98
1,1-Dichloroethene	ND< 4.98
cis-1,2-Dichloroethene	ND< 4.98
trans-1,2-Dichloroethene	ND< 4.98
1,2-Dichloropropane	ND< 4.98 <i>u5</i>
cis-1,3-Dichloropropene	ND< 4.98 <i>u5</i>
trans-1,3-Dichloropropene	ND< 4.98 <i>u5</i>
Methylene chloride	ND< 12.5 <i>u5</i>
1,1,2,2-Tetrachloroethane	ND< 4.98 <i>u5</i>
Tetrachloroethene	ND< 4.98 <i>u5</i>
1,1,1-Trichloroethane	ND< 4.98 <i>u5</i>
1,1,2-Trichloroethane	ND< 4.98 <i>u5</i>
Trichloroethene	ND< 4.98 <i>u5</i>
Trichlorofluoromethane	ND< 4.98
Vinyl chloride	ND< 4.98

Aromatics	Results in ug / Kg
Benzene	ND< 4.98 <i>u5</i>
Chlorobenzene	ND< 4.98 <i>u5</i>
Ethylbenzene	ND< 4.98 <i>u5</i>
Toluene	ND< 4.98 <i>1.37 u5</i>
m,p-Xylene	ND< 4.98 <i>2.20 u5</i>
o-Xylene	J 2.72
Styrene	ND< 12.5 <i>u5</i>
1,2-Dichlorobenzene	ND< 12.5
1,3-Dichlorobenzene	ND< 12.5
1,4-Dichlorobenzene	ND< 4.98

Ketones	Results in ug / Kg
Acetone	ND< 24.9 <i>u5</i>
2-Butanone	ND< 24.9
2-Hexanone	ND< 12.5 <i>u5</i>
4-Methyl-2-pentanone	ND< 12.5 <i>u5</i>

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 4.98
Vinyl acetate	ND< 12.5

ELAP Number 10958

Method: EPA 8260B

Data File: V67013.D

 Comments: ND denotes Non Detect  
 ug / Kg = microgram per Kilogram  
 Surrogate outliers indicate probable matrix interference

Signature:

Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

092377V2.XLS





ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

### Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)

Client: Lu Engineers

Client Job Site: Clarkson

Lab Project Number: 09-2377

Lab Sample Number: 7644

Client Job Number: 40503

Field Location: CS-SD-04

Date Sampled: 07/02/2009

Field ID Number: N/A

Date Received: 07/06/2009

Sample Type: Soil

Date Analyzed: 07/09/2009

Aromatics	Results in ug / Kg	Aromatics	Results in ug / Kg
n-Butylbenzene	ND< 24.9	1,2,4-Trimethylbenzene	J 2.48
sec-Butylbenzene	ND< 4.98	1,3,5-Trimethylbenzene	ND< 4.98
tert-Butylbenzene	ND< 12.5		
n-Propylbenzene	ND< 4.98	<b>Miscellaneous</b>	
Isopropylbenzene	ND< 24.9	Methyl tert-butyl Ether	ND< 4.98
p-Isopropyltoluene	ND< 24.9		
Naphthalene	ND< 12.5 <i>us</i>		

ELAP Number 10958

Method: EPA 8260B

Data File: V67013.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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**PARADIGM**

ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

**Volatile Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson

**Client Job Number:** 40503

**Field Location:** CS-SD-04

**Field ID Number:** N/A

**Sample Type:** Soil

**Lab Project Number:** 09-2377

**Lab Sample Number:** 7644

**Date Sampled:** 07/02/2009

**Date Received:** 07/06/2009

**Date Analyzed:** 07/09/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	N/A	ND< 4.98	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V67013.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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**PARADIGM**

ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

### Semi-Volatile Analysis Report for Soils/Solids/Sludges

 Client: Lu Engineers

Client Job Site: Clarkson

Lab Project Number: 09-2377

Lab Sample Number: 7644

Client Job Number: 40503

Field Location: CS-SD-04

Field ID Number: N/A

Sample Type: Soil

Date Sampled: 07/02/2009

Date Received: 07/06/2009

Date Analyzed: 07/07/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 383	Dibenz (a,h) anthracene	ND< 383
Anthracene	384	Fluoranthene	3,710
Benzo (a) anthracene	1,310	Fluorene	ND< 383
Benzo (a) pyrene	1,290	Indeno (1,2,3-cd) pyrene	892
Benzo (b) fluoranthene	1,280	Naphthalene	ND< 383
Benzo (g,h,i) perylene	944	Phenanthrene	1,800
Benzo (k) fluoranthene	1,270	Pyrene	2,630
Chrysene	1,440	Acenaphthylene	ND< 383
Diethyl phthalate	ND< 383	1,2-Dichlorobenzene	ND< 383
Dimethyl phthalate	ND< 956 260 J	1,3-Dichlorobenzene	ND< 383
Butylbenzylphthalate	1,250	1,4-Dichlorobenzene	ND< 383
Di-n-butyl phthalate	ND< 383	1,2,4-Trichlorobenzene	ND< 383
Di-n-octylphthalate	ND< 383	Nitrobenzene	ND< 383
Bis (2-ethylhexyl) phthalate	ND< 383 241 J	2,4-Dinitrotoluene	ND< 383
2-Chloronaphthalene	ND< 383	2,6-Dinitrotoluene	ND< 383 691
Hexachlorobenzene	ND< 383	Bis (2-chloroethyl) ether	ND< 383
Hexachloroethane	ND< 383	Bis (2-chloroisopropyl) ether	ND< 383
Hexachlorocyclopentadiene	ND< 383	Bis (2-chloroethoxy) methan	ND< 383
Hexachlorobutadiene	ND< 383	4-Bromophenyl phenyl ether	ND< 383
N-Nitroso-di-n-propylamine	ND< 383 324 J	4-Chlorophenyl phenyl ether	ND< 383
N-Nitrosodiphenylamine	ND< 383	Benzidine	ND< 956
N-Nitrosodimethylamine	ND< 383	3,3'-Dichlorobenzidine	ND< 383
Isophorone	ND< 383	4-Chloroaniline	ND< 383
Benzyl alcohol	ND< 956	2-Nitroaniline	ND< 956
Dibenzofuran	ND< 383	3-Nitroaniline	ND< 956
2-Methylnaphthalene	ND< 383	4-Nitroaniline	ND< 956

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 383	2-Methylphenol	ND< 383
2-Chlorophenol	ND< 383	3&4-Methylphenol	ND< 383
2,4-Dichlorophenol	ND< 383	2,4-Dimethylphenol	ND< 383
2,6-Dichlorophenol	ND< 383	2-Nitrophenol	ND< 383
2,4,5-Trichlorophenol	ND< 956	4-Nitrophenol	ND< 956
2,4,6-Trichlorophenol	ND< 383	2,4-Dinitrophenol	ND< 956
Pentachlorophenol	ND< 956	4,6-Dinitro-2-methylphenol	ND< 956
4-Chloro-3-methylphenol	ND< 383	Benzoic acid	ND< 956

ELAP Number 10958

Method: EPA 8270C

Data File: S46036.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

Bruce Hoogesteger, Technical Director

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**PARADIGM**

ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

**Semi-Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Clarkson**Client Job Number:** 40503**Field Location:** CS-SD-04**Field ID Number:** N/A**Sample Type:** Soil**Lab Project Number:** 09-2377**Lab Sample Number:** 7644**Date Sampled:** 07/02/2009**Date Received:** 07/06/2009**Date Analyzed:** 07/07/2009

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
Complex Hydrocarbon	N/A	15.17	386	N/A
Complex Hydrocarbon	N/A	16.67	532	N/A
Complex Hydrocarbon	N/A	19.88	868	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S46036.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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092377S2.XLS



179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson  
**Client Job Number:** 40503  
**Field Location:** CS-SD-04  
**Field ID Number:** N/A  
**Sample Type:** Soil

**Lab Project Number:** 09-2377  
**Lab Sample Number:** 7644  
**Date Sampled:** 07/02/2009  
**Date Received:** 07/06/2009  
**Date Analyzed:** 07/07/2009

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.0380
Aroclor 1221	ND< 0.0380
Aroclor 1232	ND< 0.0380
Aroclor 1242	ND< 0.0380
Aroclor 1248	ND< 0.0380
Aroclor 1254	ND< 0.0380
Aroclor 1260	ND< 0.0380

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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092377P2.XLS



179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

Client: Lu Engineers

Lab Project No.: 09-2377

Lab Sample No.: 7644

Client Job Site: Clarkson

Sample Type: Soil

Client Job No.: 40503

Field Location: CS-SD-04

Date Sampled: 07/02/2009

Field ID No.: N/A

Date Received: 07/06/2009

**Laboratory Report for Solid Waste Analysis**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Arsenic	07/10/2009	EPA 6010	5.78
Barium	07/10/2009	EPA 6010	319
Cadmium	07/10/2009	EPA 6010	0.812
Chromium	07/10/2009	EPA 6010	15.2
Lead	07/10/2009	EPA 6010	152
Mercury	07/08/2009	EPA 7471	0.0467
Selenium	07/10/2009	EPA 6010	<0.574
Silver	07/10/2009	EPA 6010	<1.15

ELAP ID No.:10958

Comments:

Approved By: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional sample information, including compliance with sample condition requirements upon receipt.

File ID:092377.XLS

### Volatile Analysis Report for Soils/Solids/Sludges

Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1916

Lab Sample Number: 6337

Client Job Number: 40503

Field Location: CS-TP-01A

Date Sampled: 05/27/2009

Field ID Number: N/A

Date Received: 05/29/2009

Sample Type: Soil

Date Analyzed: 06/06/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 8.92 <i>R</i>
Bromomethane	ND< 8.92 <i>UJ</i>
Bromoform	ND< 22.3 <i>R</i>
Carbon Tetrachloride	ND< 22.3 <i>R</i>
Chloroethane	ND< 8.92
Chloromethane	ND< 8.92
2-Chloroethyl vinyl Ether	ND< 44.6
Chloroform	ND< 8.92 <i>17.7</i>
Dibromochloromethane	ND< 8.92 <i>R</i>
1,1-Dichloroethane	ND< 8.92
1,2-Dichloroethane	ND< 8.92 <i>5.66 J</i>
1,1-Dichloroethene	ND< 8.92
cis-1,2-Dichloroethene	ND< 8.92 <i>3.64 J</i>
trans-1,2-Dichloroethene	ND< 8.92
1,2-Dichloropropane	ND< 8.92 <i>R</i>
cis-1,3-Dichloropropene	ND< 8.92 <i>R</i>
trans-1,3-Dichloropropene	ND< 8.92 <i>R</i>
Methylene chloride	ND< 22.3 <i>20.87 J</i>
1,1,2,2-Tetrachloroethane	ND< 8.92 <i>R</i>
Tetrachloroethene	ND< 8.92 <i>R</i>
1,1,1-Trichloroethane	ND< 8.92 <i>R</i>
1,1,2-Trichloroethane	ND< 8.92 <i>R</i>
Trichloroethene	ND< 8.92 <i>R</i>
Trichlorofluoromethane	ND< 8.92
Vinyl chloride	ND< 8.92

Aromatics	Results in ug / Kg
Benzene	ND< 8.92 <i>R</i>
Chlorobenzene	ND< 8.92 <i>R</i>
Ethylbenzene	ND< 8.92 <i>R</i>
Toluene	ND< 8.92 <i>R</i>
m,p-Xylene	ND< 8.92 <i>R</i>
o-Xylene	ND< 8.92 <i>R</i>
Styrene	ND< 22.3 <i>R</i>
1,2-Dichlorobenzene	ND< 22.3 <i>R</i>
1,3-Dichlorobenzene	ND< 22.3 <i>R</i>
1,4-Dichlorobenzene	ND< 8.92 <i>R</i>

Ketones	Results in ug / Kg
Acetone	ND< 44.6 <i>UJ</i>
2-Butanone	ND< 44.6
2-Hexanone	ND< 22.3 <i>R</i>
4-Methyl-2-pentanone	ND< 22.3 <i>R</i>

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 8.92
Vinyl acetate	ND< 22.3

ELAP Number 10958

Method: EPA 8260B

Data File: V66096.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Internal Standard outliers indicate probable matrix interference

Signature:

  
Bruce Hoogesteger: Technical Director

All target  
analytes should be  
"J" or "UJ"



**Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1916

Lab Sample Number: 6337

Client Job Number: 40503

Field Location: CS-TP-01A

Date Sampled: 05/27/2009

Field ID Number: N/A

Date Received: 05/29/2009

Sample Type: Soil

Date Analyzed: 06/06/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
Alkyl Hydrocarbon	N/A	2.588	57.1	N/A
Alkyl Hydrocarbon	N/A	3.99	66.9	N/A
Alkyl Hydrocarbon	N/A	4.32	33.0	N/A
Alkyl Hydrocarbon	N/A	4.59	33.0	N/A
Alkyl Hydrocarbon	N/A	4.91	33.9	N/A
Alkyl Hydrocarbon	N/A	5.18	87.8	N/A
Alkyl Hydrocarbon	N/A	5.98	40.6	N/A
Alkyl Hydrocarbon	N/A	6.42	88.3	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V66096.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Internal Standard outliers indicate probable matrix interference

Signature: \_\_\_\_\_

  
Bruce Hoogesteger: Technical Director**All target  
analytes should be  
"J" or "UJ"**





## Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1916

Lab Sample Number: 6338

Client Job Number: 40503

Field Location: CS-TP-01B

Date Sampled: 05/27/2009

Field ID Number: N/A

Date Received: 05/29/2009

Sample Type: Soil

Date Analyzed: 06/06/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 8.73 42.1
Bromomethane	ND< 8.73 4.5
Bromoform	ND< 21.8
Carbon Tetrachloride	ND< 21.8
Chloroethane	ND< 8.73
Chloromethane	ND< 8.73
2-Chloroethyl vinyl Ether	ND< 43.6
Chloroform	ND< 8.73 24.4
Dibromochloromethane	ND< 8.73
1,1-Dichloroethane	ND< 8.73
1,2-Dichloroethane	ND< 8.73 5.58 JB
1,1-Dichloroethene	ND< 8.73
cis-1,2-Dichloroethene	ND< 8.73 3.26 JB
trans-1,2-Dichloroethene	ND< 8.73
1,2-Dichloropropane	ND< 8.73
cis-1,3-Dichloropropene	ND< 8.73
trans-1,3-Dichloropropene	ND< 8.73
Methylene chloride	ND< 21.8 17.8 JB
1,1,2,2-Tetrachloroethane	ND< 8.73 18.5 JB
Tetrachloroethene	ND< 8.73
1,1,1-Trichloroethane	ND< 8.73
1,1,2-Trichloroethane	ND< 8.73 69.7
Trichloroethene	ND< 8.73
Trichlorofluoromethane	ND< 8.73
Vinyl chloride	ND< 8.73

Aromatics	Results in ug / Kg
Benzene	ND< 8.73
Chlorobenzene	ND< 8.73
Ethylbenzene	ND< 8.73
Toluene	ND< 8.73
m,p-Xylene	ND< 8.73
o-Xylene	ND< 8.73
Styrene	ND< 21.8
1,2-Dichlorobenzene	ND< 21.8
1,3-Dichlorobenzene	ND< 21.8
1,4-Dichlorobenzene	ND< 8.73

Ketones	Results in ug / Kg
Acetone	ND< 43.6 41.4 JB
2-Butanone	ND< 43.6
2-Hexanone	ND< 21.8 5.65 JB
4-Methyl-2-pentanone	ND< 21.8

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 8.73
Vinyl acetate	ND< 21.8

ELAP Number 10958

Method: EPA 8260B

Data File: V66097.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

*Bruce Hoogesteger*  
Bruce Hoogesteger: Technical Director

All target  
analytes should be  
"J" or "UJ"

*JB*



### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1916

**Lab Sample Number:** 6338

**Client Job Number:** 40503

**Field Location:** CS-TP-01B

**Date Sampled:** 05/27/2009

**Field ID Number:** N/A

**Date Received:** 05/29/2009

**Sample Type:** Soil

**Date Analyzed:** 06/06/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
Alkyl Hydrocarbon	N/A	2.588	72.0	N/A
Alkylene Hydrocarbon	N/A	4.31	56.3	N/A
Alkyl Hydrocarbon	N/A	4.56	103	N/A
Alkyl Hydrocarbon	N/A	4.71	78.1	N/A
Complex Hydrocarbon	N/A	4.86	87.3	N/A
Complex Hydrocarbon	N/A	4.91	79.4	N/A
Alkyl Hydrocarbon	N/A	4.96	81.6	N/A
Alkylene Hydrocarbon	N/A	5.18	116	N/A
Complex Hydrocarbon	N/A	5.41	64.6	N/A
Complex Hydrocarbon	N/A	5.54	89.5	N/A
Complex Hydrocarbon	N/A	5.76	49.3	N/A
Alkyl Hydrocarbon	N/A	5.82	61.1	N/A
Alkylene Hydrocarbon	N/A	5.90	61.1	N/A
Complex Hydrocarbon	N/A	5.97	117	N/A
Complex Hydrocarbon	N/A	6.27	65.5	N/A
Alkylene Hydrocarbon	N/A	6.42	88.6	N/A
Alkylene Hydrocarbon	N/A	6.49	193	N/A
Complex Hydrocarbon	N/A	6.72	46.7	N/A
Alkyl Hydrocarbon	N/A	6.87	112	N/A
Complex Hydrocarbon	N/A	7.01	144	N/A
Complex Hydrocarbon	N/A	7.37	58.0	N/A
Alkyl Hydrocarbon	N/A	7.51	50.2	N/A
Complex Hydrocarbon	N/A	7.67	59.3	N/A
Complex Hydrocarbon	N/A	8.30	50.6	N/A
Alkyl Benzene	N/A	10.77	50.2	N/A
Alkyl Benzene	N/A	10.87	47.1	N/A
Complex Hydrocarbon	N/A	11.52	71.6	N/A
Complex Hydrocarbon	N/A	11.68	58.0	N/A
Alkyl Hydrocarbon	N/A	12.51	79.0	N/A
Alkyl Hydrocarbon	N/A	13.13	52.4	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V66097.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature:

*Bruce Hoogesteger*  
 Bruce Hoogesteger: Technical Director

All target  
 analytes should be  
 "J" or "UJ"

38

### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1916

**Client Job Number:** 40503

**Lab Sample Number:** LRB

**Field Location:** N/A

**Date Sampled:** N/A

**Field ID Number:** N/A

**Date Received:** N/A

**Sample Type:** Soil

**Date Analyzed:** 06/05/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 4.00
Bromomethane	ND< 4.00 <i>WS</i>
Bromoform	ND< 10.0
Carbon Tetrachloride	<del>ND&lt; 10.0</del> <i>4.50 J</i>
Chloroethane	ND< 4.00
Chloromethane	ND< 4.00
2-Chloroethyl vinyl Ether	ND< 20.0
Chloroform	ND< 4.00
Dibromochloromethane	ND< 4.00
1,1-Dichloroethane	ND< 4.00
1,2-Dichloroethane	<del>ND&lt; 4.00</del> <i>1.08 J</i>
1,1-Dichloroethene	ND< 4.00
cis-1,2-Dichloroethene	ND< 4.00
trans-1,2-Dichloroethene	ND< 4.00
1,2-Dichloropropane	ND< 4.00
cis-1,3-Dichloropropene	ND< 4.00
trans-1,3-Dichloropropene	ND< 4.00
Methylene chloride	ND< 10.0 <i>WS</i>
1,1,2,2-Tetrachloroethane	<del>ND&lt; 4.00</del> <i>.83 J</i>
Tetrachloroethene	ND< 4.00
1,1,1-Trichloroethane	ND< 4.00
1,1,2-Trichloroethane	ND< 4.00
Trichloroethene	ND< 4.00
Trichlorofluoromethane	ND< 4.00
Vinyl chloride	ND< 4.00

Aromatics	Results in ug / Kg
Benzene	ND< 4.00
Chlorobenzene	ND< 4.00
Ethylbenzene	ND< 4.00
Toluene	ND< 4.00
m,p-Xylene	ND< 4.00
o-Xylene	ND< 4.00
Styrene	ND< 10.0
1,2-Dichlorobenzene	ND< 10.0
1,3-Dichlorobenzene	ND< 10.0
1,4-Dichlorobenzene	ND< 4.00

Ketones	Results in ug / Kg
Acetone	ND< 20.0 <i>WS</i>
2-Butanone	ND< 20.0
2-Hexanone	<del>ND&lt; 10.0</del> <i>7.32 J</i>
4-Methyl-2-pentanone	<del>ND&lt; 10.0</del> <i>2.99 J</i>

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 4.00
Vinyl acetate	ND< 10.0

ELAP Number 10958

Method: EPA 8260B

Data File: V66076.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

*Bruce Hoogesteger*  
Bruce Hoogesteger: Technical Director

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091916V3.XLS




**Semi-Volatile Analysis Report for Soils/Solids/Sludges**

 Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1916

Lab Sample Number: 6337

Client Job Number: 40503

Field Location: CS-TP-01A

Date Sampled: 05/27/2009

Field ID Number: N/A

Date Received: 05/29/2009

Sample Type: Soil

Date Analyzed: 06/08/2009

Date Reissued: 06/18/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 738	Dibenz (a,h) anthracene	ND< 738
Anthracene	ND< 738	Fluoranthene	2,200
Benzo (a) anthracene	818	Fluorene	ND< 738
Benzo (a) pyrene	894	Indeno (1,2,3-cd) pyrene	J 727
Benzo (b) fluoranthene	1,160	Naphthalene	ND< 738
Benzo (g,h,i) perylene	888	Phenanthrene	1,020
Benzo (k) fluoranthene	J 667	Pyrene	1,510
Chrysene	950	Acenaphthylene	ND< 738
Diethyl phthalate	ND< 738	1,2-Dichlorobenzene	ND< 738
Dimethyl phthalate	ND< 1,850	1,3-Dichlorobenzene	ND< 738
Butylbenzylphthalate	2,030	1,4-Dichlorobenzene	ND< 738
Di-n-butyl phthalate	894	1,2,4-Trichlorobenzene	ND< 738
Di-n-octylphthalate	ND< 738	Nitrobenzene	ND< 738
Bis (2-ethylhexyl) phthalate	2,810	2,4-Dinitrotoluene	ND< 738
2-Chloronaphthalene	ND< 738	2,6-Dinitrotoluene	ND< 738
Hexachlorobenzene	ND< 738	Bis (2-chloroethyl) ether	ND< 738
Hexachloroethane	ND< 738	Bis (2-chloroisopropyl) ether	ND< 738
Hexachlorocyclopentadiene	ND< 738	Bis (2-chloroethoxy) methan	ND< 738
Hexachlorobutadiene	ND< 738	4-Bromophenyl phenyl ether	ND< 738
N-Nitroso-di-n-propylamine	ND< 738	4-Chlorophenyl phenyl ether	ND< 738
N-Nitrosodiphenylamine	ND< 738	Benzydine	ND< 1,850
N-Nitrosodimethylamine	ND< 738	3,3'-Dichlorobenzidine	ND< 738
Isophorone	ND< 738	4-Chloroaniline	ND< 738
Benzyl alcohol	ND< 1,850	2-Nitroaniline	ND< 1,850
Dibenzofuran	ND< 738	3-Nitroaniline	ND< 1,850
2-Methylnaphthalene	ND< 738	4-Nitroaniline	ND< 1,850

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 738	2-Methylphenol	ND< 738
2-Chlorophenol	ND< 738	3&4-Methylphenol	ND< 738
2,4-Dichlorophenol	ND< 738	2,4-Dimethylphenol	ND< 738
2,6-Dichlorophenol	ND< 738	2-Nitrophenol	ND< 738
2,4,5-Trichlorophenol	ND< 1,850	4-Nitrophenol	ND< 1,850
2,4,6-Trichlorophenol	ND< 738	2,4-Dinitrophenol	ND< 1,850
Pentachlorophenol	ND< 1,850	4,6-Dinitro-2-methylphenol	ND< 1,850
4-Chloro-3-methylphenol	ND< 738	Benzoic acid	ND< 1,850

ELAP Number 10958

Method: EPA 8270C

Data File: S45503.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
 Bruce Hoogesteger: Technical Director

**All target  
 analytes should be  
 "J" or "UJ"**

**Semi -Volatile Analysis Report for Non-potable Water**Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1916

Lab Sample Number: 6337

Client Job Number: 40503

Field Location: CS-TP-01A

Date Sampled: 05/27/2009

Field ID Number: N/A

Date Received: 05/29/2009

Sample Type: Water

Date Analyzed: 06/08/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
Complex Hydrocarbon	N/A	17.4	28.6	N/A
Complex Hydrocarbon	N/A	17.85	11.8	N/A
Complex Hydrocarbon	N/A	18.37	33.2	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S45503.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

  
Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**





ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

### Semi-Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1916

Client Job Number: 40503

Lab Sample Number: 6338

Field Location: CS-TP-01B

Date Sampled: 05/27/2009

Field ID Number: N/A

Date Received: 05/29/2009

Sample Type: Soil

Date Analyzed: 06/08/2009

Date Reissued: 10/07/2010

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 660	Dibenz (a,h) anthracene	ND< 660
Anthracene	ND< 660	Fluoranthene	1,300
Benzo (a) anthracene	J 602	Fluorene	ND< 660
Benzo (a) pyrene	J 587	Indeno (1,2,3-cd) pyrene	J 468
Benzo (b) fluoranthene	756	Naphthalene	ND< 660
Benzo (g,h,i) perylene	J 536	Phenanthrene	J 452
Benzo (k) fluoranthene	J 422	Pyrene	965
Chrysene	674	Acenaphthylene	ND< 660
Diethyl phthalate	ND< 660	1,2-Dichlorobenzene	ND< 660
Dimethyl phthalate	ND< 1,650	1,3-Dichlorobenzene	ND< 660
Butylbenzylphthalate	988	1,4-Dichlorobenzene	ND< 660
Di-n-butyl phthalate	ND< 660	1,2,4-Trichlorobenzene	ND< 660
Di-n-octylphthalate	ND< 660	Nitrobenzene	ND< 660
Bis (2-ethylhexyl) phthalate	J 577	2,4-Dinitrotoluene	ND< 660
2-Chloronaphthalene	ND< 660	2,6-Dinitrotoluene	ND< 660
Hexachlorobenzene	ND< 660	Bis (2-chloroethyl) ether	ND< 660
Hexachloroethane	ND< 660	Bis (2-chloroisopropyl) ether	ND< 660
Hexachlorocyclopentadiene	ND< 660	Bis (2-chloroethoxy) methan	ND< 660
Hexachlorobutadiene	ND< 660	4-Bromophenyl phenyl ether	ND< 660
N-Nitroso-di-n-propylamine	ND< 660	4-Chlorophenyl phenyl ether	ND< 660
N-Nitrosodiphenylamine	ND< 660	Benzidine	ND< 1,650
N-Nitrosodimethylamine	ND< 660	3,3'-Dichlorobenzidine	ND< 660
Isophorone	ND< 660	4-Chloroaniline	ND< 660
Benzyl alcohol	ND< 1,650	2-Nitroaniline	ND< 1,650
Dibenzofuran	ND< 660	3-Nitroaniline	ND< 1,650
2-Methylnapthalene	ND< 660	4-Nitroaniline	ND< 1,650

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 660	2-Methylphenol	ND< 660
2-Chlorophenol	ND< 660	3&4-Methylphenol	ND< 660
2,4-Dichlorophenol	ND< 660	2,4-Dimethylphenol	ND< 660
2,6-Dichlorophenol	ND< 660	2-Nitrophenol	ND< 660
2,4,5-Trichlorophenol	ND< 1,650	4-Nitrophenol	ND< 1,650
2,4,6-Trichlorophenol	ND< 660	2,4-Dinitrophenol	ND< 1,650
Pentachlorophenol	ND< 1,650	4,6-Dinitro-2-methylphenol	ND< 1,650
4-Chloro-3-methylphenol	ND< 660	Benzoic acid	ND< 1,650

ELAP Number 10958

Method: EPA 8270C

Data File: S45504.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**

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091916r2.xls



**Semi -Volatile Analysis Report for Non-potable Water****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-1916**Lab Sample Number:** 6338**Client Job Number:** 40503**Field Location:** CS-TP-01B**Date Sampled:** 05/27/2009**Field ID Number:** N/A**Date Received:** 05/29/2009**Sample Type:** Water**Date Analyzed:** 06/08/2009

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / L</b>	<b>Percent Fit</b>
Complex Hydrocarbon	N/A	4.46	10.7	N/A
Complex Hydrocarbon	N/A	14.90	19.2	N/A
Complex Hydrocarbon	N/A	17.05	12.6	N/A
Complex Hydrocarbon	N/A	17.40	53.9	N/A
Complex Hydrocarbon	N/A	17.99	21.3	N/A
Complex Hydrocarbon	N/A	18.37	69.7	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S45504.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

**All target  
analytes should be  
"J" or "UJ"**

Signature:

  
Bruce Hoogesteger: Technical Director

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091916S2.XLS



### Semi-Volatile Analysis Report for Soils/Solids/Sludges

 Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1916

Lab Sample Number: Soil PB 6/4 ABN

Client Job Number: 40503

Field Location: N/A

Date Sampled: N/A

Field ID Number: N/A

Date Received: N/A

Sample Type: Soil

Date Analyzed: 06/08/2009

Date Reissued: 06/18/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 286	Dibenz (a,h) anthracene	ND< 286
Anthracene	ND< 286	Fluoranthene	ND< 286
Benzo (a) anthracene	ND< 286	Fluorene	ND< 286
Benzo (a) pyrene	ND< 286	Indeno (1,2,3-cd) pyrene	ND< 286
Benzo (b) fluoranthene	ND< 286	Naphthalene	ND< 286
Benzo (g,h,i) perylene	ND< 286	Phenanthrene	ND< 286
Benzo (k) fluoranthene	ND< 286	Pyrene	ND< 286
Chrysene	ND< 286	Acenaphthylene	ND< 286
Diethyl phthalate	ND< 286	1,2-Dichlorobenzene	ND< 286
Dimethyl phthalate	ND< 714	1,3-Dichlorobenzene	ND< 286
Butylbenzylphthalate	ND< 286	1,4-Dichlorobenzene	ND< 286
Di-n-butyl phthalate	ND< 286	1,2,4-Trichlorobenzene	ND< 286
Di-n-octylphthalate	ND< 286	Nitrobenzene	ND< 286
Bis (2-ethylhexyl) phthalate	ND< 286	2,4-Dinitrotoluene	ND< 286
2-Chloronaphthalene	ND< 286	2,6-Dinitrotoluene	ND< 286
Hexachlorobenzene	ND< 286	Bis (2-chloroethyl) ether	ND< 286
Hexachloroethane	ND< 286	Bis (2-chloroisopropyl) ether	ND< 286
Hexachlorocyclopentadiene	ND< 286	Bis (2-chloroethoxy) methan	ND< 286
Hexachlorobutadiene	ND< 286	4-Bromophenyl phenyl ether	ND< 286
N-Nitroso-di-n-propylamine	ND< 286	4-Chlorophenyl phenyl ether	ND< 286
N-Nitrosodiphenylamine	ND< 286	Benzidine	ND< 714
N-Nitrosodimethylamine	ND< 286	3,3'-Dichlorobenzidine	ND< 286
Isophorone	ND< 286	4-Chloroaniline	ND< 286
Benzyl alcohol	ND< 714	2-Nitroaniline	ND< 714
Dibenzofuran	ND< 286	3-Nitroaniline	ND< 714
2-Methylnaphthalene	ND< 286	4-Nitroaniline	ND< 714

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 286	2-Methylphenol	ND< 286
2-Chlorophenol	ND< 286	3&4-Methylphenol	ND< 286
2,4-Dichlorophenol	ND< 286	2,4-Dimethylphenol	ND< 286
2,6-Dichlorophenol	ND< 286	2-Nitrophenol	ND< 286
2,4,5-Trichlorophenol	ND< 714	4-Nitrophenol	ND< 714
2,4,6-Trichlorophenol	ND< 286	2,4-Dinitrophenol	ND< 714
Pentachlorophenol	ND< 714	4,6-Dinitro-2-methylphenol	ND< 714
4-Chloro-3-methylphenol	ND< 286	Benzoic acid	ND< 714

ELAP Number 10958

Method: EPA 8270C

Data File: S45500.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
 Bruce Hoogesteger: Technical Director





**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1916

**Lab Sample Number:** 6337

**Client Job Number:** 40503

**Field Location:** CS-TP-01A

**Field ID Number:** N/A

**Sample Type:** Soil

**Date Sampled:** 05/27/2009

**Date Received:** 05/29/2009

**Date Analyzed:** 06/08/2009

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.0732
Aroclor 1221	ND< 0.0732
Aroclor 1232	ND< 0.0732
Aroclor 1242	ND< 0.0732
Aroclor 1248	ND< 0.0732
Aroclor 1254	ND< 0.0732
Aroclor 1260	ND< 0.0732

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
mg / Kg = milligram per Kilogram

**All target  
analytes should be  
"J" or "UJ"**

Signature: Bruce Hoogesteger  
Bruce Hoogesteger: Technical Director



**PCB Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-1916

Lab Sample Number: 6338

Client Job Number: 40503

Field Location: CS-TP-01B

Date Sampled: 05/27/2009

Field ID Number: N/A

Date Received: 05/29/2009

Sample Type: Soil

Date Analyzed: 06/08/2009

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.0655
Aroclor 1221	ND< 0.0655
Aroclor 1232	ND< 0.0655
Aroclor 1242	ND< 0.0655
Aroclor 1248	ND< 0.0655
Aroclor 1254	ND< 0.0655
Aroclor 1260	ND< 0.0655

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect

mg / Kg = milligram per Kilogram

Signature:

  
Bruce Hoogesteger: Technical Director**All target  
analytes should be  
"J" or "UJ"**

**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-1916

**Lab Sample Number:** Soil PB LL 6/8

**Client Job Number:** 40503

**Field Location:** N/A

**Date Sampled:** N/A

**Field ID Number:** N/A

**Date Received:** N/A

**Sample Type:** Soil

**Date Analyzed:** 06/08/2009

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.0286
Aroclor 1221	ND< 0.0286
Aroclor 1232	ND< 0.0286
Aroclor 1242	ND< 0.0286
Aroclor 1248	ND< 0.0286
Aroclor 1254	ND< 0.0286
Aroclor 1260	ND< 0.0286

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect

mg / Kg = milligram per Kilogram

Signature:



Bruce Hoogesteger: Technical Director





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Client: Lu Engineers

Lab Project No.: 09-1916

Client Job Site: Clarkson ERP Site

Lab Sample No.: 6337

Client Job No.: 40503

Sample Type: Soil

Field Location: CS-TP-01A

Date Sampled: 05/27/2009

Field ID No.: N/A

Date Received: 05/29/2009

## Laboratory Report for TAL Metals Analysis in Solid

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	06/09/2009	SW846 6010	7860
Antimony	06/09/2009	SW846 6010	<14.8
Arsenic	06/09/2009	SW846 6010	15.2
Barium	06/09/2009	SW846 6010	1450
Beryllium	06/09/2009	SW846 6010	<1.23
Cadmium	06/09/2009	SW846 6010	<1.23
Calcium	06/09/2009	SW846 6010	7500
Chromium	06/09/2009	SW846 6010	46.9
Cobalt	06/09/2009	SW846 6010	6.24
Copper	06/09/2009	SW846 6010	237
Iron	06/09/2009	SW846 6010	44800
Lead	06/09/2009	SW846 6010	2040
Magnesium	06/09/2009	SW846 6010	3840
Manganese	06/09/2009	SW846 6010	1360
Mercury	06/10/2009	SW846 7471	26.5
Nickel	06/09/2009	SW846 6010	20.5
Potassium	06/09/2009	SW846 6010	2410
Selenium	06/09/2009	SW846 6010	5.10
Silver	06/09/2009	SW846 6010	18.0
Sodium	06/09/2009	SW846 6010	2080
Thallium	06/09/2009	SW846 6010	<1.48
Vanadium	06/09/2009	SW846 6010	30.7
Zinc	06/09/2009	SW846 6010	294

ELAP ID No.:10958

Comments:

Approved By: Valm Miller for:

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

**Client:** Lu Engineers

**Lab Project No.:** 09-1916

**Client Job Site:** Clarkson ERP Site

**Lab Sample No.:** 6338

**Client Job No.:** 40503

**Sample Type:** Soil

**Field Location:** CS-TP-01B

**Date Sampled:** 05/27/2009

**Field ID No.:** N/A

**Date Received:** 05/29/2009

**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	06/09/2009	SW846 6010	6330
Antimony	06/09/2009	SW846 6010	<8.41
Arsenic	06/09/2009	SW846 6010	9.54
Barium	06/09/2009	SW846 6010	1290
Beryllium	06/09/2009	SW846 6010	<0.700
Cadmium	06/09/2009	SW846 6010	<0.700
Calcium	06/09/2009	SW846 6010	4560
Chromium	06/09/2009	SW846 6010	35.3
Cobalt	06/09/2009	SW846 6010	4.45
Copper	06/09/2009	SW846 6010	454
Iron	06/09/2009	SW846 6010	23700
Lead	06/09/2009	SW846 6010	2070
Magnesium	06/09/2009	SW846 6010	1850
Manganese	06/09/2009	SW846 6010	447
Mercury	06/10/2009	SW846 7471	56.8
Nickel	06/09/2009	SW846 6010	17.4
Potassium	06/09/2009	SW846 6010	1870
Selenium	06/09/2009	SW846 6010	<0.700
Silver	06/09/2009	SW846 6010	3.34
Sodium	06/09/2009	SW846 6010	1790
Thallium	06/09/2009	SW846 6010	<0.841
Vanadium	06/09/2009	SW846 6010	20.7
Zinc	06/09/2009	SW846 6010	221

ELAP ID No.:10958

Comments:

Approved By:

  
 Bruce Hoogesteger, Technical Director

 All target  
 analytes should be  
 "J" or "UJ"

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional sample information, including compliance with sample condition requirements upon receipt.

File ID:091916.xls

## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CS-TP-01A

Lab Name: AES, Inc.Contract: ParadigmLab Code: AESCase No.: PA0902

SAS No.: \_\_\_\_\_

SDG No.: CS-TP-01AMatrix (soil/water): SOILLab Sample ID: 090602006-001ASample wt/vol: 10.0 (g/mL) gLab File ID: A1708% Moisture: 60.7Date Received: 6/2/09Extraction: (Type) PFEEXDate Extracted: 6/2/2009Concentrated Extract Volume: 10000 (uL)Date Analyzed: 6/4/09Injection Volume: 1.0 (uL)Dilution Factor: 1.0GPC Cleanup: (Y/N) N pH: 7.5Sulfur Cleanup: (Y/N) Y

## CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg)	ug/Kg	Q
319-84-6	alpha-BHC		4.3	U
319-85-7	beta-BHC		4.3	U
319-86-8	delta-BHC		4.3	U
58-89-9	gamma-BHC (Lindane)		4.3	U
76-44-8	Heptachlor		4.3	U
309-00-2	Aldrin		4.3	U
1024-57-3	Heptachlor epoxide		4.3	U
959-98-8	Endosulfan I		4.3	U
60-57-1	Dieldrin		15	
72-55-9	4,4'-DDE		35	P
72-20-8	Endrin		17	P
33213-65-9	Endosulfan II		8.4	U
72-54-8	4,4'-DDD		320	
1031-07-8	Endosulfan sulfate		8.4	U
50-29-3	4,4'-DDT		140	
72-43-5	Methoxychlor		43	U
53494-70-5	Endrin ketone		8.4	U
7421-93-4	Endrin aldehyde		8.4	U
5103-71-9	alpha-Chlordane	12.1	4.3	U
5103-74-2	gamma-Chlordane		21	
8001-35-2	Toxaphene		83.97	U

All target  
analytes should be  
"J" or "UJ"

## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CS-TP-01B

Lab Name: AES, Inc.Contract: ParadigmLab Code: AESCase No.: PA0902

SAS No.: \_\_\_\_\_

SDG No.: CS-TP-01AMatrix (soil/water): SOILLab Sample ID: 090602006-002ASample wt/vol: 10.0 (g/mL) gLab File ID: A1725% Moisture: 63.7Date Received: 6/2/09Extraction: (Type) PFXDate Extracted: 6/2/2009Concentrated Extract Volume: 10000 (uL)Date Analyzed: 6/5/09Injection Volume: 1.0 (uL)Dilution Factor: 2.0GPC Cleanup: (Y/N) N pH: 7.58Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS:		
		(ug/L or ug/Kg)	ug/Kg	Q
319-84-6	alpha-BHC		9.4	U
319-85-7	beta-BHC		9.4	U
319-86-8	delta-BHC		9.4	U
58-89-9	gamma-BHC (Lindane)		9.4	U
76-44-8	Heptachlor		9.4	U
309-00-2	Aldrin		9.4	U
1024-57-3	Heptachlor epoxide		9.4	U
959-98-8	Endosulfan I		9.4	U
60-57-1	Dieldrin		19	J
72-55-9	4,4'-DDE		41	
72-20-8	Endrin		18	JP
33213-65-9	Endosulfan II		18	U
72-54-8	4,4'-DDD		340	
1031-07-8	Endosulfan sulfate		18	UJ
50-29-3	4,4'-DDT		120	
72-43-5	Methoxychlor		94	U
53494-70-5	Endrin ketone		18	U
7421-93-4	Endrin aldehyde		18	U
5103-71-9	alpha-Chlordane		24.3 9.4	U
5103-74-2	gamma-Chlordane		27	
8001-35-2	Toxaphene		181.8	U

All target  
analytes should be  
"J" or "UJ"

## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK01

Lab Name: AES, Inc.

Contract: Paradigm

Lab Code: AES

Case No.: PA0902

SAS No.:

SDG No.: CS-TP-01A

Matrix (soil/water): SOIL

Lab Sample ID: MB-21258

Sample wt/vol: 10.0 (g/mL) g

Lab File ID: A1706

% Moisture:

Date Received:

Extraction: (Type) PFEX

Date Extracted: 6/2/2009

Concentrated Extract Volume: 10000 (uL)

Date Analyzed: 6/4/09

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

Sulfur Cleanup: (Y/N) Y

## CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg)	ug/Kg	Q
319-84-6	alpha-BHC		1.7	U
319-85-7	beta-BHC		1.7	U
319-86-8	delta-BHC		1.7	U
58-89-9	gamma-BHC (Lindane)		1.7	U
76-44-8	Heptachlor		1.7	U
309-00-2	Aldrin		1.7	U
1024-57-3	Heptachlor epoxide		1.7	U
959-98-8	Endosulfan I		1.7	U
60-57-1	Dieldrin		3.3	U
72-55-9	4,4'-DDE		3.3	U
72-20-8	Endrin		3.3	U
33213-65-9	Endosulfan II		3.3	U
72-54-8	4,4'-DDD		3.3	U
1031-07-8	Endosulfan sulfate		3.3	U
50-29-3	4,4'-DDT		3.3	U
72-43-5	Methoxychlor		17	U
53494-70-5	Endrin ketone		3.3	U
7421-93-4	Endrin aldehyde		3.3	U
5103-71-9	alpha-Chlordane		1.7	U
5103-74-2	gamma-Chlordane		1.7	U
8001-35-2	Toxaphene		33.00	U



## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CS-TP-01EMS

Lab Name: AES, Inc.Contract: ParadigmLab Code: AESCase No.: PA0902

SAS No.: \_\_\_\_\_

SDG No.: CS-TP-01AMatrix (soil/water): SOILLab Sample ID: 090602006-002AMSSample wt/vol: 10.0 (g/mL) gLab File ID: A1726% Moisture: 63.7Date Received: 6/2/09Extraction: (Type) PPEXDate Extracted: 6/2/2009Concentrated Extract Volume: 10000 (uL)Date Analyzed: 6/5/09Injection Volume: 1.0 (uL)Dilution Factor: 2.0GPC Cleanup: (Y/N) N pH: 7.58Sulfur Cleanup: (Y/N) Y

## CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg)	ug/Kg	Q
319-84-6	alpha-BHC	9.4	U	
319-85-7	beta-BHC	9.4	U	
319-86-8	delta-BHC	9.4	U	
58-89-9	gamma-BHC (Lindane)	83		
76-44-8	Heptachlor	96		
309-00-2	Aldrin	100		
1024-57-3	Heptachlor epoxide	9.4	U	
959-98-8	Endosulfan I	9.4	U	
60-57-1	Dieldrin	200		
72-55-9	4,4'-DDE	86	P	
72-20-8	Endrin	180		
33213-65-9	Endosulfan II	18	U	
72-54-8	4,4'-DDD	820		
1031-07-8	Endosulfan sulfate	18	U	
50-29-3	4,4'-DDT	290		
72-43-5	Methoxychlor	94	U	
53494-70-5	Endrin ketone	18	U	
7421-93-4	Endrin aldehyde	18	U	
5103-71-9	alpha-Chlordane	9.4	U	
5103-74-2	gamma-Chlordane	48		
8001-35-2	Toxaphene	181.8	U	

All target  
analytes should be  
"J" or "UJ"

## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CS-TP-01BMSD

Lab Name: AES, Inc.Contract: ParadigmLab Code: AESCase No.: PA0902

SAS No.: \_\_\_\_\_

SDG No.: CS-TP-01AMatrix (soil/water): SOILLab Sample ID: 090602006-002AMSDSample wt/vol: 10.0 (g/mL) gLab File ID: A1727% Moisture: 63.7Date Received: 6/2/09Extraction: (Type) PPEXDate Extracted: 6/2/2009Concentrated Extract Volume: 10000 (uL)Date Analyzed: 6/5/09Injection Volume: 1.0 (uL)Dilution Factor: 2.0GPC Cleanup: (Y/N) N pH: 7.58Sulfur Cleanup: (Y/N) Y

## CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg)	ug/Kg	Q
319-84-6	alpha-BHC		9.4	U
319-85-7	beta-BHC		9.4	U
319-86-8	delta-BHC		9.4	U
58-89-9	gamma-BHC (Lindane)		89	
76-44-8	Heptachlor		89	
309-00-2	Aldrin		110	
1024-57-3	Heptachlor epoxide		9.4	U
959-98-8	Endosulfan I		9.4	U
60-57-1	Dieldrin		190	
72-55-9	4,4'-DDE		93	
72-20-8	Endrin		200	
33213-65-9	Endosulfan II		18	U
72-54-8	4,4'-DDD		610	
1031-07-8	Endosulfan sulfate		18	U J
50-29-3	4,4'-DDT		320	
72-43-5	Methoxychlor		94	U
53494-70-5	Endrin ketone		18	U
7421-93-4	Endrin aldehyde		18	U
5103-71-9	alpha-Chlordane		9.4	U
5103-74-2	gamma-Chlordane		44	
8001-35-2	Toxaphene		181.8	U

All target  
analytes should be  
"J" or "UJ"

## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PMSB01

Lab Name: AES, Inc.

Contract: Paradigm

Lab Code: AES

Case No.: PA0902

SAS No.:

SDG No.: CS-TP-01A

Matrix (soil/water): SOIL

Lab Sample ID: LCS-21258

Sample wt/vol: 10.0 (g/mL) g

Lab File ID: A1707

% Moisture:

Date Received:

Extraction: (Type) PFEX

Date Extracted: 6/2/2009

Concentrated Extract Volume: 10000 (uL)

Date Analyzed: 6/4/09

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

Sulfur Cleanup: (Y/N) Y

## CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg)	ug/Kg	Q
319-84-6	alpha-BHC		1.7	U
319-85-7	beta-BHC		1.7	U
319-86-8	delta-BHC		1.7	U
58-89-9	gamma-BHC (Lindane)		53	
76-44-8	Heptachlor		49	
309-00-2	Aldrin		56	
1024-57-3	Heptachlor epoxide		1.7	U
959-98-8	Endosulfan I		1.7	U
60-57-1	Dieldrin		120	
72-55-9	4,4'-DDE		3.3	U
72-20-8	Endrin		110	
33213-65-9	Endosulfan II		3.3	U
72-54-8	4,4'-DDD		3.3	U
1031-07-8	Endosulfan sulfate		3.3	U
50-29-3	4,4'-DDT		110	
72-43-5	Methoxychlor		17	U
53494-70-5	Endrin ketone		3.3	U
7421-93-4	Endrin aldehyde		3.3	U
5103-71-9	alpha-Chlordane		1.7	U
5103-74-2	gamma-Chlordane		1.7	U
8001-35-2	Toxaphene		33.00	U

B

# CHAIN OF CUSTODY

## PARADIGM ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue  
Rochester, NY 14608  
(585) 647-2530 • (800) 724-1997  
FAX: (585) 647-3311

REPORT TO:

INVOICE TO:

PROJECT NAME/SITE NAME:

Clarkson ERP Site

COMPANY:	L.V. Engineers	ADDRESS:	2230 V Penfield Rd.	CITY:	Penfield	STATE:	NY	ZIP:	14526
PHONE:	377-1450	FAX:	377-1266	ATTN:	Greg Andrews	PHONE:		FAX:	
COMMENTS:	PD # 088410 ASP Cat B. Deliverables w/EDD								

REQUESTED ANALYSIS

LAB PROJECT #:	09-1916	CLIENT PROJECT #:	40503
TURNAROUND TIME: (WORKING DAYS)		STD	
QUOTE #:		MS042409A	
1		2	
3		5	
OTHER		X	

DATE	TIME	C O M P O S I T E	G R A B	SAMPLE LOCATION/FIELD ID	M A T R I X	C O N T A I N E R S	8260 TCL VOC	8270 TCL VOC	TAL Metals	PCBs	REMARKS	PARADIGM LAB SAMPLE NUMBER
1 5/27/09	13:17		X	CS-TP-01A	Soil	1	X	X	X	X	CRC per GA 5/29/09	6337
2 5/27/09	13:17		X	CS-TP-01B	↓	↓	X	X	X	X	1000 paraffin acet	6338
3											pesticide, TICs to	
4											1004 vs 1004A, 1004B vs 1004C	
5											on 1004A, 1004B, 1004C, 1004D	
6											30 TICS as per client	
7											history ERM G11	
8												
9												
10												

\*\*LAB USE ONLY BELOW THIS LINE\*\*

Sample Condition: Per NELAC/ELAP 210/241/242/243/244

Receipt Parameter	NELAC Compliance
Container Type:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Comments:	
Preservation:	N/A
Y <input type="checkbox"/> N <input type="checkbox"/>	
Holding Time:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Comments:	
Temperature:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
Comments:	10°Ciced = temp from sample

5/27/09 13:17  
5/29/09 13:34  
5/29/09 13:34  
5/29/09 1735

P.L.F.

Total Cost:

### Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Clarkson ERP

Lab Project Number: 09-2352

Lab Sample Number: 7578

Client Job Number: 40503

Field Location: CS-TP-10-08

Date Sampled: 07/01/2009

Field ID Number: N/A

Date Received: 07/02/2009

Sample Type: Soil

Date Analyzed: 07/08/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 4.20
Bromomethane	ND< 4.20 <i>us</i>
Bromoform	ND< 10.5 <i>us</i>
Carbon Tetrachloride	ND< 10.5
Chloroethane	ND< 4.20
Chloromethane	ND< 4.20
2-Chloroethyl vinyl Ether	ND< 21.0
Chloroform	ND< 4.20
Dibromochloromethane	ND< 4.20
1,1-Dichloroethane	ND< 4.20
1,2-Dichloroethane	ND< 4.20
1,1-Dichloroethene	ND< 4.20
cis-1,2-Dichloroethene	ND< 4.20
trans-1,2-Dichloroethene	ND< 4.20
1,2-Dichloropropane	ND< 4.20
cis-1,3-Dichloropropene	ND< 4.20
trans-1,3-Dichloropropene	ND< 4.20
Methylene chloride	ND< 10.5 <i>us</i>
1,1,2,2-Tetrachloroethane	<del>ND&lt; 4.20</del> <i>6.41</i>
Tetrachloroethene	ND< 4.20
1,1,1-Trichloroethane	ND< 4.20
1,1,2-Trichloroethane	<del>ND&lt; 4.20</del> <i>14.5</i>
Trichloroethene	ND< 4.20
Trichlorofluoromethane	ND< 4.20
Vinyl chloride	ND< 4.20

Aromatics	Results in ug / Kg
Benzene	ND< 4.20
Chlorobenzene	ND< 4.20
Ethylbenzene	<del>ND&lt; 4.20</del> <i>1.05 J</i>
Toluene	ND< 4.20
m,p-Xylene	J 3.25
o-Xylene	ND< 4.20 <i>us</i>
Styrene	ND< 10.5 <i>us</i>
1,2-Dichlorobenzene	ND< 10.5
1,3-Dichlorobenzene	ND< 10.5
1,4-Dichlorobenzene	ND< 4.20

Ketones	Results in ug / Kg
Acetone	32.0 <i>J</i>
2-Butanone	ND< 21.0
2-Hexanone	<del>ND&lt; 10.5</del> <i>71.6 B</i>
4-Methyl-2-pentanone	ND< 10.5

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 4.20
Vinyl acetate	ND< 10.5

ELAP Number 10958

Method: EPA 8260B

Data File: V67012.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

Signature:

  
Bruce Hoogesteger, Technical Director

**Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)**Client: **Lu Engineers**

Client Job Site: Clarkson ERP

Lab Project Number: 09-2352

Client Job Number: 40503

Lab Sample Number: 7578

Field Location: CS-TP-10-08

Date Sampled: 07/01/2009

Field ID Number: N/A

Date Received: 07/02/2009

Sample Type: Soil

Date Analyzed: 07/08/2009

Aromatics	Results in ug / Kg	Aromatics	Results in ug / Kg
n-Butylbenzene	ND< 21.0 10.85	1,2,4-Trimethylbenzene	15.5
sec-Butylbenzene	J 2.66	1,3,5-Trimethylbenzene	9.41
tert-Butylbenzene	ND< 10.5		
n-Propylbenzene	5.83	<b>Miscellaneous</b>	
Isopropylbenzene	ND< 21.0 4.205	Methyl tert-butyl Ether	ND< 4.20
p-Isopropyltoluene	ND< 21.0 5.795		
Naphthalene	J 7.09 8		

ELAP Number 10958 Method: EPA 8260B Data File: V67012.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP

**Lab Project Number:** 09-2352

**Client Job Number:** 40503

**Lab Sample Number:** 7578

**Field Location:** CS-TP-10-08

**Date Sampled:** 07/01/2009

**Field ID Number:** N/A

**Date Received:** 07/02/2009

**Sample Type:** Soil

**Date Analyzed:** 07/08/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
Alkyl Hydrocarbon	N/A	6.158	37.1	N/A
Alkyl Hydrocarbon	N/A	6.30	27.5	N/A
Alkyl Hydrocarbon	N/A	6.73	90.9	N/A
Alkyl Hydrocarbon	N/A	6.87	21.0	N/A
Alkyl Hydrocarbon	N/A	7.20	27.5	N/A
Alkyl Hydrocarbon	N/A	7.51	36.5	N/A
Alkyl Hydrocarbon	N/A	7.78	63.4	N/A
Alkyl Hydrocarbon	N/A	7.90	46.4	N/A
Alkyl Hydrocarbon	N/A	8.63	47.8	N/A
Alkyl Hydrocarbon	N/A	8.85	52.0	N/A
Alkyl Hydrocarbon	N/A	8.98	40.3	N/A
Complex Hydrocarbon	N/A	9.18	33.4	N/A
Alkyl Hydrocarbon	N/A	9.39	19.1	N/A
Alkyl Benzene	N/A	9.99	36.5	N/A
Alkyl Hydrocarbon	N/A	10.11	21.0	N/A
Alkyl Hydrocarbon	N/A	10.44	32.9	N/A
Alkyl Benzene	N/A	10.47	21.4	N/A
Alkyl Benzene	N/A	10.87	38.6	N/A
Alkyl Benzene	N/A	10.97	83.5	N/A
Alkyl Hydrocarbon	N/A	11.13	78.7	N/A
Alkyl Benzene	N/A	11.19	27.9	N/A
Alkyl Benzene	N/A	11.29	19.7	N/A
Alkyl Benzene	N/A	11.32	18.7	N/A
Alkyl Benzene	N/A	11.40	27.5	N/A
Complex Hydrocarbon	N/A	11.52	40.5	N/A
Complex Hydrocarbon	N/A	11.68	29.2	N/A
Alkyl Hydrocarbon	N/A	11.80	19.7	N/A
Alkyl Benzene	N/A	11.91	48.3	N/A
Alkyl Benzene	N/A	12.00	25.4	N/A
Complex Hydrocarbon	N/A	12.37	101	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V67012.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

092352V2.XLS



### Semi-Volatile Analysis Report for Soils/Solids/Sludges

 Client: **Lu Engineers**

Client Job Site: Clarkson - ERP

Lab Project Number: 09-2352

Lab Sample Number: 7578

Client Job Number: 40503

Field Location: CS-TP-10-08

Date Sampled: 07/01/2009

Field ID Number: N/A

Date Received: 07/02/2009

Sample Type: Soil

Date Analyzed: 07/07/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 332	Dibenz (a,h) anthracene	ND< 332
Anthracene	ND< 332	Fluoranthene	ND< 332
Benzo (a) anthracene	ND< 332	Fluorene	ND< 332
Benzo (a) pyrene	ND< 332	Indeno (1,2,3-cd) pyrene	ND< 332
Benzo (b) fluoranthene	ND< 332	Naphthalene	ND< 332
Benzo (g,h,i) perylene	ND< 332	Phenanthrene	ND< 332
Benzo (k) fluoranthene	ND< 332	Pyrene	ND< 332
Chrysene	ND< 332	Acenaphthylene	ND< 332
Diethyl phthalate	ND< 332	1,2-Dichlorobenzene	ND< 332
Dimethyl phthalate	ND< 332 234 J	1,3-Dichlorobenzene	ND< 332
Butylbenzylphthalate	ND< 332	1,4-Dichlorobenzene	ND< 332
Di-n-butyl phthalate	ND< 332	1,2,4-Trichlorobenzene	ND< 332
Di-n-octylphthalate	ND< 332	Nitrobenzene	ND< 332
Bis (2-ethylhexyl) phthalate	ND< 332	2,4-Dinitrotoluene	ND< 332
2-Chloronaphthalene	ND< 332	2,6-Dinitrotoluene	ND< 332 630
Hexachlorobenzene	ND< 332	Bis (2-chloroethyl) ether	ND< 332
Hexachloroethane	ND< 332	Bis (2-chloroisopropyl) ether	ND< 332
Hexachlorocyclopentadiene	ND< 332	Bis (2-chloroethoxy) methan	ND< 332
Hexachlorobutadiene	ND< 332	4-Bromophenyl phenyl ether	ND< 332
N-Nitroso-di-n-propylamine	ND< 332 274 J	4-Chlorophenyl phenyl ether	ND< 332
N-Nitrosodiphenylamine	ND< 332	Benzidine	ND< 831
N-Nitrosodimethylamine	ND< 332	3,3'-Dichlorobenzidine	ND< 332
Isophorone	ND< 332	4-Chloroaniline	ND< 332
Benzyl alcohol	ND< 831	2-Nitroaniline	ND< 831
Dibenzofuran	ND< 332	3-Nitroaniline	ND< 831
2-Methylnaphthalene	ND< 332	4-Nitroaniline	ND< 831

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 332	2-Methylphenol	ND< 332
2-Chlorophenol	ND< 332	3&4-Methylphenol	ND< 332
2,4-Dichlorophenol	ND< 332	2,4-Dimethylphenol	ND< 332
2,6-Dichlorophenol	ND< 332	2-Nitrophenol	ND< 332
2,4,5-Trichlorophenol	ND< 831	4-Nitrophenol	ND< 831
2,4,6-Trichlorophenol	ND< 332	2,4-Dinitrophenol	ND< 831
Pentachlorophenol	ND< 831	4,6-Dinitro-2-methylphenol	ND< 831
4-Chloro-3-methylphenol	ND< 332	Benzoic acid	ND< 831

ELAP Number 10958

Method: EPA 8270C

Data File: S46035.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

Bruce Hoegesteger: Technical Director



**Semi -Volatile Analysis Report for Non-potable Water**

Client: **Lu Engineers**

Client Job Site: Clarkson - ERP

Lab Project Number: 09-2352

Client Job Number: 40503

Lab Sample Number: 7578

Field Location: CS-TP-10-08

Field ID Number: N/A

Date Sampled: 07/01/2009

Sample Type: ~~Water~~ Soil

Date Received: 07/02/2009

Date Analyzed: 07/07/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
None Found	N/A	N/A	ND< 10.0	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S46035.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

092352S2.XLS

*Handwritten signature/initials*

**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP

**Lab Project Number:** 09-2352

**Client Job Number:** 40503

**Lab Sample Number:** 7578

**Field Location:** CS-TP-10-08

**Date Sampled:** 07/01/2009

**Field ID Number:** N/A

**Date Received:** 07/02/2009

**Sample Type:** Soil

**Date Analyzed:** 07/07/2009

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.0333
Aroclor 1221	ND< 0.0333
Aroclor 1232	ND< 0.0333
Aroclor 1242	ND< 0.0333
Aroclor 1248	ND< 0.0333
Aroclor 1254	ND< 0.0333
Aroclor 1260	ND< 0.0333

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

092352P2.XLS



179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

**Client:** Lu Engineers

**Lab Project No.:** 09-2352

**Client Job Site:** Clarkson ERP

**Lab Sample No.:** 7578

**Client Job No.:** 40503

**Sample Type:** Soil

**Field Location:** CS-TP-10-08

**Date Sampled:** 07/01/2009

**Field ID No.:** N/A

**Date Received:** 07/02/2009

### Laboratory Report for Solid Waste Analysis

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Arsenic	07/10/2009	EPA 6010	6.11
Barium	07/10/2009	EPA 6010	229
Cadmium	07/10/2009	EPA 6010	0.770
Chromium	07/10/2009	EPA 6010	25.2
Lead	07/10/2009	EPA 6010	5.12
Mercury	07/10/2009	EPA 7471	0.0093
Selenium	07/10/2009	EPA 6010	<0.399
Silver	07/10/2009	EPA 6010	<0.798

ELAP ID No.:10958

Comments:

Approved By: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional sample information, including compliance with sample condition requirements upon receipt.

File ID:092352.XLS

# CHAIN OF CUSTODY



REPORT TO: INVOICE TO:

PROJECT NAME/SITE NAME:

Clarkson ERP

COMPANY: Lu Engineers		COMPANY: Same		LAB PROJECT #:	CLIENT PROJECT #:
ADDRESS: 2230 Penfield Rd.		ADDRESS:		09-2352	40503
CITY: Penfield	STATE: NY ZIP: 14526	CITY:	STATE:	TURNAROUND TIME: (WORKING DAYS)	
PHONE: 377-1450	FAX: 377-1266	PHONE:	FAX:		
ATTN: Laura Smith	ATTN:	RCRA Metals above per G. Andrusas per V. Miller 7/2 EAH 712			
COMMENTS: Category B ASP package needed for sample CS-TP-10-08 per V.M. REQUESTED ANALYSIS: 8260+STARS, 8270+STARS, TCLP Lead, Flashpoint, Paint filter test, 8260 TCL VOC+, 8270 TCL VOC+, PCBs		Quotation # 1 2 3 4 5 OTHER			

DATE	TIME	C O M P O S I T E	G R A B	SAMPLE LOCATION/FIELD ID	M A T R I X	C O N T A I N E R	REMARKS	PARADIGM LAB SAMPLE NUMBER
7/1/09	14:40		X	South tank pit	S	3	24-hr TAT	See 09-2340 for these two samples
2	15:00		X	north tank pit	S	3	24-hr TAT	
3	15:15		X	CS-TP-10-08	Soil	2	Std. turnaround	75 78
4								
5								
6								
7								
8				Samples hand delivered to lab so custody seals not necessary.				
9								
10								

LAB USE ONLY/BELOW THIS LINE

Sample Condition: Per NELAC/ELAP 210/241/242/243/244

Receipt Parameter NELAC Compliance

Comments:	Container Type:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Comments:	Preservation:	Y <input type="checkbox"/> N <input type="checkbox"/>
Comments:	Holding Time:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Comments:	Temperature:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>

Sampled By: Laura Smith	Date/Time: 7/1/09 15:37	Total Cost:
Requisitioned By: Laura Smith	Date/Time: 7/1/09 16:15	
Received By: [Signature]	Date/Time: 7/1/09 16:15	
Received @ Lab By: Elizabeth A. Honick	Date/Time: 7/2/09 11:40	

P.L.F.

pres. begun in field

### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers

**Client Job Site:** Clarkson

**Client Job Number:** 40503

**Field Location:** CS-PI-01

**Field ID Number:** N/A

**Sample Type:** Soil

**Lab Project Number:** 09-2377

**Lab Sample Number:** 7645

**Date Sampled:** 07/02/2009

**Date Received:** 07/06/2009

**Date Analyzed:** 07/09/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 50.2 <i>us</i>
Bromomethane	ND< 50.2 <i>us</i>
Bromoform	ND< 126 <i>us</i>
Carbon Tetrachloride	ND< 126 <i>us</i>
Chloroethane	ND< 50.2
Chloromethane	ND< 50.2
2-Chloroethyl vinyl Ether	ND< 251
Chloroform	ND< 50.2
Dibromochloromethane	ND< 50.2 <i>us</i>
1,1-Dichloroethane	ND< 50.2
1,2-Dichloroethane	ND< 50.2
1,1-Dichloroethene	ND< 50.2
cis-1,2-Dichloroethene	ND< 50.2
trans-1,2-Dichloroethene	ND< 50.2
1,2-Dichloropropane	ND< 50.2 <i>us</i>
cis-1,3-Dichloropropene	ND< 50.2 <i>us</i>
trans-1,3-Dichloropropene	ND< 50.2 <i>us</i>
Methylene chloride	ND< 126 <i>us</i>
1,1,2,2-Tetrachloroethane	ND< 50.2 <i>us</i>
Tetrachloroethene	ND< 50.2 <i>us</i>
1,1,1-Trichloroethane	ND< 50.2 <i>us</i>
1,1,2-Trichloroethane	ND< 50.2 <i>us</i>
Trichloroethene	ND< 50.2 <i>us</i>
Trichlorofluoromethane	ND< 50.2
Vinyl chloride	ND< 50.2

Aromatics	Results in ug / Kg
Benzene	ND< 50.2 <i>us</i>
Chlorobenzene	ND< 50.2 <i>us</i>
Ethylbenzene	283 <i>us</i>
Toluene	ND< 50.2 <i>us</i>
m,p-Xylene	1,060 <i>us</i>
o-Xylene	151 <i>us</i>
Styrene	ND< 126 <i>us</i>
1,2-Dichlorobenzene	ND< 126
1,3-Dichlorobenzene	ND< 126
1,4-Dichlorobenzene	ND< 50.2

Ketones	Results in ug / Kg
Acetone	ND< 251 <i>us</i>
2-Butanone	ND< 251
2-Hexanone	ND< 126 <i>us</i>
4-Methyl-2-pentanone	ND< 126 <i>us</i>

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 50.2
Vinyl acetate	ND< 126

ELAP Number 10958

Method: EPA 8260B

Data File: V67014.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

092377V9.XLS



### Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)

Client: Lu Engineers

Client Job Site: Clarkson

Client Job Number: 40503

Field Location: CS-PI-01

Field ID Number: N/A

Sample Type: Soil

Lab Project Number: 09-2377

Lab Sample Number: 7645

Date Sampled: 07/02/2009

Date Received: 07/06/2009

Date Analyzed: 07/09/2009

Aromatics	Results in ug / Kg	Aromatics	Results in ug / Kg
n-Butylbenzene	ND< 251	1,2,4-Trimethylbenzene	E 33,100
sec-Butylbenzene	1,720	1,3,5-Trimethylbenzene	E 12,700
tert-Butylbenzene	ND< 126		
n-Propylbenzene	4,100	<b>Miscellaneous</b>	
Isopropylbenzene	725	Methyl tert-butyl Ether	ND< 50.2
p-Isopropyltoluene	ND< 251		
Naphthalene	E 12,700 <i>BJ</i>		

ELAP Number 10958

Method: EPA 8260B

Data File: V67014.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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092377V9.XLS



### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Clarkson

**Client Job Number:** 40503

**Field Location:** CS-PI-01

**Field ID Number:** N/A

**Sample Type:** Soil

**Lab Project Number:** 09-2377

**Lab Sample Number:** 7645

**Date Sampled:** 07/02/2009

**Date Received:** 07/06/2009

**Date Analyzed:** 07/09/2009

**Date Reissued:** 07/23/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 1,270
Bromomethane	ND< 1,270 <i>u5</i>
Bromoform	ND< 3,180 <i>u5</i>
Carbon Tetrachloride	ND< 3,180
Chloroethane	ND< 1,270
Chloromethane	ND< 1,270
2-Chloroethyl vinyl Ether	ND< 6,360
Chloroform	ND< 1,270
Dibromochloromethane	ND< 1,270
1,1-Dichloroethane	ND< 1,270
1,2-Dichloroethane	ND< 1,270
1,1-Dichloroethene	ND< 1,270
cis-1,2-Dichloroethene	ND< 1,270
trans-1,2-Dichloroethene	ND< 1,270
1,2-Dichloropropane	ND< 1,270
cis-1,3-Dichloropropene	ND< 1,270
trans-1,3-Dichloropropene	ND< 1,270
Methylene chloride	ND< 3,180 <i>u5</i>
1,1,2,2-Tetrachloroethane	ND< 1,270
Tetrachloroethene	ND< 1,270
1,1,1-Trichloroethane	ND< 1,270
1,1,2-Trichloroethane	ND< 1,270
Trichloroethene	ND< 1,270
Trichlorofluoromethane	ND< 1,270
Vinyl chloride	ND< 1,270

Aromatics	Results in ug / Kg
Benzene	ND< 1,270
Chlorobenzene	ND< 1,270
Ethylbenzene	ND< 636
Toluene	ND< 636
m,p-Xylene	ND< 1,270 <i>u5</i>
o-Xylene	ND< 1,270 <i>u5</i>
Styrene	ND< 3,180 <i>u5</i>
1,2-Dichlorobenzene	ND< 3,180
1,3-Dichlorobenzene	ND< 3,180
1,4-Dichlorobenzene	ND< 1,270

Ketones	Results in ug / Kg
Acetone	B 8,090 <i>5</i>
2-Butanone	ND< 6,360
2-Hexanone	ND< 3,180
4-Methyl-2-pentanone	ND< 3,180

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 1,270
Vinyl acetate	ND< 3,180

ELAP Number 10958

Method: EPA 8260B

Data File: V67027.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
Bruce Hoogesteger, Technical Director

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092377w5



### Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)

Client: Lu Engineers

Client Job Site: Clarkson

Lab Project Number: 09-2377

Lab Sample Number: 7645

Client Job Number: 40503

Field Location: CS-PI-01

Date Sampled: 07/02/2009

Field ID Number: N/A

Date Received: 07/06/2009

Sample Type: Soil

Date Analyzed: 07/09/2009

Date Reissued: 07/23/2009

Aromatics	Results in ug / Kg	Aromatics	Results in ug / Kg
n-Butylbenzene	ND< 6,360	1,2,4-Trimethylbenzene	24,100
sec-Butylbenzene	ND< 1,270 <i>527 J</i>	1,3,5-Trimethylbenzene	4,280
tert-Butylbenzene	ND< 3,180		
n-Propylbenzene	1,510	Miscellaneous	
Isopropylbenzene	ND< 6,360	Methyl tert-butyl Ether	ND< 1,270
p-Isopropyltoluene	ND< 8,360 <i>544 J</i>		
Naphthalene	9,240 <i>BJ</i>		
ELAP Number 10958	Method: EPA 8260B	Data File: V67027.D	

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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092377w5



### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Clarkson

**Lab Project Number:** 09-2377

**Lab Sample Number:** 7645

**Client Job Number:** 40503

**Field Location:** CS-PI-01

**Date Sampled:** 07/02/2009

**Field ID Number:** N/A

**Date Received:** 07/06/2009

**Sample Type:** Soil

**Date Analyzed:** 07/09/2009

**Date Reissued:** 07/23/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
Alkyl Benzene	N/A	9.659	5,350	N/A
Alkyl Benzene	N/A	9.98	5,980	N/A
Alkyl Benzene	N/A	10.65	7,760	N/A
Alkyl Benzene	N/A	10.87	8,460	N/A
Alkyl Benzene	N/A	10.90	9,070	N/A
Alkyl Benzene	N/A	10.98	22,600	N/A
Alkyl Hydrocarbon	N/A	11.12	5,660	N/A
Alkyl Benzene	N/A	11.18	5,060	N/A
Alkyl Benzene	N/A	11.28	9,800	N/A
Alkyl Benzene	N/A	11.32	6,680	N/A
Alkyl Benzene	N/A	11.40	17,700	N/A
Complex Hydrocarbon	N/A	11.52	11,800	N/A
Alkyl Benzene	N/A	11.74	3,630	N/A
Alkyl Benzene	N/A	11.85	10,100	N/A
Alkyl Benzene	N/A	11.91	16,000	N/A
Alkyl Benzene	N/A	12.00	6,680	N/A
Alkyl Benzene	N/A	12.07	4,710	N/A
Complex Hydrocarbon	N/A	12.19	14,300	N/A
Alkyl Benzene	N/A	12.26	5,220	N/A
Alkyl Benzene	N/A	12.32	5,890	N/A
Complex Hydrocarbon	N/A	12.37	17,600	N/A
Alkyl Benzene	N/A	12.48	5,730	N/A
Complex Hydrocarbon	N/A	12.66	6,490	N/A
Complex Hydrocarbon	N/A	12.72	8,720	N/A
Complex Hydrocarbon	N/A	12.77	13,500	N/A
Complex Hydrocarbon	N/A	12.88	4,580	N/A
Complex Hydrocarbon	N/A	13.22	6,270	N/A
Complex Hydrocarbon	N/A	13.42	5,950	N/A
Complex Hydrocarbon	N/A	13.60	7,320	N/A
Complex Hydrocarbon	N/A	13.80	3,400	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V67027.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

092377w5



### Semi-Volatile Analysis Report for Soils/Solids/Sludges

Client: **Lu Engineers**

Client Job Site: Clarkson

Lab Project Number: 09-2377

Lab Sample Number: 7645

Client Job Number: 40503

Field Location: CS-PI-01

Date Sampled: 07/02/2009

Field ID Number: N/A

Date Received: 07/06/2009

Sample Type: Soil

Date Analyzed: 07/09/2009

Date Reissued: 07/21/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 3,110	Dibenz (a,h) anthracene	ND< 3,110
Anthracene	ND< 3,110	Fluoranthene	ND< 3,110
Benzo (a) anthracene	ND< 3,110	Fluorene	ND< 3,110
Benzo (a) pyrene	ND< 3,110	Indeno (1,2,3-cd) pyrene	ND< 3,110
Benzo (b) fluoranthene	ND< 3,110	Naphthalene	20,400
Benzo (g,h,i) perylene	ND< 3,110	Phenanthrene	ND< 3,110
Benzo (k) fluoranthene	ND< 3,110	Pyrene	ND< 3,110
Chrysene	ND< 3,110	Acenaphthylene	ND< 3,110
Diethyl phthalate	ND< 3,110	1,2-Dichlorobenzene	ND< 3,110
Dimethyl phthalate	ND< 7,770	1,3-Dichlorobenzene	ND< 3,110
Butylbenzylphthalate	ND< 3,110	1,4-Dichlorobenzene	ND< 3,110
Di-n-butyl phthalate	ND< 3,110	1,2,4-Trichlorobenzene	ND< 3,110
Di-n-octylphthalate	ND< 3,110	Nitrobenzene	ND< 3,110
Bis (2-ethylhexyl) phthalate	ND< 3,110	2,4-Dinitrotoluene	ND< 3,110
2-Chloronaphthalene	ND< 3,110	2,6-Dinitrotoluene	ND< 3,110
Hexachlorobenzene	ND< 3,110	Bis (2-chloroethyl) ether	ND< 3,110
Hexachloroethane	ND< 3,110 8895	Bis (2-chloroisopropyl) ether	ND< 3,110
Hexachlorocyclopentadiene	ND< 3,110	Bis (2-chloroethoxy) methan	ND< 3,110
Hexachlorobutadiene	ND< 3,110	4-Bromophenyl phenyl ether	ND< 3,110
N-Nitroso-di-n-propylamine	ND< 3,110	4-Chlorophenyl phenyl ether	ND< 3,110
N-Nitrosodiphenylamine	ND< 3,110	Benzidine	ND< 7,770
N-Nitrosodimethylamine	ND< 3,110	3,3'-Dichlorobenzidine	ND< 3,110
Isophorone	ND< 3,110	4-Chloroaniline	ND< 3,110 5480
Benzyl alcohol	ND< 7,770	2-Nitroaniline	ND< 7,770
Dibenzofuran	ND< 3,110	3-Nitroaniline	ND< 7,770
2-Methylnaphthalene	33,400	4-Nitroaniline	ND< 7,770

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 3,110	2-Methylphenol	ND< 3,110
2-Chlorophenol	ND< 3,110	3&4-Methylphenol	ND< 3,110
2,4-Dichlorophenol	ND< 3,110	2,4-Dimethylphenol	ND< 3,110
2,6-Dichlorophenol	ND< 3,110	2-Nitrophenol	ND< 3,110
2,4,5-Trichlorophenol	ND< 7,770	4-Nitrophenol	ND< 7,770
2,4,6-Trichlorophenol	ND< 3,110	2,4-Dinitrophenol	ND< 7,770
Pentachlorophenol	ND< 7,770	4,6-Dinitro-2-methylphenol	ND< 7,770
4-Chloro-3-methylphenol	ND< 3,110	Benzoic acid	ND< 7,770

ELAP Number 10958

Method: EPA 8270C

Data File: S46076.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature:

Bruce Hoogesteger: Technical Director

### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers

**Client Job Site:** Clarkson

**Lab Project Number:** 09-2377

**Client Job Number:** 40503

**Lab Sample Number:** 7645

**Field Location:** CS-PI-01

**Date Sampled:** 07/02/2009

**Field ID Number:** N/A

**Date Received:** 07/06/2009

**Sample Type:** Soil

**Date Analyzed:** 07/09/2009

**Date Reissued:** 07/21/2009

<u>Tentatively Identified Compounds</u>	<u>CAS Number</u>	<u>Retention Time</u>	<u>Results in ug / Kg</u>	<u>Percent Fit</u>
Alkyl Benzene	N/A	6.49	23,900	N/A
Alkyl Hydrocarbon	N/A	6.51	9,450	N/A
Alkyl Benzene	N/A	6.58	13,600	N/A
Alkyl Benzene	N/A	6.89	44,100	N/A
Alkyl Hydrocarbon	N/A	6.96	14,500	N/A
Alkyl Benzene	N/A	7.25	22,300	N/A
Alkyl Hydrocarbon	N/A	7.37	10,000	N/A
Alkyl Hydrocarbon	N/A	7.41	13,600	N/A
Alkyl Benzene	N/A	7.58	36,200	N/A
Alkyl Benzene	N/A	7.62	27,600	N/A
Alkyl Benzene	N/A	7.66	39,300	N/A
Alkyl Hydrocarbon	N/A	7.70	13,500	N/A
Alkyl Benzene	N/A	7.76	17,400	N/A
Alkyl Benzene	N/A	7.87	31,700	N/A
Alkyl Benzene	N/A	7.89	15,900	N/A
Alkyl Hydrocarbon	N/A	8.08	9,670	N/A
Alkyl Benzene	N/A	8.29	14,600	N/A
Alkyl Benzene	N/A	8.33	15,300	N/A
Complex Hydrocarbon	N/A	8.53	13,800	N/A
Complex Hydrocarbon	N/A	8.57	10,300	N/A
Complex Hydrocarbon	N/A	8.65	31,400	N/A
Complex Hydrocarbon	N/A	8.70	8,120	N/A
Complex Hydrocarbon	N/A	8.79	8,860	N/A
Complex Hydrocarbon	N/A	9.08	15,700	N/A
Alkyl Hydrocarbon	N/A	9.11	8,830	N/A
Alkyl Hydrocarbon	N/A	9.13	9,760	N/A
Alkyl Hydrocarbon	N/A	9.46	13,700	N/A
Alkyl Hydrocarbon	N/A	9.61	10,900	N/A
Alkyl Hydrocarbon	N/A	9.74	10,900	N/A
Alkyl Hydrocarbon	N/A	10.20	8,890	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S46076.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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09237713





179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

Client: Lu Engineers

Lab Project No.: 09-2377

Lab Sample No.: 7645

Client Job Site: Clarkson

Sample Type: Soil

Client Job No.: 40503

Field Location: CS-PI-01

Date Sampled: 07/02/2009

Field ID No.: N/A

Date Received: 07/06/2009

**Laboratory Report for Solid Waste Analysis**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Arsenic	07/10/2009	EPA 6010	2.70
Barium	07/10/2009	EPA 6010	655
Cadmium	07/10/2009	EPA 6010	<0.459
Chromium	07/10/2009	EPA 6010	11.4
Lead	07/10/2009	EPA 6010	9.07
Mercury	07/08/2009	EPA 7471	0.0192
Selenium	07/10/2009	EPA 6010	<0.459
Silver	07/10/2009	EPA 6010	<0.918

ELAP ID No.:10958

Comments:

Approved By:   
Bruce Hoogesteger, Technical Director

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File ID:092377.XLS

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### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-2950

**Lab Sample Number:** 9359

**Client Job Number:** 40503

**Field Location:** MW-01, 8-10'

**Date Sampled:** 08/10/2009

**Field ID Number:** N/A

**Date Received:** 08/12/2009

**Sample Type:** Soil

**Date Analyzed:** 08/21/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 4.46
Bromomethane	ND< 4.46
Bromoform	ND< 11.2
Carbon Tetrachloride	ND< 11.2
Chloroethane	ND< 4.46
Chloromethane	ND< 4.46
2-Chloroethyl vinyl Ether	ND< 22.3
Chloroform	ND< 4.46
Dibromochloromethane	ND< 4.46
1,1-Dichloroethane	ND< 4.46
1,2-Dichloroethane	ND< 4.46
1,1-Dichloroethene	ND< 4.46
cis-1,2-Dichloroethene	ND< 4.46
trans-1,2-Dichloroethene	ND< 4.46
1,2-Dichloropropane	ND< 4.46
cis-1,3-Dichloropropene	ND< 4.46
trans-1,3-Dichloropropene	ND< 4.46
Methylene chloride	ND< 11.2
1,1,2,2-Tetrachloroethane	ND< 4.46
Tetrachloroethene	ND< 4.46
1,1,1-Trichloroethane	ND< 4.46
1,1,2-Trichloroethane	ND< 4.46
Trichloroethene	ND< 4.46
Trichlorofluoromethane	ND< 4.46
Vinyl chloride	ND< 4.46

Aromatics	Results in ug / Kg
Benzene	ND< 4.46
Chlorobenzene	ND< 4.46
Ethylbenzene	ND< 4.46
Toluene	ND< 4.46
m,p-Xylene	ND< 4.46
o-Xylene	ND< 4.46
Styrene	ND< 11.2
1,2-Dichlorobenzene	ND< 11.2
1,3-Dichlorobenzene	ND< 11.2
1,4-Dichlorobenzene	ND< 4.46

Ketones	Results in ug / Kg
Acetone	ND< 22.3
2-Butanone	ND< 22.3
2-Hexanone	ND< 11.2
4-Methyl-2-pentanone	ND< 11.2

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 4.46
Vinyl acetate	ND< 11.2

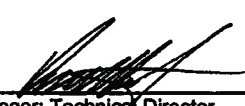
ELAP Number 10958

Method: EPA 8260B

Data File: V68214.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

Signature:

  
Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**



**Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-2950

Client Job Number: 40503

Lab Sample Number: 9359

Field Location: MW-01, 8-10'

Date Sampled: 08/10/2009

Field ID Number: N/A

Date Received: 08/12/2009

Sample Type: Soil

Date Analyzed: 08/21/2009

Aromatics	Results in ug / Kg	Aromatics	Results in ug / Kg
n-Butylbenzene	ND< 22.3	1,2,4-Trimethylbenzene	ND< 4.46
sec-Butylbenzene	ND< 4.46	1,3,5-Trimethylbenzene	ND< 4.46
tert-Butylbenzene	ND< 11.2		
n-Propylbenzene	ND< 4.46	<b>Miscellaneous</b>	
Isopropylbenzene	ND< 22.3	Methyl tert-butyl Ether	ND< 4.46
p-Isopropyltoluene	ND< 22.3		
Naphthalene	ND< 11.2 <i>WJ</i>		

ELAP Number 10958 Method: EPA 8260B Data File: V68214.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"***WJ*

**Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-2950

Client Job Number: 40503

Lab Sample Number: 9359

Field Location: MW-01, 8-10'

Date Sampled: 08/10/2009

Field ID Number: N/A

Date Received: 08/12/2009

Sample Type: Soil

Date Analyzed: 08/21/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	N/A	ND< 4.46	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V68214.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**

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092950V1.XLS

### Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-2950

Lab Sample Number: 9360

Client Job Number: 40503

Field Location: MW-02, 8-9.5'

Date Sampled: 08/11/2009

Field ID Number: N/A

Date Received: 08/12/2009

Sample Type: Soil

Date Analyzed: 08/21/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 4.31
Bromomethane	ND< 4.31
Bromoform	ND< 10.8
Carbon Tetrachloride	ND< 10.8
Chloroethane	ND< 4.31
Chloromethane	ND< 4.31
2-Chloroethyl vinyl Ether	ND< 21.5
Chloroform	ND< 4.31
Dibromochloromethane	ND< 4.31
1,1-Dichloroethane	ND< 4.31
1,2-Dichloroethane	ND< 4.31
1,1-Dichloroethene	ND< 4.31
cis-1,2-Dichloroethene	ND< 4.31
trans-1,2-Dichloroethene	ND< 4.31
1,2-Dichloropropane	ND< 4.31
cis-1,3-Dichloropropene	ND< 4.31
trans-1,3-Dichloropropene	ND< 4.31
Methylene chloride	ND< 10.8
1,1,2,2-Tetrachloroethane	ND< 4.31
Tetrachloroethene	ND< 4.31
1,1,1-Trichloroethane	ND< 4.31
1,1,2-Trichloroethane	ND< 4.31
Trichloroethene	ND< 4.31
Trichlorofluoromethane	ND< 4.31
Vinyl chloride	ND< 4.31

Aromatics	Results in ug / Kg
Benzene	ND< 4.31
Chlorobenzene	ND< 4.31
Ethylbenzene	ND< 4.31
Toluene	ND< 4.31
m,p-Xylene	ND< 4.31
o-Xylene	ND< 4.31
Styrene	ND< 10.8
1,2-Dichlorobenzene	ND< 10.8
1,3-Dichlorobenzene	ND< 10.8
1,4-Dichlorobenzene	ND< 4.31

Ketones	Results in ug / Kg
Acetone	ND< 21.5
2-Butanone	ND< 21.5
2-Hexanone	ND< 10.8
4-Methyl-2-pentanone	ND< 10.8

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 4.31
Vinyl acetate	ND< 10.8

ELAP Number 10958

Method: EPA 8260B

Data File: V68215.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

Signature:

  
Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**

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092950V2.XLS





**Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-2950

Lab Sample Number: 9360

Client Job Number: 40503

Field Location: MW-02, 8-9.5'

Date Sampled: 08/11/2009

Field ID Number: N/A

Date Received: 08/12/2009

Sample Type: Soil

Date Analyzed: 08/21/2009

Aromatics	Results in ug / Kg	Aromatics	Results in ug / Kg
n-Butylbenzene	ND< 21.5	1,2,4-Trimethylbenzene	ND< 4.31
sec-Butylbenzene	ND< 4.31	1,3,5-Trimethylbenzene	ND< 4.31
tert-Butylbenzene	ND< 10.8		
n-Propylbenzene	ND< 4.31	<b>Miscellaneous</b>	
Isopropylbenzene	ND< 21.5	Methyl tert-butyl Ether	ND< 4.31
p-Isopropyltoluene	ND< 21.5		
Naphthalene	ND< 10.8 <i>us</i>		

ELAP Number 10958

Method: EPA 8260B

Data File: V68215.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"***Handwritten mark*

**Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-2950

Client Job Number: 40503

Lab Sample Number: 9360

Field Location: MW-02, 8-9.5'

Date Sampled: 08/11/2009

Field ID Number: N/A

Date Received: 08/12/2009

Sample Type: Soil

Date Analyzed: 08/21/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	N/A	ND< 4.31	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V68215.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**

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092950V2.XLS

**Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-2950**Lab Sample Number:** 9361**Client Job Number:** 40503**Field Location:** MW-03, 2-4'**Date Sampled:** 08/12/2009**Field ID Number:** N/A**Date Received:** 08/12/2009**Sample Type:** Soil**Date Analyzed:** 08/21/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 4.46
Bromomethane	ND< 4.46
Bromoform	ND< 11.1
Carbon Tetrachloride	ND< 11.1
Chloroethane	ND< 4.46
Chloromethane	ND< 4.46
2-Chloroethyl vinyl Ether	ND< 22.3
Chloroform	ND< 4.46
Dibromochloromethane	ND< 4.46
1,1-Dichloroethane	ND< 4.46
1,2-Dichloroethane	ND< 4.46
1,1-Dichloroethene	ND< 4.46
cis-1,2-Dichloroethene	ND< 4.46
trans-1,2-Dichloroethene	ND< 4.46
1,2-Dichloropropane	ND< 4.46
cis-1,3-Dichloropropene	ND< 4.46
trans-1,3-Dichloropropene	ND< 4.46
Methylene chloride	ND< 11.1
1,1,2,2-Tetrachloroethane	ND< 4.46
Tetrachloroethene	ND< 4.46
1,1,1-Trichloroethane	ND< 4.46
1,1,2-Trichloroethane	ND< 4.46
Trichloroethene	ND< 4.46
Trichlorofluoromethane	ND< 4.46
Vinyl chloride	ND< 4.46

Aromatics	Results in ug / Kg
Benzene	ND< 4.46
Chlorobenzene	ND< 4.46
Ethylbenzene	ND< 4.46
Toluene	ND< 4.46
m,p-Xylene	ND< 4.46
o-Xylene	ND< 4.46
Styrene	ND< 11.1
1,2-Dichlorobenzene	ND< 11.1
1,3-Dichlorobenzene	ND< 11.1
1,4-Dichlorobenzene	ND< 4.46

Ketones	Results in ug / Kg
Acetone	ND< 22.3 <i>UJ</i>
2-Butanone	ND< 22.3
2-Hexanone	ND< 11.1
4-Methyl-2-pentanone	ND< 11.1

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 4.46
Vinyl acetate	ND< 11.1

ELAP Number 10958

Method: EPA 8260B

Data File: V68216.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**

**Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-2950

Lab Sample Number: 9361

Client Job Number: 40503

Field Location: MW-03, 2-4'

Date Sampled: 08/12/2009

Field ID Number: N/A

Date Received: 08/12/2009

Sample Type: Soil

Date Analyzed: 08/21/2009

Aromatics	Results in ug / Kg	Aromatics	Results in ug / Kg
n-Butylbenzene	ND< 22.3	1,2,4-Trimethylbenzene	ND< 4.46
sec-Butylbenzene	ND< 4.46	1,3,5-Trimethylbenzene	ND< 4.46
tert-Butylbenzene	ND< 11.1		
n-Propylbenzene	ND< 4.46	<b>Miscellaneous</b>	
Isopropylbenzene	ND< 22.3	Methyl tert-butyl Ether	ND< 4.46
p-Isopropyltoluene	ND< 22.3		
Naphthalene	ND< 11.1 <i>us</i>		

ELAP Number 10958

Method: EPA 8260B

Data File: V68216.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**

*Handwritten mark*

**Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-2950**Client Job Number:** 40503**Lab Sample Number:** 9361**Field Location:** MW-03, 2-4'**Date Sampled:** 08/12/2009**Field ID Number:** N/A**Date Received:** 08/12/2009**Sample Type:** Soil**Date Analyzed:** 08/21/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	N/A	ND< 4.46	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V68216.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

**Signature:**  
Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**

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092950V3.XLS

### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-2950

**Lab Sample Number:** 9362

**Client Job Number:** 40503

**Field Location:** MW-04, 8-11'

**Date Sampled:** 08/12/2009

**Field ID Number:** N/A

**Date Received:** 08/12/2009

**Sample Type:** Soil

**Date Analyzed:** 08/21/2009

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 4.56
Bromomethane	ND< 4.56
Bromoform	ND< 11.4
Carbon Tetrachloride	ND< 11.4
Chloroethane	ND< 4.56
Chloromethane	ND< 4.56
2-Chloroethyl vinyl Ether	ND< 22.8
Chloroform	ND< 4.56
Dibromochloromethane	ND< 4.56
1,1-Dichloroethane	ND< 4.56
1,2-Dichloroethane	ND< 4.56
1,1-Dichloroethene	ND< 4.56
cis-1,2-Dichloroethene	ND< 4.56
trans-1,2-Dichloroethene	ND< 4.56
1,2-Dichloropropane	ND< 4.56
cis-1,3-Dichloropropene	ND< 4.56
trans-1,3-Dichloropropene	ND< 4.56
Methylene chloride	ND< 11.4
1,1,2,2-Tetrachloroethane	ND< 4.56
Tetrachloroethene	ND< 4.56 <i>UJ</i>
1,1,1-Trichloroethane	ND< 4.56
1,1,2-Trichloroethane	ND< 4.56
Trichloroethene	ND< 4.56 <i>UJ</i>
Trichlorofluoromethane	ND< 4.56
Vinyl chloride	ND< 4.56 <i>UJ</i>

Aromatics	Results in ug / Kg
Benzene	ND< 4.56
Chlorobenzene	ND< 4.56
Ethylbenzene	ND< 4.56 <i>UJ</i>
Toluene	ND< 4.56 <i>UJ</i>
m,p-Xylene	ND< 4.56 <i>UJ</i>
o-Xylene	ND< 4.56 <i>UJ</i>
Styrene	ND< 11.4 <i>UJ</i>
1,2-Dichlorobenzene	ND< 11.4
1,3-Dichlorobenzene	ND< 11.4
1,4-Dichlorobenzene	ND< 4.56

Ketones	Results in ug / Kg
Acetone	ND< 22.8 <i>UJ</i>
2-Butanone	ND< 22.8
2-Hexanone	ND< 11.4
4-Methyl-2-pentanone	ND< 11.4

Miscellaneous	Results in ug / Kg
Carbon disulfide	10.0
Vinyl acetate	ND< 11.4

ELAP Number 10958

Method: EPA 8260B

Data File: V68217.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

**Signature:**
  
Bruce Hoogesteger: Technical Director

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All target  
analytes should be  
"J" or "UJ"



### Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-2950

Lab Sample Number: 9362

Client Job Number: 40503

Field Location: MW-04, 8-11'

Date Sampled: 08/12/2009

Field ID Number: N/A

Date Received: 08/12/2009

Sample Type: Soil

Date Analyzed: 08/21/2009

Aromatics	Results in ug / Kg	Aromatics	Results in ug / Kg
n-Butylbenzene	ND< 22.8	1,2,4-Trimethylbenzene	ND< 4.56
sec-Butylbenzene	ND< 4.56	1,3,5-Trimethylbenzene	ND< 4.56
tert-Butylbenzene	ND< 11.4		
n-Propylbenzene	ND< 4.56	<b>Miscellaneous</b>	
Isopropylbenzene	ND< 22.8 <i>UJ</i>	Methyl tert-butyl Ether	ND< 4.56
p-Isopropyltoluene	ND< 22.8		
Naphthalene	ND< 11.4 <i>UJ</i>		

ELAP Number 10958

Method: EPA 8260B

Data File: V68217.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**

### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-2950

**Lab Sample Number:** 9362

**Client Job Number:** 40503

**Field Location:** MW-04, 8-11'

**Date Sampled:** 08/12/2009

**Field ID Number:** N/A

**Date Received:** 08/12/2009

**Sample Type:** Soil

**Date Analyzed:** 08/21/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
Unknown Hydrocarbon	N/A	5.544	48.4	N/A
Alkyl Hydrocarbon	N/A	5.95	87.9	N/A
Alkyl Hydrocarbon	N/A	6.27	43.4	N/A
n,n'-Dimethylcyclohexane	N/A	6.87	178	N/A
Alkyl Hydrocarbon	N/A	7.21	140	N/A
Alkyl Hydrocarbon	N/A	7.33	47.5	N/A
n,n'-Dimethylcyclohexane	N/A	7.52	353	N/A
n,n',n"-Trimethylcyclohexane	N/A	7.75	213	N/A
n,n',n"-Trimethylcyclohexane	N/A	7.92	46.8	N/A
n,n',n"-Trimethylcyclohexane	N/A	8.16	120	N/A
Alkyl Cyclohexane	N/A	8.26	83.1	N/A
Alkyl Hydrocarbon	N/A	8.30	102	N/A
Alkyl Hydrocarbon	N/A	8.35	114	N/A
Alkyl Hydrocarbon	N/A	8.37	335	N/A
Alkyl Hydrocarbon	N/A	8.85	283	N/A
Unknown Hydrocarbon	N/A	8.89	98.6	N/A
Unknown Hydrocarbon	N/A	9.00	141	N/A
Unknown Hydrocarbon	N/A	9.34	43.4	N/A
Alkyl Hydrocarbon	N/A	9.41	63.4	N/A
Unknown Hydrocarbon	N/A	9.47	195	N/A
Unknown Hydrocarbon	N/A	9.87	62.5	N/A
Unknown Hydrocarbon	N/A	10.00	48.6	N/A
Unknown Hydrocarbon	N/A	10.16	42.2	N/A
n,n'-Diethylbenzene	N/A	10.87	45.4	N/A
Decahydro-naphthalene	N/A	10.96	191	N/A
Unknown Hydrocarbon	N/A	11.68	133	N/A
Unknown Hydrocarbon	N/A	11.84	46.1	N/A
Unknown Hydrocarbon	N/A	11.93	54.1	N/A
Unknown Hydrocarbon	N/A	12.00	40.2	N/A
Unknown Hydrocarbon	N/A	12.51	46.3	N/A

ELAP Number 10958

Method: EPA 8260B

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

**Signature:**
  
Bruce Hoogesteger: Technical Director

All target  
analytes should be  
"J" or "UJ"







ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

### Volatile Analysis Report for Soils/Solids/Sludges

Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-2950

Lab Sample Number: Method Blank

Client Job Number: 40503

Field Location: N/A

Date Sampled: N/A

Field ID Number: N/A

Date Received: N/A

Sample Type: Soil

Date Analyzed: 08/21/2009

Date Reissued: 08/25/2010

Halocarbons	Results in ug / Kg
Bromodichloromethane	ND< 4.00
Bromomethane	ND< 4.00
Bromoform	ND< 10.0
Carbon Tetrachloride	ND< 10.0
Chloroethane	ND< 4.00
Chloromethane	ND< 4.00
2-Chloroethyl vinyl Ether	ND< 20.0
Chloroform	ND< 4.00
Dibromochloromethane	ND< 4.00
1,1-Dichloroethane	ND< 4.00
1,2-Dichloroethane	ND< 4.00
1,1-Dichloroethene	ND< 4.00
cis-1,2-Dichloroethene	ND< 4.00
trans-1,2-Dichloroethene	ND< 4.00
1,2-Dichloropropane	ND< 4.00
cis-1,3-Dichloropropene	ND< 4.00
trans-1,3-Dichloropropene	ND< 4.00
Methylene chloride	ND< 10.0
1,1,2,2-Tetrachloroethane	ND< 4.00 1.08 J
Tetrachloroethene	ND< 4.00
1,1,1-Trichloroethane	ND< 4.00
1,1,2-Trichloroethane	ND< 4.00
Trichloroethene	ND< 4.00
Trichlorofluoromethane	ND< 4.00
Vinyl chloride	ND< 4.00

Aromatics	Results in ug / Kg
Benzene	ND< 4.00
Chlorobenzene	ND< 4.00
Ethylbenzene	ND< 4.00
Toluene	ND< 4.00
m,p-Xylene	ND< 4.00
o-Xylene	ND< 4.00
Styrene	ND< 10.0
1,2-Dichlorobenzene	ND< 10.0 1.17 J
1,3-Dichlorobenzene	ND< 10.0
1,4-Dichlorobenzene	ND< 4.00 1.47 J

Ketones	Results in ug / Kg
Acetone	ND< 20.0
2-Butanone	ND< 20.0
2-Hexanone	J 5.74
4-Methyl-2-pentanone	ND< 10.0 4.33 J

Miscellaneous	Results in ug / Kg
Carbon disulfide	ND< 4.00
Vinyl acetate	ND< 10.0

ELAP Number 10958

Method: EPA 8260B

Data File: V68211.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

092950VB.XLS

**PARADIGM**

ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

**Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-2950**Lab Sample Number:** Method Blank**Client Job Number:** 40503**Field Location:** N/A**Date Sampled:** N/A**Field ID Number:** N/A**Date Received:** N/A**Sample Type:** Soil**Date Analyzed:** 08/21/2009**Date Reissued:** 08/25/2010

Aromatics	Results in ug / Kg	Aromatics	Results in ug / Kg
n-Butylbenzene	ND< 20.0	1,2,4-Trimethylbenzene	ND< 4.00
sec-Butylbenzene	ND< 4.00	1,3,5-Trimethylbenzene	ND< 4.00
tert-Butylbenzene	ND< 10.0		
n-Propylbenzene	ND< 4.00	<b>Miscellaneous</b>	
Isopropylbenzene	ND< 20.0	Methyl tert-butyl Ether	ND< 4.00
p-Isopropyltoluene	ND< 20.0		
Naphthalene	J 5.06		

ELAP Number 10958

Method: EPA 8260B

Data File: V68211.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

092950VB.XLS

### Semi-Volatile Analysis Report for Soils/Solids/Sludges

 Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-2950

Lab Sample Number: 9359

Client Job Number: 40503

Field Location: MW-01, 8-10'

Date Sampled: 08/10/2009

Field ID Number: N/A

Date Received: 08/12/2009

Sample Type: Soil

Date Analyzed: 08/25/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 331	Dibenz (a,h) anthracene	ND< 331
Anthracene	ND< 331	Fluoranthene	ND< 331
Benzo (a) anthracene	ND< 331	Fluorene	ND< 331
Benzo (a) pyrene	ND< 331	Indeno (1,2,3-cd) pyrene	ND< 331
Benzo (b) fluoranthene	ND< 331	Naphthalene	ND< 331
Benzo (g,h,i) perylene	ND< 331	Phenanthrene	ND< 331
Benzo (k) fluoranthene	ND< 331	Pyrene	ND< 331
Chrysene	ND< 331	Acenaphthylene	ND< 331
Diethyl phthalate	ND< 331	1,2-Dichlorobenzene	ND< 331
Dimethyl phthalate	ND< 829	1,3-Dichlorobenzene	ND< 331
Butylbenzylphthalate	ND< 331	1,4-Dichlorobenzene	ND< 331
Di-n-butyl phthalate	ND< 331	1,2,4-Trichlorobenzene	ND< 331
Di-n-octylphthalate	ND< 331	Nitrobenzene	ND< 331
Bis (2-ethylhexyl) phthalate	ND< 331	2,4-Dinitrotoluene	ND< 331
2-Chloronaphthalene	ND< 331	2,6-Dinitrotoluene	ND< 331
Hexachlorobenzene	ND< 331	Bis (2-chloroethyl) ether	ND< 331
Hexachloroethane	ND< 331	Bis (2-chloroisopropyl) ether	ND< 331
Hexachlorocyclopentadiene	ND< 331	Bis (2-chloroethoxy) methan	ND< 331
Hexachlorobutadiene	ND< 331	4-Bromophenyl phenyl ether	ND< 331
N-Nitroso-di-n-propylamine	ND< 331	4-Chlorophenyl phenyl ether	ND< 331
N-Nitrosodiphenylamine	ND< 331	Benzidine	ND< 829
N-Nitrosodimethylamine	ND< 331	3,3'-Dichlorobenzidine	ND< 331
Isophorone	ND< 331	4-Chloroaniline	ND< 331
Benzyl alcohol	ND< 829	2-Nitroaniline	ND< 829
Dibenzofuran	ND< 331	3-Nitroaniline	ND< 829
2-Methylnaphthalene	ND< 331	4-Nitroaniline	ND< 829

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 331	2-Methylphenol	ND< 331
2-Chlorophenol	ND< 331	3&4-Methylphenol	ND< 331
2,4-Dichlorophenol	ND< 331	2,4-Dimethylphenol	ND< 331
2,6-Dichlorophenol	ND< 331	2-Nitrophenol	ND< 331
2,4,5-Trichlorophenol	ND< 829	4-Nitrophenol	ND< 829
2,4,6-Trichlorophenol	ND< 331	2,4-Dinitrophenol	ND< 829
Pentachlorophenol	ND< 829	4,6-Dinitro-2-methylphenol	ND< 829
4-Chloro-3-methylphenol	ND< 331	Benzolc acid	ND< 829

ELAP Number 10958

Method: EPA 8270C

Data File: S46734.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature:

  
 Bruce Hoogesteger: Technical Director

All target  
analytes should be  
"J" or "UJ"



**Semi -Volatile Analysis Report for Non-potable Water**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-2950

Client Job Number: 40503

Lab Sample Number: 9359

Field Location: MW-01, 8-10'

Date Sampled: 08/10/2009

Field ID Number: N/A

Date Received: 08/12/2009

Sample Type: Water

Date Analyzed: 08/25/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
None Found	N/A	N/A	ND< 10.0	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S46734.D

Comments: ND denotes Non Detect

ug / L = microgram per Liter

Surrogate outliers indicate probable matrix interference

**All target  
analytes should be  
"J" or "UJ"**

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

092950S1.XLS



### Semi-Volatile Analysis Report for Soils/Solids/Sludges

 Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-2950

Lab Sample Number: 9360

Client Job Number: 40503

Field Location: MW-02, 8-9.5'

Field ID Number: N/A

Sample Type: Soil

Date Sampled: 08/11/2009

Date Received: 08/12/2009

Date Analyzed: 08/25/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 333	Dibenz (a,h) anthracene	ND< 333
Anthracene	ND< 333	Fluoranthene	170
Benzo (a) anthracene	ND< 333	Fluorene	ND< 333
Benzo (a) pyrene	ND< 333	Indeno (1,2,3-cd) pyrene	ND< 333
Benzo (b) fluoranthene	ND< 333	Naphthalene	ND< 333
Benzo (g,h,i) perylene	ND< 333	Phenanthrene	ND< 333
Benzo (k) fluoranthene	ND< 333	Pyrene	ND< 333
Chrysene	ND< 333	Acenaphthylene	ND< 333
Diethyl phthalate	ND< 333	1,2-Dichlorobenzene	ND< 333
Dimethyl phthalate	ND< 832	1,3-Dichlorobenzene	ND< 333
Butylbenzylphthalate	ND< 333	1,4-Dichlorobenzene	ND< 333
Di-n-butyl phthalate	ND< 333	1,2,4-Trichlorobenzene	ND< 333
Di-n-octylphthalate	ND< 333	Nitrobenzene	ND< 333
Bis (2-ethylhexyl) phthalate	ND< 333	2,4-Dinitrotoluene	ND< 333
2-Chloronaphthalene	ND< 333	2,6-Dinitrotoluene	ND< 333
Hexachlorobenzene	ND< 333	Bis (2-chloroethyl) ether	ND< 333
Hexachloroethane	ND< 333	Bis (2-chloroisopropyl) ether	ND< 333
Hexachlorocyclopentadiene	ND< 333	Bis (2-chloroethoxy) methan	ND< 333
Hexachlorobutadiene	ND< 333	4-Bromophenyl phenyl ether	ND< 333
N-Nitroso-di-n-propylamine	ND< 333	4-Chlorophenyl phenyl ether	ND< 333
N-Nitrosodiphenylamine	ND< 333	Benzidine	ND< 832
N-Nitrosodimethylamine	ND< 333	3,3'-Dichlorobenzidine	ND< 333
Isophorone	ND< 333	4-Chloroaniline	ND< 333
Benzyl alcohol	ND< 832	2-Nitroaniline	ND< 832
Dibenzofuran	ND< 333	3-Nitroaniline	ND< 832
2-Methylnaphthalene	ND< 333	4-Nitroaniline	ND< 832

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 333	2-Methylphenol	ND< 333
2-Chlorophenol	ND< 333	3&4-Methylphenol	ND< 333
2,4-Dichlorophenol	ND< 333	2,4-Dimethylphenol	ND< 333
2,6-Dichlorophenol	ND< 333	2-Nitrophenol	ND< 333
2,4,5-Trichlorophenol	ND< 832	4-Nitrophenol	ND< 832
2,4,6-Trichlorophenol	ND< 333	2,4-Dinitrophenol	ND< 832
Pentachlorophenol	ND< 832	4,6-Dinitro-2-methylphenol	ND< 832
4-Chloro-3-methylphenol	ND< 333	Benzoic acid	ND< 832

ELAP Number 10958

Method: EPA 8270C

Data File: S46735.D

 Comments: ND denotes Non Detect  
 ug / Kg = microgram per Kilogram

Signature:

Bruce Hoogesteger: Technical Director

All target  
analytes should be  
"J" or "UJ"

**Semi -Volatile Analysis Report for Non-potable Water**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-2950

Client Job Number: 40503

Lab Sample Number: 9360

Field Location: MW-02, 8-9.5'

Date Sampled: 08/11/2009

Field ID Number: N/A

Date Received: 08/12/2009

Sample Type: Water

Date Analyzed: 08/25/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
None Found	N/A	N/A	ND< 10.0	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S46735.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

**All target  
analytes should be  
"J" or "UJ"**

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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092950S2.XLS

### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-2950

**Lab Sample Number:** 9361

**Client Job Number:** 40503

**Field Location:** MW-03, 2-4'

**Date Sampled:** 08/12/2009

**Field ID Number:** N/A

**Date Received:** 08/12/2009

**Sample Type:** Soil

**Date Analyzed:** 08/25/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 326	Dibenz (a,h) anthracene	ND< 326
Anthracene	ND< 326	Fluoranthene	ND< 163
Benzo (a) anthracene	ND< 326	Fluorene	ND< 326
Benzo (a) pyrene	ND< 326	Indeno (1,2,3-cd) pyrene	ND< 326
Benzo (b) fluoranthene	ND< 326	Naphthalene	ND< 326
Benzo (g,h,i) perylene	ND< 326	Phenanthrene	ND< 326
Benzo (k) fluoranthene	ND< 326	Pyrene	ND< 326
Chrysene	ND< 326	Acenaphthylene	ND< 326
Diethyl phthalate	ND< 326	1,2-Dichlorobenzene	ND< 326
Dimethyl phthalate	ND< 816	1,3-Dichlorobenzene	ND< 326
Butylbenzylphthalate	ND< 326	1,4-Dichlorobenzene	ND< 326
Di-n-butyl phthalate	ND< 326	1,2,4-Trichlorobenzene	ND< 326
Di-n-octylphthalate	ND< 326	Nitrobenzene	ND< 326
Bis (2-ethylhexyl) phthalate	ND< 326	2,4-Dinitrotoluene	ND< 326
2-Chloronaphthalene	ND< 326	2,6-Dinitrotoluene	ND< 326
Hexachlorobenzene	ND< 326	Bis (2-chloroethyl) ether	ND< 326
Hexachloroethane	ND< 326	Bis (2-chloroisopropyl) ether	ND< 326
Hexachlorocyclopentadiene	ND< 326	Bis (2-chloroethoxy) methan	ND< 326
Hexachlorobutadiene	ND< 326	4-Bromophenyl phenyl ether	ND< 326
N-Nitroso-di-n-propylamine	ND< 326	4-Chlorophenyl phenyl ether	ND< 326
N-Nitrosodiphenylamine	ND< 326	Benzidine	ND< 816
N-Nitrosodimethylamine	ND< 326	3,3'-Dichlorobenzidine	ND< 326
Isophorone	ND< 326	4-Chloroaniline	ND< 326
Benzyl alcohol	ND< 816	2-Nitroaniline	ND< 816
Dibenzofuran	ND< 326	3-Nitroaniline	ND< 816
2-Methylnaphthalene	ND< 326	4-Nitroaniline	ND< 816

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 326	2-Methylphenol	ND< 326
2-Chlorophenol	ND< 326	3&4-Methylphenol	ND< 326
2,4-Dichlorophenol	ND< 326	2,4-Dimethylphenol	ND< 326
2,6-Dichlorophenol	ND< 326	2-Nitrophenol	ND< 326
2,4,5-Trichlorophenol	ND< 816	4-Nitrophenol	ND< 816
2,4,6-Trichlorophenol	ND< 326	2,4-Dinitrophenol	ND< 816
Pentachlorophenol	ND< 816	4,6-Dinitro-2-methylphenol	ND< 816
4-Chloro-3-methylphenol	ND< 326	Benzoic acid	ND< 816

ELAP Number 10958


Method: EPA 8270C

Data File: S46736.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
 Bruce Hoogesteger: Technical Director

All target  
analytes should be  
"J" or "UJ"





**Semi -Volatile Analysis Report for Non-potable Water****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-2950**Lab Sample Number:** 9361**Client Job Number:** 40503**Field Location:** MW-03, 2-4'**Date Sampled:** 08/12/2009**Field ID Number:** N/A**Date Received:** 08/12/2009**Sample Type:** Water**Date Analyzed:** 08/25/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
None Found	N/A	N/A	ND< 10.0	N/A


ELAP Number 10958

Method: EPA 8270C

Data File: S46736.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

**All target  
analytes should be  
"J" or "UJ"**

**Signature:**  
Bruce Hoogesteger: Technical Director

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092950S3.XLS



### Semi-Volatile Analysis Report for Soils/Solids/Sludges

 Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-2950

Lab Sample Number: 9362

Client Job Number: 40503

Field Location: MW-04, 8-11'

Field ID Number: N/A

Sample Type: Soil

Date Sampled: 08/12/2009

Date Received: 08/12/2009

Date Analyzed: 08/25/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 331	Dibenz (a,h) anthracene	ND< 331
Anthracene	ND< 331	Fluoranthene	ND< 165
Benzo (a) anthracene	ND< 331	Fluorene	ND< 331
Benzo (a) pyrene	ND< 331	Indeno (1,2,3-cd) pyrene	ND< 331
Benzo (b) fluoranthene	ND< 331	Naphthalene	ND< 331
Benzo (g,h,i) perylene	ND< 331	Phenanthrene	ND< 331
Benzo (k) fluoranthene	ND< 331	Pyrene	ND< 331
Chrysene	ND< 331	Acenaphthylene	ND< 331
Diethyl phthalate	ND< 331	1,2-Dichlorobenzene	ND< 331
Dimethyl phthalate	ND< 827	1,3-Dichlorobenzene	ND< 331
Butylbenzylphthalate	ND< 331	1,4-Dichlorobenzene	ND< 331
Di-n-butyl phthalate	ND< 331	1,2,4-Trichlorobenzene	ND< 331
Di-n-octylphthalate	ND< 331	Nitrobenzene	ND< 331
Bis (2-ethylhexyl) phthalate	ND< 331	2,4-Dinitrotoluene	ND< 331
2-Chloronaphthalene	ND< 331	2,6-Dinitrotoluene	ND< 331
Hexachlorobenzene	ND< 331	Bis (2-chloroethyl) ether	ND< 331
Hexachloroethane	ND< 331	Bis (2-chloroisopropyl) ether	ND< 331
Hexachlorocyclopentadiene	ND< 331	Bis (2-chloroethoxy) methan	ND< 331
Hexachlorobutadiene	ND< 331	4-Bromophenyl phenyl ether	ND< 331
N-Nitroso-di-n-propylamine	ND< 331	4-Chlorophenyl phenyl ether	ND< 331
N-Nitrosodiphenylamine	ND< 331	Benzidine	ND< 827
N-Nitrosodimethylamine	ND< 331	3,3'-Dichlorobenzidine	ND< 331
Isophorone	ND< 331	4-Chloroaniline	ND< 331
Benzyl alcohol	ND< 827	2-Nitroaniline	ND< 827
Dibenzofuran	ND< 331	3-Nitroaniline	ND< 827
2-Methylnaphthalene	ND< 331	4-Nitroaniline	ND< 827

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 331	2-Methylphenol	ND< 331
2-Chlorophenol	ND< 331	3&4-Methylphenol	ND< 331
2,4-Dichlorophenol	ND< 331	2,4-Dimethylphenol	ND< 331
2,6-Dichlorophenol	ND< 331	2-Nitrophenol	ND< 331
2,4,5-Trichlorophenol	ND< 827	4-Nitrophenol	ND< 827
2,4,6-Trichlorophenol	ND< 331	2,4-Dinitrophenol	ND< 827
Pentachlorophenol	ND< 827	4,6-Dinitro-2-methylphenol	ND< 827
4-Chloro-3-methylphenol	ND< 331	Benzoic acid	ND< 827

ELAP Number 10958

Method: EPA 8270C

Data File: S46737.D

 Comments: ND denotes Non Detect  
 ug / Kg = microgram per Kilogram

Signature:

  
 Bruce Hoogesteger: Technical Director

All target  
 analytes should be  
 "J" or "UJ"



**Semi -Volatile Analysis Report for Non-potable Water**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-2950

**Lab Sample Number:** 9362

**Client Job Number:** 40503

**Field Location:** MW-04, 8-11'

**Field ID Number:** N/A

**Sample Type:** Water

**Date Sampled:** 08/12/2009

**Date Received:** 08/12/2009

**Date Analyzed:** 08/25/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
None Found	N/A	N/A	ND< 10.0	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S46737.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**

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092950S4.XLS



### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-2950

**Lab Sample Number:** Method Blank

**Client Job Number:** 40503

**Field Location:** N/A

**Field ID Number:** N/A

**Sample Type:** Soil

**Date Sampled:** N/A

**Date Received:** N/A

**Date Analyzed:** 08/25/2009

Base / Neutrals	Results in ug / Kg	Base / Neutrals	Results in ug / Kg
Acenaphthene	ND< 286	Dibenz (a,h) anthracene	ND< 286
Anthracene	ND< 286	Fluoranthene	ND< 286
Benzo (a) anthracene	ND< 286	Fluorene	ND< 286
Benzo (a) pyrene	ND< 286	Indeno (1,2,3-cd) pyrene	ND< 286
Benzo (b) fluoranthene	ND< 286	Naphthalene	ND< 286
Benzo (g,h,i) perylene	ND< 286	Phenanthrene	ND< 286
Benzo (k) fluoranthene	ND< 286	Pyrene	ND< 286
Chrysene	ND< 286	Acenaphthylene	ND< 286
Diethyl phthalate	ND< 286	1,2-Dichlorobenzene	ND< 286
Dimethyl phthalate	ND< 714	1,3-Dichlorobenzene	ND< 286
Butylbenzylphthalate	ND< 286	1,4-Dichlorobenzene	ND< 286
Di-n-butyl phthalate	ND< 286	1,2,4-Trichlorobenzene	ND< 286
Di-n-octylphthalate	ND< 286	Nitrobenzene	ND< 286
Bis (2-ethylhexyl) phthalate	ND< 286	2,4-Dinitrotoluene	ND< 286
2-Chloronaphthalene	ND< 286	2,6-Dinitrotoluene	ND< 286
Hexachlorobenzene	ND< 286	Bis (2-chloroethyl) ether	ND< 286
Hexachloroethane	ND< 286	Bis (2-chloroisopropyl) ether	ND< 286
Hexachlorocyclopentadiene	ND< 286	Bis (2-chloroethoxy) methan	ND< 286
Hexachlorobutadiene	ND< 286	4-Bromophenyl phenyl ether	ND< 286
N-Nitroso-di-n-propylamine	ND< 286	4-Chlorophenyl phenyl ether	ND< 286
N-Nitrosodiphenylamine	ND< 286	Benzidine	ND< 714
N-Nitrosodimethylamine	ND< 286	3,3'-Dichlorobenzidine	ND< 286
Isophorone	ND< 286	4-Chloroaniline	ND< 286
Benzyl alcohol	ND< 714	2-Nitroaniline	ND< 714
Dibenzofuran	ND< 286	3-Nitroaniline	ND< 714
2-Methylnaphthalene	ND< 286	4-Nitroaniline	ND< 714

Acids	Results in ug / Kg	Acids	Results in ug / Kg
Phenol	ND< 286	2-Methylphenol	ND< 286
2-Chlorophenol	ND< 286	3&4-Methylphenol	ND< 286
2,4-Dichlorophenol	ND< 286	2,4-Dimethylphenol	ND< 286
2,6-Dichlorophenol	ND< 286	2-Nitrophenol	ND< 286
2,4,5-Trichlorophenol	ND< 714	4-Nitrophenol	ND< 714
2,4,6-Trichlorophenol	ND< 286	2,4-Dinitrophenol	ND< 714
Pentachlorophenol	ND< 714	4,6-Dinitro-2-methylphenol	ND< 714
4-Chloro-3-methylphenol	ND< 286	Benzoic acid	ND< 714

ELAP Number 10958

Method: EPA 8270C

Data File: S46732.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
 Bruce Hoogesteger: Technical Director

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092950S8.XLS





# CHAIN OF CUSTODY

REPORT TO:		INVOICE TO:	
COMPANY: <b>Lu Engineers</b>	COMPANY: <b>Same</b>	LAB PROJECT #: <b>09-2950</b>	CLIENT PROJECT #: <b>40503</b>
ADDRESS: <b>2230 Penfield Rd.</b>	ADDRESS:	TURNAROUND TIME: (WORKING DAYS)	
CITY: <b>Penfield</b>	CITY:		
STATE: <b>NY</b>	STATE:		
ZIP: <b>14526</b>	ZIP:		
PHONE: <b>377-1450</b>	PHONE:		
FAX: <b>377-1366</b>	FAX:		
ATTN: <b>Greg Andrus</b>	ATTN:		
PROJECT NAME/SITE NAME: <b>Clarkson ERP Site</b>		Quotation # <b>Per client history: 10 day for data, 15 day for packaging</b>	
COMMENTS: <b>Please call Greg A. Wilany questions</b>		STD <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 5 <input type="checkbox"/> OTHER <input type="checkbox"/>	

Requested Analysis

→ See remarks for changes to tests. EAH 8/12

Per G. Andrus as per J. Daloria 8/12: **EAH 8/12**

DATE	TIME	COMPOSITE	GRA B	SAMPLE LOCATION/FIELD ID	MATRIX	CONTAINER	COINTEGRATED STARS	REMARKS	PARADIGM LAB SAMPLE NUMBER
1 8/10/09	10:00		X	mw-01, 8-10'	soil	2	X	Per G. Andrus as per J. Daloria 8/12:	9 3 5 9
2 8/11/09	11:01		X	mw-02, 8-9.5'		1	X	EAH 8/12	9 3 6 0
3 8/12/09	8:37		X	mw-03, 2-4'		1	X	EAH 8/12	9 3 6 1
4 8/12/09	12:37		X	mw-04, 8-11'		1	X	EAH 8/12	9 3 6 2
5								EAH 8/12	
6								Cooler hand delivered to lab	
7								So custody seals not necessary.	
8								EAH 8/12	
9									
10									

PLEASE USE ONLY BELOW THIS LINE

Sample Condition: Per NELAC/ELAP 210/241/242/243/244

Receipt Parameter	NELAC Compliance
Container Type:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Preservation: <b>N/A</b>	Y <input type="checkbox"/> N <input type="checkbox"/>
Holding Time:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Temperature: <b>17°Ciced = temp. of sample.</b>	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>

Sampled By: **Rachel Inermolochuk** 8/12/09 15:16:00 RF

Relinquished By: **Rachel Inermolochuk** 8/12/09 15:16:00 RF

Received By: **John J. Daloria** 8/12/09 16:00

Received @ Lab By: **Elizabeth A. Honch** 8/12/09 17:25

Date/Time

Total Cost:

P.I.F.

### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers

**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2964

**Client Job Number:** 40503

**Field Location:** CS-GP-01-03

**Date Sampled:** 02/08/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/16/2010

Compound	Results in ug / Kg
Acetone	ND< 21.4 <i>us</i>
Benzene	ND< 4.27
Bromochloromethane	ND< 10.7
Bromodichloromethane	ND< 4.27
Bromoform	ND< 10.7
Bromomethane	ND< 4.27
2-Butanone	ND< 21.4
Carbon disulfide	ND< 4.27
Carbon Tetrachloride	ND< 10.7
Chlorobenzene	ND< 4.27
Chloroethane	ND< 4.27
Chloroform	ND< 4.27
Chloromethane	ND< 4.27
Cyclohexane	ND< 21.4
Dibromochloromethane	ND< 4.27
1,2-Dibromo-3-Chloropropane	ND< 21.4
1,2-Dibromoethane	ND< 10.7
1,2-Dichlorobenzene	ND< 10.7
1,3-Dichlorobenzene	ND< 10.7
1,4-Dichlorobenzene	ND< 4.27
Dichlorodifluoromethane	ND< 4.27
1,1-Dichloroethane	ND< 4.27
1,2-Dichloroethane	ND< 4.27
1,1-Dichloroethene	ND< 4.27
cis-1,2-Dichloroethene	ND< 4.27
trans-1,2-Dichloroethene	ND< 4.27

Compound	Results in ug / Kg
1,2-Dichloropropane	ND< 4.27
cis-1,3-Dichloropropene	ND< 4.27
trans-1,3-Dichloropropene	ND< 4.27
Ethylbenzene	ND< 4.27
2-Hexanone	ND< 10.7
Isopropylbenzene	ND< 21.4
Methyl acetate	ND< 10.7
Methyl tert-butyl Ether	ND< 4.27
Methylcyclohexane	ND< 4.27
Methylene chloride	ND< 10.7 <i>us</i>
4-Methyl-2-pentanone	ND< 10.7 <i>1.3 J</i>
Styrene	ND< 10.7
1,1,2,2-Tetrachloroethane	ND< 4.27
Tetrachloroethene	ND< 4.27
Toluene	ND< 4.27
Freon 113	ND< 4.27
1,2,3-Trichlorobenzene	ND< 10.7
1,2,4-Trichlorobenzene	ND< 10.7
1,1,1-Trichloroethane	ND< 4.27
1,1,2-Trichloroethane	ND< 4.27
Trichloroethene	ND< 4.27
Trichlorofluoromethane	ND< 4.27
Vinyl chloride	ND< 4.27
m,p-Xylene	ND< 4.27
o-Xylene	ND< 4.27

ELAP Number 10958

Method: EPA 8260B

Data File: V73073.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Matrix Spike Outliers Indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)**Client: **Lu Engineers**

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Client Job Number: 40503

Lab Sample Number: 2964

Field Location: CS-GP-01-03

Date Sampled: 02/08/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/16/2010

Compound	Results in ug / Kg	Compound	Results in ug / Kg
n-Butylbenzene	ND< 21.4	n-Propylbenzene	ND< 4.27
sec-Butylbenzene	ND< 4.27	1,2,4-Trimethylbenzene	ND< 4.27
tert-Butylbenzene	ND< 10.7	1,3,5-Trimethylbenzene	ND< 4.27
p-Isopropyltoluene	ND< 21.4		
Naphthalene	ND< 10.7		

ELAP Number 10958

Method: EPA 8260B

Data File: V73073.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

00655V1.XLS



**Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Client Job Number:** 40503**Lab Sample Number:** 2964**Field Location:** CS-GP-01-03**Date Sampled:** 02/08/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/16/2010**Date Reissued:** 03/16/2010

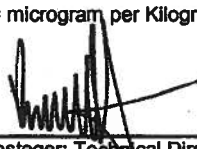
<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
None Found	N/A	N/A	ND< 10.7	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V73073.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

**Signature:**  
Bruce Hoogesteger: Technical Director

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00655V1.XLS

### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Client Job Number:** 40503

**Lab Sample Number:** 2965

**Field Location:** CS-GP-07-07

**Date Sampled:** 02/08/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/16/2010

**Date Reissued:** 03/16/2010

Compound	Results in ug / Kg
Acetone	78.0 J B
Benzene	ND< 5.08
Bromochloromethane	ND< 12.7
Bromodichloromethane	ND< 5.08
Bromoform	ND< 12.7
Bromomethane	ND< 5.08
2-Butanone	J 20.1
Carbon disulfide	ND< 5.08 20 J
Carbon Tetrachloride	ND< 12.7
Chlorobenzene	ND< 5.08
Chloroethane	ND< 5.08
Chloroform	ND< 5.08
Chloromethane	ND< 5.08
Cyclohexane	ND< 25.4
Dibromochloromethane	ND< 5.08
1,2-Dibromo-3-Chloropropane	ND< 25.4
1,2-Dibromoethane	ND< 12.7
1,2-Dichlorobenzene	ND< 12.7
1,3-Dichlorobenzene	ND< 12.7
1,4-Dichlorobenzene	ND< 5.08
Dichlorodifluoromethane	ND< 5.08
1,1-Dichloroethane	ND< 5.08
1,2-Dichloroethane	ND< 5.08
1,1-Dichloroethene	ND< 5.08
cis-1,2-Dichloroethene	ND< 5.08
trans-1,2-Dichloroethene	ND< 5.08

Compound	Results in ug / Kg
1,2-Dichloropropane	ND< 5.08
cis-1,3-Dichloropropene	ND< 5.08
trans-1,3-Dichloropropene	ND< 5.08
Ethylbenzene	ND< 5.08
2-Hexanone	ND< 12.7 8.2 J
Isopropylbenzene	ND< 25.4 5.0 J
Methyl acetate	ND< 12.7
Methyl tert-butyl Ether	ND< 5.08
Methylcyclohexane	ND< 5.08
Methylene chloride	ND< 12.7 4.5
4-Methyl-2-pentanone	ND< 12.7
Styrene	ND< 12.7
1,1,2,2-Tetrachloroethane	ND< 5.08 20.6 J
Tetrachloroethene	ND< 5.08
Toluene	ND< 5.08
Freon 113	ND< 5.08
1,2,3-Trichlorobenzene	ND< 12.7
1,2,4-Trichlorobenzene	ND< 12.7
1,1,1-Trichloroethane	ND< 5.08
1,1,2-Trichloroethane	ND< 5.08 3.0 J
Trichloroethene	ND< 5.08
Trichlorofluoromethane	ND< 5.08
Vinyl chloride	ND< 5.08
m,p-Xylene	ND< 5.08
o-Xylene	ND< 5.08

ELAP Number 10958

Method: EPA 8260B

Data File: V73074.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

Bruce Hoogesteger, Technical Director

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00655V2.XLS






**PARADIGM**

ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

**Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)**
**Client: Lu Engineers**
**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2965

**Client Job Number:** 40503

**Field Location:** CS-GP-07-07

**Date Sampled:** 02/08/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/16/2010

Compound	Results in ug / Kg	Compound	Results in ug / Kg
n-Butylbenzene	<del>ND &lt; 26.4</del> 4.05	n-Propylbenzene	J 2.76
sec-Butylbenzene	J 2.56	1,2,4-Trimethylbenzene	<del>ND &lt; 5.08</del> 2.0 J
tert-Butylbenzene	ND < 12.7	1,3,5-Trimethylbenzene	ND < 5.08
p-Isopropyltoluene	ND < 25.4		
Naphthalene	ND < 12.7		

ELAP Number 10958

Method: EPA 8260B

Data File: V73074.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

**Signature:**
  
 Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

00855V2.XLS

### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Client Job Number:** 40503

**Lab Sample Number:** 2965

**Field Location:** CS-GP-07-07

**Date Sampled:** 02/08/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/16/2010

<u>Tentatively Identified Compounds</u>	<u>CAS Number</u>	<u>Retention Time</u>	<u>Results in ug / Kg</u>	<u>Percent Fit</u>
Unknown Alkane	N/A	7.752	36.6	N/A
Unknown Alkane	N/A	8.26	30.5	N/A
Unknown Alkane	N/A	8.61	39.1	N/A
Unknown Alkane	N/A	9.01	86.2	N/A
Unknown Alkane	N/A	9.18	73.7	N/A
Unknown Alkane	N/A	9.46	55.9	N/A
Unknown Alkane	N/A	9.67	29.7	N/A
Unknown Alkane	N/A	9.73	33.0	N/A
Unknown Alkane	N/A	9.80	60.7	N/A
Unknown Alkane	N/A	9.87	25.9	N/A
Unknown Alkane	N/A	9.99	57.2	N/A
Unknown Alkane	N/A	10.07	33.5	N/A
Unknown Alkane	N/A	10.11	52.9	N/A
Unknown Alkane	N/A	10.28	29.5	N/A
Unknown Alkane	N/A	10.44	36.1	N/A
Unknown Alkane	N/A	10.48	37.9	N/A
Unknown Alkane	N/A	10.88	58.2	N/A
Unknown	N/A	11.18	46.5	N/A
Unknown Alkane	N/A	11.69	51.6	N/A
Unknown Aromatic	N/A	12.37	29.2	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V73074.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
Bruce Hoogesteger, Technical Director

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00655V2.XLS





ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

### Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2966

Client Job Number: 40503

Field Location: CS-GP-04-02

Date Sampled: 02/08/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/16/2010

Compound	Results in ug / Kg
Acetone	ND< 22.5 <i>u3</i>
Benzene	ND< 4.50
Bromochloromethane	ND< 11.2
Bromodichloromethane	ND< 4.50
Bromoform	ND< 11.2
Bromomethane	ND< 4.50
2-Butanone	ND< 22.5
Carbon disulfide	ND< 4.50
Carbon Tetrachloride	ND< 11.2
Chlorobenzene	ND< 4.50
Chloroethane	ND< 4.50
Chloroform	ND< 4.50
Chloromethane	ND< 4.50
Cyclohexane	ND< 22.5 <i>1.9 J</i>
Dibromochloromethane	ND< 4.50
1,2-Dibromo-3-Chloropropane	ND< 22.5
1,2-Dibromoethane	ND< 11.2
1,2-Dichlorobenzene	ND< 11.2
1,3-Dichlorobenzene	ND< 11.2
1,4-Dichlorobenzene	ND< 4.50
Dichlorodifluoromethane	ND< 4.50
1,1-Dichloroethane	ND< 4.50
1,2-Dichloroethane	ND< 4.50
1,1-Dichloroethene	ND< 4.50
cis-1,2-Dichloroethene	ND< 4.50
trans-1,2-Dichloroethene	ND< 4.50

Compound	Results in ug / Kg
1,2-Dichloropropane	ND< 4.50
cis-1,3-Dichloropropene	ND< 4.50
trans-1,3-Dichloropropene	ND< 4.50
Ethylbenzene	ND< 4.50
2-Hexanone	ND< 11.2
Isopropylbenzene	ND< 22.5
Methyl acetate	ND< 11.2
Methyl tert-butyl Ether	ND< 4.50
Methylcyclohexane	ND< 4.50
Methylene chloride	ND< 11.2 <i>u3</i>
4-Methyl-2-pentanone	ND< 11.2
Styrene	ND< 11.2
1,1,2,2-Tetrachloroethane	ND< 4.50
Tetrachloroethene	ND< 4.50
Toluene	ND< 4.50
Freon 113	ND< 4.50
1,2,3-Trichlorobenzene	ND< 11.2
1,2,4-Trichlorobenzene	ND< 11.2
1,1,1-Trichloroethane	ND< 4.50
1,1,2-Trichloroethane	ND< 4.50
Trichloroethene	ND< 4.50
Trichlorofluoromethane	ND< 4.50
Vinyl chloride	ND< 4.50
m,p-Xylene	ND< 4.50
o-Xylene	ND< 4.50

ELAP Number 10958

Method: EPA 8260B

Data File: V73075.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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00855V3.XLS

**Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Client Job Number:** 40503**Lab Sample Number:** 2966**Field Location:** CS-GP-04-02**Date Sampled:** 02/08/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/16/2010

Compound	Results in ug / Kg	Compound	Results in ug / Kg
n-Butylbenzene	ND< 22.5	n-Propylbenzene	ND< 4.50
sec-Butylbenzene	ND< 4.50	1,2,4-Trimethylbenzene	ND< 4.50
tert-Butylbenzene	ND< 11.2	1,3,5-Trimethylbenzene	ND< 4.50
p-Isopropyltoluene	ND< 22.5		
Naphthalene	ND< 11.2		

ELAP Number 10958

Method: EPA 8260B

Data File: V73075.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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00655V3.XLS

**Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Client Job Number:** 40503**Lab Sample Number:** 2966**Field Location:** CS-GP-04-02**Date Sampled:** 02/08/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/16/2010**Date Reissued:** 03/16/2010

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
None Found	N/A	N/A	ND< 11.2	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V73075.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: 

Bruce Hoogesteger: Technical Director

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00655V3.XLS



### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2967

**Client Job Number:** 40503

**Field Location:** CS-GP-16-8.5

**Date Sampled:** 02/08/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/16/2010

Compound	Results in ug / Kg
Acetone	ND< 23.8
Benzene	ND< 4.76
Bromochloromethane	ND< 11.9
Bromodichloromethane	ND< 4.76
Bromoform	ND< 11.9
Bromomethane	ND< 4.76
2-Butanone	ND< 23.8
Carbon disulfide	ND< 4.76
Carbon Tetrachloride	ND< 11.9
Chlorobenzene	ND< 4.76
Chloroethane	ND< 4.76
Chloroform	ND< 4.76
Chloromethane	ND< 4.76
Cyclohexane	ND< 23.8
Dibromochloromethane	ND< 4.76
1,2-Dibromo-3-Chloropropane	ND< 23.8
1,2-Dibromoethane	ND< 11.9
1,2-Dichlorobenzene	ND< 11.9
1,3-Dichlorobenzene	ND< 11.9
1,4-Dichlorobenzene	ND< 4.76
Dichlorodifluoromethane	ND< 4.76
1,1-Dichloroethane	ND< 4.76
1,2-Dichloroethane	ND< 4.76
1,1-Dichloroethene	ND< 4.76
cis-1,2-Dichloroethene	ND< 4.76
trans-1,2-Dichloroethene	ND< 4.76

Compound	Results in ug / Kg
1,2-Dichloropropane	ND< 4.76
cis-1,3-Dichloropropene	ND< 4.76
trans-1,3-Dichloropropene	ND< 4.76
Ethylbenzene	ND< 4.76
2-Hexanone	ND< 11.9
Isopropylbenzene	ND< 23.8
Methyl acetate	ND< 11.9
Methyl tert-butyl Ether	ND< 4.76
Methylcyclohexane	ND< 4.76
Methylene chloride	ND< 11.9
4-Methyl-2-pentanone	ND< 11.9
Styrene	ND< 11.9
1,1,2,2-Tetrachloroethane	ND< 4.76
Tetrachloroethene	ND< 4.76
Toluene	ND< 4.76
Freon 113	ND< 4.76
1,2,3-Trichlorobenzene	ND< 11.9
1,2,4-Trichlorobenzene	ND< 11.9
1,1,1-Trichloroethane	ND< 4.76
1,1,2-Trichloroethane	ND< 4.76
Trichloroethene	ND< 4.76
Trichlorofluoromethane	ND< 4.76
Vinyl chloride	ND< 4.76
m,p-Xylene	ND< 4.76
o-Xylene	ND< 4.76

ELAP Number 10958

Method: EPA 8260B

Data File: V73076.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
Bruce Hoogesteger, Technical Director

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00855V4.XLS





ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

### Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)

**Client:** Lu Engineers

**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2967

**Client Job Number:** 40503

**Field Location:** CS-GP-16-8.5

**Date Sampled:** 02/08/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/16/2010

Compound	Results in ug / Kg	Compound	Results in ug / Kg
n-Butylbenzene	ND< 23.8	n-Propylbenzene	ND< 4.76
sec-Butylbenzene	ND< 4.76	1,2,4-Trimethylbenzene	ND< 4.76
tert-Butylbenzene	ND< 11.9	1,3,5-Trimethylbenzene	ND< 4.76
p-Isopropyltoluene	ND< 23.8		
Naphthalene	ND< 11.9		

ELAP Number 10958

Method: EPA 8260B

Data File: V73076.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

00856V4.XLS

**Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Town of Clarkson

Client Job Number: 40503

Field Location: CS-GP-16-8.5

Field ID Number: N/A

Sample Type: Soil

Lab Project Number: 10-0655

Lab Sample Number: 2967

Date Sampled: 02/08/2010

Date Received: 02/11/2010

Date Analyzed: 02/16/2010

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	N/A	ND< 11.9	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V73076.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2968

**Client Job Number:** 40503

**Field Location:** CS-GP-11-10

**Date Sampled:** 02/09/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/16/2010

Compound	Results in ug / Kg
Acetone	J 17.2 B
Benzene	ND< 3.83
Bromochloromethane	ND< 9.57
Bromodichloromethane	ND< 3.83
Bromoform	ND< 9.57
Bromomethane	ND< 3.83
2-Butanone	ND< 19.1
Carbon disulfide	ND< 3.83
Carbon Tetrachloride	ND< 9.57
Chlorobenzene	ND< 3.83
Chloroethane	ND< 3.83
Chloroform	ND< 3.83
Chloromethane	ND< 3.83
Cyclohexane	ND< 19.1 1.7 J
Dibromochloromethane	ND< 3.83
1,2-Dibromo-3-Chloropropane	ND< 19.1
1,2-Dibromoethane	ND< 9.57
1,2-Dichlorobenzene	ND< 9.57
1,3-Dichlorobenzene	ND< 9.57
1,4-Dichlorobenzene	ND< 3.83
Dichlorodifluoromethane	ND< 3.83
1,1-Dichloroethane	ND< 3.83
1,2-Dichloroethane	ND< 3.83
1,1-Dichloroethene	ND< 3.83
cis-1,2-Dichloroethene	ND< 3.83
trans-1,2-Dichloroethene	ND< 3.83

Compound	Results in ug / Kg
1,2-Dichloropropane	ND< 3.83
cis-1,3-Dichloropropene	ND< 3.83
trans-1,3-Dichloropropene	ND< 3.83
Ethylbenzene	ND< 3.83
2-Hexanone	ND< 9.57
Isopropylbenzene	ND< 19.1
Methyl acetate	ND< 9.57
Methyl tert-butyl Ether	ND< 3.83
Methylcyclohexane	ND< 3.83
Methylene chloride	ND< 9.57 uJ
4-Methyl-2-pentanone	ND< 9.57 1.1 J
Styrene	ND< 9.57
1,1,2,2-Tetrachloroethane	ND< 3.83
Tetrachloroethene	ND< 3.83
Toluene	ND< 3.83
Freon 113	ND< 3.83
1,2,3-Trichlorobenzene	ND< 9.57
1,2,4-Trichlorobenzene	ND< 9.57
1,1,1-Trichloroethane	ND< 3.83
1,1,2-Trichloroethane	ND< 3.83
Trichloroethene	ND< 3.83
Trichlorofluoromethane	ND< 3.83
Vinyl chloride	ND< 3.83
m,p-Xylene	ND< 3.83
o-Xylene	ND< 3.83

ELAP Number 10958

Method: EPA 8260B

Data File: V73077.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
Bruce Hoogesteger: Technical Director

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- 61 -

### Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)

Client: Lu Engineers

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2968

Client Job Number: 40503

Field Location: CS-GP-11-10

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/16/2010

Compound	Results in ug / Kg	Compound	Results in ug / Kg
n-Butylbenzene	ND< 19.1	n-Propylbenzene	ND< 3.83
sec-Butylbenzene	ND< 3.83	1,2,4-Trimethylbenzene	ND< 3.83
tert-Butylbenzene	ND< 9.57	1,3,5-Trimethylbenzene	ND< 3.83
p-Isopropyltoluene	ND< 19.1		
Naphthalene	ND< 9.57		

ELAP Number 10958

Method: EPA 8260B

Data File: V73077.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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### Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2968

Client Job Number: 40503

Field Location: CS-GP-11-10

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/16/2010

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	N/A	ND < 9.57	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V73077.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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### Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2969

Client Job Number: 40503

Field Location: CS-GP-12-09

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/16/2010

Compound	Results in ug / Kg
Acetone	J 43.4 B
Benzene	ND< 4.44
Bromochloromethane	ND< 11.1
Bromodichloromethane	ND< 4.44
Bromoform	ND< 11.1
Bromomethane	ND< 4.44
2-Butanone	ND< 22.2 4.0 J
Carbon disulfide	ND< 4.44
Carbon Tetrachloride	ND< 11.1
Chlorobenzene	ND< 4.44
Chloroethane	ND< 4.44
Chloroform	ND< 4.44
Chloromethane	ND< 4.44
Cyclohexane	ND< 22.2 2.0 J
Dibromochloromethane	ND< 4.44
1,2-Dibromo-3-Chloropropane	ND< 22.2
1,2-Dibromoethane	ND< 11.1
1,2-Dichlorobenzene	ND< 11.1
1,3-Dichlorobenzene	ND< 11.1
1,4-Dichlorobenzene	ND< 4.44
Dichlorodifluoromethane	ND< 4.44
1,1-Dichloroethane	ND< 4.44
1,2-Dichloroethane	ND< 4.44
1,1-Dichloroethene	ND< 4.44
cis-1,2-Dichloroethene	ND< 4.44
trans-1,2-Dichloroethene	ND< 4.44

Compound	Results in ug / Kg
1,2-Dichloropropane	ND< 4.44
cis-1,3-Dichloropropene	ND< 4.44
trans-1,3-Dichloropropene	ND< 4.44
Ethylbenzene	ND< 4.44
2-Hexanone	ND< 11.1
Isopropylbenzene	ND< 22.2
Methyl acetate	ND< 11.1
Methyl tert-butyl Ether	ND< 4.44
Methylcyclohexane	ND< 4.44
Methylene chloride	ND< 11.1 UJ
4-Methyl-2-pentanone	ND< 11.1
Styrene	ND< 11.1
1,1,2,2-Tetrachloroethane	ND< 4.44
Tetrachloroethene	ND< 4.44
Toluene	ND< 4.44
Freon 113	ND< 4.44
1,2,3-Trichlorobenzene	ND< 11.1
1,2,4-Trichlorobenzene	ND< 11.1
1,1,1-Trichloroethane	ND< 4.44
1,1,2-Trichloroethane	ND< 4.44
Trichloroethene	ND< 4.44
Trichlorofluoromethane	ND< 4.44
Vinyl chloride	ND< 4.44
m,p-Xylene	ND< 4.44
o-Xylene	ND< 4.44

ELAP Number 10958

Method: EPA 8260B

Data File: V73078.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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**Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Client Job Number:** 40503**Lab Sample Number:** 2969**Field Location:** CS-GP-12-09**Date Sampled:** 02/09/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/16/2010

Compound	Results in ug / Kg	Compound	Results in ug / Kg
n-Butylbenzene	ND< 22.2	n-Propylbenzene	ND< 4.44
sec-Butylbenzene	ND< 4.44	1,2,4-Trimethylbenzene	ND< 4.44
tert-Butylbenzene	ND< 11.1	1,3,5-Trimethylbenzene	ND< 4.44
p-Isopropyltoluene	ND< 22.2		
Naphthalene	ND< 11.1		

ELAP Number 10958

Method: EPA 8260B

Data File: V73078.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

**Signature:**  
Bruce Hoogesteger, Technical Director

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### Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2969

Client Job Number: 40503

Field Location: CS-GP-12-09

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/16/2010

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	N/A	ND< 11.1	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V73078.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2970

**Client Job Number:** 40503

**Field Location:** CS-GP-13-10

**Date Sampled:** 02/09/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/16/2010

Compound	Results in ug / Kg
Acetone	J 60.1 B
Benzene	ND< 19.8
Bromochloromethane	ND< 49.5
Bromodichloromethane	ND< 19.8
Bromoform	ND< 49.5
Bromomethane	ND< 19.8
2-Butanone	ND< 98.9 11.2 J
Carbon disulfide	ND< 19.8
Carbon Tetrachloride	ND< 49.5
Chlorobenzene	ND< 19.8
Chloroethane	ND< 19.8
Chloroform	ND< 19.8
Chloromethane	ND< 19.8
Cyclohexane	ND< 98.9 7.2 J
Dibromochloromethane	ND< 19.8
1,2-Dibromo-3-Chloropropane	ND< 98.9
1,2-Dibromoethane	ND< 49.5
1,2-Dichlorobenzene	ND< 49.5
1,3-Dichlorobenzene	ND< 49.5
1,4-Dichlorobenzene	ND< 19.8
Dichlorodifluoromethane	ND< 19.8
1,1-Dichloroethane	ND< 19.8
1,2-Dichloroethane	ND< 19.8
1,1-Dichloroethene	ND< 19.8
cis-1,2-Dichloroethene	ND< 19.8
trans-1,2-Dichloroethene	ND< 19.8

Compound	Results in ug / Kg
1,2-Dichloropropane	ND< 19.8
cis-1,3-Dichloropropene	ND< 19.8
trans-1,3-Dichloropropene	ND< 19.8
Ethylbenzene	ND< 19.8
2-Hexanone	ND< 49.5 71.8
Isopropylbenzene	ND< 98.9
Methyl acetate	ND< 49.5
Methyl tert-butyl Ether	ND< 19.8
Methylcyclohexane	ND< 19.8 7.3 J
Methylene chloride	ND< 49.5 6.5
4-Methyl-2-pentanone	ND< 49.5
Styrene	ND< 49.5
1,1,2,2-Tetrachloroethane	ND< 19.8 54.3
Tetrachloroethene	ND< 19.8
Toluene	ND< 19.8
Freon 113	ND< 19.8
1,2,3-Trichlorobenzene	ND< 49.5
1,2,4-Trichlorobenzene	ND< 49.5
1,1,1-Trichloroethane	ND< 19.8
1,1,2-Trichloroethane	ND< 19.8 27.5
Trichloroethene	ND< 19.8
Trichlorofluoromethane	ND< 19.8
Vinyl chloride	ND< 19.8
m,p-Xylene	ND< 19.8
o-Xylene	ND< 19.8

ELAP Number 10958

Method: EPA 8260B

Data File: V73079.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
Bruce Hoogesteger, Technical Director

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### Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)

Client: Lu Engineers

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2970

Client Job Number: 40503

Field Location: CS-GP-13-10

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/16/2010

Compound	Results in ug / Kg	Compound	Results in ug / Kg
n-Butylbenzene	ND < 98.9 18.6 J	n-Propylbenzene	ND < 19.8
sec-Butylbenzene	J 18.9	1,2,4-Trimethylbenzene	ND < 19.8
tert-Butylbenzene	ND < 49.5	1,3,5-Trimethylbenzene	ND < 19.8
p-Isopropyltoluene	ND < 98.9 6.2 J		
Naphthalene	ND < 49.5		

ELAP Number 10958

Method: EPA 8260B

Data File: V73079.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers

**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2970

**Client Job Number:** 40503

**Field Location:** CS-GP-13-10

**Date Sampled:** 02/09/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/16/2010

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
Unknown Alkane	N/A	7.21	93.0	N/A
Unknown Alkane	N/A	7.75	113	N/A
Unknown Alkane	N/A	8.35	87.1	N/A
Unknown Alkane	N/A	8.64	209	N/A
Unknown Alkane	N/A	8.85	225	N/A
Unknown Alkane	N/A	8.89	124	N/A
Unknown Alkane	N/A	9.00	245	N/A
Unknown	N/A	9.17	146	N/A
Unknown Alkane	N/A	9.46	111	N/A
Unknown Alkane	N/A	9.61	85.1	N/A
Unknown Alkane	N/A	9.72	95.0	N/A
Unknown Alkane	N/A	9.79	85.1	N/A
Unknown Alkane	N/A	10.11	86.1	N/A
Unknown Aromatic	N/A	10.87	106	N/A
Unknown Aromatic	N/A	11.56	110	N/A
Unknown Aromatic	N/A	11.68	96.0	N/A
Unknown Aromatic	N/A	12.00	160	N/A
Unknown Aromatic	N/A	12.38	101	N/A
Unknown Aromatic	N/A	12.77	78.2	N/A
Unknown Aromatic	N/A	12.87	88.1	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V73079.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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### Volatile Analysis Report for Soils/Solids/Sludges

Client: **Lu Engineers**

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2971

Client Job Number: 40503

Field Location: CS-GP-18-07

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/16/2010

Compound	Results in ug / Kg
Acetone	177 JB
Benzene	ND< 10.2
Bromochloromethane	ND< 25.4
Bromodichloromethane	ND< 10.2 4.1 J
Bromoform	ND< 25.4
Bromomethane	ND< 10.2
2-Butanone	54.5
Carbon disulfide	ND< 10.2
Carbon Tetrachloride	ND< 25.4
Chlorobenzene	ND< 10.2
Chloroethane	ND< 10.2
Chloroform	ND< 10.2
Chloromethane	ND< 10.2
Cyclohexane	ND< 50.9 9.4 J
Dibromochloromethane	ND< 10.2
1,2-Dibromo-3-Chloropropane	ND< 50.9
1,2-Dibromoethane	ND< 25.4
1,2-Dichlorobenzene	ND< 25.4
1,3-Dichlorobenzene	ND< 25.4
1,4-Dichlorobenzene	ND< 10.2
Dichlorodifluoromethane	ND< 10.2
1,1-Dichloroethane	ND< 10.2
1,2-Dichloroethane	ND< 10.2
1,1-Dichloroethene	ND< 10.2
cis-1,2-Dichloroethene	ND< 10.2
trans-1,2-Dichloroethene	ND< 10.2

ELAP Number 10958

Compound	Results in ug / Kg
1,2-Dichloropropane	ND< 10.2
cis-1,3-Dichloropropene	ND< 10.2
trans-1,3-Dichloropropene	ND< 10.2
Ethylbenzene	ND< 10.2
2-Hexanone	ND< 25.4 8.1 J
Isopropylbenzene	ND< 50.9
Methyl acetate	ND< 25.4 5.3 J
Methyl tert-butyl Ether	ND< 10.2
Methylcyclohexane	ND< 10.2
Methylene chloride	ND< 25.4 6.5 J
4-Methyl-2-pentanone	ND< 25.4 5.9 J
Styrene	ND< 25.4
1,1,2,2-Tetrachloroethane	ND< 10.2
Tetrachloroethene	ND< 10.2
Toluene	ND< 10.2
Freon 113	ND< 10.2
1,2,3-Trichlorobenzene	ND< 25.4
1,2,4-Trichlorobenzene	ND< 25.4
1,1,1-Trichloroethane	ND< 10.2
1,1,2-Trichloroethane	ND< 10.2 5.6 J
Trichloroethene	ND< 10.2
Trichlorofluoromethane	ND< 10.2
Vinyl chloride	ND< 10.2
m,p-Xylene	ND< 10.2
o-Xylene	ND< 10.2

Method: EPA 8260B

Data File: V73080.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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00655V8.XLS

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**Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Lab Sample Number:** 2971**Client Job Number:** 40503**Field Location:** CS-GP-18-07**Date Sampled:** 02/09/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/16/2010

Compound	Results in ug / Kg	Compound	Results in ug / Kg
n-Butylbenzene	ND< 50.9	n-Propylbenzene	ND< 10.2
sec-Butylbenzene	ND< 10.2	1,2,4-Trimethylbenzene	ND< 10.2
tert-Butylbenzene	ND< 25.4	1,3,5-Trimethylbenzene	ND< 10.2
p-Isopropyltoluene	ND< 50.9		
Naphthalene	ND< 25.4		

ELAP Number 10958

Method: EPA 8260B

Data File: V73080.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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**Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2971

Client Job Number: 40503

Field Location: CS-GP-18-07

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/16/2010

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	7.21	ND< 25.4	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V73080.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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### Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2972

Client Job Number: 40503

Field Location: CS-GP-18-07D

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/16/2010

Compound	Results in ug / Kg
Acetone	88.0 JB
Benzene	ND< 4.37
Bromochloromethane	ND< 10.9
Bromodichloromethane	ND< 4.37 2.8 J
Bromoform	ND< 10.9
Bromomethane	ND< 4.37
2-Butanone	28.9
Carbon disulfide	J 3.08
Carbon Tetrachloride	ND< 10.9
Chlorobenzene	ND< 4.37
Chloroethane	ND< 4.37
Chloroform	ND< 4.37
Chloromethane	ND< 4.37
Cyclohexane	ND< 21.9 5.6 J
Dibromochloromethane	ND< 4.37
1,2-Dibromo-3-Chloropropane	ND< 21.9
1,2-Dibromoethane	ND< 10.9 1.3 J
1,2-Dichlorobenzene	ND< 10.9
1,3-Dichlorobenzene	ND< 10.9
1,4-Dichlorobenzene	ND< 4.37
Dichlorodifluoromethane	ND< 4.37
1,1-Dichloroethane	ND< 4.37
1,2-Dichloroethane	ND< 4.37
1,1-Dichloroethene	ND< 4.37
cls-1,2-Dichloroethene	ND< 4.37
trans-1,2-Dichloroethene	ND< 4.37

Compound	Results in ug / Kg
1,2-Dichloropropane	ND< 4.37
cis-1,3-Dichloropropene	ND< 4.37
trans-1,3-Dichloropropene	ND< 4.37
Ethylbenzene	ND< 4.37
2-Hexanone	ND< 10.9 4.2 J
Isopropylbenzene	ND< 21.9
Methyl acetate	ND< 10.9 3.0 J
Methyl tert-butyl Ether	ND< 4.37
Methylcyclohexane	ND< 4.37 1.3 J
Methylene chloride	ND< 10.9 6J
4-Methyl-2-pentanone	ND< 10.9 3.0 J
Styrene	ND< 10.9
1,1,2,2-Tetrachloroethane	ND< 4.37 2.6 J
Tetrachloroethene	ND< 4.37
Toluene	ND< 4.37
Freon 113	ND< 4.37
1,2,3-Trichlorobenzene	ND< 10.9
1,2,4-Trichlorobenzene	ND< 10.9
1,1,1-Trichloroethane	ND< 4.37
1,1,2-Trichloroethane	ND< 4.37 3.5 J
Trichloroethene	ND< 4.37
Trichlorofluoromethane	ND< 4.37
Vinyl chloride	ND< 4.37
m,p-Xylene	ND< 4.37
o-Xylene	ND< 4.37

ELAP Number 10958

Method: EPA 8260B

Data File: V73081.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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00655V9.XLS

JB

**Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Client Job Number:** 40503**Lab Sample Number:** 2972**Field Location:** CS-GP-18-07D**Date Sampled:** 02/09/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/16/2010

Compound	Results in ug / Kg	Compound	Results in ug / Kg
n-Butylbenzene	ND< 21.9	n-Propylbenzene	ND< 4.37
sec-Butylbenzene	ND< 4.37	1,2,4-Trimethylbenzene	ND< 4.37
tert-Butylbenzene	ND< 10.9	1,3,5-Trimethylbenzene	ND< 4.37
p-Isopropyltoluene	ND< 21.9		
Naphthalene	ND< 10.9		

ELAP Number 10958

Method: EPA 8260B

Data File: V73081.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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### Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2972

Client Job Number: 40503

Field Location: CS-GP-18-07D

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/16/2010

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
Unknown Alkane	N/A	6.09	11.0	N/A
Unknown Alkane	N/A	7.02	26.0	N/A
Unknown Alkane	N/A	7.65	10.9	N/A
Unknown Alkane	N/A	7.75	13.8	N/A
Unknown	N/A	8.62	14.7	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V73081.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogestegen Technical Director

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### Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2973

Client Job Number: 40503

Field Location: CS-GP-19-10

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/16/2010

Compound	Results in ug / Kg	Compound	Results in ug / Kg
Acetone	ND< 21.4 7.1	1,2-Dichloropropane	ND< 4.29
Benzene	ND< 4.29	cis-1,3-Dichloropropene	ND< 4.29
Bromochloromethane	ND< 10.7	trans-1,3-Dichloropropene	ND< 4.29
Bromodichloromethane	ND< 4.29	Ethylbenzene	ND< 4.29
Bromoform	ND< 10.7	2-Hexanone	ND< 10.7
Bromomethane	ND< 4.29	Isopropylbenzene	ND< 21.4
2-Butanone	ND< 21.4	Methyl acetate	ND< 10.7
Carbon disulfide	ND< 4.29	Methyl tert-butyl Ether	ND< 4.29
Carbon Tetrachloride	ND< 10.7	Methylcyclohexane	ND< 4.29
Chlorobenzene	ND< 4.29	Methylene chloride	ND< 10.7 6.5
Chloroethane	ND< 4.29	4-Methyl-2-pentanone	ND< 10.7 1.3
Chloroform	ND< 4.29	Styrene	ND< 10.7
Chloromethane	ND< 4.29	1,1,2,2-Tetrachloroethane	ND< 4.29
Cyclohexane	ND< 21.4 2.0	Tetrachloroethene	ND< 4.29
Dibromochloromethane	ND< 4.29	Toluene	ND< 4.29
1,2-Dibromo-3-Chloropropane	ND< 21.4	Freon 113	ND< 4.29
1,2-Dibromoethane	ND< 10.7	1,2,3-Trichlorobenzene	ND< 10.7
1,2-Dichlorobenzene	ND< 10.7	1,2,4-Trichlorobenzene	ND< 10.7
1,3-Dichlorobenzene	ND< 10.7	1,1,1-Trichloroethane	ND< 4.29
1,4-Dichlorobenzene	ND< 4.29	1,1,2-Trichloroethane	ND< 4.29
Dichlorodifluoromethane	ND< 4.29	Trichloroethene	ND< 4.29
1,1-Dichloroethane	ND< 4.29	Trichlorofluoromethane	ND< 4.29
1,2-Dichloroethane	ND< 4.29	Vinyl chloride	ND< 4.29
1,1-Dichloroethene	ND< 4.29	m,p-Xylene	ND< 4.29
cis-1,2-Dichloroethene	ND< 4.29	o-Xylene	ND< 4.29
trans-1,2-Dichloroethene	ND< 4.29		

ELAP Number 10958

Method: EPA 8260B

Data File: V73082.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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**PARADIGM**

ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

**Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)**

 Client: **Lu Engineers**

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2973

Client Job Number: 40503

Field Location: CS-GP-19-10

Date Sampled: 02/09/2010

Date Received: 02/11/2010

Field ID Number: N/A

Date Analyzed: 02/16/2010

Sample Type: Soil

Compound	Results in ug / Kg	Compound	Results in ug / Kg
n-Butylbenzene	ND< 21.4	n-Propylbenzene	ND< 4.29
sec-Butylbenzene	ND< 4.29	1,2,4-Trimethylbenzene	ND< 4.29
tert-Butylbenzene	ND< 10.7	1,3,5-Trimethylbenzene	ND< 4.29
p-Isopropyltoluene	ND< 21.4		
Naphthalene	ND< 10.7		

ELAP Number 10958

Method: EPA 8260B

Data File: V73082.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
 Bruce Hoogestegen, Technical Director

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ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

# Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers

**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2973

**Client Job Number:** 40503

**Field Location:** CS-GP-19-10

**Date Sampled:** 02/09/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/16/2010

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	N/A	ND< 10.7	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V73082.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogestegen, Technical Director

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### Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Town of Clarkson

Lab Project Number: 10-0855

Lab Sample Number: 2974

Client Job Number: 40503

Field Location: CS-GP-20-09

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/16/2010

Compound	Results in ug / Kg
Acetone	23.1 J B
Benzene	ND< 3.94
Bromochloromethane	ND< 9.86
Bromodichloromethane	ND< 3.94
Bromoform	ND< 9.86
Bromomethane	ND< 3.94
2-Butanone	ND< 19.7 5.8 J
Carbon disulfide	ND< 3.94 1.3 J
Carbon Tetrachloride	ND< 9.86
Chlorobenzene	ND< 3.94
Chloroethane	ND< 3.94
Chloroform	ND< 3.94
Chloromethane	ND< 3.94
Cyclohexane	ND< 19.7
Dibromochloromethane	ND< 3.94
1,2-Dibromo-3-Chloropropane	ND< 19.7
1,2-Dibromoethane	ND< 9.86
1,2-Dichlorobenzene	ND< 9.86
1,3-Dichlorobenzene	ND< 9.86
1,4-Dichlorobenzene	ND< 3.94
Dichlorodifluoromethane	ND< 3.94
1,1-Dichloroethane	ND< 3.94
1,2-Dichloroethane	ND< 3.94
1,1-Dichloroethene	ND< 3.94
cis-1,2-Dichloroethene	ND< 3.94
trans-1,2-Dichloroethene	ND< 3.94

Compound	Results in ug / Kg
1,2-Dichloropropane	ND< 3.94
cis-1,3-Dichloropropene	ND< 3.94
trans-1,3-Dichloropropene	ND< 3.94
Ethylbenzene	ND< 3.94
2-Hexanone	ND< 9.86
Isopropylbenzene	ND< 19.7
Methyl acetate	ND< 9.86 1.3 J
Methyl tert-butyl Ether	ND< 3.94
Methylcyclohexane	ND< 3.94
Methylene chloride	ND< 9.86 u J
4-Methyl-2-pentanone	ND< 9.86
Styrene	ND< 9.86
1,1,2,2-Tetrachloroethane	ND< 3.94
Tetrachloroethene	ND< 3.94
Toluene	6.74
Freon 113	ND< 3.94
1,2,3-Trichlorobenzene	ND< 9.86
1,2,4-Trichlorobenzene	ND< 9.86
1,1,1-Trichloroethane	ND< 3.94
1,1,2-Trichloroethane	ND< 3.94
Trichloroethene	ND< 3.94
Trichlorofluoromethane	ND< 3.94
Vinyl chloride	ND< 3.94
m,p-Xylene	ND< 3.94
o-Xylene	ND< 3.94

ELAP Number 10958

Method: EPA 8260B

Data File: V73083.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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00856W2.XLS


**PARADIGM**

ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

**Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)**

 Client: **Lu Engineers**

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2974

Client Job Number: 40503

Field Location: CS-GP-20-09

Date Sampled: 02/09/2010

Date Received: 02/11/2010

Field ID Number: N/A

Date Analyzed: 02/16/2010

Sample Type: Soil

Compound	Results in ug / Kg	Compound	Results in ug / Kg
n-Butylbenzene	ND< 19.7	n-Propylbenzene	ND< 3.94
sec-Butylbenzene	ND< 3.94	1,2,4-Trimethylbenzene	ND< 3.94
tert-Butylbenzene	ND< 9.86	1,3,5-Trimethylbenzene	ND< 3.94
p-Isopropyltoluene	ND< 19.7		
Naphthalene	ND< 9.86		

ELAP Number 10958

Method: EPA 8260B

Data File: V73083.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
 Bruce Hoogesteger, Technical Director

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ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

**Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Lab Sample Number:** 2974**Client Job Number:** 40503**Field Location:** CS-GP-20-09**Date Sampled:** 02/09/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/16/2010

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
None Found	N/A	N/A	ND< 9.86	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V73083.D

,Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: 

Bruce Hoogesteger: Technical Director

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00655W2.XLS



### Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** Soil LRB 02/16

**Client Job Number:** 40503

**Field Location:** N/A

**Date Sampled:** N/A

**Field ID Number:** N/A

**Date Received:** N/A

**Sample Type:** Soil

**Date Analyzed:** 02/16/2010

Compound	Results in ug / Kg
Acetone	ND< 20.0
Benzene	ND< 4.00
Bromochloromethane	ND< 10.0
Bromodichloromethane	ND< 4.00
Bromoform	ND< 10.0
Bromomethane	ND< 4.00
2-Butanone	ND< 20.0
Carbon disulfide	ND< 4.00
Carbon Tetrachloride	ND< 10.0
Chlorobenzene	ND< 4.00
Chloroethane	ND< 4.00
Chloroform	ND< 4.00
Chloromethane	ND< 4.00
Cyclohexane	ND< 20.0
Dibromochloromethane	ND< 4.00
1,2-Dibromo-3-Chloropropane	ND< 20.0
1,2-Dibromoethane	ND< 10.0
1,2-Dichlorobenzene	ND< 10.0
1,3-Dichlorobenzene	ND< 10.0
1,4-Dichlorobenzene	ND< 4.00
Dichlorodifluoromethane	ND< 4.00
1,1-Dichloroethane	ND< 4.00
1,2-Dichloroethane	ND< 4.00
1,1-Dichloroethene	ND< 4.00
cis-1,2-Dichloroethene	ND< 4.00
trans-1,2-Dichloroethene	ND< 4.00

Compound	Results in ug / Kg
1,2-Dichloropropane	ND< 4.00
cis-1,3-Dichloropropene	ND< 4.00
trans-1,3-Dichloropropene	ND< 4.00
Ethylbenzene	ND< 4.00
2-Hexanone	ND< 10.0
Isopropylbenzene	ND< 20.0
Methyl acetate	ND< 10.0
Methyl tert-butyl Ether	ND< 4.00
Methylcyclohexane	ND< 4.00
Methylene chloride	ND< 10.0
4-Methyl-2-pentanone	ND< 10.0
Styrene	ND< 10.0
1,1,2,2-Tetrachloroethane	ND< 4.00
Tetrachloroethene	ND< 4.00
Toluene	ND< 4.00
Freon 113	ND< 4.00
1,2,3-Trichlorobenzene	ND< 10.0
1,2,4-Trichlorobenzene	ND< 10.0
1,1,1-Trichloroethane	ND< 4.00
1,1,2-Trichloroethane	ND< 4.00
Trichloroethene	ND< 4.00
Trichlorofluoromethane	ND< 4.00
Vinyl chloride	ND< 4.00
m,p-Xylene	ND< 4.00
o-Xylene	ND< 4.00

ELAP Number 10958

Method: EPA 8260B

Data File: V73062.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Matrix Spike Outliers indicate probable matrix interference

Signature:

  
Bruce Hoogesteger: Technical Director

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100655B4.XLS



**Volatile Analysis Report for Soils/Solids/Sludges (Additional STARS Compounds)**

Client: **Lu Engineers**

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: Soil LRB 02/16

Client Job Number: 40503

Field Location: N/A

Date Sampled: N/A

Field ID Number: N/A

Date Received: N/A

Sample Type: Soil

Date Analyzed: 02/16/2010

Compound	Results in ug / Kg	Compound	Results in ug / Kg
n-Butylbenzene	ND< 20.0	n-Propylbenzene	ND< 4.00
sec-Butylbenzene	ND< 4.00	1,2,4-Trimethylbenzene	ND< 4.00
tert-Butylbenzene	ND< 10.0	1,3,5-Trimethylbenzene	ND< 4.00
p-Isopropyltoluene	ND< 20.0		
Naphthalene	ND< 10.0, 715		

ELAP Number 10958

Method: EPA 8260B

Data File: V73062.D

Comments: ND denotes Non Detect

ug / Kg = microgram per kilogram

Signature:

Bruce Hoogesteger, Technical Director

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10065584.XLS



**Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Lab Sample Number:** Soil LRB 02/16**Client Job Number:** 40503**Field Location:** N/A**Date Sampled:** N/A**Field ID Number:** N/A**Date Received:** N/A**Sample Type:** Soil**Date Analyzed:** 02/16/2010

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
None Found	N/A	N/A	ND< 8.00	N/A


ELAP Number 10958

Method: EPA 8260B

Data File: V73062.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

**Signature:**  
Bruce Hoogesteger: Technical Director

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100655B4.XLS







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# Semi-Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Town of Clarkson  
 Client Job Number: 40503  
 Field Location: N/A  
 Field ID Number: N/A  
 Sample Type: Soil

Lab Project Number: 10-0655  
 Lab Sample Number: Soil LCS 02/19  
 SDG Group: 2964

Date Sampled: N/A  
 Date Received: N/A  
 Date Analyzed: 02/20/2010

Spiked Compound	Sample Results In ug / Kg	LCS Spiked In ug / Kg	LCS Results In ug / Kg	LCS Percent Recovery	MSD Spiked In ug / Kg	MSD Results In ug / Kg	MSD Percent Recovery	MS / MSD % RPD
2-Chlorophenol	ND < 286	2,140	1,710	79.9	N/A	N/A	N/A	N/A
1,4-Dichlorobenzene	ND < 286	1,430	1,080	75.5	N/A	N/A	N/A	N/A
N-Nitroso-di-n-propylamine	ND < 286	1,430	1,200	83.9	N/A	N/A	N/A	N/A
Phenol	ND < 286	2,140	1,720	80.4	N/A	N/A	N/A	N/A
4-Chloro-3-methylphenol	ND < 286	2,140	1,840	86.0	N/A	N/A	N/A	N/A
1,2,4-Trichlorobenzene	ND < 286	1,430	1,050	73.4	N/A	N/A	N/A	N/A
Acenaphthene	ND < 286	1,430	1,240	86.7	N/A	N/A	N/A	N/A
2,4-Dinitrotoluene	ND < 286	1,430	1,250	87.4	N/A	N/A	N/A	N/A
4-Nitrophenol	ND < 714	2,140	2,170	101	N/A	N/A	N/A	N/A
Pentachlorophenol	ND < 714	2,140	1,870	87.4	N/A	N/A	N/A	N/A
Pyrene	ND < 286	1,430	1,280	89.5	N/A	N/A	N/A	N/A
2,4-dichlorophenol			1707					
2,4-dinitrophenol			1820					
2-nitrophenol			1735					
2,4-dinitrophenol			1298					
2,4,6-Trinitrophenol			1932					
4,6-Dinitro-2-methylphenol			1903					
2,3,4,6-Tetrachlorophenol			1964					

ELAP Number 10858

Data File: S49733.D

Data File: S49734.D

Method: EPA 8270C

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### Semi-Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Town of Clarkson  
 Client Job Number: 40503  
 Field Location: CS-GP-01-03  
 Field ID Number: N/A  
 Sample Type: Soil

Lab Project Number: 10-0655  
 Lab Sample Number: 2964

SDG Group: 2964

Date Sampled: 02/08/2010  
 Date Received: 02/11/2010  
 Date Analyzed: 02/20/2010

Spiked Compound	Sample Results in ug / Kg	MS Spiked in ug / Kg	MS Results in ug / Kg	MS Percent Recovery	MSD Spiked in ug / Kg	MSD Results in ug / Kg	MSD Percent Recovery	MS / MSD % RPD
2-Chlorophenol	ND< 334	2,520	1,860	73.8	2,510	1,770	70.5	4.57
1,4-Dichlorobenzene	ND< 334	1,680	1,180	70.2	1,670	1,140	68.3	2.74
N-Nitroso-di-n-propylamine	ND< 334	1,680	1,350	80.4	1,670	1,240	74.3	7.89
Phenol	ND< 334	2,520	1,870	74.2	2,510	1,820	72.5	2.32
4-Chloro-3-methylphenol	ND< 334	2,520	2,020	80.2	2,510	1,850	73.7	8.45
1,2,4-Trichlorobenzene	ND< 334	1,680	1,170	69.6	1,670	1,100	65.9	5.46
Acenaphthene	ND< 334	1,680	1,320	78.6	1,670	1,270	76.0	3.36
2,4-Dinitrotoluene	ND< 334	1,680	1,340	79.8	1,670	1,250	74.9	6.33
4-Nitrophenol	ND< 834	2,520	2,330	92.5	2,510	2,180	86.9	6.24
Pentachlorophenol	ND< 834	2,520	2,030	80.6	2,510	1,920	76.5	5.22
Pyrene	ND< 334	1,680	1,390	82.7	1,670	1,300	77.8	6.11
2,4-dichlorophenol	1936					1793		
2,4-dinitrophenol	1900					1735		
2-nitrophenol	2006					1808		
2,4-dinitrophenol	1443					1350		
2,4,6-Trinitrophenol	2101					1960		
4,6-Dinitro-2-methylphenol	1974					1916		
2,3,4,6-Tetrachlorophenol	2169					2018		

ELAP Number 10958

Data File: S49735.D

Data File: S49736.D

Data File: S49737.D

Method: EPA 8270C

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### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2964

**Client Job Number:** 40503

**Field Location:** CS-GP-01-03

**Date Sampled:** 02/08/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/20/2010

Compound	Results in ug / Kg
Acenaphthene	ND< 334
Acenaphthylene	ND< 334
Acetophenone	ND< 334
Anthracene	ND< 334
Atrazine	ND< 334
Benzaldehyde	ND< 334
Benzo (a) anthracene	ND< 334
Benzo (a) pyrene	ND< 334
Benzo (b) fluoranthene	ND< 334
Benzo (g,h,i) perylene	ND< 334
Benzo (k) fluoranthene	ND< 334
Biphenyl	ND< 334
Bis (2-chloroethyl) ether	ND< 334
Bis (2-chloroethoxy) methane	ND< 334
Bis (2-ethylhexyl) phthalate	ND< 334
Bis (2-chloroisopropyl) ether	ND< 334
4-Bromophenyl phenyl ether	ND< 334
Butylbenzylphthalate	ND< 334
Caprolactam	ND< 334
Carbazole	ND< 334
4-Chloroaniline	ND< 334
4-Chloro-3-methylphenol	ND< 334
2-Chloronaphthalene	ND< 334
2-Chlorophenol	ND< 334
4-Chlorophenyl phenyl ether	ND< 334
Chrysene	ND< 334
1,3-Dichlorobenzene	ND< 334
1,4-Dichlorobenzene	ND< 334
1,2-Dichlorobenzene	ND< 334
Dibenz (a,h) anthracene	ND< 334
Dibenzofuran	ND< 334
3,3'-Dichlorobenzidine	ND< 334
2,4-Dichlorophenol	ND< 334
Diethyl phthalate	ND< 334
2,4-Dimethylphenol	ND< 334
Dimethyl phthalate	ND< 834

Compound	Results in ug / Kg
Di-n-butyl phthalate	ND< 334
4,6-Dinitro-2-methylphenol	ND< 834
2,4-Dinitrophenol	ND< 834
2,4-Dinitrotoluene	ND< 334
2,6-Dinitrotoluene	ND< 334
Di-n-octylphthalate	ND< 334
Fluoranthene	ND< 334
Fluorene	ND< 334
Hexachlorobenzene	ND< 334
Hexachlorobutadiene	ND< 334
Hexachlorocyclopentadiene	ND< 334
Hexachloroethane	ND< 334
Indeno (1,2,3-cd) pyrene	ND< 334
Isophorone	ND< 334
2-Methylnaphthalene	ND< 334
2-Methylphenol	ND< 334
3&4-Methylphenol	ND< 334
Naphthalene	ND< 334
2-Nitroaniline	ND< 834
3-Nitroaniline	ND< 834
4-Nitroaniline	ND< 834
Nitrobenzene	ND< 334
2-Nitrophenol	ND< 334
4-Nitrophenol	ND< 834
N-Nitroso-di-n-propylamine	ND< 334
N-Nitrosodiphenylamine	ND< 334
Pentachlorophenol	ND< 834
Phenanthrene	ND< 334
Phenol	ND< 334
Pyrene	ND< 334
1,2,4-Trichlorobenzene	ND< 334
2,4,5-Trichlorophenol	ND< 834
2,4,6-Trichlorophenol	ND< 334
1,2,4,5-Tetrachlorobenzene	ND< 334
2,3,4,6-Tetrachlorophenol	ND< 334

ELAP Number 10958

Method: EPA 8270C

Data File: S49735.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
 Bruce Hoogesteger, Technical Director



**Semi-Volatile Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2964

**Client Job Number:** 40503

**Field Location:** CS-GP-01-03

**Date Sampled:** 02/08/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/20/2010

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
Unknown	N/A	12.29	237	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S49735.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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100855S1.XLS



### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2965

**Client Job Number:** 40503

**Field Location:** CS-GP-07-07

**Date Sampled:** 02/08/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/20/2010

**Date Reissued:** 03/16/2010

Compound	Results in ug / Kg
Acenaphthene	ND< 400
Acenaphthylene	ND< 400
Acetophenone	ND< 400
Anthracene	ND< 400
Atrazine	ND< 400
Benzaldehyde	ND< 400 <i>us</i>
Benzo (a) anthracene	ND< 400
Benzo (a) pyrene	ND< 400
Benzo (b) fluoranthene	ND< 400
Benzo (g,h,i) perylene	ND< 400
Benzo (k) fluoranthene	ND< 400
Biphenyl	ND< 400
Bis (2-chloroethyl) ether	ND< 400
Bis (2-chloroethoxy) methane	ND< 400
Bis (2-ethylhexyl) phthalate	525
Bis (2-chloroisopropyl) ether	ND< 400
4-Bromophenyl phenyl ether	ND< 400
Butylbenzylphthalate	977
Caprolactam	ND< 400
Carbazole	ND< 400
4-Chloroaniline	ND< 400
4-Chloro-3-methylphenol	ND< 400
2-Chloronaphthalene	ND< 400
2-Chlorophenol	ND< 400
4-Chlorophenyl phenyl ether	ND< 400
Chrysene	ND< 400
1,3-Dichlorobenzene	ND< 400
1,4-Dichlorobenzene	ND< 400
1,2-Dichlorobenzene	ND< 400
Dibenz (a,h) anthracene	ND< 400
Dibenzofuran	ND< 400
3,3'-Dichlorobenzidine	ND< 400
2,4-Dichlorophenol	ND< 400
Diethyl phthalate	ND< 400
2,4-Dimethylphenol	ND< 400
Dimethyl phthalate	ND< 1,000

Compound	Results in ug / Kg
Di-n-butyl phthalate	ND< 400
4,6-Dinitro-2-methylphenol	ND< 1,000
2,4-Dinitrophenol	ND< 1,000
2,4-Dinitrotoluene	ND< 400
2,6-Dinitrotoluene	ND< 400
Di-n-octylphthalate	ND< 400
Fluoranthene	J 241
Fluorene	ND< 400
Hexachlorobenzene	ND< 400
Hexachlorobutadiene	ND< 400
Hexachlorocyclopentadiene	ND< 400
Hexachloroethane	ND< 400
Indeno (1,2,3-cd) pyrene	ND< 400
Isophorone	ND< 400
2-Methylnaphthalene	J 256
2-Methylphenol	ND< 400
3&4-Methylphenol	ND< 400
Naphthalene	ND< 400
2-Nitroaniline	ND< 1,000
3-Nitroaniline	ND< 1,000
4-Nitroaniline	ND< 1,000
Nitrobenzene	ND< 400
2-Nitrophenol	ND< 400
4-Nitrophenol	ND< 1,000
N-Nitroso-di-n-propylamine	ND< 400
N-Nitrosodiphenylamine	ND< 400
Pentachlorophenol	ND< 1,000
Phenanthrene	ND< 400
Phenol	ND< 400
Pyrene	J 201
1,2,4-Trichlorobenzene	ND< 400
2,4,5-Trichlorophenol	ND< 1,000
2,4,6-Trichlorophenol	ND< 400
1,2,4,5-Tetrachlorobenzene	ND< 400
2,3,4,6-Tetrachlorophenol	ND< 400

ELAP Number 10958

Method: EPA 8270C

Data File: S49738.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
 Bruce Hoogesteger: Technical Director



### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers

**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2965

**Client Job Number:** 40503

**Field Location:** CS-GP-07-07

**Date Sampled:** 02/08/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/20/2010

**Date Relssued:** 03/16/2010

<u>Tentatively Identified Compounds</u>	<u>CAS Number</u>	<u>Retention Time</u>	<u>Results in ug / Kg</u>	<u>Percent Fit</u>
Limonene	N/A	7.21	755	N/A
Unknown	N/A	9.98	364	N/A
Unknown PAH	N/A	10.85	395	N/A
Unknown	N/A	12.29	475	N/A
Unknown Alkane	N/A	13.02	387	N/A
Cyclic octaatomic sulfur	10544-50-0	15.43	2,560	90
Unknown	N/A	15.71	530	N/A
Unknown	N/A	20.25	2,520	N/A
Unknown	N/A	20.43	36,400	N/A
Vitamin E	10191-41-0	20.49	341	99
Unknown	N/A	20.55	24,500	N/A
Unknown	N/A	20.69	1,560	N/A
Unknown	N/A	20.76	2,970	N/A
Unknown	N/A	20.91	29,700	N/A
Unknown	N/A	21.07	12,300	N/A
Unknown	N/A	21.14	1,790	N/A
Unknown	N/A	21.22	3,090	N/A
Unknown	N/A	21.29	2,300	N/A
Unknown	N/A	21.41	1,330	N/A
Unknown	N/A	21.65	4,450	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S49738.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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**Semi-Volatile Analysis Report for Soils/Solids/Sludges**
**Client: Lu Engineers**
**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2966

**Client Job Number:** 40503

**Field Location:** CS-GP-04-02

**Date Sampled:** 02/08/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/20/2010

Compound	Results in ug / Kg
Acenaphthene	ND< 329
Acenaphthylene	ND< 329
Acetophenone	ND< 329
Anthracene	ND< 329
Atrazine	ND< 329
Benzaldehyde	ND< 329 u 5
Benzo (a) anthracene	ND< 329
Benzo (a) pyrene	ND< 329
Benzo (b) fluoranthene	ND< 329
Benzo (g,h,i) perylene	ND< 329
Benzo (k) fluoranthene	ND< 329
Biphenyl	ND< 329
Bis (2-chloroethyl) ether	ND< 329
Bis (2-chloroethoxy) methane	ND< 329
Bis (2-ethylhexyl) phthalate	ND< 329
Bis (2-chloroisopropyl) ether	ND< 329
4-Bromophenyl phenyl ether	ND< 329
Butylbenzylphthalate	ND< 329
Caprolactam	ND< 329
Carbazole	ND< 329
4-Chloroaniline	ND< 329
4-Chloro-3-methylphenol	ND< 329
2-Chloronaphthalene	ND< 329
2-Chlorophenol	ND< 329
4-Chlorophenyl phenyl ether	ND< 329
Chrysene	ND< 329
1,3-Dichlorobenzene	ND< 329
1,4-Dichlorobenzene	ND< 329
1,2-Dichlorobenzene	ND< 329
Dibenz (a,h) anthracene	ND< 329
Dibenzofuran	ND< 329
3,3'-Dichlorobenzidine	ND< 329
2,4-Dichlorophenol	ND< 329
Diethyl phthalate	ND< 329
2,4-Dimethylphenol	ND< 329
Dimethyl phthalate	ND< 821

Compound	Results in ug / Kg
Di-n-butyl phthalate	ND< 329
4,6-Dinitro-2-methylphenol	ND< 821
2,4-Dinitrophenol	ND< 821
2,4-Dinitrotoluene	ND< 329
2,6-Dinitrotoluene	ND< 329
Di-n-octylphthalate	ND< 329
Fluoranthene	ND< 329
Fluorene	ND< 329
Hexachlorobenzene	ND< 329
Hexachlorobutadiene	ND< 329
Hexachlorocyclopentadiene	ND< 329
Hexachloroethane	ND< 329
Indeno (1,2,3-cd) pyrene	ND< 329
Isophorone	ND< 329
2-Methylnaphthalene	ND< 329
2-Methylphenol	ND< 329
3&4-Methylphenol	ND< 329
Naphthalene	ND< 329
2-Nitroaniline	ND< 821
3-Nitroaniline	ND< 821
4-Nitroaniline	ND< 821
Nitrobenzene	ND< 329
2-Nitrophenol	ND< 329
4-Nitrophenol	ND< 821
N-Nitroso-di-n-propylamine	ND< 329
N-Nitrosodiphenylamine	ND< 329
Pentachlorophenol	ND< 821
Phenanthrene	ND< 329
Phenol	ND< 329
Pyrene	ND< 329
1,2,4-Trichlorobenzene	ND< 329
2,4,5-Trichlorophenol	ND< 821
2,4,6-Trichlorophenol	ND< 329
1,2,4,5-Tetrachlorobenzene	ND< 329
2,3,4,6-Tetrachlorophenol	ND< 329

ELAP Number 10958

Method: EPA 8270C

Data File: S49739.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
 Bruce Hoogesteger, Technical Director

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**Semi-Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Client Job Number:** 40503**Lab Sample Number:** 2966**Field Location:** CS-GP-04-02**Date Sampled:** 02/08/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/20/2010

<u>Tentatively Identified Compounds</u>	<u>CAS Number</u>	<u>Retention Time</u>	<u>Results in ug / Kg</u>	<u>Percent Fit</u>
Unknown	N/A	12.29	269	N/A
Unknown	N/A	19.36	186	N/A
Unknown	N/A	20.86	1,580	N/A
Unknown	N/A	21.62	184	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S49739.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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100655S3.XLS

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**Semi-Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2967

Client Job Number: 40503

Field Location: CS-GP-16-8.5

Date Sampled: 02/08/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/20/2010

Compound	Results in ug / Kg
Acenaphthene	ND< 343
Acenaphthylene	ND< 343
Acetophenone	ND< 343
Anthracene	ND< 343
Atrazine	ND< 343
Benzaldehyde	ND< 343
Benzo (a) anthracene	ND< 343
Benzo (a) pyrene	ND< 343
Benzo (b) fluoranthene	ND< 343
Benzo (g,h,i) perylene	ND< 343
Benzo (k) fluoranthene	ND< 343
Biphenyl	ND< 343
Bis (2-chloroethyl) ether	ND< 343
Bis (2-chloroethoxy) methane	ND< 343
Bis (2-ethylhexyl) phthalate	ND< 343
Bis (2-chloroisopropyl) ether	ND< 343
4-Bromophenyl phenyl ether	ND< 343
Butylbenzylphthalate	ND< 343
Caprolactam	ND< 343
Carbazole	ND< 343
4-Chloroaniline	ND< 343
4-Chloro-3-methylphenol	ND< 343
2-Chloronaphthalene	ND< 343
2-Chlorophenol	ND< 343
4-Chlorophenyl phenyl ether	ND< 343
Chrysene	ND< 343
1,3-Dichlorobenzene	ND< 343
1,4-Dichlorobenzene	ND< 343
1,2-Dichlorobenzene	ND< 343
Dibenz (a,h) anthracene	ND< 343
Dibenzofuran	ND< 343
3,3'-Dichlorobenzidine	ND< 343
2,4-Dichlorophenol	ND< 343
Diethyl phthalate	ND< 343
2,4-Dimethylphenol	ND< 343
Dimethyl phthalate	ND< 857

Compound	Results in ug / Kg
Di-n-butyl phthalate	ND< 343
4,6-Dinitro-2-methylphenol	ND< 857
2,4-Dinitrophenol	ND< 857
2,4-Dinitrotoluene	ND< 343
2,6-Dinitrotoluene	ND< 343
Di-n-octylphthalate	ND< 343
Fluoranthene	ND< 343
Fluorene	ND< 343
Hexachlorobenzene	ND< 343
Hexachlorobutadiene	ND< 343
Hexachlorocyclopentadiene	ND< 343
Hexachloroethane	ND< 343
Indeno (1,2,3-cd) pyrene	ND< 343
Isophorone	ND< 343
2-Methylnaphthalene	ND< 343
2-Methylphenol	ND< 343
3&4-Methylphenol	ND< 343
Naphthalene	ND< 343
2-Nitroaniline	ND< 857
3-Nitroaniline	ND< 857
4-Nitroaniline	ND< 857
Nitrobenzene	ND< 343
2-Nitrophenol	ND< 343
4-Nitrophenol	ND< 857
N-Nitroso-di-n-propylamine	ND< 343
N-Nitrosodiphenylamine	ND< 343
Pentachlorophenol	ND< 857
Phenanthrene	ND< 343
Phenol	ND< 343
Pyrene	ND< 343
1,2,4-Trichlorobenzene	ND< 343
2,4,5-Trichlorophenol	ND< 857
2,4,6-Trichlorophenol	ND< 343
1,2,4,5-Tetrachlorobenzene	ND< 343
2,3,4,6-Tetrachlorophenol	ND< 343

ELAP Number 10958

Method: EPA 8270C

Data File: S49740.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: 

Bruce Hoogesteger, Technical Director

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100856S4.XLS

**Semi-Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Lab Sample Number:** 2967**Client Job Number:** 40503**Field Location:** CS-GP-16-8.5**Date Sampled:** 02/08/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/20/2010

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
Unknown	N/A	12.29	141	N/A
Unknown	N/A	14.84	172	N/A
Unknown	N/A	17.09	163	N/A
				N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S49740.D

**Comments:** ND denotes Non Detect

ug / Kg = microgram per Kilogram

**Signature:**  
Bruce Hoogesteger, Technical Director

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100655S4.XLS



### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2968

**Client Job Number:** 40503

**Field Location:** CS-GP-11-10

**Date Sampled:** 02/09/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/20/2010

Compound	Results in ug / Kg
Acenaphthene	ND< 326
Acenaphthylene	ND< 326
Acetophenone	ND< 326
Anthracene	ND< 326
Atrazine	ND< 326
Benzaldehyde	ND< 326
Benzo (a) anthracene	ND< 326
Benzo (a) pyrene	ND< 326
Benzo (b) fluoranthene	ND< 326
Benzo (g,h,i) perylene	ND< 326
Benzo (k) fluoranthene	ND< 326
Biphenyl	ND< 326
Bis (2-chloroethyl) ether	ND< 326
Bis (2-chloroethoxy) methane	ND< 326
Bis (2-ethylhexyl) phthalate	ND< 326
Bis (2-chloroisopropyl) ether	ND< 326
4-Bromophenyl phenyl ether	ND< 326
Butylbenzylphthalate	ND< 326
Caprolactam	ND< 326
Carbazole	ND< 326
4-Chloroaniline	ND< 326
4-Chloro-3-methylphenol	ND< 326
2-Chloronaphthalene	ND< 326
2-Chlorophenol	ND< 326
4-Chlorophenyl phenyl ether	ND< 326
Chrysene	ND< 326
1,3-Dichlorobenzene	ND< 326
1,4-Dichlorobenzene	ND< 326
1,2-Dichlorobenzene	ND< 326
Dibenz (a,h) anthracene	ND< 326
Dibenzofuran	ND< 326
3,3'-Dichlorobenzidine	ND< 326
2,4-Dichlorophenol	ND< 326
Diethyl phthalate	ND< 326
2,4-Dimethylphenol	ND< 326
Dimethyl phthalate	ND< 814

ELAP Number 10958

Compound	Results in ug / Kg
Di-n-butyl phthalate	ND< 326
4,6-Dinitro-2-methylphenol	ND< 814
2,4-Dinitrophenol	ND< 814
2,4-Dinitrotoluene	ND< 326
2,6-Dinitrotoluene	ND< 326
Di-n-octylphthalate	ND< 326
Fluoranthene	ND< 326
Fluorene	ND< 326
Hexachlorobenzene	ND< 326
Hexachlorobutadiene	ND< 326
Hexachlorocyclopentadiene	ND< 326
Hexachloroethane	ND< 326
Indeno (1,2,3-cd) pyrene	ND< 326
Isophorone	ND< 326
2-Methylnaphthalene	ND< 326
2-Methylphenol	ND< 326
3&4-Methylphenol	ND< 326
Naphthalene	ND< 326
2-Nitroaniline	ND< 814
3-Nitroaniline	ND< 814
4-Nitroaniline	ND< 814
Nitrobenzene	ND< 326
2-Nitrophenol	ND< 326
4-Nitrophenol	ND< 814
N-Nitroso-di-n-propylamine	ND< 326
N-Nitrosodiphenylamine	ND< 326
Pentachlorophenol	ND< 814
Phenanthrene	ND< 326
Phenol	ND< 326
Pyrene	ND< 326
1,2,4-Trichlorobenzene	ND< 326
2,4,5-Trichlorophenol	ND< 814
2,4,6-Trichlorophenol	ND< 326
1,2,4,5-Tetrachlorobenzene	ND< 326
2,3,4,6-Tetrachlorophenol	ND< 326

Method: EPA 8270C

Data File: S49741.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
 Bruce Hoogesteger: Technical Director

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10065565.XLS



**Semi-Volatile Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2968

Client Job Number: 40503

Field Location: CS-GP-11-10

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/20/2010

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	N/A	ND< 130	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S49741.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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10065535.XLS

### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2969

**Client Job Number:** 40503

**Field Location:** CS-GP-12-09

**Date Sampled:** 02/09/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/20/2010

Compound	Results in ug / Kg
Acenaphthene	ND< 325
Acenaphthylene	ND< 325
Acetophenone	ND< 325
Anthracene	ND< 325
Atrazine	ND< 325
Benzaldehyde	ND< 325
Benzo (a) anthracene	ND< 325
Benzo (a) pyrene	ND< 325
Benzo (b) fluoranthene	ND< 325
Benzo (g,h,i) perylene	ND< 325
Benzo (k) fluoranthene	ND< 325
Biphenyl	ND< 325
Bis (2-chloroethyl) ether	ND< 325
Bis (2-chloroethoxy) methane	ND< 325
Bis (2-ethylhexyl) phthalate	ND< 325
Bis (2-chloroisopropyl) ether	ND< 325
4-Bromophenyl phenyl ether	ND< 325
Butylbenzylphthalate	ND< 325
Caprolactam	ND< 325
Carbazole	ND< 325
4-Chloroaniline	ND< 325
4-Chloro-3-methylphenol	ND< 325
2-Chloronaphthalene	ND< 325
2-Chlorophenol	ND< 325
4-Chlorophenyl phenyl ether	ND< 325
Chrysene	ND< 325
1,3-Dichlorobenzene	ND< 325
1,4-Dichlorobenzene	ND< 325
1,2-Dichlorobenzene	ND< 325
Dibenz (a,h) anthracene	ND< 325
Dibenzofuran	ND< 325
3,3'-Dichlorobenzidine	ND< 325
2,4-Dichlorophenol	ND< 325
Dlethyl phthalate	ND< 325
2,4-Dimethylphenol	ND< 325
Dimethyl phthalate	ND< 814

Compound	Results in ug / Kg
Di-n-butyl phthalate	ND< 325
4,6-Dinitro-2-methylphenol	ND< 814
2,4-Dinitrophenol	ND< 814
2,4-Dinitrotoluene	ND< 325
2,6-Dinitrotoluene	ND< 325
Di-n-octylphthalate	ND< 325
Fluoranthene	ND< 325
Fluorene	ND< 325
Hexachlorobenzene	ND< 325
Hexachlorobutadiene	ND< 325
Hexachlorocyclopentadiene	ND< 325
Hexachloroethane	ND< 325
Indeno (1,2,3-cd) pyrene	ND< 325
Isophorone	ND< 325
2-Methylnaphthalene	ND< 325
2-Methylphenol	ND< 325
3&4-Methylphenol	ND< 325
Naphthalene	ND< 325
2-Nitroaniline	ND< 814
3-Nitroaniline	ND< 814
4-Nitroaniline	ND< 814
Nitrobenzene	ND< 325
2-Nitrophenol	ND< 325
4-Nitrophenol	ND< 814
N-Nitroso-di-n-propylamine	ND< 325
N-Nitrosodiphenylamine	ND< 325
Pentachlorophenol	ND< 814
Phenanthrene	ND< 325
Phenol	ND< 325
Pyrene	ND< 325
1,2,4-Trichlorobenzene	ND< 325
2,4,5-Trichlorophenol	ND< 814
2,4,6-Trichlorophenol	ND< 325
1,2,4,5-Tetrachlorobenzene	ND< 325
2,3,4,6-Tetrachlorophenol	ND< 325

ELAP Number 10958

Method: EPA 8270C

Data File: S49742.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
 Bruce Hoogesteger, Technical Director

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**Semi-Volatile Analysis Report for Solids/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Lab Sample Number:** 2969**Client Job Number:** 40503**Field Location:** CS-GP-12-09**Date Sampled:** 02/09/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/20/2010

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
Unknown	N/A	19.36	133	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S49742.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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**Semi-Volatile Analysis Report for Soils/Solids/Sludges****Client: Lu Engineers****Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Lab Sample Number:** 2970**Client Job Number:** 40503**Field Location:** CS-GP-13-10**Date Sampled:** 02/09/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/20/2010

Compound	Results in ug / Kg
Acenaphthene	ND< 322
Acenaphthylene	ND< 322
Acetophenone	ND< 322
Anthracene	ND< 322
Atrazine	ND< 322
Benzaldehyde	ND< 322
Benzo (a) anthracene	ND< 322
Benzo (a) pyrene	ND< 322
Benzo (b) fluoranthene	ND< 322
Benzo (g,h,i) perylene	ND< 322
Benzo (k) fluoranthene	ND< 322
Biphenyl	ND< 322
Bis (2-chloroethyl) ether	ND< 322
Bis (2-chloroethoxy) methane	ND< 322
Bis (2-ethylhexyl) phthalate	ND< 322
Bis (2-chloroisopropyl) ether	ND< 322
4-Bromophenyl phenyl ether	ND< 322
Butylbenzylphthalate	ND< 322
Caprolactam	ND< 322
Carbazole	ND< 322
4-Chloroaniline	ND< 322
4-Chloro-3-methylphenol	ND< 322
2-Chloronaphthalene	ND< 322
2-Chlorophenol	ND< 322
4-Chlorophenyl phenyl ether	ND< 322
Chrysene	ND< 322
1,3-Dichlorobenzene	ND< 322
1,4-Dichlorobenzene	ND< 322
1,2-Dichlorobenzene	ND< 322
Dibenz (a,h) anthracene	ND< 322
Dibenzofuran	ND< 322
3,3'-Dichlorobenzidine	ND< 322
2,4-Dichlorophenol	ND< 322
Diethyl phthalate	ND< 322
2,4-Dimethylphenol	ND< 322
Dimethyl phthalate	ND< 805

ELAP Number 10958

Method: EPA 8270C

Compound	Results in ug / Kg
Di-n-butyl phthalate	ND< 322
4,6-Dinitro-2-methylphenol	ND< 805
2,4-Dinitrophenol	ND< 805
2,4-Dinitrotoluene	ND< 322
2,6-Dinitrotoluene	ND< 322
Di-n-octylphthalate	ND< 322
Fluoranthene	ND< 322
Fluorene	ND< 322
Hexachlorobenzene	ND< 322
Hexachlorobutadiene	ND< 322
Hexachlorocyclopentadiene	ND< 322
Hexachloroethane	ND< 322
Indeno (1,2,3-cd) pyrene	ND< 322
Isophorone	ND< 322
2-Methylnaphthalene	ND< 322
2-Methylphenol	ND< 322
3&4-Methylphenol	ND< 322
Naphthalene	ND< 322
2-Nitroaniline	ND< 805
3-Nitroaniline	ND< 805
4-Nitroaniline	ND< 805
Nitrobenzene	ND< 322
2-Nitrophenol	ND< 322
4-Nitrophenol	ND< 805
N-Nitroso-di-n-propylamine	ND< 322
N-Nitrosodiphenylamine	ND< 322
Pentachlorophenol	ND< 805
Phenanthrene	ND< 322
Phenol	ND< 322
Pyrene	ND< 322
1,2,4-Trichlorobenzene	ND< 322
2,4,5-Trichlorophenol	ND< 805
2,4,6-Trichlorophenol	ND< 322
1,2,4,5-Tetrachlorobenzene	ND< 322
2,3,4,6-Tetrachlorophenol	ND< 322

Data File: S49743.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

Bruce Hoogesteger, Technical Director

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### Semi-Volatile Analysis Report for Soils/Solids/Sludges

Client: Lu Engineers

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2970

Client Job Number: 40503

Field Location: CS-GP-13-10

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/20/2010

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	N/A	ND < 129	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S49743.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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# Semi-Volatile Analysis Report for Soils/Solids/Sludges

Client: **Lu Engineers**

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2971

Client Job Number: 40503

Field Location: CS-GP-18-07

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/20/2010

Compound	Results in ug / Kg
Acenaphthene	ND< 337
Acenaphthylene	ND< 337
Acetophenone	ND< 337
Anthracene	ND< 337
Atrazine	ND< 337
Benzaldehyde	ND< 337
Benzo (a) anthracene	ND< 337
Benzo (a) pyrene	ND< 337
Benzo (b) fluoranthene	ND< 337
Benzo (g,h,i) perylene	ND< 337
Benzo (k) fluoranthene	ND< 337
Biphenyl	ND< 337
Bis (2-chloroethyl) ether	ND< 337
Bis (2-chloroethoxy) methane	ND< 337
Bis (2-ethylhexyl) phthalate	ND< 337
Bis (2-chloroisopropyl) ether	ND< 337
4-Bromophenyl phenyl ether	ND< 337
Butylbenzylphthalate	ND< 337
Caprolactam	ND< 337
Carbazole	ND< 337
4-Chloroaniline	ND< 337
4-Chloro-3-methylphenol	ND< 337
2-Chloronaphthalene	ND< 337
2-Chlorophenol	ND< 337
4-Chlorophenyl phenyl ether	ND< 337
Chrysene	ND< 337
1,3-Dichlorobenzene	ND< 337
1,4-Dichlorobenzene	ND< 337
1,2-Dichlorobenzene	ND< 337
Dibenz (a,h) anthracene	ND< 337
Dibenzofuran	ND< 337
3,3'-Dichlorobenzidine	ND< 337
2,4-Dichlorophenol	ND< 337
Diethyl phthalate	ND< 337
2,4-Dimethylphenol	ND< 337
Dimethyl phthalate	ND< 843

ELAP Number 10958

Compound	Results in ug / Kg
Di-n-butyl phthalate	ND< 337
4,6-Dinitro-2-methylphenol	ND< 843
2,4-Dinitrophenol	ND< 843
2,4-Dinitrotoluene	ND< 337
2,6-Dinitrotoluene	ND< 337
Di-n-octylphthalate	ND< 337
Fluoranthene	ND< 337
Fluorene	ND< 337
Hexachlorobenzene	ND< 337
Hexachlorobutadiene	ND< 337
Hexachlorocyclopentadiene	ND< 337
Hexachloroethane	ND< 337
Indeno (1,2,3-cd) pyrene	ND< 337
Isophorone	ND< 337
2-Methylnaphthalene	ND< 337
2-Methylphenol	ND< 337
3&4-Methylphenol	ND< 337
Naphthalene	ND< 337
2-Nitroaniline	ND< 843
3-Nitroaniline	ND< 843
4-Nitroaniline	ND< 843
Nitrobenzene	ND< 337
2-Nitrophenol	ND< 337
4-Nitrophenol	ND< 843
N-Nitroso-di-n-propylamine	ND< 337
N-Nitrosodiphenylamine	ND< 337
Pentachlorophenol	ND< 843
Phenanthrene	ND< 337
Phenol	ND< 337
Pyrene	ND< 337
1,2,4-Trichlorobenzene	ND< 337
2,4,5-Trichlorophenol	ND< 843
2,4,6-Trichlorophenol	ND< 337
1,2,4,5-Tetrachlorobenzene	ND< 337
2,3,4,6-Tetrachlorophenol	ND< 337

Method: EPA 8270C

Data File: S49744.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

Bruce Hoogesteger: Technical Director

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10085538.XLS

**Semi-Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Lab Sample Number:** 2971**Client Job Number:** 40503**Field Location:** CS-GP-18-07**Date Sampled:** 02/09/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/20/2010

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
Unknown	N/A	14.25	140	N/A
Cyclic octaatomic sulfur	10544-50-0	15.41	497	95

ELAP Number 10958

Method: EPA 8270C

Data File: S49744.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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100655S8.XLS

### Semi-Volatile Analysis Report for Soils/Solids/Sludges

 Client: Lu Engineers

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2972

Client Job Number: 40503

Field Location: CS-GP-18-07D

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/20/2010

Compound	Results in ug / Kg
Acenaphthene	ND< 336
Acenaphthylene	ND< 336
Acetophenone	ND< 336
Anthracene	ND< 336
Atrazine	ND< 336
Benzaldehyde	ND< 336
Benzo (a) anthracene	ND< 336
Benzo (a) pyrene	ND< 336
Benzo (b) fluoranthene	ND< 336
Benzo (g,h,i) perylene	ND< 336
Benzo (k) fluoranthene	ND< 336
Biphenyl	ND< 336
Bis (2-chloroethyl) ether	ND< 336
Bis (2-chloroethoxy) methane	ND< 336
Bis (2-ethylhexyl) phthalate	J 261
Bis (2-chloroisopropyl) ether	ND< 336
4-Bromophenyl phenyl ether	ND< 336
Butylbenzylphthalate	ND< 336
Caprolactam	ND< 336
Carbazole	ND< 336
4-Chloroaniline	ND< 336
4-Chloro-3-methylphenol	ND< 336
2-Chloronaphthalene	ND< 336
2-Chlorophenol	ND< 336
4-Chlorophenyl phenyl ether	ND< 336
Chrysene	ND< 336
1,3-Dichlorobenzene	ND< 336
1,4-Dichlorobenzene	ND< 336
1,2-Dichlorobenzene	ND< 336
Dibenz (a,h) anthracene	ND< 336
Dibenzofuran	ND< 336
3,3'-Dichlorobenzidine	ND< 336
2,4-Dichlorophenol	ND< 336
Diethyl phthalate	ND< 336
2,4-Dimethylphenol	ND< 336
Dimethyl phthalate	ND< 840

Compound	Results in ug / Kg
Di-n-butyl phthalate	ND< 336
4,6-Dinitro-2-methylphenol	ND< 840
2,4-Dinitrophenol	ND< 840
2,4-Dinitrotoluene	ND< 336
2,6-Dinitrotoluene	ND< 336
Di-n-octylphthalate	ND< 336
Fluoranthene	ND< 336
Fluorene	ND< 336
Hexachlorobenzene	ND< 336
Hexachlorobutadiene	ND< 336
Hexachlorocyclopentadiene	ND< 336
Hexachloroethane	ND< 336
Indeno (1,2,3-cd) pyrene	ND< 336
Isophorone	ND< 336
2-Methylnaphthalene	ND< 336
2-Methylphenol	ND< 336
3&4-Methylphenol	ND< 336
Naphthalene	ND< 336
2-Nitroaniline	ND< 840
3-Nitroaniline	ND< 840
4-Nitroaniline	ND< 840
Nitrobenzene	ND< 336
2-Nitrophenol	ND< 336
4-Nitrophenol	ND< 840
N-Nitroso-di-n-propylamine	ND< 336
N-Nitrosodiphenylamine	ND< 336
Pentachlorophenol	ND< 840
Phenanthrene	ND< 336
Phenol	ND< 336
Pyrene	ND< 336
1,2,4-Trichlorobenzene	ND< 336
2,4,5-Trichlorophenol	ND< 840
2,4,6-Trichlorophenol	ND< 336
1,2,4,5-Tetrachlorobenzene	ND< 336
2,3,4,6-Tetrachlorophenol	ND< 336

ELAP Number 10958

Method: EPA 8270C

Data File: S49745.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
 Bruce Hoogesteger, Technical Director

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10065589.XLS



**Semi-Volatile Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2972

**Client Job Number:** 40503

**Field Location:** CS-GP-18-07D

**Date Sampled:** 02/09/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/20/2010

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
Cyclic octaatomic sulfur	10544-50-0	15.41	326	96

ELAP Number 10958

Method: EPA 8270C

Data File: S49745.D

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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10085589.XLS

# Semi-Volatile Analysis Report for Soils/Solids/Sludges

Client: **Lu Engineers**

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2973

Client Job Number: 40503

Field Location: CS-GP-19-10

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/20/2010

Compound	Results in ug / Kg
Acenaphthene	ND< 321
Acenaphthylene	ND< 321
Acetophenone	ND< 321
Anthracene	ND< 321
Atrazine	ND< 321
Benzaldehyde	ND< 321
Benzo (a) anthracene	ND< 321
Benzo (a) pyrene	ND< 321
Benzo (b) fluoranthene	ND< 321
Benzo (g,h,i) perylene	ND< 321
Benzo (k) fluoranthene	ND< 321
Biphenyl	ND< 321
Bis (2-chloroethyl) ether	ND< 321
Bis (2-chloroethoxy) methane	ND< 321
Bis (2-ethylhexyl) phthalate	ND< 321
Bis (2-chloroisopropyl) ether	ND< 321
4-Bromophenyl phenyl ether	ND< 321
Butylbenzylphthalate	ND< 321
Caprolactam	ND< 321
Carbazole	ND< 321
4-Chloroaniline	ND< 321
4-Chloro-3-methylphenol	ND< 321
2-Chloronaphthalene	ND< 321
2-Chlorophenol	ND< 321
4-Chlorophenyl phenyl ether	ND< 321
Chrysene	ND< 321
1,3-Dichlorobenzene	ND< 321
1,4-Dichlorobenzene	ND< 321
1,2-Dichlorobenzene	ND< 321
Dibenz (a,h) anthracene	ND< 321
Dibenzofuran	ND< 321
3,3'-Dichlorobenzidine	ND< 321
2,4-Dichlorophenol	ND< 321
Diethyl phthalate	ND< 321
2,4-Dimethylphenol	ND< 321
Dimethyl phthalate	ND< 803

Compound	Results in ug / Kg
Di-n-butyl phthalate	ND< 321
4,6-Dinitro-2-methylphenol	ND< 803
2,4-Dinitrophenol	ND< 803
2,4-Dinitrotoluene	ND< 321
2,6-Dinitrotoluene	ND< 321
Di-n-octylphthalate	ND< 321
Fluoranthene	ND< 321
Fluorene	ND< 321
Hexachlorobenzene	ND< 321
Hexachlorobutadiene	ND< 321
Hexachlorocyclopentadiene	ND< 321
Hexachloroethane	ND< 321
Indeno (1,2,3-cd) pyrene	ND< 321
Isophorone	ND< 321
2-Methylnaphthalene	ND< 321
2-Methylphenol	ND< 321
3&4-Methylphenol	ND< 321
Naphthalene	ND< 321
2-Nitroaniline	ND< 803
3-Nitroaniline	ND< 803
4-Nitroaniline	ND< 803
Nitrobenzene	ND< 321
2-Nitrophenol	ND< 321
4-Nitrophenol	ND< 803
N-Nitroso-di-n-propylamine	ND< 321
N-Nitrosodiphenylamine	ND< 321
Pentachlorophenol	ND< 803
Phenanthrene	ND< 321
Phenol	ND< 321
Pyrene	ND< 321
1,2,4-Trichlorobenzene	ND< 321
2,4,5-Trichlorophenol	ND< 803
2,4,6-Trichlorophenol	ND< 321
1,2,4,5-Tetrachlorobenzene	ND< 321
2,3,4,6-Tetrachlorophenol	ND< 321

ELAP Number 10958

Method: EPA 8270C

Data File: S49746.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

Bruce Hoogesteger, Technical Director

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**Semi-Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Lab Sample Number:** 2973**Client Job Number:** 40503**Field Location:** CS-GP-19-10**Date Sampled:** 02/09/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/20/2010

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
None Found	N/A	N/A	ND< 128	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S49746.D

**Comments:** ND denotes Non Detect

ug / Kg = microgram per Kilogram

**Signature:**  
Bruce Hoogesteger, Technical Director

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### Semi-Volatile Analysis Report for Soils/Solids/Sludges

 Client: **Lu Engineers**

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2974

Client Job Number: 40503

Field Location: CS-GP-20-09

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/20/2010

Compound	Results in ug / Kg
Acenaphthene	ND< 338
Acenaphthylene	ND< 338
Acetophenone	ND< 338
Anthracene	ND< 338
Atrazine	ND< 338
Benzaldehyde	ND< 338
Benzo (a) anthracene	ND< 338
Benzo (a) pyrene	ND< 338
Benzo (b) fluoranthene	ND< 338
Benzo (g,h,i) perylene	ND< 338
Benzo (k) fluoranthene	ND< 338
Biphenyl	ND< 338
Bis (2-chloroethyl) ether	ND< 338
Bis (2-chloroethoxy) methane	ND< 338
Bis (2-ethylhexyl) phthalate	ND< 338
Bis (2-chloroisopropyl) ether	ND< 338
4-Bromophenyl phenyl ether	ND< 338
Butylbenzylphthalate	ND< 338
Caprolactam	ND< 338
Carbazole	ND< 338
4-Chloroaniline	ND< 338
4-Chloro-3-methylphenol	ND< 338
2-Chloronaphthalene	ND< 338
2-Chlorophenol	ND< 338
4-Chlorophenyl phenyl ether	ND< 338
Chrysene	ND< 338
1,3-Dichlorobenzene	ND< 338
1,4-Dichlorobenzene	ND< 338
1,2-Dichlorobenzene	ND< 338
Dibenz (a,h) anthracene	ND< 338
Dibenzofuran	ND< 338
3,3'-Dichlorobenzidine	ND< 338
2,4-Dichlorophenol	ND< 338
Diethyl phthalate	ND< 338
2,4-Dimethylphenol	ND< 338
Dimethyl phthalate	ND< 845

Compound	Results in ug / Kg
Di-n-butyl phthalate	ND< 338
4,6-Dinitro-2-methylphenol	ND< 845
2,4-Dinitrophenol	ND< 845
2,4-Dinitrotoluene	ND< 338
2,6-Dinitrotoluene	ND< 338
Di-n-octylphthalate	ND< 338
Fluoranthene	ND< 338
Fluorene	ND< 338
Hexachlorobenzene	ND< 338
Hexachlorobutadiene	ND< 338
Hexachlorocyclopentadiene	ND< 338
Hexachloroethane	ND< 338
Indeno (1,2,3-cd) pyrene	ND< 338
Isophorone	ND< 338
2-Methylnaphthalene	ND< 338
2-Methylphenol	ND< 338
3&4-Methylphenol	ND< 338
Naphthalene	ND< 338
2-Nitroaniline	ND< 845
3-Nitroaniline	ND< 845
4-Nitroaniline	ND< 845
Nitrobenzene	ND< 338
2-Nitrophenol	ND< 338
4-Nitrophenol	ND< 845
N-Nitroso-di-n-propylamine	ND< 338
N-Nitrosodiphenylamine	ND< 338
Pentachlorophenol	ND< 845
Phenanthrene	ND< 338
Phenol	ND< 338
Pyrene	ND< 338
1,2,4-Trichlorobenzene	ND< 338
2,4,5-Trichlorophenol	ND< 845
2,4,6-Trichlorophenol	ND< 338
1,2,4,5-Tetrachlorobenzene	ND< 338
2,3,4,6-Tetrachlorophenol	ND< 338

ELAP Number 10958

Method: EPA 8270C

Data File: S49747.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature:

  
 Bruce Hoogesteger: Technical Director

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100855T2.XLS



**Semi-Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Lab Sample Number:** 2974**Client Job Number:** 40503**Field Location:** CS-GP-20-09**Date Sampled:** 02/09/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/20/2010

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / Kg</b>	<b>Percent Fit</b>
Unknown	N/A	12.29	208	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S49747.D

**Comments:** ND denotes Non Detect

ug / Kg = microgram per Kilogram

**Signature:**  
Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

100655T2.XLS



### Semi-Volatile Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers
**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** Soil PB 02/19

**Client Job Number:** 40503

**Field Location:** N/A

**Date Sampled:** N/A

**Field ID Number:** N/A

**Date Received:** N/A

**Sample Type:** Soil

**Date Analyzed:** 02/20/2010

Compound	Results in ug / Kg
Acenaphthene	ND< 286
Acenaphthylene	ND< 286
Acetophenone	ND< 286
Anthracene	ND< 286
Atrazine	ND< 286
Benzaldehyde	ND< 286
Benzo (a) anthracene	ND< 286
Benzo (a) pyrene	ND< 286
Benzo (b) fluoranthene	ND< 286
Benzo (g,h,i) perylene	ND< 286
Benzo (k) fluoranthene	ND< 286
Biphenyl	ND< 286
Bis (2-chloroethyl) ether	ND< 286
Bis (2-chloroethoxy) methane	ND< 286
Bis (2-ethylhexyl) phthalate	ND< 286
Bis (2-chloroisopropyl) ether	ND< 286
4-Bromophenyl phenyl ether	ND< 286
Butylbenzylphthalate	ND< 286
Caprolactam	ND< 286
Carbazole	ND< 286
4-Chloroaniline	ND< 286
4-Chloro-3-methylphenol	ND< 286
2-Chloronaphthalene	ND< 286
2-Chlorophenol	ND< 286
4-Chlorophenyl phenyl ether	ND< 286
Chrysene	ND< 286
1,3-Dichlorobenzene	ND< 286
1,4-Dichlorobenzene	ND< 286
1,2-Dichlorobenzene	ND< 286
Dibenz (a,h) anthracene	ND< 286
Dibenzofuran	ND< 286
3,3'-Dichlorobenzidine	ND< 286
2,4-Dichlorophenol	ND< 286
Diethyl phthalate	ND< 286
2,4-Dimethylphenol	ND< 286
Dimethyl phthalate	ND< 714

ELAP Number 10958

Method: EPA 8270C

Compound	Results in ug / Kg
Di-n-butyl phthalate	ND< 286
4,6-Dinitro-2-methylphenol	ND< 714
2,4-Dinitrophenol	ND< 714
2,4-Dinitrotoluene	ND< 286
2,6-Dinitrotoluene	ND< 286
Di-n-octylphthalate	ND< 286
Fluoranthene	ND< 286
Fluorene	ND< 286
Hexachlorobenzene	ND< 286
Hexachlorobutadiene	ND< 286
Hexachlorocyclopentadiene	ND< 286
Hexachloroethane	ND< 286
Indeno (1,2,3-cd) pyrene	ND< 286
Isophorone	ND< 286
2-Methylnaphthalene	ND< 286
2-Methylphenol	ND< 286
3&4-Methylphenol	ND< 286
Naphthalene	ND< 286
2-Nitroaniline	ND< 714
3-Nitroaniline	ND< 714
4-Nitroaniline	ND< 714
Nitrobenzene	ND< 286
2-Nitrophenol	ND< 286
4-Nitrophenol	ND< 714
N-Nitroso-di-n-propylamine	ND< 286
N-Nitrosodiphenylamine	ND< 286
Pentachlorophenol	ND< 714
Phenanthrene	ND< 286
Phenol	ND< 286
Pyrene	ND< 286
1,2,4-Trichlorobenzene	ND< 286
2,4,5-Trichlorophenol	ND< 714
2,4,6-Trichlorophenol	ND< 286
1,2,4,5-Tetrachlorobenzene	ND< 286
2,3,4,6-Tetrachlorophenol	ND< 286

Data File: S49733.D

Comments: ND denotes Non Detect  
 ug / Kg = microgram per Kilogram

Signature:

  
 Bruce Hoogesteger: Technical Director





ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

-358-

**Semi-Volatile Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Lab Sample Number:** Soil PB 02/19**Client Job Number:** 40503**Field Location:** N/A**Date Sampled:** N/A**Field ID Number:** N/A**Date Received:** N/A**Sample Type:** Soil**Date Analyzed:** 02/20/2010

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / Kg	Percent Fit
None Found	N/A	N/A	ND< 114	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S49733.D

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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100655B3

### Pesticide Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers

**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** 2964

**Client Job Number:** 40503

**Field Location:** CS-GP-01-03

**Date Sampled:** 02/08/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/22/2010

Pesticide Identification	Results in ug / Kg
Aldrin	ND< 3.34
alpha-BHC	ND< 3.34
beta-BHC	ND< 3.34
delta-BHC	ND< 3.34
gamma-BHC	ND< 3.34
alpha-Chlordane	ND< 3.34
gamma-Chlordane	ND< 3.34
4,4'-DDD	ND< 3.34
4,4'-DDE	ND< 3.34
4,4'-DDT	ND< 3.34
Dieldrin	ND< 3.34
Endosulfan I	ND< 3.34
Endosulfan II	ND< 3.34
Endosulfan Sulfate	ND< 3.34
Endrin	ND< 3.34
Endrin Aldehyde	J 1.89 B
Heptachlor	ND< 3.34
Heptachlor Epoxide	ND< 3.34
Methoxychlor	ND< 1.67
Toxaphene	ND< 167

ELAP Number 10958

Method: EPA 8081

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

100655C1.XLS



**Pesticide Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Lab Sample Number:** 2966**Client Job Number:** 40503**Field Location:** CS-GP-04-02**Date Sampled:** 02/08/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/22/2010

Pesticide Identification	Results in ug / Kg
Aldrin	ND< 3.27
alpha-BHC	ND< 3.27
beta-BHC	ND< 3.27
delta-BHC	ND< 3.27
gamma-BHC	ND< 3.27
alpha-Chlordane	ND< 3.27
gamma-Chlordane	ND< 3.27
4,4'-DDD	ND< 3.27
4,4'-DDE	ND< 3.27
4,4'-DDT	ND< 3.27
Dieldrin	ND< 3.27
Endosulfan I	ND< 3.27
Endosulfan II	ND< 3.27
Endosulfan Sulfate	ND< 3.27
Endrin	ND< 3.27
Endrin Aldehyde	J 2.07 B
Heptachlor	ND< 3.27
Heptachlor Epoxide	ND< 3.27
Methoxychlor	ND< 3.27
Toxaphene	ND< 163

ELAP Number 10958

Method: EPA 8081

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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100655C2.XLS

**Pesticide Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Client Job Number:** 40503**Lab Sample Number:** 2971**Field Location:** CS-GP-18-07**Date Sampled:** 02/09/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/22/2010

Pesticide Identification	Results in ug / Kg
Aldrin	ND< 3.38
alpha-BHC	ND< 3.38
beta-BHC	ND< 3.38
delta-BHC	ND< 3.38
gamma-BHC	ND< 3.38
alpha-Chlordane	ND< 3.38
gamma-Chlordane	ND< 3.38
4,4'-DDD	4.16
4,4'-DDE	ND< 3.38
4,4'-DDT	ND< 3.38
Dieldrin	ND< 3.38
Endosulfan I	ND< 3.38
Endosulfan II	J 1.91
Endosulfan Sulfate	ND< 3.38
Endrin	ND< 3.38
Endrin Aldehyde	3.45 B
Heptachlor	ND< 3.38
Heptachlor Epoxide	ND< 3.38
Methoxychlor	ND< 3.38
Toxaphene	ND< 169

ELAP Number 10958

Method: EPA 8081

Comments: ND denotes Non Detect  
ug / Kg = microgram per Kilogram

**Signature:**

Bruce Hoogesteger, Technical Director

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100855C3.XLS

**Pesticide Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Lab Sample Number: 2972

Client Job Number: 40503

Field Location: CS-GP-18-07D

Date Sampled: 02/09/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/22/2010

Pesticide Identification	Results in ug / Kg
Aldrin	ND< 3.36
alpha-BHC	ND< 3.36
beta-BHC	ND< 3.36
delta-BHC	ND< 3.36
gamma-BHC	ND< 3.36
alpha-Chlordane	ND< 3.36
gamma-Chlordane	ND< 3.36
4,4'-DDD	ND< 3.36
4,4'-DDE	J 3.25
4,4'-DDT	ND< 3.36
Dieldrin	ND< 3.36
Endosulfan I	ND< 3.36
Endosulfan II	ND< 3.36
Endosulfan Sulfate	ND< 3.36
Endrin	ND< 3.36
Endrin Aldehyde	J 2.92 B
Heptachlor	ND< 3.36
Heptachlor Epoxide	ND< 3.36
Methoxychlor	ND< 3.36
Toxaphene	ND< 168

ELAP Number 10958

Method: EPA 8081

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

100655C4.XLS

### Pesticide Analysis Report for Soils/Solids/Sludges

**Client:** Lu Engineers

**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Lab Sample Number:** Soil PB 02/18

**Client Job Number:** 40503

**Field Location:** N/A

**Date Sampled:** N/A

**Field ID Number:** N/A

**Date Received:** N/A

**Sample Type:** Soil

**Date Analyzed:** 02/22/2010

Pesticide Identification	Results in ug / Kg
Aldrin	ND< 2.86
alpha-BHC	ND< 2.86
beta-BHC	ND< 2.86
delta-BHC	ND< 2.86
gamma-BHC	ND< 2.86
alpha-Chlordane	ND< 2.86
gamma-Chlordane	ND< 2.86
4,4'-DDD	ND< 2.86
4,4'-DDE	ND< 2.86
4,4'-DDT	ND< 2.86
Dieldrin	ND< 2.86
Endosulfan I	ND< 2.86
Endosulfan II	ND< 2.86
Endosulfan Sulfate	ND< 2.86
Endrin	ND< 2.86
Endrin Aldehyde	ND< 2.86 1.12 J
Heptachlor	ND< 2.86
Heptachlor Epoxide	ND< 2.86
Methoxychlor	ND< 2.86
Toxaphene	ND< 143

ELAP Number 10958

Method: EPA 8081

Comments: ND denotes Non Detect

ug / Kg = microgram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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100655B2.XLS



**PCB Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Client Job Number:** 40503**Lab Sample Number:** 2964**Field Location:** CS-GP-01-03**Date Sampled:** 02/08/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/19/2010**Date Reissued:** 03/16/2010

PCB Identification	Results in mg / Kg
Aroclor 1016	ND < 0.0334 .012 JB
Aroclor 1221	ND < 0.0334
Aroclor 1232	ND < 0.0334
Aroclor 1242	ND < 0.0334
Aroclor 1248	ND < 0.0334
Aroclor 1254	ND < 0.0334
Aroclor 1260	ND < 0.0334

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect

mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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100655P1.XLS



**PCB Analysis Report for Soils/Solids/Sludges**Client: **Lu Engineers**

Client Job Site: Town of Clarkson

Lab Project Number: 10-0655

Client Job Number: 40503

Lab Sample Number: 2965

Field Location: CS-GP-07-07

Date Sampled: 02/08/2010

Field ID Number: N/A

Date Received: 02/11/2010

Sample Type: Soil

Date Analyzed: 02/19/2010

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.0397 .027 JB
Aroclor 1221	ND< 0.0397
Aroclor 1232	ND< 0.0397
Aroclor 1242	ND< 0.0397
Aroclor 1248	ND< 0.0397
Aroclor 1254	ND< 0.0397
Aroclor 1260	ND< 0.0397 .094 J

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect

mg / Kg = milligram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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100655P2.XLS



**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Client Job Number:** 40503

**Lab Sample Number:** 2966

**Field Location:** CS-GP-04-02

**Date Sampled:** 02/08/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/19/2010

**Date Reissued:** 03/16/2010

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.0327 .014 JB
Aroclor 1221	ND< 0.0327
Aroclor 1232	ND< 0.0327
Aroclor 1242	ND< 0.0327
Aroclor 1248	ND< 0.0327
Aroclor 1254	ND< 0.0327
Aroclor 1260	ND< 0.0327

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect

mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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100655P3.XLS

**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Client Job Number:** 40503

**Lab Sample Number:** 2967

**Field Location:** CS-GP-16-8.5

**Date Sampled:** 02/08/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/19/2010

**Date Relissued:** 03/16/2010

PCB Identification	Results in mg / Kg
Aroclor 1016	ND<0.0344 .009 38
Aroclor 1221	ND< 0.0344
Aroclor 1232	ND< 0.0344
Aroclor 1242	ND< 0.0344
Aroclor 1248	ND< 0.0344
Aroclor 1254	ND< 0.0344
Aroclor 1260	ND< 0.0344

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
mg / Kg = milligram per kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

100655P4.XLS



**PCB Analysis Report for Soils/Solids/Sludges****Client:** Lu Engineers**Client Job Site:** Town of Clarkson**Lab Project Number:** 10-0655**Client Job Number:** 40503**Lab Sample Number:** 2971**Field Location:** CS-GP-18-07**Date Sampled:** 02/09/2010**Field ID Number:** N/A**Date Received:** 02/11/2010**Sample Type:** Soil**Date Analyzed:** 02/19/2010**Date Reissued:** 03/16/2010

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.0338 .038 B
Aroclor 1221	ND< 0.0338
Aroclor 1232	ND< 0.0338
Aroclor 1242	ND< 0.0338
Aroclor 1248	ND< 0.0338
Aroclor 1254	ND< 0.0338
Aroclor 1260	ND< 0.0338

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
mg / Kg = milligram per Kilogram

**Signature:**  
Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

100655P5.XLS



**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Client Job Number:** 40503

**Lab Sample Number:** 2972

**Field Location:** CS-GP-18-07D

**Date Sampled:** 02/09/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/19/2010

**Date Reissued:** 03/16/2010

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.0336 .023 5B
Aroclor 1221	ND< 0.0336
Aroclor 1232	ND< 0.0336
Aroclor 1242	ND< 0.0336
Aroclor 1248	ND< 0.0336
Aroclor 1254	ND< 0.0336
Aroclor 1260	ND< 0.0336

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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100655P8.XLS

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**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Client Job Number:** 40503

**Lab Sample Number:** 2974

**Field Location:** CS-GP-20-09

**Date Sampled:** 02/09/2010

**Field ID Number:** N/A

**Date Received:** 02/11/2010

**Sample Type:** Soil

**Date Analyzed:** 02/19/2010

**Date Reissued:** 03/16/2010

PCB Identification	Results in mg / Kg
Aroclor 1016	ND < 0.0338 1015 JB
Aroclor 1221	ND < 0.0338
Aroclor 1232	ND < 0.0338
Aroclor 1242	ND < 0.0338
Aroclor 1248	ND < 0.0338
Aroclor 1254	ND < 0.0338
Aroclor 1260	ND < 0.0338

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect

mg / Kg = milligram per Kilogram

Signature: \_\_\_\_\_

Bruce Hoogeneger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

100655P7.XLS



**PCB Analysis Report for Soils/Solids/Sludges**

**Client:** Lu Engineers

**Client Job Site:** Town of Clarkson

**Lab Project Number:** 10-0655

**Client Job Number:** 40503

**Lab Sample Number:** Soil PB 2/18

**Field Location:** N/A

**Date Sampled:** N/A

**Field ID Number:** N/A

**Date Received:** N/A

**Sample Type:** Soil

**Date Analyzed:** 02/19/2010

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.0286 .007 J
Aroclor 1221	ND< 0.0286
Aroclor 1232	ND< 0.0286
Aroclor 1242	ND< 0.0286
Aroclor 1248	ND< 0.0286
Aroclor 1254	ND< 0.0286
Aroclor 1260	ND< 0.0286

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect

mg / Kg = milligram per Kilogram

Surrogate outliers indicate probable matrix interference

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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100655B1.XLS

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 Client: Lu Engineers

Client Job Site: Town of Clarkson

Client Job No.: 40503

Field Location: CS-GP-01-03

Field ID No.: N/A

Lab Project No.: 10-0655

Lab Sample No.: 2964

Sample Type: Soil

Date Sampled: 02/08/2010

Date Received: 02/11/2010

## Laboratory Report for TAL Metals Analysis in Solid

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	02/24/2010	SW846 6010	14900 D
Antimony	02/24/2010	SW846 6010	<4.45 M N*
Arsenic	02/24/2010	SW846 6010	5.25 D,M
Barium	02/24/2010	SW846 6010	400 D,M N
Beryllium	02/24/2010	SW846 6010	0.892 D,M
Cadmium	02/24/2010	SW846 6010	<0.371 M *
Calcium	02/24/2010	SW846 6010	2460 D *
Chromium	02/24/2010	SW846 6010	21.3 D,M *
Cobalt	02/24/2010	SW846 6010	10.9 D,M
Copper	02/24/2010	SW846 6010	3.24 D,M *
Iron	02/24/2010	SW846 6010	26200 D
Lead	02/24/2010	SW846 6010	4.00 M
Magnesium	02/24/2010	SW846 6010	5180 D,M
Manganese	02/24/2010	SW846 6010	296 D,M N
Mercury	02/18/2010	SW846 7471	0.0130 D
Nickel	02/24/2010	SW846 6010	26.0 D,M
Potassium	02/24/2010	SW846 6010	2970 D,M N
Selenium	02/24/2010	SW846 6010	<0.371 M *
Silver	02/24/2010	SW846 6010	<0.742 M *
Sodium	02/24/2010	SW846 6010	184 D
Thallium	02/24/2010	SW846 6010	<0.445 M *
Vanadium	02/24/2010	SW846 6010	28.3 D,M
Zinc	02/24/2010	SW846 6010	43.8 D,M *

ELAP ID No.: 10958

Comments:

Approved By:

  
 Bruce Hoogesteger, Technical Director

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File ID: 100655.xls







179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

 Client: Lu Engineers

Client Job Site: Town of Clarkson

Client Job No.: 40503

Field Location: CS-GP-07-07

Field ID No.: N/A

Lab Project No.: 10-0655

Lab Sample No.: 2965

Sample Type: Soil

Date Sampled: 02/08/2010

Date Received: 02/11/2010

**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	02/24/2010	SW846 6010	8380
Antimony	02/24/2010	SW846 6010	<6.14
Arsenic	02/24/2010	SW846 6010	5.52
Barium	02/24/2010	SW846 6010	281
Beryllium	02/24/2010	SW846 6010	<0.511
Cadmium	02/24/2010	SW846 6010	0.961
Calcium	02/24/2010	SW846 6010	21300
Chromium	02/24/2010	SW846 6010	15.0
Cobalt	02/24/2010	SW846 6010	6.95
Copper	02/24/2010	SW846 6010	25.9
Iron	02/24/2010	SW846 6010	14900
Lead	02/24/2010	SW846 6010	123
Magnesium	02/24/2010	SW846 6010	6170
Manganese	02/24/2010	SW846 6010	577
Mercury	02/18/2010	SW846 7471	0.0606
Nickel	02/24/2010	SW846 6010	18.0
Potassium	02/24/2010	SW846 6010	1730
Selenium	02/24/2010	SW846 6010	1.60
Silver	02/24/2010	SW846 6010	<1.02
Sodium	02/24/2010	SW846 6010	311
Thallium	02/24/2010	SW846 6010	<0.614
Vanadium	02/24/2010	SW846 6010	20.9
Zinc	02/24/2010	SW846 6010	159

ELAP ID No.:10958

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

 Client: **Lu Engineers**

Client Job Site: Town of Clarkson

Client Job No.: 40503

Field Location: CS-GP-04-02

Field ID No.: N/A

Lab Project No.: 10-0655

Lab Sample No.: 2966

Sample Type: Soil

Date Sampled: 02/08/2010

Date Received: 02/11/2010

**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	02/24/2010	SW846 6010	16900
Antimony	02/24/2010	SW846 6010	<5.80
Arsenic	02/24/2010	SW846 6010	5.21
Barium	02/24/2010	SW846 6010	224
Beryllium	02/24/2010	SW846 6010	0.931
Cadmium	02/24/2010	SW846 6010	<0.484
Calcium	02/24/2010	SW846 6010	2390
Chromium	02/24/2010	SW846 6010	25.7
Cobalt	02/24/2010	SW846 6010	14.2
Copper	02/24/2010	SW846 6010	4.91
Iron	02/24/2010	SW846 6010	34100
Lead	02/24/2010	SW846 6010	5.03
Magnesium	02/24/2010	SW846 6010	6330
Manganese	02/24/2010	SW846 6010	338
Mercury	02/18/2010	SW846 7471	<0.0085
Nickel	02/24/2010	SW846 6010	31.0
Potassium	02/24/2010	SW846 6010	3970
Selenium	02/24/2010	SW846 6010	<0.484
Silver	02/24/2010	SW846 6010	<0.967
Sodium	02/24/2010	SW846 6010	174
Thallium	02/24/2010	SW846 6010	0.580
Vanadium	02/24/2010	SW846 6010	33.0
Zinc	02/24/2010	SW846 6010	50.9

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

 Client: **Lu Engineers**

Client Job Site: Town of Clarkson

Client Job No.: 40503

Field Location: CS-GP-16-8.5

Field ID No.: N/A

Lab Project No.: 10-0655

Lab Sample No.: 2967

Sample Type: Soil

Date Sampled: 02/08/2010

Date Received: 02/11/2010

**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	02/24/2010	SW846 6010	8500
Antimony	02/24/2010	SW846 6010	<4.43
Arsenic	02/24/2010	SW846 6010	3.39
Barium	02/24/2010	SW846 6010	217
Beryllium	02/24/2010	SW846 6010	0.370
Cadmium	02/24/2010	SW846 6010	<0.369
Calcium	02/24/2010	SW846 6010	17300
Chromium	02/24/2010	SW846 6010	13.7
Cobalt	02/24/2010	SW846 6010	7.05
Copper	02/24/2010	SW846 6010	5.20
Iron	02/24/2010	SW846 6010	17300
Lead	02/24/2010	SW846 6010	5.05
Magnesium	02/24/2010	SW846 6010	4990
Manganese	02/24/2010	SW846 6010	348
Mercury	02/18/2010	SW846 7471	0.0205
Nickel	02/24/2010	SW846 6010	16.0
Potassium	02/24/2010	SW846 6010	1930
Selenium	02/24/2010	SW846 6010	<0.369
Silver	02/24/2010	SW846 6010	<0.737
Sodium	02/24/2010	SW846 6010	421
Thallium	02/24/2010	SW846 6010	<0.443
Vanadium	02/24/2010	SW846 6010	21.1
Zinc	02/24/2010	SW846 6010	33.1

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Comments:

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

 Client: Lu Engineers

Client Job Site: Town of Clarkson

Client Job No.: 40503

 Field Location: CS-GP-11-10  
 Field ID No.: N/A

Lab Project No.: 10-0655

Lab Sample No.: 2968

Sample Type: Soil

Date Sampled: 02/09/2010

Date Received: 02/11/2010

**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	02/24/2010	SW846 6010	13100
Antimony	02/24/2010	SW846 6010	<5.41
Arsenic	02/24/2010	SW846 6010	4.75
Barium	02/24/2010	SW846 6010	292
Beryllium	02/24/2010	SW846 6010	0.662
Cadmium	02/24/2010	SW846 6010	<0.450
Calcium	02/24/2010	SW846 6010	2490
Chromium	02/24/2010	SW846 6010	20.6
Cobalt	02/24/2010	SW846 6010	13.0
Copper	02/24/2010	SW846 6010	3.53
Iron	02/24/2010	SW846 6010	20400
Lead	02/24/2010	SW846 6010	2.93
Magnesium	02/24/2010	SW846 6010	6430
Manganese	02/24/2010	SW846 6010	356
Mercury	02/18/2010	SW846 7471	<0.0074, 0.0038
Nickel	02/24/2010	SW846 6010	31.0
Potassium	02/24/2010	SW846 6010	2900
Selenium	02/24/2010	SW846 6010	<0.450
Silver	02/24/2010	SW846 6010	<0.901
Sodium	02/24/2010	SW846 6010	455
Thallium	02/24/2010	SW846 6010	<0.540
Vanadium	02/24/2010	SW846 6010	23.7
Zinc	02/24/2010	SW846 6010	51.2

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Comments:

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

Client: Lu Engineers  
 Client Job Site: Town of Clarkson  
 Client Job No.: 40503  
 Field Location: CS-GP-12-09  
 Field ID No.: N/A

Lab Project No.: 10-0655  
 Lab Sample No.: 2969  
 Sample Type: Soil  
 Date Sampled: 02/09/2010  
 Date Received: 02/11/2010

**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	02/24/2010	SW846 6010	11800
Antimony	02/24/2010	SW846 6010	<5.54
Arsenic	02/24/2010	SW846 6010	4.63
Barium	02/24/2010	SW846 6010	142
Beryllium	02/24/2010	SW846 6010	0.598
Cadmium	02/24/2010	SW846 6010	<0.462
Calcium	02/24/2010	SW846 6010	17100
Chromium	02/24/2010	SW846 6010	20.5
Cobalt	02/24/2010	SW846 6010	12.1
Copper	02/24/2010	SW846 6010	3.44
Iron	02/24/2010	SW846 6010	27000
Lead	02/24/2010	SW846 6010	3.54
Magnesium	02/24/2010	SW846 6010	6300
Manganese	02/24/2010	SW846 6010	383
Mercury	02/18/2010	SW846 7471	<0.0075
Nickel	02/24/2010	SW846 6010	28.4
Potassium	02/24/2010	SW846 6010	2510
Selenium	02/24/2010	SW846 6010	<0.462
Silver	02/24/2010	SW846 6010	<0.924
Sodium	02/24/2010	SW846 6010	665
Thallium	02/24/2010	SW846 6010	<0.554
Vanadium	02/24/2010	SW846 6010	26.7
Zinc	02/24/2010	SW846 6010	47.1

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Comments:

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

 Client: Lu Engineers

Client Job Site: Town of Clarkson

Client Job No.: 40503

 Field Location: CS-GP-13-10  
 Field ID No.: N/A

Lab Project No.: 10-0655

Lab Sample No.: 2970

Sample Type: Soil

Date Sampled: 02/09/2010

Date Received: 02/11/2010

**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	02/24/2010	SW846 6010	15500
Antimony	02/24/2010	SW846 6010	<5.52
Arsenic	02/24/2010	SW846 6010	5.75
Barium	02/24/2010	SW846 6010	99.7
Beryllium	02/24/2010	SW846 6010	0.814
Cadmium	02/24/2010	SW846 6010	<0.460
Calcium	02/24/2010	SW846 6010	12100
Chromium	02/24/2010	SW846 6010	29.0
Cobalt	02/24/2010	SW846 6010	15.4
Copper	02/24/2010	SW846 6010	3.54
Iron	02/24/2010	SW846 6010	32800
Lead	02/24/2010	SW846 6010	3.47
Magnesium	02/24/2010	SW846 6010	7690
Manganese	02/24/2010	SW846 6010	398
Mercury	02/18/2010	SW846 7471	<0.0060 .0008
Nickel	02/24/2010	SW846 6010	36.7
Potassium	02/24/2010	SW846 6010	3730
Selenium	02/24/2010	SW846 6010	<0.460
Silver	02/24/2010	SW846 6010	<0.921
Sodium	02/24/2010	SW846 6010	833
Thallium	02/24/2010	SW846 6010	<0.552
Vanadium	02/24/2010	SW846 6010	33.3
Zinc	02/24/2010	SW846 6010	57.9

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

 Client: Lu Engineers

Client Job Site: Town of Clarkson

Client Job No.: 40503

 Field Location: CS-GP-18-07  
 Field ID No.: N/A

Lab Project No.: 10-0655

Lab Sample No.: 2971

Sample Type: Soil

Date Sampled: 02/09/2010

Date Received: 02/11/2010

## Laboratory Report for TAL Metals Analysis In Solid

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	02/24/2010	SW846 6010	8240
Antimony	02/24/2010	SW846 6010	<6.64
Arsenic	02/24/2010	SW846 6010	2.59
Barium	02/24/2010	SW846 6010	936
Beryllium	02/24/2010	SW846 6010	<0.553
Cadmium	02/24/2010	SW846 6010	<0.553
Calcium	02/24/2010	SW846 6010	2230
Chromium	02/24/2010	SW846 6010	13.2
Cobalt	02/24/2010	SW846 6010	6.72
Copper	02/24/2010	SW846 6010	6.49
Iron	02/24/2010	SW846 6010	17700
Lead	02/24/2010	SW846 6010	5.82
Magnesium	02/24/2010	SW846 6010	2880
Manganese	02/24/2010	SW846 6010	296
Mercury	02/18/2010	SW846 7471	0.0303
Nickel	02/24/2010	SW846 6010	14.5
Potassium	02/24/2010	SW846 6010	1330
Selenium	02/24/2010	SW846 6010	<0.553
Silver	02/24/2010	SW846 6010	<1.11
Sodium	02/24/2010	SW846 6010	837
Thallium	02/24/2010	SW846 6010	<0.664
Vanadium	02/24/2010	SW846 6010	22.9
Zinc	02/24/2010	SW846 6010	35.7

ELAP ID No.: 10958

Comments:

Approved By:

  
 Bruce Hoogesteger, Technical Director

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179 Lake Avenue, Rochester, NY 14608 (585) 847-2530 FAX (585) 847-3311

 Client: Lu Engineers

Client Job Site: Town of Clarkson

Client Job No.: 40503

 Field Location: CS-GP-18-07D  
 Field ID No.: N/A

Lab Project No.: 10-0655

Lab Sample No.: 2972

Sample Type: Soil

Date Sampled: 02/09/2010

Date Received: 02/11/2010

## Laboratory Report for TAL Metals Analysis in Solid

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	02/24/2010	SW846 6010	7250
Antimony	02/24/2010	SW846 6010	<5.40
Arsenic	02/24/2010	SW846 6010	2.88
Barium	02/24/2010	SW846 6010	873
Beryllium	02/24/2010	SW846 6010	<0.449
Cadmium	02/24/2010	SW846 6010	<0.449
Calcium	02/24/2010	SW846 6010	8860
Chromium	02/24/2010	SW846 6010	11.9
Cobalt	02/24/2010	SW846 6010	5.76
Copper	02/24/2010	SW846 6010	7.29
Iron	02/24/2010	SW846 6010	17800
Lead	02/24/2010	SW846 6010	5.74
Magnesium	02/24/2010	SW846 6010	3110
Manganese	02/24/2010	SW846 6010	621
Mercury	02/18/2010	SW846 7471	0.0332
Nickel	02/24/2010	SW846 6010	13.1
Potassium	02/24/2010	SW846 6010	1030
Selenium	02/24/2010	SW846 6010	<0.449
Silver	02/24/2010	SW846 6010	<0.900
Sodium	02/24/2010	SW846 6010	919
Thallium	02/24/2010	SW846 6010	<0.540
Vanadium	02/24/2010	SW846 6010	23.2
Zinc	02/24/2010	SW846 6010	29.9

ELAP ID No.:10958

Comments:

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

 Client: Lu Engineers

Lab Project No.: 10-0655

Client Job Site: Town of Clarkson

Lab Sample No.: 2973

Client Job No.: 40503

Sample Type: Soil

Field Location: CS-GP-19-10

Date Sampled: 02/09/2010

Field ID No.: N/A

Date Received: 02/11/2010

**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	02/24/2010	SW846 6010	13800
Antimony	02/24/2010	SW846 6010	<6.07
Arsenic	02/24/2010	SW846 6010	5.41
Barium	02/24/2010	SW846 6010	121
Beryllium	02/24/2010	SW846 6010	0.707
Cadmium	02/24/2010	SW846 6010	<0.505
Calcium	02/24/2010	SW846 6010	17800
Chromium	02/24/2010	SW846 6010	22.5
Cobalt	02/24/2010	SW846 6010	12.9
Copper	02/24/2010	SW846 6010	3.86
Iron	02/24/2010	SW846 6010	31000
Lead	02/24/2010	SW846 6010	3.98
Magnesium	02/24/2010	SW846 6010	7270
Manganese	02/24/2010	SW846 6010	375
Mercury	02/18/2010	SW846 7471	<0.0077 .0012
Nickel	02/24/2010	SW846 6010	29.8
Potassium	02/24/2010	SW846 6010	3250
Selenium	02/24/2010	SW846 6010	<0.505
Silver	02/24/2010	SW846 6010	<1.01
Sodium	02/24/2010	SW846 6010	976
Thallium	02/24/2010	SW846 6010	<0.607
Vanadium	02/24/2010	SW846 6010	31.0
Zinc	02/24/2010	SW846 6010	50.5

ELAP ID No.:10958

Comments:

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179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

Client: Lu Engineers  
 Client Job Site: Town of Clarkson  
 Client Job No.: 40503  
 Field Location: CS-GP-20-09  
 Field ID No.: N/A

Lab Project No.: 10-0655  
 Lab Sample No.: 2974  
 Sample Type: Soil  
 Date Sampled: 02/09/2010  
 Date Received: 02/11/2010

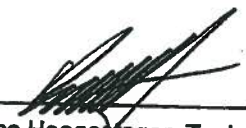
**Laboratory Report for TAL Metals Analysis in Solid**

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	02/24/2010	SW846 6010	10800
Antimony	02/24/2010	SW846 6010	<5.44 M N*
Arsenic	02/24/2010	SW846 6010	3.66 D,M
Barium	02/24/2010	SW846 6010	368 N
Beryllium	02/24/2010	SW846 6010	0.508 D,M
Cadmium	02/24/2010	SW846 6010	<0.453 M *
Calcium	02/24/2010	SW846 6010	16900 D *
Chromium	02/24/2010	SW846 6010	19.1 D,M *
Cobalt	02/24/2010	SW846 6010	8.28 M
Copper	02/24/2010	SW846 6010	5.35 D,M *
Iron	02/24/2010	SW846 6010	20800
Lead	02/24/2010	SW846 6010	5.22 D,M
Magnesium	02/24/2010	SW846 6010	4740 D
Manganese	02/24/2010	SW846 6010	392 M N
Mercury	02/18/2010	SW846 7471	0.0116
Nickel	02/24/2010	SW846 6010	19.0 D,M
Potassium	02/24/2010	SW846 6010	2310 D,M N
Selenium	02/24/2010	SW846 6010	<0.453 M *
Silver	02/24/2010	SW846 6010	<0.906 M *
Sodium	02/24/2010	SW846 6010	870
Thallium	02/24/2010	SW846 6010	<0.544 M *
Vanadium	02/24/2010	SW846 6010	27.6 D,M
Zinc	02/24/2010	SW846 6010	38.4 D,M *

ELAP ID No.:10958

Comments:

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**CHAIN OF CUSTODY**

1 of 2



PROJECT NAME/SITE NAME:

Town of Clarkson

## REPORT TO:

## INVOICE TO:

COMPANY: Lu Engineers	COMPANY: Same	LAB PROJECT #:	CLIENT PROJECT #:
ADDRESS: 2230 Penfield Rd.	ADDRESS:	10-0655	40503
CITY: Penfield	CITY: NY	STATE: NY	ZIP: 14526
PHONE: 377-1450	FAX: 377-1246	TURNAROUND TIME: (WORKING DAYS)	
ATTN: L. Neubauer @ Lu Engineers, Corp.	ATTN:	1	2
COMMENTS: PO# 722151	REQUESTED ANALYSIS: * ASD Cat. B *	3	5
		Quotation # MS 0424094 (rev.)	

DATE	TIME	COMPOSITE	GRADES	SAMPLE LOCATION/FIELD ID	MATRIX	CONTAMINANTS	8260 TCL+Stars	8270+Stars+T	TAL Metals	PCBs	Pesticides	REMARKS	PARADIGM LAB SAMPLE NUMBER
12/8/10	11:35	✓		CS-GP-01-03	Soil	1	X	X	X	X	X	* Note: PCBs + Pesticides to be performed on select samples only	2964
22/8/10	11:35	✓		CS-GP-01-03MS	1	1	X	X	X	X	X		2966
32/8/10	11:35	✓		CS-GP-01-03MSD	1	1	X	X	X	X	X		2965
42/8/10	13:22	✓		CS-GP-07-07	2	2	X	X	X	X	X		2965
52/8/10	10:40	✓		CS-GP-04-02	2	2	X	X	X	X	X		2966
62/8/10	14:45	✓		CS-GP-16-8.5	1	1	X	X	X	X	X		2967
72/8/10	10:08	✓		CS-GP-11-10	1	1	X	X	X	X	X		2968
82/8/10	10:32	✓		CS-GP-12-09	1	1	X	X	X	X	X		2969
92/8/10	12:27	✓		CS-GP-13-10	2	2	X	X	X	X	X	Samples hand delivered to lab so custody seals	2970
102/8/10	11:40	✓		CS-GP-18-07	2	2	X	X	X	X	X	N/A.	2971

LAB USE ONLY BELOW THIS LINE

EQA 2/10

Sample Condition: Per NELAC/LAP 210/241/242/243/244

Receipt Parameter NELAC Compliance

Comments:	Container Type:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Comments:	Preservation:	N/A Y <input type="checkbox"/> N <input type="checkbox"/>
Comments:	Holding Time:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Comments:	Temperature:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Comments:	6°Ciced = from samples on 2/10	

Sampled By: L. Neubauer 2/9/10 16:00

Total Cost:

Relinquished By: L. Neubauer 2/10/10 13:15

Received By: Elizabeth A. Honck 2/10/10 13:15

P.L.F.

Received @ Lab By: Elizabeth A. Honck 2/10/10 18:35

Date/Time

Received @ Lab By: Elizabeth A. Honck 2/11/10 10:20

Date/Time

**CHAIN OF CUSTODY**
**PARADIGM**  
 ENVIRONMENTAL SERVICES, INC.
**REPORT TO:****INVOICE TO:**

COMPANY: Lu Engineers	COMPANY: Same	LAB PROJECT #:	CLIENT PROJECT #:
ADDRESS: 2230 Penfield Rd	ADDRESS:	10-0655	40503
CITY: Penfield STATE: NY ZIP: 14526	CITY: STATE: ZIP:	TURNAROUND TIME: (WORKING DAYS)	
PHONE: 377-1450 FAX: 377-1266	PHONE: FAX:	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 5	STD OTHER
ATTN: LNeubauer@luengineers.com	ATTN:	Quotation # Ws 042409A (rev)	

 PROJECT NAME/SITE NAME:  
 Town of Clarkson

COMMENTS: PD # 722151

 REQUESTED ANALYSIS  
 CS ASP Cat. B

DATE	TIME	COMPOSITES	GARB	SAMPLE LOCATION/FIELD ID	MATERIALS	CONTAMINANTS	REMARKS	PARADIGM LAB SAMPLE NUMBER
12/9/10	11:40		V	CS-GP-18-07D	Soil	2		2972
22/9/10	13:15		V	CS-GP-19-1D	S1	1		2973
32/9/10	11:00		V	CS-GP-20-09	S1	1		2974
4								
5								
6								
7								
8								
9								
10								

\*\*LAB USE ONLY BELOW THIS LINE\*\*

Sample Condition: Per NELAC/ELAP 210/241/242/243/244

Receipt Parameter NELAC Compliance

Comments:	Container Type:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Comments:	Preservation:	N/A Y <input type="checkbox"/> N <input type="checkbox"/>
Comments:	Holding Time:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Comments:	Temperature:	60 Ciced = from samples Y <input type="checkbox"/> N <input type="checkbox"/>
Comments:		ON 2/10

Received By	Date/Time	Total Cost:
Laura Neubauer	2/9/10 16:00	
Relinquished By	Date/Time	
Laura Neubauer	2/10/10 13:15	
Received By	Date/Time	
Elizabeth A. Honck	2/10/10 1835	
Received @ Lab By	Date/Time	
Elizabeth A. Honck	2/11/10 1020	



## Volatile Analysis Report for Non-potable Water

Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: 10419

Client Job Number: 40503

Field Location: MW-1

Field ID Number: N/A

Sample Type: Water

Date Sampled: 09/16/2009

Date Received: 09/17/2009

Date Analyzed: 09/29/2009

Halocarbons	Results in ug / L
Bromodichloromethane	ND< 2.00
Bromomethane	ND< 2.00
Bromoform	ND< 5.00
Carbon Tetrachloride	ND< 2.00
Chloroethane	ND< 2.00
Chloromethane	ND< 2.00
2-Chloroethyl vinyl Ether	ND< 10.0 <i>5u</i>
Chloroform	ND< 2.00
Dibromochloromethane	ND< 2.00
1,1-Dichloroethane	ND< 2.00
1,2-Dichloroethane	ND< 2.00
1,1-Dichloroethene	ND< 2.00
cis-1,2-Dichloroethene	ND< 2.00
trans-1,2-Dichloroethene	ND< 2.00
1,2-Dichloropropane	ND< 2.00
cis-1,3-Dichloropropene	ND< 2.00
trans-1,3-Dichloropropene	ND< 2.00
Methylene chloride	ND< 5.00 <i>u</i>
1,1,2,2-Tetrachloroethane	ND< 2.00
Tetrachloroethene	2.83
1,1,1-Trichloroethane	ND< 2.00
1,1,2-Trichloroethane	ND< 2.00
Trichloroethene	ND< 2.00
Trichlorofluoromethane	ND< 2.00
Vinyl chloride	ND< 2.00

Aromatics	Results in ug / L
Benzene	15.3
Chlorobenzene	ND< 2.00
Ethylbenzene	ND< 2.00
Toluene	ND< 2.00
m,p-Xylene	ND< 2.00
o-Xylene	ND< 2.00
Styrene	ND< 5.00
1,2-Dichlorobenzene	ND< 2.00
1,3-Dichlorobenzene	ND< 2.00
1,4-Dichlorobenzene	ND< 2.00

Ketones	Results in ug / L
Acetone	ND< 10.0 <i>5u</i>
2-Butanone	ND< 10.0
2-Hexanone	ND< 5.00
4-Methyl-2-pentanone	ND< 5.00

Miscellaneous	Results in ug / L
Carbon disulfide	ND< 5.00
Vinyl acetate	ND< 5.00

ELAP Number 10958

Method: EPA 8260B

Data File: V68935.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogestéger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**

*[Handwritten signature]*

### Volatile Analysis Report for Non-potable Water (Additional STARS Compounds)

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: 10419

Client Job Number: 40503

Field Location: MW-1

Date Sampled: 09/16/2009

Field ID Number: N/A

Date Received: 09/17/2009

Sample Type: Water

Date Analyzed: 09/29/2009

Aromatics	Results in ug / L	Aromatics	Results in ug / L
n-Butylbenzene	ND< 5.00	1,2,4-Trimethylbenzene	ND< 5.00
sec-Butylbenzene	ND< 5.00	1,3,5-Trimethylbenzene	ND< 5.00
tert-Butylbenzene	ND< 5.00		
n-Propylbenzene	ND< 2.00	<b>Miscellaneous</b>	
Isopropylbenzene	ND< 5.00	Methyl tert-butyl Ether	ND< 2.00
p-Isopropyltoluene	ND< 5.00		
Naphthalene	ND< 5.00 <i>1.04 JB</i>		

ELAP Number 10958

Method: EPA 8260B

Data File: V68935.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**

**Volatile Analysis Report for Non-potable Water**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Client Job Number: 40503

Lab Sample Number: 10419

Field Location: MW-1

Date Sampled: 09/16/2009

Field ID Number: N/A

Date Received: 09/17/2009

Sample Type: Water

Date Analyzed: 09/29/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
Alkyl Hydrocarbon	N/A	2.019	6.45	N/A
Cyclic Alkyl Hydrocarbon	N/A	3.956	5.68	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V68935.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**



### Volatile Analysis Report for Non-potable Water

**Client: Lu Engineers**
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Lab Sample Number:** 10420

**Client Job Number:** 40503

**Field Location:** MW-3

**Date Sampled:** 09/16/2009

**Field ID Number:** N/A

**Date Received:** 09/17/2009

**Sample Type:** Water

**Date Analyzed:** 09/29/2009

Halocarbons	Results in ug / L
Bromodichloromethane	ND< 2.00
Bromomethane	ND< 2.00
Bromoform	ND< 5.00
Carbon Tetrachloride	ND< 2.00
Chloroethane	ND< 2.00
Chloromethane	ND< 2.00
2-Chloroethyl vinyl Ether	ND< 10.0 <i>UJ</i>
Chloroform	ND< 2.00
Dibromochloromethane	ND< 2.00
1,1-Dichloroethane	ND< 2.00
1,2-Dichloroethane	ND< 2.00
1,1-Dichloroethene	ND< 2.00
cis-1,2-Dichloroethene	ND< 2.00
trans-1,2-Dichloroethene	ND< 2.00
1,2-Dichloropropane	ND< 2.00
cis-1,3-Dichloropropene	ND< 2.00
trans-1,3-Dichloropropene	ND< 2.00
Methylene chloride	ND< 5.00 <i>UJ</i>
1,1,2,2-Tetrachloroethane	ND< 2.00
Tetrachloroethene	ND< 2.00
1,1,1-Trichloroethane	ND< 2.00
1,1,2-Trichloroethane	ND< 2.00
Trichloroethene	ND< 2.00
Trichlorofluoromethane	ND< 2.00
Vinyl chloride	ND< 2.00

Aromatics	Results in ug / L
Benzene	ND< 0.700
Chlorobenzene	ND< 2.00
Ethylbenzene	ND< 2.00
Toluene	ND< 2.00
m,p-Xylene	ND< 2.00
o-Xylene	ND< 2.00 <i>.53 J</i>
Styrene	ND< 5.00
1,2-Dichlorobenzene	ND< 2.00
1,3-Dichlorobenzene	ND< 2.00
1,4-Dichlorobenzene	ND< 2.00

Ketones	Results in ug / L
Acetone	ND< 10.0 <i>UJ</i>
2-Butanone	ND< 10.0
2-Hexanone	JB 4.23
4-Methyl-2-pentanone	JB 3.87

Miscellaneous	Results in ug / L
Carbon disulfide	ND< 5.00
Vinyl acetate	ND< 5.00

ELAP Number 10958

Method: EPA 8260B

Data File: V68938.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature:

  
Bruce Hoogesteger: Technical Director

All target  
analytes should be  
"J" or "UJ"



### Volatile Analysis Report for Non-potable Water (Additional STARS Compounds)

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Lab Sample Number:** 10420

**Client Job Number:** 40503

**Field Location:** MW-3

**Field ID Number:** N/A

**Sample Type:** Water

**Date Sampled:** 09/16/2009

**Date Received:** 09/17/2009

**Date Analyzed:** 09/29/2009

Aromatics	Results in ug / L	Aromatics	Results in ug / L
n-Butylbenzene	ND< 5.00	1,2,4-Trimethylbenzene	ND< 5.00 .76 J
sec-Butylbenzene	ND< 5.00	1,3,5-Trimethylbenzene	ND< 5.00
tert-Butylbenzene	ND< 5.00		
n-Propylbenzene	ND< 2.00	<b>Miscellaneous</b>	
Isopropylbenzene	ND< 5.00	Methyl tert-butyl Ether	ND< 2.00
p-Isopropyltoluene	ND< 5.00		
Naphthalene	ND< 5.00 2.24 JB		
ELAP Number 10958	Method: EPA 8260B		Data File: V68938.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**

**Volatile Analysis Report for Non-potable Water**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: 10420

Client Job Number: 40503

Field Location: MW-3

Date Sampled: 09/16/2009

Field ID Number: N/A

Date Received: 09/17/2009

Sample Type: Water

Date Analyzed: 09/29/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
None Found	N/A	N/A	ND< 2.00	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V68938.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**



### Volatile Analysis Report for Non-potable Water

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site  
**Client Job Number:** 40503  
**Field Location:** MW-3 Field Duplicate  
**Field ID Number:** N/A  
**Sample Type:** Water

**Lab Project Number:** 09-3381  
**Lab Sample Number:** 10421  
**Date Sampled:** 09/16/2009  
**Date Received:** 09/17/2009  
**Date Analyzed:** 09/29/2009

Halocarbons	Results in ug / L
Bromodichloromethane	ND< 2.00
Bromomethane	ND< 2.00
Bromoform	ND< 5.00
Carbon Tetrachloride	ND< 2.00
Chloroethane	ND< 2.00
Chloromethane	ND< 2.00
2-Chloroethyl vinyl Ether	ND< 10.0 <i>us</i>
Chloroform	ND< 2.00
Dibromochloromethane	ND< 2.00
1,1-Dichloroethane	ND< 2.00
1,2-Dichloroethane	ND< 2.00
1,1-Dichloroethene	ND< 2.00
cis-1,2-Dichloroethene	ND< 2.00
trans-1,2-Dichloroethene	ND< 2.00
1,2-Dichloropropane	ND< 2.00
cis-1,3-Dichloropropene	ND< 2.00
trans-1,3-Dichloropropene	ND< 2.00
Methylene chloride	ND< 5.00 <i>us</i>
1,1,2,2-Tetrachloroethane	ND< 2.00
Tetrachloroethene	ND< 2.00
1,1,1-Trichloroethane	ND< 2.00
1,1,2-Trichloroethane	ND< 2.00
Trichloroethene	ND< 2.00
Trichlorofluoromethane	ND< 2.00
Vinyl chloride	ND< 2.00

Aromatics	Results in ug / L
Benzene	ND< 0.700
Chlorobenzene	ND< 2.00
Ethylbenzene	ND< 2.00
Toluene	ND< 2.00
m,p-Xylene	ND< 2.00
o-Xylene	ND< 2.00
Styrene	ND< 5.00
1,2-Dichlorobenzene	ND< 2.00
1,3-Dichlorobenzene	ND< 2.00
1,4-Dichlorobenzene	ND< 2.00

Ketones	Results in ug / L
Acetone	J 5.48
2-Butanone	ND< 10.0
2-Hexanone	ND< 5.00 <i>.77 JB</i>
4-Methyl-2-pentanone	ND< 5.00

Miscellaneous	Results in ug / L
Carbon disulfide	ND< 5.00
Vinyl acetate	ND< 5.00

ELAP Number 10958

Method: EPA 8260B

Data File: V68939.D

Comments: ND denotes Non Detect  
 ug / L = microgram per Liter

Signature:

  
 Bruce Hoogesteger, Technical Director

All target  
 analytes should be  
 "J" or "UJ"





ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

### Volatile Analysis Report for Non-potable Water (Additional STARS Compounds)

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site  
**Client Job Number:** 40503  
**Field Location:** MW-3 Field Duplicate  
**Field ID Number:** N/A  
**Sample Type:** Water

**Lab Project Number:** 09-3381  
**Lab Sample Number:** 10421  
**Date Sampled:** 09/16/2009  
**Date Received:** 09/17/2009  
**Date Analyzed:** 09/29/2009

Aromatics	Results in ug / L	Aromatics	Results in ug / L
n-Butylbenzene	ND< 5.00	1,2,4-Trimethylbenzene	ND< 5.00
sec-Butylbenzene	ND< 5.00	1,3,5-Trimethylbenzene	ND< 5.00
tert-Butylbenzene	ND< 5.00		
n-Propylbenzene	ND< 2.00	<b>Miscellaneous</b>	
Isopropylbenzene	ND< 5.00	Methyl tert-butyl Ether	ND< 2.00
p-Isopropyltoluene	ND< 5.00		
Naphthalene	ND< 5.00 1.14 JB		

ELAP Number 10958

Method: EPA 8260B

Data File: V68939.D

Comments: ND denotes Non Detect  
 ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
 analytes should be  
 "J" or "UJ"**

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

093381V3.XLS

### Volatile Analysis Report for Non-potable Water

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: 10421

Client Job Number: 40503

Field Location: MW-3 Field Duplicate

Date Sampled: 09/16/2009

Field ID Number: N/A

Date Received: 09/17/2009

Sample Type: Water

Date Analyzed: 09/29/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
None Found	N/A	N/A	ND< 2.00	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V68939.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

**All target  
analytes should be  
"J" or "UJ"**

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

093381V3.XLS





ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

### Volatile Analysis Report for Non-potable Water

Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: 10422

Client Job Number: 40503

Field Location: MW-4

Field ID Number: N/A

Sample Type: Water

Date Sampled: 09/16/2009

Date Received: 09/17/2009

Date Analyzed: 09/29/2009

Halocarbons	Results in ug / L
Bromodichloromethane	ND< 20.0
Bromomethane	ND< 20.0
Bromoform	ND< 50.0
Carbon Tetrachloride	ND< 20.0
Chloroethane	ND< 20.0
Chloromethane	ND< 20.0
2-Chloroethyl vinyl Ether	ND< 100 <i>us</i>
Chloroform	ND< 20.0
Dibromochloromethane	ND< 20.0
1,1-Dichloroethane	ND< 20.0
1,2-Dichloroethane	ND< 20.0
1,1-Dichloroethene	ND< 20.0
cis-1,2-Dichloroethene	ND< 20.0
trans-1,2-Dichloroethene	ND< 20.0
1,2-Dichloropropane	ND< 20.0
cis-1,3-Dichloropropene	ND< 20.0
trans-1,3-Dichloropropene	ND< 20.0
Methylene chloride	ND< 50.0 <i>us</i>
1,1,2,2-Tetrachloroethane	ND< 20.0
Tetrachloroethene	ND< 20.0
1,1,1-Trichloroethane	ND< 20.0
1,1,2-Trichloroethane	ND< 20.0 <i>26.0</i>
Trichloroethene	ND< 20.0
Trichlorofluoromethane	ND< 20.0
Vinyl chloride	ND< 20.0

Aromatics	Results in ug / L
Benzene	353
Chlorobenzene	ND< 20.0
Ethylbenzene	30.2
Toluene	20.3
m,p-Xylene	25.2
o-Xylene	ND< 20.0
Styrene	ND< 50.0
1,2-Dichlorobenzene	ND< 20.0
1,3-Dichlorobenzene	ND< 20.0
1,4-Dichlorobenzene	ND< 20.0

Ketones	Results in ug / L
Acetone	ND< 100 <i>78.7</i>
2-Butanone	ND< 100
2-Hexanone	ND< 50.0
4-Methyl-2-pentanone	ND< 50.0

Miscellaneous	Results in ug / L
Carbon disulfide	ND< 50.0
Vinyl acetate	ND< 50.0

ELAP Number 10958

Method: EPA 8260B

Data File: V68940.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

093381V4.XLS

### Volatile Analysis Report for Non-potable Water (Additional STARS Compounds)

Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: 10422

Client Job Number: 40503

Field Location: MW-4

Date Sampled: 09/16/2009

Field ID Number: N/A

Date Received: 09/17/2009

Sample Type: Water

Date Analyzed: 09/29/2009

Aromatics	Results in ug / L	Aromatics	Results in ug / L
n-Butylbenzene	ND< 50.0	1,2,4-Trimethylbenzene	ND< 50.0 <i>14.0 J</i>
sec-Butylbenzene	ND< 50.0	1,3,5-Trimethylbenzene	ND< 50.0
tert-Butylbenzene	ND< 50.0		
n-Propylbenzene	ND< 20.0 <i>8.00 J</i>	Miscellaneous	
Isopropylbenzene	ND< 50.0 <i>10.0 J</i>	Methyl tert-butyl Ether	ND< 20.0
p-Isopropyltoluene	ND< 50.0		
Naphthalene	ND< 50.0 <i>4.5</i>		

ELAP Number 10958

Method: EPA 8260B

Data File: V68940.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**

**Volatile Analysis Report for Non-potable Water****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-3381**Lab Sample Number:** 10422**Client Job Number:** 40503**Field Location:** MW-4**Date Sampled:** 09/16/2009**Field ID Number:** N/A**Date Received:** 09/17/2009**Sample Type:** Water**Date Analyzed:** 09/29/2009

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / L</b>	<b>Percent Fit</b>
Alkyl Hydrocarbon	N/A	1.511	88.2	N/A
Complex Hydrocarbon	N/A	1.62	117	N/A
Complex Hydrocarbon	N/A	2.02	274	N/A
Alkyl Hydrocarbon	N/A	2.23	143	N/A
Alkyl Hydrocarbon	N/A	2.98	117	N/A
Alkyl Hydrocarbon	N/A	3.04	82.1	N/A
Cyclic Alkyl Hydrocarbon	N/A	3.95	234	N/A
Cyclic Alkyl Hydrocarbon	N/A	4.96	61.8	N/A
Complex Hydrocarbon	N/A	10.87	55.6	N/A
Complex Hydrocarbon	N/A	11.52	62.2	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V68940.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**







ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

### Volatile Analysis Report for Non-potable Water

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: 10423

Client Job Number: 40503

Field Location: Field Blank

Date Sampled: 09/16/2009

Field ID Number: N/A

Date Received: 09/17/2009

Sample Type: Water

Date Analyzed: 09/29/2009

Halocarbons	Results in ug / L
Bromodichloromethane	ND< 2.00
Bromomethane	ND< 2.00
Bromoform	ND< 5.00
Carbon Tetrachloride	ND< 2.00
Chloroethane	ND< 2.00
Chloromethane	ND< 2.00
2-Chloroethyl vinyl Ether	ND< 10.0 <i>uS</i>
Chloroform	ND< 2.00
Dibromochloromethane	ND< 2.00
1,1-Dichloroethane	ND< 2.00
1,2-Dichloroethane	ND< 2.00
1,1-Dichloroethene	ND< 2.00
cis-1,2-Dichloroethene	ND< 2.00
trans-1,2-Dichloroethene	ND< 2.00
1,2-Dichloropropane	ND< 2.00
cis-1,3-Dichloropropene	ND< 2.00
trans-1,3-Dichloropropene	ND< 2.00
Methylene chloride	ND< 5.00 <i>uS</i>
1,1,2,2-Tetrachloroethane	ND< 2.00
Tetrachloroethene	ND< 2.00
1,1,1-Trichloroethane	ND< 2.00
1,1,2-Trichloroethane	ND< 2.00
Trichloroethene	ND< 2.00
Trichlorofluoromethane	ND< 2.00
Vinyl chloride	ND< 2.00

Aromatics	Results in ug / L
Benzene	ND< 0.700
Chlorobenzene	ND< 2.00
Ethylbenzene	ND< 2.00
Toluene	ND< 2.00
m,p-Xylene	ND< 2.00
o-Xylene	ND< 2.00
Styrene	ND< 5.00
1,2-Dichlorobenzene	ND< 2.00
1,3-Dichlorobenzene	ND< 2.00
1,4-Dichlorobenzene	ND< 2.00

Ketones	Results in ug / L
Acetone	J 9.24
2-Butanone	ND< 10.0
2-Hexanone	ND< 5.00
4-Methyl-2-pentanone	ND< 5.00

Miscellaneous	Results in ug / L
Carbon disulfide	ND< 5.00
Vinyl acetate	ND< 5.00

ELAP Number 10958

Method: EPA 8260B

Data File: V68941.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

093381V5.XLS

*Handwritten signature*



ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

### Volatile Analysis Report for Non-potable Water (Additional STARS Compounds)

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Lab Sample Number:** 10423

**Client Job Number:** 40503

**Field Location:** Field Blank

**Date Sampled:** 09/16/2009

**Field ID Number:** N/A

**Date Received:** 09/17/2009

**Sample Type:** Water

**Date Analyzed:** 09/29/2009

Aromatics	Results in ug / L	Aromatics	Results in ug / L
n-Butylbenzene	ND< 5.00	1,2,4-Trimethylbenzene	ND< 5.00
sec-Butylbenzene	ND< 5.00	1,3,5-Trimethylbenzene	ND< 5.00
tert-Butylbenzene	ND< 5.00		
n-Propylbenzene	ND< 2.00	<b>Miscellaneous</b>	
Isopropylbenzene	ND< 5.00	Methyl tert-butyl Ether	ND< 2.00
p-Isopropyltoluene	ND< 5.00		
Naphthalene	ND< 5.00 <i>4.5</i>		

ELAP Number 10958

Method: EPA 8260B

Data File: V68941.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**

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093381V5.XLS

**Volatile Analysis Report for Non-potable Water****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-3381**Lab Sample Number:** 10423**Client Job Number:** 40503**Field Location:** Field Blank**Date Sampled:** 09/16/2009**Field ID Number:** N/A**Date Received:** 09/17/2009**Sample Type:** Water**Date Analyzed:** 09/29/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
None Found	N/A	N/A	ND< 2.00	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V68941.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

**Signature:**  
Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**



### Volatile Analysis Report for Non-potable Water

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Lab Sample Number:** 10424

**Client Job Number:** 40503

**Field Location:** Trip Blank

**Date Sampled:** 09/16/2009

**Field ID Number:** N/A

**Date Received:** 09/17/2009

**Sample Type:** Water

**Date Analyzed:** 09/29/2009

Halocarbons	Results in ug / L
Bromodichloromethane	ND< 2.00
Bromomethane	ND< 2.00
Bromoform	ND< 5.00
Carbon Tetrachloride	ND< 2.00
Chloroethane	ND< 2.00
Chloromethane	ND< 2.00
2-Chloroethyl vinyl Ether	ND< 10.0 <i>us</i>
Chloroform	ND< 2.00
Dibromochloromethane	ND< 2.00
1,1-Dichloroethane	ND< 2.00
1,2-Dichloroethane	ND< 2.00
1,1-Dichloroethene	ND< 2.00
cis-1,2-Dichloroethene	ND< 2.00
trans-1,2-Dichloroethene	ND< 2.00
1,2-Dichloropropane	ND< 2.00
cis-1,3-Dichloropropene	ND< 2.00
trans-1,3-Dichloropropene	ND< 2.00
Methylene chloride	ND< 5.00 <i>us</i>
1,1,2,2-Tetrachloroethane	ND< 2.00
Tetrachloroethene	ND< 2.00
1,1,1-Trichloroethane	ND< 2.00
1,1,2-Trichloroethane	ND< 2.00
Trichloroethene	ND< 2.00
Trichlorofluoromethane	ND< 2.00
Vinyl chloride	ND< 2.00

Aromatics	Results in ug / L
Benzene	ND< 0.700
Chlorobenzene	ND< 2.00
Ethylbenzene	ND< 2.00
Toluene	ND< 2.00
m,p-Xylene	ND< 2.00
o-Xylene	ND< 2.00
Styrene	ND< 5.00
1,2-Dichlorobenzene	ND< 2.00
1,3-Dichlorobenzene	ND< 2.00
1,4-Dichlorobenzene	ND< 2.00

Ketones	Results in ug / L
Acetone	ND< 10.0 <i>us</i>
2-Butanone	ND< 10.0
2-Hexanone	ND< 5.00
4-Methyl-2-pentanone	ND< 5.00

Miscellaneous	Results in ug / L
Carbon disulfide	ND< 5.00
Vinyl acetate	ND< 5.00

ELAP Number 10958

Method: EPA 8260B

Data File: V68942.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**



**Volatile Analysis Report for Non-potable Water (Additional STARS Compounds)****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-3381**Client Job Number:** 40503**Lab Sample Number:** 10424**Field Location:** Trip Blank**Date Sampled:** 09/16/2009**Field ID Number:** N/A**Date Received:** 09/17/2009**Sample Type:** Water**Date Analyzed:** 09/29/2009

Aromatics	Results in ug / L	Aromatics	Results in ug / L
n-Butylbenzene	ND< 5.00	1,2,4-Trimethylbenzene	ND< 5.00
sec-Butylbenzene	ND< 5.00	1,3,5-Trimethylbenzene	ND< 5.00
tert-Butylbenzene	ND< 5.00		
n-Propylbenzene	ND< 2.00	<b>Miscellaneous</b>	
Isopropylbenzene	ND< 5.00	Methyl tert-butyl Ether	ND< 2.00
p-Isopropyltoluene	ND< 5.00		
Naphthalene	ND< 5.00 <i>WJ</i>		

ELAP Number 10958

Method: EPA 8260B

Data File: V68942.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**

### Volatile Analysis Report for Non-potable Water

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Lab Sample Number:** 10424

**Client Job Number:** 40503

**Field Location:** Trip Blank

**Date Sampled:** 09/16/2009

**Field ID Number:** N/A

**Date Received:** 09/17/2009

**Sample Type:** Water

**Date Analyzed:** 09/29/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
None Found	N/A	N/A	ND< 2.00	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V68942.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

**All target  
analytes should be  
"J" or "UJ"**

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

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093381V6.XLS



### Volatile Analysis Report for Non-potable Water

**Client:** Lu Engineers
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Lab Sample Number:** 10425

**Client Job Number:** 40503

**Field Location:** MW-2

**Field ID Number:** N/A

**Sample Type:** Water

**Date Sampled:** 09/17/2009

**Date Received:** 09/17/2009

**Date Analyzed:** 09/29/2009

Halocarbons	Results in ug / L
Bromodichloromethane	ND< 2.00
Bromomethane	ND< 2.00
Bromoform	ND< 5.00
Carbon Tetrachloride	ND< 2.00
Chloroethane	ND< 2.00
Chloromethane	ND< 2.00
2-Chloroethyl vinyl Ether	ND< 10.0 <i>uJ</i>
Chloroform	2.72
Dibromochloromethane	ND< 2.00
1,1-Dichloroethane	ND< 2.00
1,2-Dichloroethane	ND< 2.00
1,1-Dichloroethene	ND< 2.00
cis-1,2-Dichloroethene	ND< 2.00
trans-1,2-Dichloroethene	ND< 2.00
1,2-Dichloropropane	ND< 2.00
cis-1,3-Dichloropropene	ND< 2.00
trans-1,3-Dichloropropene	ND< 2.00
Methylene chloride	ND< 5.00 <i>uJ</i>
1,1,2,2-Tetrachloroethane	ND< 2.00
Tetrachloroethene	ND< 2.00
1,1,1-Trichloroethane	ND< 2.00
1,1,2-Trichloroethane	ND< 2.00
Trichloroethene	ND< 2.00
Trichlorofluoromethane	ND< 2.00
Vinyl chloride	ND< 2.00

Aromatics	Results in ug / L
Benzene	2.09
Chlorobenzene	ND< 2.00
Ethylbenzene	ND< 2.00
Toluene	ND< 2.00
m,p-Xylene	ND< 2.00
o-Xylene	ND< 2.00
Styrene	ND< 5.00
1,2-Dichlorobenzene	ND< 2.00
1,3-Dichlorobenzene	ND< 2.00
1,4-Dichlorobenzene	ND< 2.00

Ketones	Results in ug / L
Acetone	J 10.0
2-Butanone	ND< 10.0
2-Hexanone	ND< 5.00
4-Methyl-2-pentanone	ND< 5.00

Miscellaneous	Results in ug / L
Carbon disulfide	ND< 5.00
Vinyl acetate	ND< 5.00

ELAP Number 10958

Method: EPA 8260B

Data File: V68943.D

 Comments: ND denotes Non Detect  
 ug / L = microgram per Liter

Signature:

  
 Bruce Hoogesteger: Technical Director

All target  
analytes should be  
"J" or "UJ"



**Volatile Analysis Report for Non-potable Water (Additional STARS Compounds)**
**Client:** Lu Engineers
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Client Job Number:** 40503

**Lab Sample Number:** 10425

**Field Location:** MW-2

**Date Sampled:** 09/17/2009

**Field ID Number:** N/A

**Date Received:** 09/17/2009

**Sample Type:** Water

**Date Analyzed:** 09/29/2009

Aromatics	Results in ug / L	Aromatics	Results in ug / L
n-Butylbenzene	ND< 5.00	1,2,4-Trimethylbenzene	ND< 5.00
sec-Butylbenzene	ND< 5.00	1,3,5-Trimethylbenzene	ND< 5.00
tert-Butylbenzene	ND< 5.00		
n-Propylbenzene	ND< 2.00	<b>Miscellaneous</b>	
Isopropylbenzene	ND< 5.00	Methyl tert-butyl Ether	ND< 2.00
p-Isopropyltoluene	ND< 5.00		
Naphthalene	ND< 5.00 <i>UT</i>		

ELAP Number 10958

Method: EPA 8260B

Data File: V68943.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

**Signature:**
  
Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**





**Volatile Analysis Report for Non-potable Water****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-3381**Client Job Number:** 40503**Lab Sample Number:** 10425**Field Location:** MW-2**Date Sampled:** 09/17/2009**Field ID Number:** N/A**Date Received:** 09/17/2009**Sample Type:** Water**Date Analyzed:** 09/29/2009

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / L</b>	<b>Percent Fit</b>
Alkyl Hydrocarbon	N/A	2.017	7.66	N/A
Cyclic Alkyl Hydrocarbon	N/A	3.95	5.13	N/A

ELAP Number 10958

Method: EPA 8260B

Data File: V68943.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**





ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

### Volatile Analysis Report for Non-potable Water

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: Water LRB

Client Job Number: 40503

Field Location: N/A

Field ID Number: N/A

Sample Type: Water

Date Sampled: N/A

Date Received: N/A

Date Analyzed: 09/29/2009

Halocarbons	Results in ug / L
Bromodichloromethane	ND< 2.00
Bromomethane	ND< 2.00
Bromoform	ND< 5.00
Carbon Tetrachloride	ND< 2.00
Chloroethane	ND< 2.00
Chloromethane	ND< 2.00
2-Chloroethyl vinyl Ether	ND< 10.0 <i>us</i>
Chloroform	ND< 2.00
Dibromochloromethane	ND< 2.00
1,1-Dichloroethane	ND< 2.00
1,2-Dichloroethane	ND< 2.00
1,1-Dichloroethene	ND< 2.00
cis-1,2-Dichloroethene	ND< 2.00
trans-1,2-Dichloroethene	ND< 2.00
1,2-Dichloropropane	ND< 2.00
cis-1,3-Dichloropropene	ND< 2.00
trans-1,3-Dichloropropene	ND< 2.00
Methylene chloride	ND< 5.00 <i>us</i>
1,1,2,2-Tetrachloroethane	ND< 2.00
Tetrachloroethene	ND< 2.00
1,1,1-Trichloroethane	ND< 2.00
1,1,2-Trichloroethane	ND< 2.00
Trichloroethene	ND< 2.00
Trichlorofluoromethane	ND< 2.00
Vinyl chloride	ND< 2.00

ELAP Number 10958

Aromatics	Results in ug / L
Benzene	ND< 0.700
Chlorobenzene	ND< 2.00
Ethylbenzene	ND< 2.00
Toluene	ND< 2.00
m,p-Xylene	ND< 2.00
o-Xylene	ND< 2.00
Styrene	ND< 5.00
1,2-Dichlorobenzene	ND< 2.00
1,3-Dichlorobenzene	ND< 2.00
1,4-Dichlorobenzene	ND< 2.00

Ketones	Results in ug / L
Acetone	ND< 10.0 <i>us</i>
2-Butanone	<del>ND&lt; 10.0</del> 1.49 <i>J</i>
2-Hexanone	J 4.35
4-Methyl-2-pentanone	J 3.85

Miscellaneous	Results in ug / L
Carbon disulfide	ND< 5.00
Vinyl acetate	ND< 5.00

Data File: V68923.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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093381VB.XLS



ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

### Volatile Analysis Report for Non-potable Water (Additional STARS Compounds)

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: Water LRB

Client Job Number: 40503

Field Location: N/A

Date Sampled: N/A

Field ID Number: N/A

Date Received: N/A

Sample Type: Water

Date Analyzed: 09/29/2009

Aromatics	Results in ug / L	Aromatics	Results in ug / L
n-Butylbenzene	ND< 5.00	1,2,4-Trimethylbenzene	ND< 5.00
sec-Butylbenzene	ND< 5.00	1,3,5-Trimethylbenzene	ND< 5.00
tert-Butylbenzene	ND< 5.00		
n-Propylbenzene	ND< 2.00	<b>Miscellaneous</b>	
Isopropylbenzene	ND< 5.00	Methyl tert-butyl Ether	ND< 2.00
p-Isopropyltoluene	ND< 5.00		
Naphthalene	ND< 5.00 2.145		

ELAP Number 10958

Method: EPA 8260B

Data File: V68923.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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093381VB.XLS



## Semi -Volatile Analysis Report for Non-potable Water

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: 10419

Client Job Number: 40503

Field Location: MW-1

Field ID Number: N/A

Sample Type: Water

Date Sampled: 09/16/2009

Date Received: 09/17/2009

Date Analyzed: 09/23/2009

Date Reissued: 10/05/2009

Base / Neutrals	Results in ug / L	Base / Neutrals	Results in ug / L
Acenaphthene	M ND< 10.0	Dibenz (a,h) anthracene	ND< 10.0
Anthracene	ND< 10.0	Fluoranthene	ND< 10.0
Benzo (a) anthracene	ND< 10.0	Fluorene	ND< 10.0
Benzo (a) pyrene	ND< 10.0	Indeno (1,2,3-cd) pyrene	ND< 10.0
Benzo (b) fluoranthene	ND< 10.0	Naphthalene	ND< 10.0
Benzo (g,h,i) perylene	ND< 10.0	Phenanthrene	ND< 10.0
Benzo (k) fluoranthene	ND< 10.0	Pyrene	ND< 10.0
Chrysene	ND< 10.0	Acenaphthylene	ND< 10.0
Diethyl phthalate	ND< 10.0	1,2-Dichlorobenzene	ND< 10.0
Dimethyl phthalate	ND< 25.0	1,3-Dichlorobenzene	ND< 10.0
Butylbenzylphthalate	ND< 10.0	1,4-Dichlorobenzene	ND< 10.0
Di-n-butyl phthalate	ND< 10.0	1,2,4-Trichlorobenzene	ND< 10.0
Di-n-octylphthalate	ND< 10.0	Nitrobenzene	ND< 10.0
Bis (2-ethylhexyl) phthalate	ND< 10.0	2,4-Dinitrotoluene	ND< 10.0
2-Chloronaphthalene	ND< 10.0	2,6-Dinitrotoluene	ND< 10.0
Hexachlorobenzene	ND< 10.0	Bis (2-chloroethyl) ether	ND< 10.0
Hexachloroethane	ND< 10.0	Bis (2-chloroisopropyl) ether	ND< 10.0
Hexachlorocyclopentadiene	ND< 10.0	Bis (2-chloroethoxy) methan	ND< 10.0
Hexachlorobutadiene	ND< 10.0	4-Bromophenyl phenyl ether	ND< 10.0
N-Nitroso-di-n-propylamine	M ND< 10.0	4-Chlorophenyl phenyl ether	ND< 10.0
N-Nitrosodiphenylamine	ND< 10.0	Benzidine	ND< 25.0
N-Nitrosodimethylamine	ND< 10.0	3,3'-Dichlorobenzidine	ND< 10.0
Isophorone	ND< 10.0	4-Chloroaniline	ND< 10.0
Benzyl alcohol	ND< 25.0	2-Nitroaniline	ND< 25.0
Dibenzofuran	ND< 10.0	3-Nitroaniline	ND< 25.0
2-Methylnaphthalene	ND< 10.0	4-Nitroaniline	ND< 25.0

Acids	Results in ug / L	Acids	Results in ug / L
Phenol	ND< 10.0	2-Methylphenol	ND< 10.0
2-Chlorophenol	ND< 10.0	3&4-Methylphenol	ND< 10.0
2,4-Dichlorophenol	M ND< 10.0	2,4-Dimethylphenol	M ND< 10.0
2,6-Dichlorophenol	ND< 10.0	2-Nitrophenol	ND< 10.0
2,4,5-Trichlorophenol	ND< 25.0	4-Nitrophenol	ND< 25.0
2,4,6-Trichlorophenol	ND< 10.0	2,4-Dinitrophenol	ND< 25.0
Pentachlorophenol	ND< 25.0	4,6-Dinitro-2-methylphenol	ND< 25.0
4-Chloro-3-methylphenol	ND< 10.0	Benzoic acid	ND< 25.0

ELAP Number 10958

Method: EPA 8270C

Data File: S47003.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**

8

**Semi-Volatile Analysis Report for Non-potable Water****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-3381**Lab Sample Number:** 10419**Client Job Number:** 40503**Field Location:** MW-1**Date Sampled:** 09/16/2009**Field ID Number:** N/A**Date Received:** 09/17/2009**Sample Type:** Water**Date Analyzed:** 09/23/2009

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / L</b>	<b>Percent Fit</b>
None Found	N/A	N/A	ND< 10.0	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S47003.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

**Signature:**  
Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**

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093381SC.XLS



### Semi -Volatile Analysis Report for Non-potable Water

**Client: Lu Engineers**
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Lab Sample Number:** 10420

**Client Job Number:** 40503

**Field Location:** MW-3

**Field ID Number:** N/A

**Sample Type:** Water

**Date Sampled:** 09/16/2009

**Date Received:** 09/17/2009

**Date Analyzed:** 09/23/2009

Base / Neutrals	Results in ug / L	Base / Neutrals	Results in ug / L
Acenaphthene	ND< 10.0	Dibenz (a,h) anthracene	ND< 10.0
Anthracene	ND< 10.0	Fluoranthene	ND< 10.0
Benzo (a) anthracene	ND< 10.0	Fluorene	ND< 10.0
Benzo (a) pyrene	ND< 10.0	Indeno (1,2,3-cd) pyrene	ND< 10.0
Benzo (b) fluoranthene	ND< 10.0	Naphthalene	ND< 10.0
Benzo (g,h,i) perylene	ND< 10.0	Phenanthrene	ND< 10.0
Benzo (k) fluoranthene	ND< 10.0	Pyrene	ND< 10.0
Chrysene	ND< 10.0	Acenaphthylene	ND< 10.0
Diethyl phthalate	ND< 10.0	1,2-Dichlorobenzene	ND< 10.0
Dimethyl phthalate	ND< 25.0	1,3-Dichlorobenzene	ND< 10.0
Butylbenzylphthalate	ND< 10.0	1,4-Dichlorobenzene	ND< 10.0
Di-n-butyl phthalate	ND< 10.0	1,2,4-Trichlorobenzene	ND< 10.0
Di-n-octylphthalate	ND< 10.0	Nitrobenzene	ND< 10.0
Bis (2-ethylhexyl) phthalate	ND< 10.0	2,4-Dinitrotoluene	ND< 10.0
2-Chloronaphthalene	ND< 10.0	2,6-Dinitrotoluene	ND< 10.0
Hexachlorobenzene	ND< 10.0	Bis (2-chloroethyl) ether	ND< 10.0
Hexachloroethane	ND< 10.0	Bis (2-chloroisopropyl) ether	ND< 10.0
Hexachlorocyclopentadiene	ND< 10.0	Bis (2-chloroethoxy) methan	ND< 10.0
Hexachlorobutadiene	ND< 10.0	4-Bromophenyl phenyl ether	ND< 10.0
N-Nitroso-di-n-propylamine	ND< 10.0	4-Chlorophenyl phenyl ether	ND< 10.0
N-Nitrosodiphenylamine	ND< 10.0	Benzidine	ND< 25.0
N-Nitrosodimethylamine	ND< 10.0	3,3'-Dichlorobenzidine	ND< 10.0
Isophorone	ND< 10.0	4-Chloroaniline	ND< 10.0
Benzyl alcohol	ND< 25.0	2-Nitroaniline	ND< 25.0
Dibenzofuran	ND< 10.0	3-Nitroaniline	ND< 25.0
2-Methylnaphthalene	ND< 10.0	4-Nitroaniline	ND< 25.0

Acids	Results in ug / L	Acids	Results in ug / L
Phenol	ND< 10.0	2-Methylphenol	ND< 10.0
2-Chlorophenol	ND< 10.0	3&4-Methylphenol	ND< 10.0
2,4-Dichlorophenol	ND< 10.0	2,4-Dimethylphenol	ND< 10.0
2,6-Dichlorophenol	ND< 10.0	2-Nitrophenol	ND< 10.0
2,4,5-Trichlorophenol	ND< 25.0	4-Nitrophenol	ND< 25.0
2,4,6-Trichlorophenol	ND< 10.0	2,4-Dinitrophenol	ND< 25.0
Pentachlorophenol	ND< 25.0	4,6-Dinitro-2-methylphenol	ND< 25.0
4-Chloro-3-methylphenol	ND< 10.0	Benzoic acid	ND< 25.0

ELAP Number 10958

Method: EPA 8270C

Data File: S47006.D

 Comments: ND denotes Non Detect  
 ug / L = microgram per Liter

All target  
analytes should be  
"J" or "UJ"

Signature:

  
 Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

093381S2.XLS



**Semi -Volatile Analysis Report for Non-potable Water**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Lab Sample Number:** 10420

**Client Job Number:** 40503

**Field Location:** MW-3

**Field ID Number:** N/A

**Sample Type:** Water

**Date Sampled:** 09/16/2009

**Date Received:** 09/17/2009

**Date Analyzed:** 09/23/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
None Detected	N/A	N/A	ND< 10.0	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S47006.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**





**Semi -Volatile Analysis Report for Non-potable Water****Client: Lu Engineers**

**Client Job Site:** Clarkson ERP Site  
**Client Job Number:** 40503  
**Field Location:** MW-3/Field Duplicate  
**Field ID Number:** N/A  
**Sample Type:** Water

**Lab Project Number:** 09-3381  
**Lab Sample Number:** 10421  
**Date Sampled:** 09/16/2009  
**Date Received:** 09/17/2009  
**Date Analyzed:** 09/23/2009

Base / Neutrals	Results in ug / L	Base / Neutrals	Results in ug / L
Acenaphthene	ND< 10.0	Dibenz (a,h) anthracene	ND< 10.0
Anthracene	ND< 10.0	Fluoranthene	ND< 10.0
Benzo (a) anthracene	ND< 10.0	Fluorene	ND< 10.0
Benzo (a) pyrene	ND< 10.0	Indeno (1,2,3-cd) pyrene	ND< 10.0
Benzo (b) fluoranthene	ND< 10.0	Naphthalene	ND< 10.0
Benzo (g,h,i) perylene	ND< 10.0	Phenanthrene	ND< 10.0
Benzo (k) fluoranthene	ND< 10.0	Pyrene	ND< 10.0
Chrysene	ND< 10.0	Acenaphthylene	ND< 10.0
Diethyl phthalate	ND< 10.0	1,2-Dichlorobenzene	ND< 10.0
Dimethyl phthalate	ND< 25.0	1,3-Dichlorobenzene	ND< 10.0
Butylbenzylphthalate	ND< 10.0	1,4-Dichlorobenzene	ND< 10.0
DI-n-butyl phthalate	ND< 10.0	1,2,4-Trichlorobenzene	ND< 10.0
Di-n-octylphthalate	ND< 10.0	Nitrobenzene	ND< 10.0
Bis (2-ethylhexyl) phthalate	ND< 10.0	2,4-Dinitrotoluene	ND< 10.0
2-Chloronaphthalene	ND< 10.0	2,6-Dinitrotoluene	ND< 10.0
Hexachlorobenzene	ND< 10.0	Bis (2-chloroethyl) ether	ND< 10.0
Hexachloroethane	ND< 10.0	Bis (2-chloroisopropyl) ether	ND< 10.0
Hexachlorocyclopentadiene	ND< 10.0	Bis (2-chloroethoxy) methan	ND< 10.0
Hexachlorobutadiene	ND< 10.0	4-Bromophenyl phenyl ether	ND< 10.0
N-Nitroso-di-n-propylamine	ND< 10.0	4-Chlorophenyl phenyl ether	ND< 10.0
N-Nitrosodiphenylamine	ND< 10.0	Benzidine	ND< 25.0
N-Nitrosodimethylamine	ND< 10.0	3,3'-Dichlorobenzidine	ND< 10.0
Isophorone	ND< 10.0	4-Chloroaniline	ND< 10.0
Benzyl alcohol	ND< 25.0	2-Nitroaniline	ND< 25.0
Dibenzofuran	ND< 10.0	3-Nitroaniline	ND< 25.0
2-Methylnaphthalene	ND< 10.0	4-Nitroaniline	ND< 25.0

Acids	Results in ug / L	Acids	Results in ug / L
Phenol	ND< 10.0	2-Methylphenol	ND< 10.0
2-Chlorophenol	ND< 10.0	3&4-Methylphenol	ND< 10.0
2,4-Dichlorophenol	ND< 10.0	2,4-Dimethylphenol	ND< 10.0
2,6-Dichlorophenol	ND< 10.0	2-Nitrophenol	ND< 10.0
2,4,5-Trichlorophenol	ND< 25.0	4-Nitrophenol	ND< 25.0
2,4,6-Trichlorophenol	ND< 10.0	2,4-Dinitrophenol	ND< 25.0
Pentachlorophenol	ND< 25.0	4,6-Dinitro-2-methylphenol	ND< 25.0
4-Chloro-3-methylphenol	ND< 10.0	Benzoic acid	ND< 25.0

ELAP Number 10958

Method: EPA 8270C

Data File: S47007.D

Comments: ND denotes Non Detect  
 ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
 analytes should be  
 "J" or "UJ"**



**Semi-Volatile Analysis Report for Non-potable Water**Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Client Job Number: 40503

Lab Sample Number: 10421

Field Location: MW-3 Field Duplicate

Date Sampled: 09/16/2009

Field ID Number: N/A

Date Received: 09/17/2009

Sample Type: Water

Date Analyzed: 09/23/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
Complex Hydrocarbon	N/A	11.62	37.8	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S47007.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**



### Semi -Volatile Analysis Report for Non-potable Water

 Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: 10422

Client Job Number: 40503

Field Location: MW-4

Field ID Number: N/A

Sample Type: Water

Date Sampled: 09/16/2009

Date Received: 09/17/2009

Date Analyzed: 09/23/2009

Base / Neutrals	Results in ug / L	Base / Neutrals	Results in ug / L
Acenaphthene	ND< 10.0	Dibenz (a,h) anthracene	ND< 10.0
Anthracene	ND< 10.0	Fluoranthene	ND< 10.0
Benzo (a) anthracene	ND< 10.0	Fluorene	ND< 10.0
Benzo (a) pyrene	ND< 10.0	Indeno (1,2,3-cd) pyrene	ND< 10.0
Benzo (b) fluoranthene	ND< 10.0	Naphthalene	ND< 10.0
Benzo (g,h,i) perylene	ND< 10.0	Phenanthrene	ND< 10.0
Benzo (k) fluoranthene	ND< 10.0	Pyrene	ND< 10.0
Chrysene	ND< 10.0	Acenaphthylene	ND< 10.0
Diethyl phthalate	ND< 10.0	1,2-Dichlorobenzene	ND< 10.0
Dimethyl phthalate	ND< 25.0	1,3-Dichlorobenzene	ND< 10.0
Butylbenzylphthalate	ND< 10.0	1,4-Dichlorobenzene	ND< 10.0
Di-n-butyl phthalate	ND< 10.0	1,2,4-Trichlorobenzene	ND< 10.0
Di-n-octylphthalate	ND< 10.0	Nitrobenzene	ND< 10.0
Bis (2-ethylhexyl) phthalate	ND< 10.0	2,4-Dinitrotoluene	ND< 10.0
2-Chloronaphthalene	ND< 10.0	2,6-Dinitrotoluene	ND< 10.0
Hexachlorobenzene	ND< 10.0	Bis (2-chloroethyl) ether	ND< 10.0
Hexachloroethane	ND< 10.0	Bis (2-chloroisopropyl) ether	ND< 10.0
Hexachlorocyclopentadiene	ND< 10.0	Bis (2-chloroethoxy) methan	ND< 10.0
Hexachlorobutadiene	ND< 10.0	4-Bromophenyl phenyl ether	ND< 10.0
N-Nitroso-di-n-propylamine	ND< 10.0	4-Chlorophenyl phenyl ether	ND< 10.0
N-Nitrosodiphenylamine	ND< 10.0	Benzidine	ND< 25.0
N-Nitrosodimethylamine	ND< 10.0	3,3'-Dichlorobenzidine	ND< 10.0
Isophorone	ND< 10.0	4-Chloroaniline	ND< 10.0
Benzyl alcohol	ND< 25.0	2-Nitroaniline	ND< 25.0
Dibenzofuran	ND< 10.0	3-Nitroaniline	ND< 25.0
2-Methylnaphthalene	ND< 10.0	4-Nitroaniline	ND< 25.0

Acids	Results in ug / L	Acids	Results in ug / L
Phenol	J 7.97	2-Methylphenol	ND< 10.0
2-Chlorophenol	ND< 10.0	3&4-Methylphenol	ND< 10.0
2,4-Dichlorophenol	ND< 10.0	2,4-Dimethylphenol	ND< 10.0
2,6-Dichlorophenol	ND< 10.0	2-Nitrophenol	ND< 10.0
2,4,5-Trichlorophenol	ND< 25.0	4-Nitrophenol	ND< 25.0
2,4,6-Trichlorophenol	ND< 10.0	2,4-Dinitrophenol	ND< 25.0
Pentachlorophenol	ND< 25.0	4,6-Dinitro-2-methylphenol	ND< 25.0
4-Chloro-3-methylphenol	ND< 10.0	Benzoic acid	ND< 25.0

ELAP Number 10958

Method: EPA 8270C

Data File: S47008.D

 Comments: ND denotes Non Detect  
 ug / L = microgram per Liter

Signature:

Bruce Hoogesteger, Technical Director

All target  
analytes should be  
"J" or "UJ"



**Semi -Volatile Analysis Report for Non-potable Water****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-3381**Client Job Number:** 40503**Lab Sample Number:** 10422**Field Location:** MW-4**Date Sampled:** 09/16/2009**Field ID Number:** N/A**Date Received:** 09/17/2009**Sample Type:** Water**Date Analyzed:** 09/23/2009

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / L</b>	<b>Percent Fit</b>
Alkyl Benzene	N/A	4.39	10.7	N/A
Alkyl Benzene	N/A	6.04	12.3	N/A
Alkyl Benzene	N/A	6.72	12.0	N/A
Alkyl Benzene	N/A	6.89	10.2	N/A
Complex Hydrocarbon	N/A	7.97	12.8	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S47008.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

**All target  
analytes should be  
"J" or "UJ"**

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director



### Semi-Volatile Analysis Report for Non-potable Water

**Client:** Lu Engineers
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Lab Sample Number:** 10423

**Client Job Number:** 40503

**Field Location:** Field Blank

**Date Sampled:** 09/16/2009

**Field ID Number:** N/A

**Date Received:** 09/17/2009

**Sample Type:** Water

**Date Analyzed:** 09/23/2009

Base / Neutrals	Results in ug / L	Base / Neutrals	Results in ug / L
Acenaphthene	ND< 10.0	Dibenz (a,h) anthracene	ND< 10.0
Anthracene	ND< 10.0	Fluoranthene	ND< 10.0
Benzo (a) anthracene	ND< 10.0	Fluorene	ND< 10.0
Benzo (a) pyrene	ND< 10.0	Indeno (1,2,3-cd) pyrene	ND< 10.0
Benzo (b) fluoranthene	ND< 10.0	Naphthalene	ND< 10.0
Benzo (g,h,i) perylene	ND< 10.0	Phenanthrene	ND< 10.0
Benzo (k) fluoranthene	ND< 10.0	Pyrene	ND< 10.0
Chrysene	ND< 10.0	Acenaphthylene	ND< 10.0
Diethyl phthalate	ND< 10.0	1,2-Dichlorobenzene	ND< 10.0
Dimethyl phthalate	ND< 25.0	1,3-Dichlorobenzene	ND< 10.0
Butylbenzylphthalate	ND< 10.0	1,4-Dichlorobenzene	ND< 10.0
Di-n-butyl phthalate	ND< 10.0	1,2,4-Trichlorobenzene	ND< 10.0
Di-n-octylphthalate	ND< 10.0	Nitrobenzene	ND< 10.0
Bis (2-ethylhexyl) phthalate	ND< 10.0	2,4-Dinitrotoluene	ND< 10.0
2-Chloronaphthalene	ND< 10.0	2,6-Dinitrotoluene	ND< 10.0
Hexachlorobenzene	ND< 10.0	Bis (2-chloroethyl) ether	ND< 10.0
Hexachloroethane	ND< 10.0	Bis (2-chloroisopropyl) ether	ND< 10.0
Hexachlorocyclopentadiene	ND< 10.0	Bis (2-chloroethoxy) methan	ND< 10.0
Hexachlorobutadiene	ND< 10.0	4-Bromophenyl phenyl ether	ND< 10.0
N-Nitroso-di-n-propylamine	ND< 10.0	4-Chlorophenyl phenyl ether	ND< 10.0
N-Nitrosodiphenylamine	ND< 10.0	Benzidine	ND< 25.0
N-Nitrosodimethylamine	ND< 10.0	3,3'-Dichlorobenzidine	ND< 10.0
Isophorone	ND< 10.0	4-Chloroaniline	ND< 10.0
Benzyl alcohol	ND< 25.0	2-Nitroaniline	ND< 25.0
Dibenzofuran	ND< 10.0	3-Nitroaniline	ND< 25.0
2-Methylnaphthalene	ND< 10.0	4-Nitroaniline	ND< 25.0

Acids	Results in ug / L	Acids	Results in ug / L
Phenol	ND< 10.0	2-Methylphenol	ND< 10.0
2-Chlorophenol	ND< 10.0	3&4-Methylphenol	ND< 10.0
2,4-Dichlorophenol	ND< 10.0	2,4-Dimethylphenol	ND< 10.0
2,6-Dichlorophenol	ND< 10.0	2-Nitrophenol	ND< 10.0
2,4,5-Trichlorophenol	ND< 25.0	4-Nitrophenol	ND< 25.0
2,4,6-Trichlorophenol	ND< 10.0	2,4-Dinitrophenol	ND< 25.0
Pentachlorophenol	ND< 25.0	4,6-Dinitro-2-methylphenol	ND< 25.0
4-Chloro-3-methylphenol	ND< 10.0	Benzoic acid	ND< 25.0

ELAP Number 10958

Method: EPA 8270C

Data File: S47009.D

 Comments: ND denotes Non Detect  
 ug / L = microgram per Liter

Signature:

Bruce Hoogesteger: Technical Director

All target  
analytes should be  
"J" or "UJ"

### Semi -Volatile Analysis Report for Non-potable Water

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: 10423

Client Job Number: 40503

Field Location: Field Blank

Date Sampled: 09/16/2009

Field ID Number: N/A

Date Received: 09/17/2009

Sample Type: Water

Date Analyzed: 09/23/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
None Found	N/A	N/A	ND< 10.0	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S47009.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

**All target  
analytes should be  
"J" or "UJ"**

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director



### Semi -Volatile Analysis Report for Non-potable Water

**Client: Lu Engineers**
**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Lab Sample Number:** 10425

**Client Job Number:** 40503

**Field Location:** MW-2

**Field ID Number:** N/A

**Sample Type:** Water

**Date Sampled:** 09/17/2009

**Date Received:** 09/17/2009

**Date Analyzed:** 09/23/2009

Base / Neutrals	Results in ug / L	Base / Neutrals	Results in ug / L
Acenaphthene	ND< 10.0	Dibenz (a,h) anthracene	ND< 10.0
Anthracene	ND< 10.0	Fluoranthene	ND< 10.0
Benzo (a) anthracene	ND< 10.0	Fluorene	ND< 10.0
Benzo (a) pyrene	ND< 10.0	Indeno (1,2,3-cd) pyrene	ND< 10.0
Benzo (b) fluoranthene	ND< 10.0	Naphthalene	ND< 10.0
Benzo (g,h,i) perylene	ND< 10.0	Phenanthrene	ND< 10.0
Benzo (k) fluoranthene	ND< 10.0	Pyrene	ND< 10.0
Chrysene	ND< 10.0	Acenaphthylene	ND< 10.0
Diethyl phthalate	ND< 10.0	1,2-Dichlorobenzene	ND< 10.0
Dimethyl phthalate	ND< 25.0	1,3-Dichlorobenzene	ND< 10.0
Butylbenzylphthalate	ND< 10.0	1,4-Dichlorobenzene	ND< 10.0
Di-n-butyl phthalate	ND< 10.0	1,2,4-Trichlorobenzene	ND< 10.0
Di-n-octylphthalate	ND< 10.0	Nitrobenzene	ND< 10.0
Bis (2-ethylhexyl) phthalate	ND< 10.0	2,4-Dinitrotoluene	ND< 10.0
2-Chloronaphthalene	ND< 10.0	2,6-Dinitrotoluene	ND< 10.0
Hexachlorobenzene	ND< 10.0	Bis (2-chloroethyl) ether	ND< 10.0
Hexachloroethane	ND< 10.0	Bis (2-chloroisopropyl) ether	ND< 10.0
Hexachlorocyclopentadiene	ND< 10.0	Bis (2-chloroethoxy) methan	ND< 10.0
Hexachlorobutadiene	ND< 10.0	4-Bromophenyl phenyl ether	ND< 10.0
N-Nitroso-di-n-propylamine	ND< 10.0	4-Chlorophenyl phenyl ether	ND< 10.0
N-Nitrosodiphenylamine	ND< 10.0	Benzidine	ND< 25.0
N-Nitrosodimethylamine	ND< 10.0	3,3'-Dichlorobenzidine	ND< 10.0
Isophorone	ND< 10.0	4-Chloroaniline	ND< 10.0
Benzyl alcohol	ND< 25.0	2-Nitroaniline	ND< 25.0
Dibenzofuran	ND< 10.0	3-Nitroaniline	ND< 25.0
2-Methylnaphthalene	ND< 10.0	4-Nitroaniline	ND< 25.0

Acids	Results in ug / L	Acids	Results in ug / L
Phenol	ND< 10.0	2-Methylphenol	ND< 10.0
2-Chlorophenol	ND< 10.0	3&4-Methylphenol	ND< 10.0
2,4-Dichlorophenol	ND< 10.0	2,4-Dimethylphenol	ND< 10.0
2,6-Dichlorophenol	ND< 10.0	2-Nitrophenol	ND< 10.0
2,4,5-Trichlorophenol	ND< 25.0	4-Nitrophenol	ND< 25.0
2,4,6-Trichlorophenol	ND< 10.0	2,4-Dinitrophenol	ND< 25.0
Pentachlorophenol	ND< 25.0	4,6-Dinitro-2-methylphenol	ND< 25.0
4-Chloro-3-methylphenol	ND< 10.0	Benzoic acid	ND< 25.0

ELAP Number 10958

Method: EPA 8270C

Data File: S47010.D

 Comments: ND denotes Non Detect  
 ug / L = microgram per Liter

Signature:

Bruce Hoogesteger: Technical Director

All target  
analytes should be  
"J" or "UJ"

### Semi -Volatile Analysis Report for Non-potable Water

Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: 10425

Client Job Number: 40503

Field Location: MW-2

Date Sampled: 09/17/2009

Field ID Number: N/A

Date Received: 09/17/2009

Sample Type: Water

Date Analyzed: 09/23/2009

Tentatively Identified Compounds	CAS Number	Retention Time	Results in ug / L	Percent Fit
None Found	N/A	N/A	ND< 10.0	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S47010.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**





### Semi-Volatile Analysis Report for Non-potable Water

 Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: Water PB 9/22

Client Job Number: 40503

Field Location: N/A

Date Sampled: N/A

Field ID Number: N/A

Date Received: N/A

Sample Type: Water

Date Analyzed: 09/23/2009

Base / Neutrals	Results in ug / L	Base / Neutrals	Results in ug / L
Acenaphthene	ND< 10.0	Dibenz (a,h) anthracene	ND< 10.0
Anthracene	ND< 10.0	Fluoranthene	ND< 10.0
Benzo (a) anthracene	ND< 10.0	Fluorene	ND< 10.0
Benzo (a) pyrene	ND< 10.0	Indeno (1,2,3-cd) pyrene	ND< 10.0
Benzo (b) fluoranthene	ND< 10.0	Naphthalene	ND< 10.0
Benzo (g,h,i) perylene	ND< 10.0	Phenanthrene	ND< 10.0
Benzo (k) fluoranthene	ND< 10.0	Pyrene	ND< 10.0
Chrysene	ND< 10.0	Acenaphthylene	ND< 10.0
Diethyl phthalate	ND< 10.0	1,2-Dichlorobenzene	ND< 10.0
Dimethyl phthalate	ND< 25.0	1,3-Dichlorobenzene	ND< 10.0
Butylbenzylphthalate	ND< 10.0	1,4-Dichlorobenzene	ND< 10.0
Di-n-butyl phthalate	ND< 10.0	1,2,4-Trichlorobenzene	ND< 10.0
Di-n-octylphthalate	ND< 10.0	Nitrobenzene	ND< 10.0
Bis (2-ethylhexyl) phthalate	ND< 10.0	2,4-Dinitrotoluene	ND< 10.0
2-Chloronaphthalene	ND< 10.0	2,6-Dinitrotoluene	ND< 10.0
Hexachlorobenzene	ND< 10.0	Bis (2-chloroethyl) ether	ND< 10.0
Hexachloroethane	ND< 10.0	Bis (2-chloroisopropyl) ether	ND< 10.0
Hexachlorocyclopentadiene	ND< 10.0	Bis (2-chloroethoxy) methan	ND< 10.0
Hexachlorobutadiene	ND< 10.0	4-Bromophenyl phenyl ether	ND< 10.0
N-Nitroso-di-n-propylamine	ND< 10.0	4-Chlorophenyl phenyl ether	ND< 10.0
N-Nitrosodiphenylamine	ND< 10.0	Benzidine	ND< 25.0
N-Nitrosodimethylamine	ND< 10.0	3,3'-Dichlorobenzidine	ND< 10.0
Isophorone	ND< 10.0	4-Chloroaniline	ND< 10.0
Benzyl alcohol	ND< 25.0	2-Nitroaniline	ND< 25.0
Dibenzofuran	ND< 10.0	3-Nitroaniline	ND< 25.0
2-Methylnaphthalene	ND< 10.0	4-Nitroaniline	ND< 25.0

Acids	Results in ug / L	Acids	Results in ug / L
Phenol	ND< 10.0	2-Methylphenol	ND< 10.0
2-Chlorophenol	ND< 10.0	3&4-Methylphenol	ND< 10.0
2,4-Dichlorophenol	ND< 10.0	2,4-Dimethylphenol	ND< 10.0
2,6-Dichlorophenol	ND< 10.0	2-Nitrophenol	ND< 10.0
2,4,5-Trichlorophenol	ND< 25.0	4-Nitrophenol	ND< 25.0
2,4,6-Trichlorophenol	ND< 10.0	2,4-Dinitrophenol	ND< 25.0
Pentachlorophenol	ND< 25.0	4,6-Dinitro-2-methylphenol	ND< 25.0
4-Chloro-3-methylphenol	ND< 10.0	Benzoic acid	ND< 25.0

ELAP Number 10958

Method: EPA 8270C

Data File: S47001.D

 Comments: ND denotes Non Detect  
 ug / L = microgram per Liter

Signature:

  
 Bruce Hoogesteger, Technical Director





**Semi -Volatile Analysis Report for Non-potable Water****Client:** Lu Engineers**Client Job Site:** Clarkson ERP Site**Lab Project Number:** 09-3381**Lab Sample Number:** Water PB 9/22**Client Job Number:** 40503**Field Location:** N/A**Date Sampled:** N/A**Field ID Number:** N/A**Date Received:** N/A**Sample Type:** Water**Date Analyzed:** 09/23/2009

<b>Tentatively Identified Compounds</b>	<b>CAS Number</b>	<b>Retention Time</b>	<b>Results in ug / L</b>	<b>Percent Fit</b>
None Found	N/A	N/A	ND< 10.0	N/A

ELAP Number 10958

Method: EPA 8270C

Data File: S47001.D

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

**Signature:**  
Bruce Hoogesteger: Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

093381SA.XLS

**Pesticide Analysis Report for Non-potable Water**

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: 10419

Client Job Number: 40503

Field Location: MW-1

Date Sampled: 09/16/2009

Field ID Number: N/A

Date Received: 09/17/2009

Sample Type: Water

Date Analyzed: 09/22/2009

Pesticide Identification	Results in ug / L
Aldrin	ND< 0.100 .053 J
alpha-BHC	M ND< 0.100
beta-BHC	ND< 0.100
delta-BHC	M ND< 0.100
gamma-BHC	M ND< 0.100 .033 J
alpha-Chlordane	M ND< 0.100 .041 JB
gamma-Chlordane	ND< 0.100 .088 JB
4,4'-DDD	ND< 0.100 .069
4,4'-DDE	ND< 0.100
4,4'-DDT	ND< 0.100 .083 J
Dieldrin	ND< 0.100 .039 J
Endosulfan I	ND< 0.100
Endosulfan II	ND< 0.100
Endosulfan Sulfate	ND< 0.100 .049 J
Endrin	ND< 0.100 .034 J
Endrin Aldehyde	ND< 0.100 .061 J
Heptachlor	ND< 0.100
Heptachlor Epoxide	ND< 0.100
Methoxychlor	ND< 0.100 .058 JB
Toxaphene	ND< 5.00

ELAP Number 10958

Method: EPA 8081

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

**All target  
analytes should be  
"J" or "JB"**

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt.

093381P1.XLS

*JB*

**Pesticide Analysis Report for Non-potable Water**

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: 10420

Client Job Number: 40503

Field Location: MW-3

Date Sampled: 09/16/2009

Field ID Number: N/A

Date Received: 09/17/2009

Sample Type: Water

Date Analyzed: 09/22/2009

Pesticide Identification	Results in ug / L
Aldrin	ND< 0.100
alpha-BHC	ND< 0.100
beta-BHC	ND< 0.100
delta-BHC	ND< 0.100
gamma-BHC	ND< 0.100
alpha-Chlordane	ND< 0.100
gamma-Chlordane	ND< 0.100 .075 JB
4,4'-DDD	ND< 0.100
4,4'-DDE	ND< 0.100 .055 J
4,4'-DDT	ND< 0.100 .072 J
Dieldrin	ND< 0.100 .036 J
Endosulfan I	ND< 0.100
Endosulfan II	ND< 0.100 .039 JB
Endosulfan Sulfate	ND< 0.100
Endrin	ND< 0.100
Endrin Aldehyde	ND< 0.100
Heptachlor	ND< 0.100
Heptachlor Epoxide	ND< 0.100
Methoxychlor	ND< 0.100 .035 JB
Toxaphene	ND< 5.00

ELAP Number 10958

Method: EPA 8081

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

All target  
analytes should be  
"J" or "UJ"

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**Pesticide Analysis Report for Non-potable Water**

Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site  
Client Job Number: 40503  
Field Location: MW-3 / Field Duplicate  
Field ID Number: N/A  
Sample Type: Water

Lab Project Number: 09-3381  
Lab Sample Number: 10421  
Date Sampled: 09/16/2009  
Date Received: 09/17/2009  
Date Analyzed: 09/22/2009

Pesticide Identification	Results in ug / L
Aldrin	ND< 0.100
alpha-BHC	ND< 0.100 .055 J
beta-BHC	0.338 B
delta-BHC	ND< 0.100 .027 J
gamma-BHC	ND< 0.100 .037 J
alpha-Chlordane	ND< 0.100
gamma-Chlordane	ND< 0.100 .074 JB
4,4'-DDD	ND< 0.100 .065 JB
4,4'-DDE	ND< 0.100
4,4'-DDT	ND< 0.100 .082 J
Dieldrin	ND< 0.100 .044 JB
Endosulfan I	ND< 0.100
Endosulfan II	ND< 0.100 .039 JB
Endosulfan Sulfate	ND< 0.100 .038 J
Endrin	ND< 0.100
Endrin Aldehyde	ND< 0.100 .041 J
Heptachlor	ND< 0.100
Heptachlor Epoxide	ND< 0.100
Methoxychlor	ND< 0.100 .045 JB
Toxaphene	ND< 5.00

ELAP Number 10958

Method: EPA 8081

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

**All target  
analytes should be  
"J" or "UJ"**

Signature: \_\_\_\_\_

Bruce Hoogseeger, Technical Director

**Pesticide Analysis Report for Non-potable Water**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Client Job Number:** 40503

**Lab Sample Number:** 10423

**Field Location:** Field Blank

**Date Sampled:** 09/16/2009

**Field ID Number:** N/A

**Date Received:** 09/17/2009

**Sample Type:** Water

**Date Analyzed:** 09/22/2009

Pesticide Identification	Results in ug / L
Aldrin	ND < 0.100
alpha-BHC	<del>ND &lt; 0.100</del> .085 J
beta-BHC	<del>ND &lt; 0.100</del> .090 JB
delta-BHC	ND < 0.100
gamma-BHC	ND < 0.100
alpha-Chlordane	ND < 0.100
gamma-Chlordane	<del>ND &lt; 0.100</del> .126 B
4,4'-DDD	<del>ND &lt; 0.100</del> .094 JB
4,4'-DDE	ND < 0.100
4,4'-DDT	ND < 0.100
Dieldrin	<del>ND &lt; 0.100</del> .080 J
Endosulfan I	ND < 0.100
Endosulfan II	<del>ND &lt; 0.100</del> .060 JB
Endosulfan Sulfate	<del>ND &lt; 0.100</del> .053 J
Endrin	ND < 0.100
Endrin Aldehyde	<del>ND &lt; 0.100</del> .267
Heptachlor	ND < 0.100
Heptachlor Epoxide	ND < 0.100
Methoxychlor	<del>ND &lt; 0.100</del> .057 JB
Toxaphene	ND < 5.00

ELAP Number 10958

Method: EPA 8081

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "JB"**

**Pesticide Analysis Report for Non-potable Water**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Lab Sample Number:** Water PB 9/21

**Client Job Number:** 40503

**Field Location:** N/A

**Field ID Number:** N/A

**Sample Type:** Water

**Date Sampled:** N/A

**Date Received:** N/A

**Date Analyzed:** 09/22/2009

Pesticide Identification	Results in ug / L
Aldrin	ND< 0.100
alpha-BHC	ND< 0.100
beta-BHC	ND< 0.100 .054 J
delta-BHC	ND< 0.100
gamma-BHC	ND< 0.100
alpha-Chlordane	ND< 0.100
gamma-Chlordane	ND< 0.100 .074 J
4,4'-DDD	ND< 0.100 .055 J
4,4'-DDE	ND< 0.100
4,4'-DDT	ND< 0.100
Dieldrin	ND< 0.100 .035 J
Endosulfan I	ND< 0.100
Endosulfan II	ND< 0.100 .036 J
Endosulfan Sulfate	ND< 0.100
Endrin	ND< 0.100
Endrin Aldehyde	ND< 0.100
Heptachlor	ND< 0.100
Heptachlor Epoxide	ND< 0.100
Methoxychlor	ND< 0.100 .047 J
Toxaphene	ND< 5.00

ELAP Number 10958

Method: EPA 8081

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**PCB Analysis Report for Non-potable Water**

Client: **Lu Engineers**

Client Job Site: Clarkson ERP Site

Lab Project Number: 09-3381

Lab Sample Number: 10419

Client Job Number: 40503

Field Location: MW-1

Date Sampled: 09/16/2009

Field ID Number: N/A

Date Received: 09/17/2009

Sample Type: Water

Date Analyzed: 09/24/2009

PCB Identification	Results in ug / L
Aroclor 1016	ND< 1.00
Aroclor 1221	ND< 1.00
Aroclor 1232	ND< 1.00
Aroclor 1242	ND< 1.00
Aroclor 1248	ND< 1.00
Aroclor 1254	ND< 1.00
Aroclor 1260	ND< 1.00

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**



**PCB Analysis Report for Non-potable Water**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Lab Sample Number:** 10420

**Client Job Number:** 40503

**Field Location:** MW-3

**Field ID Number:** N/A

**Sample Type:** Water

**Date Sampled:** 09/16/2009

**Date Received:** 09/17/2009

**Date Analyzed:** 09/24/2009

PCB Identification	Results in ug / L
Aroclor 1016	ND< 1.00
Aroclor 1221	ND< 1.00
Aroclor 1232	ND< 1.00
Aroclor 1242	ND< 1.00
Aroclor 1248	ND< 1.00
Aroclor 1254	ND< 1.00
Aroclor 1260	ND< 1.00

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**





**PCB Analysis Report for Non-potable Water**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Client Job Number:** 40503

**Lab Sample Number:** 10421

**Field Location:** MW-3 / Field Duplicate

**Date Sampled:** 09/16/2009

**Field ID Number:** N/A

**Date Received:** 09/17/2009

**Sample Type:** Water

**Date Analyzed:** 09/24/2009

PCB Identification	Results in ug / L
Aroclor 1016	ND< 1.00
Aroclor 1221	ND< 1.00
Aroclor 1232	ND< 1.00
Aroclor 1242	ND< 1.00
Aroclor 1248	ND< 1.00
Aroclor 1254	ND< 1.00
Aroclor 1260	ND< 1.00

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**



**PCB Analysis Report for Non-potable Water**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Lab Sample Number:** 10422

**Client Job Number:** 40503

**Field Location:** MW-4

**Field ID Number:** N/A

**Sample Type:** Water

**Date Sampled:** 09/16/2009

**Date Received:** 09/17/2009

**Date Analyzed:** 09/24/2009

PCB Identification	Results in ug / L
Aroclor 1016	ND< 1.00
Aroclor 1221	ND< 1.00
Aroclor 1232	ND< 1.00
Aroclor 1242	ND< 1.00
Aroclor 1248	ND< 1.00
Aroclor 1254	ND< 1.00
Aroclor 1260	ND< 1.00

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director

**All target  
analytes should be  
"J" or "UJ"**



**PCB Analysis Report for Non-potable Water**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Lab Sample Number:** 10423

**Client Job Number:** 40503

**Field Location:** Field Blank

**Date Sampled:** 09/16/2009

**Field ID Number:** N/A

**Date Received:** 09/17/2009

**Sample Type:** Water

**Date Analyzed:** 09/24/2009

PCB Identification	Results in ug / L
Aroclor 1016	ND< 1.00
Aroclor 1221	ND< 1.00
Aroclor 1232	ND< 1.00
Aroclor 1242	ND< 1.00
Aroclor 1248	ND< 1.00
Aroclor 1254	ND< 1.00
Aroclor 1260	ND< 1.00

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**



**PCB Analysis Report for Non-potable Water**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Lab Sample Number:** 10425

**Client Job Number:** 40503

**Field Location:** MW-2

**Date Sampled:** 09/16/2009

**Field ID Number:** N/A

**Date Received:** 09/17/2009

**Sample Type:** Water

**Date Analyzed:** 09/24/2009

PCB Identification	Results in ug / L
Aroclor 1016	ND< 1.00
Aroclor 1221	ND< 1.00
Aroclor 1232	ND< 1.00
Aroclor 1242	ND< 1.00
Aroclor 1248	ND< 1.00
Aroclor 1254	ND< 1.00
Aroclor 1260	ND< 1.00

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

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"J" or "UJ"**

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**PCB Analysis Report for Non-potable Water**

**Client:** Lu Engineers

**Client Job Site:** Clarkson ERP Site

**Lab Project Number:** 09-3381

**Lab Sample Number:** Water PB 9/23

**Client Job Number:** 40503

**Field Location:** N/A

**Field ID Number:** N/A

**Sample Type:** Water

**Date Sampled:** N/A

**Date Received:** N/A

**Date Analyzed:** 09/24/2009

PCB Identification	Results in ug / L
Aroclor 1016	ND< 1.00
Aroclor 1221	ND< 1.00
Aroclor 1232	ND< 1.00
Aroclor 1242	ND< 1.00
Aroclor 1248	ND< 1.00
Aroclor 1254	ND< 1.00
Aroclor 1260	ND< 1.00

ELAP Number 10958

Method: EPA 8082

Comments: ND denotes Non Detect  
ug / L = microgram per Liter

Signature: \_\_\_\_\_

Bruce Hoogesteger: Technical Director





179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

Client: Lu Engineers

Lab Project No.: 09-3381

Client Job Site: Clarkson ERP Site

Lab Sample No.: 10419

Client Job No.: 40503

Sample Type: Water

Field Location: MW-1

Date Sampled: 09/16/2009

Field ID No.: N/A

Date Received: 09/17/2009

Laboratory Report for TAL Metals Analysis in Water

Parameter	Date Analyzed	Analytical Method	Result (mg/L)
Aluminum	09/29/2009	SW846 6010	<0.200
Antimony	09/29/2009	SW846 6010	<0.060 <i>uS</i>
Arsenic	09/29/2009	SW846 6010	<0.005
Barium	09/29/2009	SW846 6010	1.06
Beryllium	09/29/2009	SW846 6010	<0.005
Cadmium	09/29/2009	SW846 6010	<0.005
Calcium	09/29/2009	SW846 6010	186
Chromium	09/29/2009	SW846 6010	<0.010
Cobalt	09/29/2009	SW846 6010	<0.010
Copper	09/29/2009	SW846 6010	<0.010
Iron	09/29/2009	SW846 6010	<0.100
Lead	10/01/2009	SW846 6010	<0.005
Magnesium	09/29/2009	SW846 6010	46.7
Manganese	09/29/2009	SW846 6010	0.580
Mercury	09/22/2009	SW846 7470	<0.0002 <i>uS</i>
Nickel	09/29/2009	SW846 6010	<0.040
Potassium	10/01/2009	SW846 6010	35.0 <i>N M</i>
Selenium	10/01/2009	SW846 6010	<0.005 <i>uS</i>
Silver	09/29/2009	SW846 6010	<0.010
Sodium	09/30/2009	SW846 6010	465
Thallium	09/29/2009	SW846 6010	<0.006
Vanadium	09/29/2009	SW846 6010	<0.010
Zinc	09/29/2009	SW846 6010	<0.020

ELAP ID No.:10958

Comments:

Approved By: \_\_\_\_\_

Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
"J" or "UJ"**

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File ID:093381.xls



179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

 Client: Lu Engineers

Lab Project No.: 09-3381

Client Job Site: Clarkson ERP Site

Lab Sample No.: 10420

Client Job No.: 40503

Sample Type: Water

Field Location: MW-3

Date Sampled: 09/16/2009

Field ID No.: N/A

Date Received: 09/16/2009

**Laboratory Report for TAL Metals Analysis in Water**

Parameter	Date Analyzed	Analytical Method	Result (mg/L)
Aluminum	09/29/2009	SW846 6010	<0.200
Antimony	09/29/2009	SW846 6010	<0.060 <i>UJ</i>
Arsenic	09/29/2009	SW846 6010	<0.005
Barium	09/29/2009	SW846 6010	0.856
Beryllium	09/29/2009	SW846 6010	<0.005
Cadmium	09/29/2009	SW846 6010	<0.005
Calcium	09/29/2009	SW846 6010	133
Chromium	09/29/2009	SW846 6010	<0.010
Cobalt	09/29/2009	SW846 6010	<0.010
Copper	09/29/2009	SW846 6010	<0.010
Iron	09/29/2009	SW846 6010	<0.100
Lead	10/01/2009	SW846 6010	<0.005
Magnesium	09/29/2009	SW846 6010	23.6
Manganese	09/29/2009	SW846 6010	<0.010
Mercury	09/22/2009	SW846 7470	<0.0002 <i>UJ</i>
Nickel	09/29/2009	SW846 6010	<0.040
Potassium	10/01/2009	SW846 6010	10.7 <i>N</i>
Selenium	10/01/2009	SW846 6010	<0.005 <i>UJ</i>
Silver	09/29/2009	SW846 6010	<0.010
Sodium	09/30/2009	SW846 6010	262
Thallium	09/29/2009	SW846 6010	0.007
Vanadium	09/29/2009	SW846 6010	<0.010
Zinc	09/29/2009	SW846 6010	<0.020

ELAP ID No.:10958

Comments:

Approved By:

  
 Bruce Hoogesteger, Technical Director

All target  
analytes should be  
"J" or "UJ"

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File ID:093381.xls





**PARADIGM**  
ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue, Rochester, NY 14608 (585) 647-2630 FAX (585) 647-3311

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Client Job No.: 40503

Field Location: MW-3/Field Duplicate  
Field ID No.: N/A

Lab Project No.: 09-3381

Lab Sample No.: 10421

Sample Type: Water

Date Sampled: 09/16/2009

Date Received: 09/16/2009

**Laboratory Report for TAL Metals Analysis in Water**

Parameter	Date Analyzed	Analytical Method	Result (mg/L)
Aluminum	09/29/2009	SW846 6010	<0.200
Antimony	09/29/2009	SW846 6010	<0.060 <i>UJ</i>
Arsenic	09/29/2009	SW846 6010	<0.005
Barium	09/29/2009	SW846 6010	0.866
Beryllium	09/29/2009	SW846 6010	<0.005
Cadmium	09/29/2009	SW846 6010	<0.005
Calcium	09/29/2009	SW846 6010	134
Chromium	09/29/2009	SW846 6010	<0.010
Cobalt	09/29/2009	SW846 6010	<0.010
Copper	09/29/2009	SW846 6010	<0.010
Iron	09/29/2009	SW846 6010	<0.100
Lead	10/01/2009	SW846 6010	<0.005
Magnesium	09/29/2009	SW846 6010	23.8
Manganese	09/29/2009	SW846 6010	<0.010
Mercury	09/22/2009	SW846 7470	<0.0002 <i>UJ</i>
Nickel	09/29/2009	SW846 6010	<0.040
Potassium	10/01/2009	SW846 6010	10.5 <i>N</i>
Selenium	10/01/2009	SW846 6010	<0.005 <i>UJ</i>
Silver	09/29/2009	SW846 6010	<0.010
Sodium	09/30/2009	SW846 6010	267
Thallium	09/29/2009	SW846 6010	<0.006
Vanadium	09/29/2009	SW846 6010	<0.010
Zinc	09/29/2009	SW846 6010	<0.020

ELAP ID No.:10958

Comments:

Approved By:   
Bruce Hoogesteger, Technical Director

**All target  
analytes should be  
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File ID:093381.xls





179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

**Client:** Lu Engineers
**Lab Project No.:** 09-3381

**Client Job Site:** Clarkson ERP Site

**Lab Sample No.:** 10422

**Client Job No.:** 40503

**Sample Type:** Water

**Field Location:** MW-4

**Date Sampled:** 09/16/2009

**Field ID No.:** N/A

**Date Received:** 09/16/2009

**Laboratory Report for TAL Metals Analysis in Water**

Parameter	Date Analyzed	Analytical Method	Result (mg/L)
Aluminum	09/29/2009	SW846 6010	<0.200
Antimony	09/29/2009	SW846 6010	<0.060 <i>UJ</i>
Arsenic	09/29/2009	SW846 6010	<0.005
Barium	09/29/2009	SW846 6010	1.51
Beryllium	09/29/2009	SW846 6010	<0.005
Cadmium	09/29/2009	SW846 6010	<0.005
Calcium	09/29/2009	SW846 6010	155
Chromium	09/29/2009	SW846 6010	<0.010
Cobalt	09/29/2009	SW846 6010	<0.010
Copper	09/29/2009	SW846 6010	<0.010
Iron	09/29/2009	SW846 6010	0.366
Lead	10/01/2009	SW846 6010	<0.005
Magnesium	09/29/2009	SW846 6010	27.9
Manganese	09/29/2009	SW846 6010	5.45
Mercury	09/22/2009	SW846 7470	<0.0002 <i>UJ</i>
Nickel	09/29/2009	SW846 6010	<0.040
Potassium	10/01/2009	SW846 6010	19.5 <i>N</i>
Selenium	10/01/2009	SW846 6010	<0.005 <i>UJ</i>
Silver	09/29/2009	SW846 6010	<0.010
Sodium	09/30/2009	SW846 6010	514
Thallium	09/29/2009	SW846 6010	0.009
Vanadium	09/29/2009	SW846 6010	<0.010
Zinc	09/29/2009	SW846 6010	<0.020

ELAP ID No.:10958

**Comments:**
**Approved By:**

Bruce Hoogesteger, Technical Director

All target  
analytes should be  
"J" or "UJ"

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File ID:093381.xls



179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

 Client: Lu Engineers

Lab Project No.: 09-3381

Client Job Site: Clarkson ERP Site

Lab Sample No.: 10423

Client Job No.: 40503

Sample Type: Water

Field Location: Field Blank

Date Sampled: 09/16/2009

Field ID No.: N/A

Date Received: 09/16/2009

**Laboratory Report for TAL Metals Analysis in Water**

Parameter	Date Analyzed	Analytical Method	Result (mg/L)
Aluminum	09/29/2009	SW846 6010	<0.200
Antimony	09/29/2009	SW846 6010	<0.060 <i>UJ</i>
Arsenic	09/29/2009	SW846 6010	<0.005
Barium	09/29/2009	SW846 6010	<0.020
Beryllium	09/29/2009	SW846 6010	<0.005
Cadmium	09/29/2009	SW846 6010	<0.005
Calcium	09/29/2009	SW846 6010	<0.500
Chromium	09/29/2009	SW846 6010	<0.010
Cobalt	09/29/2009	SW846 6010	<0.010
Copper	09/29/2009	SW846 6010	<0.010
Iron	09/29/2009	SW846 6010	<0.100
Lead	10/01/2009	SW846 6010	<0.005
Magnesium	09/29/2009	SW846 6010	<0.050
Manganese	09/29/2009	SW846 6010	<0.040 <i>.0040 J</i>
Mercury	09/22/2009	SW846 7470	<0.0002 <i>UJ</i>
Nickel	09/29/2009	SW846 6010	<0.040
Potassium	10/01/2009	SW846 6010	<1.00 <i>N, 99 J</i>
Selenium	10/01/2009	SW846 6010	<0.005 <i>.0044 J</i>
Silver	09/29/2009	SW846 6010	<0.010
Sodium	09/30/2009	SW846 6010	<1.00 <i>.25 J</i>
Thallium	09/29/2009	SW846 6010	<0.006
Vanadium	09/29/2009	SW846 6010	<0.010
Zinc	09/29/2009	SW846 6010	<0.020

ELAP ID No.:10958

Comments:

Approved By:

  
 Bruce Hoogesteger, Technical Director

All target  
analytes should be  
"J" or "UJ"

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional sample information, including compliance with sample condition requirements upon receipt.

File ID:093381.xls




**PARADIGM**

ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

 Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Client Job No.: 40503

Field Location: MW-2

Field ID No.: N/A

Lab Project No.: 09-3381

Lab Sample No.: 10425

Sample Type: Water

Date Sampled: 09/17/2009

Date Received: 09/17/2009

**Laboratory Report for TAL Metals Analysis in Water**

Parameter	Date Analyzed	Analytical Method	Result (mg/L)
Aluminum	09/29/2009	SW846 6010	11.8
Antimony	09/29/2009	SW846 6010	<0.060 <i>WJ</i>
Arsenic	09/29/2009	SW846 6010	<0.005
Barium	09/29/2009	SW846 6010	1.38
Beryllium	09/29/2009	SW846 6010	<0.005
Cadmium	09/29/2009	SW846 6010	<0.005
Calcium	09/29/2009	SW846 6010	198
Chromium	09/29/2009	SW846 6010	0.010
Cobalt	09/29/2009	SW846 6010	<0.010
Copper	09/29/2009	SW846 6010	<0.010
Iron	09/29/2009	SW846 6010	16.1
Lead	10/01/2009	SW846 6010	0.009
Magnesium	09/29/2009	SW846 6010	38.7
Manganese	09/29/2009	SW846 6010	1.30
Mercury	09/22/2009	SW846 7470	<0.0002 <i>WJ</i>
Nickel	09/29/2009	SW846 6010	<0.040
Potassium	10/01/2009	SW846 6010	20.9 <i>N</i>
Selenium	10/01/2009	SW846 6010	<0.005 <i>WJ</i>
Silver	09/29/2009	SW846 6010	<0.010
Sodium	09/30/2009	SW846 6010	253
Thallium	09/29/2009	SW846 6010	<0.006
Vanadium	09/29/2009	SW846 6010	0.022
Zinc	09/29/2009	SW846 6010	<0.020

ELAP ID No.:10958

Comments:

Approved By:

  
 Bruce Hoogesteger, Technical Director

All target  
analytes should be  
"J" or "UJ"

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional sample information, including compliance with sample condition requirements upon receipt.

File ID:093381.xls



179 Lake Avenue, Rochester, NY 14608 (585) 647-2530 FAX (585) 647-3311

Client: Lu Engineers

Lab Project No.: 09-3381

Client Job Site: Clarkson ERP Site

Lab Sample No.: Method Blank

Client Job No.: 40503

Sample Type: Water

Field Location: N/A

Date Sampled: N/A

Field ID No.: N/A

Date Received: N/A

Laboratory Report for TAL Metals Analysis in Water

Parameter	Date Analyzed	Analytical Method	Result (mg/L)
Aluminum	09/29/2009	SW846 6010	<0.200
Antimony	09/29/2009	SW846 6010	<0.060 <i>us</i>
Arsenic	09/29/2009	SW846 6010	<0.005
Barium	09/29/2009	SW846 6010	<0.020
Beryllium	09/29/2009	SW846 6010	<0.005
Cadmium	09/29/2009	SW846 6010	<0.005
Calcium	09/29/2009	SW846 6010	<0.500
Chromium	09/29/2009	SW846 6010	<0.010
Cobalt	09/29/2009	SW846 6010	<0.010
Copper	09/29/2009	SW846 6010	<0.010
Iron	09/29/2009	SW846 6010	<0.100
Lead	10/01/2009	SW846 6010	<0.005
Magnesium	09/29/2009	SW846 6010	<0.050
Manganese	09/29/2009	SW846 6010	<0.010
Mercury	09/22/2009	SW846 7470	<0.0002 <i>us</i>
Nickel	09/29/2009	SW846 6010	<0.040
Potassium	10/01/2009	SW846 6010	<1.00
Selenium	10/01/2009	SW846 6010	<0.005 <i>us</i>
Silver	09/29/2009	SW846 6010	<0.010
Sodium	09/30/2009	SW846 6010	<1.00
Thallium	09/29/2009	SW846 6010	<0.006
Vanadium	09/29/2009	SW846 6010	<0.010
Zinc	09/29/2009	SW846 6010	<0.020

ELAP ID No.:10958

Comments:

Approved By: \_\_\_\_\_

  
Bruce Hoogesteger, Technical Director

This report is part of a multipage document and should only be evaluated in its entirety. Chain of Custody provides additional sample information, including compliance with sample condition requirements upon receipt.

File ID:093381

*Handwritten initials*

**CHAIN OF CUSTODY****REPORT TO:****INVOICE TO:**

<b>COMPANY:</b> Lu Engineers	<b>COMPANY:</b> Same	<b>LAB PROJECT #:</b> 09-3381	<b>CLIENT PROJECT #:</b> 40503
<b>ADDRESS:</b> 2230 Penfield Rd.	<b>ADDRESS:</b>	<b>TURNAROUND TIME (WORKING DAYS)</b> ASP	<b>STD/OTHER</b> 1 2 3 4 5
<b>CITY:</b> Penfield	<b>CITY:</b> NY	<b>STATE:</b> NY	<b>ZIP:</b> 14506
<b>PHONE:</b>	<b>FAX:</b>	<b>PHONE:</b>	<b>FAX:</b>

PROJECT NAME/SITE NAME:

Clarkson ERP site

ATTN: Greg Andrus

ATTN:

COMMENTS:

**REQUESTED ANALYSIS**Quotation # 2 week TAT data.  
3 week TAT package.Per quote/client history for site.  
EPH 9/17  
PARADIGM LAB  
SAMPLE NUMBER

DATE	TIME	COMPOSITION	GRADES	SAMPLE LOCATION/FIELD ID	MATERIALS	CONTAMINANTS	VOC+30TICS	SVOC+30TICS	Metals	PCB	Pest	REMARKS	PARADIGM LAB SAMPLE NUMBER
19/16/09	13:31	X		MW-1	Water	Le	X	X	X	X	X	VOC = 8260TCL + 30TICS	104119
2	13:31			MW-1/M5		Le	X	X	X	X	X	SVOC = 8270ABN + 30TICS	104119MS
3	13:31			MW-1/M5D		Le	X	X	X	X	X	Metals = TAL	104119MSD
4	15:33			MW-3		Le	X	X	X	X	X	EPH 9/17	104210
5	15:33			MW-3/Field Duplicate		Le	X	X	X	X	X		104211
6	14:34			MW-4		5	X	X	X	X	X		104222
7	16/09	14:34	X	Field Blank	Water	Le	X	X	X	X	X		104223
8				Trip Blank		1	X						104224
9													
10													

\*LAB USE ONLY BELOW THIS LINE\*

Sample Condition: Per NELAC/ELAP 210/241/242/243/244

Receipt Parameter NELAC Compliance

<b>Comments:</b>	Container Type:	Y <input checked="" type="checkbox"/> X <input type="checkbox"/> N <input type="checkbox"/>
<b>Comments:</b>	Preservation: added at lab.	Y <input checked="" type="checkbox"/> X <input type="checkbox"/> N <input type="checkbox"/> EPH 9/17
<b>Comments:</b>	Holding Time:	Y <input checked="" type="checkbox"/> X <input type="checkbox"/> N <input type="checkbox"/>
<b>Comments:</b>	Temperature: 9 80 ciced = temp of samples	Y <input checked="" type="checkbox"/> X <input type="checkbox"/> N <input type="checkbox"/> EPH 9/17

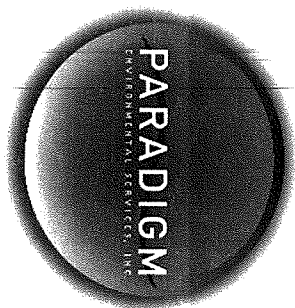
Received By: Rachel Andrus  
Date/Time: 9/16/09 16:34  
Total Cost:

Relinquished By: [Signature]  
Date/Time: 9/17/09 10:06  
P.I.F.

Received @ Lab By: Elizabeth A. Horch  
Date/Time: 9/17/09 1335

Samples hand delivered to lab  
80 custody seals  
not used  
Std. DL per J. Dal Dias per V. Miller  
9/17. EPH 9/17

## CHAIN OF CUSTODY



LOCKPORT, N.Y.

REPORT TO:		INVOICE TO:	
COMPANY:	LU Engineers	COMPANY:	Same
ADDRESS:	2230 Penfield Road	ADDRESS:	
CITY:	Penfield	CITY:	
STATE:	NY	STATE:	
ZIP:	14523	ZIP:	
PHONE:		PHONE:	
FAX:		FAX:	
ATTN:	Greg Andrus	ATTN:	
COMMENTS:			
LAB PROJECT #:		CLIENT PROJECT #:	
09-3381		40503	
TURNAROUND TIME: (WORKING DAYS)			
ASAP			
<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 5		STD OTHER	

REQUESTED ANALYSIS

Quotation #	2 week data	3 week package
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DATE	TIME	C O M P O S I T E	G R A B	SAMPLE LOCATION/FIELD ID	M A T R I X	C O N T A M I N A N T S	VOC + 30 TICS	SUOC + 30 TICS	PCB	TAL Metals	REMARKS	PARADIGM LAB SAMPLE NUMBER
19/17/09	10:50		X	MU-2 EAH 9/17	water	4	X	X	X	X	per G. Andrus as per J. Dalozia 9/17: VOC=8260 TEL + * + TICS SVOC = 8270 ABU + 30 TICS Metals = TAL EAH 9/17	10425
											Samples hand delivered to lab so custody seals not necessary. EAH 9/17	
											Std DL per J. Dalozia as per V. Hill	

**Sample Condition:** Per NELAC/ELAP 210/241/242/243/244

Asper V. Miller 9/17

Receipt Parameter	NELAC Compliance
-------------------	------------------

Comments:	Container Type:	Y	<input checked="" type="checkbox"/>	N	<input type="checkbox"/>
Comments:	Preservation: W-2 Metals Sample: HNO <sub>3</sub> added at 1AB	Y	<input checked="" type="checkbox"/>	N	<input checked="" type="checkbox"/>
Comments:	Holding Time:	Y	<input checked="" type="checkbox"/>	N	<input type="checkbox"/>
Comments:	Temperature: 9°C iced = temp.	Y	<input type="checkbox"/>	N	<input checked="" type="checkbox"/>
Comments:	of samples				

EAH 9117

Sampled By Rachel Jaramaschuk 9/17/07 10:50  
Date/Time

Relinquished By: Rachel Jewett  
Date/Time: 7/17/07 12:10

Received By	
Date/Time	9/17/09 12:10

Received @ Lab By	Date/Time
Elizabeth A. Honech	9/17/09 1335

P.I.F.

## Appendix D

### Data Usability Summary Report

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## **Data Usability Summary Report**

Vali-Data of WNY, LLC  
1514 Davis Rd.  
West Falls, NY 14170

Town of Clarkson  
Paradigm Environmental Services Inc. SDG#5179  
July 29, 2010  
Sampling date: 04/27/09

Prepared by:  
Jodi Zimmerman  
Vali-Data of WNY, LLC  
1514 Davis Rd.  
West Falls, NY 14170

Town of Clarkson  
SDG# 5179



## **DELIVERABLES**

This Data Usability Summary Report (DUSR) was prepared by evaluating the analytical data package for Lu Engineers, project located in the Town of Clarkson, SDG#5179, Paradigm # 09-1511, submitted to Vali-Data of WNY, LLC on May 17, 2010. The laboratory performed the analyses using USEPA methods, 8260B (Volatile Organics), 8270C (Semi-Volatile Organics), 8081 (Pesticides), 8082 (PCBs), 6010B (Inorganics) and 7471A (Mercury).

## **VOLATILE ORGANIC COMPOUNDS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Internal Standard (IS) Area Performance
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration
- GC/MS Performance Check

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

## **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times, Internal Standard, Surrogate Spike Recoveries, Method Blank, Compound Quantitation, Initial Calibration and Continuing Calibration.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

## **DATA COMPLETENESS**

All criteria were met.

## **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met except Methylene Chloride was detected in sample CS-SS-02 but not recorded on the Form 1. An updated page is attached.

## **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

Town of Clarkson  
SDG# 5179

**HOLDING TIMES**

All holding times were met except sample CS-SS-EB was not recorded as having a pH<2 and was analyzed after 7 days. All detected target analytes in this sample should be qualified as estimated and all nondetects should be qualified as unusable.

**INTERNAL STANDARD (IS)**

The IS met criteria except the 1,4-Dichlorobenzene- $d_4$  was outside QC limits, low, in all soil samples except CS-SS-01MS/SD and CS-SD-01. These samples were rerun with similar results. All associated detects in these samples should be qualified as estimated and all non-detects should be qualified as unusable per National Functional Guidelines.

**SURROGATE SPIKE RECOVERIES**

All criteria were met except most surrogate recoveries were outside laboratory QC limits, low, possibly due to matrix interference. All surrogates outside laboratory QC limits were also outside ASP QC limits, low, except Toluene- $d_8$  in Soil LCS 5/7 and 4-Bromofluorobenzene in CS-SS-01MS, CS-SS-04D, CS-SS-05, CS-SD-01, -02 and CS-SD-03. Associated target analytes should be qualified as estimated. All surrogates were outside QC limits in CS-WC-01 due to dilution.

**METHOD BLANK**

All criteria were met except 4-Methyl-2-pentanone was detected above the MDL, below the MRL in Soil LRB 5/5 and should be qualified as estimated in the blank, associated samples and spikes.

2-Hexanone and 4-Methyl-2-pentanone were detected above the MDL, below the MRL in Soil LRB 5/7 and should be qualified as estimated in the blank, associated samples and spikes.

Styrene was detected in Solid M/L LRB 5/8 above the MDL, below the MRL but due to the high concentration in the sample, no qualification is required.

Paradigm has reviewed the data and does not believe these target analytes to be present or they are detected outside the laboratories range for qualification (see Overall evaluation above). No supporting data has been included in the package.

Styrene, 2-Hexanone and 4-Methyl-2-pentanone were detected above the MDL, below the MRL in Water LRB 5/5. These target analytes were not detected in the samples, so no further action is required.

**FIELD DUPLICATE SAMPLE PRECISION**

All criteria were met.

**LABORATORY CONTROL SAMPLES**

All criteria were met.

**MS/MSD**

All criteria were met. The %Rec were within ASP QC limits, however, Toluene was outside laboratory QC limits in CS-SS-01MSD.

**COMPOUND QUANTITATION**

All criteria were met except several target analytes were detected in the samples but not recorded.

Paradigm has reviewed the data and does not believe these target analytes to be present or they are detected outside the laboratories range for qualification (see Overall evaluation above). No supporting data has been included in the package.

### **INITIAL CALIBRATION**

All criteria were met except the %RSD of Acetone and Methylene Chloride were outside ASP outer QC limits. These target analytes should be qualified as estimated in all samples, blanks and spikes. The %RSD of Bromomethane, 2-Butanone and Bromoform were outside ASP QC limits. ASP allows for up to two target analytes to be outside QC limits without further action. National Functional Guidelines states that target analytes which fell outside QC limits should be qualified as estimated in all blanks, spikes and samples. Paradigm did not indicate the use of alternate regression.

### **CONTINUING CALIBRATION**

All criteria were met except the %RSD of Acetone was outside ASP outer QC limits in the Continuing Calibrations performed on 5/7/10 and 5/8/10. This target analyte should be qualified as estimated in all samples, blanks and spikes. The %D of Tetrachloroethene was outside ASP QC limits in the Continuing Calibration performed on 5/7/10. ASP allows up to two target analytes to fall outside of QC limits, so no further action is required. Paradigm did not indicate the use of alternate regression.

### **GC/MS PERFORMANCE CHECK**

All criteria were met.

### **SEMIVOLATILE ORGANIC COMPOUNDS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Internal Standard (IS) Area Performance
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration
- GC/MS Performance Check

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Internal Standard, MS/MSD, Compound Quantitation and Continuing Calibration.

Town of Clarkson

SDG# 5179

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

#### **DATA COMPLETENESS**

All criteria were met.

#### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met.

#### **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

#### **HOLDING TIMES**

All holding times were met.

#### **INTERNAL STANDARD (IS)**

All criteria were met except all internal standards were outside QC limits in Water PB 5/1 and all internal standards except 1,4-Dichlorobenzene- $d_4$  in Water LCS 5/1. Naphthalene- $d_8$ , Acenaphthene- $d_{10}$  and Phenanthrene- $d_{10}$  were outside QC limits in CS-SS-EB. All detected associated target analytes should be qualified as estimated, all non-detects should be qualified as unusable, per National Functional Guidelines.

#### **SURROGATE SPIKE RECOVERIES**

All criteria were met. The %Rec's were within ASP QC limits.

#### **METHOD BLANK**

All criteria were met. (see Internal Standard, above)

#### **FIELD DUPLICATE SAMPLE PRECISION**

All criteria were met.

#### **LABORATORY CONTROL SAMPLES**

All criteria were met.

#### **MS/MSD**

All criteria were met except the %Rec of Pyrene was outside laboratory QC limits in CS-SS-01MS, but within ASP QC limits. Several target analytes were detected but not recorded.

#### **COMPOUND QUANTITATION**

All criteria were met except several target analytes and TIC's were detected but not recorded. Paradigm has reviewed the data and does not believe these target analytes and TIC's to be present or they are detected outside the laboratories range for qualification (see Overall evaluation above). No supporting data has been included in the package.

#### **INITIAL CALIBRATION**

All criteria were met.

Town of Clarkson

SDG# 5179

### **CONTINUING CALIBRATION**

All criteria were met except the %D of 2,4-Dinitrophenol, Hexachlorocyclopentadiene and 4,6-Dinitro-2-methylphenol were outside ASP outer QC limits in Continuing Calibration performed on 5/8/10 at 9:38. These target analytes should be qualified as estimated in the associated blank, samples and spikes.

### **GC/MS PERFORMANCE CHECK**

All criteria were met.

### **PESTICIDES**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times and MS/MSD.

Adirondack Environmental Services, Inc. reported the lesser of the concentrations off the two columns.

### **DATA COMPLETENESS**

All criteria were met.

### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met.

### **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

### **HOLDING TIMES**

All holding times were met. The samples were received with a temperature of 13.0°C which is outside the acceptance window ( $4 \pm 2$  Degrees °C), thus all target analytes in the samples should be qualified as estimated.

**SURROGATE SPIKE RECOVERIES**

All criteria were met except the %Rec of DCBP off column 1 was outside QC limits in sample CS-SS-EB. No target analytes were detected in this sample off either column, so no further action is required.

**METHOD BLANK**

All the criteria were met.

**FIELD DUPLICATE SAMPLE PRECISION**

All criteria were met.

**LABORATORY CONTROL SAMPLES**

All criteria were met.

**MS/MSD**

All criteria were met except 4,4'-DDE was detected in CS-SS-01MS/SD and qualified as estimated in CS-SS-01.

**COMPOUND QUANTITATION**

All criteria were met except the %D between the columns was outside QC limits for 4,4'-DDT in samples CS-SS-01 and CS-SS-04 and 4,4'-DDE in samples CS-SS-04 and CS-SS-04D.

**INITIAL CALIBRATION**

All criteria were met except the %resolution of delta-BHC and Heptachlor were outside ASP QC limits off column 2 in the Individual Standard Mixture C performed on 4/30/10 and 5/1/10. These target analytes were not detected in any of the samples off either column.

**CONTINUING CALIBRATION**

All criteria were met.

**POLYCHLORINATED BIPHENYLS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures

Town of Clarkson

SDG# 5179

outlined above and qualified accordingly.

#### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use. The data do not completely fulfill ASP category B deliverable guidelines, see Initial Calibration, below.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

#### **DATA COMPLETENESS**

All criteria were met.

#### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met except no lab limits were provided for the LCS or MS/SD. This page is attached. The raw data for the Initial Calibration standards were not included in the original package. The injection logs are labeled as 'GC/ECD Pest System 5890/ Dual ECD'pesticide'. Paradigm confirmed that these injection logs were used for PCB analysis. This does not affect the data.

#### **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

#### **HOLDING TIMES**

All holding times were met.

#### **SURROGATE SPIKE RECOVERIES**

All criteria were met within ASP QC limits.

#### **METHOD BLANK**

All the criteria were met.

#### **FIELD DUPLICATE SAMPLE PRECISION**

All criteria were met.

#### **LABORATORY CONTROL SAMPLES**

All criteria were met.

#### **MS/MSD**

All criteria were met.

#### **COMPOUND QUANTITATION**

All criteria were met.

#### **INITIAL CALIBRATION**

All criteria were met except no raw data were provided for the initial calibrations. Calibration Curves and Calibration tables were sent. Paradigm used linear regression on all target analytes and surrogates.

## **CONTINUING CALIBRATION**

All criteria were met.

## **METALS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Method Blank
- Laboratory Control Sample
- MS/MSD
- Duplicate
- Field Duplicate
- Serial Dilution
- Compound Quantitation
- Calibration

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above.

## **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

## **DATA COMPLETENESS**

All criteria were met.

## **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met.

## **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

## **HOLDING TIMES**

All holding times were met.

## **METHOD BLANK**

All criteria were met except the target analyte Mg was detected in the Preparation blank, Blk 4/29 s. The concentration of Mg in the samples was  $> 10\times$  blank concentration, so no further action is required.

Town of Clarkson

SDG# 5179



**LABORATORY CONTROL SAMPLE**

All criteria were met.

**MS/MSD**

All criteria were met except the %Rec of Al, Ca and Fe were outside ASP QC limits in CS-SS-01MS. The sample concentrations were > 4X spike amount, therefore no further action is required. Several target analytes were outside laboratory QC limits and are qualified with an 'M'.

**DUPLICATE**

All criteria were met within ASP QC limits.

Several target analytes were qualified with a 'D', due to the %D being outside lab QC limits.

**FIELD DUPLICATE**

All criteria were met.

**SERIAL DILUTION**

No serial dilution was performed.

**COMPOUND QUANTITATION**

All criteria were met.

**CALIBRATION**

All criteria were met.

**MERCURY**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Method Blank
- Laboratory Control Samples
- MS/MSD
- Duplicate
- Field Duplicate
- Compound Quantitation
- Calibration

The items listed above were technically in compliance with the method and SOP criteria with any exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above.

**OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use.

Town of Clarkson

SDG# 5179

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

#### **DATA COMPLETENESS**

All criteria were met.

#### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met except no results were recorded for Blk s on the summary tables. After review of the raw data, Blk s was analyzed in accordance with the analysis run log and contained no Hg.

#### **CHAIN OF CUSTODY**

All criteria were met.

#### **HOLDING TIMES**

All holding times were met.

#### **METHOD BLANK**

All criteria were met.

#### **LABORATORY CONTROL SAMPLES**

All criteria were met.

#### **MS/MSD**

All criteria were met except the %Rec was outside ASP QC limits, high, and is qualified with an 'M' in sample CS-SS-01.

#### **DUPLICATE**

All criteria were met.

Hg was qualified with a 'D' due to the %D being outside lab QC limits.

#### **FIELD DUPLICATE**

All criteria were met.

#### **COMPOUND QUANTITATION**

All criteria were met.

#### **CALIBRATION**

All criteria were met.

#### **GENERAL CHEMISTRY**

The following items/criteria were reviewed for this analytical suite:

- Percent Moisture
- pH

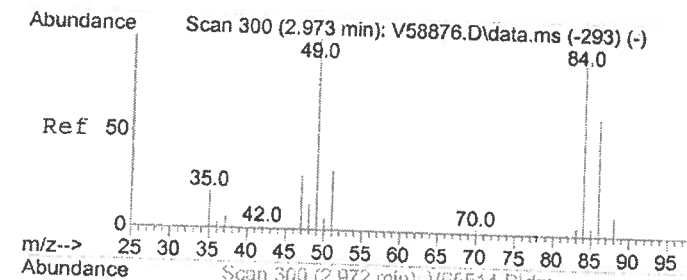
The items listed above were technically in compliance with the method and SOP criteria with any exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above.

**Percent Moisture**

The percent moisture was recorded on a prep log but no Form 1's were submitted.

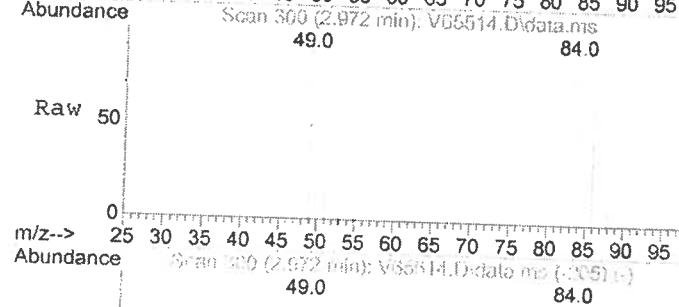
**pH**

The pH was recorded on a prep log but no Form 1's were submitted.

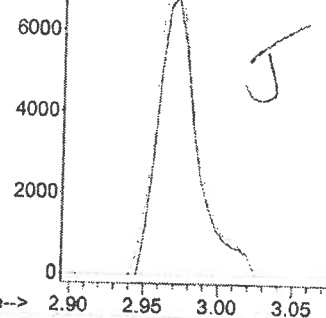


#14  
 Methylene chloride  
 Concen: 4.89 ug/L  
 RT: 2.972 min Scan# 300  
 Delta R.T. 0.006 min  
 Lab File: V65514.D  
 Acq: 7 May 2009 6:08 am

Tgt Ion	Ratio	Lower	Upper
84	100		
49	114.2	0.0	0.0#



Abundance Ion 84.00 (83.70 to 84.70): V6  
 Ion 49.00 (48.70 to 49.70): V6



*Handwritten signature*  
 8/23/10



179 Lake Avenue Rochester, New York 14608 (585) 647-2530 FAX (585) 647-3311

**PCB Analysis Report for Soils/Solids/Sludges**

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Client Job Number: 40503

Lab Project Number: 09-1511

Lab Sample Number: N/A

SDG Group: 5179

Spiked Compound	Soil Spike Limits		Soil % RPD Limits		Water Spike Limits		Water % RPD Limits	
	Lower %	Upper %	Lower %	Upper %	Lower %	Upper %	Lower %	Upper %
Aroclor	10.0	187	0	98.0	10.0	142	0	65.4

ELAP Number 10958

Method: EPA 8082

Compound	Spike Level	MDL1	MDL2	MDL3	MDL4	MDL5	MDL6	MDL7	SD	MDL	Reporting Limit
2 Dichlorodifluoromethane	2	1.624	1.556	1.137	1.515	1.182	1.911	1.449	0.265	0.832	2
3 Chloromethane	2	1.762	1.72	1.295	1.54	1.211	1.749	1.474	0.223	0.700	2
4 Vinyl chloride	2	1.869	1.691	1.294	1.684	1.316	1.788	1.555	0.223	0.701	2
5 Bromomethane	2	3.15	2.66	2.857	2.88	2.708	3.529	2.671	0.317	0.996	2
6 Chloroethane	2	1.856	2.071	1.613	2.182	1.294	1.861	1.524	0.313	0.983	2
7 Trichlorofluoromethane	2	2.016	1.677	1.355	1.693	1.213	1.912	1.784	0.289	0.906	2
8 Ethyl ether	2	2.194	1.636	1.762	1.718	1.625	2.263	1.664	0.272	0.854	2
9 Freon 113	2	2.148	1.835	1.476	1.954	1.51	2.303	1.774	0.307	0.964	2
10 1,1-Dichloroethene	2	1.866	1.627	1.369	1.785	1.359	2.008	1.511	0.250	0.787	2
11 Acetone	5	3.234	4.055	3.665	3.775	3.561	3.986	3.36	0.305	0.957	5
12 Carbon disulfide	2	1.979	1.629	1.363	1.755	1.349	2.085	1.642	0.281	0.882	2
13 Methyl acetate	2	2.196	2.073	1.781	2.121	1.91	2.257	1.893	0.175	0.550	2
14 Methylene chloride	5	5.609	4.612	3.133	3.467	4.076	4.616	4.136	0.818	2.568	5
15 Acrylonitrile	2	2.018	1.874	1.902	1.647	2.056	1.997	1.653	0.168	0.529	2
16 tert-Butyl alcohol	200	214.401	271.269	271.78	253.957	325.094	187.712	258.768	44.064	138.362	200
17 Methyl tert-butyl ether	2	2.517	2.279	2.015	2.322	2.025	2.552	2.1	0.222	0.698	2
18 trans-1,2-Dichloroethene	2	2.172	1.951	1.549	1.877	1.44	2.142	1.756	0.279	0.876	2
19 1,1-Dichloroethane	2	2.026	1.855	1.485	1.771	1.538	1.981	1.66	0.210	0.658	2
20 Vinyl Acetate	2	1.701	1.572	1.358	1.34	1.333	1.423	1.197	0.168	0.528	5
21 2,2-Dichloropropane	2	2.142	1.913	1.55	1.952	1.521	2.254	1.73	0.281	0.882	2
22 2-Butanone	2	1.686	0.981	1.104	0.549	0.788	1.564	1.512	0.430	1.351	5
23 cis-1,2-Dichloroethene	2	2.011	1.917	1.565	1.794	1.583	2.218	1.845	0.231	0.727	2
24 Bromochloromethane	2	2.227	1.779	1.745	1.969	1.55	2.302	1.877	0.268	0.842	2
25 Chloroform	2	2.201	1.994	1.723	1.991	1.569	2.249	1.853	0.245	0.771	2
28 1,1,1-Trichloroethane	2	2.124	1.968	1.58	2.148	1.563	2.359	1.853	0.298	0.936	2
30 Carbon tetrachloride	2	2.224	1.979	1.556	1.974	1.477	2.216	1.734	0.300	0.941	2
31 Benzene	1	1.028	0.821	0.75	0.821	0.75	0.816	0.912	0.098	0.309	0.7
32 1,2-Dichloroethane	2	2.195	2.076	1.719	1.94	1.886	2.341	1.764	0.227	0.714	2
33 Trichloroethene	2	1.977	1.871	1.427	1.646	1.422	2.055	1.619	0.255	0.802	2
34 Methylcyclohexane	2	2.104	1.805	1.435	1.866	1.472	2.255	1.852	0.301	0.944	2
36 1,2-Dichloropropane	2	1.851	1.777	1.402	1.721	1.44	2.084	1.644	0.237	0.743	2
38 Dibromomethane	2	2.073	1.784	1.745	1.917	1.806	2.185	1.798	0.167	0.526	2
39 Bromodichloromethane	2	1.946	1.684	1.546	1.718	1.599	1.842	1.727	0.137	0.429	2
40 2-Chloroethyl vinyl ether	5	4.93	5.83	5.812	5.479	4.896	5.937	5.679	0.432	1.356	5
42 1,1-Dichloropropene	2	2.11	1.874	1.404	2.004	1.364	2.252	1.801	0.339	1.063	2
43 cis-1,3-Dichloropropene	2	1.899	1.72	1.382	1.589	1.507	1.909	1.418	0.217	0.680	2
44 4-Methyl-2-pentanone	2	2.278	2.093	1.813	1.98	2.087	2.267	1.821	0.190	0.595	5
46 Toluene	2	2.188	2.198	1.603	2.046	1.694	2.202	1.866	0.252	0.791	2
47 trans-1,3-Dichloropropene	2	2.123	1.771	1.445	1.734	1.642	1.996	1.63	0.230	0.723	2
48 1,1,2-Trichloroethane	2	2.201	2.103	1.677	1.98	1.667	2.157	1.685	0.242	0.759	2

VOA Water Master MDL  
1/2009-4/2009  
Due 1/2010

49	1,3-Dichloropropane	2	2.057	1.918	1.695	2.032	1.731	2.242	1.67	0.217	0.681	2
50	Tetrachloroethene	2	2.423	2.253	1.776	2.381	1.851	2.542	1.97	0.303	0.951	2
51	2-Hexanone	2	2.16	1.87	1.71	1.76	1.69	1.95	1.57	0.196	0.615	5
52	Dibromochloromethane	2	1.93	1.82	1.56	1.72	1.5	1.84	1.44	0.189	0.592	2
53	1,2-Dibromoethane	2	1.96	1.73	1.76	1.9	1.78	1.96	1.58	0.139	0.436	2
55	Chlorobenzene	2	2.01	2.07	1.92	1.87	1.83	2.08	1.9	0.099	0.311	2
56	1,1,1,2-Tetrachloroethane	2	2	2.07	1.76	1.71	1.77	1.97	1.98	0.143	0.449	2
57	Ethylbenzene	2	2.08	2.17	1.75	1.94	1.76	2.01	2.02	0.158	0.495	5
58	m,p-Xylene	4	4.21	4.32	3.45	3.96	3.49	3.88	4.31	0.365	1.147	2
59	o-Xylene	2	2.09	2.08	1.73	1.91	1.8	2.06	2.01	0.144	0.452	2
60	Styrene	2	2.16	2.09	1.79	1.91	1.81	2.06	2.17	0.160	0.504	2
61	Bromoform	2	1.9	1.99	1.67	1.81	1.68	1.67	1.98	0.145	0.454	2
62	Isopropylbenzene	2	1.96	2.07	1.72	1.95	1.82	1.96	2.24	0.167	0.525	5
63	1,2,3-Trichloropropane	2	2.18	2.3	1.89	1.75	1.75	2.18	1.94	0.222	0.697	2
64	4-Bromofluorobenzene	2	2.23	2.21	1.79	1.83	1.86	1.85	2.16	0.199	0.624	2
65	Bromobenzene	2	2.09	2.13	1.87	1.92	1.79	2.08	2.43	0.212	0.666	2
66	1,1,2,2-Tetrachloroethane	2	2.01	2.2	1.96	1.89	2	2.05	2.24	0.127	0.398	2
67	n-Propylbenzene	2	2.19	2.3	1.86	2.04	1.79	2.15	2.31	0.205	0.643	5
68	2-Chlorotoluene	2	2.02	2.12	1.72	1.95	1.84	1.97	2.16	0.153	0.481	2
69	4-Chlorotoluene	2	2.09	2.15	1.76	1.87	1.82	2	2.18	0.167	0.525	2
70	1,3,5-Trimethylbenzene	2	2.13	2.27	1.76	1.91	1.81	2.08	2.11	0.187	0.587	5
71	tert-Butylbenzene	2	2.16	2.26	1.68	1.95	1.69	2.01	2.23	0.241	0.755	2
72	1,2,4-Trimethylbenzene	2	2.25	2.33	1.88	2.13	1.89	1.97	2.32	0.197	0.619	5
73	sec-Butylbenzene	2	2.2	2.23	1.73	2.02	1.74	2.06	2.05	0.200	0.628	5
74	p-Isopropyltoluene	2	2.23	2.28	1.86	1.88	1.76	2.11	2.27	0.218	0.686	5
76	1,3-Dichlorobenzene	2	2.04	1.86	1.78	1.94	1.77	1.71	2.12	0.151	0.476	2
77	1,4-Dichlorobenzene	2	2.17	2.01	1.82	2.1	1.94	1.99	2.07	0.114	0.359	2
78	n-Butylbenzene	2	2.07	2.07	1.61	1.88	1.6	1.8	1.87	0.192	0.602	5
79	1,2-Dichlorobenzene	2	2.21	2.21	2	1.99	1.94	1.98	2.09	0.112	0.352	2
81	1,2-Dibromo-3-Chloropropane	2	1.51	1.49	1.24	1.43	1.2	1.34	1.44	0.122	0.382	5
82	1,2,4-Trichlorobenzene	5	1.48	1.85	2.17	2	2.18	2.3	2.35	0.303	0.952	5
83	1,2,3-Trichlorobenzene	5	1.17	1.55	1.49	1.43	1.8	1.81	1.78	0.238	0.748	5
84	Hexachlorobutadiene	2	2.35	2.16	1.64	2.02	1.88	1.92	2.25	0.243	0.763	2
85	Naphthalene	5	0.59	0.49	0.52	0.32	0.39	0.39	0.38	0.095	0.299	5
86	Cyclohexane	2	1.85	1.73	1.58	2	1.42	1.97	2.04	0.233	0.733	2

Data File Ids per level:

2	V62986	V62987	V62988	V62989	V62990	V62991	V62992
5	V62742	V62743	V62744	V62745	V62747	V62748	V62749
200	V64078	V64079	V64080	V64081	V64082	V64083	V64084
*5	V64990	V64991	V64992	V64993	V64994	V64995	V64996
1	V64982	V64983	V64984	V64985	V64986	V64987	V64988

# **Data Usability Summary Report**

Vali-Data of WNY, LLC  
1514 Davis Rd.  
West Falls, NY 14170

Town of Clarkson  
Paradigm Environmental Services Inc. SDG#6337  
August 6, 2010  
Sampling date: 05/27/09

Prepared by:  
Jodi Zimmerman  
Vali-Data of WNY, LLC  
1514 Davis Rd.  
West Falls, NY 14170

Town of Clarkson  
SDG# 6337



## **DELIVERABLES**

This Data Usability Summary Report (DUSR) was prepared by evaluating the analytical data package for Lu Engineers, project located in the Town of Clarkson, SDG#6337, Paradigm # 09-1916, submitted to Vali-Data of WNY, LLC on May 17, 2010. The laboratory performed the analyses using USEPA methods, 8260B (Volatile Organics), 8270C (Semi-Volatile Organics), 8081 (Pesticides), 8082 (PCBs), 6010B (Inorganics) and 7471A (Mercury).

## **VOLATILE ORGANIC COMPOUNDS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Internal Standard (IS) Area Performance
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration
- GC/MS Performance Check

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

## **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times, Internal Standard, Surrogate Spike Recoveries, Method Blank, Compound Quantitation and Initial Calibration.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

### **DATA COMPLETENESS**

All criteria were met.

### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met.

### **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

Town of Clarkson

SDG# 6337

**HOLDING TIMES**

All holding times were met. The samples were received at a temperature of 10°C which is outside the acceptance window ( $4 \pm 2$  Degrees °C), thus all target analytes in the samples should be qualified as estimated.

**INTERNAL STANDARD (IS)**

The IS met criteria except the 1,4-Dichlorobenzene- $d_4$  was outside QC limits, low, in sample CS-TP-01A. All associated detects in this sample should be qualified as estimated and all non-detects should be qualified as unusable per National Functional Guidelines.

**SURROGATE SPIKE RECOVERIES**

All criteria were met except Toluene- $d_8$  and 4-Bromofluorobenzene were outside QC limits in sample CS-TP-01A and CS-TP-01B possibly due to matrix interference. Pentafluorobenzene was outside QC limits in sample CS-TP-01B. All associated target analytes should be qualified as estimated or undetected estimated except for those associated with Toluene- $d_8$  in sample CS-TP-01A, per National Functional Guidelines (NFG). NFG requires all non detected target analytes associated with Toluene- $d_8$  in sample CS-TP-01A to be qualified as unusable since the %Rec of Toluene- $d_8$  was <20%.

**METHOD BLANK**

All criteria were met except several target analytes were detected but not recorded. Paradigm has reviewed the data and does not believe these target analytes to be present or they are detected outside the laboratories range for qualification (see Overall evaluation above). No supporting data has been included in the package.

**FIELD DUPLICATE SAMPLE PRECISION**

No field duplicate sample was obtained.

**LABORATORY CONTROL SAMPLES**

All criteria were met.

**MS/MSD**

No MS/MSD were performed on these samples.

**COMPOUND QUANTITATION**

All criteria were met except several target analytes were detected in the samples but not recorded. Paradigm has reviewed the data and does not believe these target analytes to be present or they are detected outside the laboratories range for qualification (see Overall evaluation above). No supporting data has been included in the package.

**INITIAL CALIBRATION**

All criteria were met except the %RSD of Acetone and Methylene Chloride were outside ASP outer QC limits. These target analytes should be qualified as estimated in all samples, blanks and spikes. The %RSD of Bromomethane and Bromoform were outside ASP QC limits. ASP allows for up to two target analytes to be outside QC limits without further action. Alternate forms of regression were used on target analytes whose %RSD >15%. The r-squared value for Bromomethane remained outside QC limits, so it should be qualified as estimated in all samples, blanks and spikes.

Town of Clarkson

SDG# 6337

### **CONTINUING CALIBRATION**

No continuing calibration was run because samples were run after the initial calibration.

### **GC/MS PERFORMANCE CHECK**

All criteria were met.

### **SEMIVOLATILE ORGANIC COMPOUNDS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Internal Standard (IS) Area Performance
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration
- GC/MS Performance Check

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times and Compound Quantitation.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

### **DATA COMPLETENESS**

All criteria were met.

### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met.

### **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

### **HOLDING TIMES**

All holding times were met. The samples were received at a temperature of 10°C which is outside the

Town of Clarkson

SDG# 6337

acceptance window ( $4 \pm 2$  Degrees °C), thus all target analytes in the samples should be qualified as estimated.

**INTERNAL STANDARD (IS)**

All criteria were met.

**SURROGATE SPIKE RECOVERIES**

All criteria were met.

**METHOD BLANK**

All criteria were met.

**FIELD DUPLICATE SAMPLE PRECISION**

No field duplicate sample was obtained.

**LABORATORY CONTROL SAMPLES**

All criteria were met.

**MS/MSD**

No MS/MSD were performed.

**COMPOUND QUANTITATION**

All criteria were met except several TIC's were detected but not recorded. Paradigm has reviewed the data and does not believe these target analytes to be present or they are detected outside the laboratories range for qualification (see Overall evaluation above). No supporting data has been included in the package.

**INITIAL CALIBRATION**

All criteria were met.

**CONTINUING CALIBRATION**

All criteria were met.

**GC/MS PERFORMANCE CHECK**

All criteria were met.

**PESTICIDES**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples

Town of Clarkson

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- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

#### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times and Continuing Calibration.

Adirondack Environmental Services, Inc. reported the lesser of the concentrations off the two columns. Sulfur clean up was used.

#### **DATA COMPLETENESS**

All criteria were met.

#### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met.

#### **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

#### **HOLDING TIMES**

All holding times were met. The samples were received at a temperature of 11°C which is outside the acceptance window ( $4 \pm 2$  Degrees °C), thus all target analytes in the samples should be qualified as estimated.

#### **SURROGATE SPIKE RECOVERIES**

All criteria were met.

#### **METHOD BLANK**

All the criteria were met.

#### **FIELD DUPLICATE SAMPLE PRECISION**

No field duplicate sample was obtained.

#### **LABORATORY CONTROL SAMPLES**

All criteria were met except the %Rec of Dieldrin was outside laboratory QC limits but within ASP limits.

#### **MS/MSD**

All criteria were met.

#### **COMPOUND QUANTITATION**

All criteria were met except alpha-Chlordane was detected in the samples but not recorded. The %D between the columns was outside QC limits for 4,4'-DDE and Endrin in sample CS-TP-01A, Endrin in sample CS-TP-01B and 4,4'-DDE in sample CS-TP-01BMS. Adirondack Environmental Services, Inc.

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reported the lesser of the concentrations off the two columns.

#### **INITIAL CALIBRATION**

All criteria were met except the %resolution of delta-BHC and Heptachlor were outside ASP QC limits off column 2 in the Resolution Check Mixture and Individual Standard Mixture C performed. These target analytes were not detected in any of the samples off either column.

#### **CONTINUING CALIBRATION**

All criteria were met except the %RPD was outside QC limits for Endosulfan Sulfate and DCBP in IND MID C off column 1. These target analytes should be qualified as estimated. Adirondack Environmental Services recorded %RPD not %D.

#### **POLYCHLORINATED BIPHENYLS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

#### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

#### **DATA COMPLETENESS**

All criteria were met.

#### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met except no raw data for the initial calibration was included in the original data package.

**CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

**HOLDING TIMES**

All holding times were met. The samples were received at a temperature of 10°C which is outside the acceptance window ( $4 \pm 2$  Degrees °C), thus all target analytes in the samples should be qualified as estimated.

**SURROGATE SPIKE RECOVERIES**

All criteria were met within ASP QC limits.

**METHOD BLANK**

All the criteria were met.

**FIELD DUPLICATE SAMPLE PRECISION**

No field duplicate sample was obtained.

**LABORATORY CONTROL SAMPLES**

All criteria were met except the incorrect spiked compound was recorded on the 'PCB Analysis Report for Soils/Solids/Sludges'. An updated page is attached.

**MS/MSD**

No MS/MSD were performed on these samples.

**COMPOUND QUANTITATION**

All criteria were met.

**INITIAL CALIBRATION**

All criteria were met except no raw data were provided for the initial calibrations. Calibration Curves and Calibration tables were sent.

Paradigm used linear regression on all target analytes and surrogates.

**CONTINUING CALIBRATION**

All criteria were met except the %D was recorded incorrectly on Form 7. Paradigm recorded '% Agreement' as '%D'. This does not affect the usability of the data.

**METALS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Method Blank
- Laboratory Control Sample
- MS/MSD

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- Duplicate
- Field Duplicate
- Serial Dilution
- Compound Quantitation
- Calibration

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above.

#### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but the package did not conform to an ASP category B deliverable, as described in MS/MSD/Duplicate, below, and are qualified in Holding Times.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

#### **DATA COMPLETENESS**

All criteria were met.

#### **NARATIVE AND DATA REPORTING FORMS**

All criteria were met.

#### **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

#### **HOLDING TIMES**

All holding times were met. The samples were received at a temperature of 10°C which is outside the acceptance window ( $4 \pm 2$  Degrees °C), thus all target analytes in the samples should be qualified as estimated.

#### **METHOD BLANK**

All criteria were met.

#### **LABORATORY CONTROL SAMPLE**

All criteria were met.

#### **MS/MSD**

No MS/MSD was performed.

#### **DUPLICATE**

No Duplicate was performed.

#### **FIELD DUPLICATE**

No field duplicate sample was obtained.



**SERIAL DILUTION**

No serial dilution was performed.

**COMPOUND QUANTITATION**

All criteria were met.

**CALIBRATION**

All criteria were met.

**MERCURY**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Method Blank
- Laboratory Control Samples
- MS/MSD
- Duplicate
- Field Duplicate
- Compound Quantitation
- Calibration

The items listed above were technically in compliance with the method and SOP criteria with any exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above.

**OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

**DATA COMPLETENESS**

All criteria were met.

**NARRATIVE AND DATA REPORTING FORMS**

All criteria were met.

**CHAIN OF CUSTODY**

All criteria were met.

**HOLDING TIMES**

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All holding times were met. The samples were received at a temperature of 10°C which is outside the acceptance window ( $4 \pm 2$  Degrees °C), thus all target analytes in the samples should be qualified as estimated.

**METHOD BLANK**

All criteria were met.

**LABORATORY CONTROL SAMPLES**

All criteria were met.

**MS/MSD**

No MS/MSD were performed on these samples.

**DUPLICATE**

No Duplicate was performed on these samples.

**FIELD DUPLICATE**

No field duplicate sample was obtained.

**COMPOUND QUANTITATION**

All criteria were met.

**CALIBRATION**

All criteria were met.

**GENERAL CHEMISTRY**

The following items/criteria were reviewed for this analytical suite:

- Percent Moisture

The item listed above was technically in compliance with the method and SOP criteria with any exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above.

**Percent Moisture**

The percent moisture was recorded on a prep log but no Form 1's were submitted.

**PCB Analysis Report for Soils/Solids/Sludges**

Client: Lu Engineers

Client Job Site: Clarkson ERP Site

Client Job Number: 40503

Field Location: N/A

Field ID Number: N/A

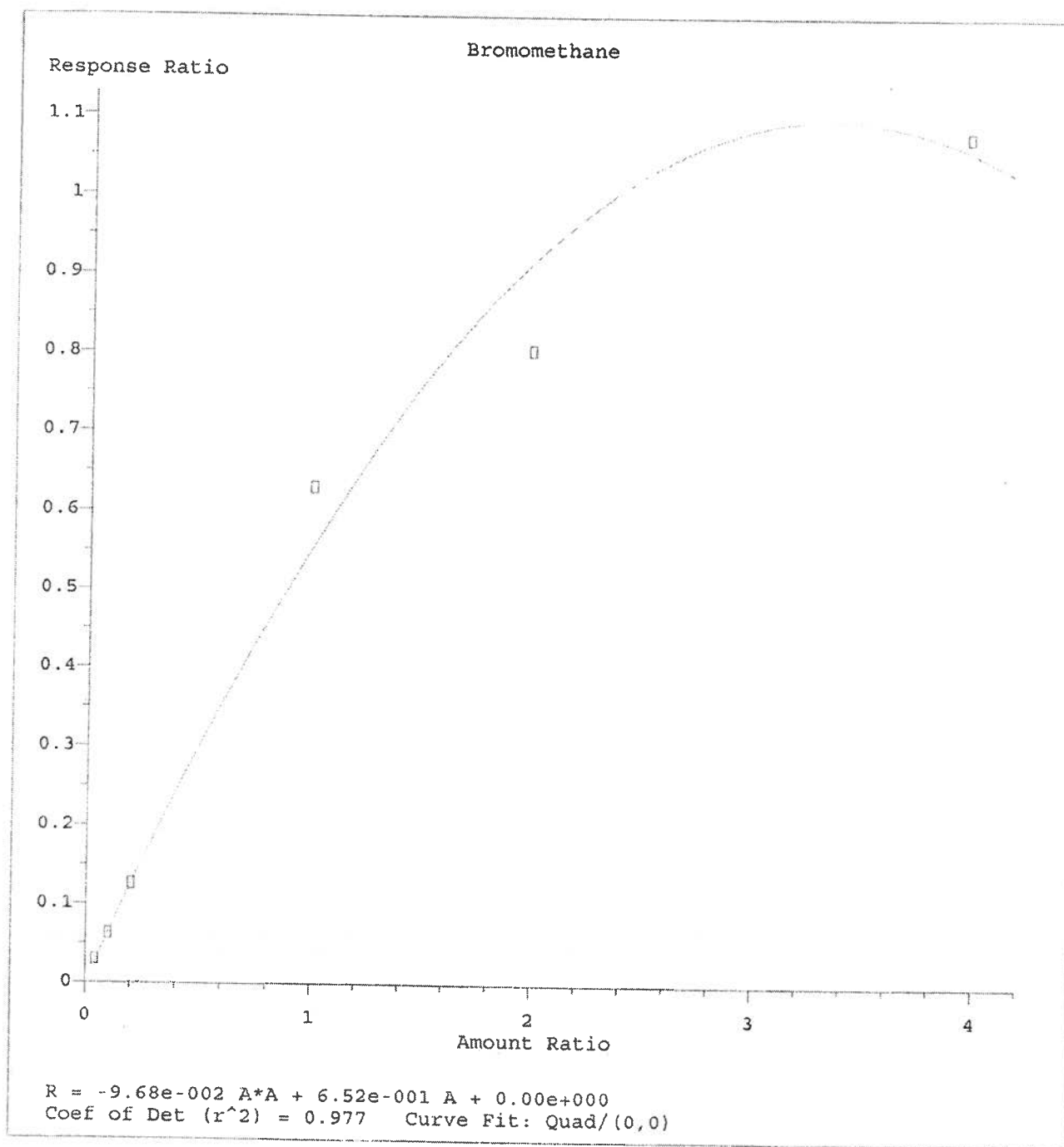
Sample Type: Soil

Lab Project Number: 09-1916  
Lab Sample Number: LCS

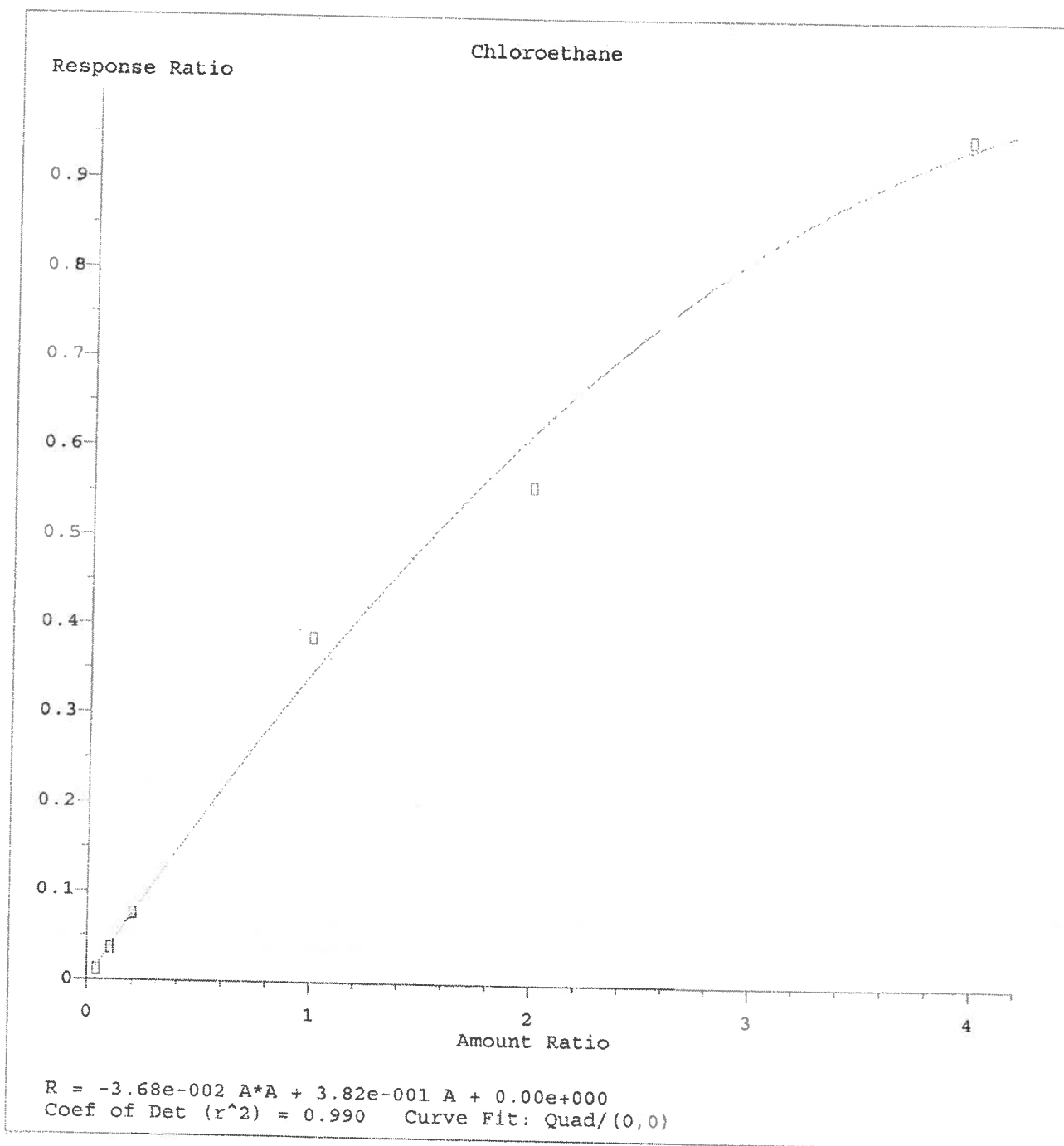
SDG Group: N/A

Date Sampled: N/A  
Date Received: N/A  
Date Analyzed: 06/08/2009  
Date Reissued: 10/07/2010

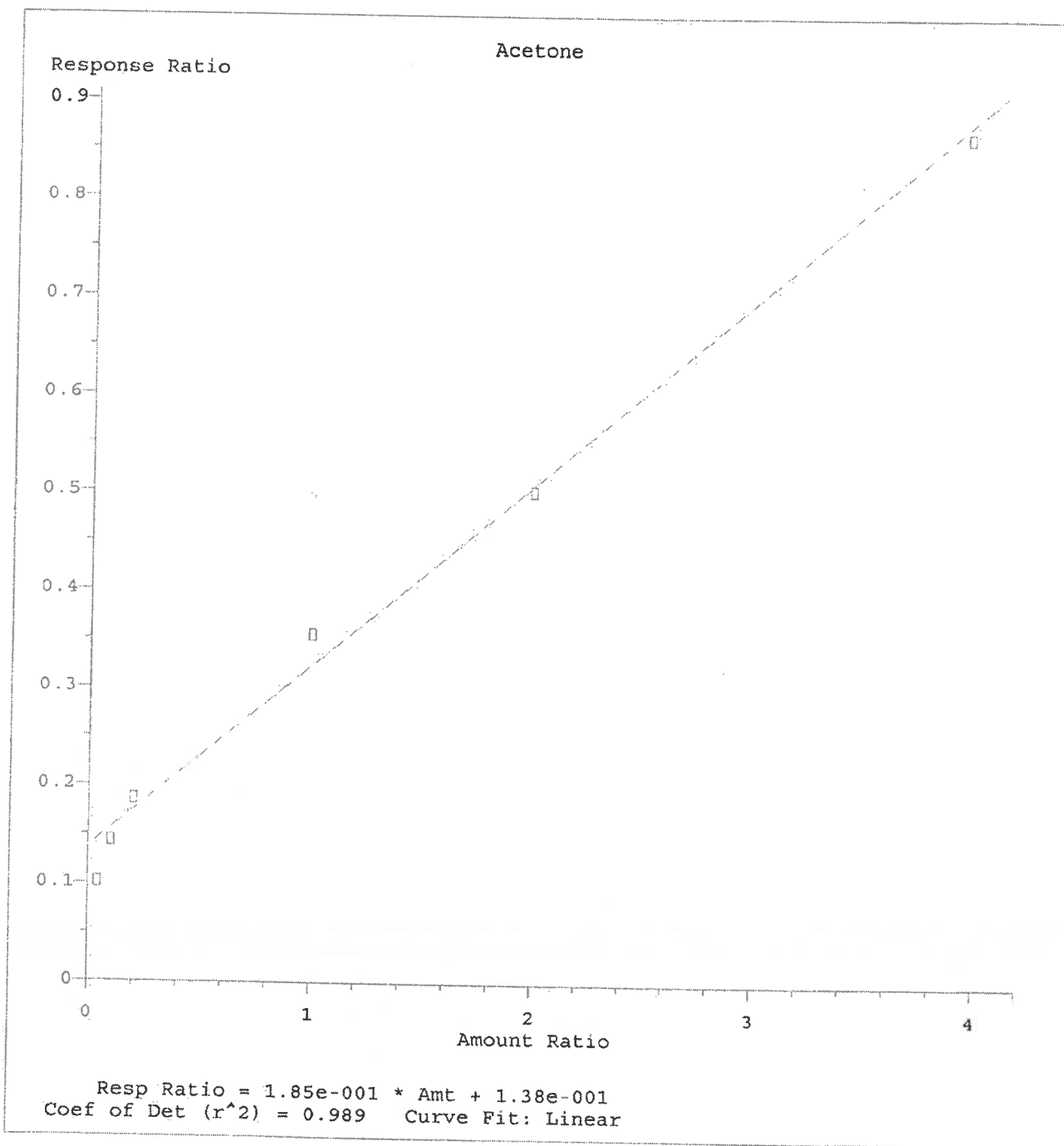
Spiked Compound	Blank Results in ug / Kg	LCS Spiked in ug / Kg	LCS Results in ug / Kg	LCS Percent Recovery	MSD Spiked in ug / Kg	MSD Results in ug / Kg	MSD Percent Recovery	MS / MSD % RPD
Aroclor 1016/1260	ND< 0.00286	0.0143	0.00989	69.2	N/A	N/A	N/A	N/A
ELAP Number 10958								



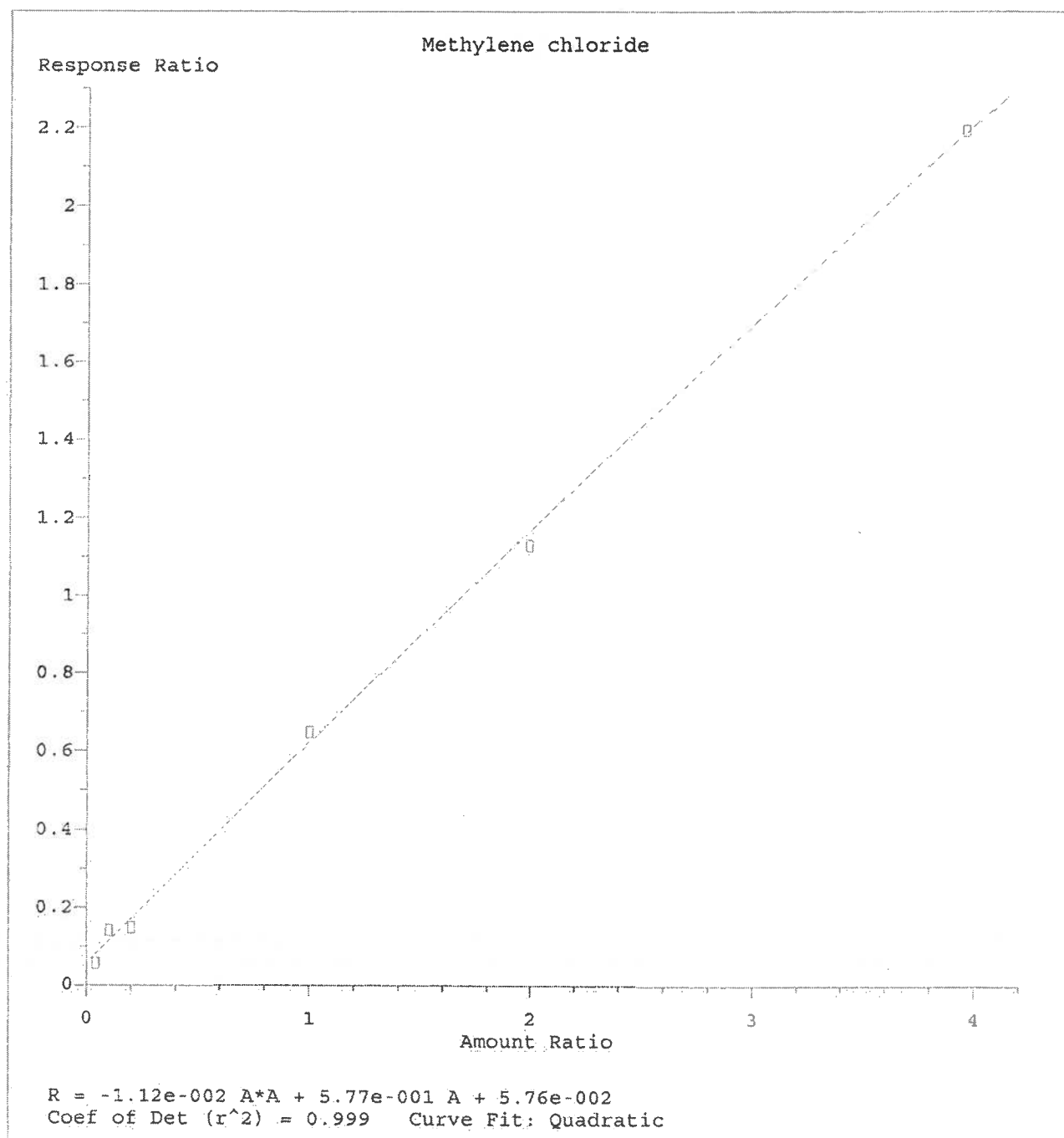
Method Name: C:\msdchem\1\METHODS\060509.M  
Calibration Table Last Updated: Fri Jun 05 18:02:14 2009



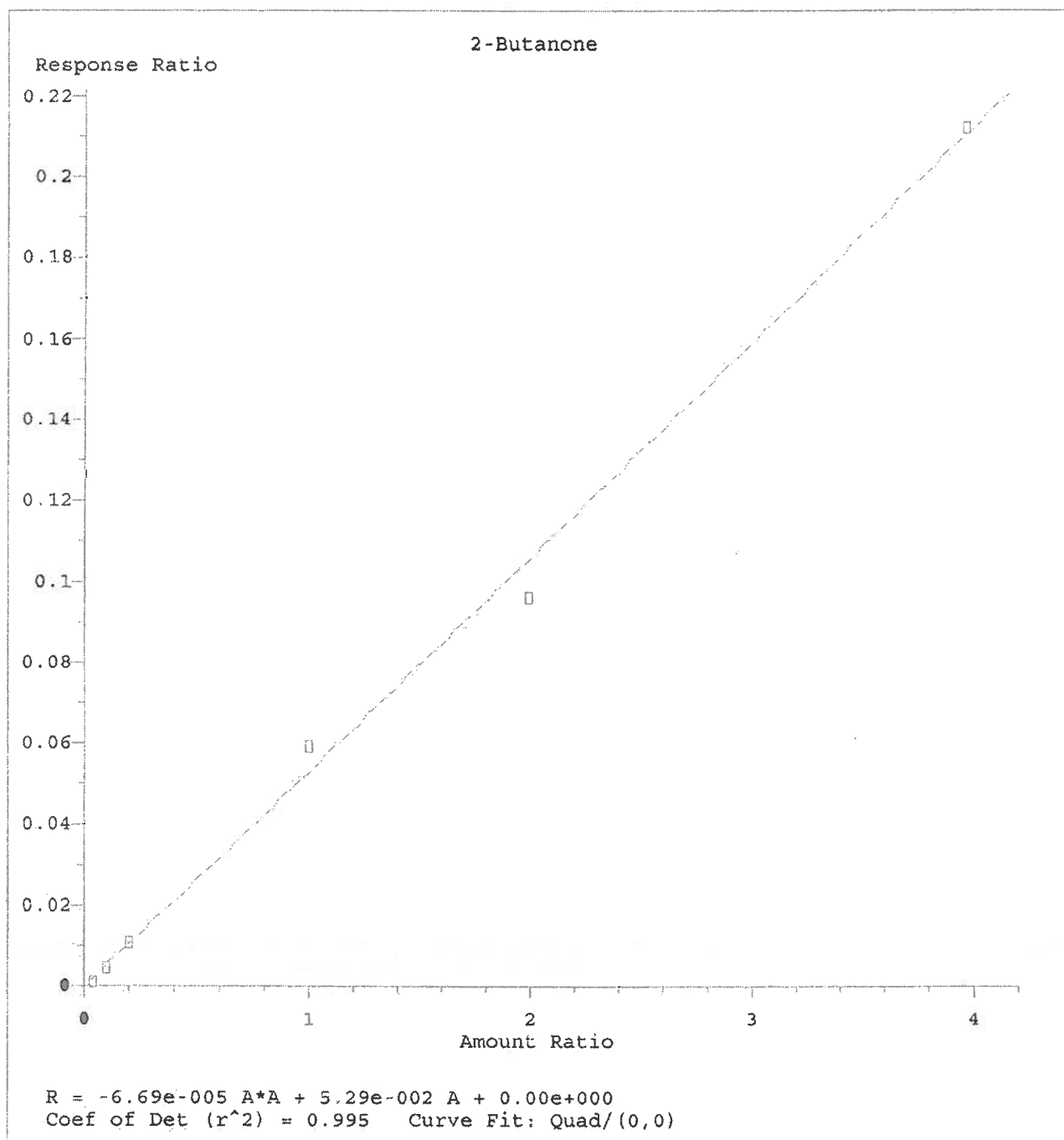
Method Name: C:\msdchem\1\METHODS\060509.M  
Calibration Table Last Updated: Fri Jun 05 18:02:14 2009



Method Name: C:\msdchem\1\METHODS\060509.M  
Calibration Table Last Updated: Fri Jun 05 18:02:14 2009

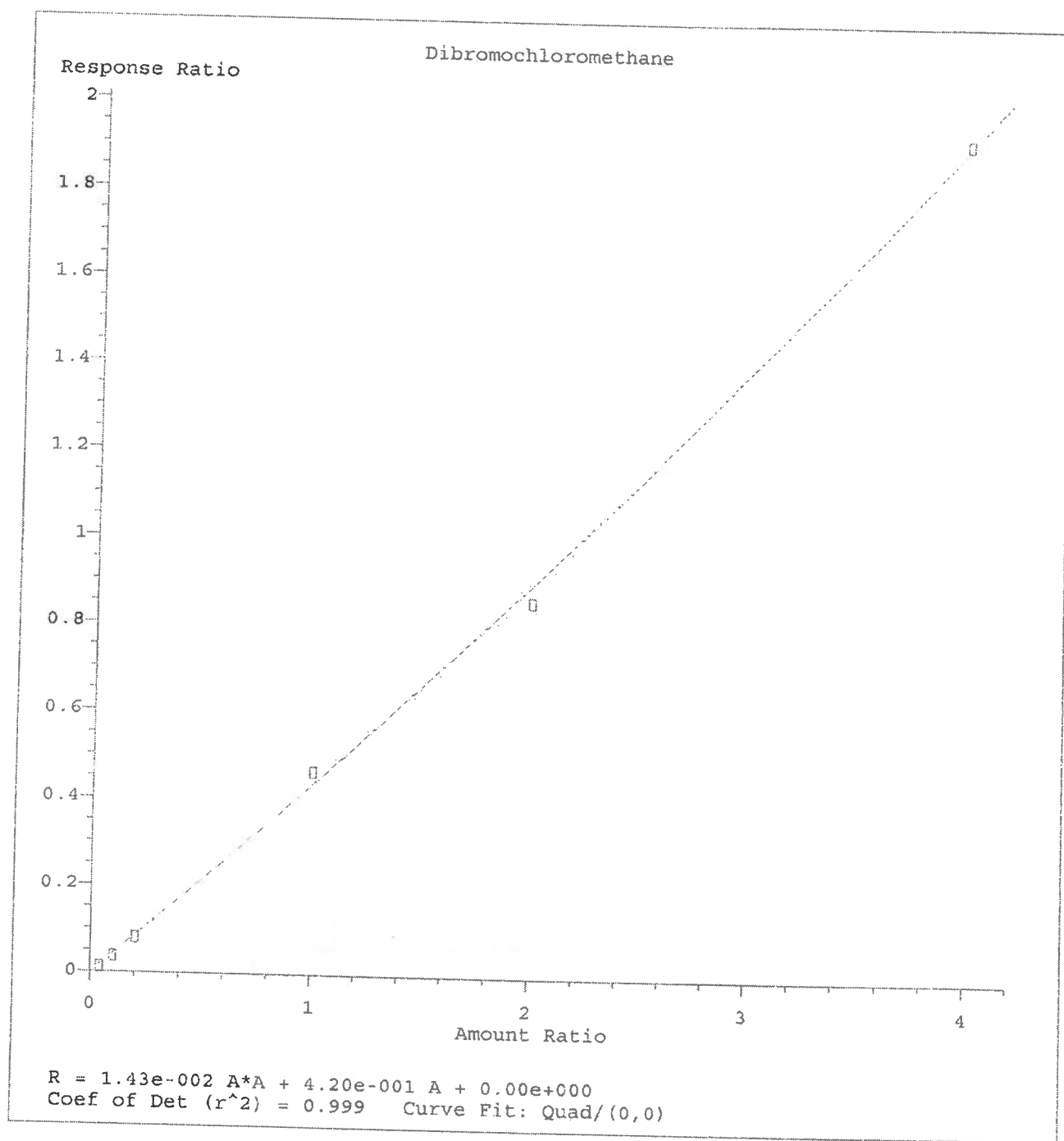


Method Name: C:\msdchem\1\METHODS\060509.M  
Calibration Table Last Updated: Fri Jun 05 18:02:14 2009

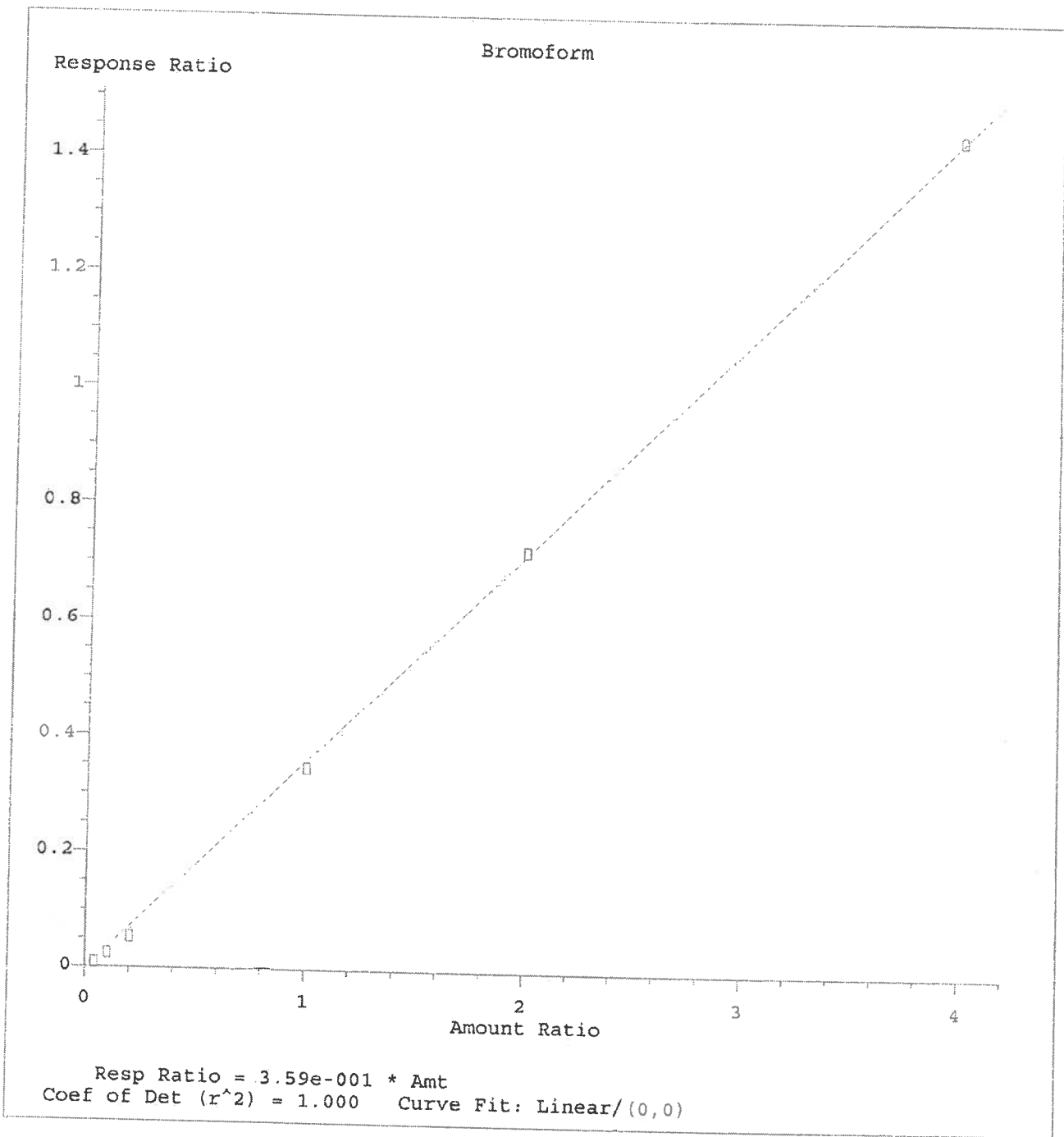


Method Name: C:\msdchem\1\METHODS\060509.M  
Calibration Table Last Updated: Fri Jun 05 18:02:14 2009





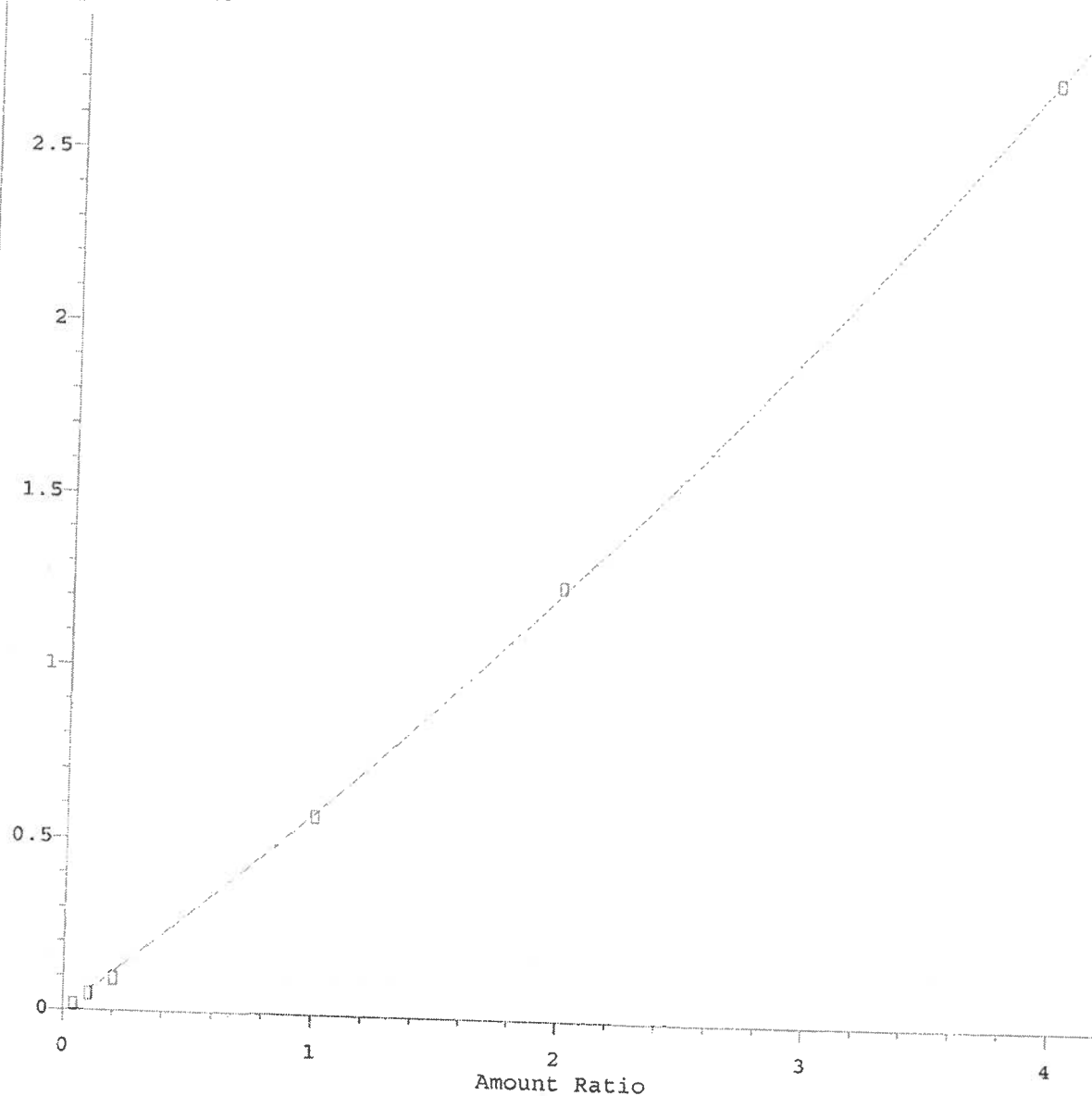
Method Name: C:\msdchem\1\METHODS\060509.M  
Calibration Table Last Updated: Fri Jun 05 18:02:14 2009



Method Name: C:\msdchem\1\METHODS\060509.M  
Calibration Table Last Updated: Fri Jun 05 18:02:14 2009

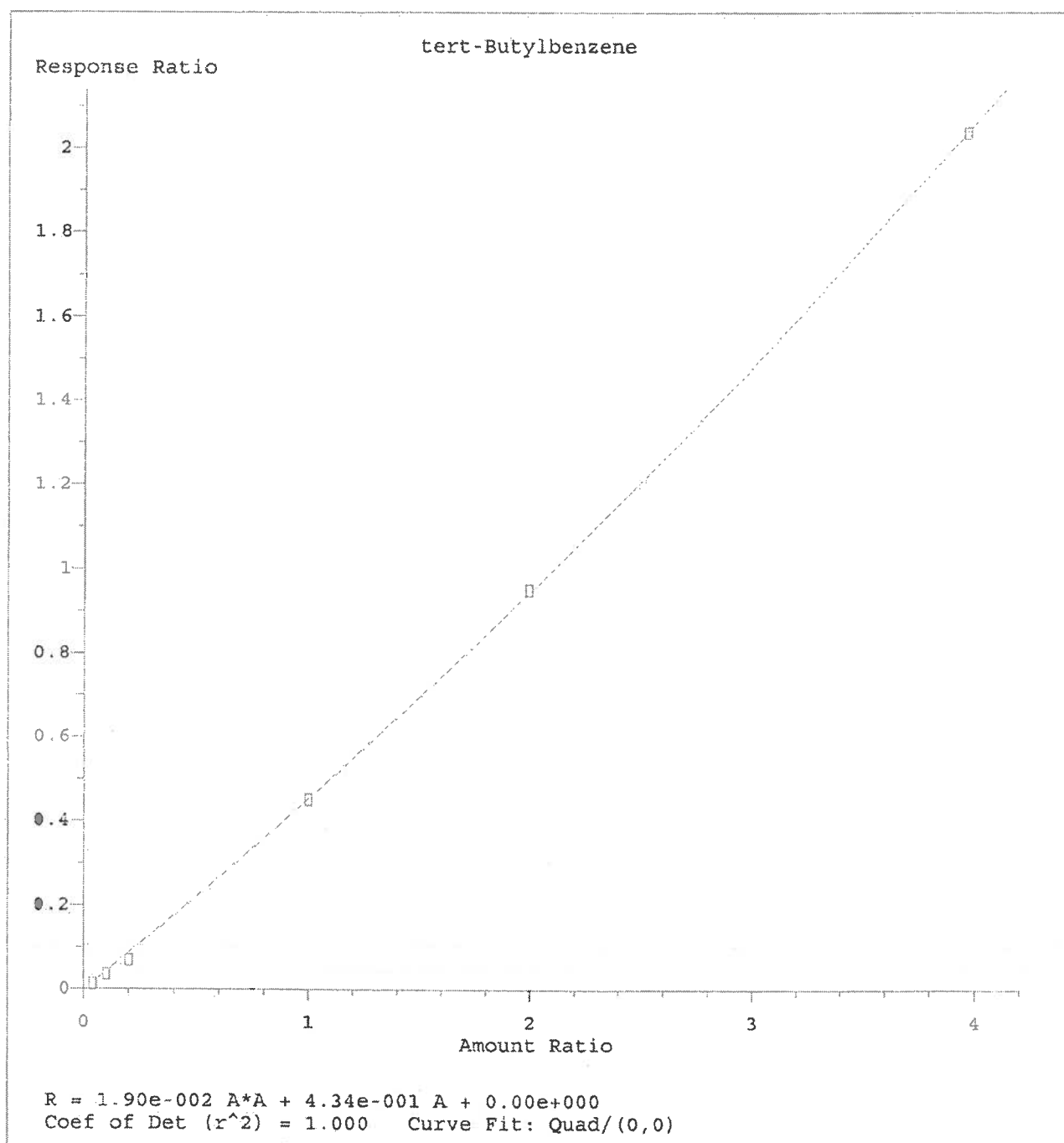
Response Ratio

4-Chlorotoluene

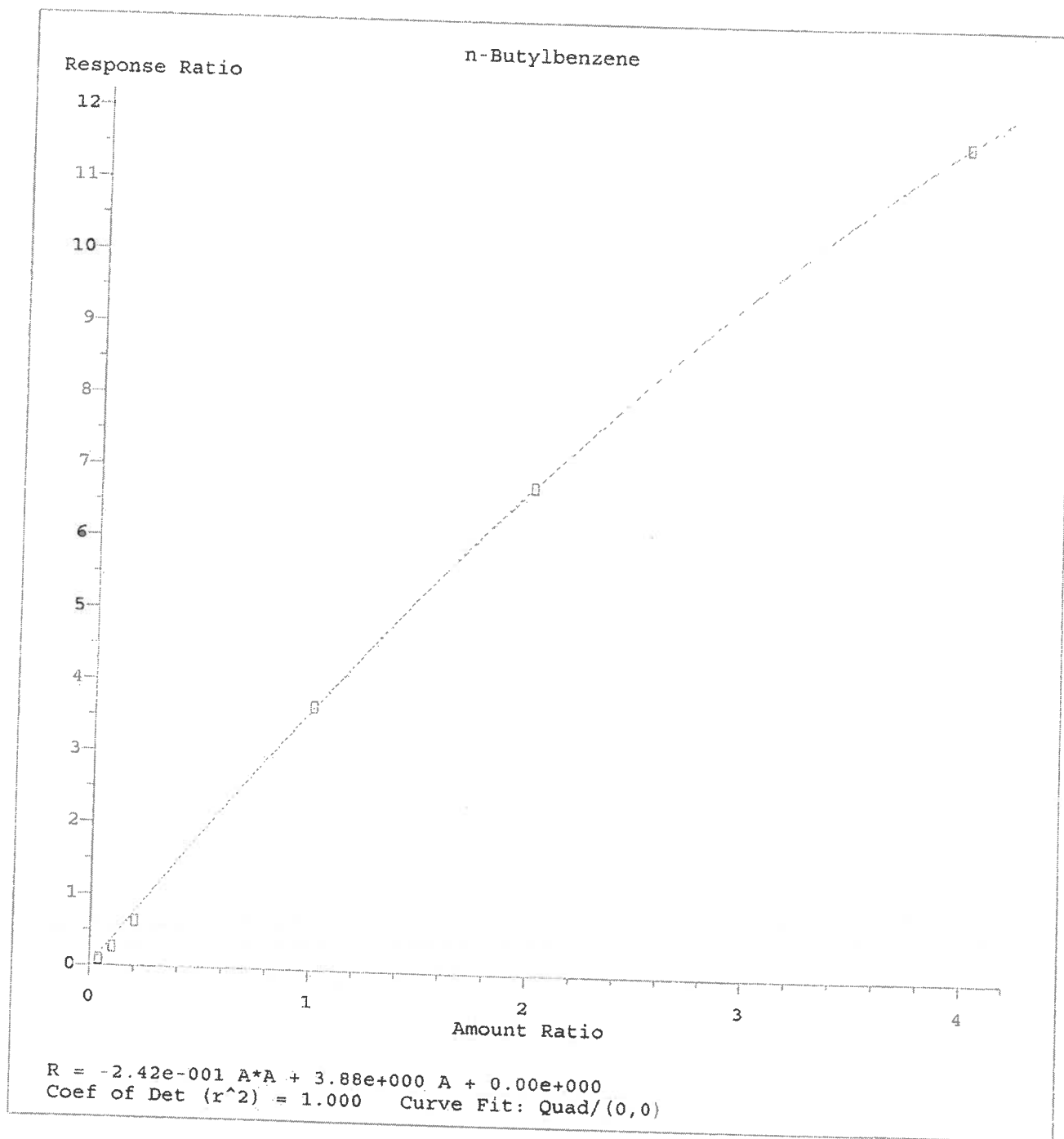


$R = 3.39e-002 A^2 + 5.50e-001 A + 0.00e+000$   
Coef of Det ( $r^2$ ) = 1.000 Curve Fit: Quad/(0,0)

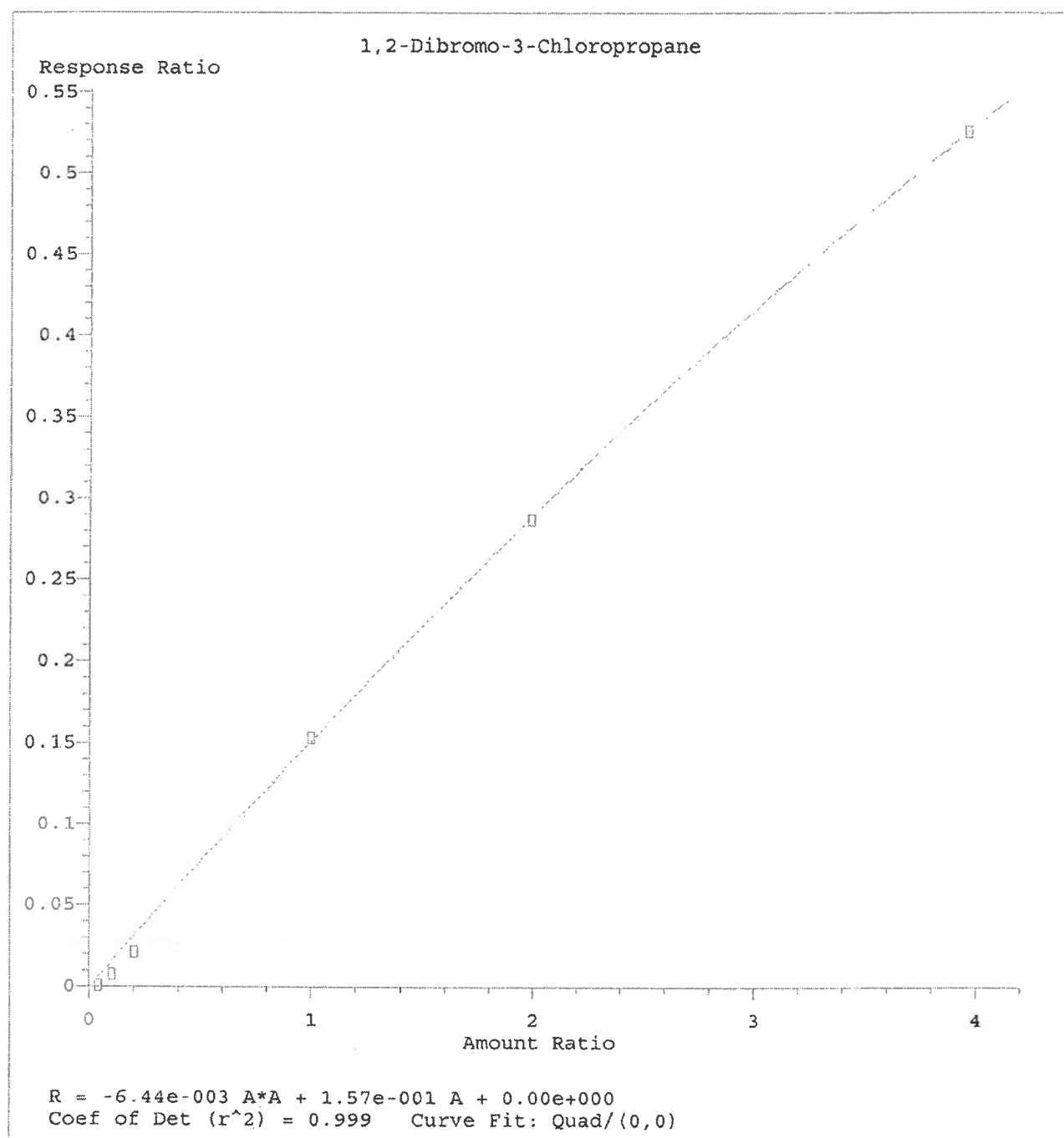
Method Name: C:\msdchem\1\METHODS\060509.M  
Calibration Table Last Updated: Fri Jun 05 18:02:14 2009



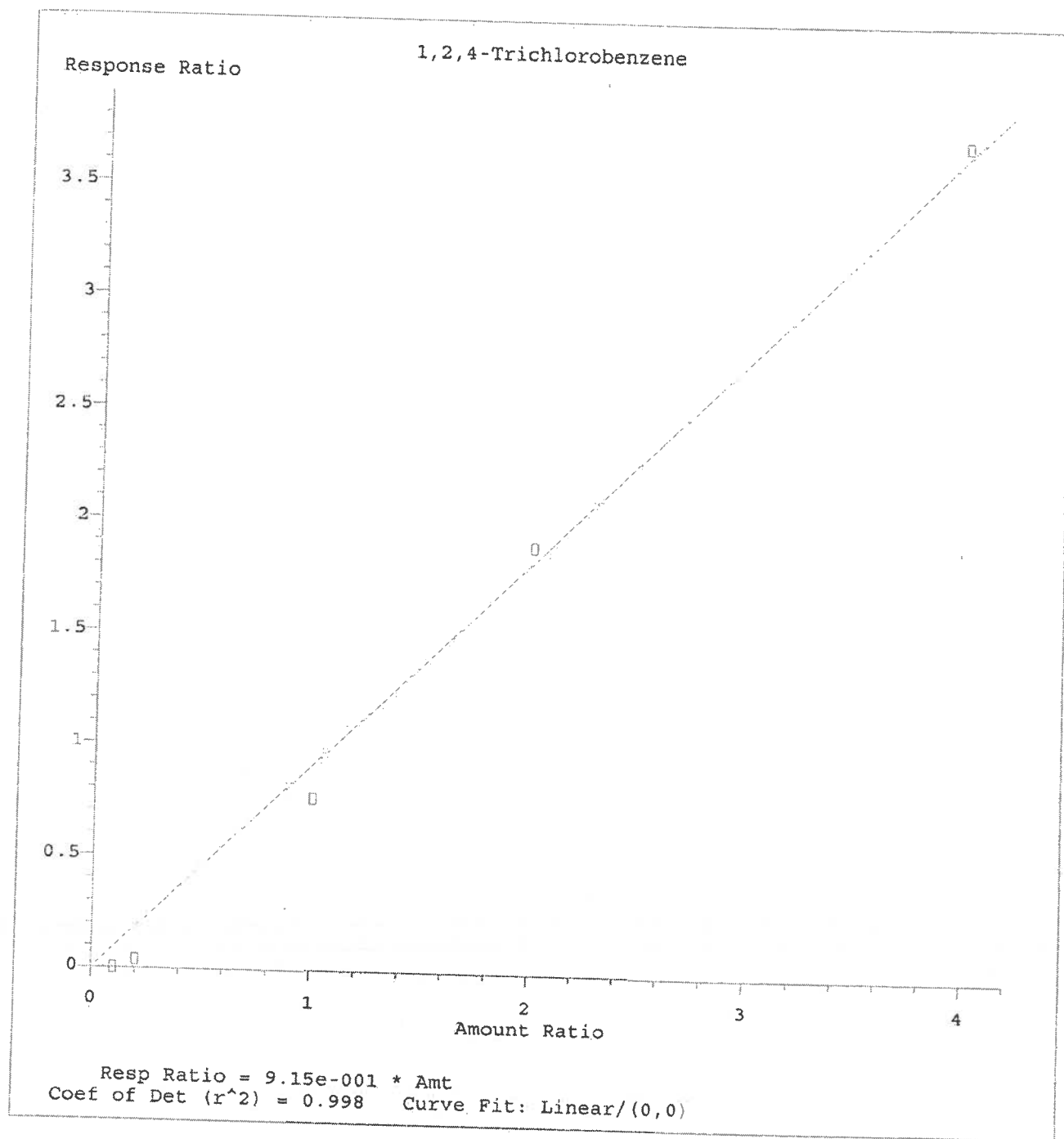
Method Name: C:\msdchem\1\METHODS\060509.M  
Calibration Table Last Updated: Fri Jun 05 18:02:14 2009



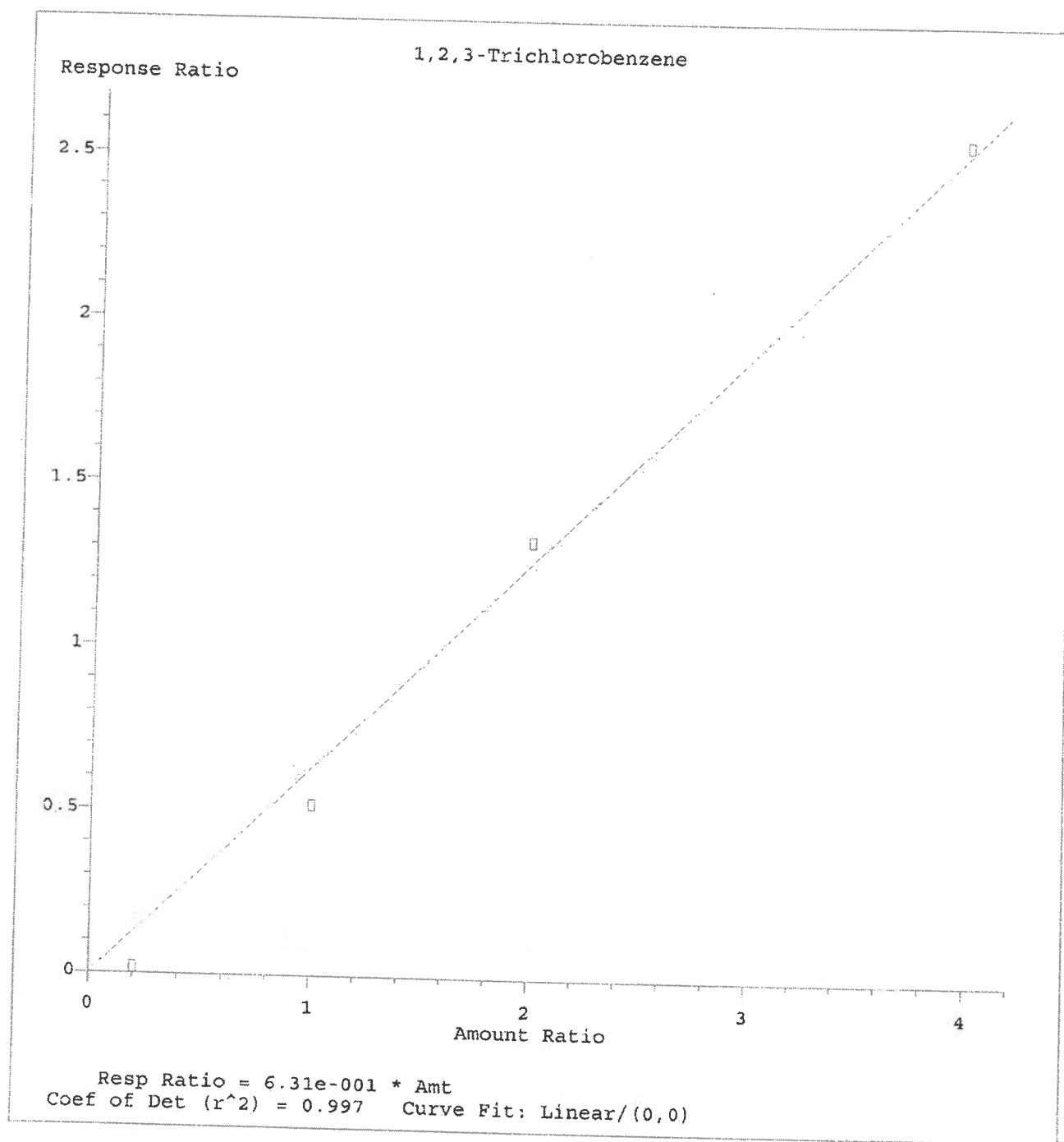
Method Name: C:\msdchem\1\METHODS\060509.M  
Calibration Table Last Updated: Fri Jun 05 18:02:14 2009



Method Name: C:\msdchem\1\METHODS\060509.M  
Calibration Table Last Updated: Fri Jun 05 18:02:14 2009

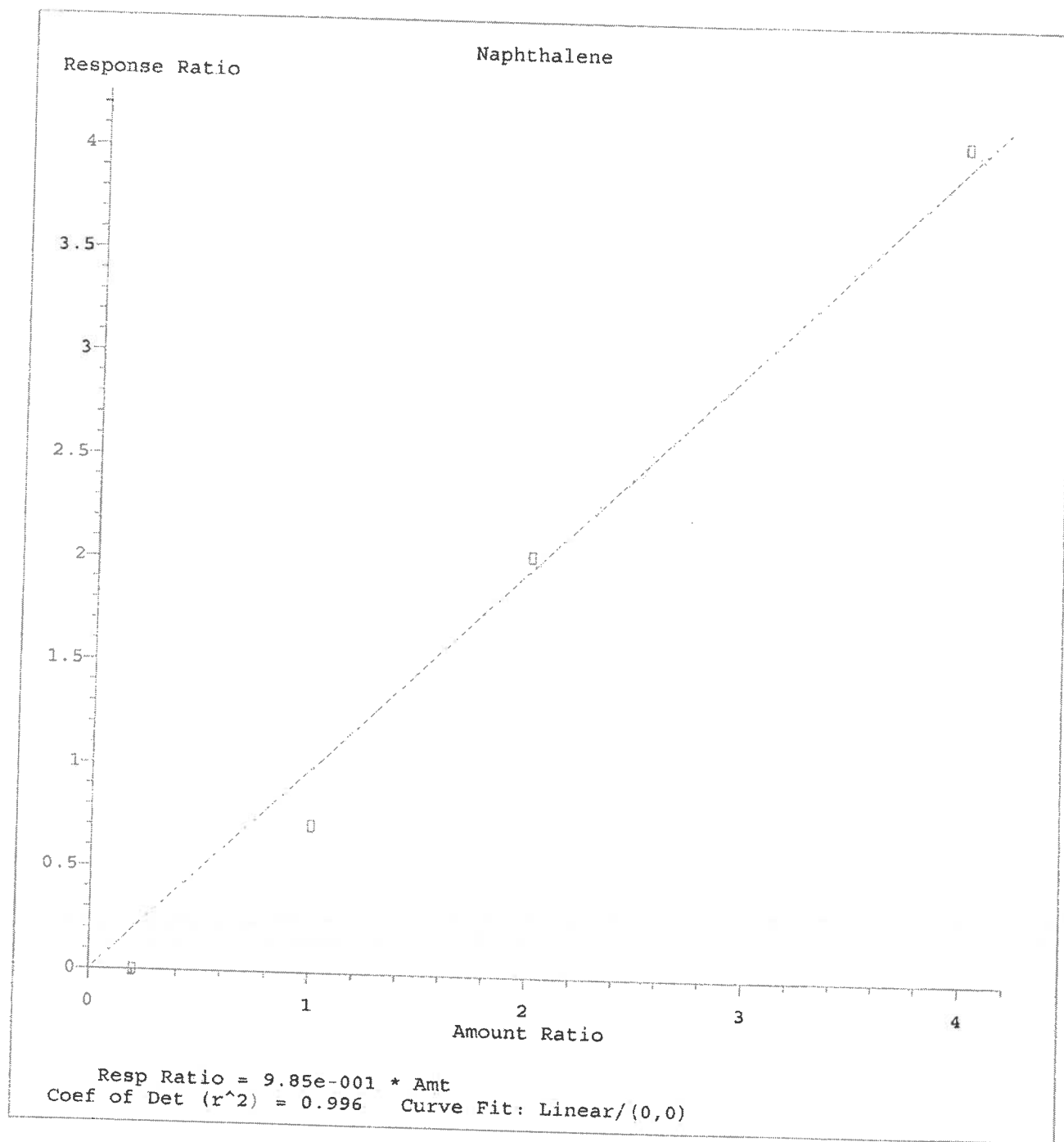


Method Name: C:\msdchem\1\METHODS\060509.M  
Calibration Table Last Updated: Fri Jun 05 18:02:14 2009

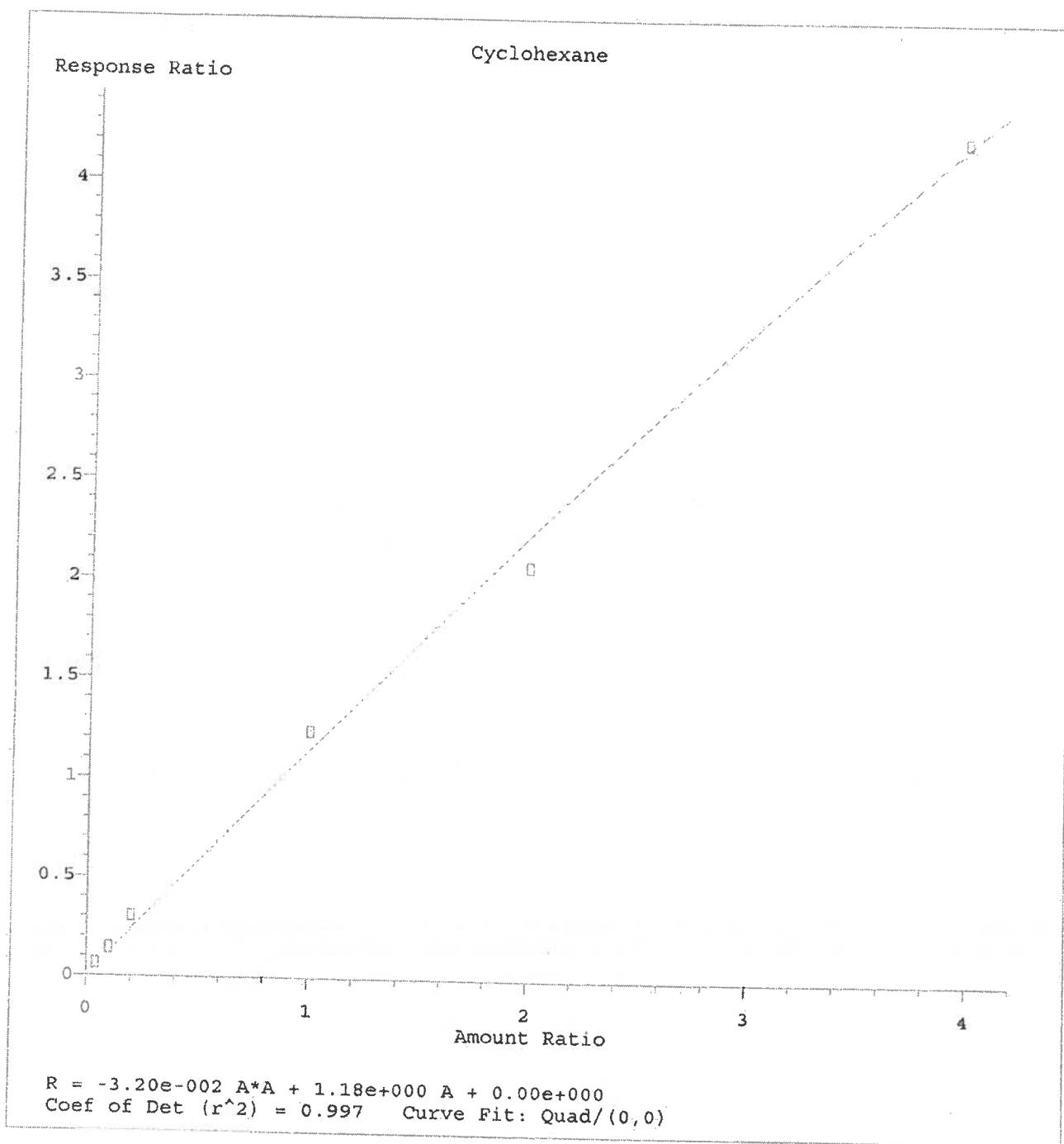


Method Name: C:\msdchem\1\METHODS\060509.M  
Calibration Table Last Updated: Fri Jun 05 18:02:14 2009





Method Name: C:\msdchem\1\METHODS\060509.M  
Calibration Table Last Updated: Fri Jun 05 18:02:14 2009



Method Name: C:\msdchem\1\METHODS\060509.M  
Calibration Table Last Updated: Fri Jun 05 18:02:14 2009

# **Data Usability Summary Report**

Vali-Data of WNY, LLC  
1514 Davis Rd.  
West Falls, NY 14170

Town of Clarkson  
Paradigm Environmental Services Inc. SDG#7480  
August 10, 2010  
Sampling date: 06/30/09- 7/2/09

Prepared by:  
Jodi Zimmerman  
Vali-Data of WNY, LLC  
1514 Davis Rd.  
West Falls, NY 14170

Town of Clarkson  
SDG# 7480

## **DELIVERABLES**

This Data Usability Summary Report (DUSR) was prepared by evaluating the analytical data package for Lu Engineers, project located in the Town of Clarkson, SDG#7480, Paradigm # 09-2320, 09-2352, 09-2377, submitted to Vali-Data of WNY, LLC on May 17, 2010. The laboratory performed the analyses using USEPA methods, 8260B (Volatile Organics), 8270C (Semi-Volatile Organics), 8082 (PCBs), 6010B (Inorganics) and 7471A (Mercury).

## **VOLATILE ORGANIC COMPOUNDS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Internal Standard (IS) Area Performance
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration
- GC/MS Performance Check

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

## **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times, Internal Standard, Surrogate Spike Recoveries, Method Blank, Compound Quantitation, Initial Calibration and Continuing Calibration.

Medium level analysis was performed on sample CS-PI-01 due to results exceeding the linear range of several target analytes.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

## **DATA COMPLETENESS**

All criteria were met.

## **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met.

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## **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

## **HOLDING TIMES**

All holding times were met except sample, Floor Drain Pipe, was received at a temperature of 24°C which is outside the acceptance window ( $4 \pm 2$  Degrees °C) and was not put on ice, thus all target analytes in this sample should be qualified as estimated.

The remaining samples were received at a temperature outside the acceptance window but were put on ice and had cooled below the ambient temperature for the respective days of sampling.

## **INTERNAL STANDARD (IS)**

The IS met criteria except the 1,4-Dichlorobenzene- $d_4$  was outside QC limits, low, in sample CS-LP-01. All associated detects in this sample should be qualified as estimated and all non-detects should be qualified as unusable per National Functional Guidelines.

## **SURROGATE SPIKE RECOVERIES**

All criteria were met except Toluene- $d_8$  was outside QC limits, low, in sample, Floor Drain Pipe possibly due to matrix interference. 4-Bromofluorobenzene was outside QC limits in samples CS-SD-04 and SC-PI-01(initial run). All associated target analytes should be qualified as estimated or undetected estimated.

## **METHOD BLANK**

All criteria were met except several target analytes were detected but not recorded in the blanks. Those target analytes should be qualified as estimated in the blank and where detected in the associated samples and spikes. Paradigm has reviewed the data and does not believe these target analytes to be present or they are detected outside the laboratories range for qualification (see Overall evaluation above). No supporting data has been included in the package.

## **FIELD DUPLICATE SAMPLE PRECISION**

No field duplicate sample was obtained.

## **LABORATORY CONTROL SAMPLES**

All criteria were met except the %Rec of all surrogates but 1,1-Dichloroethene were outside QC limits, high, in LCS M/L. The associated target analytes would be considered biased high.

## **MS/MSD**

No MS/MSD were performed on these samples.

## **COMPOUND QUANTITATION**

All criteria were met except several target analytes were detected in the samples but not recorded. Paradigm has reviewed the data and does not believe these target analytes to be present or they are detected outside the laboratories range for qualification (see Overall evaluation above). No supporting data has been included in the package.

## **INITIAL CALIBRATION**

All criteria were met except the %RSD of Acetone, Naphthalene and Methylene Chloride were outside ASP outer QC limits. These target analytes should be qualified as estimated in all samples, blanks and spikes. The %RSD of Bromomethane, m&p Xylene, o-Xylene, Styrene and

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Bromoform were outside ASP QC limits. ASP allows for up to two target analytes to be outside QC limits without further action. National Functional Guidelines states that target analytes which fell outside QC limits should be qualified as estimated in all blanks, spikes and samples.

#### **CONTINUING CALIBRATION**

All criteria were met except the %D of Acetone was outside ASP outer in CCV performed on 7/8 and 7/9. This target analyte should be qualified as estimated in all samples, blanks and spikes.

#### **GC/MS PERFORMANCE CHECK**

All criteria were met.

#### **SEMIVOLATILE ORGANIC COMPOUNDS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Internal Standard (IS) Area Performance
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration
- GC/MS Performance Check

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

#### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times and Compound Quantitation.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

#### **DATA COMPLETENESS**

All criteria were met.

#### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met.

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**CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

**HOLDING TIMES**

All holding times were met. (See VOC, above)

**INTERNAL STANDARD (IS)**

All criteria were met.

**SURROGATE SPIKE RECOVERIES**

All criteria were met except the %Rec of Nitrobenzene-d<sub>5</sub> was outside QC limits in CS-PI-01. ASP allows one surrogate spike from each group to be outside QC limits without further action.

**METHOD BLANK**

All criteria were met.

**FIELD DUPLICATE SAMPLE PRECISION**

No field duplicate sample was obtained.

**LABORATORY CONTROL SAMPLES**

All criteria were met.

**MS/MSD**

No MS/MSD were performed on these samples.

**COMPOUND QUANTITATION**

All criteria were met except several target analytes were detected but not recorded. In samples, Floor Drain Pipe, CS-TP-10-08 and CS-SD-04 there were detected TIC's that were not recorded. Paradigm has reviewed the data and does not believe these target analytes to be present or they are detected outside the laboratories range for qualification (see Overall evaluation above). No supporting data has been included in the package.

**INITIAL CALIBRATION**

All criteria were met except the RF value of several target analytes did not correlate between the 'Response Factor Report' and the calculated values from the 'Quantitation Reports'. The differences observed would not affect the calculated concentrations significantly, so no further action is required.

**CONTINUING CALIBRATION**

All criteria were met.

**GC/MS PERFORMANCE CHECK**

All criteria were met.

## **POLYCHLORINATED BIPHENYLS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times. The data do not completely fulfill ASP category B deliverable guidelines, see Initial Calibration, below.

Alterations to some of the Forms are described below in Narrative and Data Reporting Forms, Surrogate Spike Recoveries and Continuing Calibration.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

### **DATA COMPLETENESS**

All criteria were met.

### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met except the LCS summary page recorded the PCB being monitored as Aroclor 1248 but should have recorded it as Aroclor 1221.

### **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

### **HOLDING TIMES**

All holding times were met. (See VOC, above)

### **SURROGATE SPIKE RECOVERIES**

All criteria were met, within ASP QC limits, except the surrogate spike recoveries on Form 2F were recorded incorrectly due to a calculation error. The surrogate spike recoveries were within QC limits when the correct concentration was used.

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**METHOD BLANK**

All the criteria were met.

**FIELD DUPLICATE SAMPLE PRECISION**

No field duplicate sample was obtained.

**LABORATORY CONTROL SAMPLES**

All criteria were met. (See Narrative and Data Reporting Forms, above)

**MS/MSD**

No MS/MSD were performed on these samples.

**COMPOUND QUANTITATION**

All criteria were met.

**INITIAL CALIBRATION**

All criteria were met except no raw data were provided for the initial calibrations. Calibration Curves and Calibration tables were sent.

Paradigm used linear regression on all target analytes and surrogates.

**CONTINUING CALIBRATION**

All criteria were met except the %D was recorded incorrectly on Form 7. The correct %D's fell with QC limits.

**METALS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Method Blank
- Laboratory Control Sample
- MS/MSD
- Duplicate
- Field Duplicate
- Serial Dilution
- Compound Quantitation
- Calibration

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above.

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**OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

**DATA COMPLETENESS**

All criteria were met.

**NARRATIVE AND DATA REPORTING FORMS**

All criteria were met.

**CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

**HOLDING TIMES**

All holding times were met. (See VOC, above)

**METHOD BLANK**

All criteria were met.

**LABORATORY CONTROL SAMPLE**

All criteria were met.

**MS/MSD**

All criteria were met except the %Rec of all target analytes were outside laboratory QC limits and are qualified with an 'M' in sample, Floor Drain Pipe. The %Rec was within ASP QC limits.

**DUPLICATE**

All criteria were met except the %D of Cr and Pb were outside laboratory QC limits and are qualified with a 'D' in sample, Floor Drain Pipe. The %D was within ASP QC limits.

**FIELD DUPLICATE**

No field duplicate sample was obtained.

**SERIAL DILUTION**

No serial dilution was performed.

**COMPOUND QUANTITATION**

All criteria were met.

**CALIBRATION**

All criteria were met.

## **MERCURY**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Method Blank
- Laboratory Control Samples
- MS/MSD
- Duplicate
- Field Duplicate
- Compound Quantitation
- Calibration

The items listed above were technically in compliance with the method and SOP criteria with any exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above.

### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times and Duplicate.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

### **DATA COMPLETENESS**

All criteria were met.

### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met.

### **CHAIN OF CUSTODY**

All criteria were met.

### **HOLDING TIMES**

All holding times were met. (See VOC, above)

### **METHOD BLANK**

All criteria were met.

### **LABORATORY CONTROL SAMPLES**

All criteria were met.

### **MS/MSD**

All criteria were met except the %Rec was outside QC limits. Since the concentration of Hg in the sample is >4x the spike added, no further action is required.

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SDG# 7480

**DUPLICATE**

All criteria were met except the %Rec was outside QC limits. Sample, Floor Drain Pipe, should be qualified with an '\*\*'.

**FIELD DUPLICATE**

No field duplicate sample was obtained.

**COMPOUND QUANTITATION**

All criteria were met.

**CALIBRATION**

All criteria were met.

**GENERAL CHEMISTRY**

The following items/criteria were reviewed for this analytical suite:

- Percent Moisture

The item listed above was technically in compliance with the method and SOP criteria with any exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above.

**Percent Moisture**

The percent moisture was recorded on a prep log but no Form 1's were submitted. The internal chain of custody was not complete because it is missing the transfer for the %moisture analysis.

# **Data Usability Summary Report**

**Vali-Data of WNY, LLC  
1514 Davis Rd.  
West Falls, NY 14170**

**Town of Clarkson  
Paradigm Environmental Services Inc. SDG#9359  
August 12, 2010  
Sampling date: 08/10/09- 08/12/09**

**Prepared by:  
Jodi Zimmerman  
Vali-Data of WNY, LLC  
1514 Davis Rd.  
West Falls, NY 14170**

**Town of Clarkson  
SDG# 9359**

## **DELIVERABLES**

This Data Usability Summary Report (DUSR) was prepared by evaluating the analytical data package for Lu Engineers, project located in the Town of Clarkson, SDG#9359, Paradigm # 09-2950, submitted to Vali-Data of WNY, LLC on May 17, 2010. The laboratory performed the analyses using USEPA methods, 8260B (Volatile Organics) and 8270C (Semi-Volatile Organics).

## **VOLATILE ORGANIC COMPOUNDS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Internal Standard (IS) Area Performance
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration
- GC/MS Performance Check

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

## **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times, Surrogate Spike Recoveries, Method Blank and Initial Calibration.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

## **DATA COMPLETENESS**

All criteria were met.

## **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met except the MDL of 2-Chloroethylvinyl ether was not recorded on the MDL pages. Updated pages are attached.

## **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

Town of Clarkson

SDG# 9359

**HOLDING TIMES**

All holding times were met. The samples were received at a temperature of 17°C which is outside the acceptance window ( $4 \pm 2$  Degrees °C), thus all target analytes in these samples should be qualified as estimated.

**INTERNAL STANDARD (IS)**

The IS met criteria.

**SURROGATE SPIKE RECOVERIES**

All criteria were met except the %Rec of Toluene-d8 was outside ASP QC limits in sample, MW-04,8-11' possibly due to matrix interference. All associated target analytes should be qualified as estimated or undetected estimated.

**METHOD BLANK**

All criteria were met except several target analytes were detected above the MDL, below the MRL and should be qualified as estimated in LRB 8/21 and samples in which they were detected. Paradigm qualified Naphthalene and 2-Hexanone as estimated on the raw data but not the Form 1's. Updated Form 1's are attached.

**FIELD DUPLICATE SAMPLE PRECISION**

No field duplicate was obtained.

**LABORATORY CONTROL SAMPLES**

All criteria were met.

**MS/MSD**

No MS/MSD were performed.

**COMPOUND QUANTITATION**

All criteria were met.

**INITIAL CALIBRATION**

All criteria were met except the %RSD of Acetone and Naphthalene were outside ASP outer QC limits. These target analytes should be qualified as estimated in all samples, blanks and spikes. The %RSD of Bromomethane was outside ASP QC limits. ASP allows for up to two target analytes to be outside QC limits without further action. Paradigm used alternate forms of regression for some of the target analytes.

**CONTINUING CALIBRATION**

All criteria were met.

**GC/MS PERFORMANCE CHECK**

All criteria were met.

## **SEMIVOLATILE ORGANIC COMPOUNDS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Internal Standard (IS) Area Performance
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration
- GC/MS Performance Check

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

### **DATA COMPLETENESS**

All criteria were met.

### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met.

### **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

### **HOLDING TIMES**

All holding times were met. The samples were received at a temperature of 17°C which is outside the acceptance window ( $4 \pm 2$  Degrees °C), thus all target analytes in these samples should be qualified as estimated.

### **INTERNAL STANDARD (IS)**

All criteria were met.



**SURROGATE SPIKE RECOVERIES**

All ASP criteria were met.

**METHOD BLANK**

All criteria were met.

**FIELD DUPLICATE SAMPLE PRECISION**

No field duplicate sample was obtained.

**LABORATORY CONTROL SAMPLES**

All criteria were met.

**MS/MSD**

No MS/MSD were performed.

**COMPOUND QUANTITATION**

All criteria were met.

**INITIAL CALIBRATION**

All criteria were met.

**CONTINUING CALIBRATION**

All criteria were met.

**GC/MS PERFORMANCE CHECK**

All criteria were met.

**GENERAL CHEMISTRY**

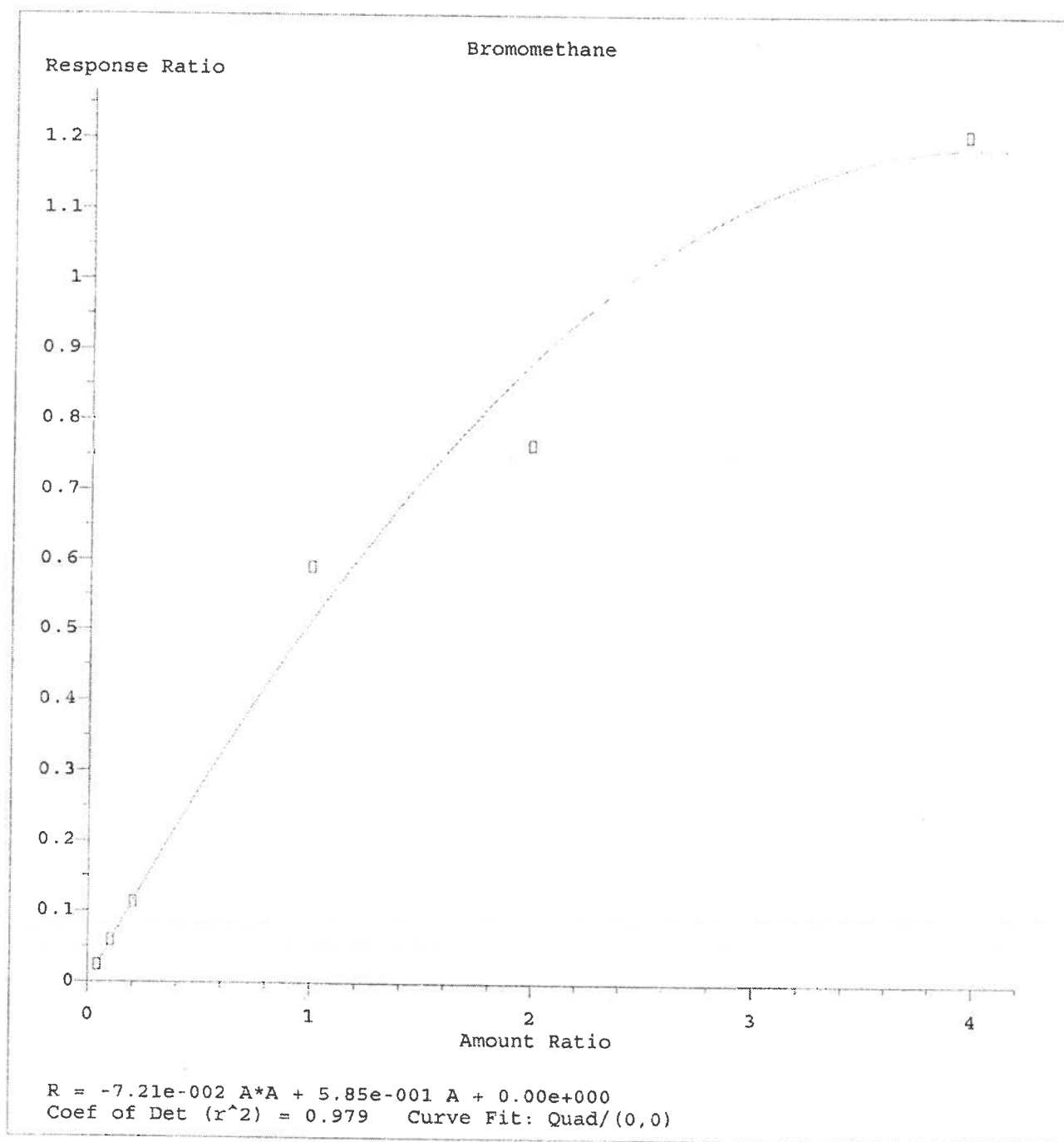
The following items/criteria were reviewed for this analytical suite:

- Percent Moisture

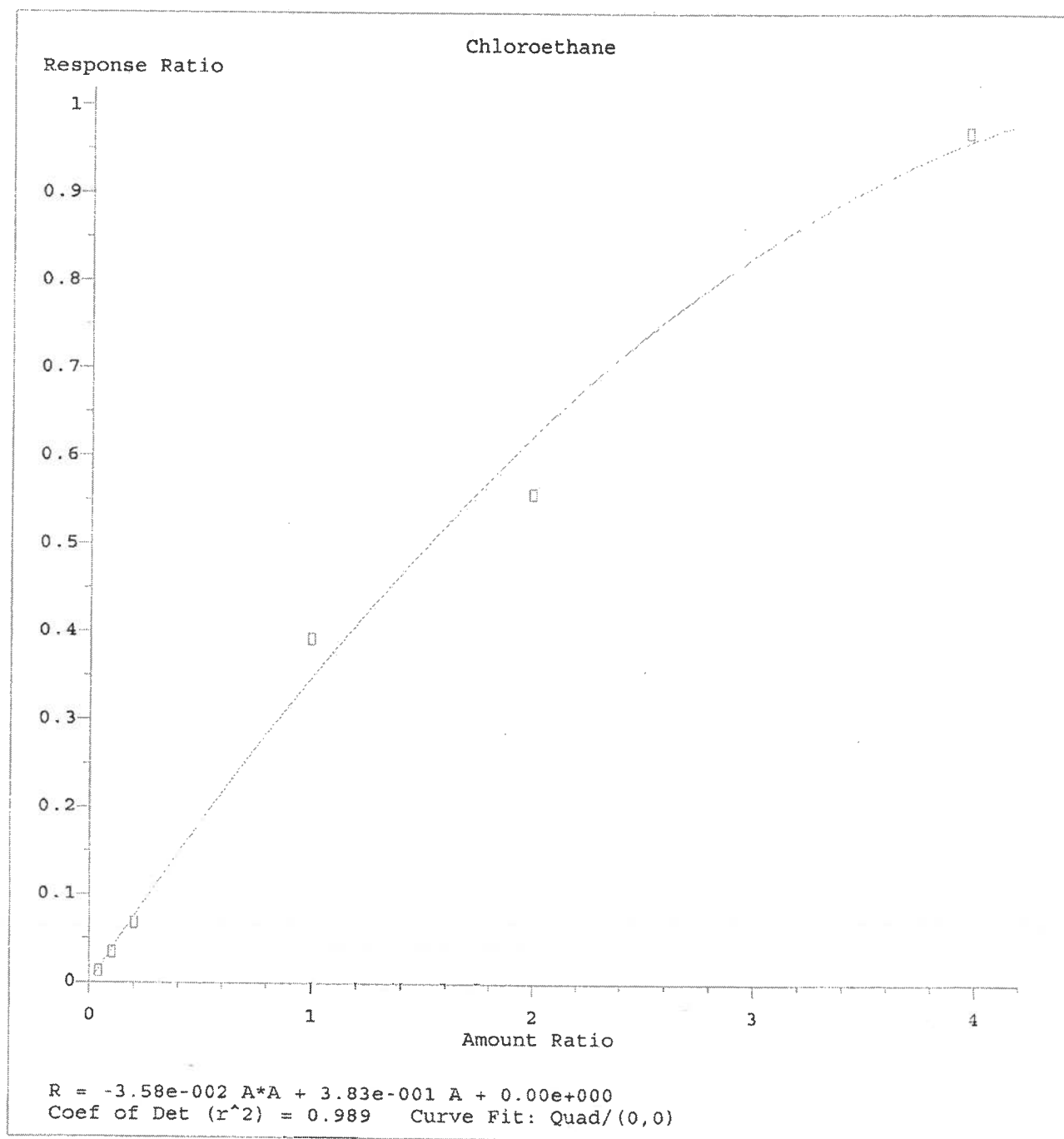
The item listed above was technically in compliance with the method and SOP criteria with any exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above.

**Percent Moisture**

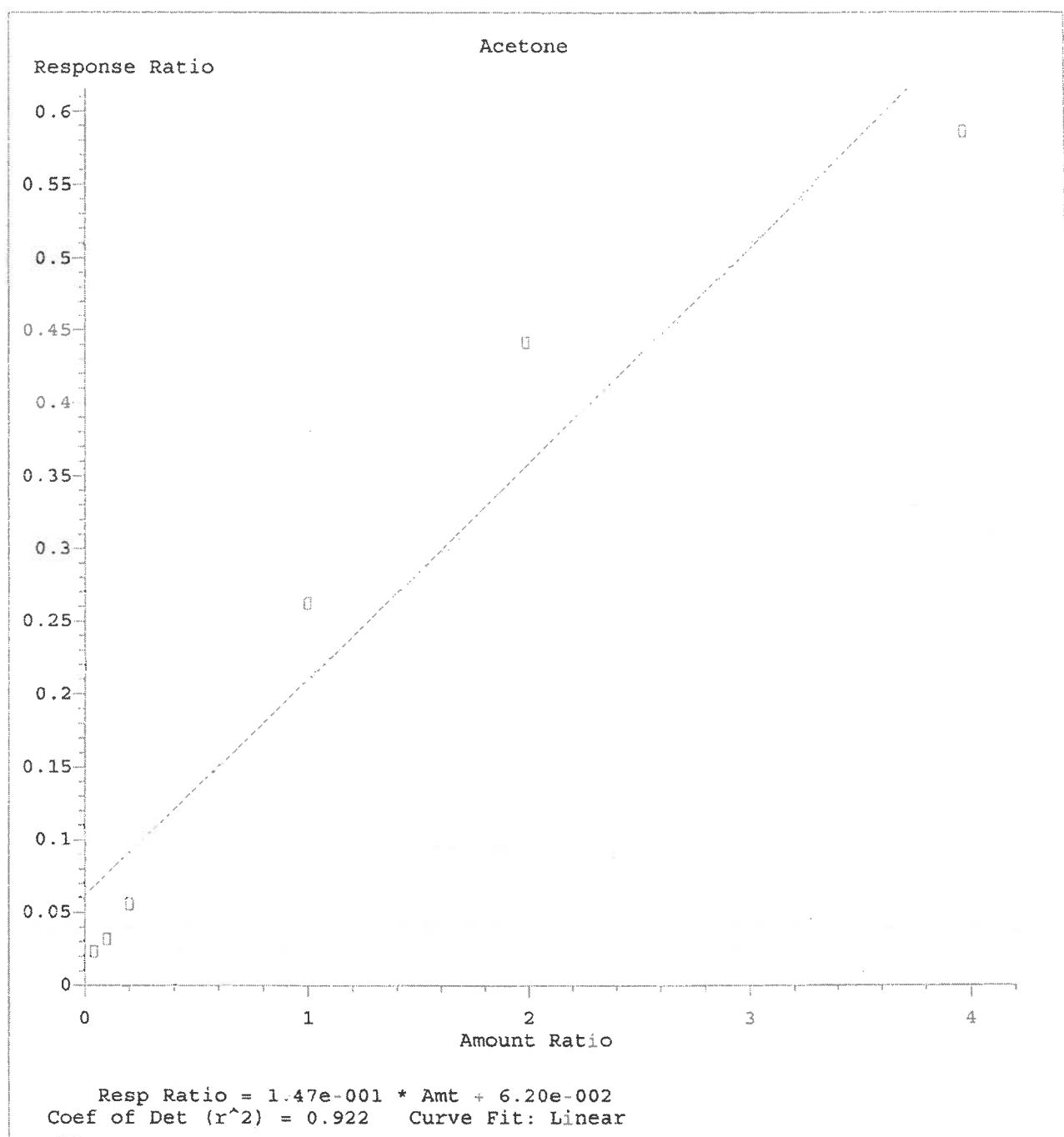
The percent moisture was recorded on a prep log but no Form 1's were submitted. The internal chain of custody was not complete because it is missing the transfer for the %moisture analysis.



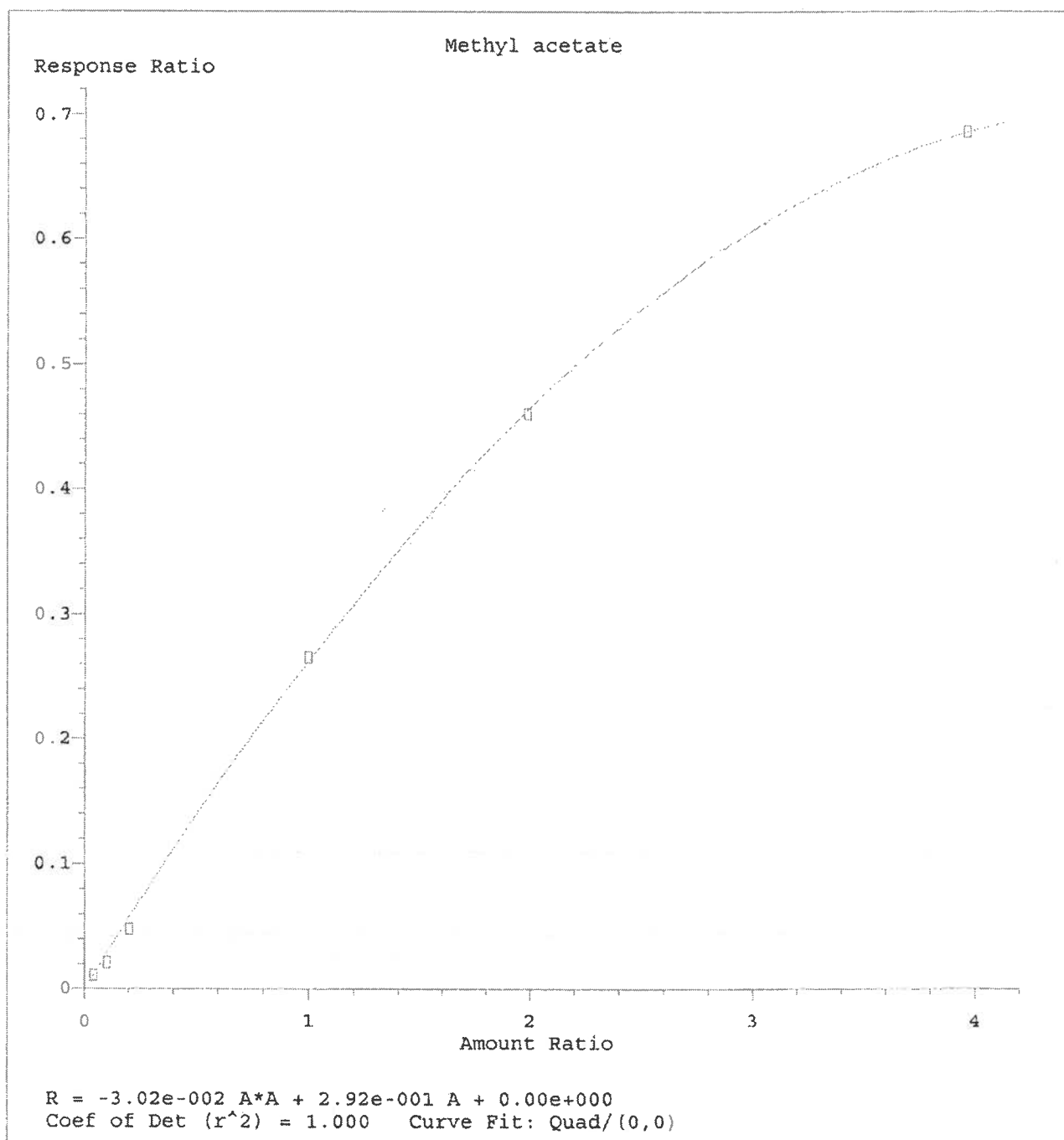
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Calibration Table Last Updated: Wed Aug 19 16:32:55 2009



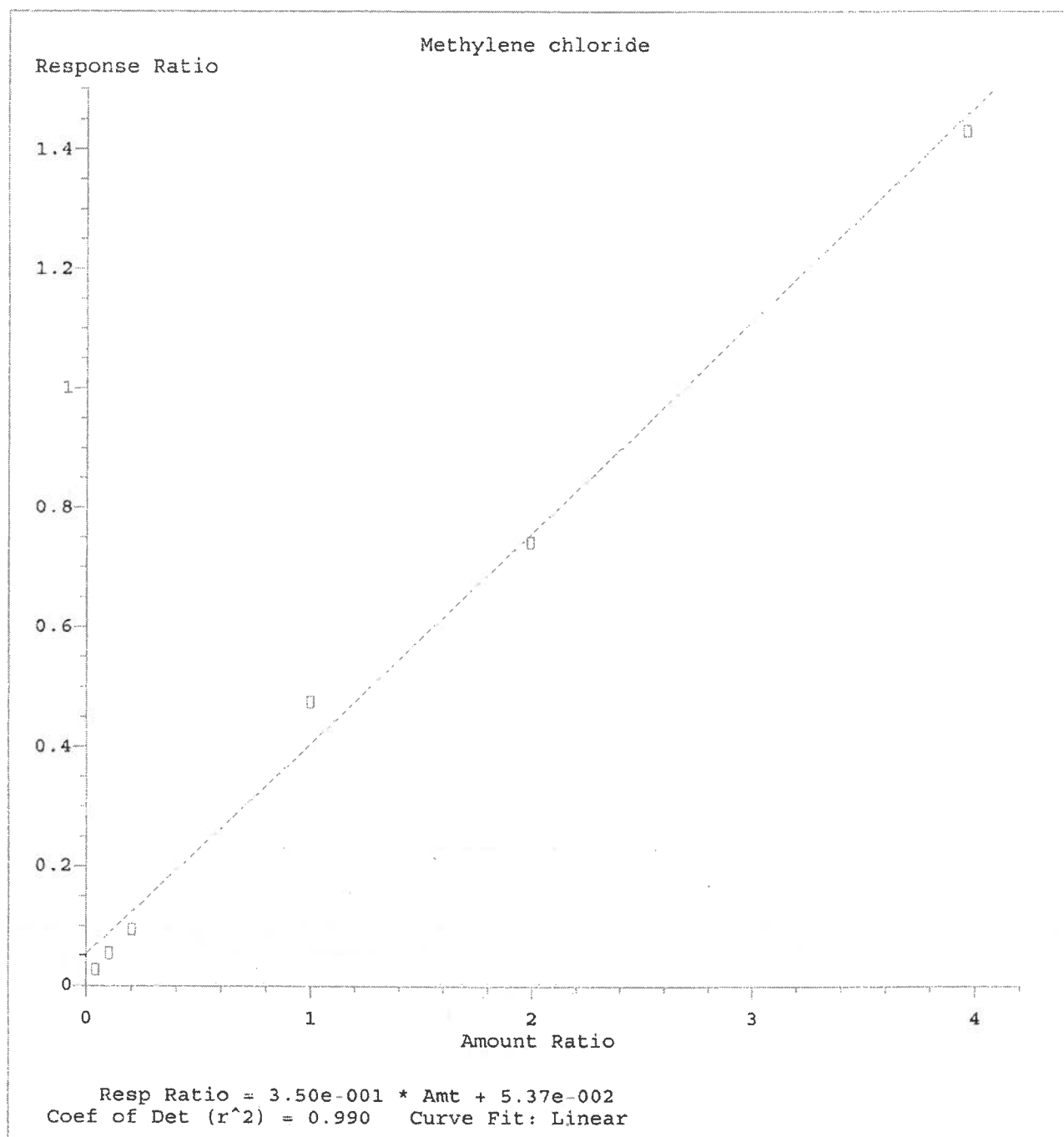
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Calibration Table Last Updated: Wed Aug 19 16:32:55 2009



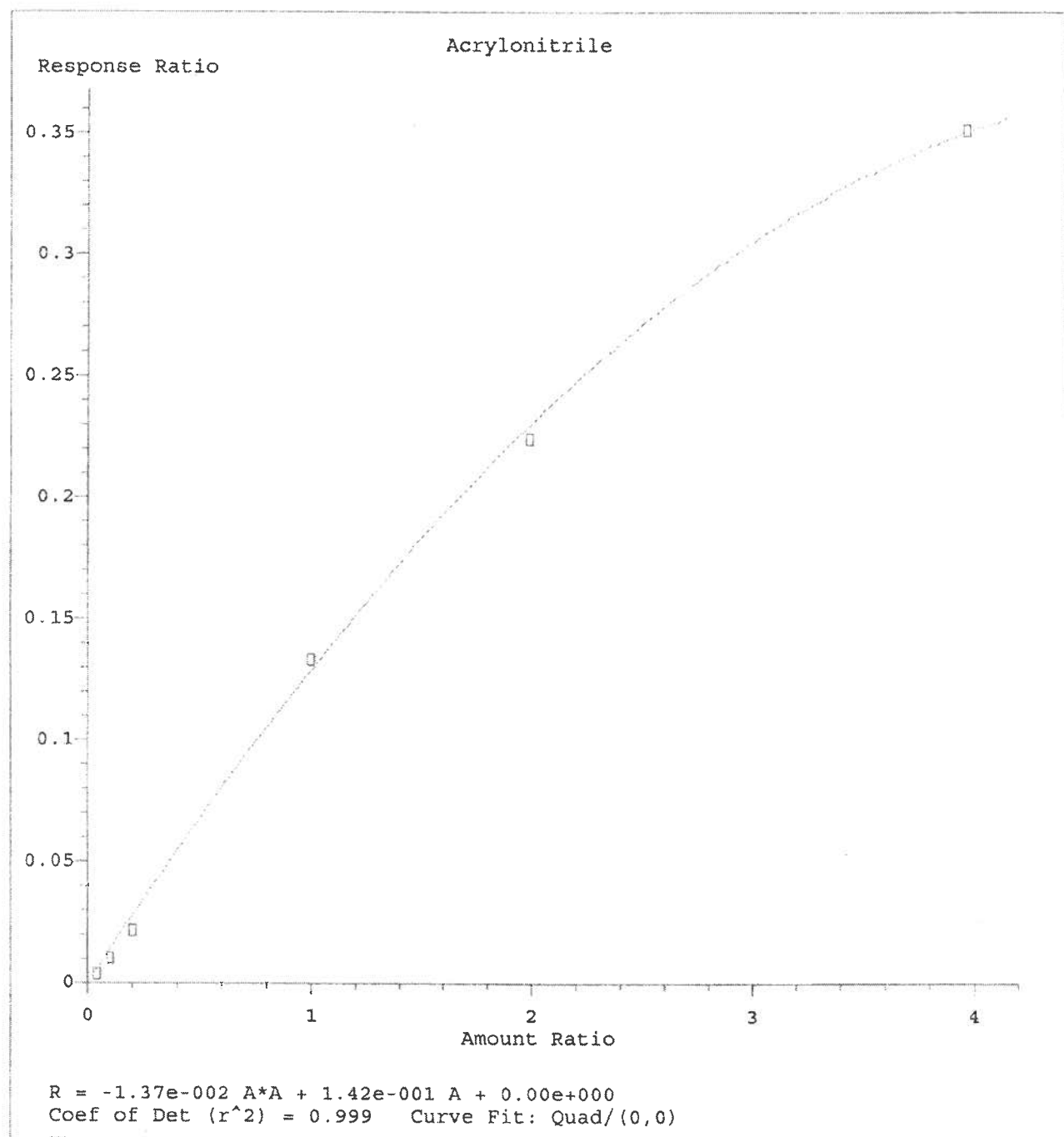
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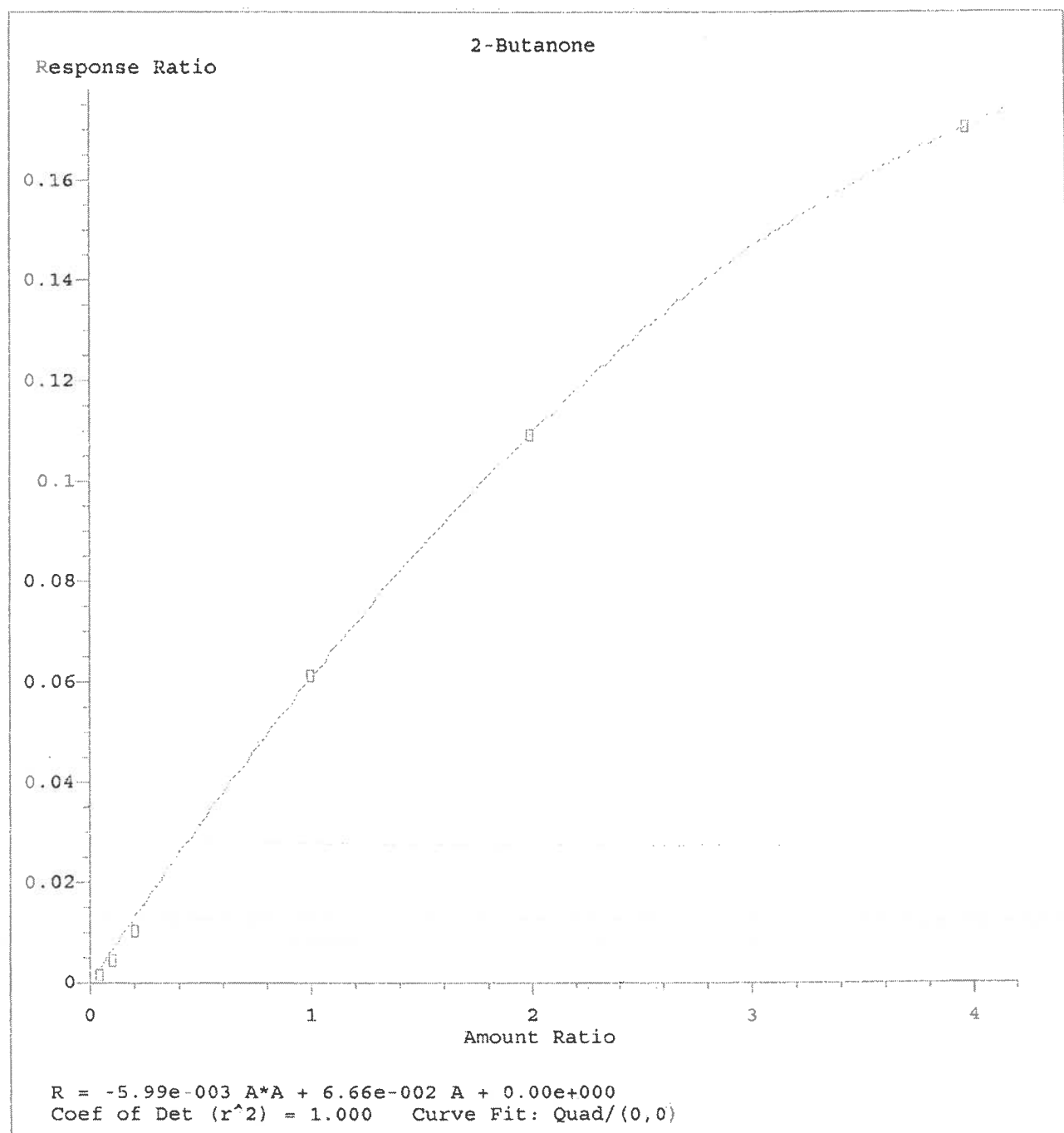
Method Name: C:\msdchem\1\METHODS\081909.M  
Calibration Table Last Updated: Wed Aug 19 16:32:55 2009



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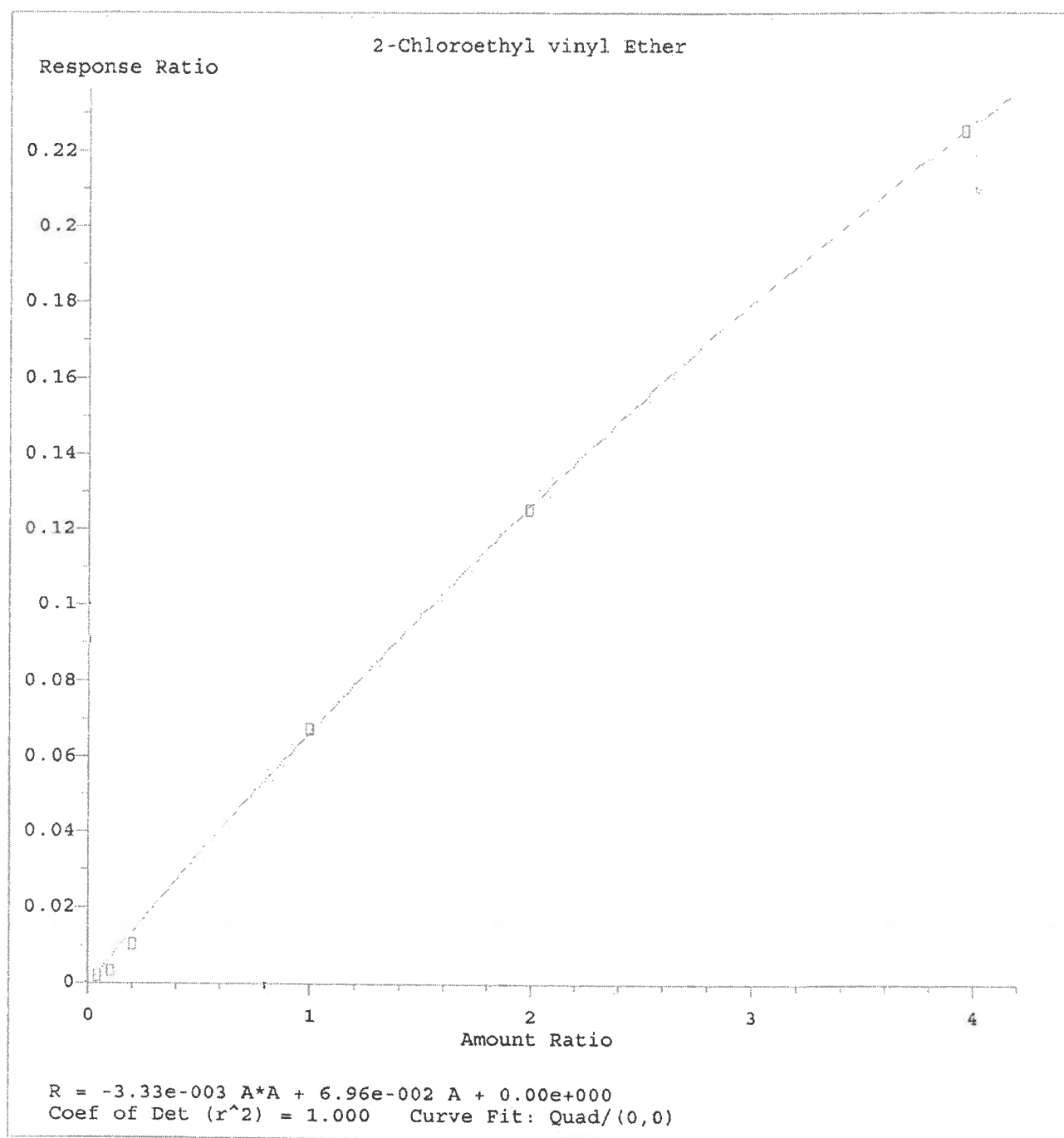


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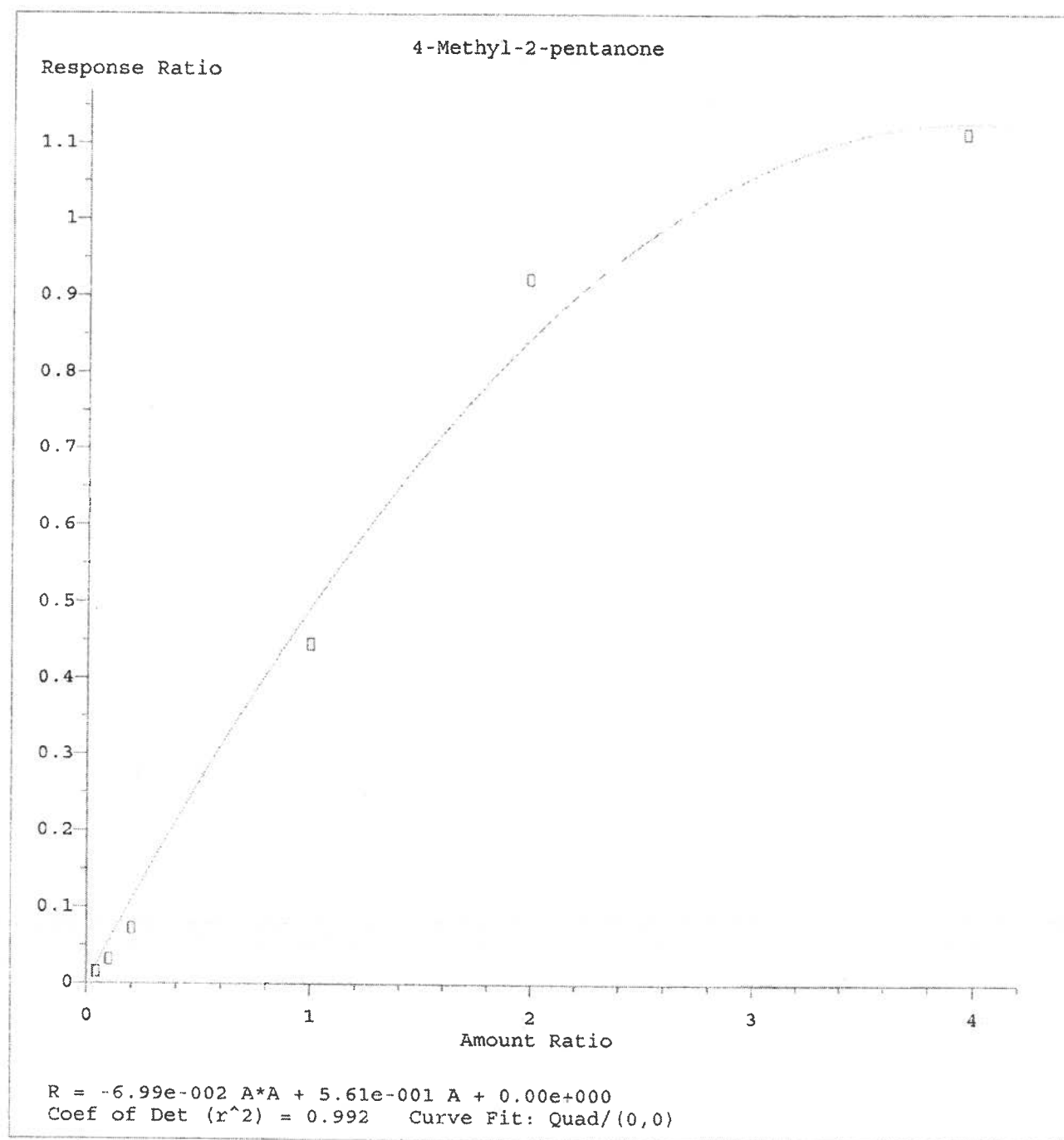


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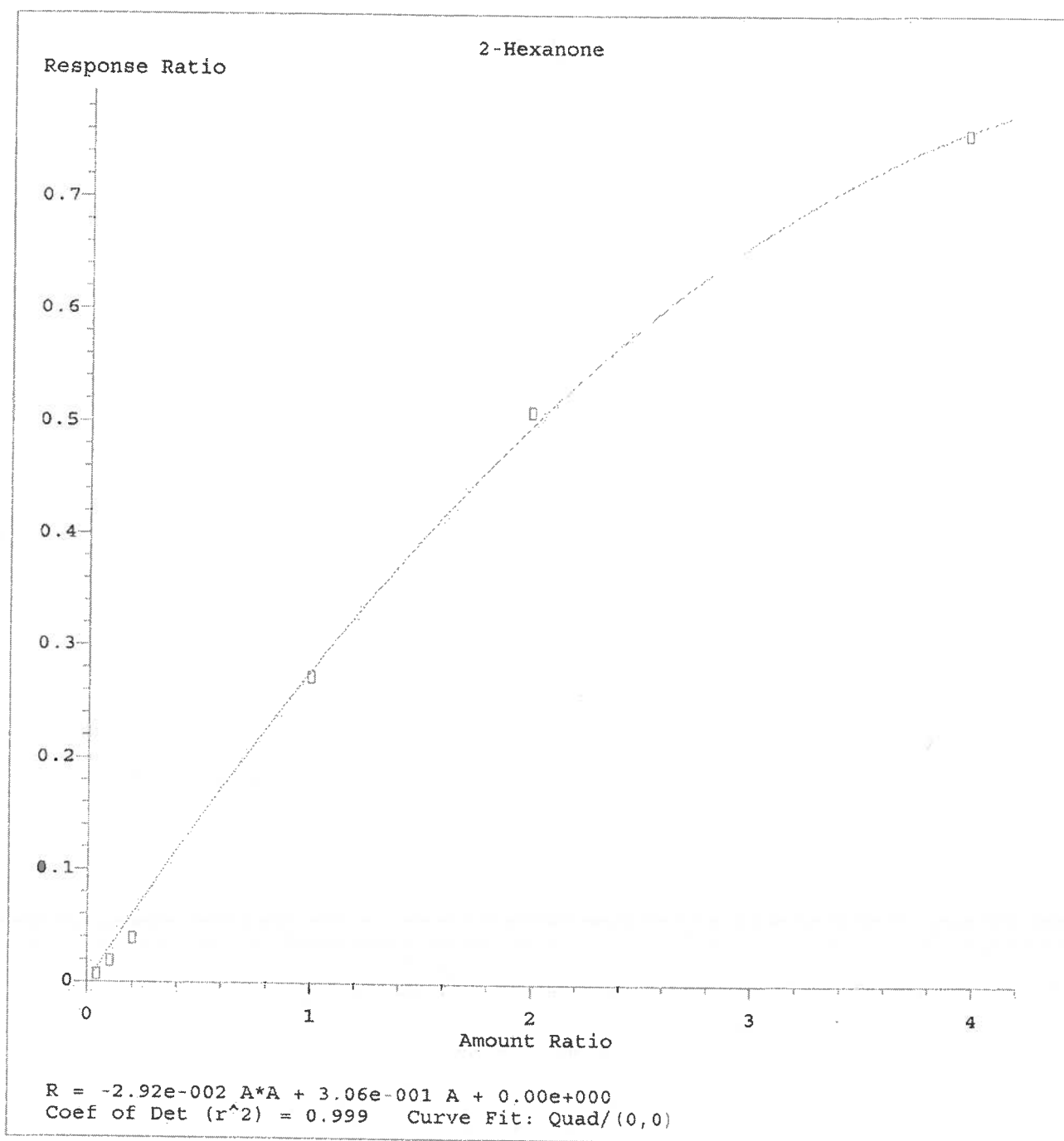




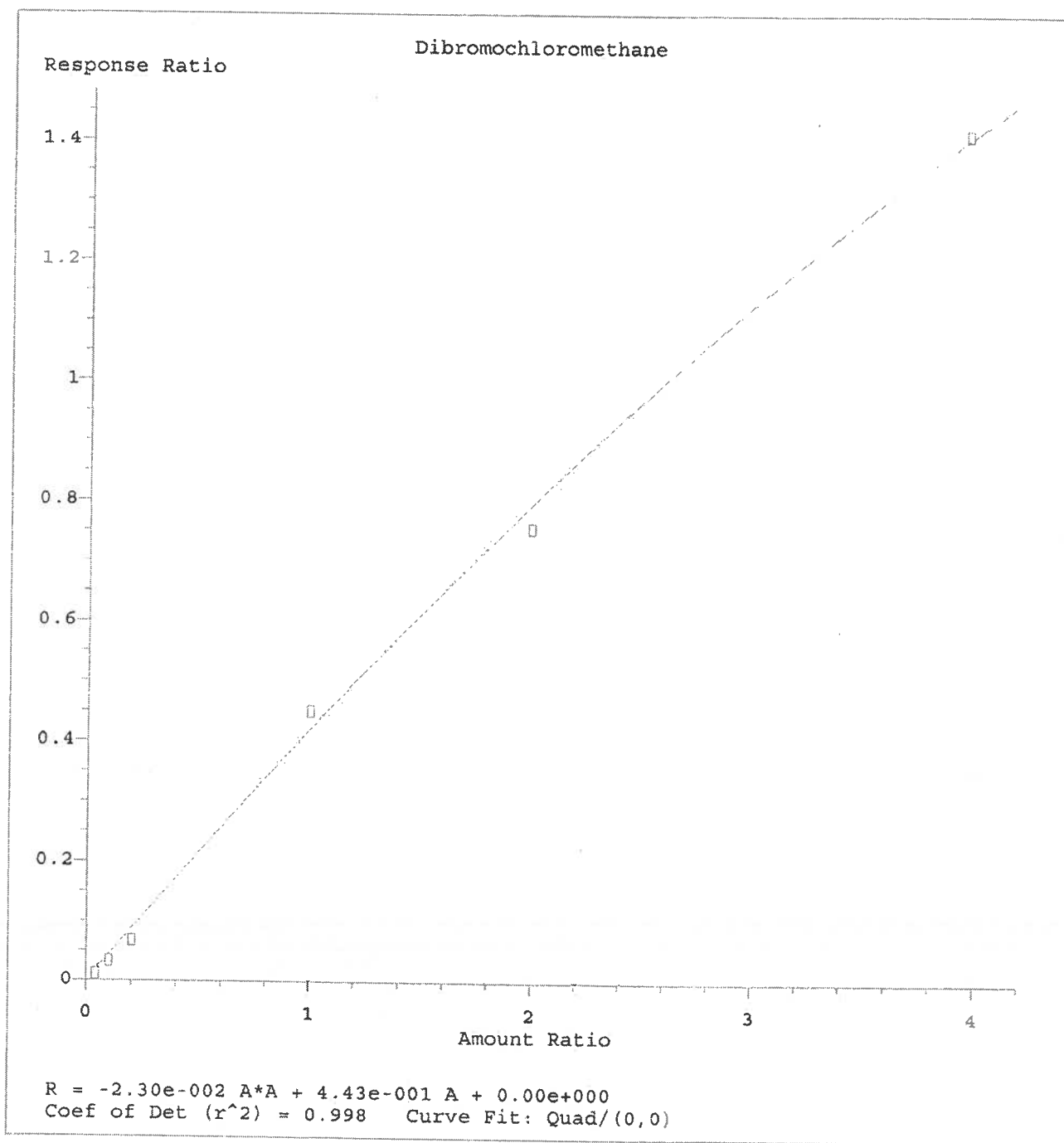
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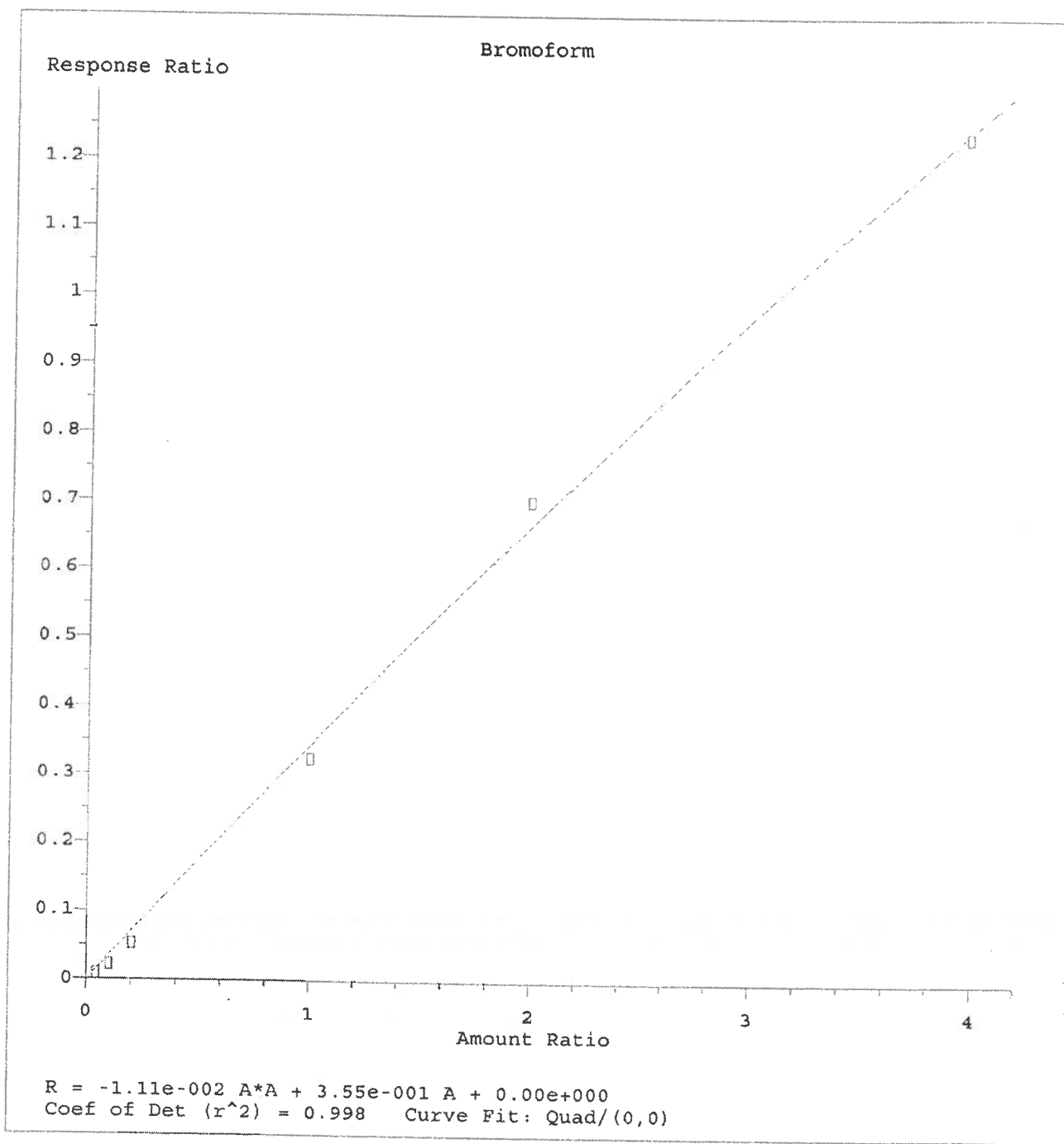
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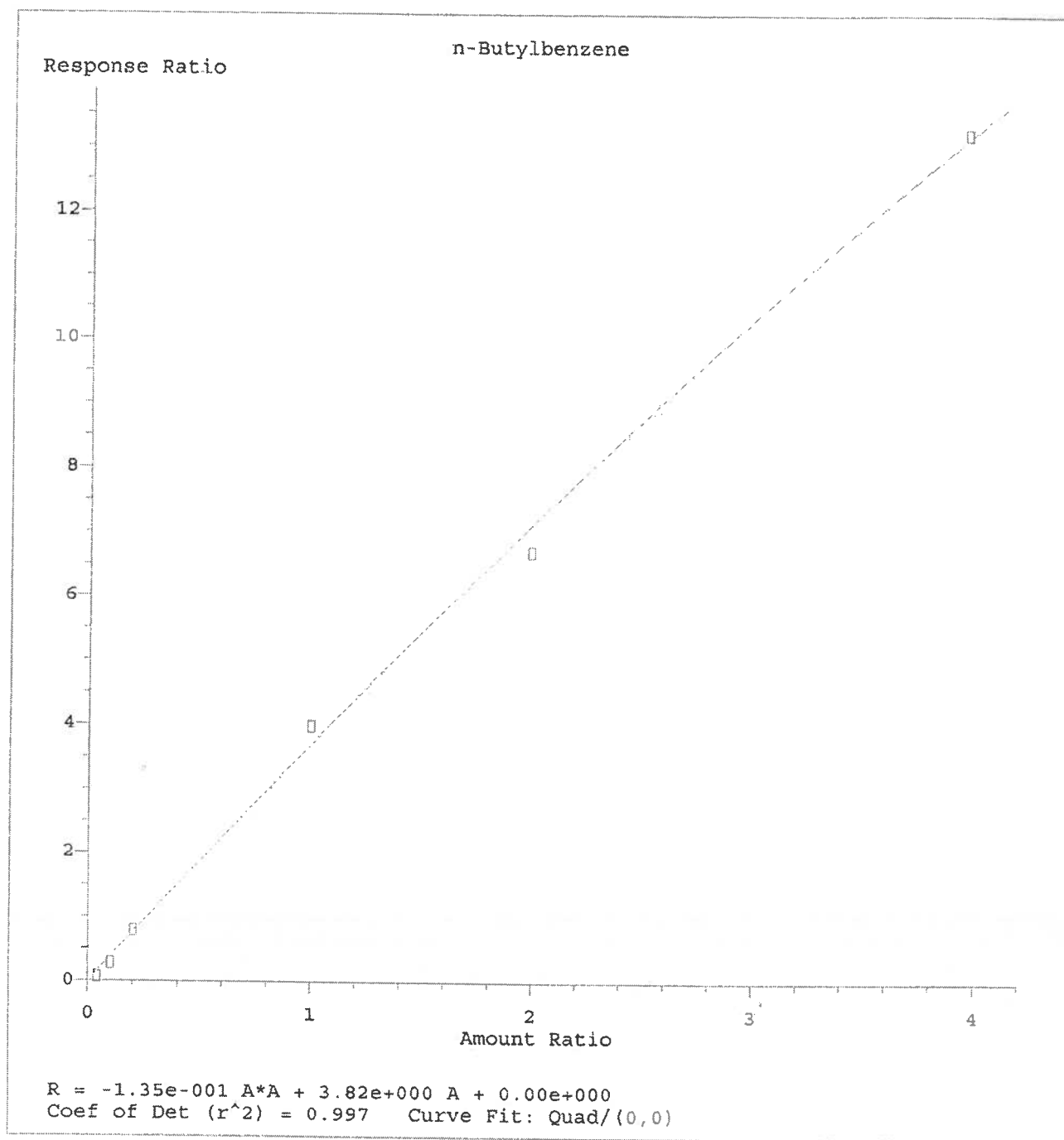
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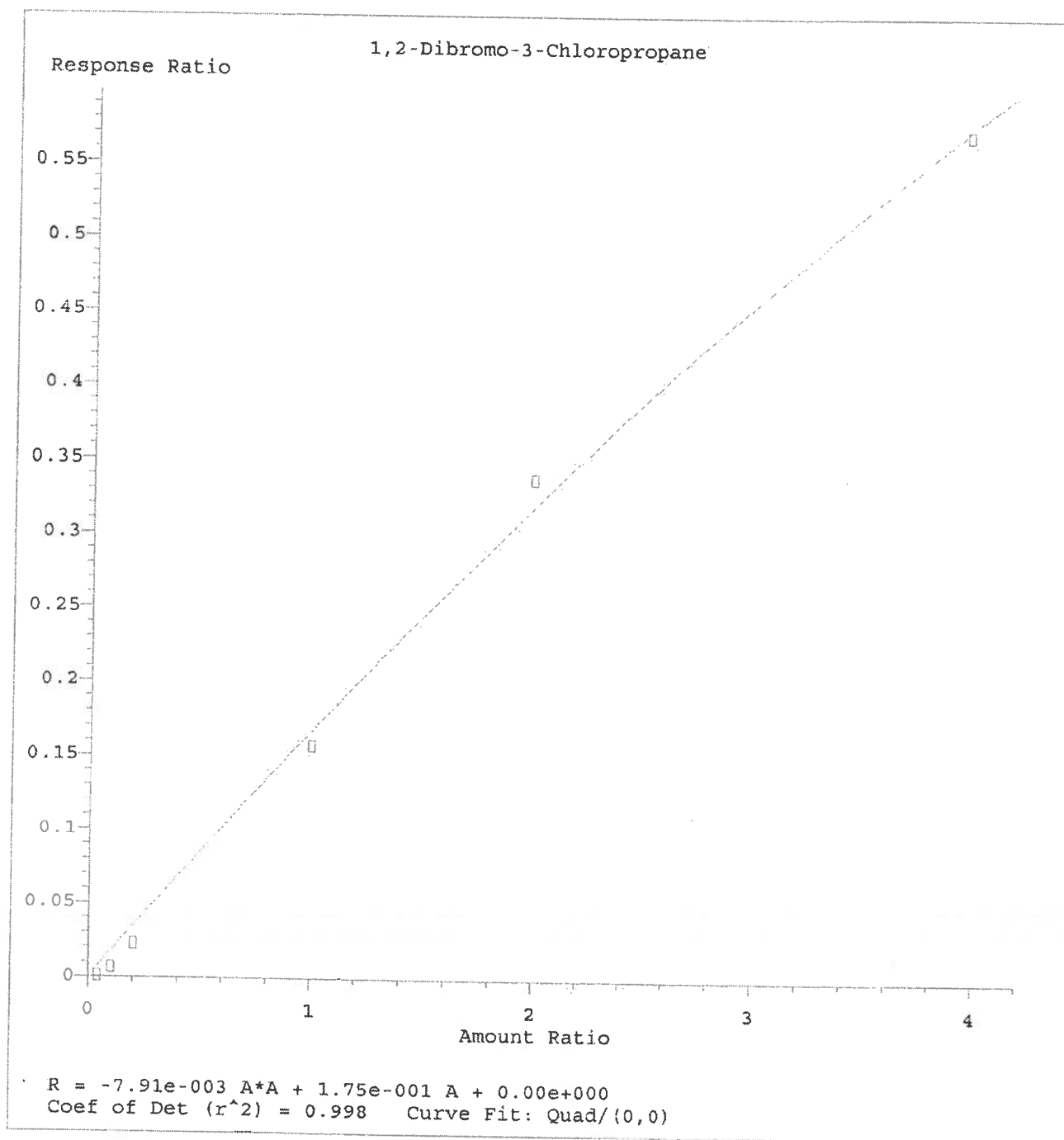
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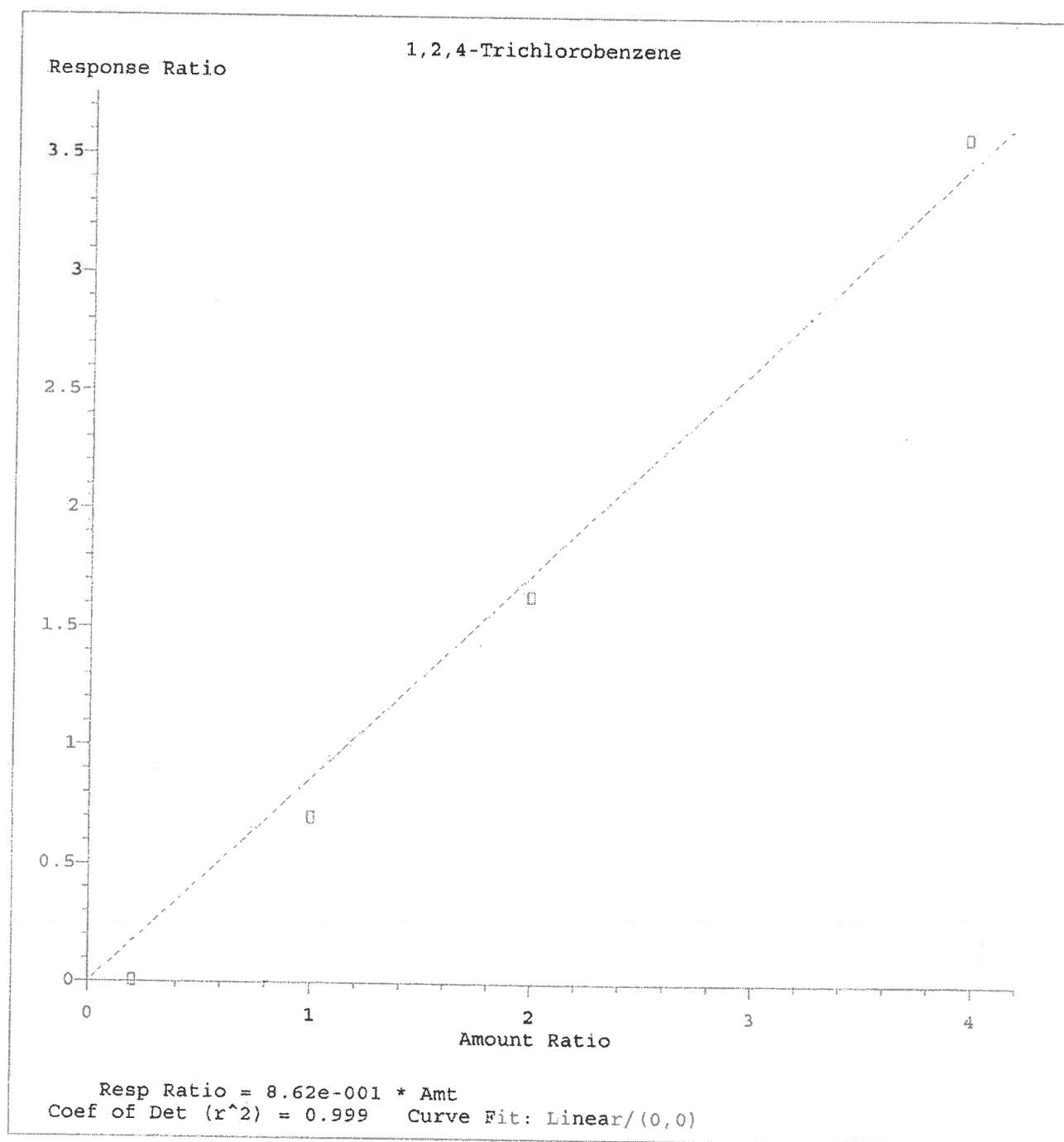
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Calibration Table Last Updated: Wed Aug 19 16:32:55 2009

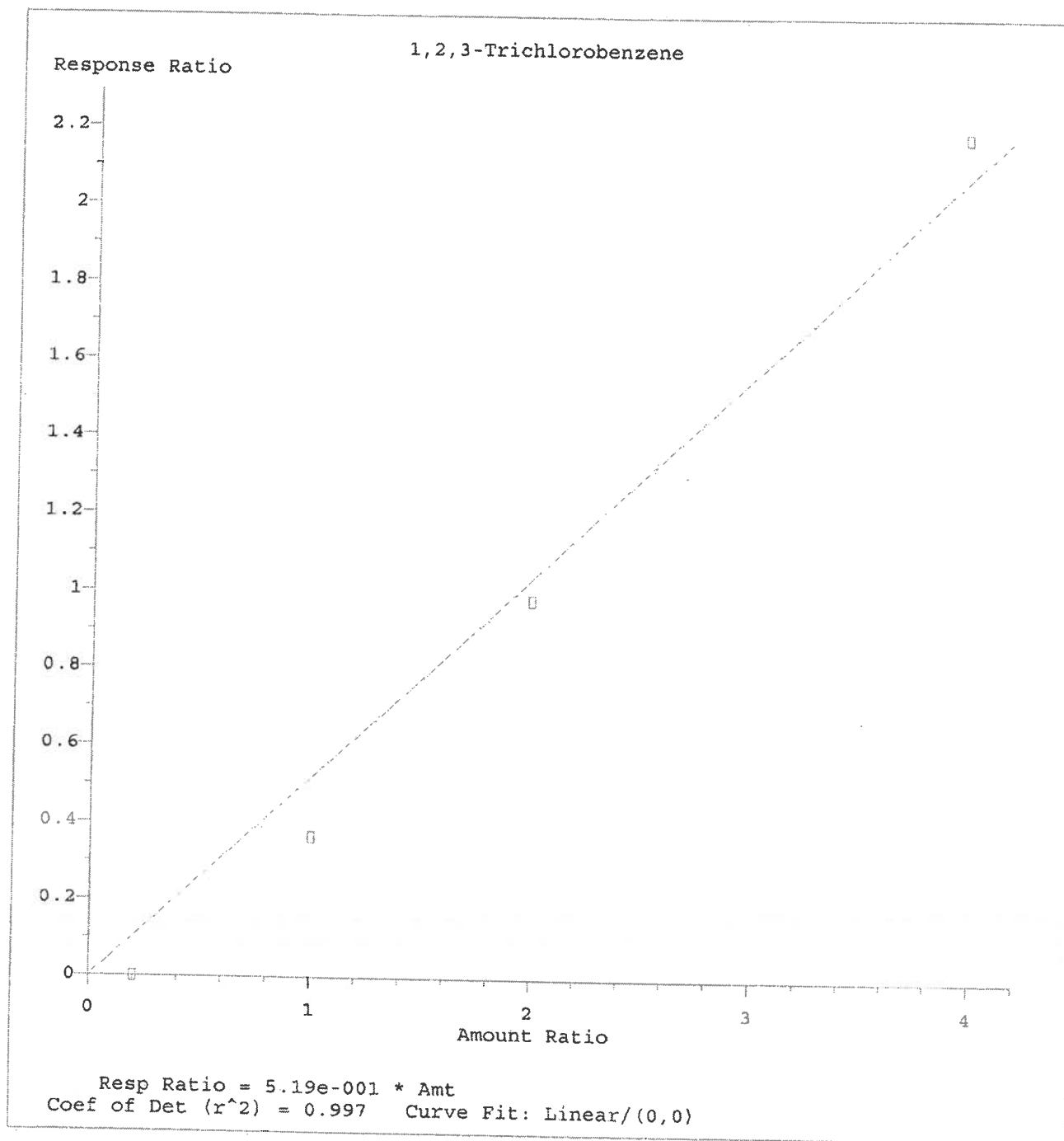


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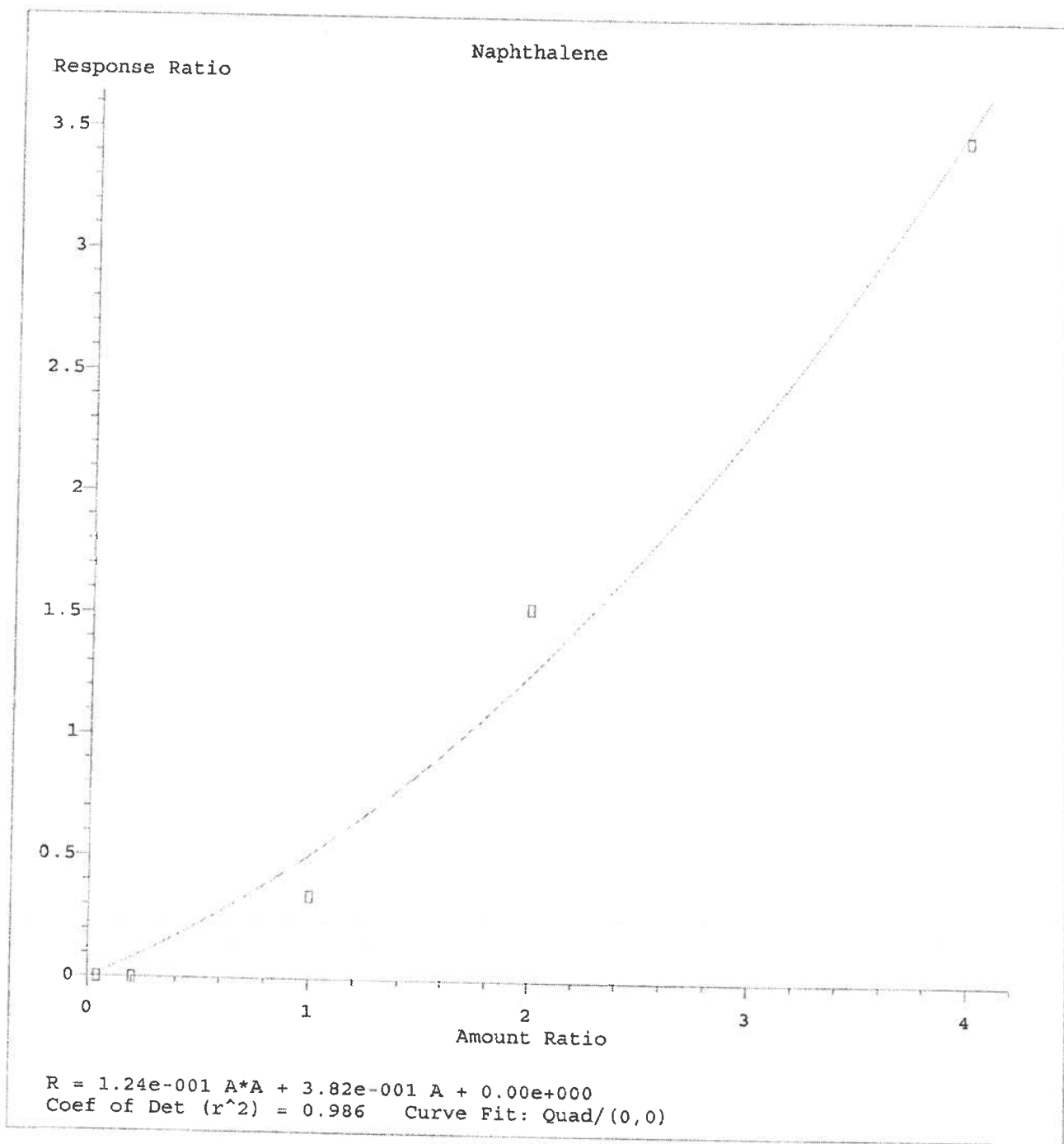


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Calibration Table Last Updated: Wed Aug 19 16:32:55 2009

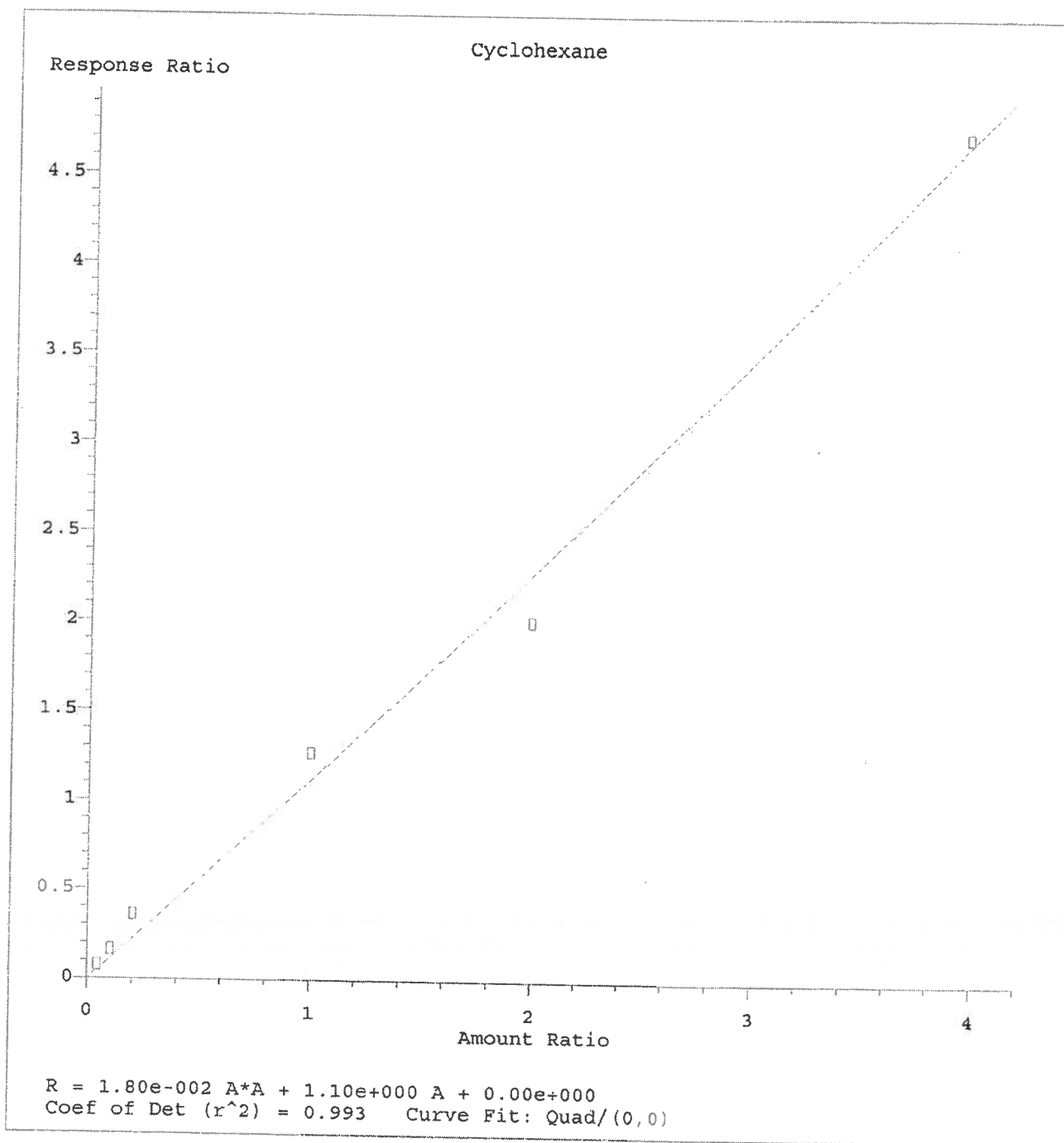




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Calibration Table Last Updated: Wed Aug 19 16:32:55 2009



Method Name: C:\msdchem\1\METHODS\081909.M  
Calibration Table Last Updated: Wed Aug 19 16:32:55 2009



Method Name: C:\msdchem\1\METHODS\081909.M  
Calibration Table Last Updated: Wed Aug 19 16:32:55 2009

VOA Soil MDL Master  
Started 1/2009  
Due 1/2010

Compound	Spike Level	MDL1	MDL2	MDL3	MDL4	MDL5	MDL6	MDL7	SD	MDL	Reporting Limit
Dichlorodifluoromethane	2	1.262	1.154	1.69	1.364	1.208	1.251	1.257	0.178	0.560	2
Chloromethane	2	1.552	1.457	1.795	1.841	1.579	1.622	1.524	0.142	0.447	2
Vinyl chloride	2	1.243	1.112	1.531	1.597	1.242	1.272	1.242	0.176	0.551	5
Bromomethane	2	1.606	1.574	1.975	1.975	1.468	1.471	1.33	0.253	0.794	2
Chloroethane	2	0.974	1.041	0.993	1.011	1.027	0.853	0.871	0.075	0.236	2
Trichlorofluoromethane	2	1.503	1.271	1.664	1.698	1.406	1.426	1.463	0.149	0.468	2
Ethyl ether	2	1.302	1.404	1.742	1.716	1.164	1.513	1.224	0.229	0.720	2
Freon 113	2	1.472	1.349	1.654	1.725	1.363	1.464	1.464	0.141	0.443	2
1,1-Dichloroethene	2	1.476	1.318	1.621	1.751	1.417	1.456	1.411	0.146	0.458	2
Acetone	5	6.824	5.841	6.412	7.059	7.194	6.926	7.738	0.601	1.887	10
Carbon disulfide	2	1.474	1.416	1.725	1.815	1.425	1.406	1.452	0.167	0.525	2
Methyl acetate	2	1.754	1.574	2.016	1.975	1.667	1.611	1.798	0.172	0.541	5
Methylene chloride	5	2.246	3.218	2	2.23	1.944	2.456	2.807	0.458	1.437	5
Acrylonitrile	5	6.281	6.4	5.83	5.879	6.311	6.571	6.492	0.289	0.909	N/A
tert-Butyl alcohol											
Methyl tert-butyl ether											
trans-1,2-Dichloroethene	2	2.216	2.098	2.679	2.472	2.118	2.208	2.041	0.231	0.725	2
1,1-Dichloroethane	2	1.77	1.702	2.08	1.831	1.654	1.65	1.532	0.175	0.551	2
Vinyl Acetate	2	1.881	1.81	2.047	1.995	1.839	1.773	1.751	0.112	0.352	5
2,2-Dichloropropane	2	2.064	1.79	2.259	2.155	1.652	1.753	1.791	0.232	0.730	2
2-Butanone	5	7.013	1.876	2.004	2.087	1.718	1.592	1.786	0.173	0.545	2
cis-1,2-Dichloroethene	2	1.608	1.662	1.882	1.942	1.509	1.559	1.654	0.450	1.414	10
Bromochloromethane	2	1.56	1.612	1.896	1.984	1.501	1.596	1.745	0.163	0.511	2
Chloroform	2	1.742	1.732	2.184	2.195	1.871	1.691	1.767	0.182	0.572	5
1,1,1-Trichloroethane	2	1.685	1.626	1.918	2.066	1.675	1.757	1.787	0.216	0.680	2
Carbon tetrachloride	2	1.704	1.632	1.873	1.919	1.646	1.561	1.717	0.155	0.488	2
Benzene	2	1.607	1.55	1.823	1.904	1.714	1.626	1.597	0.130	0.409	5
1,2-Dichloroethane	2	1.949	1.964	2.157	2.138	1.91	1.753	1.831	0.131	0.412	2
Trichloroethene	2	1.38	1.374	1.717	1.547	1.365	1.352	1.476	0.149	0.467	2
Methylcyclohexane	2	1.628	1.563	1.914	1.951	1.708	1.745	1.78	0.134	0.422	2
1,2-Dichloropropane	2	1.395	1.428	1.676	1.715	1.557	1.52	1.703	0.141	0.443	2
Dibromomethane	2	1.572	1.517	1.818	1.78	1.546	1.55	1.793	0.131	0.412	2
Bromodichloromethane	2	1.548	1.62	1.783	1.789	1.552	1.483	1.716	0.135	0.425	5
2-Chloroethyl vinyl ether	5	12.69	13.25	13.79	13.1	13.29	12.35	12.71	0.122	0.384	5
1,1-Dichloropropene	2	1.513	1.485	1.669	1.701	1.521	1.497	1.508	0.479	1.505	2
cis-1,3-Dichloropropene	2	1.501	1.539	1.792	1.868	1.515	1.579	1.497	0.089	0.280	2
4-methyl-2-pentanone	2	2.277	2.265	2.381	2.306	1.996	2.126	2.516	0.152	0.478	2
Toluene	2	1.762	1.724	1.985	1.869	1.799	1.701	1.736	0.168	0.528	5
trans-1,3-Dichloropropene	2	1.61	1.591	1.82	1.688	1.717	1.639	1.731	0.100	0.314	2
									0.080	0.250	2

## VOA Soil MDL Master

Started 1/2009

Due 1/2010

1,1,2-Trichloroethane	2	1.328	1.409	1.768	1.841	1.554	1.515	1.489	0.185	0.582	2
1,3-Dichloropropane	2	1.567	1.671	1.942	1.832	1.586	1.744	1.643	0.136	0.428	2
Tetrachloroethene	2	1.568	1.497	1.807	1.791	1.578	1.66	1.676	0.116	0.364	2
2-Hexanone	2	1.84	1.98	2.66	2.83	1.97	1.83	2.41	0.412	1.294	5
Dibromochloromethane	2	1.41	1.41	1.7	1.66	1.43	1.38	1.57	0.133	0.416	2
1,2-Dibromoethane	2	1.57	1.62	1.71	1.98	1.44	1.6	1.59	0.168	0.528	5
Chlorobenzene	2	1.72	1.67	1.7	1.74	1.73	1.83	1.71	0.050	0.157	2
1,1,1,2-Tetrachloroethane	2	1.64	1.58	1.8	1.76	1.72	1.76	1.8	0.084	0.263	2
Ethylbenzene	2	1.87	1.8	1.91	2	1.94	1.92	1.89	0.062	0.194	2
m,p-Xylene	2	3.87	3.82	3.83	4.02	3.74	3.77	4.06	0.122	0.384	2
o-Xylene	2	1.89	1.65	1.97	1.84	1.78	1.76	2.02	0.128	0.401	2
Styrene	2	1.95	1.75	1.98	1.95	1.87	1.81	2.02	0.098	0.307	5
Bromoform	2	1.34	1.19	1.43	1.34	1.28	1.29	1.49	0.099	0.312	5
Isopropylbenzene	2	1.95	1.83	1.99	2	2.03	1.91	2.01	0.070	0.220	10
1,2,3-Trichloropropane	5	5.86	6.43	6.65	6.44	5.9	6.37	6.72	0.338	1.060	5
4-Bromofluorobenzene	2	2.19	1.9	1.96	2.05	1.86	1.75	2	0.142	0.445	2
Bromobenzene	2	1.99	1.9	2.11	2.04	2.04	2.04	2.09	0.069	0.218	5
1,1,2,2-Tetrachloroethane	2	2.16	2.09	2.31	2.22	2.1	2.05	2.38	0.122	0.384	2
n-Propylbenzene	2	1.95	1.81	2.11	2.03	1.93	1.97	2.06	0.098	0.309	2
2-Chlorotoluene	2	1.79	1.77	2.04	1.9	1.9	1.97	1.96	0.097	0.306	5
4-Chlorotoluene	2	2.06	1.75	2.12	2.07	1.96	1.92	2.07	0.128	0.401	5
1,3,5-Trimethylbenzene	2	1.97	1.79	2.1	2.08	2.05	1.95	2	0.105	0.329	5
tert-Butylbenzene	2	1.67	1.71	2.07	1.89	1.89	1.82	1.95	0.138	0.433	5
1,2,4-Trimethylbenzene	2	1.97	1.84	2.11	2.03	2.02	1.95	2.04	0.085	0.268	2
sec-Butylbenzene	2	1.92	1.86	2.18	2.05	1.85	2.04	1.98	0.118	0.370	2
p-Isopropyltoluene	2	1.81	1.76	2.01	1.97	1.95	1.84	1.96	0.095	0.299	10
1,3-Dichlorobenzene	2	1.7	1.68	1.87	1.72	1.69	1.83	1.93	0.101	0.317	5
1,4-Dichlorobenzene	2	1.8	1.74	1.87	1.8	1.74	1.81	1.9	0.060	0.189	2
n-Butylbenzene	2	1.62	1.56	1.63	1.58	1.63	1.68	1.72	0.055	0.172	10
1,2-Dichlorobenzene	2	1.74	1.74	1.98	1.84	1.79	1.99	1.97	0.114	0.357	5
1,2-Dibromo-3-Chloropropane	5	5.12	5.64	5.8	5.31	5.45	5.21	5.25	0.247	0.775	10
1,2,4-Trichlorobenzene	5	2.09	2.59	2.54	2.34	2.28	2.01	2.33	0.213	0.668	5
1,2,3-Trichlorobenzene	2	1.07	0.83	1.05	0.78	0.94	0.89	1.04	0.115	0.361	5
Hexachlorobutadiene	2	1.69	1.7	1.8	1.79	1.66	1.8	1.88	0.079	0.247	5
Naphthalene	5	0.61	0.88	0.76	0.71	0.64	0.53	0.6	0.117	0.368	10
Cyclohexane	2	1.76	1.72	1.57	1.51	1.53	1.69	1.65	0.097	0.306	2
Data File Ids per level:	2	V64070	V64071	V64072	V64073	V64074	V64075	V64076			
	5	V62750	V62751	V62752	V62753	V62754	V62755	V62756			

## **Data Usability Summary Report**

**Vali-Data of WNY, LLC  
1514 Davis Rd.  
West Falls, NY 14170**

**Town of Clarkson  
Paradigm Environmental Services Inc. SDG#10419  
August 17, 2010  
Sampling date: 09/16-17/09**

**Prepared by:  
Jodi Zimmerman  
Vali-Data of WNY, LLC  
1514 Davis Rd.  
West Falls, NY 14170**

**Town of Clarkson  
SDG# 10419**

## **DELIVERABLES**

This Data Usability Summary Report (DUSR) was prepared by evaluating the analytical data package for Lu Engineers, project located in the Town of Clarkson, SDG#10419, Paradigm # 09-3381, submitted to Vali-Data of WNY, LLC on May 17, 2010. The laboratory performed the analyses using USEPA methods, 8260 (Volatile Organics), 8270 (Semi-Volatile Organics), 8081 (Pesticides), 8082 (PCBs), 6010 (Inorganics) and 7470 (Mercury).

## **VOLATILE ORGANIC COMPOUNDS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Internal Standard (IS) Area Performance
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration
- GC/MS Performance Check

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

## **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times, Method Blank, Field Duplicate Precision Sample, Compound Quantitation, Initial Calibration and Continuing Calibration.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

## **DATA COMPLETENESS**

All criteria were met.

## **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met except a receipt page recorded the incorrect sampling date for MW-2. The MDL list was not complete. Updated pages are attached.

## **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

## **HOLDING TIMES**

All holding times were met except the pH was only recorded as <2 for the trip blank. Correspondence with Paradigm confirmed that the pH was within acceptable limits. That correspondence is attached.

The samples were received at a temperature of 9°C which is outside the acceptance window ( $4 \pm 2$  Degrees °C), thus all target analytes in the samples should be qualified as estimated.

## **INTERNAL STANDARD (IS)**

All criteria were met.

## **SURROGATE SPIKE RECOVERIES**

All criteria were met.

## **METHOD BLANK**

All criteria were met except 2-Hexanone and 4-Methyl-2-pentanone were detected above the MDL, below the MRL and are qualified as estimated. Naphthalene and 2-Butanone were detected but not recorded. Paradigm has reviewed the data and does not believe these target analytes to be present or they are detected outside the laboratories range for qualification (see Overall evaluation above). No supporting data has been included in the package.

## **FIELD DUPLICATE SAMPLE PRECISION**

All criteria were met except Acetone was detected in MW-3/Field Duplicate but not in MW-3. 4-Methyl-2-Pentanone, o-Xylene and 1,2,4-Trimethylbenzene were detected in MW-3 but not in MW-3/Field Duplicate. Paradigm has reviewed the data and does not believe all of these target analytes to be present in MW-3 or they are detected outside the laboratories range for qualification (see Overall evaluation above). No supporting data has been included in the package.

## **LABORATORY CONTROL SAMPLES**

All criteria were met.

## **MS/MSD**

All criteria were met.

## **COMPOUND QUANTITATION**

All criteria were met except several target analytes and TIC's were detected in the samples but not recorded. Paradigm has reviewed the data and does not believe these target analytes to be present or they are detected outside the laboratories range for qualification (see Overall evaluation above). No supporting data has been included in the package.

## **INITIAL CALIBRATION**

All criteria were met except the %RSD of Acetone, Naphthalene, 2-Chloroethylvinyl ether and Methylene Chloride were outside ASP outer QC limits. These target analytes should be qualified as estimated in all samples, blanks and spikes. The %RSD of Bromomethane and Bromoform were outside ASP QC limits. ASP allows for up to two target analytes to be outside QC limits without further action.

Alternate forms of regression were used for target analytes whose %RSD >15%. Those pages

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are attached.

#### **CONTINUING CALIBRATION**

All criteria were met except the %D of Methylene Chloride was outside the ASP QC outer limits. This target analyte should be qualified as estimated in all blanks, samples and spikes.

#### **GC/MS PERFORMANCE CHECK**

All criteria were met.

#### **SEMIVOLATILE ORGANIC COMPOUNDS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Internal Standard (IS) Area Performance
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration
- GC/MS Performance Check

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

#### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times and Compound Quantitation.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

#### **DATA COMPLETENESS**

All criteria were met.

#### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met. (see VOC, above)

#### **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

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**HOLDING TIMES**

All holding times were met except the samples were received at a temperature of 9°C which is outside the acceptance window ( $4 \pm 2$  Degrees °C), thus all target analytes in the samples should be qualified as estimated.

**INTERNAL STANDARD (IS)**

All criteria were met.

**SURROGATE SPIKE RECOVERIES**

All criteria were met.

**METHOD BLANK**

All criteria were met.

**FIELD DUPLICATE SAMPLE PRECISION**

No field duplicate sample was obtained.

**LABORATORY CONTROL SAMPLES**

All criteria were met.

**MS/MSD**

All criteria were met except the %Rec of Acetone and N-Nitroso-di-n-propylamine were outside laboratory QC limits but within ASP limits. No further action is required.

2-Methylmapthalene was detected in MW-1MS/MSD.

**COMPOUND QUANTITATION**

All criteria were met except several TIC's were detected in the samples but not recorded. Paradigm has reviewed the data and does not believe these target analytes to be present or they are detected outside the laboratories range for qualification (see Overall evaluation above). No supporting data has been included in the package.

**INITIAL CALIBRATION**

All criteria were met.

**CONTINUING CALIBRATION**

All criteria were met.

**GC/MS PERFORMANCE CHECK**

All criteria were met.

**PESTICIDES**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports

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- Holding Times
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

#### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times, Method Blank, Compound Quantitation and Continuing Calibration.

Adirondack Environmental Services, Inc. reported the lesser of the concentrations off the two columns. Sulfur clean up was used.

#### **DATA COMPLETENESS**

All criteria were met.

#### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met. (see VOC, above)

#### **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

#### **HOLDING TIMES**

All holding times were met except the samples were received at a temperature of 9°C which is outside the acceptance window ( $4 \pm 2$  Degrees °C), thus all target analytes in the samples should be qualified as estimated.

#### **SURROGATE SPIKE RECOVERIES**

All criteria were met except the %Rec of DCBP was outside laboratory QC limits in Water PB 9/21 but within ASP limits. No further action is required.

#### **METHOD BLANK**

All the criteria were met except several target analytes were detected above the MDL, below the MRL and should be qualified as estimated.

#### **FIELD DUPLICATE SAMPLE PRECISION**

All criteria were met except a-BHC, g-BHC, b-BHC, d-BHC, Endrin and Endosulfan Sulphate were detected in MW-3/Field Duplicate but not in MW-3.

## **LABORATORY CONTROL SAMPLES**

All criteria were met.

## **MS/MSD**

All criteria were met except the %Rec of g-BHC in MW-1MS/MSD was outside ASP QC limits, low, and should be qualified as estimated in MW-1. The %Rec of Dieldrin was outside ASP QC limits in MW-1MS. The results for MW-1MSD on the summary page were recorded incorrectly. An updated page is attached.

## **COMPOUND QUANTITATION**

All criteria were met except several target analytes were detected in the samples but not recorded. The %D between the columns was outside QC limits for b-BHC in sample MW-3/Field Duplicate. The result off the primary column, the larger concentration, was recorded.

## **INITIAL CALIBRATION**

All criteria were met.

Paradigm used linear regression on all target analytes and surrogates.

## **CONTINUING CALIBRATION**

All criteria were met except the %D was outside laboratory QC limits for Endrin and DCBP, but outside ASP QC limits for DCBP only, off column A. The %D was outside laboratory QC limits for Endrin, Methoxychlor, Endosulfan sulfate, a-Chlordane and DCBP, but outside ASP QC limits for Methoxychlor and DCBP, off column B. Per National Functional Guidelines DCBP off both columns and Methoxychlor off column B should be qualified as estimated.

## **POLYCHLORINATED BIPHENYLS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

## **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times.

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Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

#### **DATA COMPLETENESS**

All criteria were met.

#### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met except no raw data for the initial calibration was included in the original data package. (see VOC, above)

#### **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

#### **HOLDING TIMES**

All holding times were met except the samples were received at a temperature of 9°C which is outside the acceptance window ( $4 \pm 2$  Degrees °C), thus all target analytes in the samples should be qualified as estimated.

#### **SURROGATE SPIKE RECOVERIES**

All criteria were met.

#### **METHOD BLANK**

All the criteria were met.

#### **FIELD DUPLICATE SAMPLE PRECISION**

All criteria were met.

#### **LABORATORY CONTROL SAMPLES**

All criteria were met.

#### **MS/MSD**

All criteria were met.

#### **COMPOUND QUANTITATION**

All criteria were met.

#### **INITIAL CALIBRATION**

All criteria were met except no raw data were provided for the initial calibrations. Calibration Curves and Calibration tables were sent.

Paradigm used linear regression on all target analytes and surrogates.

#### **CONTINUING CALIBRATION**

All criteria were met.

## **METALS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Method Blank
- Laboratory Control Sample
- MS/MSD
- Duplicate
- Field Duplicate
- Serial Dilution
- Compound Quantitation
- Calibration

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above.

### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times, MS/MSD, Compound Quantitation and Calibration.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

### **DATA COMPLETENESS**

All criteria were met.

### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met. (see VOC, above)

### **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

### **HOLDING TIMES**

All holding times were met except the samples were received at a temperature of 9°C which is outside the acceptance window ( $4 \pm 2$  Degrees °C), thus all target analytes in the samples should be qualified as estimated. The pH was only recorded as <2 for the trip blank. Correspondence with Paradigm confirmed that the pH was within acceptable limits. That correspondence is attached. Sample, MW-2 was not preserved for metals upon sampling. HNO<sub>3</sub> was added upon receipt by laboratory.

### **METHOD BLANK**

All criteria were met.

**LABORATORY CONTROL SAMPLE**

All criteria were met.

**MS/MSD**

All criteria were met except the %Rec of As, Cu, K and Na were outside laboratory QC limits. The %Rec of K and Na were outside ASP QC limits. The sample concentration of Na was >4x spike added, so no further action is required.

A post digest spike should have been performed. Since no post digest spike was performed K should be qualified with an 'N' in all samples.

**DUPLICATE**

All criteria were met.

**FIELD DUPLICATE**

All criteria were met.

**SERIAL DILUTION**

No serial dilution was performed.

**COMPOUND QUANTITATION**

All criteria were met except K, Na, Mn and Se were detected above the MDL, below the MRL and should be qualified as estimated in Field Blank.

**CALIBRATION**

All criteria were met except Sb and Na were not spiked in ICP, so should be qualified as estimated in the samples.

**MERCURY**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Method Blank
- Laboratory Control Samples
- MS/MSD
- Duplicate
- Field Duplicate
- Compound Quantitation
- Calibration

The items listed above were technically in compliance with the method and SOP criteria with any exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above.

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**OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Holding Times and Calibration.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

**DATA COMPLETENESS**

All criteria were met.

**NARRATIVE AND DATA REPORTING FORMS**

All criteria were met. (see VOC, above)

**CHAIN OF CUSTODY**

All criteria were met.

**HOLDING TIMES**

All holding times were met except the samples were received at a temperature of 9°C which is outside the acceptance window ( $4 \pm 2$  Degrees °C), thus all target analytes in the samples should be qualified as estimated. The pH was only recorded as <2 for the trip blank. Correspondence with Paradigm confirmed that the pH was within acceptable limits. That correspondence is attached.

Sample, MW-2 was not preserved for metals upon sampling. HNO<sub>3</sub> was added upon receipt by laboratory.

**METHOD BLANK**

All criteria were met.

**LABORATORY CONTROL SAMPLES**

All criteria were met.

**MS/MSD**

All criteria were met.

**DUPLICATE**

All criteria were met.

**FIELD DUPLICATE**

All criteria were met.

**COMPOUND QUANTITATION**

All criteria were met.

**CALIBRATION**

All criteria were met except Hg was not spiked in the ICP, so should be qualified as estimated in the samples.



(Revised)

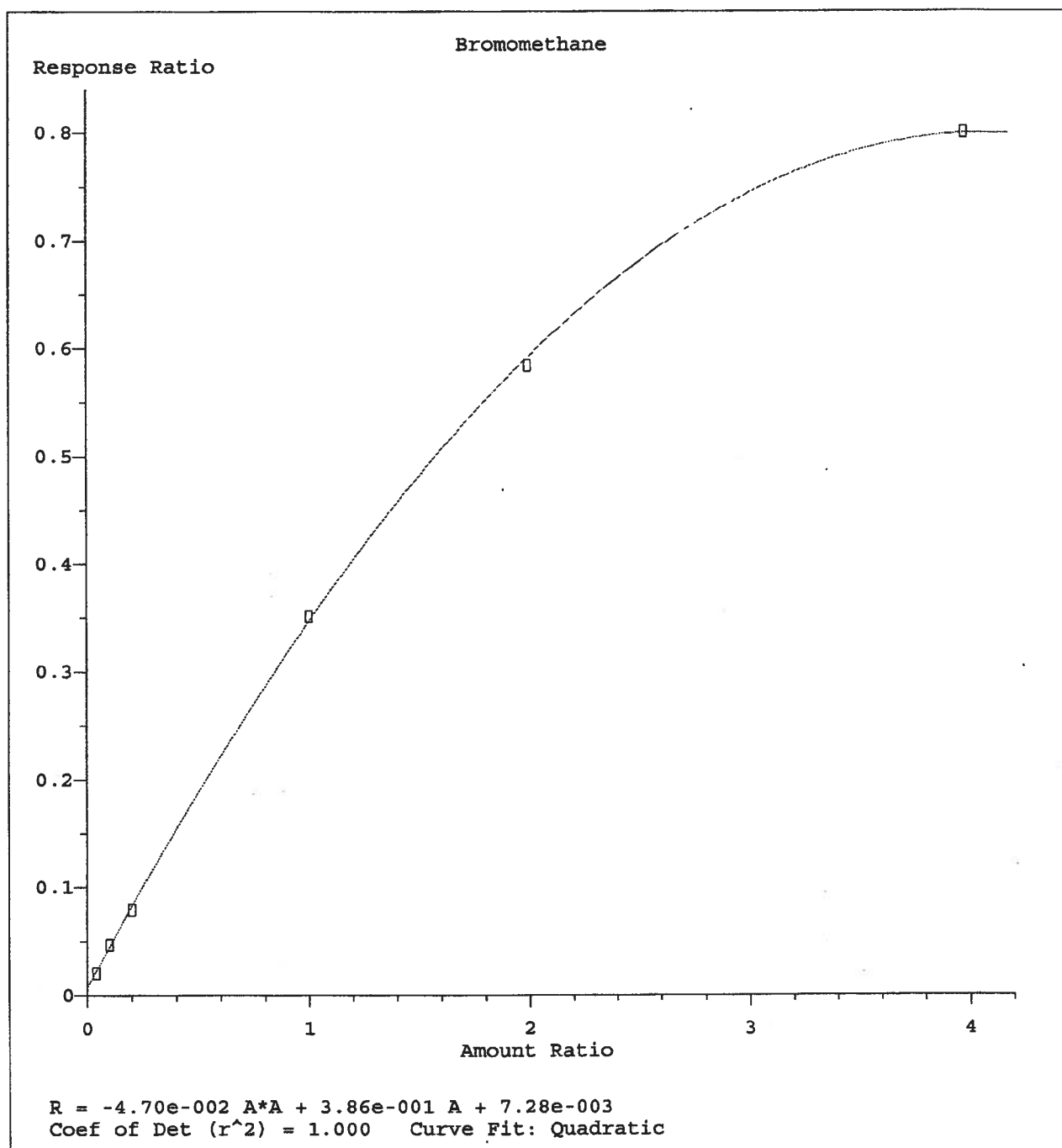
Compound	Spike Level	MDL 1	MDL 2	MDL 3	MDL 4	MDL 5	MDL 6	MDL 7	SD	MDL	Reporting Limit
2 Dichlorodifluoromethane	2	1.624	1.556	1.137	1.515	1.182	1.911	1.449	0.265	0.832	2
3 Chloromethane	2	1.762	1.72	1.295	1.54	1.211	1.749	1.474	0.223	0.700	2
4 Vinyl chloride	2	1.869	1.691	1.294	1.684	1.316	1.788	1.555	0.223	0.701	2
5 Bromomethane	2	3.15	2.66	2.857	2.88	2.708	3.529	2.671	0.317	0.996	2
6 Chloroethane	2	1.856	2.071	1.613	2.182	1.294	1.861	1.524	0.313	0.983	2
7 Trichlorofluoromethane	2	2.016	1.677	1.355	1.693	1.213	1.912	1.784	0.289	0.906	2
8 Ethyl ether	2	2.194	1.636	1.762	1.718	1.625	2.263	1.664	0.272	0.864	2
9 Freon 113	2	2.148	1.835	1.476	1.954	1.51	2.303	1.774	0.307	0.964	2
10 1,1-Dichloroethene	2	1.866	1.627	1.369	1.785	1.359	2.008	1.511	0.250	0.787	2
11 Acetone	5	3.234	4.055	3.665	3.775	3.561	3.986	3.36	0.305	0.957	5
12 Carbon disulfide	2	1.979	1.629	1.363	1.755	1.349	2.085	1.642	0.281	0.882	2
13 Methyl acetate	2	2.196	2.073	1.781	2.121	1.91	2.257	1.893	0.175	0.550	2
14 Methylene chloride	5	5.609	4.612	3.133	3.467	4.076	4.616	4.136	0.818	2.568	5
15 Acrylonitrile	2	2.018	1.874	1.902	1.647	2.056	1.997	1.653	0.168	0.529	2
16 tert-Butyl alcohol	200	214.401	271.269	271.78	253.957	325.094	187.712	258.768	44.064	138.362	200
17 Methyl tert-butyl ether	2	2.517	2.279	2.015	2.322	2.025	2.552	2.1	0.222	0.698	2
18 trans-1,2-Dichloroethene	2	2.172	1.951	1.549	1.877	1.44	2.142	1.756	0.279	0.876	2
19 1,1-Dichloroethane	2	2.026	1.855	1.485	1.771	1.538	1.981	1.66	0.210	0.658	2
20 Vinyl Acetate	2	1.701	1.572	1.358	1.34	1.333	1.423	1.197	0.168	0.528	5
21 2,2-Dichloropropane	2	2.142	1.913	1.55	1.952	1.521	2.254	1.73	0.281	0.882	2
22 2-Butanone	2	1.686	0.981	1.104	0.549	0.788	1.564	1.512	0.430	1.351	5
23 cis-1,2-Dichloroethene	2	2.011	1.917	1.565	1.794	1.583	2.218	1.845	0.231	0.727	2
24 Bromochloromethane	2	2.227	1.779	1.745	1.969	1.55	2.302	1.877	0.268	0.842	2
25 Chloroform	2	2.201	1.994	1.723	1.991	1.569	2.249	1.853	0.245	0.771	2
28 1,1,1-Trichloroethane	2	2.124	1.968	1.58	2.148	1.563	2.359	1.853	0.298	0.936	2
30 Carbon tetrachloride	2	2.224	1.979	1.556	1.974	1.477	2.216	1.734	0.300	0.941	2
31 Benzene	1	1.028	0.821	0.75	0.821	0.75	0.816	0.912	0.098	0.309	0.7
32 1,2-Dichloroethane	2	2.195	2.076	1.719	1.94	1.886	2.341	1.764	0.227	0.714	2
33 Trichloroethene	2	1.977	1.871	1.427	1.646	1.422	2.055	1.619	0.255	0.802	2
34 Methylcyclohexane	2	2.104	1.805	1.435	1.866	1.472	2.255	1.852	0.301	0.944	2
36 1,2-Dichloropropane	2	1.851	1.777	1.402	1.721	1.44	2.084	1.644	0.237	0.743	2
38 Dibromomethane	2	2.073	1.784	1.745	1.917	1.806	2.185	1.798	0.167	0.526	2
39 Bromodichloromethane	2	1.946	1.684	1.546	1.718	1.599	1.842	1.727	0.137	0.429	2
40 2-Chloroethyl vinyl ether	5	4.93	5.83	5.812	5.479	4.896	5.937	5.679	0.432	1.356	5
42 1,1-Dichloropropane	2	2.11	1.874	1.404	2.004	1.364	2.252	1.801	0.339	1.063	2
43 cis-1,3-Dichloropropene	2	1.899	1.72	1.382	1.589	1.507	1.909	1.418	0.217	0.680	2
44 4-Methyl-2-pentanone	2	2.278	2.093	1.813	1.98	2.087	2.267	1.821	0.190	0.595	5
46 Toluene	2	2.188	2.198	1.603	2.046	1.694	2.202	1.866	0.252	0.791	2
47 trans-1,3-Dichloropropene	2	2.123	1.771	1.445	1.734	1.642	1.996	1.63	0.230	0.723	2
48 1,1,2-Trichloroethane	2	2.201	2.103	1.677	1.98	1.667	2.157	1.685	0.242	0.759	2

49	1,3-Dichloropropane	2	2.057	1.918	1.695	2.032	1.731	2.242	1.67	0.217	0.681	2
50	Tetrachloroethane	2	2.423	2.253	1.776	2.381	1.851	2.542	1.97	0.303	0.951	2
51	2-Hexanone	2	2.16	1.87	1.71	1.76	1.69	1.95	1.57	0.196	0.615	5
52	Dibromochloromethane	2	1.93	1.82	1.56	1.72	1.5	1.84	1.44	0.189	0.592	2
53	1,2-Dibromoethane	2	1.96	1.73	1.76	1.9	1.78	1.96	1.68	0.139	0.436	2
55	Chlorobenzene	2	2.01	2.07	1.92	1.87	1.83	2.08	1.9	0.099	0.311	2
56	1,1,2-Tetrachloroethane	2	2	2.07	1.76	1.71	1.77	1.97	1.98	0.143	0.449	2
57	Ethylbenzene	2	2.08	2.17	1.75	1.94	1.76	2.01	2.02	0.158	0.495	5
58	m,p-Xylene	4	4.21	4.32	3.45	3.96	3.49	3.88	4.31	0.365	1.147	2
59	o-Xylene	2	2.09	2.08	1.73	1.91	1.8	2.06	2.01	0.144	0.452	2
60	Styrene	2	2.16	2.09	1.79	1.91	1.81	2.06	2.17	0.160	0.504	2
61	Bromoforn	2	1.9	1.99	1.67	1.81	1.68	1.67	1.98	0.145	0.454	2
62	Isopropylbenzene	2	1.98	2.07	1.72	1.95	1.82	1.96	2.24	0.167	0.525	5
63	1,2,3-Trichloropropane	2	2.18	2.3	1.89	1.75	1.75	2.18	1.94	0.222	0.697	2
64	4-Bromofluorobenzene	2	2.23	2.21	1.79	1.83	1.86	1.85	2.16	0.199	0.624	2
65	Bromobenzene	2	2.09	2.13	1.87	1.92	1.79	2.08	2.43	0.212	0.666	2
66	1,1,2,2-Tetrachloroethane	2	2.01	2.2	1.96	1.89	2	2.05	2.24	0.127	0.398	2
67	n-Propylbenzene	2	2.19	2.3	1.86	2.04	1.79	2.15	2.31	0.205	0.643	5
68	2-Chlorotoluene	2	2.02	2.12	1.72	1.95	1.84	1.97	2.16	0.153	0.481	2
69	4-Chlorotoluene	2	2.09	2.15	1.76	1.87	1.82	2	2.18	0.167	0.525	2
70	1,3,5-Trimethylbenzene	2	2.13	2.27	1.76	1.91	1.81	2.08	2.11	0.187	0.587	5
71	tert-Butylbenzene	2	2.16	2.26	1.68	1.95	1.69	2.01	2.23	0.241	0.755	2
72	1,2,4-Trimethylbenzene	2	2.25	2.33	1.88	2.13	1.89	1.97	2.32	0.197	0.619	5
73	sec-Butylbenzene	2	2.2	2.23	1.73	2.02	1.74	2.06	2.05	0.200	0.628	5
74	p-Isopropyltoluene	2	2.23	2.28	1.86	1.88	1.76	2.11	2.27	0.218	0.686	5
76	1,3-Dichlorobenzene	2	2.04	1.86	1.78	1.94	1.77	1.71	2.12	0.151	0.476	2
77	1,4-Dichlorobenzene	2	2.17	2.01	1.82	2.1	1.94	1.99	2.07	0.114	0.359	2
78	n-Butylbenzene	2	2.07	2.07	1.61	1.88	1.6	1.8	1.87	0.192	0.602	5
79	1,2-Dichlorobenzene	2	2.21	2.21	2	1.99	1.94	1.98	2.09	0.112	0.352	2
81	1,2-Dibromo-3-Chloropropane	2	1.51	1.49	1.24	1.43	1.2	1.34	1.44	0.122	0.382	5
82	1,2,4-Trichlorobenzene	5	1.48	1.85	2.17	2	2.18	2.3	2.35	0.303	0.952	5
83	1,2,3-Trichlorobenzene	5	1.17	1.55	1.49	1.43	1.8	1.81	1.78	0.238	0.748	5
84	Hexachlorobutadiene	2	2.35	2.16	1.64	2.02	1.88	1.92	2.25	0.243	0.763	2
85	Naphthalene	5	0.59	0.49	0.52	0.32	0.39	0.39	0.38	0.095	0.299	5
86	Cyclohexane	2	1.85	1.73	1.58	2	1.42	1.97	2.04	0.233	0.733	2

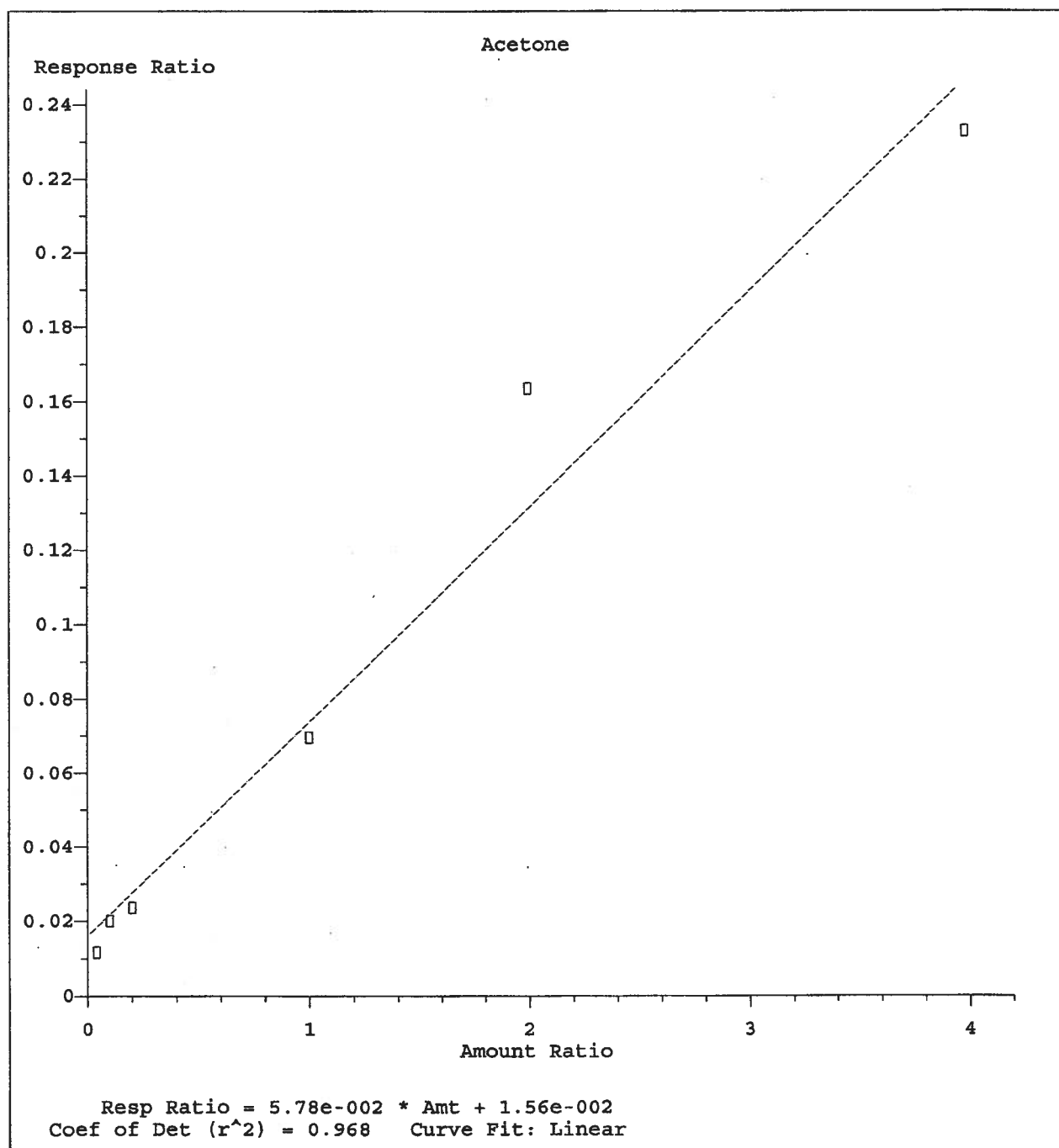
Data File lds per level:

2	V62986	V62987	V62988	V62989	V62990	V62991	V62992
5	V62742	V62743	V62744	V62745	V62747	V62748	V62749
200	V64078	V64079	V64080	V64081	V64082	V64083	V64084
*5	V64990	V64991	V64992	V64993	V64994	V64995	V64996
1	V64982	V64983	V64984	V64985	V64986	V64987	V64988



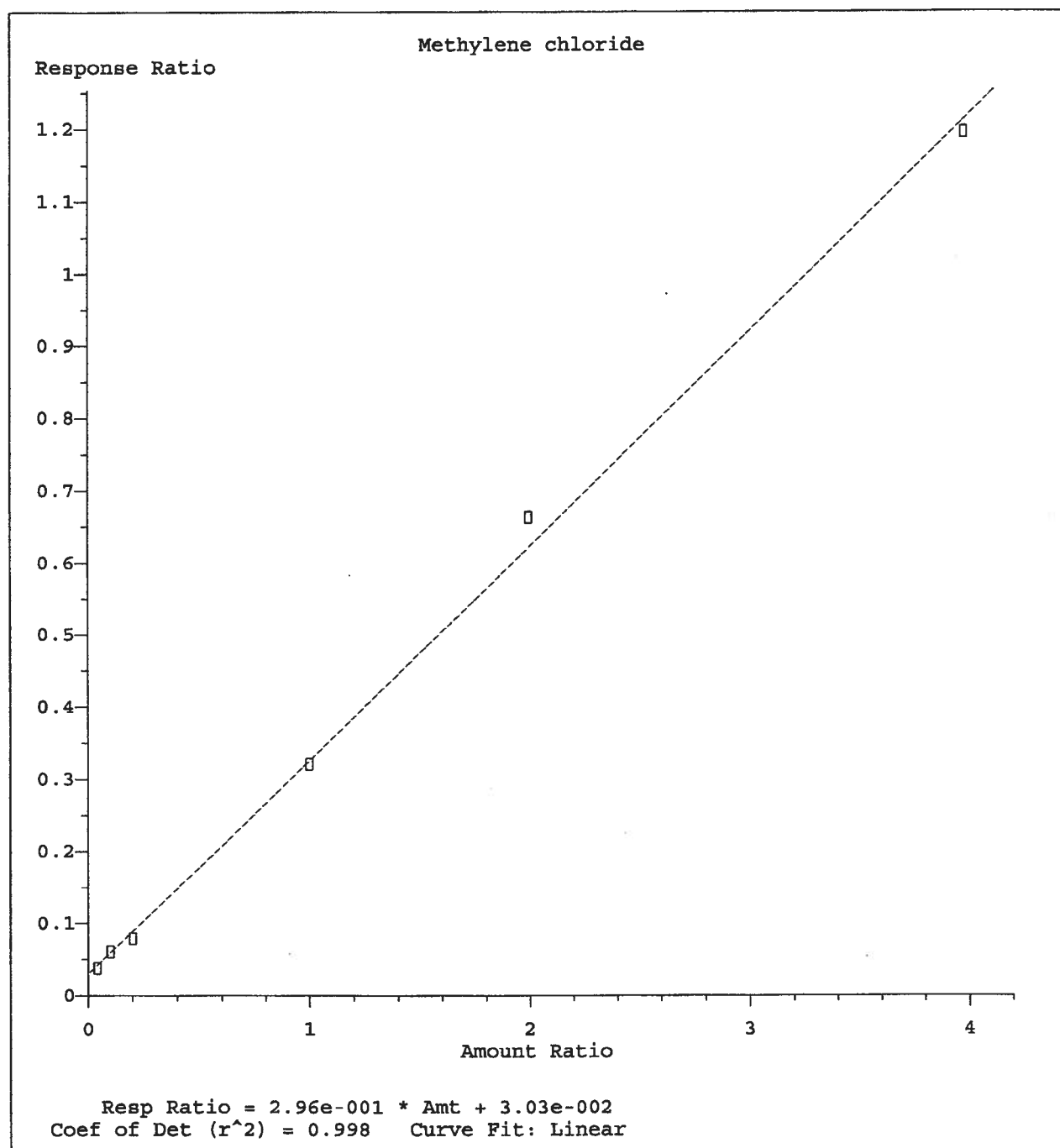


Method Name: C:\msdchem\1\METHODS\092409.M  
Calibration Table Last Updated: Sat Oct 03 08:04:31 2009



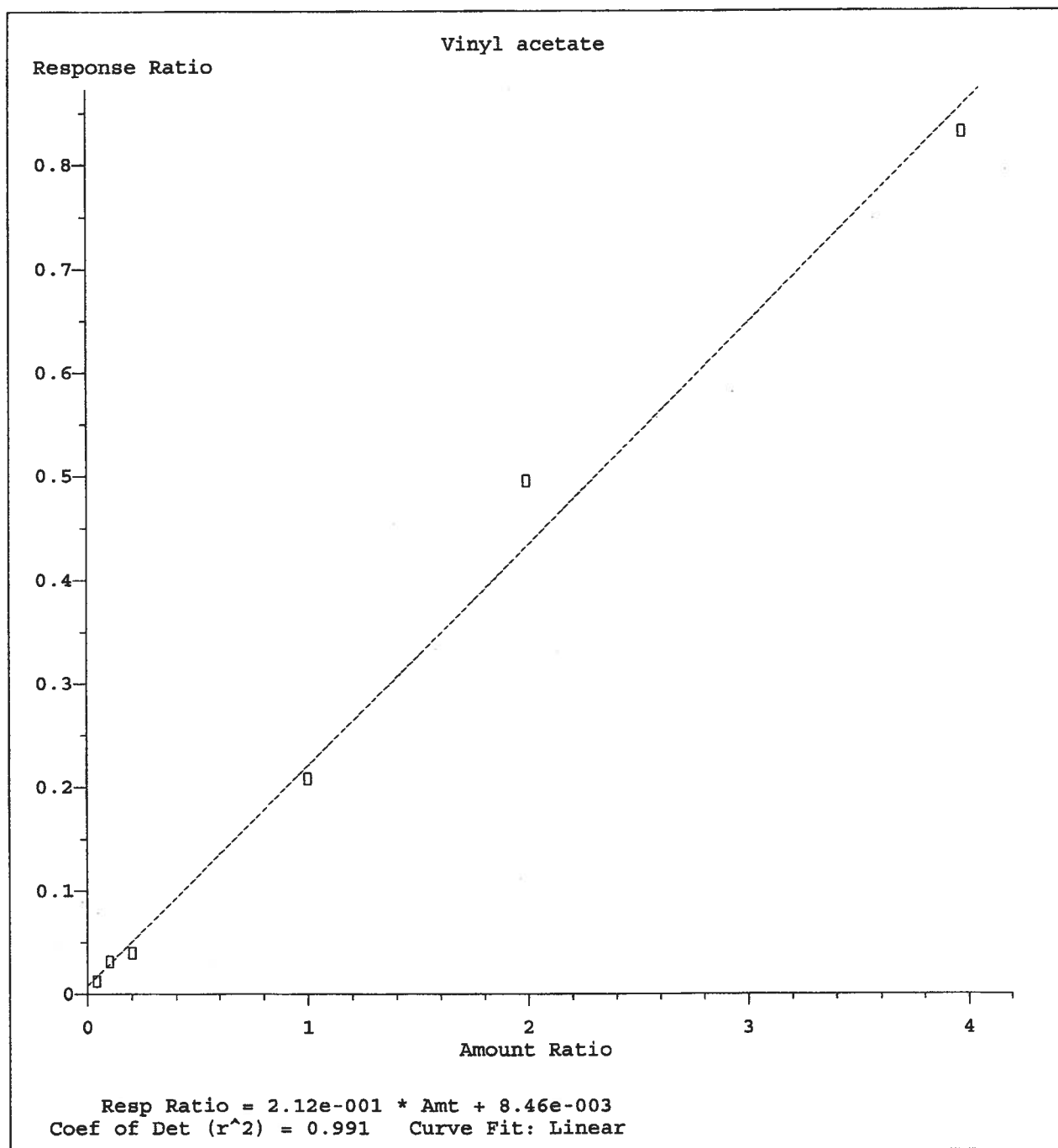
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 Calibration Table Last Updated: Sat Oct 03 08:04:31 2009

-95c-



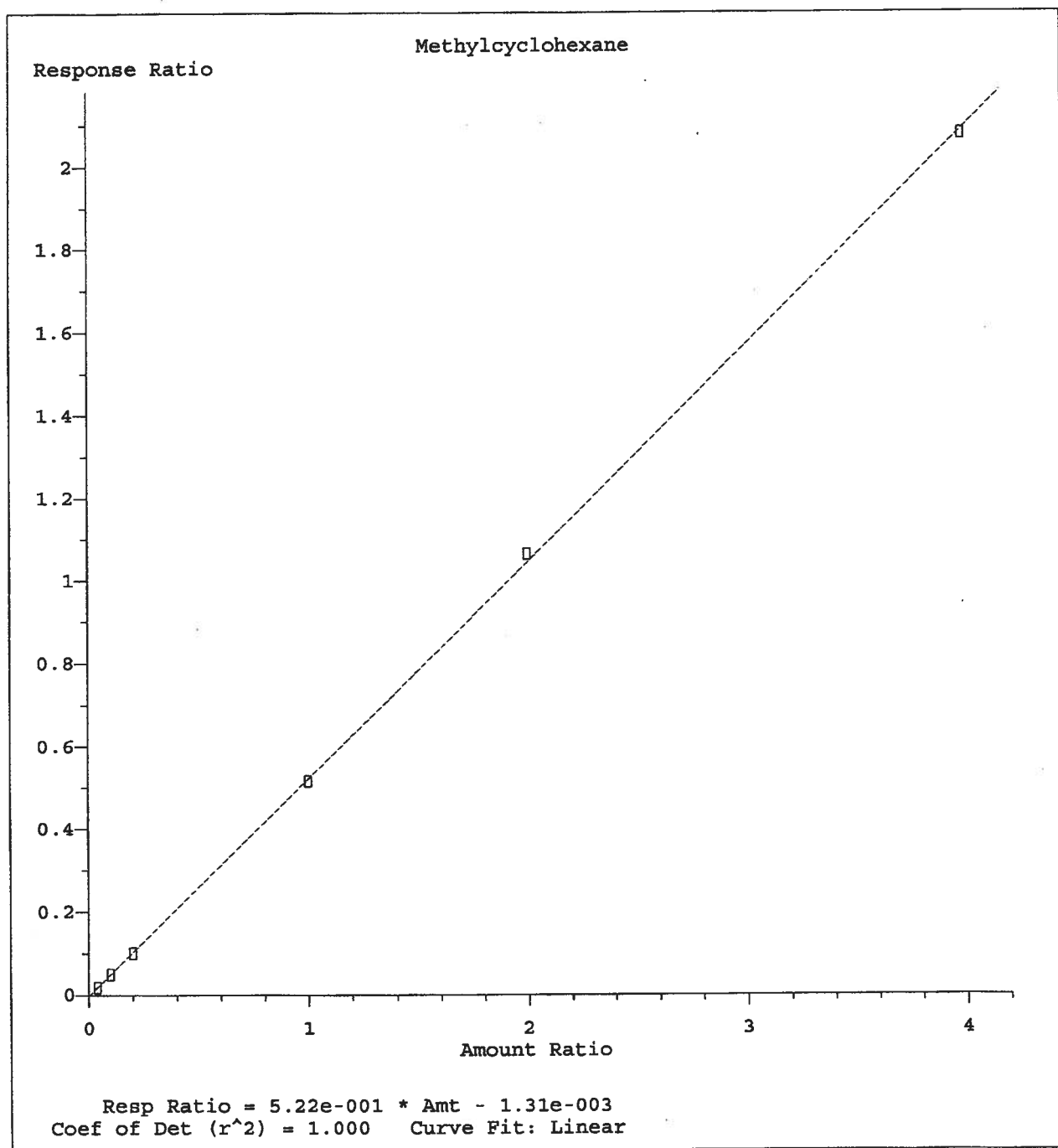
Method Name: C:\msdchem\1\METHODS\092409.M  
Calibration Table Last Updated: Sat Oct 03 08:04:31 2009

-95d-



Method Name: C:\msdchem\1\METHODS\092409.M  
Calibration Table Last Updated: Sat Oct 03 08:04:31 2009

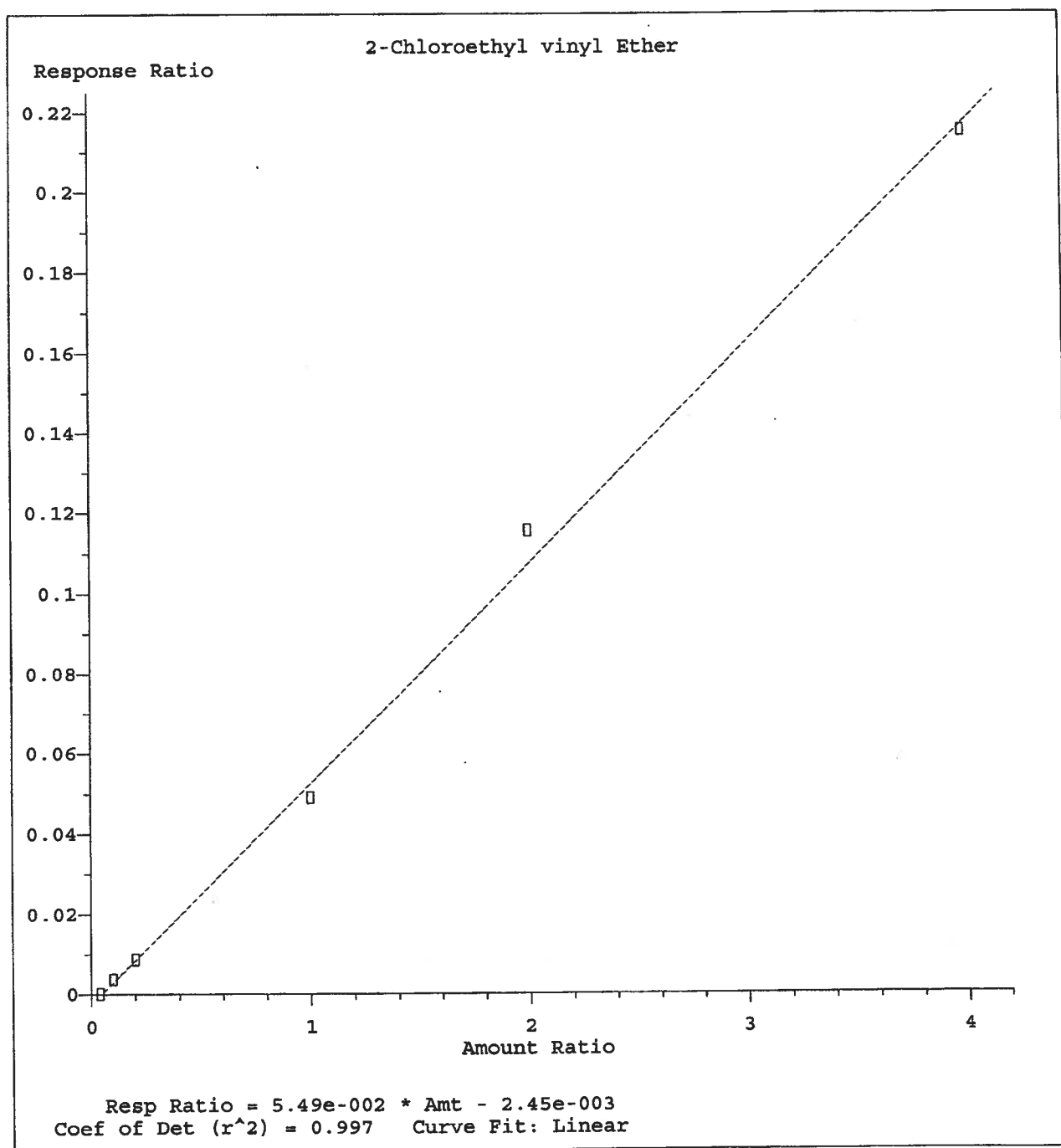
-95e-



Method Name: C:\msdchem\1\METHODS\092409.M  
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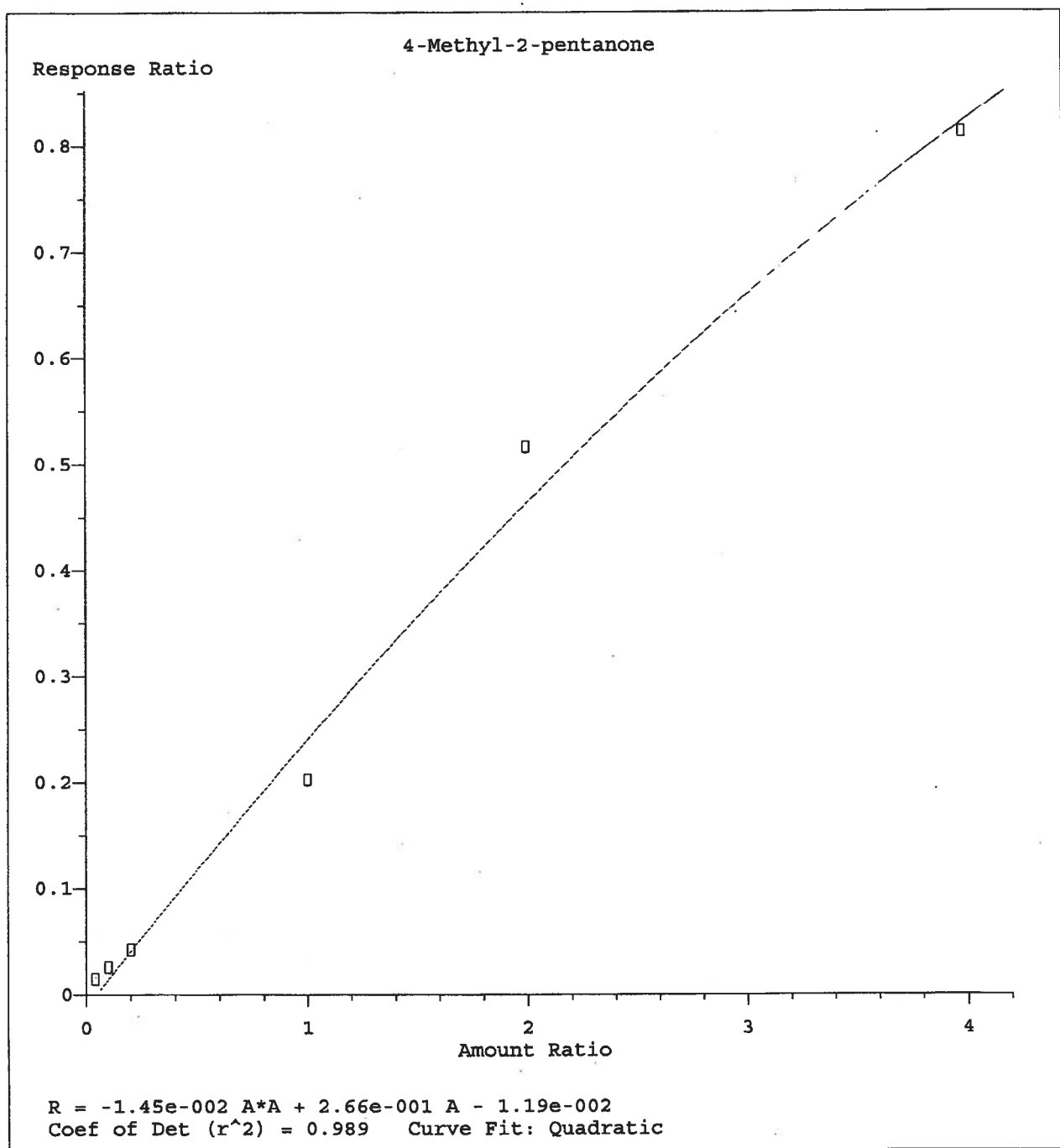


-95f-



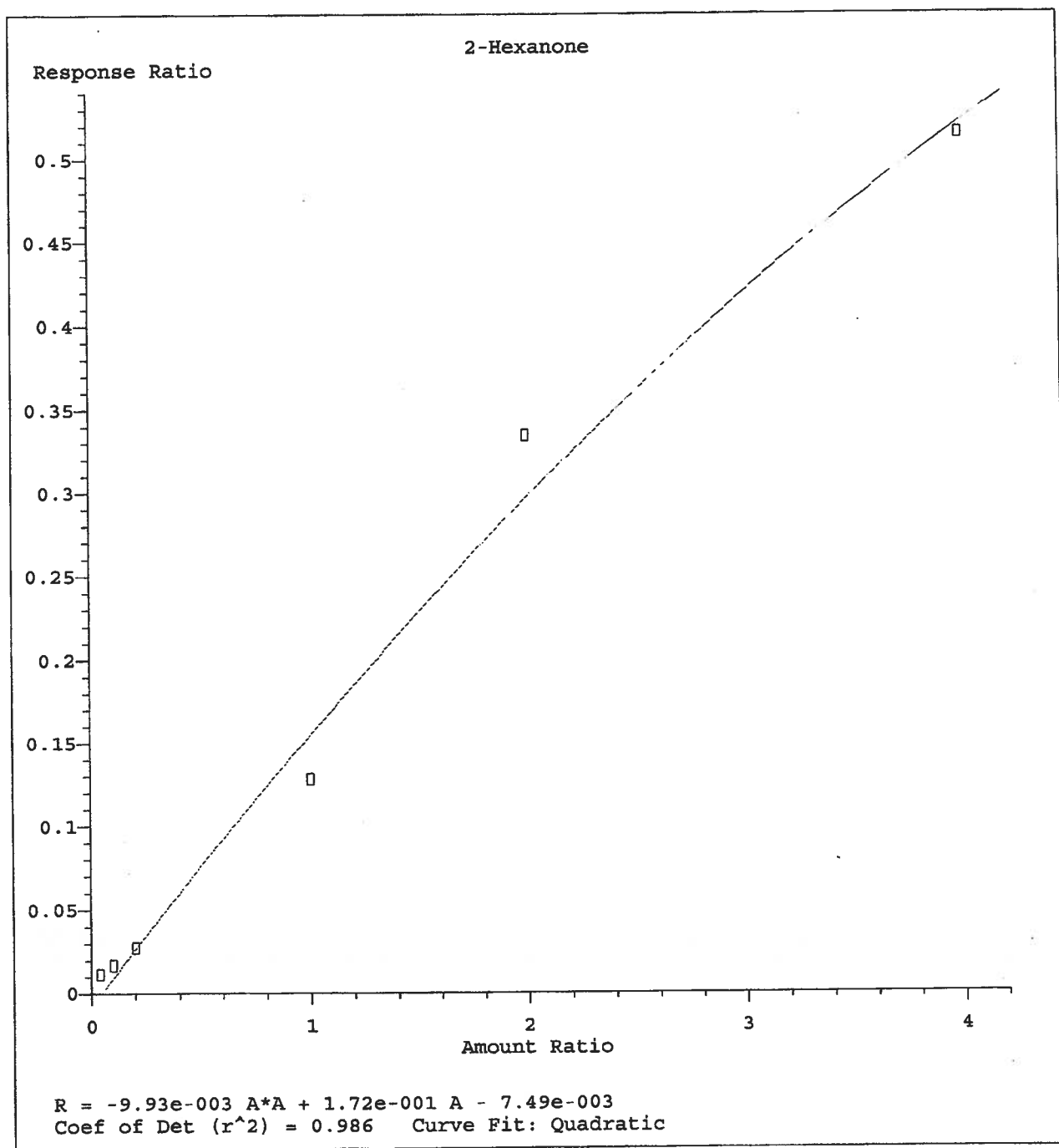
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Calibration Table Last Updated: Sat Oct 03 08:04:31 2009

-95g-



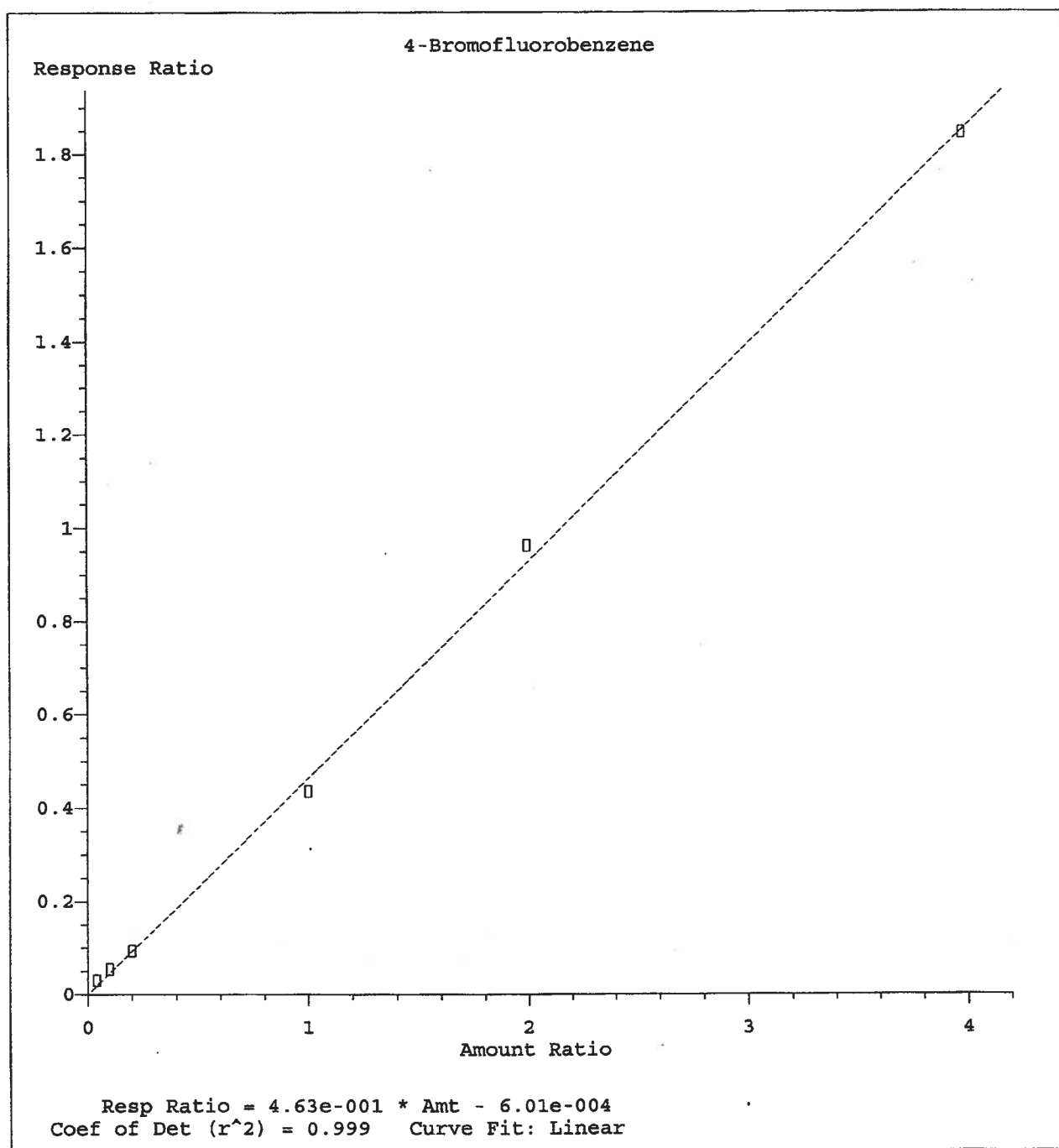
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-95h-



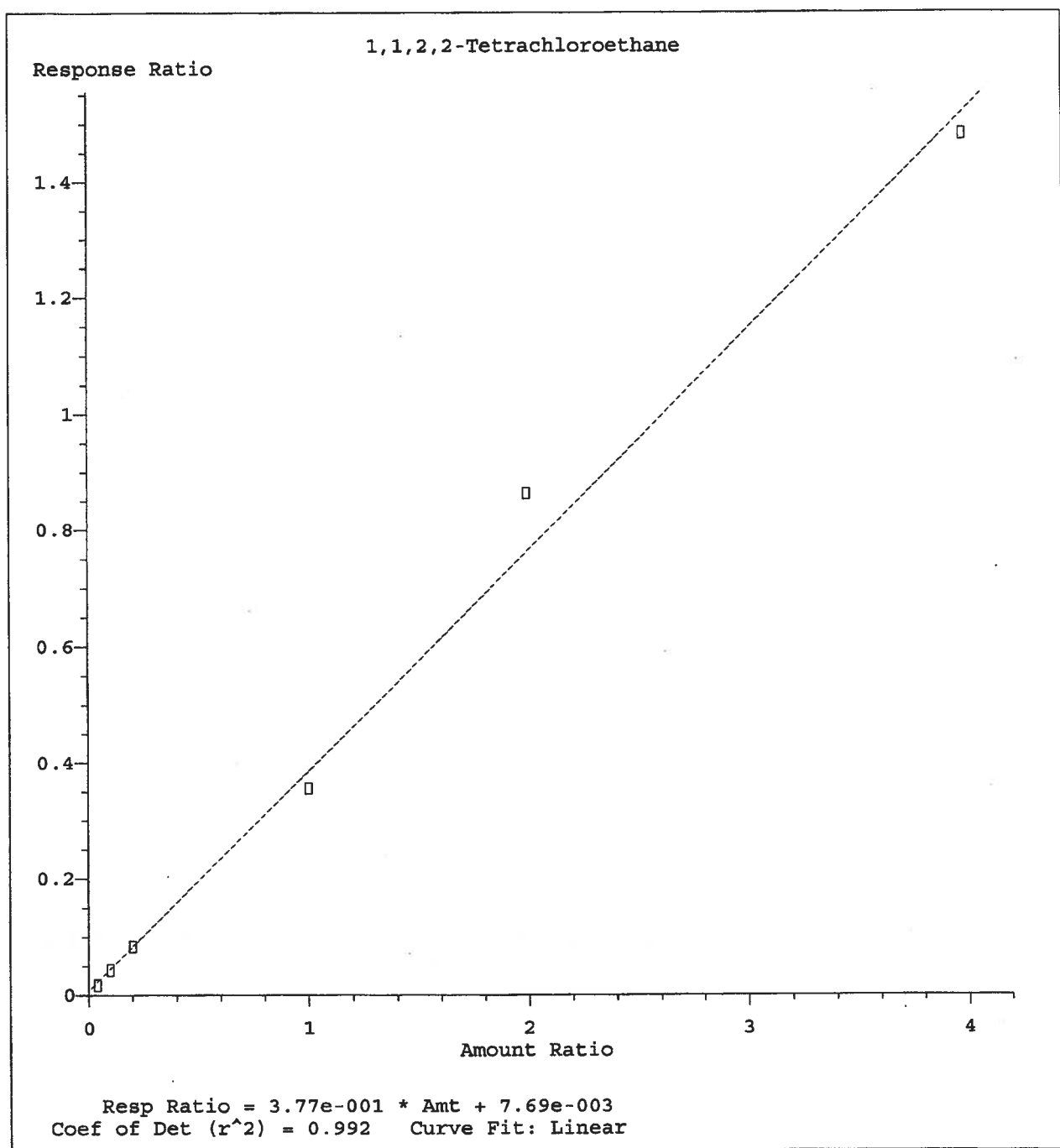
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Calibration Table Last Updated: Sat Oct 03 08:04:31 2009

-951-



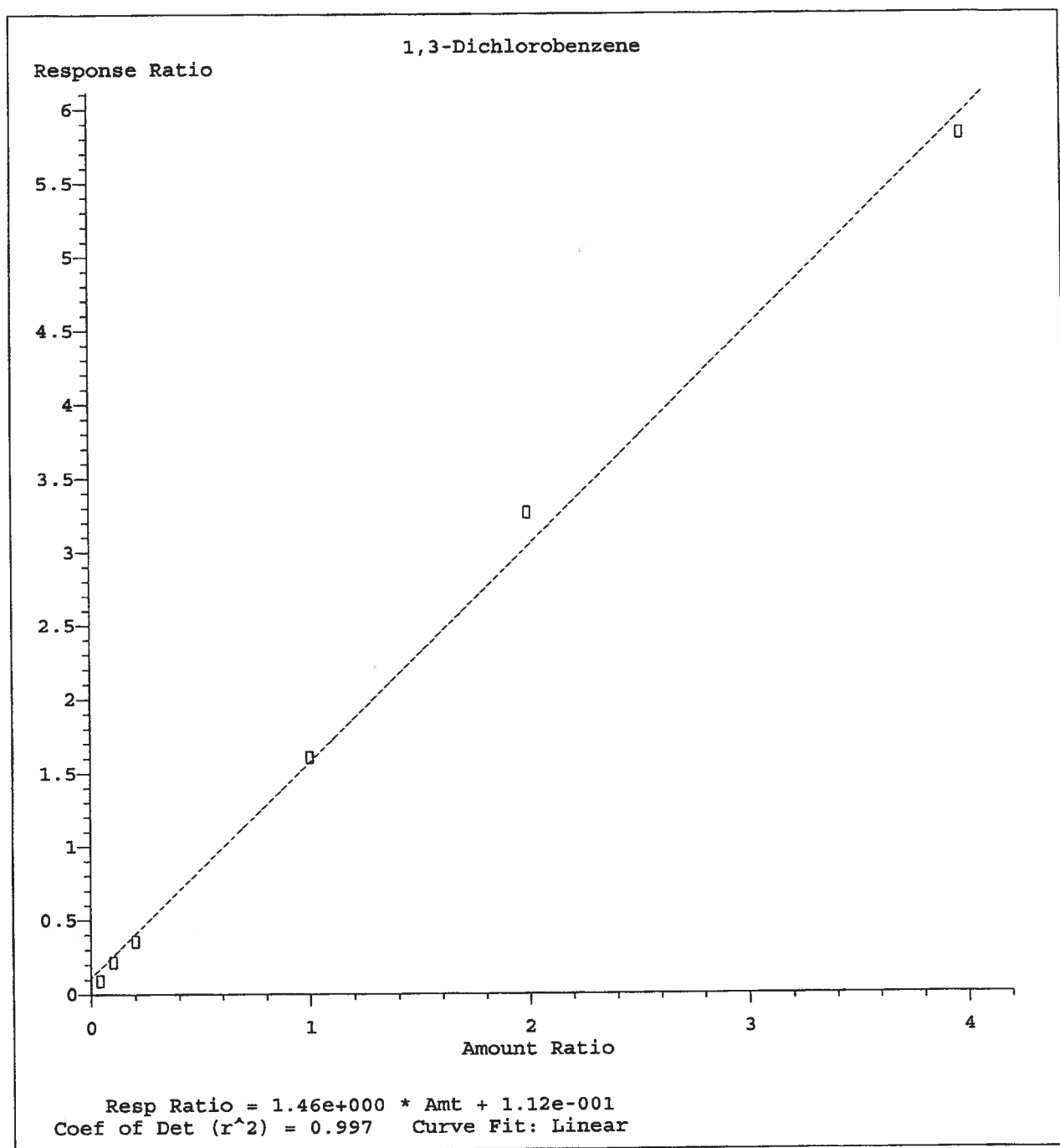
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Calibration Table Last Updated: Sat Oct 03 08:04:31 2009

-95j-



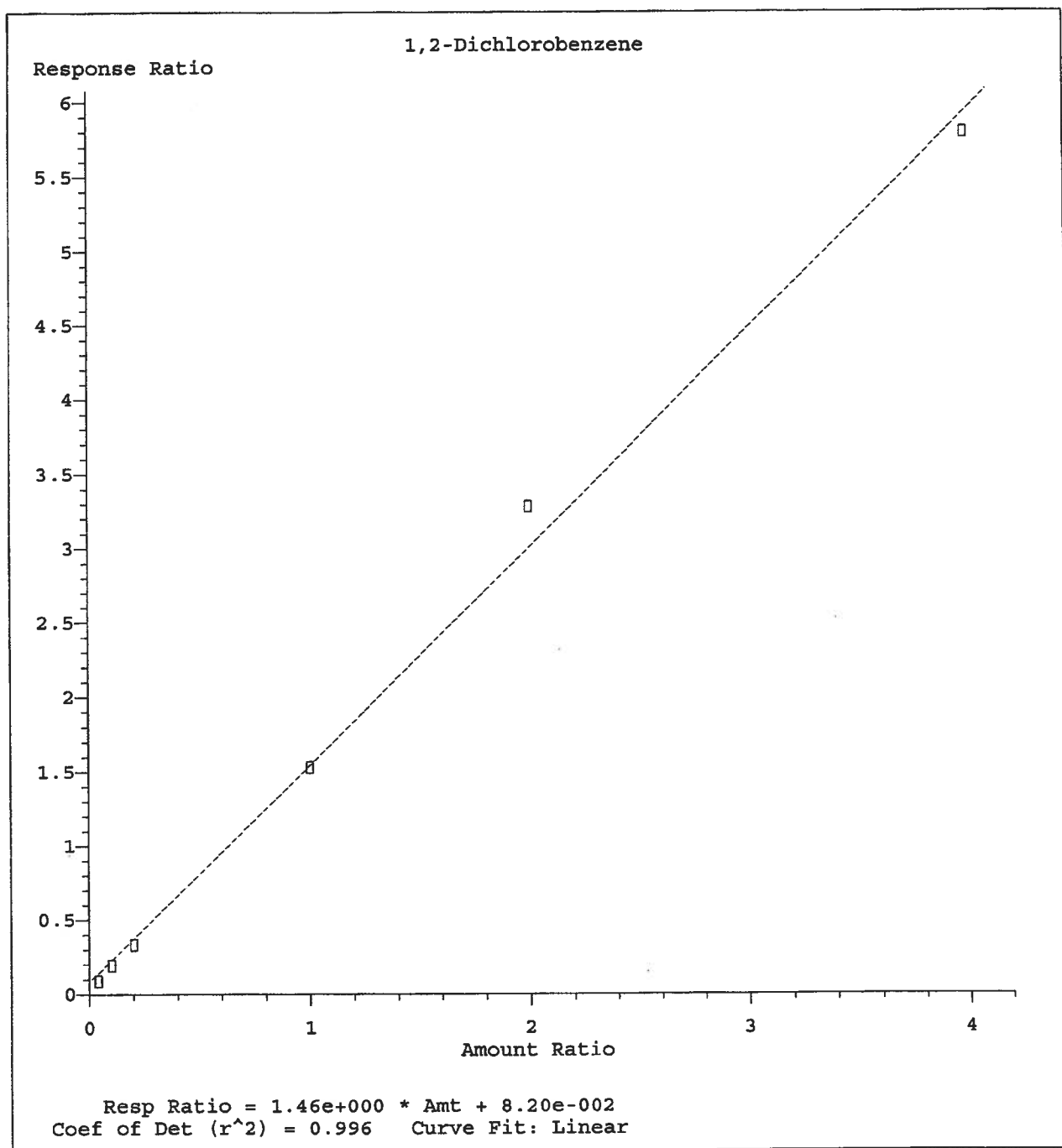
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Calibration Table Last Updated: Sat Oct 03 08:04:31 2009

-95K-



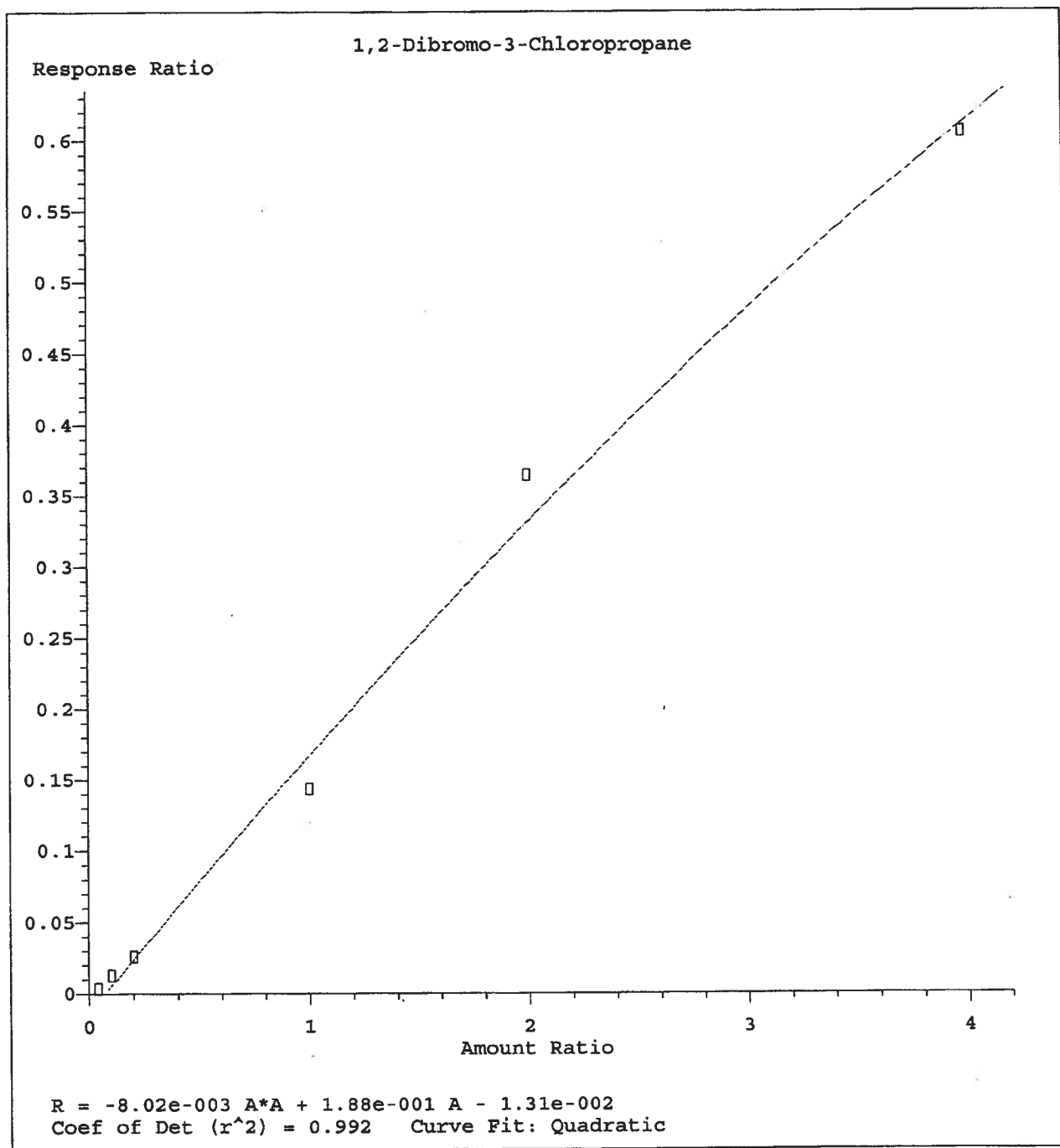
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Calibration Table Last Updated: Sat Oct 03 08:04:31 2009

-95L-



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Calibration Table Last Updated: Sat Oct 03 08:04:31 2009

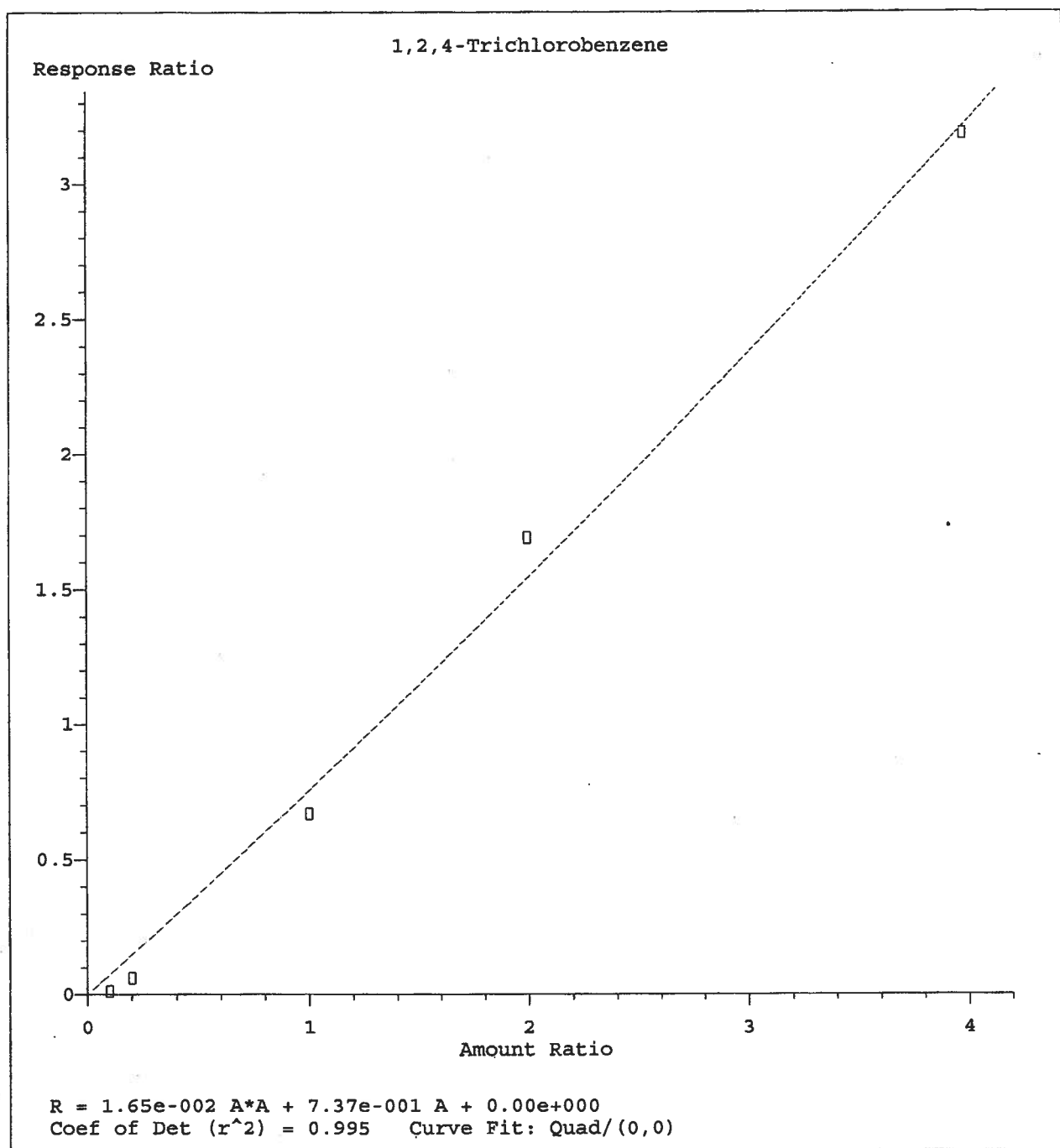
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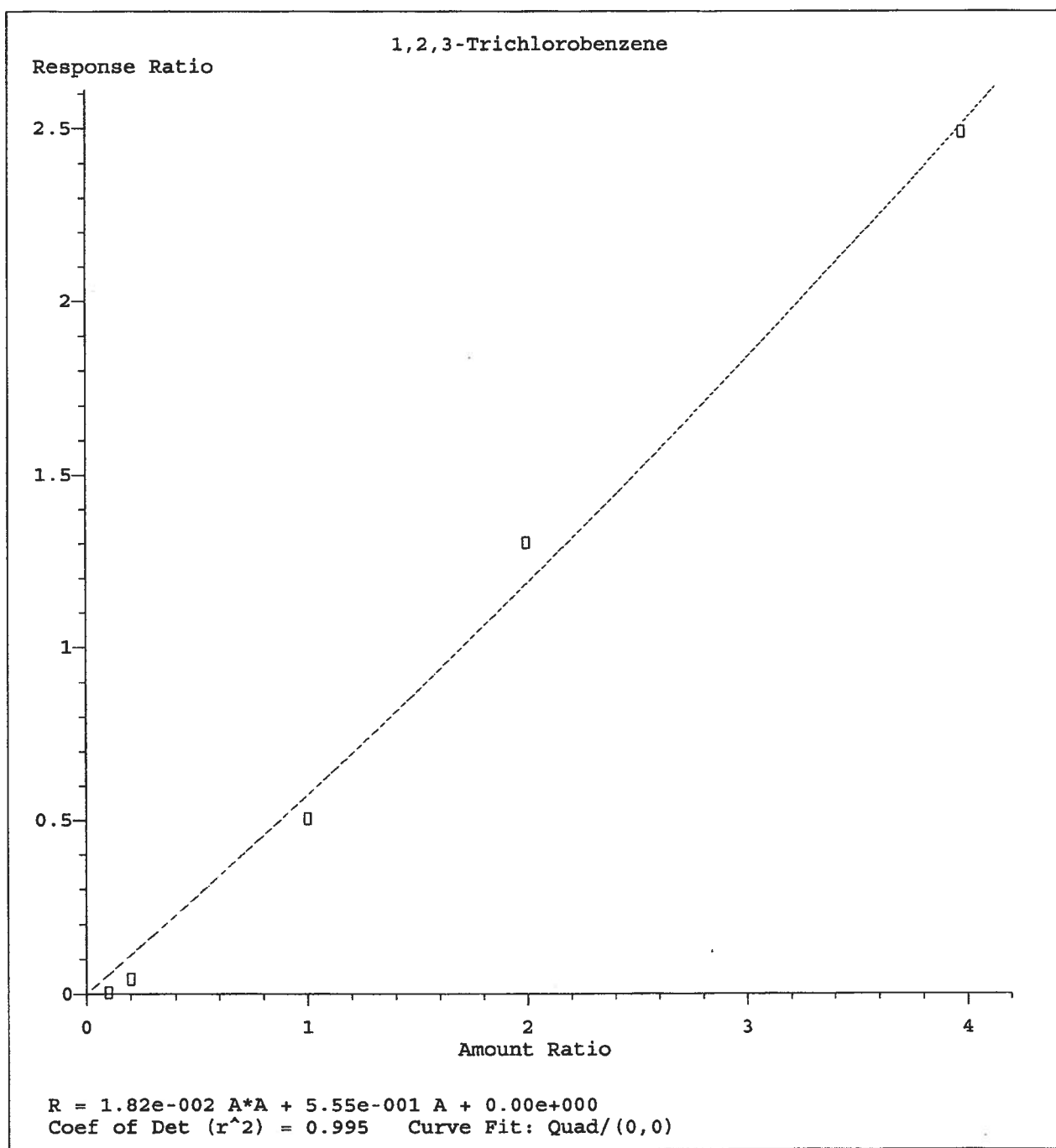


- 95n-



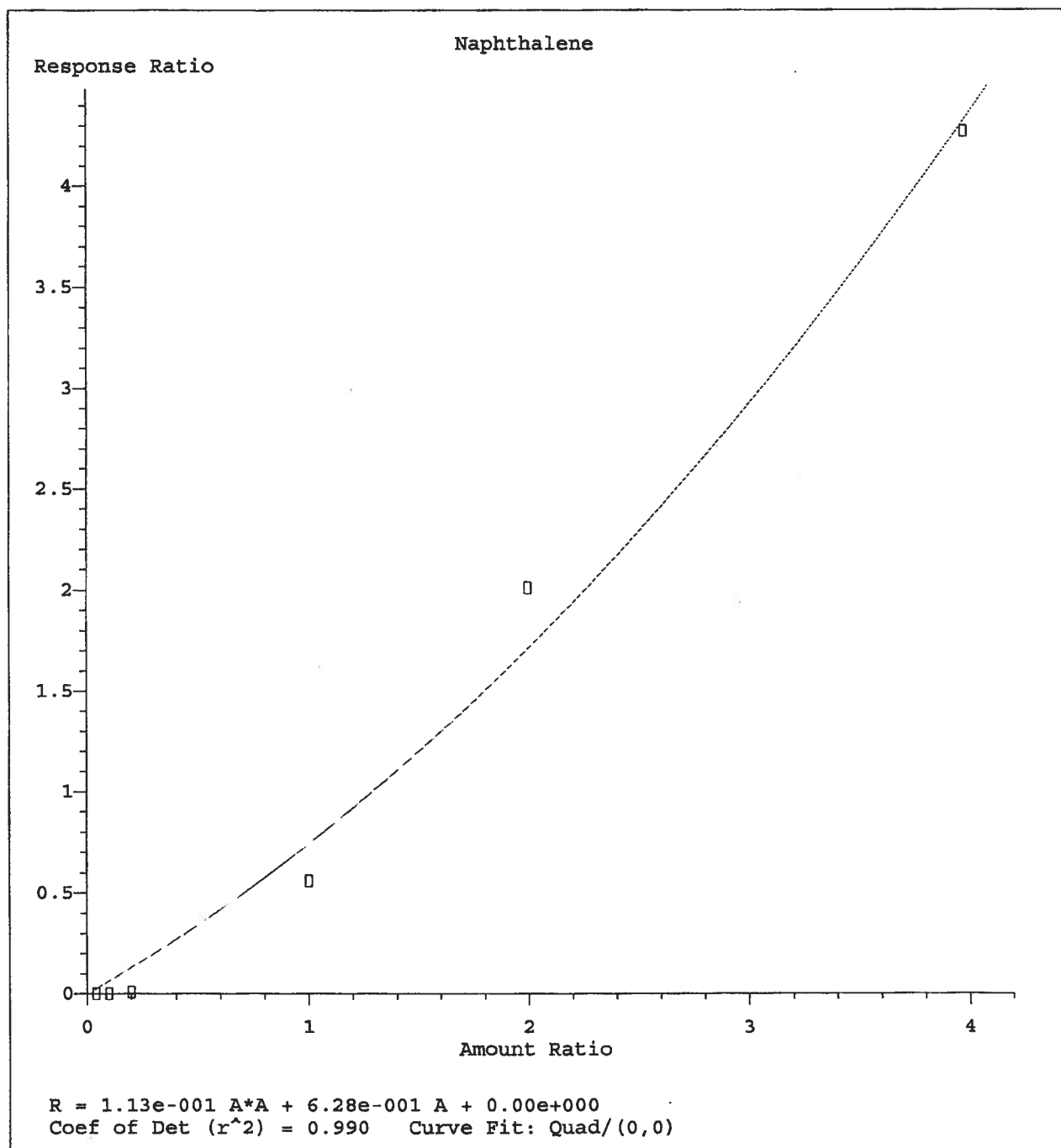
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Calibration Table Last Updated: Sat Oct 03 08:04:31 2009

-950-



Method Name: C:\msdchem\1\METHODS\092409.M  
Calibration Table Last Updated: Sat Oct 03 08:04:31 2009

-95p-



Method Name: C:\msdchem\1\METHODS\092409.M  
Calibration Table Last Updated: Sat Oct 03 08:04:31 2009

**Pesticides Analysis Report for Non-potable Water**

Client: **Lu Engineers**

Client Job Site: **Clarkson ERP**

Lab Project Number: **09-3381**  
Lab Sample Number: **10419**

SDG Group: **10419**

Client Job Number: **40503**

Field Location: **MW-1**

Field ID Number: **N/A**

Sample Type: **Water**

Date Sampled: **09/16/2009**

Date Received: **09/17/2009**

Date Analyzed: **09/22/2009**

Date Reissued: **09/20/2010**

Spiked Compound	Sample Results in ug / L	MS Spiked in ug / L	MS Results in ug / L	MS Percent Recovery	MSD Spiked in ug / L	MSD Results in ug / L	MSD Percent Recovery	MS / MSD % RPD
g-BHC *	ND< 1.00	0.500	0.198	39.6	0.500	0.324	64.7	48.1
Heptachlor	ND< 1.00	0.500	0.219	43.8	0.500	0.353	70.6	46.9
Aldrin	ND< 1.00	0.500	0.225	45.0	0.500	0.351	70.1	43.6
Dieldrin	ND< 1.00	0.500	0.247	49.4	0.500	0.361	72.3	37.6
Endrin	ND< 1.00	0.500	0.286	57.2	0.500	0.412	82.5	36.2
4,4'-DDT	ND< 1.00	0.500	0.293	58.6	0.500	0.387	77.3	27.5

ELAP Number 10958

\* Outside QC Limits for MS Percent Recovery.

Method: EPA 8082

4C  
PCB METHOD BLANK SUMMARY

SAMPLE NO.

Water PB 9/23

Lab Name: Paradigm Environmental Services

Client Name: Lu Engineers

Lab Project #: 09-3381

Client Project #: 40503

SDG No.: 10419

Client Project Name: Clarkson ERP Site

Lab File ID: 092309B\016F1901.D

Date Analyzed: 9/24/2009

Extraction(type): MeCl2->Hexane

Time Analyzed: 5:29

Matrix: (soil/water) water

Instrument ID: Instrument 1

Date Extracted: 9/23/2009

GC Column: ECD1 A ID(mm): 0.32

Sulfur Cleanup(Y/N): N

narrow bore

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	N/A	Water LCS 9/23	9/24/2009
02	MW-1	10419	9/24/2009
03	MW-1MS	10419MS	9/24/2009
04	MW-1MSD	10419MSD	9/24/2009
05	MW-3	10420	9/24/2009
06	MW-3/Field Duplicate	10421	9/24/2009
07	MW-4	10422	9/24/2009
08	Field Blank	10423	9/24/2009
09	MW-2	10425	9/24/2009
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

COMMENTS:

**Jodi Zimmerman**

---

**From:** "Val Miller" <vmiller@paradigmenv.com>  
**Date:** Tuesday, October 05, 2010 4:07 PM  
**To:** "Jodi Zimmerman" <ezimmer976@msn.com>  
**Subject:** RE: SDG#10419, 09-3381-response and reissued/additional pages attached

Hi Jodi, you are correct. We do not record the preservation check other than if it is found to be non-compliant (i.e. pH>2 for a metals sample). Then a note will be made on the chain of custody in the lower left hand box that the sample was preserved to compliance at the lab. (i.e. HNO3 added to metals bottle at Lab.). Hope this helps you out. Have a nice evening, Val

**Valentina M. Miller**  
Environmental Data Manager

179 Lake Avenue  
Rochester, NY 14608

OFFICE: 585.647.2530

FAX: 585.647.3311

[vmiller@paradigmenv.com](mailto:vmiller@paradigmenv.com)

[www.paradigmenv.com](http://www.paradigmenv.com)



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**From:** Jodi Zimmerman [mailto:ezimmer976@msn.com]  
**Sent:** Tuesday, October 05, 2010 10:32 AM  
**To:** Val Miller  
**Subject:** Re: SDG#10419, 09-3381-response and reissued/additional pages attached

Hi Val,

Thank you for getting back to me and answering my questions so thoroughly. I do want to be very clear on one point however; your responses have led me to the conclusion that as far as pH is concerned, you do not record the pH of the water samples but at what pH do you 'note to the contrary'?

Regards,  
Jodi

Jodi Zimmerman  
Vali-Data of WNY, LLC  
1514 Davis Rd.  
West Falls, NY 14170  
(716) 655-6530

10/6/2010

## **Data Usability Summary Report**

Vali-Data of WNY, LLC  
1514 Davis Rd.  
West Falls, NY 14170

Town of Clarkson  
Paradigm Environmental Services Inc. SDG#2964  
July 22, 2010  
Sampling date: 02/8/10

Prepared by:  
Jodi Zimmerman  
Vali-Data of WNY, LLC  
1514 Davis Rd.  
West Falls, NY 14170

Town of Clarkson  
SDG# 2964

## **DELIVERABLES**

This Data Usability Summary Report (DUSR) was prepared by evaluating the analytical data package for Lu Engineers, project located in the Town of Clarkson, SDG#2964, Paradigm # 10-0655, submitted to Vali-Data of WNY, LLC on May 17, 2010. The laboratory performed the analyses using USEPA methods, 8260B (Volatile Organics), 8270C (Semi-Volatile Organics), 8081 (Pesticides), 8082 (PCBs), 6010B (Inorganics) and 7471A (Mercury).

## **VOLATILE ORGANIC COMPOUNDS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Internal Standard (IS) Area Performance
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration
- GC/MS Performance Check

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

## **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Method Blank, Field Duplicate Sample Precision, Compound Quantitation, Initial Calibration and Continuing Calibration.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

## **DATA COMPLETENESS**

All criteria were met.

## **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met except the 'Volatile Analysis-Spike Recovery Limits' did not contain the target analytes spiked in the Laboratory Control Samples or Matrix Spikes. An updated page is attached.



**CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

**HOLDING TIMES**

All holding times were met.

**INTERNAL STANDARD (IS)**

The IS met criteria.

**SURROGATE SPIKE RECOVERIES**

Surrogate recoveries were acceptable.

**METHOD BLANK**

All criteria were met except Acetone, Naphthalene and 1,2,3-Trichlorobenzene were detected above the MRL and should be recorded as detected in Soil LRB 02/16 and qualified as estimated in the associated samples and spikes where detected.

**FIELD DUPLICATE SAMPLE PRECISION**

All criteria were met except Carbon disulfide, Methylcyclohexane, 1,2-Dibromoethane and 1,1,2,2-Tetrachloroethane were detected in CS-GP-18-07D and not CS-GP-18-07.

**LABORATORY CONTROL SAMPLES**

All criteria were met.

**MS/MSD**

All criteria were met.

**COMPOUND QUANTITATION**

All criteria were met except several target analytes were detected in the samples but not recorded.

**INITIAL CALIBRATION**

All criteria were met except the %RSD of Acetone and Methylene Chloride were outside ASP outer QC limits. These target analytes should be qualified as estimated in all samples, blanks and spikes. Alternate forms of regression were used on these target analytes (see attached pages).

**CONTINUING CALIBRATION**

All criteria were met except the %RSD of Acetone and Methylene Chloride were outside ASP outer QC limits. These target analytes should be qualified as estimated in all samples, blanks and spikes. Alternate forms of regression were used on these target analytes (see attached pages).

**GC/MS PERFORMANCE CHECK**

All criteria were met.

## **SEMIVOLATILE ORGANIC COMPOUNDS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Internal Standard (IS) Area Performance
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration
- GC/MS Performance Check

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Field Duplicate Sample Precision, Laboratory Control Samples, MS/MSD, Compound Quantitation and Initial Calibration.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

### **DATA COMPLETENESS**

All criteria were met.

### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met.

### **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

### **HOLDING TIMES**

All holding times were met.

### **INTERNAL STANDARD (IS)**

All criteria were met.

### **SURROGATE SPIKE RECOVERIES**

All criteria were met.

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**METHOD BLANK**

All criteria were met.

**FIELD DUPLICATE SAMPLE PRECISION**

All criteria were met except Bis(2-ethylhexyl) phthalate was detected in CS-GP-18-07D and not CS-GP-18-07.

**LABORATORY CONTROL SAMPLES**

All criteria were met except several target analytes were detected but not recorded.

**MS/MSD**

All criteria were met except several target analytes were detected but not recorded.

**COMPOUND QUANTITATION**

All criteria were met except Fluoranthene was detected in sample CS-GP-16-8.5 as a TIC and should have been recorded as detected on the Form 1.

**INITIAL CALIBRATION**

All criteria were met except the %RSD of Benzaldehyde was outside ASP outer QC limits and should be qualified as estimated in all samples, blanks and spikes.

The %RSD was outside QC limits for Pentachlorophenol. The RRF of Indeno(1,2,3-cd)pyrene was outside QC limits. ASP allows for up to 4 target analytes to be outside QC limits as long as they are within the outer limits. No further action is required.

Paradigm used alternate forms of regression on all target analytes whose %RSD was >15%.

Paradigm used the internal standard, Perylene-d<sub>12</sub>, as reference for Atrazine, Benzaldehyde, Caprolactum, Acetophenone and Biphenyl. ASP does not associate these target analytes with Perylene-d<sub>12</sub>.

**CONTINUING CALIBRATION**

All criteria were met except the RRF of Indeno(1,2,3-cd)pyrene was outside QC limits. ASP allows for up to 4 target analytes to be outside QC limits without further action.

**GC/MS PERFORMANCE CHECK**

All criteria were met.

**PESTICIDES**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD

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- Compound Quantitation
- Initial Calibration
- Continuing Calibration

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

#### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Method Blank and Field Duplicate Sample Precision.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

#### **DATA COMPLETENESS**

All criteria were met.

#### **NARRATIVE AND DATA REPORTING FORMS**

All criteria were met.

#### **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met

#### **HOLDING TIMES**

All holding times were met.

#### **SURROGATE SPIKE RECOVERIES**

All criteria were met within ASP QC limits.

#### **METHOD BLANK**

All the criteria were met except Endrin Aldehyde was detected above the MDL, below the reporting limit and should be qualified as estimated in the blank and samples with detects.

#### **FIELD DUPLICATE SAMPLE PRECISION**

All criteria were met except 4,4'-DDD and Endosulfan II were detected in CS-GP-18-07 and not in CS-GP-18-07D. 4,4'-DDE was detected in CS-GP-18-07D but not in CS-GP-18-07.

#### **LABORATORY CONTROL SAMPLES**

All criteria were met.

#### **MS/MSD**

All criteria were met.

#### **COMPOUND QUANTITATION**

All criteria were met.

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**INITIAL CALIBRATION**

All criteria were met.

Paradigm used linear regression on all target analytes and surrogates.

**CONTINUING CALIBRATION**

All criteria were met except the %D for Endrin in Pest CCV 0.100 was outside ASP QC limits off ECD2 B. Since ECD2 B was used for confirmation purposes only, no further action is required. All other target analytes fell within ASP QC limits.

**POLYCHLORINATED BIPHENYLS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Surrogate Spike Recoveries
- Method Blank
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

**OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Method Blank and Compound Quantitation.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

**DATA COMPLETENESS**

All criteria were met.

**NARRATIVE AND DATA REPORTING FORMS**

All criteria were met.

**CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

**HOLDING TIMES**

All holding times were met.

Town of Clarkson

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**SURROGATE SPIKE RECOVERIES**

All criteria were met within ASP QC limits.

**METHOD BLANK**

All the criteria were met except Aroclor 1016 was detected above the MDL, below the reporting limit and should be qualified as estimated in the blank and samples in which it was detected.

**FIELD DUPLICATE SAMPLE PRECISION**

All criteria were met.

**LABORATORY CONTROL SAMPLES**

All criteria were met.

**MS/MSD**

All criteria were met.

**COMPOUND QUANTITATION**

All criteria were met except Aroclor 1016 was detected in the samples above the MDL, below the MRL and should be qualified as estimated. Aroclor 1260 was detected above the MDL, below the MRL in sample CS-GP-07-07 and should be qualified as estimated.

**INITIAL CALIBRATION**

All criteria were met.

Paradigm used linear regression on all target analytes and surrogates.

**CONTINUING CALIBRATION**

All criteria were met.

**METALS**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Method Blank
- Laboratory Control Sample
- MS/MSD
- Duplicate
- Field Duplicate
- Serial Dilution
- Compound Quantitation
- Calibration

Town of Clarkson

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The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above.

#### **OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Method Blank, MS/MSD and Duplicate.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

#### **DATA COMPLETENESS**

All criteria were met.

#### **NARATIVE AND DATA REPORTING FORMS**

All criteria were met.

#### **CHAIN OF CUSTODY AND TRAFFIC REPORTS**

All criteria were met.

#### **HOLDING TIMES**

All holding times were met.

#### **METHOD BLANK**

All criteria were met except target analytes Al, Fe and Mg were detected above the MRL in the Preparation blank, Blk 2/16 s. The concentration of these target analytes were >10x blank result so no further action is required. The target analytes Fe and Mg were detected above the MRL in the Preparation blank, Blk 2/16 s #2. The concentration of these target analytes were >10x blank result so no further action is required.

#### **LABORATORY CONTROL SAMPLE**

All criteria were met.

#### **MS/MSD**

All criteria were met except the %Rec of Al, Sb, Ba, Fe, Mn and K were outside ASP QC limits in CS-GP-01-03MS. The sample concentrations were > 4X spike amount for Al and Fe, therefore no further action is required for these target analytes.

No post digestion spike was performed thus the remaining target analytes should be qualified with an 'N'.

The %Rec of Al, Ca, Sb, Fe, Mg, Mn and K were outside ASP QC limits in CS-GP-20-09MS. The sample concentrations were > 4X spike amount for Al, Ca, Mg, Mn and Fe therefore no further action is required for these target analytes.

No post digestion spike was performed thus the remaining target analytes should be qualified with an 'N'.

Several target analytes were qualified with an 'M' due to the %Rec being outside lab QC limits.

**DUPLICATE**

All criteria were met except the %D was outside ASP QC limits for all target analytes except Sb, Cd, Cr, Se, Ag, Tl and Zn in CS-GP-01-03dup. The target analytes which fell outside QC limits should be qualified with a '\*'.

The %D was outside ASP QC limits for Ca, Cr and Cu in CS-GP-20-09dup. These target analytes should be qualified with a '\*'.

Several target analytes were qualified with a 'D', due to the %D being outside lab QC limits.

**FIELD DUPLICATE**

All criteria were met.

**SERIAL DILUTION**

No serial dilution was performed.

**COMPOUND QUANTITATION**

All criteria were met.

**CALIBRATION**

All criteria were met.

**MERCURY**

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Method Blank
- Laboratory Control Samples
- MS/MSD
- Duplicate
- Field Duplicate
- Compound Quantitation
- Calibration

The items listed above were technically in compliance with the method and SOP criteria with any exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above.

**OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES**

The data are acceptable for use but are qualified below in Compound Quantitation.

Paradigm Environmental only records target analytes detected at a level  $\frac{1}{2}$  MRL or greater. Some target analytes may have been detected above the MDL, below  $\frac{1}{2}$  MRL and should be qualified as estimated.

Town of Clarkson

SDG# 2964



**DATA COMPLETENESS**

All criteria were met.

**NARRATIVE AND DATA REPORTING FORMS**

All criteria were met.

**CHAIN OF CUSTODY**

All criteria were met.

**HOLDING TIMES**

All holding times were met.

**METHOD BLANK**

All criteria were met.

**LABORATORY CONTROL SAMPLES**

All criteria were met.

**MS/MSD**

All criteria were met.

**DUPLICATE**

All criteria were met. Hg was qualified with a 'D' due to the %D being outside lab QC limits.

**FIELD DUPLICATE**

All criteria were met.

**COMPOUND QUANTITATION**

All criteria were met except Hg was detected in all the samples above the MDL, below the MRL and should be qualified as estimated.

**CALIBRATION**

All criteria were met.

**GENERAL CHEMISTRY**

The following items/criteria were reviewed for this analytical suite:

- Percent Moisture

The items listed above were technically in compliance with the method and SOP criteria with any exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above.

**Percent Moisture**

The percent moisture was recorded on a prep log but no Form 1's were submitted.

Town of Clarkson

SDG# 2964

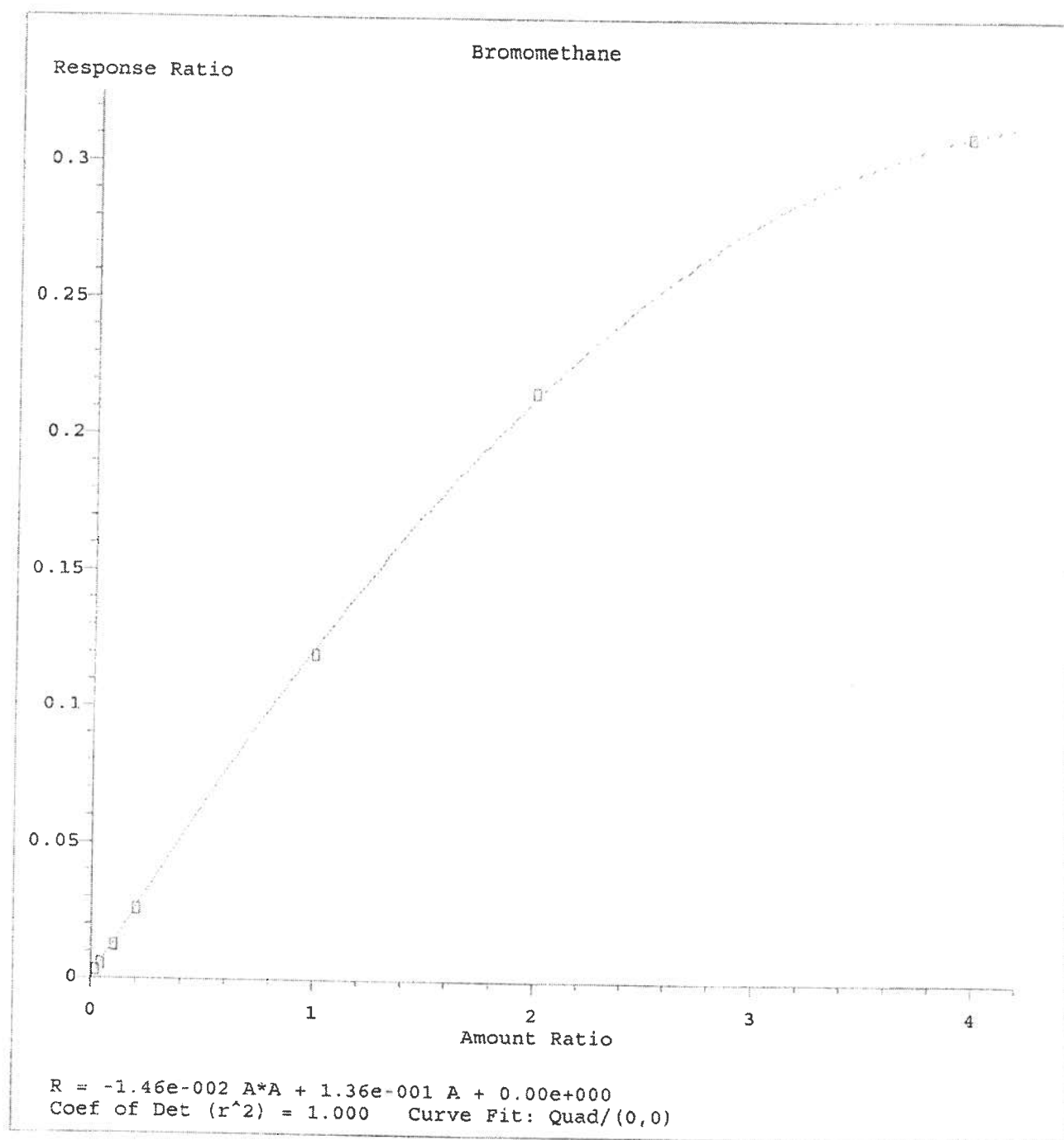
**Volatile Analysis - Spike Recovery Limits**

Spiked Compound	Soil Spike Limits		Soil % RPD Limits		Water Spike Limits		Water % RPD Limits	
	Lower %	Upper %	Lower %	Upper %	Lower %	Upper %	Lower %	Upper %
1,1-Dichloroethene	78.6	130	0	29.5	84.5	128	0	24.4
Benzene	88.5	117	0	18.6	86.0	124	0	17.7
Trichloroethene	88.2	115	0	19.0	86.6	120	0	15.7
Toluene	84.3	116	0	20.4	81.6	123	0	16.9
Chlorobenzene	82.5	109	0	16.3	84.8	113	0	17.7

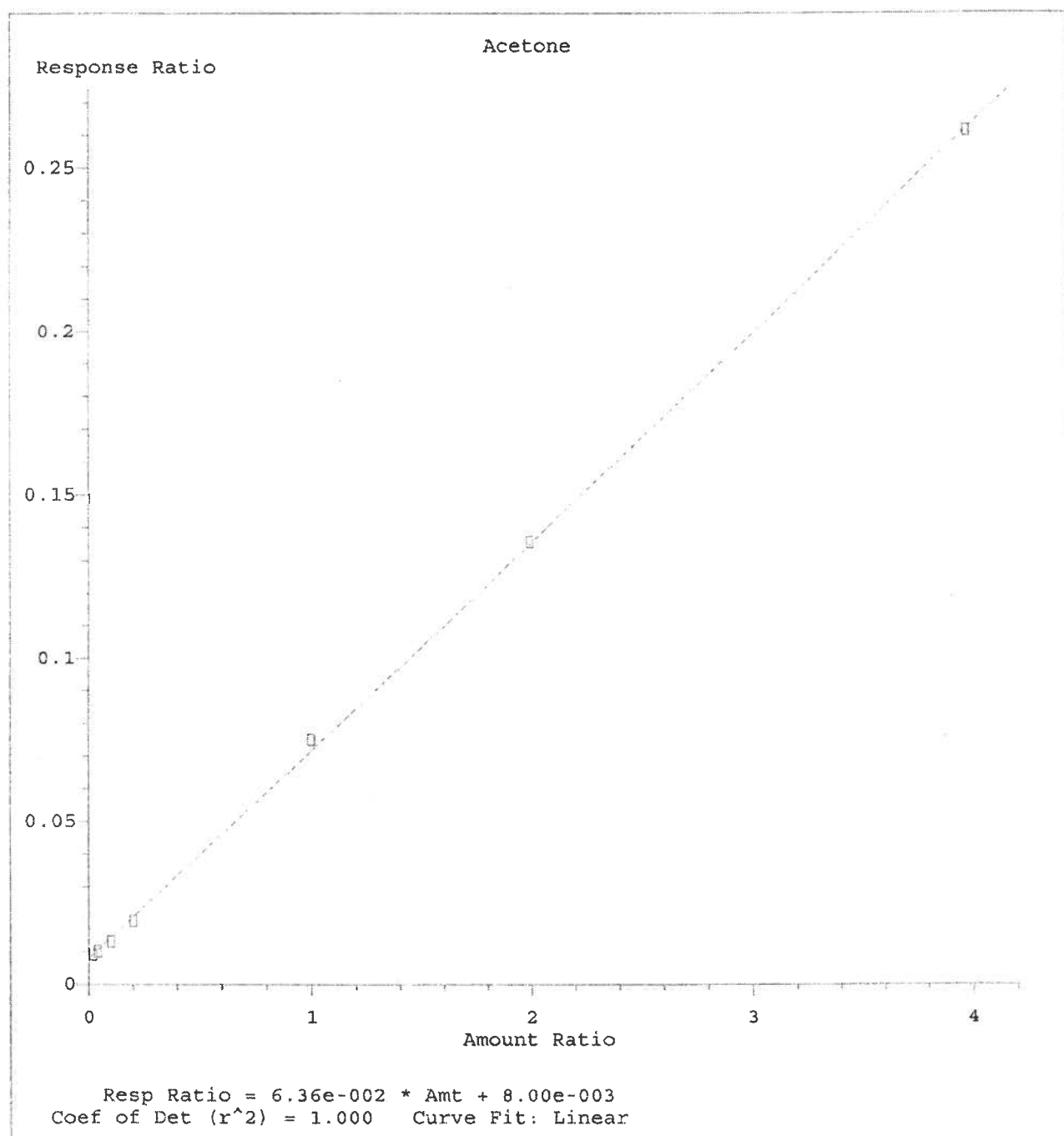
ELAP Number 10958

Limits Effective 01/01/10-03/31/10

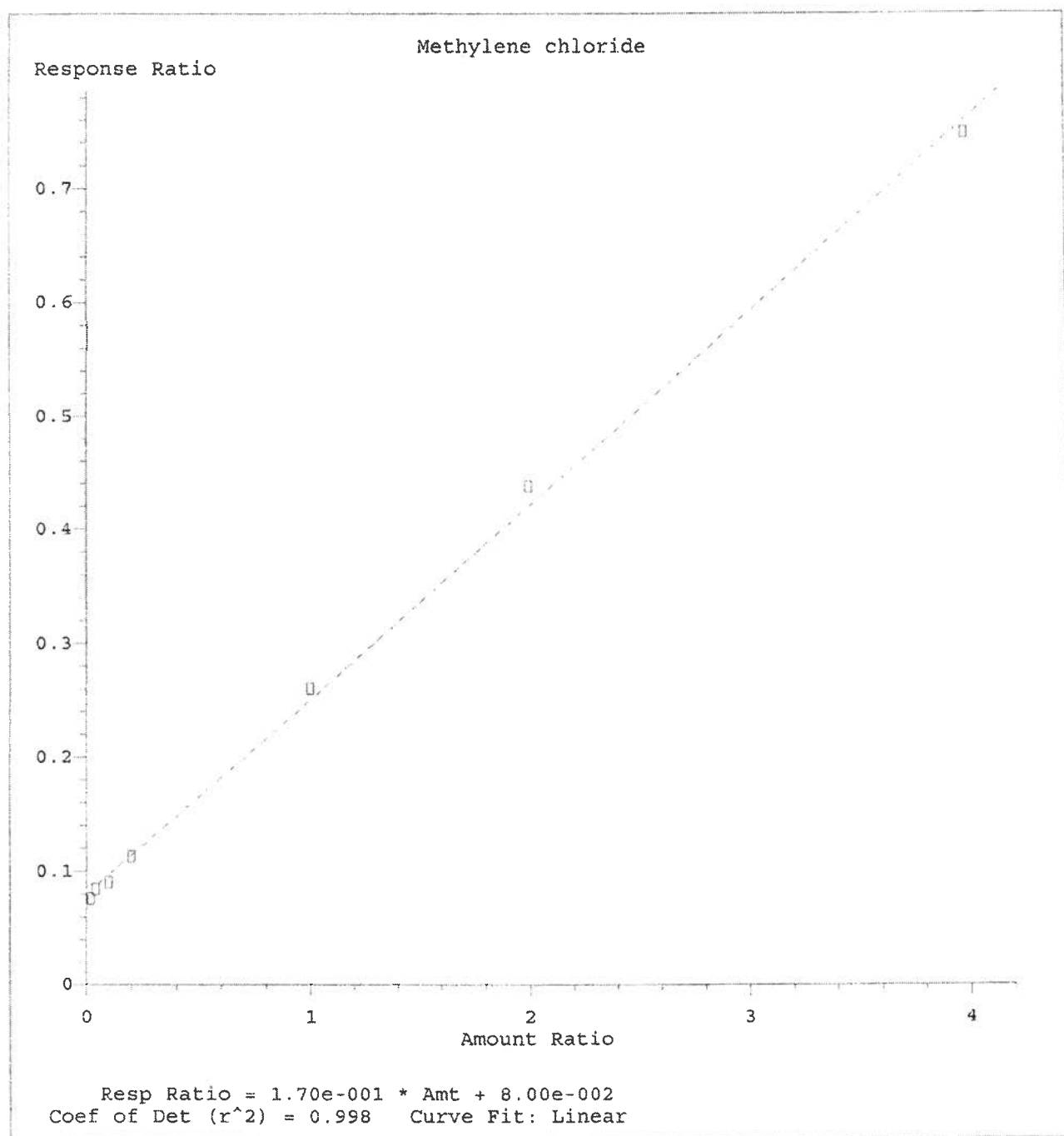
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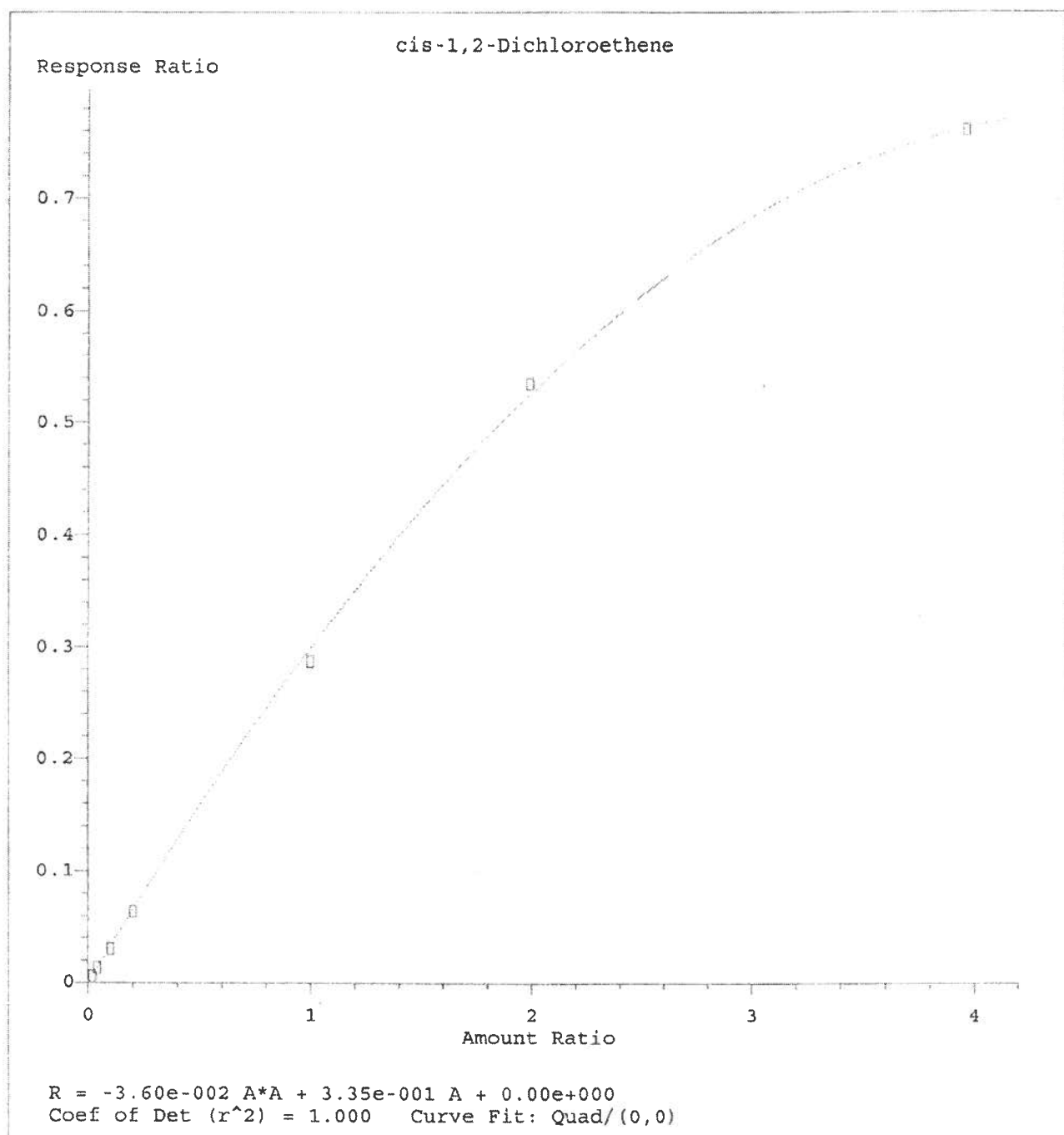
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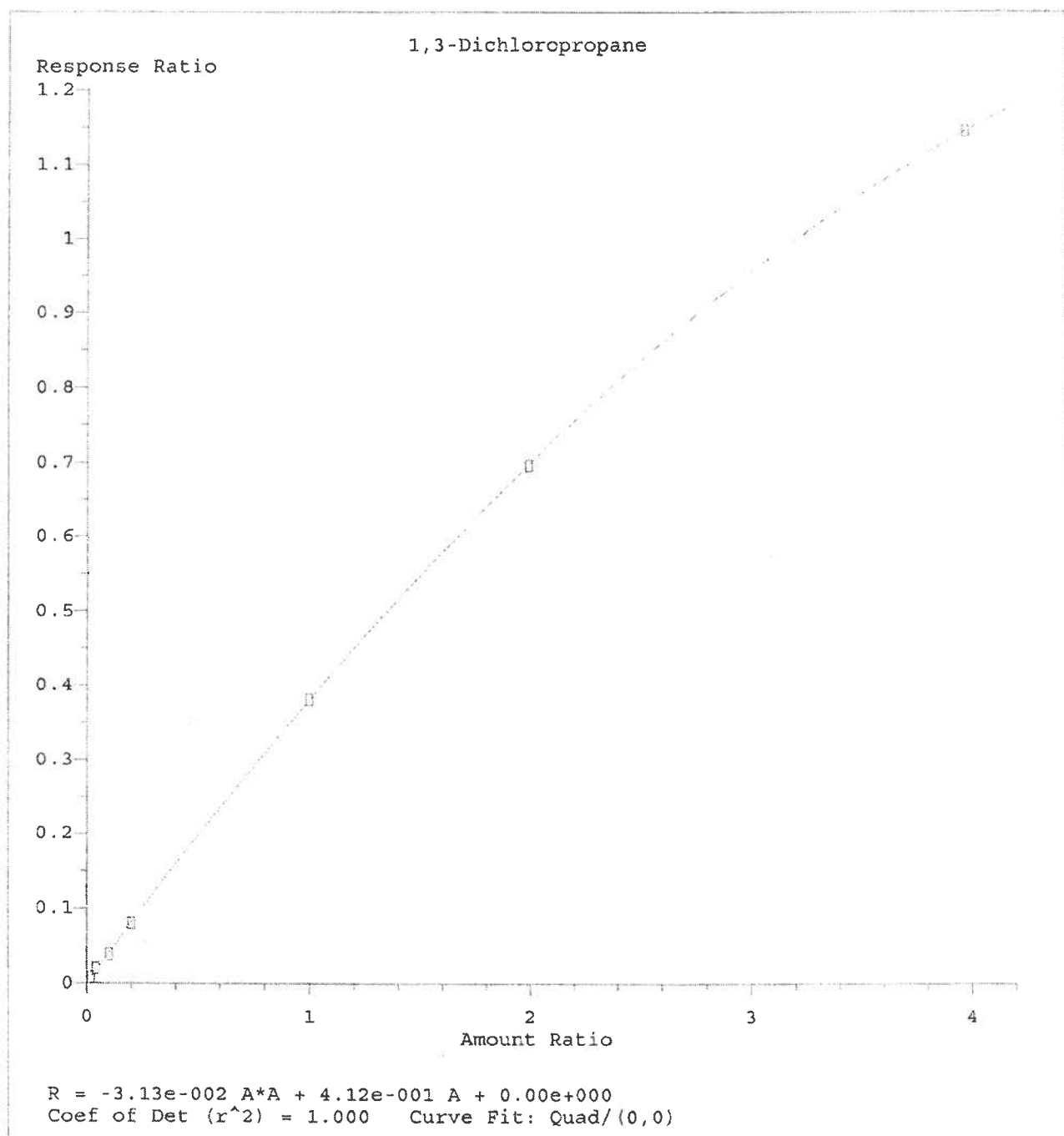
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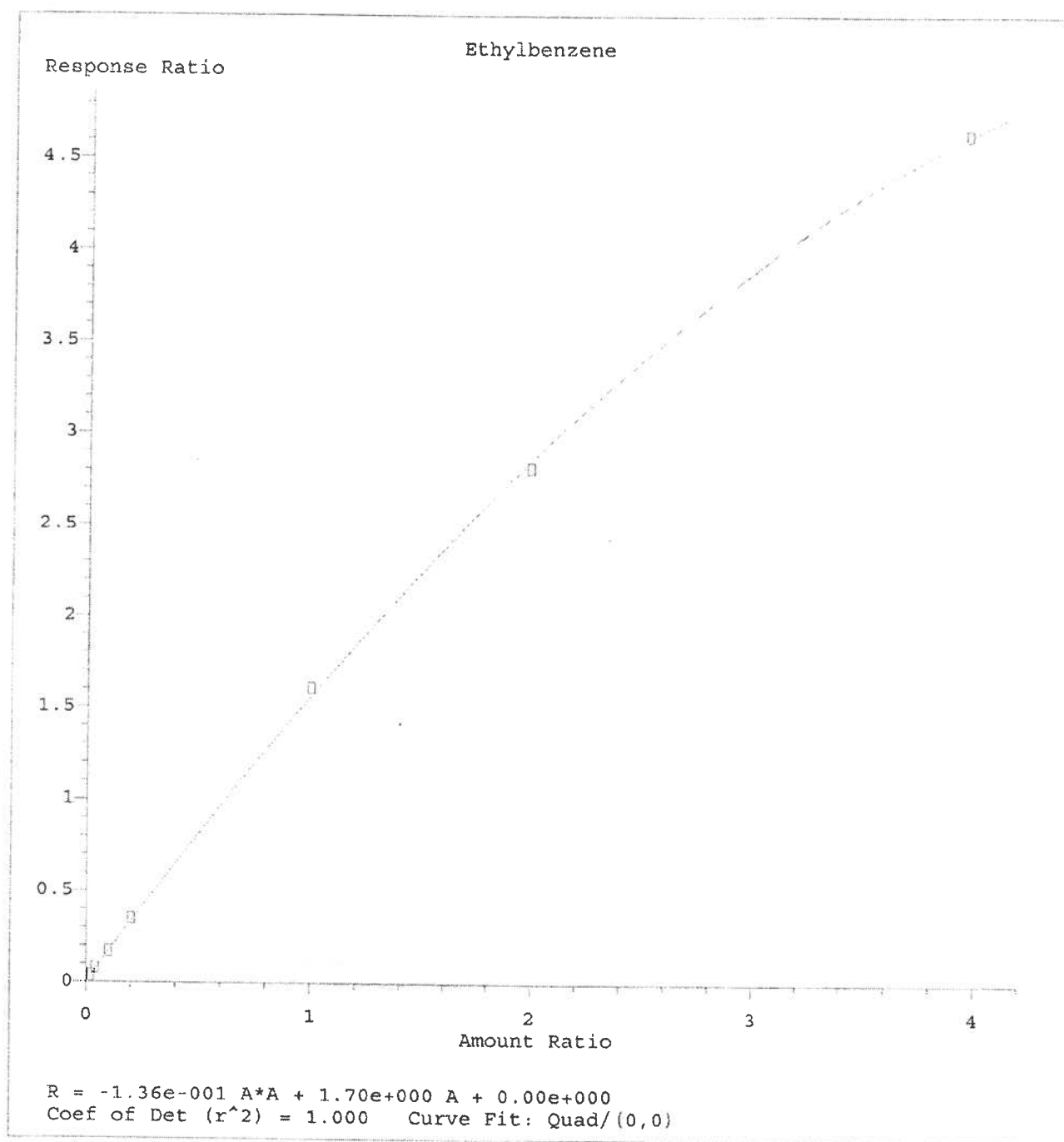
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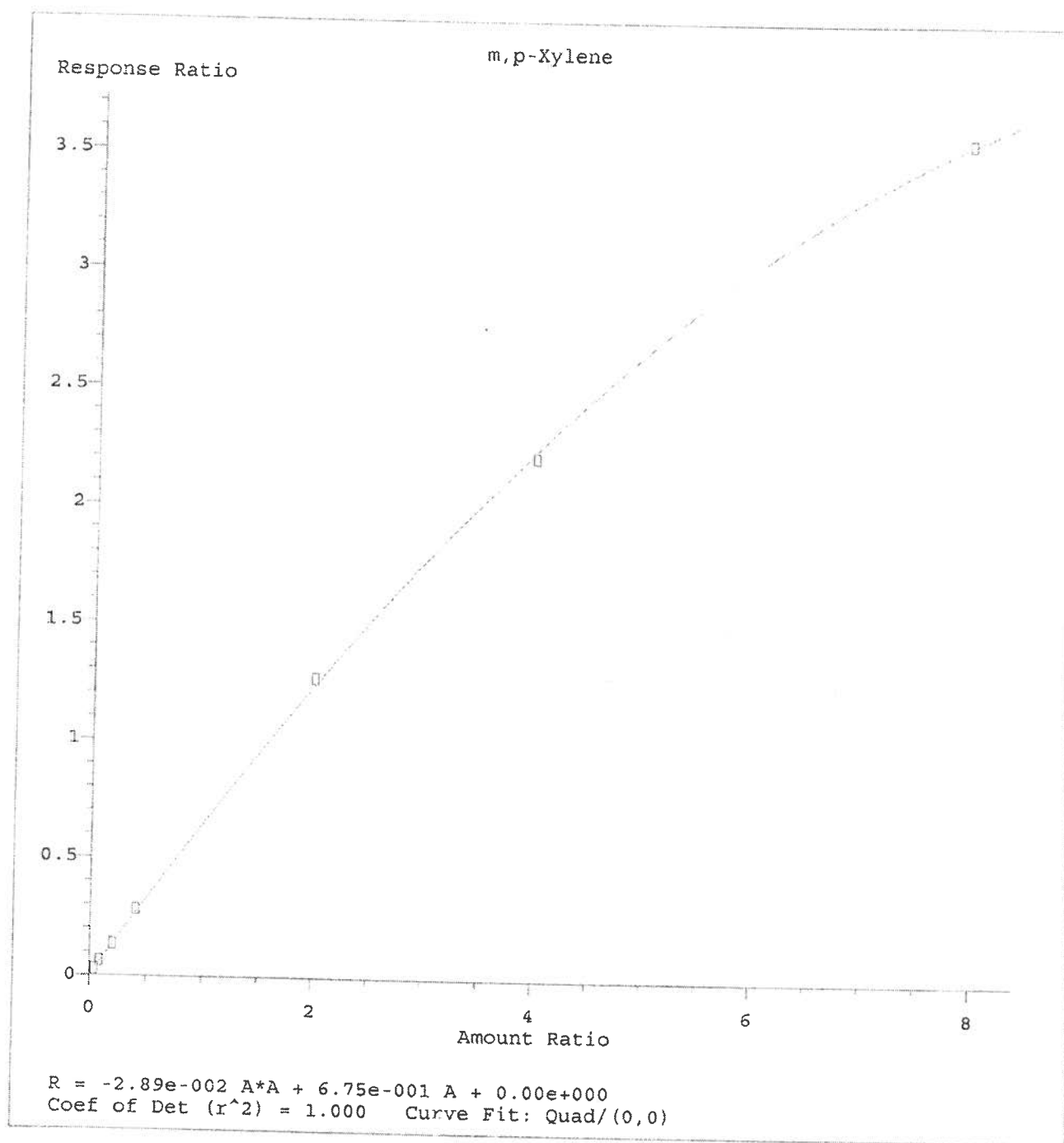
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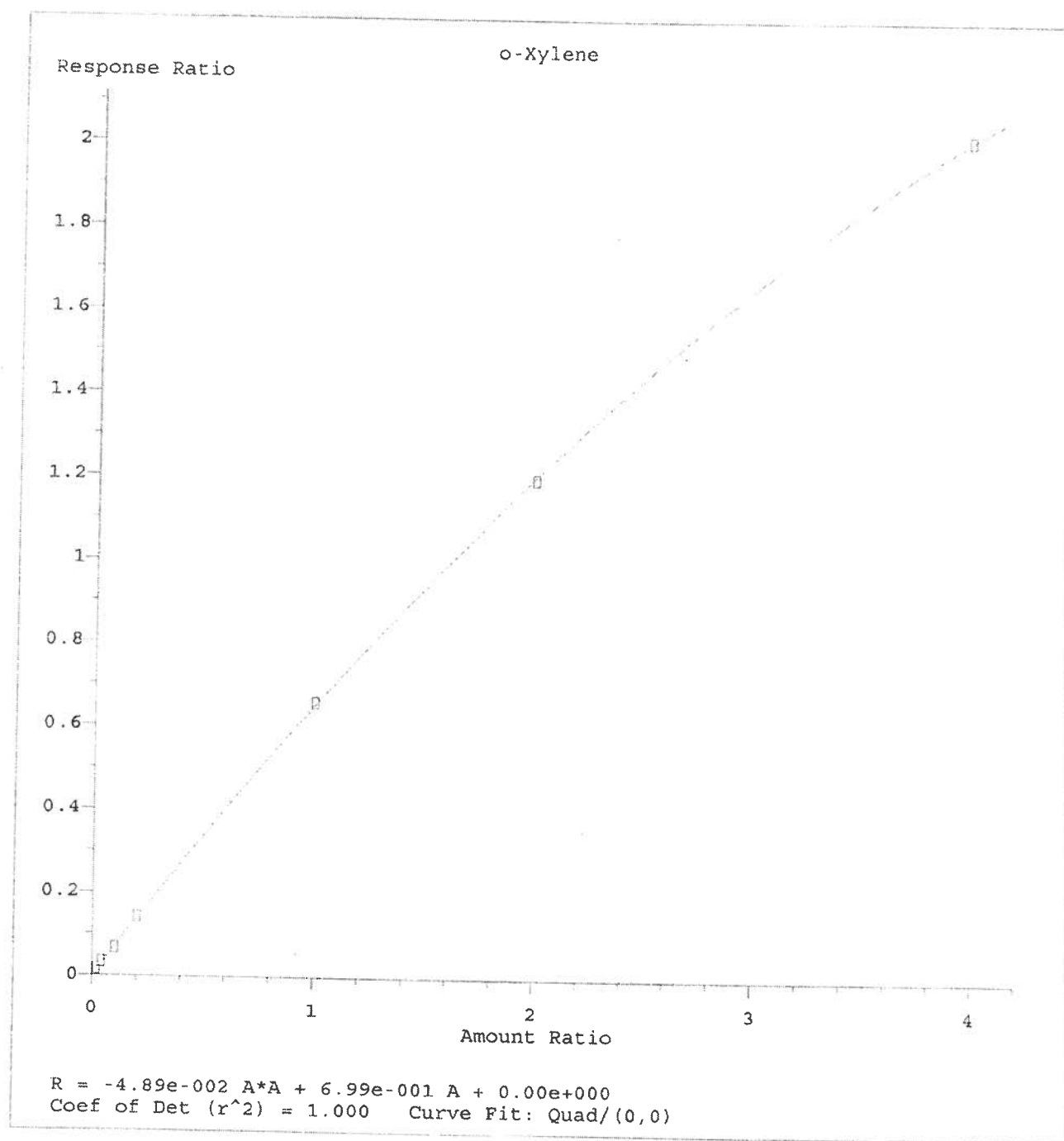
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-125g-

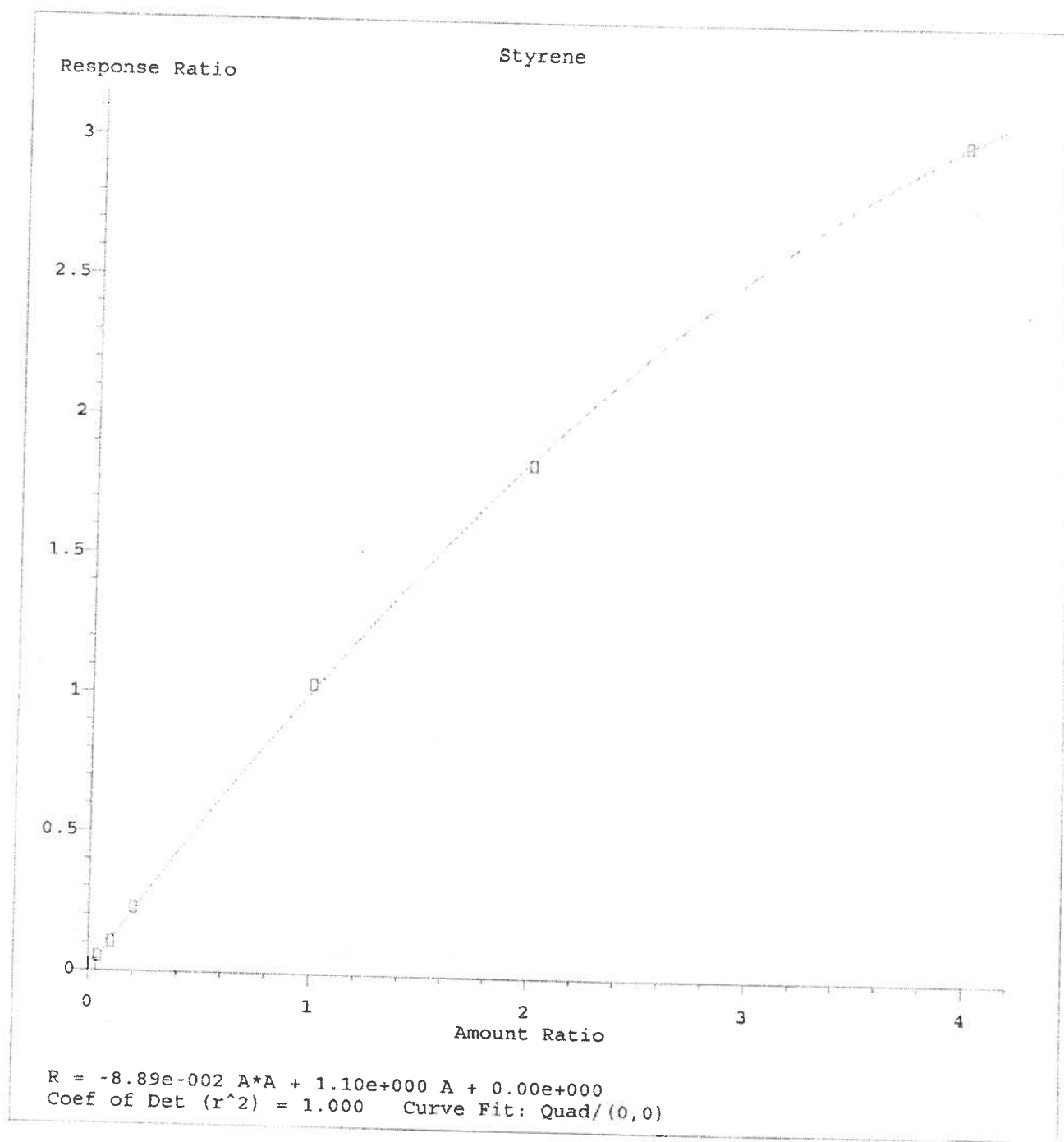


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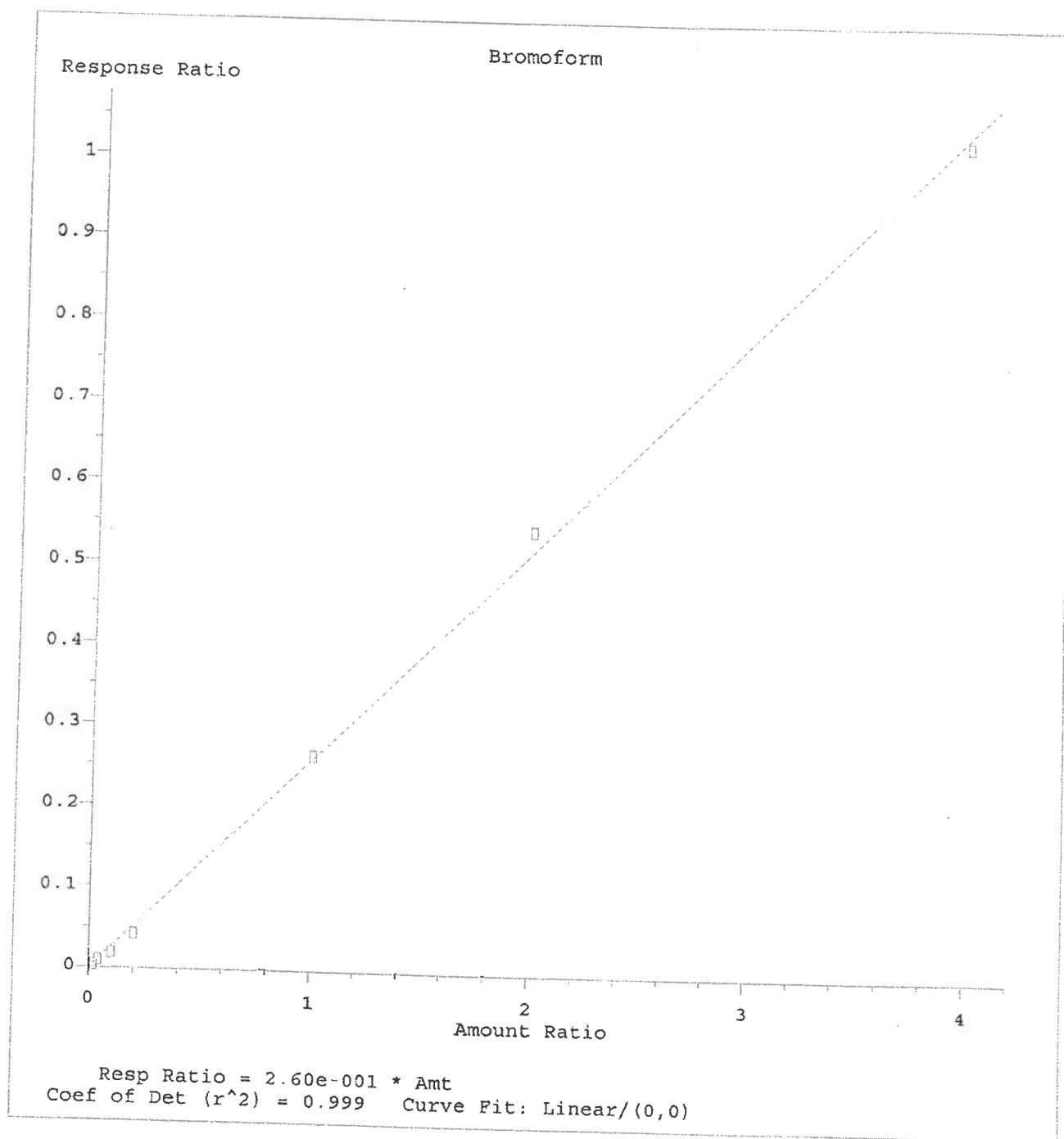
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-125-



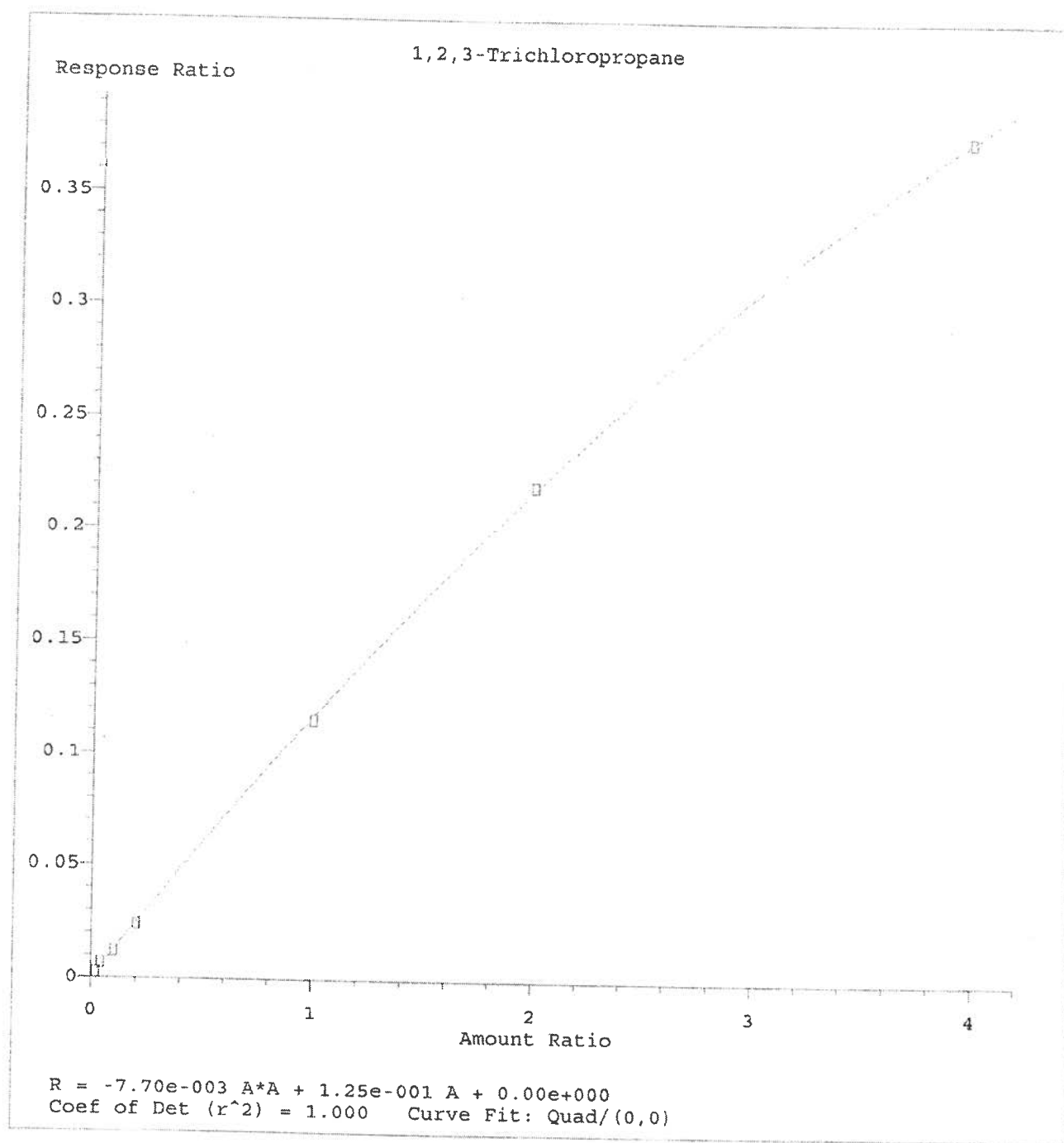
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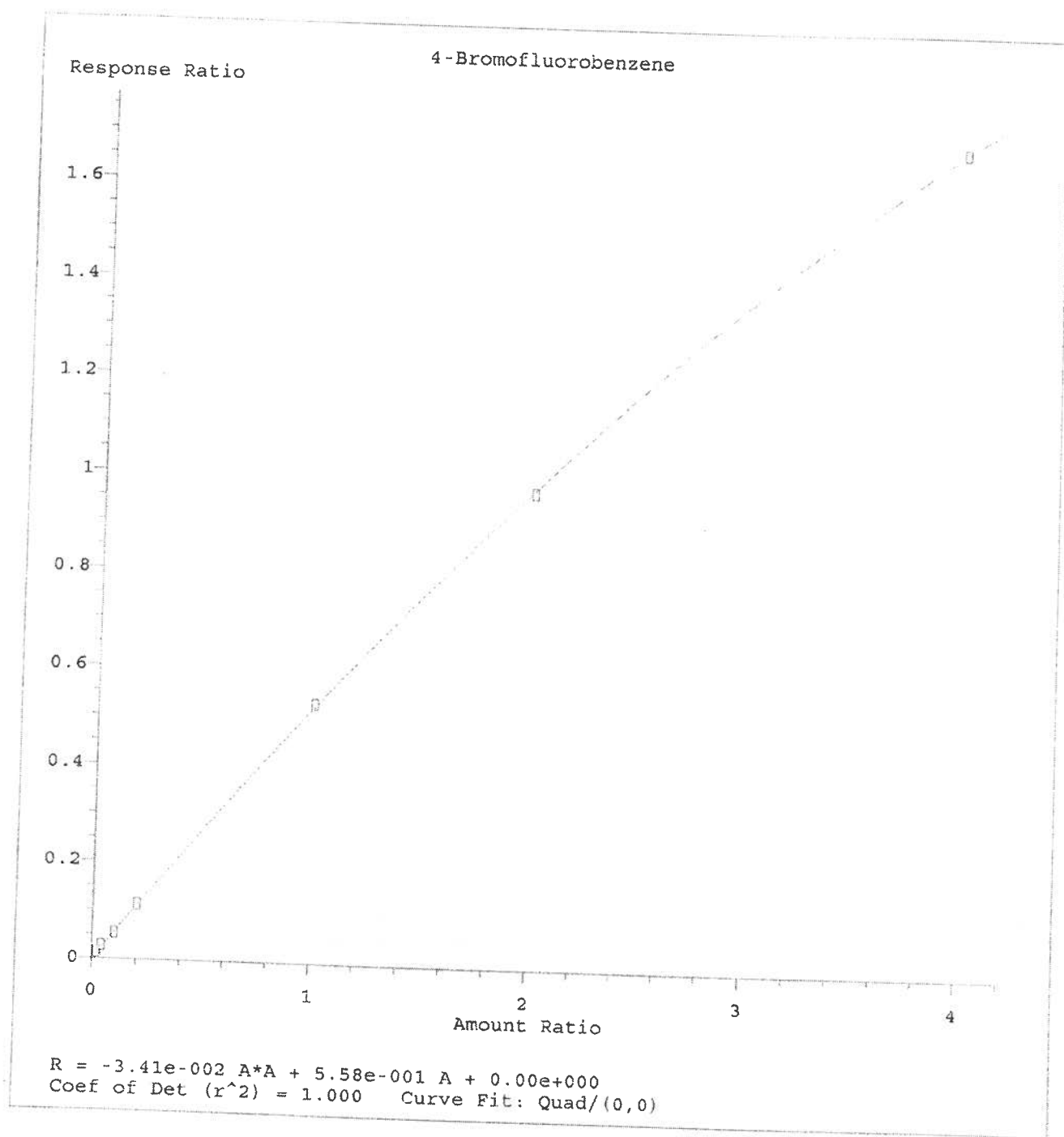
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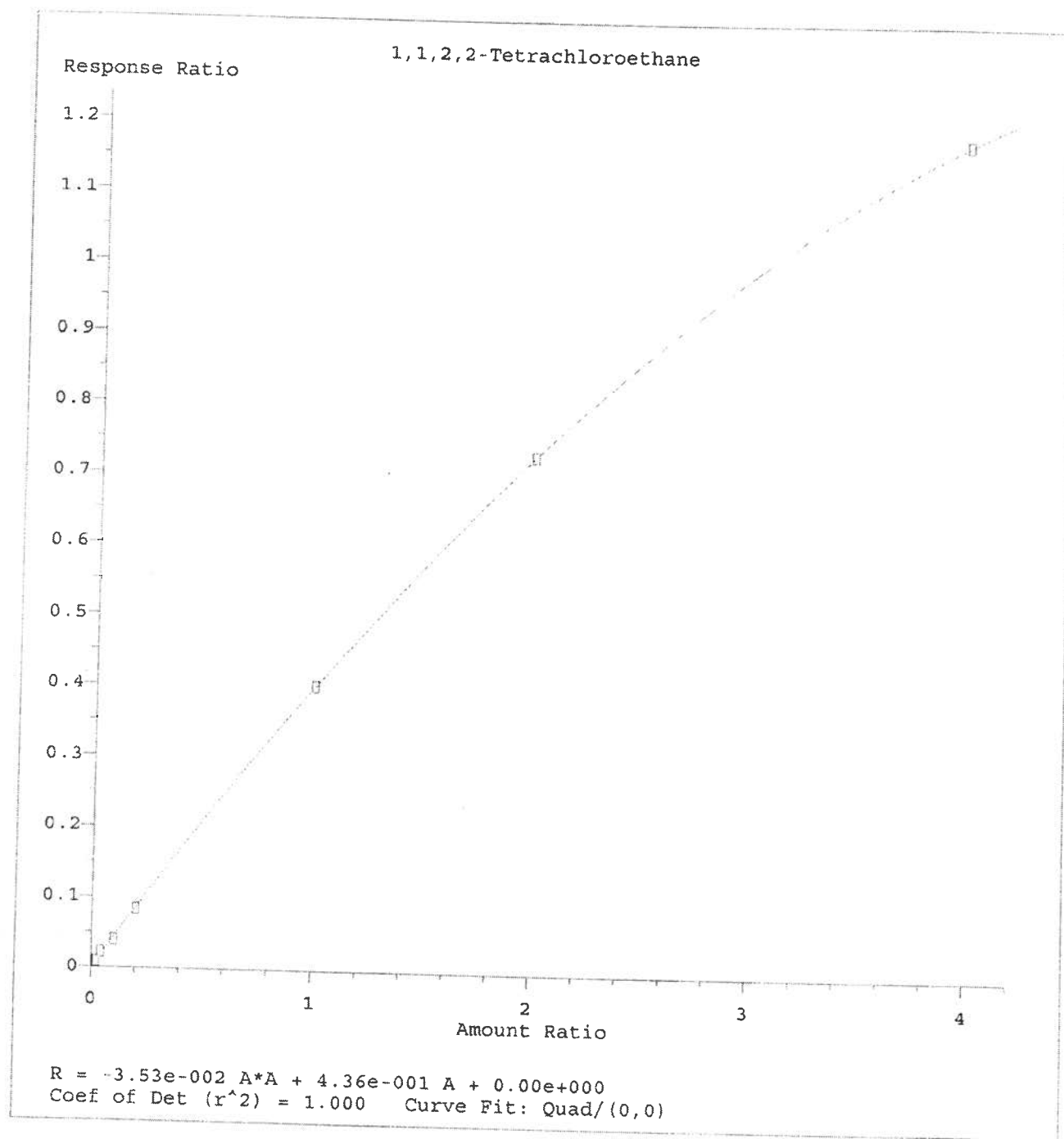
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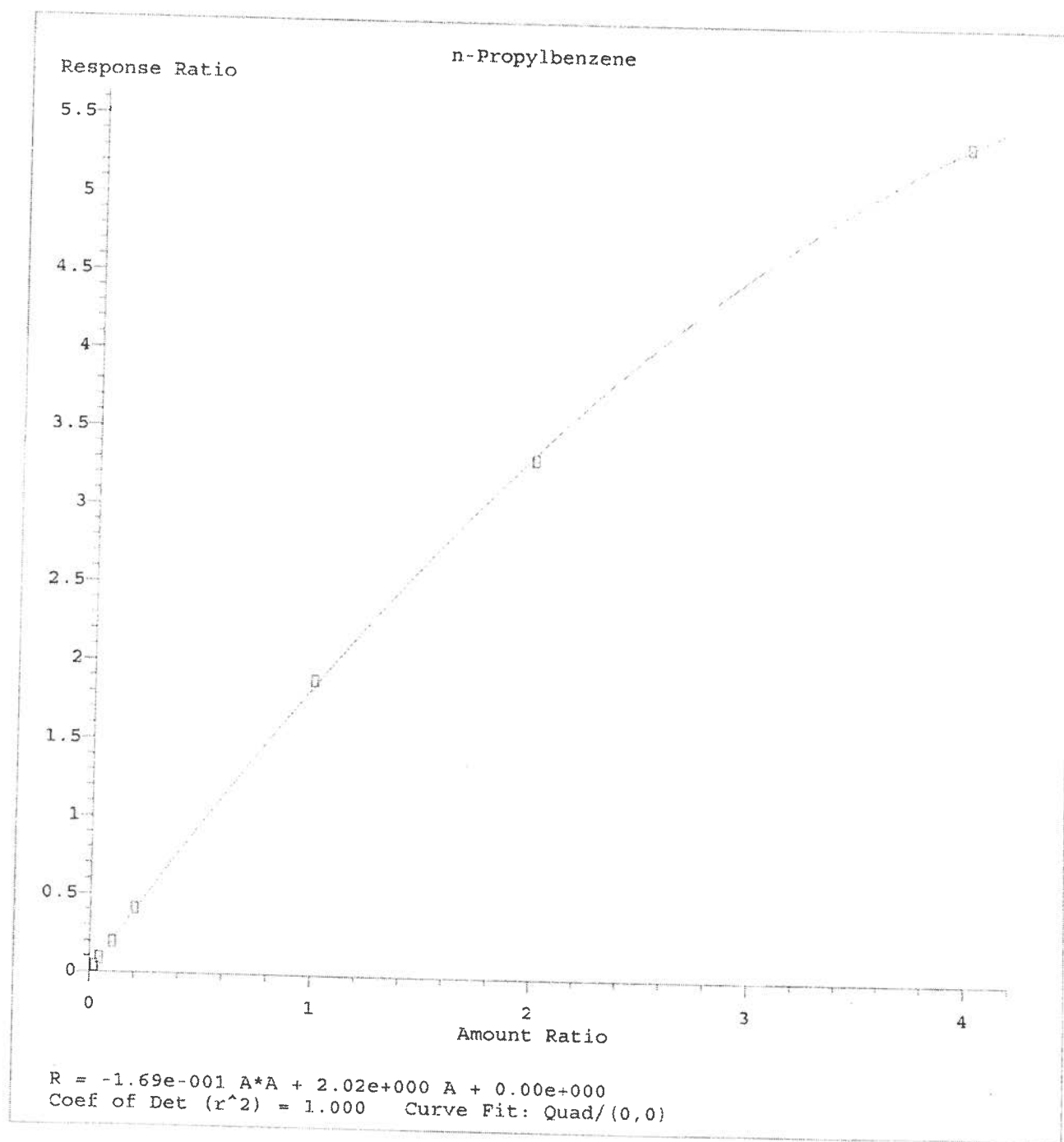
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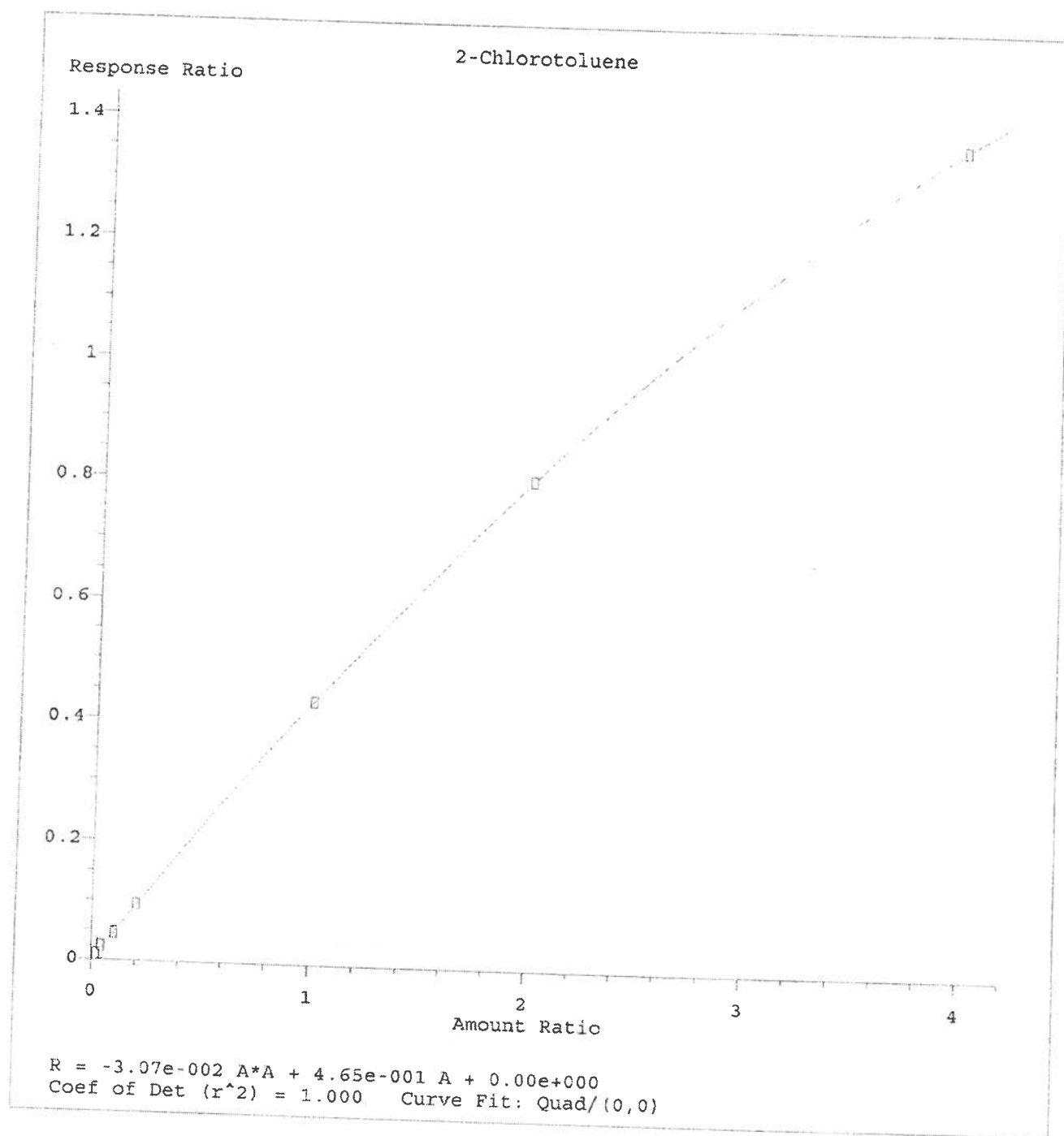
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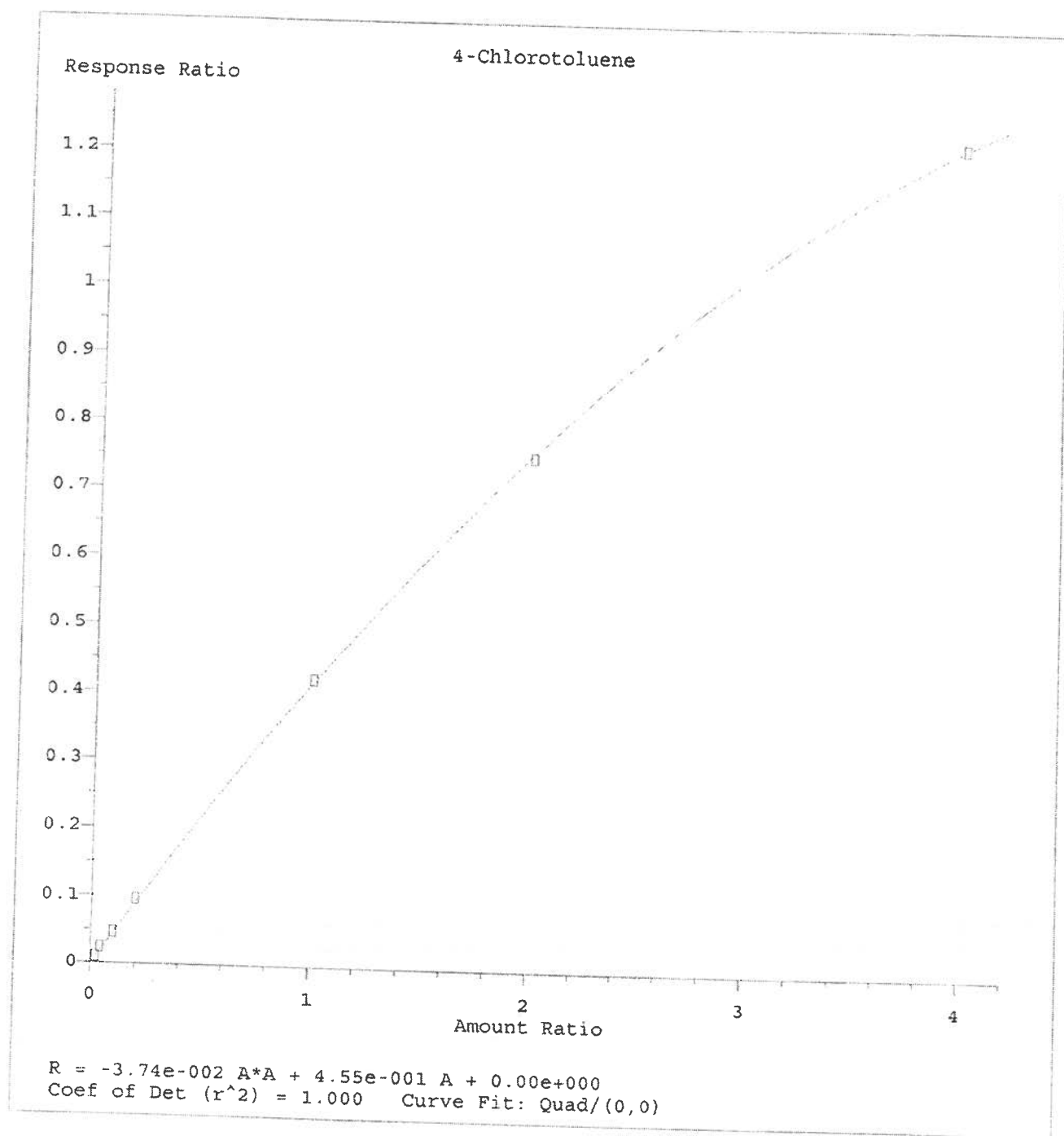


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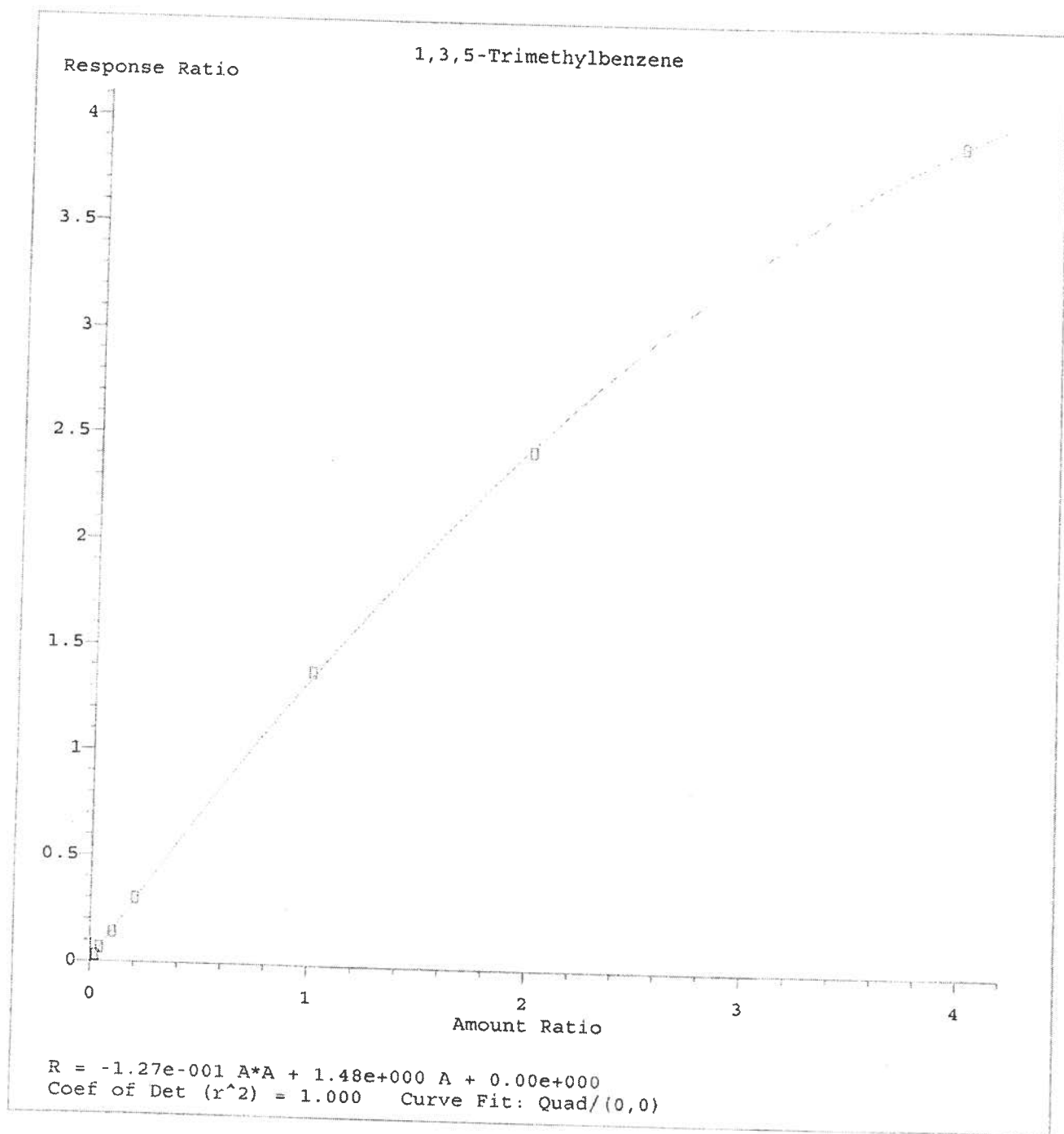
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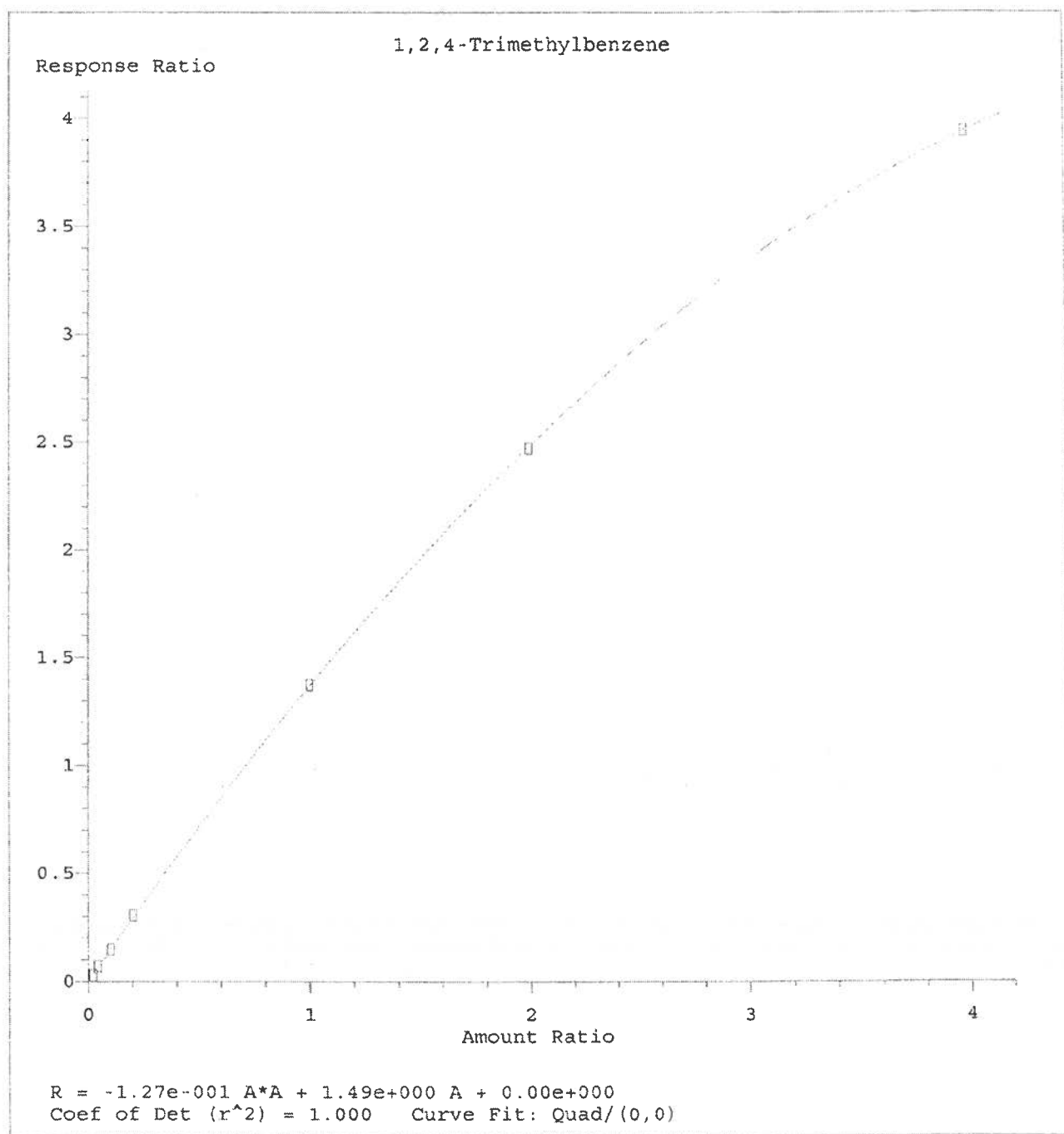
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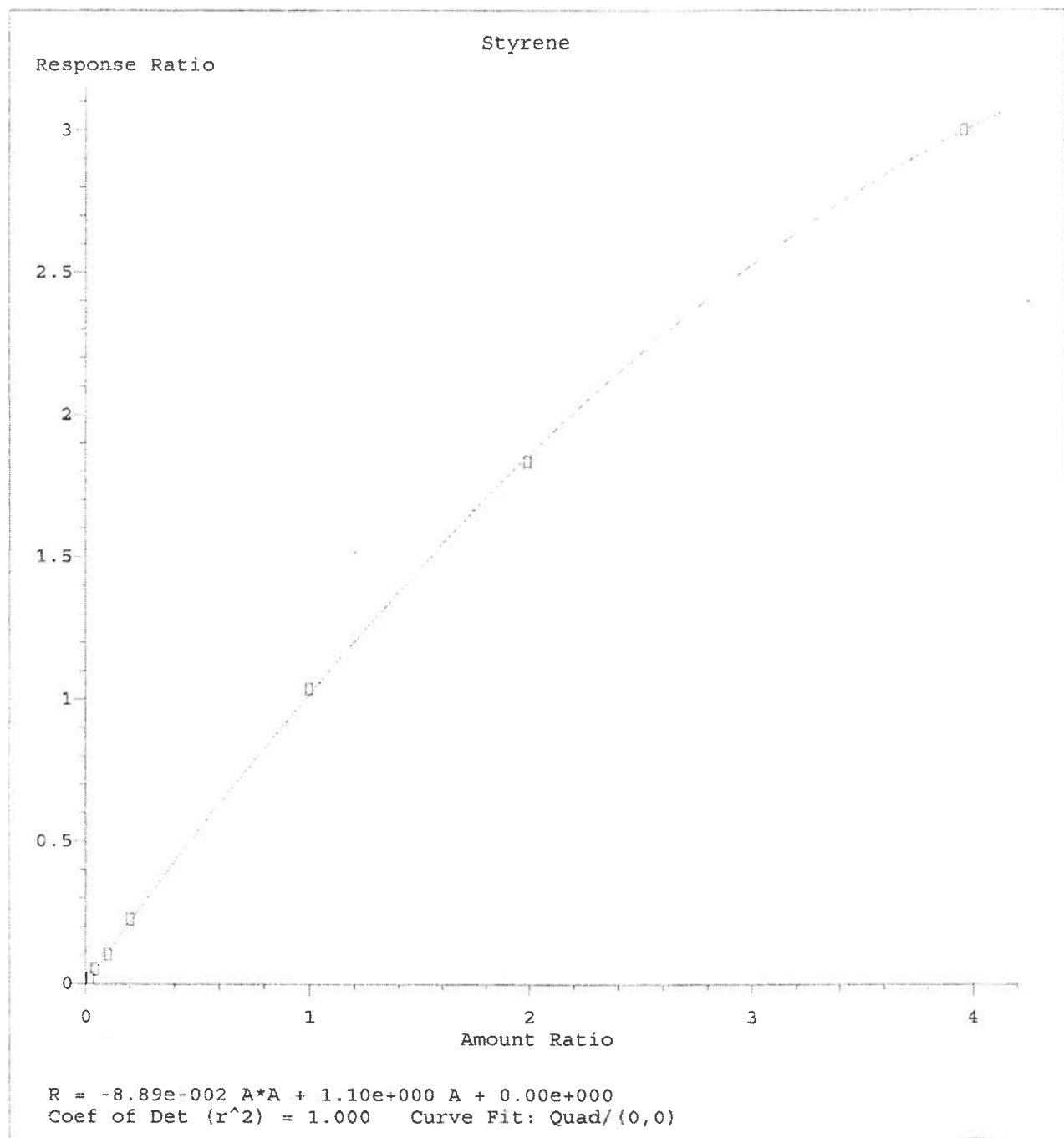
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-125r-



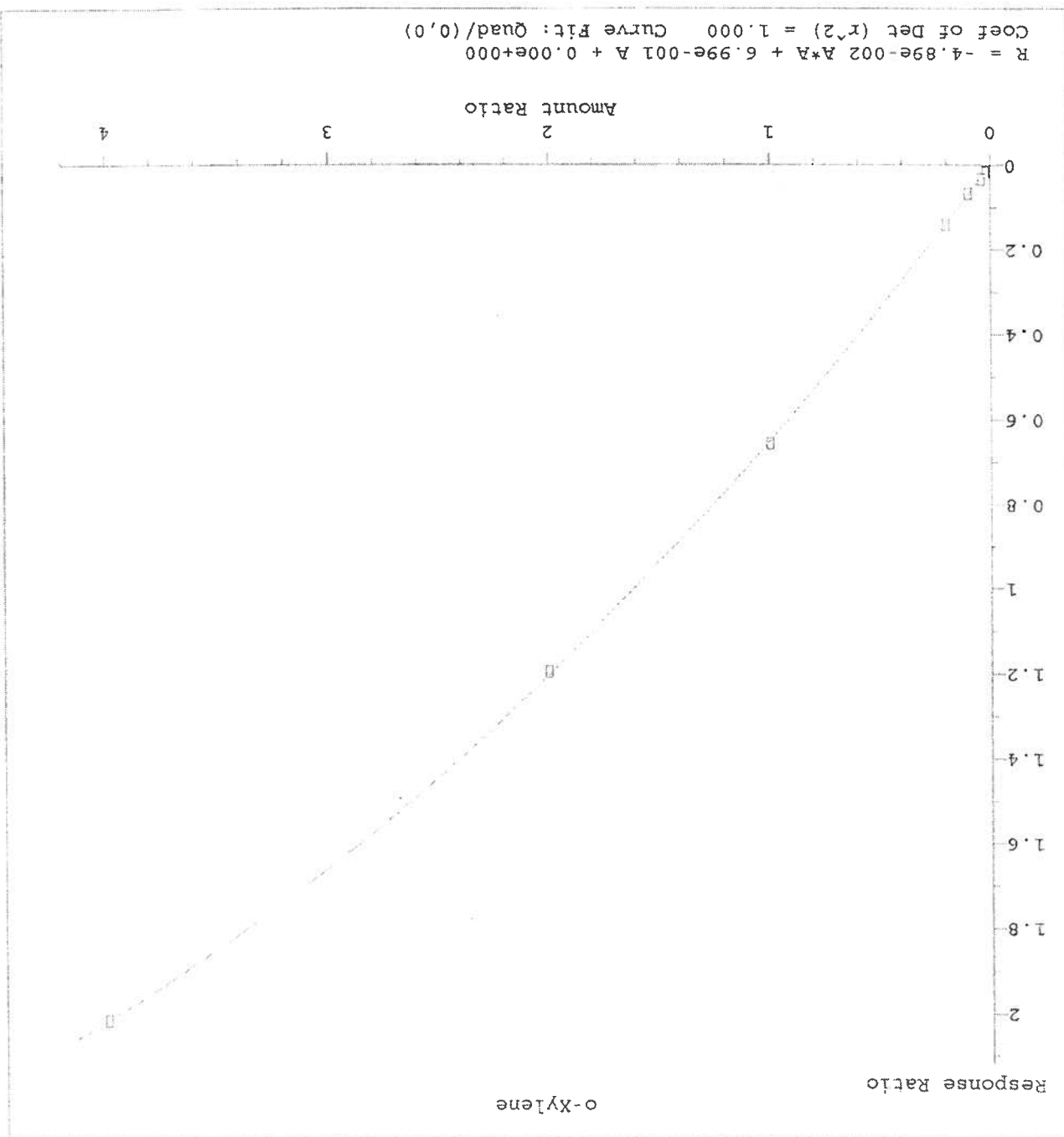
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-125-



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-154-



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## Appendix E

### FWRIA Decision Key

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July 28, 2010

New York State Department of Environmental Conservation  
6274 E. Avon-Lima Road  
Avon, NY 14414-9519

Attn: Endangered Species Coordinator

Re: Request for Information on NYS Threatened & Endangered Species  
Environmental Restoration Program Site No. E828143  
8264 Ridge Road West  
Town of Clarkson, Monroe County  
Lu Project No. 40503

Dear Sir:

Lu Engineers has been retained as a consultant to the New York State Department of Environmental Conservation to complete a remedial investigation report for the referenced Environmental Restoration Site. The site is located in a semi-rural area of the Town of Clarkson, Monroe County, New York. The Site was formerly used as a gasoline station and auto repair facility. It is adjacent to residential development. While the site is mostly paved or buildings, it backs up to a forested area on the north side of the property.

Brockport Creek is located approximately one-half mile northeast of the affected area. A U.S.G.S. topographic map of the project location is attached for your reference.

The latitude and longitude of the project site is as follows:

- 43°13'54" North
- 77°55'18" West

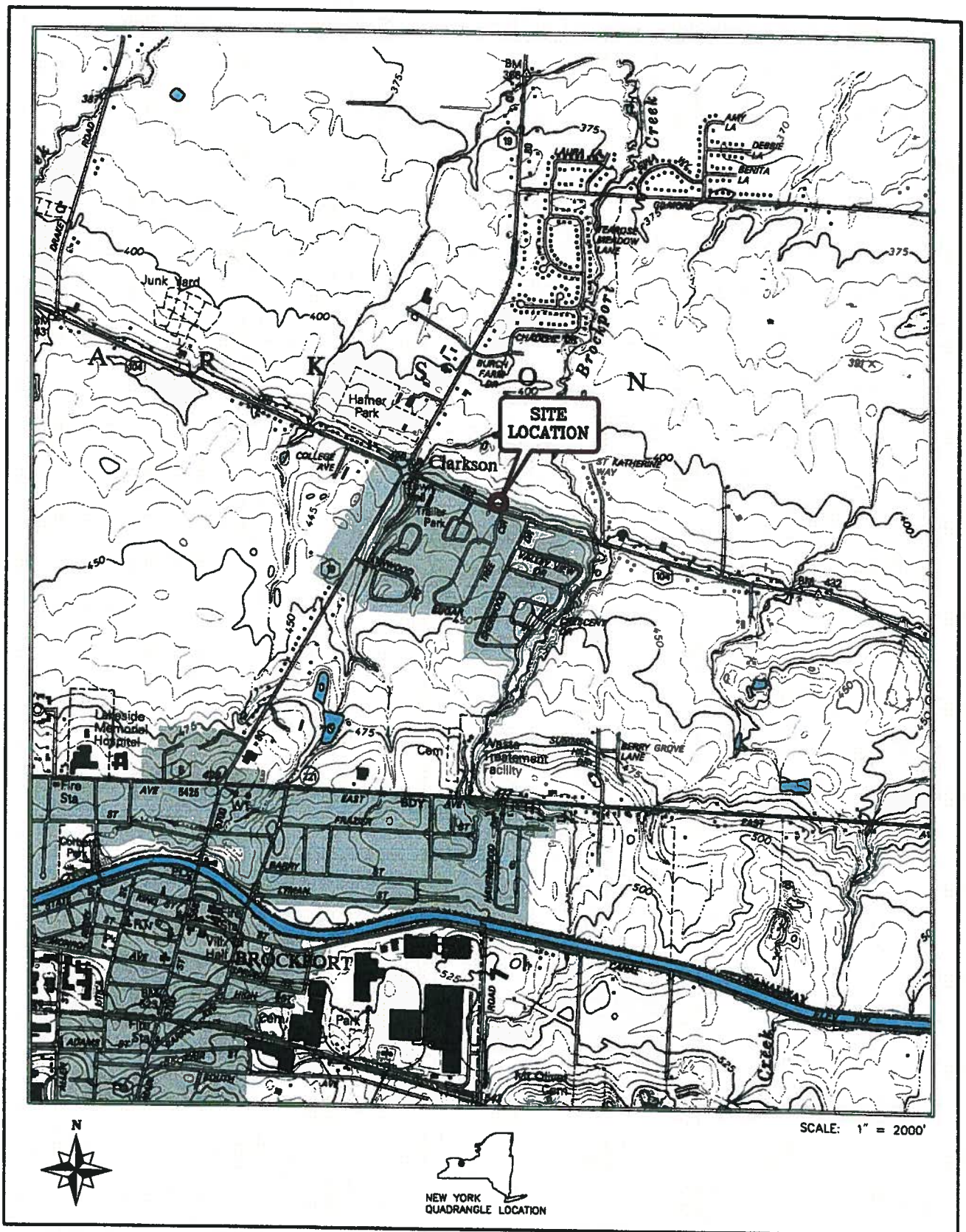
This information is needed to complete the Fish and Wildlife Resource Impact Analysis for the Remedial Investigation Report. Thank you for your assistance. Please e-mail your response to me at [fa-reese@luengineers.com](mailto:fa-reese@luengineers.com) or contact me at (585) 385-7417 ext. 246 if you have questions.

Sincerely,

Frances Reese  
Environmental Scientist

Enclosure (1)





July 28, 2010

NYS DEC Information Services  
625 Broadway, 5<sup>th</sup> Floor  
Albany, New York 12233-4757

Attn: Ms. Jean Petrusiak, Information Specialist

Re: Request for Information on NYS Threatened & Endangered Species  
Environmental Restoration Program Site No. E828143  
8264 Ridge Road West  
Town of Clarkson, Monroe County  
Lu Project No. 40503

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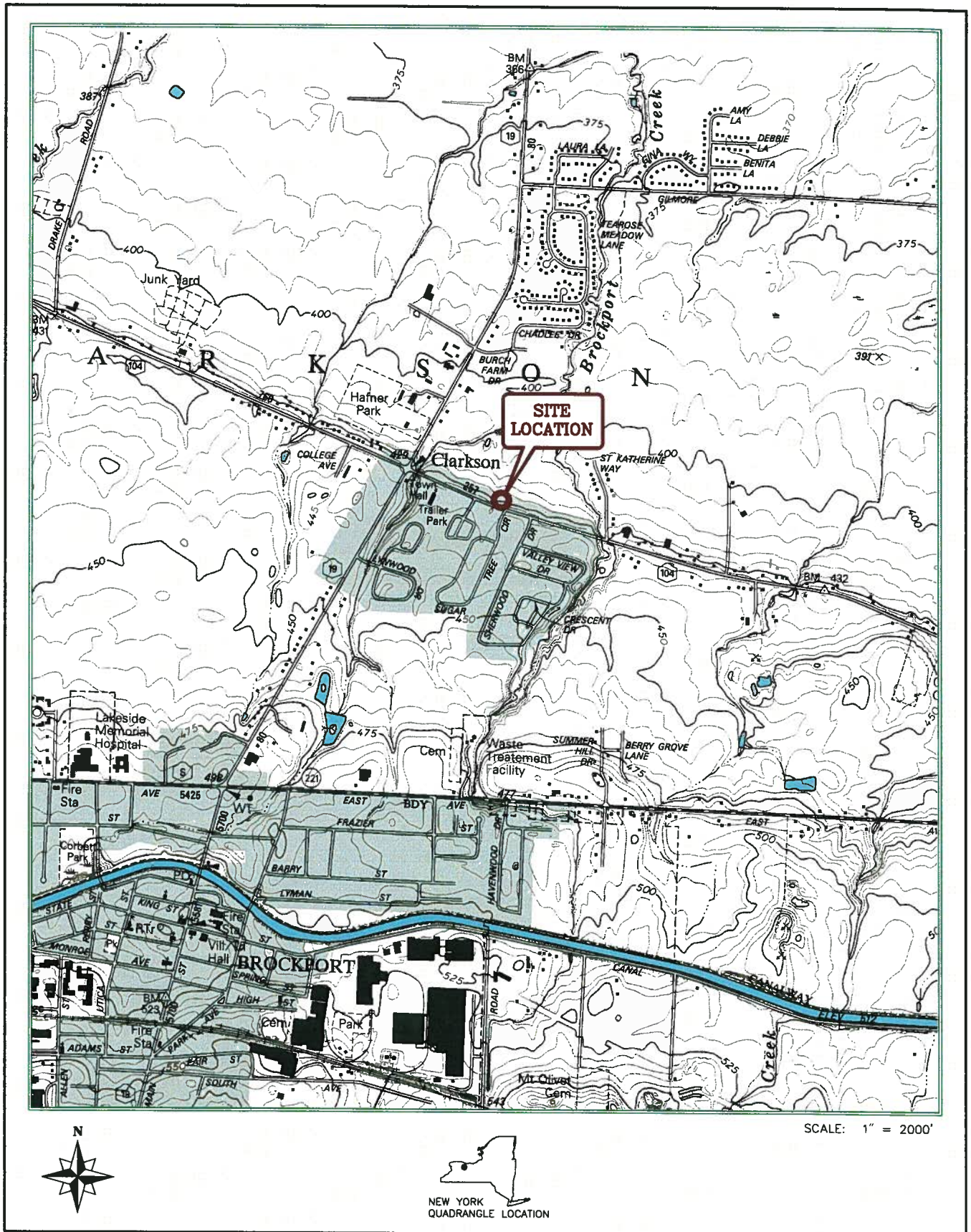
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Sincerely,

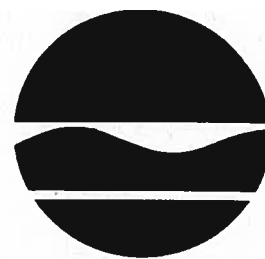
Frances Reese  
Environmental Scientist

Enclosure (1)





**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION**  
**Division of Fish, Wildlife & Marine Resources**  
**New York Natural Heritage Program**  
625 Broadway, 5<sup>th</sup> Floor, Albany, New York 12233-4757  
**Phone:** (518) 402-8935 • **Fax:** (518) 402-8925  
**Website:** [www.dec.ny.gov](http://www.dec.ny.gov)



Alexander B. Grannis  
Commissioner

August 13, 2010

Frances Reese  
LU Engineers  
175 Sullys Trail, Suite 202  
Pittsford, NY 14534

**RECEIVED**  
AUG 16 2010  
LU ENGINEERS

Dear Ms. Reese:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to an Environmental Assessment for the proposed Remedial Investigation of Site # E 828 143, area as indicated on the map you provided, including a ½ mile radius, located at 8264 Ridge Road West, Town of Clarkson, Monroe County.

Enclosed is a report of rare or state-listed animals and plants, significant natural communities, and other significant habitats, which our databases indicate occur, or may occur, on your site or in the immediate vicinity of your site. For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our databases. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or natural communities. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

The enclosed report may be included in documents that will be available to the public. However, any enclosed maps displaying locations of rare species are considered sensitive information, and are intended only for the internal use of the recipient; they should not be included in any document that will be made available to the public, without permission from the New York Natural Heritage Program.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g. regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, as listed at [www.dec.ny.gov/about/39381.html](http://www.dec.ny.gov/about/39381.html).

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

Sincerely,

*Tara Salerno*  
Tara Salerno, Information Services

New York Natural Heritage Program

# 857

Enc.  
cc: Region 8

## Natural Heritage Report on Rare Species and Ecological Communities

NY Natural Heritage Program, NYS DEC, 625 Broadway, 5th Floor,  
Albany, NY 12233-4757  
(518) 402-8935



### HISTORICAL RECORDS

The following plants and animals were documented in the vicinity of the project site at one time, but have not been documented there since 1979 or earlier.

There is no recent information on these plants and animals in the vicinity of the project site and their current status there is unknown. In most cases the precise location of the plant or animal in this vicinity at the time it was last documented is also unknown and therefore location maps are generally not provided.

If appropriate habitat for these plants or animals is present in the vicinity of the project site, it is possible that they may still occur there.

## Natural Heritage Report on Rare Species and Ecological Communities



### VASCULAR PLANTS

#### *Asimina triloba*

##### Pawpaw

**NY Legal Status:** Threatened

**Federal Listing:**

**Last Report:** 1946-08-30

**County:** Monroe

**Town:** Clarkson

**Location:** Clarkson Northeast Woods

**Directions:** Specimen label: Woods about 2 miles northeast of Brockport.

**General Quality** Specimen label: Woods.

**and Habitat:**

**NYS Rank:** S2 - Imperiled

**Global Rank:** G5 - Secure

**EO Rank:** Historical, no recent  
information

Office Use  
12724

#### 1 Records Processed

More detailed information about many of the rare and listed animals and plants in New York, including biology, identification, habitat, conservation, and management, are available online in Natural Heritage's Conservation Guides at [www.acris.nynhp.org](http://www.acris.nynhp.org), from NatureServe Explorer at <http://www.natureserve.org/explorer>, from NYSDEC at <http://www.dec.ny.gov/animals/7494.html> (for animals), and from USDA's Plants Database at <http://plants.usda.gov/index.html> (for plants).