December 2011

# REPORT ON

# Phase II Environmental Site Assessment 645 Longfields Drive, Proposed Church, Ottawa, Ontario

**Submitted to:**
Sequoia Community Church
190 Colonnade Rd., Suite 8B
Ottawa, Ontario
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Attention: Mr. Robert Jonkman, P.Eng.

REPORT

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# Executive Summary

Golder Associates Ltd. (Golder) was retained by Sequoia Community Church (Sequoia) to complete a Phase II Environmental Site Assessment (Phase II ESA) for the property located at 645 Longfields Drive in Ottawa, Ontario (Site). The Site is bounded by Greenbank Road to the west, CN railway to the north, the future Highbury Park Drive to the south and the Southwest Transitway to the east.

The Phase II ESA was carried out in general accordance with the scope of work described in Golder's proposal P1-1122-0181 and dated October 31, 2011. The Phase II ESA field program was completed in conjunction with the geotechnical investigation that was concurrently carried out at the Site by Golder. The results from the geotechnical investigation are presented in a separate report.

*The Executive Summary highlights key points from the report only; for complete information and findings, as well as the limitations, the reader should examine the complete report.*

The objective of the Phase II ESA was to investigate the potential for subsurface impacts to the Site as a result of the former use of part of the Site as a snow disposal facility and to assess the quality of the fill material present on the Site.

To achieve this objective the scope of work of the Phase II ESA included the following:

- Collecting soil samples from four test pits and submitting selected soil samples for laboratory analysis;
- Collecting three composite soil samples from the fill piles on the Site and submitting for laboratory analyses; and,
- Investigating groundwater quality via the installation of a monitoring well in the area of the Site previously occupied by the snow dump for the collection and analyses of groundwater.

Based on the Phase II ESA scope of work completed at the Site, the following conclusions can be made:

- The subsurface conditions at the Site are generally described as topsoil and/or fill underlain by silty sand and gravel overlying sandstone bedrock. The depth to the bedrock encountered in the geo-environmental test pits and the borehole ranges from exposed bedrock at ground surface to 0.75 metres below ground surface;
- *MOE Table 7 Standards: Generic Site Condition Standards for Shallow Soil in a Non-Potable Ground Water Condition*, for Industrial/Commercial/Community Property Use, coarse textured soil (April 15, 2011) is applicable for the Site and was used for comparison of the analytical results of the soil and groundwater samples that were submitted for laboratory analysis;
- Soil sampling completed at the Site indicated that the concentrations of petroleum hydrocarbons Fraction 1 to Fraction 4 (PHC F1 to F4), volatile organic compounds (VOCs), including benzene, toluene, ethylbenzene, xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), metals, pH, electrical conductivity (EC), sodium adsorption ratio (SAR) and free cyanide in all soil samples analysed for one or more of these parameters were below the applicable MOE Table 7 Standards. Thus, the soil samples are not contaminated in terms of the regulation;

- Fill sampling completed at the Site indicated that the concentrations of PHC F1 to F4 and metals in the three composite fill samples submitted for laboratory analyses were below the MOE Table 7 Standards. Thus, the fill is not contaminated in terms of the regulation;
- Groundwater sampling completed at the Site indicated that the concentrations of PHC F1 to F4, VOCs, metals, sodium and chloride in the groundwater sample collected from the monitoring well installed in the part of the Site previously occupied by the former snow dump were below the applicable MOE Table 7 Standards. Thus, the groundwater sample is not contaminated in terms of the regulation;
- The soil and groundwater sampling completed at the Site did not suggest that the former snow dump impacted the subsurface of the part of the Site previously occupied by the former snow dump. As such, no further investigations are required at this time;
- The monitoring well installed on the Site as part of the Phase II ESA if no longer required should be decommissioned in accordance with O. Reg.903;
- The monitoring well that was observed in the southwest part of the Site, south of the access road and near to the Site entrance, was confirmed to be located on the part of the Site owned by the City of Ottawa (City). No information regarding the well was provided by the City;
- There were no issues of potential environmental concern identified during the Phase I ESA in the vicinity of the southwest monitoring well. Based on the results from the snow dump area being below the applicable standards, sampling of the well in the southwest part of the Site is not considered necessary to evaluate environmental conditions at the Site; and,
- Considering that the well will be part of the land purchased it should be decommissioned in accordance with O.Reg.903.

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# 1.0 INTRODUCTION

Golder Associates Ltd. (Golder) was retained by Sequoia Community Church (Sequoia) to complete a Phase II Environmental Site Assessment (Phase II ESA) for the property located at 645 Longfields Drive in Ottawa, Ontario (Site). The Site is bounded by Greenbank Road to the west, CN railway to the north, the future Highbury Park Drive to the south and the Southwest Transitway to the east.

The Phase II ESA was carried out in general accordance with the scope of work described in Golder's proposal P1-1122-0181 and dated October 31, 2011. The Phase II ESA field program was completed in conjunction with the geotechnical investigation that was concurrently carried out at the Site by Golder. The results from the geotechnical investigation are presented in a separate report.

The Site location is shown on Figure 1.

## 2.0 BACKGROUND

The Site is owned by the City of Ottawa (City) and Jock River Farms Limited. The Site is currently vacant land overgrown with trees and grass and has always been vacant land. Part of the Site was used as a snow disposal facility for about 20 years by the former City of Nepean and was closed in the summer of 2008. It is understood that a potential Site transaction is pending and that upon the Site acquisition by Sequoia the Site will be developed with a church. A Phase I ESA (Report entitled "*Phase I Environmental Site Assessment, 645 Longfields Drive, Proposed Church, Ottawa, Ontario"),* dated December 2, 2011 was recently completed by Golder for the Site for due diligence purposes due to the potential Site transaction. The Phase I ESA identified the following potential issues of concern which relate to subsurface impacts on soil and groundwater:

- The historical information review indicated that a City of Nepean snow dump was located in the central part of the Site. The snow dump was in operation for around 20 years between the late 1980s and 2008. The former presence of a snow dump on the Site is considered to be an issue of potential environmental concern associated with the potential for subsurface impacts to the Site from contaminants such as petroleum hydrocarbons ("PHCs"), benzene, toluene, ethylbenzene, xylenes ("BTEX"), polycyclic aromatic hydrocarbons (PAHs), metals, pH, sodium and chloride (from road salt compounds) measured as sodium adsorption ratio ("SAR") contained in the melt water from the snow; and,
- Several piles of fill material were observed in the central area of the Site previously occupied by the snow dump. The fill material originated from the recent construction of the Southwest Transitway located on adjacent lands east of the Site. As part of the 2008 Phase II ESA completed by Golder for the Southwest Transitway construction project, soil sampling and analyses of PHC F1 to F4, metals and SAR was conducted in the area of potential environmental concern where the future Southwest Transitway crossed the snow dump. The soil analytical results indicated that one of the soil samples analysed in this area contained measured concentrations of PHC F3 and F4. Given that the above mentioned soil sampling was limited in area; it is considered that the soil results are not representative of the quality of the fill material currently stockpiled on the Site. Additional testing of composite soil samples collected from the piles of the fill material are required in order to assess the quality of the fill located on the Site. In addition, new MOE "Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act", April 15, 2011 that are currently applicable for the Site came into effect in July 1, 2011. Given the aforementioned considerations, the fill material on the Site should be sampled in order to evaluate the fill quality.

## 3.0 OBJECTIVES

The objective of the Phase II ESA was to assess the soil and groundwater quality at the Site for potential impacts associated with the former use of part of the Site as a snow disposal facility and to assess the quality of the fill material present on the Site.

# 4.0 SCOPE OF WORK

The Phase II ESA was carried out in conjunction with the geotechnical investigation carried out at the Site by Golder as part of the proposed Site development with a church.

The Phase II ESA scope of work included:

1) Carrying-out private and public utility locates.

2) Preparing a Health and Safety Plan prior to initiating the fieldwork.

3) Completing four (4) geo-environmental test pits and drilling one (1) borehole installed with a monitoring well on the Site in order to address the potential issue of environmental concern associated with the former presence of a snow dump on the Site. Collecting soil and/or groundwater samples for subsequent laboratory analyses.

4) Submitting selected soil samples from the four test pits for laboratory analyses of one or more of the following parameters: PHC (F1-F4) volatile organic compounds (VOCs) including BTEX, PAHs, metals, pH, SAR, free cyanide and electrical conductivity (EC).

5) Collecting three (3) composite soil samples from the fill piles on the Site and submitting for laboratory analyses of PHC F1 to F4 and/or metals in order to assess the quality of the fill material.

6) Collecting a groundwater sample from the monitoring well and submitting for laboratory analyses of PHC F1 to F4, VOCs, chloride, sodium and metals.

7) Implementing a quality control/quality assurance program during the field work.

8) Interpretation of results and preparation of this report.

# 5.0 METHODOLOGY

## 5.1 Health and Safety

Prior to initiating the fieldwork, Golder developed and implemented Site-specific protocols to protect the health and safety of its employees and subcontractors through the preparation of a Site-specific Health and Safety Plan.

## 5.2 Underground Utility Locates

Prior to commencing the intrusive field program, Golder retained a utility locations contractor - USL-1 Inc. to identify the locations of all private and public utilities within the work area and to mark the location of said utilities.

## 5.3 Soil and Groundwater Investigation

### 5.3.1 Borehole Drilling, Soil Sampling and Monitoring Well Installation

In order to address the issue of potential environmental concern associated with the former presence of a snow dump on the Site, one (1) borehole BH11-8 installed with a monitoring well was drilled in the part of the Site previously occupied by the former snow dump.

The approximate location of the borehole is shown on Figure 2.

The borehole drilling and monitoring well installation was conducted on November 25, 2011, using a truck-mounted drill rig (“CME-55”), supplied and operated by Marathon Drilling Co Ltd. (“Marathon”) of Ottawa, Ontario The borehole drilling and monitoring well installation activities were monitored in the field by Golder staff.

No overburden was present at BH11-8 and as such, no soil samples were collected from this borehole during the drilling. To achieve the objectives of the investigation, the BH11-8 was cored into the bedrock to a sufficient depth to intersect the groundwater table. As such, BH11-8 was advanced into bedrock by means of diamond drill coring equipment (size NQ) to a total depth of 9.25 metres below ground surface (mbgs). Following the completion of the drilling, a monitoring well constructed of a 32 millimetre diameter PVC pipe, threaded PVC slot #10 screen and a solid riser was installed. The screen was installed at the bottom of the borehole between 4.66 mbgs and 9.25 mbgs. An attempt was made to install the screen of the well to straddle the inferred water table so that any hydrocarbon impact (with a floating phase) would be detected in the well. Silica sand backfill (granular filter) was placed in the borehole around the screened portion of the monitoring well up to 1.5 mbgs and bentonite was placed to seal the core hole of the annular space between the PVC riser from 1.5 mbgs to the ground surface. After the installation, the monitoring well was developed by removing approximately 1.5 well volumes until the well went dry.

The monitoring well was tagged in accordance with Ontario Regulation 903 under Tag #A061835.

Borehole and monitoring well details are presented on the Record of Boreholes in Appendix A.

### 5.3.2 Test Pit Excavation and Soil Sampling

As part of the geotechnical investigation that was concurrently carried out at the Site by Golder, in total fourteen (14) test pits were excavated at the Site. In order to assess the soil quality in the area of the former snow dump, four (4) test pits (TP11-2, TP11-5, TP11-6 and TP11-9) out of the fourteen (14) were used for environmental purposes (hereafter referred as geo-environmental test pits). The geo-environmental test pits were selected based on their proximity to the former snow dump. TP11-2 was completed in the area outside of the former snow dump in order to assess the background soil conditions at the Site. TP11-5, TP11-6 and TP11-9 were excavated in the area where the former snow dump and the access road to the snow dump are located in order to investigate the potential for soil impacts as a result of the former snow dump.

The approximate location of the test pits is shown on Figure 2.

The test pitting program was completed on November 24, 2011, using a backhoe supplied and operated by Marathon. The test pit excavation was monitored in the field by Golder staff.

The four geo-environmental test pits were excavated until the bedrock was encountered to a depth ranging between 0.40 mbgs at TP11-5 and 0.75 mbgs at TP11-2. Each test pit was sampled by Golder noting the composition and quality of the soil. Soil samples were collected using a hand trowel and dedicated nitrile sample gloves. Given the shallow depth of the test pits one (1) or two (2) discrete soil samples representing different soil layers were collected from each of the test pits. Each soil sample was logged in the field, placed in laboratory supplied glass sample jars and refrigerated until selected samples were delivered to the laboratory for analysis. A separate aliquot of each soil sample was placed in a sealed plastic bag and allowed to equilibrate to ambient temperature prior to measurement of organic vapours using a MiniRae 2000 photionization detector (PID) (details regarding the soil vapour measurements are provided in section 6.4 of this report). The PID results combined with the field observations were used to select representative soil samples for laboratory analysis. One (1) or two (2) worst case soil samples were selected from TP11-2, TP11-5, TP11-6 and TP11-9 based on visual and olfactory observations and/or from depth horizons at which potential impact would most likely have occurred and PID readings. Selected soil samples were stored in coolers with ice and submitted under chain of custody procedures to Maxxam Analytics of Ottawa (Maxxam) for laboratory analysis of one or more of the following parameters: metals, VOCs, PHC F1 to F4, PAHs, SAR, EC, free cyanide and pH. The soil samples collected for PHC F1 and VOCs analyses were collected in methanol preserved vials.

The table below summarizes the soil sample IDs submitted for analytical analyses, depths, PID head space readings, and chemicals of concern analyzed:

**Summary of Soil Samples Submitted for Analyses**

| Soil sample ID | Test Pit Location | Depth Interval (mbgs) | PID readings (ppm) | Analyses |
|---|---|---|---|---|
| TP11-2 | Test pit completed outside the area occupied by the former snow dump (representing the background soil conditions at the Site) | SA2 (0.5-0.75) | 1.7 | PHC F1 to F4, VOCs, PAHs, metals, pH, and SAR |
| TP11-5 | Test pit completed in the area occupied by the former snow dump | SA1 (0-0.25) | 1.5 | Metals and SAR |
| TP11-6 | Test pit completed in the area occupied by the former snow dump and the access road to the snow dump | SA2 (0.45-0.62) | 1.5 | Metals and SAR |
| TP11-9 | Test pit completed in the area occupied by the former snow dump | SA1 (0.1-0.3) | 1.3 | Metals, pH, SAR, free cyanide, EC |
| | | SA2 (0.41-0.65) | 1.9 | PHC F1 to F4, VOCs, PAHs, metals, pH, SAR, free cyanide, EC |
| | | SA12 (0.41-0.65) Duplicate of SA2 | - | PHC F1 to F4, VOCs, PAHs, metals, pH, SAR, free cyanide, EC |

The test pits details are presented on the Record of Test Pits in Appendix B.

### 5.3.3 Fill Sampling

As already mentioned in section 2.0 of this report, piles of fill material originated from the recent construction of the Southwest Transitway (located adjacent to the Site) are present on the Site. Generally three (3) areas of fill piles were observed at the Site. As such, three composite samples (SA1, SA2, and SA3) were collected from each of the piles in order to assess the fill quality and were submitted for laboratory analyses of PHC F1 to F4 or metals.

Two of the composite samples (SA1 and SA3) were submitted to Maxxam for analyses of metals and one composite sample (SA2) was submitted for analyses of PHC F1 to F4.

The approximate location of the piles of the fill material and the composite samples collected from the piles is shown on Figure 2.

### 5.3.4 Groundwater Sampling

Golder collected a groundwater sample from the monitoring well on November 30, 2011. Prior to sampling, the static water level was recorded in the monitoring well (recorded groundwater level is presented in Section 6.3). The well was then purged until the well went dry three times. The purged water from the well had no evidence of hydrocarbon sheens or odours. Well purging and sampling was completed using dedicated tubing and a Waterra foot valve. One groundwater sample was collected from the monitoring well MW/BH11-8 and one duplicate sample was collected from MW/BH11-8 (identified as MW/BH11-88) for QA/QC purposes. The groundwater samples were collected directly into laboratory supplied bottles, placed in an insulated cooler with ice packs, and submitted under chain of custody documentation to Maxxam for analysis of dissolved metals, VOCs, PHC F1 to F4, metals, sodium and chloride. The groundwater sample collected for metal analyses was field filtered using a 0.45 µm filter.

# 6.0 RESULTS

## 6.1 Applicable Standards and Guidelines

Provincial standards described in the document entitled "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act*" dated April 15, 2011 (the Standard Document) are currently used for the assessment of potentially contaminated sites in the context of Ontario Regulation ("O. Reg.") 153/04 as amended.

The following rationale was used for the selection of the standards to be used for reference purpose only:

- The Site is located in an area which is serviced by a municipal drinking water supply which is not supplied by the local groundwater. No drinking water supply wells are known to be present within 100 m of the Site. Thus, existing private and municipal water supplies will not be adversely affected if non-potable groundwater standards are utilized for this Site;
- The overburden thickness encountered in the borehole BH11-8 as well as in the test pits completed at the Site was less than 2 m;
- The Site is not adjacent to a water body and does not contain land that is within 30 m of a water body;
- The Site is not located within an area of natural significance, or included or is adjacent to such area;
- Given that the Site will be developed with a church, the most sensitive land use of the Site is industrial/commercial/community, based on the assumption that there will be no full-time day care or pre-school in the proposed church; and,
- Based on observed soil conditions in the test pits, sand and gravel was assumed to be possible pathways for the migration of impacted groundwater and therefore the criteria associated with a coarse textured soil were considered most applicable to this Site (conservative approach).

Based on the above evidence, it appears that the Site would be classified as a shallow soil property (i.e., a sensitive property) under O. Reg. 153/04 as amended as more than 1/3 of the property could have a thickness of overburden of 2.0 metres or less. As such, the *MOE Table 7 Standards: Generic Site Condition Standards for Shallow Soil in a Non-Potable Ground Water Condition*, for Industrial/Commercial/Community Property Use, coarse textured soil ("MOE Table 7 Standards") is applicable for the Site and was used for comparison of the analytical results of the soil and groundwater samples that were submitted for laboratory analysis.

## 6.2 Overburden and Bedrock Geology

The subsurface conditions at the Site are generally described as topsoil and/or fill underlain by silty sand and gravel overlying sandstone bedrock. Fill was encountered at TP11-5, TP11-6, and TP11-9. The fill is comprised of brown and gray sand, some gravel, occasional asphaltic and concrete pieces, and traces of plastic and metal. The thickness of the fill layer varied between 0.20 and 0.30 m. The depth to the bedrock encountered in the geo-environmental test pits and the borehole ranged from exposed bedrock at BH11-8 to 0.75 mbgs at TP11-2. No visible staining or hydrocarbon odour was observed in any of the collected soil samples.

A detailed description of the subsurface conditions encountered in the geo-environmental test pits and during the borehole drilling is presented in Appendices A and B.

In addition, a detailed description of the subsurface conditions encountered in the geotechnical test pits concurrently completed at the Site by Golder as part of the geotechnical investigation is presented in a separate geotechnical report prepared for the Site.

## 6.3 Hydrogeology

Golder visited the Site on November 30, 2011 to record the static water level in the monitoring well MW/BH11-8 prior to groundwater sampling.

A summary of the groundwater level recorded on November 30, 2011 is presented below.

| Location | Depth to Groundwater Level TOP (m), November 30, 2011 | Depth to Groundwater Level from the Ground Surface (m), November 30, 2011 | Ground surface elevation (masl)* | Calculated Water Table Elevation (masl) November 30, 2011 |
|---|---|---|---|---|
| BH11-8 | 5.64 | 4.97 | 96.03 | 91.06 |

Notes: 1) TOP – Top of the pipe;
*- geodetic elevation

At the time of the water level measurements on November 30, 2011, the groundwater table in the monitoring well MW/BH11-8 was intersected by the screen which allowed detection and measurement of any floating petroleum product in the well if present. Free phase floating hydrocarbons were not detected in the monitoring well during the well purging on November 30, 2011.

## 6.4 Soil Headspace Vapour Measurements

A representative portion of the soil samples collected from the geo-environmental test pits was placed into a sealed plastic bag for organic vapour measurement using a PID. The PID used in the field was a MiniRae 2000 (Model # PGM-7300, serial number 590-001605) and was equipped with a 10.6 eV lamp. The PID was calibrated using an isobutylene standard of 100 parts per million (ppm) by a certified Golder technician, on November 23, 2011. The PID was used to provide an estimate of the relative concentrations of ionizable organic vapours in the headspace of each soil sample and was used to support the selection of the soil samples submitted from each geo-environmental test pit for laboratory analysis. The measured soil headspace vapour concentrations are presented in the Record of Test Pits in Appendix B. The measured soil headspace vapour concentrations ranged between 0 (non-detected) and 1.9 parts per million (ppm). As already mentioned in section 5.3.1 of this report, no overburden was present at BH11-8 and as such, no soil samples were collected from this location.

## 6.5 Soil Analytical Results

Soil analytical results compared to the MOE Table 7 (non-potable condition) Standards have been summarised in Tables 1 through 4, following the text. Laboratory Certificates of Analysis are provided in Appendix C.

A review of the analytical results showed that the concentrations of the parameters analysed in all soil samples submitted for laboratory analyses were below the MOE Table 7 Standards. Thus, the soil samples are not contaminated in terms of the regulation.

## 6.6 Fill Analytical Results

Fill analytical results compared to the MOE Table 7 (non-potable condition) Standards have been summarised in Table 1 and Table 3, following the text. Laboratory Certificates of Analysis are provided in Appendix B.

A review of the analytical results showed that the concentrations of the parameters analysed in the composite fill samples submitted for laboratory analyses were below the MOE Table 7 Standards. Thus, the fill is not contaminated in terms of the regulation.

## 6.7 Groundwater Analytical Results

Groundwater analytical results compared to the MOE Table 7 (non-potable condition) Standards have been summarised in Tables 5 through 7, following the text. Laboratory Certificates of Analysis are provided in Appendix C.

A review of the analytical results showed that the concentrations of the parameters analysed in the groundwater sample collected from MW/BH11-8 were below the MOE Table 7 Standards. Thus, the groundwater sample is not contaminated in terms of the regulation.

## 6.8 Quality Control and Quality Assurance

As part of the Phase II ESA, Golder implemented the following field quality control measures:

- Use of dedicated or cleaned sampling equipment between sampling events;
- Use of calibrated field monitoring equipment (PID);
- Use of appropriate laboratory supplied sampling jars;
- Analysis within an acceptable holding time;
- Delivery of samples under a Chain of Custody; and,
- Laboratory analysis by CALA accredited laboratory (Maxxam).

In addition to the above, Golder implemented the following laboratory analytical quality control measure:

- Collecting of a duplicate soil sample from TP11-9 SA2 denoted as sample TP11-9 SA12 in the laboratory reports and submission for analyses of PHC F1 to F4, VOCs, PAHs, metals, pH, SAR, free cyanide, and EC; and,
- Collecting of a duplicate groundwater sample from monitoring well MW/BH11-8 denoted as sample MW/BH11-88 in the laboratory reports and submission for analyses of dissolved metals, VOCs, PHC F1 to F4, metals, sodium and chloride.

A review of the laboratory analytical results for the soil and groundwater duplicate sample compared to the analytical results for the original samples show that differences between the results are within acceptable limits.

A review of the laboratory internal blanks, duplicates, spikes and recoveries show that all were within acceptable ranges.

Based on the above, Golder considers the data obtained during the Phase II ESA is reliable, reproducible and representative of site conditions.

# 7.0 CONCLUSIONS

A Phase II ESA was carried out to assess the groundwater and soil quality at the Site for potential impacts associated with the former use of part of the Site as a snow disposal facility and the presence of fill material on the Site. Based on the scope of work completed, the following conclusions can be made:

- The subsurface conditions at the Site are generally described as topsoil and/or fill underlain by silty sand and gravel overlying sandstone bedrock. The depth to the bedrock encountered in the geo-environmental test pits and the borehole ranges from exposed bedrock at ground surface to 0.75 mbgs;
- *MOE Table 7 Standards: Generic Site Condition Standards for Shallow Soil in a Non-Potable Ground Water Condition*, for Industrial/Commercial/Community Property Use, coarse textured soil (April 15, 2011) is applicable for the Site and was used for comparison of the analytical results of the soil and groundwater samples that were submitted for laboratory analysis;
- Soil sampling completed at the Site indicated that the concentrations of PHC F1 to F4, VOCs, PAHs, metals, EC, pH, SAR and free cyanide in all soil samples analysed for one or more of these parameters were below the applicable MOE Table 7 Standards. Thus, the soil samples are not contaminated in terms of the regulation;
- Fill sampling completed at the Site indicated that the concentrations of PHC F1 to F4 and metals in the three composite fill samples submitted for laboratory analyses were below the MOE Table 7 Standards. Thus, the fill is not contaminated in terms of the regulation;
- Groundwater sampling completed at the Site indicated that the concentrations of PHC F1 to F4, VOCs, metals, sodium and chloride in the groundwater sample collected from the monitoring well installed in the part of the Site previously occupied by the former snow dump were below the applicable MOE Table 7 Standards. Thus, the groundwater sample is not contaminated in terms of the regulation;
- The soil and groundwater sampling completed at the Site did not suggest that the former snow dump impacted the subsurface of the part of the Site previously occupied by the former snow dump. As such, no further investigations are required at this time;
- The monitoring well installed on the Site as part of the Phase II ESA if no longer required should be decommissioned in accordance with the O. Reg.903;
- The monitoring well that was observed in the southwest part of the Site, south of the access road and near to the Site entrance was confirmed to be located on the part of the Site owned by the City. No information regarding the well was provided by the City;
- There were no issues of potential environmental concern identified during the Phase I ESA in the vicinity of the southwest monitoring well. Based on the results from the snow dump area being below the applicable standards, sampling of the well in the southwest part of the Site is not considered necessary to evaluate environmental conditions at the Site; and,
- Considering that the well will be part of the land purchased it should be decommissioned in accordance with O.Reg.903.

# 8.0 REPORT LIMITATIONS

This report was prepared for the exclusive use of Sequoia Community Church. The report, which specifically includes all text and figures, is based on data and information collected during the document review and Site investigation work conducted by Golder Associates Ltd. and is based solely on the conditions of the property at the time of the Site work, supplemented by historical information and data obtained by Golder Associates Ltd. as described in this report.

The assessment of environmental conditions at the Site has been made using the results of chemical analysis of discrete soil and groundwater samples from a limited number of locations. The Site conditions between sampling locations have been inferred based on conditions observed at sampling locations. Additional study, including further subsurface investigation, can reduce the inherent uncertainties associated with this type of study. However, it is never possible, even with exhaustive sampling and testing, to dismiss the possibility that part of a site may be contaminated and remain undetected.

The services performed, as described in this report, were conducted in a manner consistent with that level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

Any use which a third party makes of this report, or any reliance on, or decisions to be made based on it, are the responsibilities of such third parties. Golder Associates Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The content of this report is based on information collected during Golder Associates Ltd.'s Site investigation and its present understanding of the site conditions, and its professional judgment in light of such information at the time of this report. This report provides a professional opinion and therefore no warranty is either expressed, implied, or made as to the conclusions, advice and recommendations offered in this report. This report does not provide a legal opinion regarding compliance with applicable laws. With respect to regulatory compliance issues, it should be noted that regulatory statutes and the interpretation of regulatory statues are subject to change.

The findings and conclusions of this report are valid only as of the date of this report. If new information is discovered in future work, including excavations, borings, or other studies, Golder Associates Ltd. should be requested to re-evaluate the conclusions of this report, and to provide amendments as required.

The monitoring well installed in the course of this investigation is property of the Sequoia Community Church.

# 9.0 CLOSURE

We trust this report satisfies your current requirements. If you have any questions regarding this report please contact the undersigned.

**GOLDER ASSOCIATES LTD.**

Maria Staneva, M.Eng.
Environmental Consultant

Tim Robertson, P. Eng.
Associate

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TABLE 1: SUMMARY OF SOIL ANALYTICAL DATA
FOR PETROLEUM HYDROCARBONS AND BTEX



| Parameter | Reporting Limit | MOE Table 7 Criteria[1] | TP11-2 SA2 (soil background sample) | TP11-9 SA2 (sample collected from the former snow dump area) | TP11-9 SA12 (Duplicate of TP11-9 SA2) | SA2 (composite sample from fill piles) |
|---|---|---|---|---|---|---|
| **Sample depth (mbgs)** | | | **0.5-0.75** | **0.41-0.65** | **0.41-0.65** | |
| **Sampling date** | | | **24-Nov-11** | **24-Nov-11** | **24-Nov-11** | **25-Nov-11** |
| Benzene | 0.32 | 0.21 | <0.02 | <0.02 | <0.02 | <0.02 |
| Toluene | 68 | 2.3 | <0.02 | <0.02 | <0.02 | <0.02 |
| Ethylbenzene | 9.5 | 2 | <0.02 | <0.02 | <0.02 | <0.02 |
| m/p xylenes | NV | NV | <0.02 | <0.02 | <0.02 | <0.04 |
| o xylene | NV | NV | <0.02 | <0.02 | <0.02 | <0.02 |
| Total xylenes | 26 | 3.1 | <0.02 | <0.02 | <0.02 | <0.04 |
| F1 (C6-C10) | 55 | 55 | <10 | <10 | <10 | <10 |
| F1 (C6-C10) - BTEX | 55 | 55 | <10 | <10 | <10 | <10 |
| F2 (C10-C16) | 230 | 98 | <10 | <10 | <10 | <10 |
| F3 (C16-C34) | 1700 | 300 | <10 | <10 | <10 | <10 |
| F4 (C34-C50) | 3300 | 2800 | <10 | <10 | <10 | <10 |
| Reached Baseline at C50 | NV | NV | YES | YES | YES | YES |
| F4 Gravimetric | 3300 | 2800 | | - | - | - |

Prepared By: MS
Checked By: NM

Notes:

All values expressed in µg/g

mbgs-metres below ground surface

<10-Not detected above the method detection limits (MDL)

NV = No value derived.

Shaded Exceeds MOE Table 7 Standards

[1]- Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) - Table 7 - Generic Site Condition Standards for Shallow Soils in a Non Potable Ground Water Condition - Industrial/Commercial/Community Property Use, coarse textured soils.

| Parameter | Reporting Limit | MOE Table 7 Criteria[1] | TP11-2 SA2 (background soil sample) | TP11-9 SA2 (sample collected from the former snow dump area) | TP11-9 SA12 (Duplicate of TP11-9 SA2) |
|---|---|---|---|---|---|
| **Sample depth (mbgs)** | | | **0.5-0.75** | **0.41-0.65** | **0.41-0.65** |
| **Sampling date** | | | **24-Nov-11** | **24-Nov-11** | **24-Nov-11** |
| Acetone | 0.5 | 16 | <0.5 | <0.5 | <0.5 |
| Benzene | 0.02 | 0.32 | <0.02 | <0.02 | <0.02 |
| Bromodichloromethane | 0.05 | 18 | <0.05 | <0.05 | <0.05 |
| Bromoform | 0.05 | 0.61 | <0.05 | <0.05 | <0.05 |
| Bromomethane | 0.05 | 0.05 | <0.05 | <0.05 | <0.05 |
| Carbon Tetrachloride | 0.05 | 0.21 | <0.05 | <0.05 | <0.05 |
| Chlorobenzene | 0.05 | 2.4 | <0.05 | <0.05 | <0.05 |
| Chloroform | 0.05 | 0.47 | <0.05 | <0.05 | <0.05 |
| Dibromochloromethane | 0.05 | 13 | <0.05 | <0.05 | <0.05 |
| 1,2-Dichlorobenzene | 0.05 | 6.8 | <0.05 | <0.05 | <0.05 |
| 1,3-Dichlorobenzene | 0.05 | 9.6 | <0.05 | <0.05 | <0.05 |
| 1,4-Dichlorobenzene | 0.05 | 0.2 | <0.05 | <0.05 | <0.05 |
| 1,1-Dichloroethane | 0.05 | 17 | <0.05 | <0.05 | <0.05 |
| 1,2-Dichloroethane | 0.05 | 0.05 | <0.05 | <0.05 | <0.05 |
| 1,1-Dichloroethylene | 0.05 | 0.064 | <0.05 | <0.05 | <0.05 |
| Cis-1,2-Dichloroethylene | 0.05 | 55 | <0.05 | <0.05 | <0.05 |
| Trans-1,2-Dichloroethylene | 0.05 | 1.3 | <0.05 | <0.05 | <0.05 |
| 1,2-Dichloropropane | 0.05 | 0.16 | <0.05 | <0.05 | <0.05 |
| Cis-1,3-Dichloropropylene | 0.03 | 0.18 | <0.03 | <0.03 | <0.03 |
| Trans-1,3-Dichloropropylene | 0.04 | 0.18 | <0.04 | <0.04 | <0.04 |
| Ethylbenzene | 0.02 | 9.5 | <0.02 | <0.02 | <0.02 |
| Ethylene Dibromide | 0.05 | 0.05 | <0.05 | <0.05 | <0.05 |
| Methyl Ethyl Ketone | 0.5 | 70 | <0.5 | <0.5 | <0.5 |
| Methylene Chloride | 0.05 | 1.6 | <0.05 | 0.05 | <0.05 |
| Methyl Isobutyl Ketone | 0.5 | 31 | <0.5 | <0.5 | <0.5 |
| Methyl-t-Butyl Ether | 0.05 | 11 | <0.05 | <0.05 | <0.05 |
| Styrene | 0.05 | 34 | <0.05 | <0.05 | <0.05 |
| 1,1,1,2-Tetrachloroethane | 0.05 | 0.087 | <0.05 | <0.05 | <0.05 |
| 1,1,2,2-Tetrachloroethane | 0.05 | 0.05 | <0.05 | <0.05 | <0.05 |
| Toluene | 0.02 | 68 | <0.02 | <0.02 | <0.02 |
| Tetrachloroethylene | 0.05 | 4.5 | <0.05 | <0.05 | <0.05 |
| 1,1,1-Trichloroethane | 0.05 | 6.1 | <0.05 | <0.05 | <0.05 |
| 1,1,2-Trichloroethane | 0.05 | 0.05 | <0.05 | <0.05 | <0.05 |
| Trichloroethylene | 0.05 | 0.91 | <0.05 | <0.05 | <0.05 |
| Vinyl Chloride | 0.02 | 0.032 | <0.02 | <0.02 | <0.02 |
| m-Xylene & p-Xylene | 0.02 | NV | <0.02 | <0.02 | <0.02 |
| o-Xylene | 0.02 | NV | <0.02 | <0.02 | <0.02 |
| Total Xylenes | 0.02 | 26 | <0.02 | <0.02 | <0.02 |
| Dichlorodifluoromethane | 0.05 | 16 | <0.05 | <0.05 | <0.05 |
| Hexane(n) | 0.05 | 46 | <0.05 | <0.05 | <0.05 |
| Trichlorofluoromethane | 0.05 | 4 | <0.05 | <0.05 | <0.05 |

Prepared By: MS
Checked By: NM

Notes:
All values expressed in µg/g

mbgs-metres below ground surface

<10-Not detected above the method detection limits (MDL)

NV = No value derived.

Shaded — Exceeds MOE Table 7 Standards

[1]- Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) - Table 7 - Generic Site Condition Standards for Shallow Soils in a Non Potable Ground Water Condition - Industrial/Commercial/Community Property Use, coarse textured soils.

TABLE 3: SUMMARY OF SOIL ANALYTICAL DATA
FOR METALS AND INORGANICS



| Parameter | Reporting Limit | MOE Table 7 Criteria[1] | TP11-2 SA2 (background soil sample) | TP11-5 SA1 (sample collected from the former snow dump area) | TP11-6 SA2 (sample collected from the former snow dump area) | TP11-9 SA1 (sample collected from the former snow dump area) | TP11-9 SA2 (sample collected from the former snow dump area) | TP11-9 SA12 (Duplicate of TP11-9 SA2) | SA1 (composite sample from fill piles) | SA3 (composite sample from fill piles) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample depth (mbgs)** | | | **0.5-0.75** | **0-0.25** | **0.45-0.62** | **0.10-0.30** | **0.41-0.65** | **0.41-0.65** | | |
| **Sampling date** | | | **24-Nov-11** | **24-Nov-11** | **24-Nov-11** | **24-Nov-11** | **24-Nov-11** | **24-Nov-11** | **25-Nov-11** | **25-Nov-11** |
| Antimony | 0.2 | 40 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| Arsenic | 1 | 18 | 3 | 2 | 2 | 1 | 1 | 1 | 2 | <1 |
| Barium | 0.5 | 670 | 120 | 72 | 61 | 29 | 63 | 64 | 98 | 27 |
| Beryllium | 0.2 | 8 | 0.6 | 0.3 | 0.5 | <0.2 | 0.6 | 0.8 | 0.4 | <0.2 |
| Boron (Hot Water Soluble) | 0.05 | 2 | - | - | - | 0.28 | 0.27 | 0.25 | - | - |
| Cadmium | 0.1 | 1.9 | 0.1 | 0.1 | 0.2 | 0.4 | 0.2 | 0.2 | 0.2 | <0.1 |
| Chromium | 1 | 160 | 22 | 15 | 18 | 18 | 25 | 25 | 16 | 7 |
| Chromium VI | 0.2 | 8 | - | - | - | 0.6 | <0.2 | <0.2 | - | - |
| Cobalt | 0.1 | 80 | 7.6 | 6.1 | 6.2 | 4.5 | 7.3 | 7.4 | 6.7 | 3.4 |
| Copper | 0.5 | 240 | 15 | 17 | 17 | 20 | 32 | 32 | 15 | 9.1 |
| Lead | 1 | 120 | 10 | 11 | 12 | 75 | 8 | 9 | 13 | 4 |
| Mercury | 0.05 | 3.9 | - | - | - | <0.05 | 0.08 | 0.09 | - | - |
| Molybdenum | 0.5 | 40 | <0.5 | 0.6 | 0.9 | 0.6 | 0.7 | 0.7 | 0.7 | <0.5 |
| Nickel | 0.5 | 370 | 16 | 9.8 | 10 | 9.5 | 16 | 16 | 12 | 6.5 |
| Selenium | 0.5 | 5.5 | 0.6 | <0.5 | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Silver | 0.2 | 40 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| Thallium | 0.05 | 3.3 | 0.15 | 0.13 | 0.09 | 0.08 | 0.12 | 0.12 | 0.14 | <0.05 |
| Vanadium | 5 | 86 | 31 | 26 | 31 | 20 | 39 | 40 | 27 | 15 |
| Zinc | 5 | 340 | 26 | 39 | 35 | 79 | 44 | 48 | 35 | 15 |
| pH (pH Units) | | NV | 4.46 | - | - | 7.46 | 6.67 | 6.7 | - | - |
| Conductivity (ms/cm) | 0.002 | 1.4 | - | - | - | 0.13 | 0.33 | 0.34 | - | - |
| Sodium Absorption Ratio | | 12 | 0.71 | 0.64 | 0.77 | 0.28 | 7.6 | 7.4 | - | - |
| Cyanide, Free | 0.01 | 0.051 | - | - | - | <0.01 | <0.04 | <0.04 | - | - |
| Boron (Total) | 5 | 120 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Uranium | 0.05 | 33 | 0.75 | 0.48 | 0.61 | 0.36 | 0.66 | 0.64 | 0.59 | 0.5 |

Prepared By: MS
Checked By: NM

Notes:
All values expressed in µg/g
mbgs-metres below ground surface
<10-Not detected above the method detection limits (MDL)
NV = No value derived.
Shaded Exceeds MOE Table 7 Standards

[1]- Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) - Table 7 - Generic Site Condition Standards for Shallow Soils in a Non Potable Ground Water Condition - Industrial/Commercial/Community Property Use, coarse textured soils.

TABLE 4: SUMMARY OF SOIL ANALYTICAL DATA
FOR POLYCYCLIC AROMATIC HYDROCARBONS



| Parameter | Reporting Limit | MOE Table 7 Criteria[1] | TP11-2 SA2 (background soil sample) | TP11-9 SA2 (sample collected from the former snow dump area) | TP11-9 SA12 (Duplicate of TP11-9 SA2) |
|---|---|---|---|---|---|
| **Sample depth (mbgs)** | | | **0.5-0.75** | **0.41-0.65** | **0.41-0.65** |
| **Sampling date** | | | **24-Nov-11** | **24-Nov-11** | **24-Nov-11** |
| Acenaphthene | 0.005 | 96 | <0.005 | <0.01 | <0.01 |
| Acenaphthylene | 0.005 | 0.15 | <0.005 | <0.01 | <0.01 |
| Anthracene | 0.005 | 0.67 | <0.005 | <0.01 | <0.01 |
| Benzo(a)anthracene | 0.005 | 0.96 | <0.005 | <0.01 | <0.01 |
| Benzo(a)pyrene | 0.005 | 0.3 | <0.005 | 0.01 | <0.01 |
| Benzo(b/j)fluoranthene | 0.005 | 0.96 | <0.005 | 0.02 | 0.01 |
| Benzo(ghi)perylene | 0.005 | 9.6 | <0.005 | 0.01 | <0.01 |
| Benzo(k)fluoranthene | 0.005 | 0.96 | <0.005 | <0.01 | <0.01 |
| Chrysene | 0.005 | 9.6 | <0.005 | 0.01 | <0.01 |
| Dibenzo(a,h)anthracene | 0.005 | 0.1 | <0.005 | <0.01 | <0.01 |
| Fluoranthene | 0.005 | 9.6 | <0.005 | 0.02 | 0.02 |
| Fluorene | 0.005 | 62 | <0.005 | <0.01 | <0.01 |
| Indeno(1,2,3-cd)pyrene | 0.005 | 0.76 | <0.005 | 0.01 | <0.01 |
| 1-Methylnaphthalene * | 0.005 | 76 | <0.005 | <0.01 | <0.01 |
| 2-Methylnaphthalene * | 0.005 | 76 | <0.005 | <0.01 | <0.01 |
| Naphthalene | 0.005 | 9.6 | <0.005 | <0.01 | <0.01 |
| Phenanthrene | 0.005 | 12 | <0.005 | <0.01 | <0.01 |
| Pyrene | 0.005 | 96 | <0.005 | 0.02 | 0.02 |

Prepared By: MS
Checked By: NM

Notes:
All values expressed in µg/g
mbgs-metres below ground surface
<10-Not detected above the method detection limits (MDL)
NV = No value derived.
Shaded — Exceeds MOE Table 7 Standards

[1]- Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) - Table 7 - Generic Site Condition Standards for Shallow Soils in a Non Potable Ground Water Condition - Industrial/Commercial/Community Property Use, coarse textured soils.
* The methylnaphthalene standards are appliable to both 1-Methylnaphthelene and 2-Methylnapthalene, with the provision that if both are detected the sum of the two must not exceed the standard.

TABLE 5: SUMMARY OF GROUNDWATER ANALYTICAL DATA
FOR PETROLEUM HYDROCARBONS AND BTEX



| Parameter | Reporting Limit | MOE Table 7 Criteria[1] | MW/BH 11-8 | MW/BH 11-88 (Duplicate of MW/BH11-8) |
|---|---|---|---|---|
| **Sampling date** | | | **30-Nov-11** | **30-Nov-11** |
| Benzene | 0.1 | 0.5 | 0.4 | 0.4 |
| Toluene | 0.2 | 320 | 0.2 | 0.2 |
| Ethylbenzene | 0.1 | 54 | <0.1 | <0.1 |
| m/p xylenes | 0.1 | NV | <0.1 | <0.1 |
| o xylene | 0.1 | NV | <0.1 | <0.1 |
| Total Xylenes | 0.1 | 72 | <0.1 | <0.1 |
| F1 (C6-C10) | 25 | 420 | <25 | <25 |
| F1 (C6-C10) - BTEX | 25 | 420 | <25 | <25 |
| F2 (C10-C16) | 100 | 150 | <100 | <100 |
| F3 (C16-C34) | 100 | 500 | <100 | <100 |
| F4 (C34-C50) | 100 | 500 | <100 | <100 |
| Reached Baseline at C50 | | NV | YES | YES |
| F4 Gravimetric | | 500 | | |

Prepared By: MS
Checked By: NM

Notes:
All values expressed in µg/L

NV = No value derived.
<25-Not detected above the method detection limits (MDL)

Shaded Exceeds MOE Table 7 Standards

[1]- Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) - Table 7 - Generic Site Condition Standards for Shallow Soils in a Non Potable Ground Water Condition - All Types of Property Use, coarse textured soils.

| Parameter | Reporting limit | MOE Table 7 Criteria[1] | MW/BH 11-8 | MW/BH 11-88 (Duplicate of MW/BH11-8) |
|---|---|---|---|---|
| Sampling date | | | 30-Nov-11 | 30-Nov-11 |
| Acetone | 10 | 100000 | <10 | <10 |
| Benzene | 0.1 | 0.5 | 0.4 | 0.4 |
| Bromodichloromethane | 0.1 | 67000 | 0.1 | 0.1 |
| Bromoform | 0.2 | 5 | <0.2 | <0.2 |
| Bromomethane | 0.5 | 0.89 | <0.5 | <0.5 |
| Carbon Tetrachloride | 0.1 | 0.2 | <0.1 | <0.1 |
| Chlorobenzene | 0.1 | 140 | <0.1 | <0.1 |
| Chloroform | 0.1 | 2 | 1.8 | 1.9 |
| Dibromochloromethane | 0.2 | 65000 | <0.2 | <0.2 |
| 1,2-Dichlorobenzene | 0.2 | 150 | <0.2 | <0.2 |
| 1,3-Dichlorobenzene | 0.2 | 7600 | <0.2 | <0.2 |
| 1,4-Dichlorobenzene | 0.2 | 0.5 | <0.2 | <0.2 |
| 1,1-Dichloroethane | 0.1 | 11 | <0.1 | <0.1 |
| 1,2-Dichloroethane | 0.2 | 0.5 | <0.2 | <0.2 |
| 1,1-Dichloroethylene | 0.1 | 0.5 | <0.1 | <0.1 |
| Cis-1,2-Dichloroethylene | 0.1 | 1.6 | <0.1 | <0.1 |
| Trans-1,2-Dichloroethylene | 0.1 | 1.6 | <0.1 | <0.1 |
| 1,2-Dichloropropane | 0.1 | 0.58 | <0.1 | <0.1 |
| Cis-1,3-Dichloropropylene | 0.2 | 0.5 | <0.2 | <0.2 |
| Trans-1,3-Dichloropropylene | 0.2 | 0.5 | <0.2 | <0.2 |
| Ethylbenzene | 0.1 | 54 | <0.1 | <0.1 |
| Ethylene Dibromide | 0.2 | 0.2 | <0.2 | <0.2 |
| Methyl Ethyl Ketone | 5 | 21000 | <5 | <5 |
| Methylene Chloride | 0.5 | 26 | <0.5 | <0.5 |
| Methyl Isobutyl Ketone | 5 | 5200 | <5 | <5 |
| Methyl-t-Butyl Ether | 0.2 | 15 | <0.2 | <0.2 |
| Styrene | 0.2 | 43 | <0.2 | <0.2 |
| 1,1,1,2-Tetrachloroethane | 0.1 | 1.1 | <0.1 | <0.1 |
| 1,1,2,2-Tetrachloroethane | 0.2 | 0.5 | <0.2 | <0.2 |
| Toluene | 0.2 | 320 | 0.2 | 0.2 |
| Tetrachloroethylene | 0.1 | 0.5 | <0.1 | <0.1 |
| 1,1,1-Trichloroethane | 0.1 | 23 | <0.1 | <0.1 |
| 1,1,2-Trichloroethane | 0.2 | 0.5 | <0.2 | <0.2 |
| Trichloroethylene | 0.1 | 0.5 | <0.1 | <0.1 |
| Vinyl Chloride | 0.2 | 0.5 | <0.2 | <0.2 |
| m-Xylene & p-Xylene | 0.1 | NV | <0.1 | <0.1 |
| o-Xylene | 0.1 | NV | <0.1 | <0.1 |
| Total Xylenes | 0.1 | 72 | <0.1 | <0.1 |
| Dichlorodifluoromethane | 0.5 | 3500 | <0.5 | <0.5 |
| Hexane(n) | 0.5 | 5 | <0.5 | <0.5 |
| Trichlorofluoromethane | 0.2 | 2000 | <0.2 | <0.2 |

Prepared By: MS
Checked By: NM

Notes:
All values expressed in µg/L

NV = No value derived.

Shaded Exceeds MOE Table 7 Standards

[1]- Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) - Table 7 - Generic Site Condition Standards for Shallow Soils in a Non Potable Ground Water Condition - All Types of Property Use, coarse textured soils.

| Parameter | Reporting Limit | MOE Table 7 Standard[1] | MW/BH 11-8 | MW/BH 11-88 (Duplicate of MW/BH11-8) |
|---|---|---|---|---|
| **Sampling date** | | | **30-Nov-11** | **30-Nov-11** |
| Antimony | 0.5 | 16000 | <0.5 | 1.3 |
| Arsenic | 1 | 1500 | <1 | <1 |
| Barium | 2 | 23000 | 76 | 73 |
| Beryllium | 0.5 | 53 | <0.5 | <0.5 |
| Boron | 10 | 36000 | 32 | 37 |
| Cadmium | 0.1 | 2.1 | 0.12 | 0.1 |
| Chromium | 5 | 640 | <5 | <5 |
| Cobalt | 0.5 | 52 | 9.2 | 9.8 |
| Copper | 1 | 69 | 28 | 28 |
| Lead | 0.5 | 20 | <0.5 | <0.5 |
| Molybdenum | 0.5 | 7300 | 12 | 13 |
| Nickel | 1 | 390 | 32 | 33 |
| Sodium | 100 | 1800000 | 200000 | 200000 |
| Selenium | 2 | 50 | <2 | <2 |
| Silver | 0.1 | 1.2 | <0.1 | <0.1 |
| Thallium | 0.05 | 400 | <0.05 | <0.05 |
| Vanadium | 0.5 | 200 | <0.5 | <0.5 |
| Zinc | 5 | 890 | 54 | 54 |
| Chloride | 1000 | 1800000 | 170000 | 150000 |
| Uranium | 0.1 | 330 | 7.7 | 8.2 |

Notes:

Prepared By: MS
Checked By: NM

<0.005-Not detected above the method detection limits (MDL)

NV = No value derived. N/A = Not applicable.

Shaded Exceeds MOE Table 7 Standards

[1]- Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) - Table 7 - Generic Site Condition Standards for Shallow Soils in a Non Potable Ground Water Condition - All Types of Property Use, coarse textured soils.


**LEGEND**

APPROXIMATE SITE BOUNDARY

**NOTE**

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT No. 11-1122-0210/2000.

**REFERENCE**

DATA PROVIDED BY ESRI CANADA ARCGIS ONLINE 2011
DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18

Golder Associates
Ottawa, Ontario

| | |
|---|---|
| PROJECT No. | 11-1122-0210 |
| SCALE | AS SHOWN |
| REV. | 0 |
| DATE | 16 Dec. 2011 |
| DESIGN | MS |
| GIS | BR |
| CHECK | MS |
| REVIEW | TDR |

TITLE

# KEY PLAN

PROJECT PHASE II ENVIRONMENTAL SITE ASSESSMENT
645 LONGFIELDS DRIVE, OTTAWA, ONTARIO

**FIGURE 1**

Path: N:\Active\2011\1122 - Contaminated Lands\11-1122-0210 Ph. I and II ESA, 645 Longfields Dr., Sequoia Church\Spatial_IMMXD\11112220210-2000-01.mxd


**LEGEND**

- LOCATION OF THE GEO-ENVIRONMENTAL TEST PIT
- LOCATION OF THE GEOTECHNICAL TEST PIT
- LOCATION OF THE ENVIRONMENTAL BOREHOLE COMPLETED WITH A MONITORING WELL
- APPROXIMATE LOCATION OF A WELL OBSERVED TO BE POTENTIALLY ON THE SITE
- SOUTH WEST TRANSITWAY
- FILL MATERIAL PILE- S1, S2, S3 - COMPOSITE SOIL SAMPLES COLLECTED FROM THE PILES OF FILL MATERIAL PRESENT ON THE SITE
- APPROXIMATE SITE BOUNDARY
- FORMER SNOW DUMP
- PART OF THE SITE OWNED BY JOCK RIVER FARMS LIMITED
- PART OF THE SITE OWNED BY THE CITY OF OTTAWA

**NOTE**

THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 11-1122-0210/2000.

**REFERENCE**

BING MAPS HYBRID DATA PROVIDED BY ESRI CANADA ARCGIS ONLINE 2011.
HTTP://WWW.ESRI.COM/SOFTWARE/ARCGIS/ARCGISONLINE/BING-MAPS.HTML
PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: UTM ZONE 18

40 0 40
SCALE 1:1,200 METRES

PROJECT
PHASE II ENVIRONMENTAL SITE ASSESSMENT
645 LONGFIELDS DRIVE, OTTAWA, ONTARIO

TITLE
# BOREHOLE AND TEST PIT LOCATIONS

Golder Associates
Ottawa, Ontario

| PROJECT No. 11-1122-0210 | | | SCALE AS SHOWN | REV. 0 |
|---|---|---|---|---|
| DESIGN | MS | 07 Dec. 2011 | FIGURE 2 | |
| GIS | BR | 16 Dec. 2011 | | |
| CHECK | MS | 16 Dec. 2011 | | |
| REVIEW | TDR | 16 Dec. 2011 | | |

Path: N:\Active\2011\1122 - Contaminated Lands\11-1122-0210 Ph. I and II ESA, 645 Longfields Dr., Sequoia Church\Spatial_IMMXD\1111220210-2000-02.mxd

# APPENDIX A

## Record of Boreholes

PROJECT: 11-1122-0210

# RECORD OF DRILLHOLE: 11-08

SHEET 1 OF 1

LOCATION: See Site Plan

DRILLING DATE: Nov. 25, 2011

DATUM: Geodetic

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 55

DRILLING CONTRACTOR: Marathon Drilling

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

| DEPTH SCALE METRES | DRILLING RECORD | DESCRIPTION | SYMBOLIC LOG | ELEV. / DEPTH (m) | RUN No. | PENETRATION RATE (m/min) | FLUSH | COLOUR % RETURN | RECOVERY: TOTAL CORE % | RECOVERY: SOLID CORE % | R.Q.D. % | FRACT. INDEX PER 0.3 | DISCONTINUITY DATA: DIP w.r.t. CORE AXIS | DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION | HYDRAULIC CONDUCTIVITY K, cm/sec | DIAMETRAL POINT LOAD INDEX (MPa) | NOTES WATER LEVELS INSTRUMENTATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GROUND SURFACE | | 96.03 | | | | | | | | | | | | | |
| 0 | Rotary Drill NQ Core | Slightly weathered yellow brown and light grey SANDSTONE | | 0.00 | 1 | | | | | | | | | | | | Bentonite Seal |
| 1 | | | | | | | | | | | | | | | | | |
| 2 | | | | 93.59 | 2 | | | | | | | | | | | | |
| | | Fresh grey SANDSTONE | | 2.44 | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | Silica Sand |
| 4 | | | | | 3 | | | | | | | | | | | | |
| 5 | | | | | 4 | | | | | | | | | | | | |
| | | | | | 5 | | | | | | | | | | | | |
| 6 | | | | | 6 | | | | | | | | | | | | |
| 7 | | | | | 7 | | | | | | | | | | | | 38 mm Diam. PVC #10 Slot Screen |
| 8 | | | | | 8 | | | | | | | | | | | | |
| 9 | | | | 86.78 | | | | | | | | | | | | | |
| | | End of Drillhole | | 9.25 | | | | | | | | | | | | | W.L in Screen at 91.06 m Elev. on Nov. 30, 2011 |
| 10 | | | | | | | | | | | | | | | | | |

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: P.A.H.
CHECKED: W.A.M.

MIS-RCK 001 1111220210.GPJ GAL-MISS.GDT 12/13/11 P.G.

# APPENDIX B

## Record of Test Pits

| Test Pit Number | Depth Interval (mbgs) | Soil Type | Sample ID (Depth in mbgs) | Organic Vapour Readings (ppm) | Observations |
|---|---|---|---|---|---|
| TP11-2 | 0-0.16 | Dark brown to black and red-brown SAND and GRAVEL with organic matter and roots | SA1 (0.05-0.17) | 1 | Test pit dry |
| | 0.16-0.75 | Red brown and grey brown SILTY SAND and GRAVEL with cobles, boulders and rock slabs (0.6x0.9x0.2m) | **SA2 (0.5-0.75)** | **1.7** | |
| | 0.75 | Refusal at SANDSTONE BEDROCK | NA | NA | |
| TP11-5 | 0-0.20 | Grey to grey brown sand and gravel, trace silt (FILL) | **SA1 (0-0.25)** | **1.5** | Test pit dry |
| | 0.20-0.40 | Brown SILTY SAND with gravel and sandstone, fragments of bedrock (top of weathered bedrock) | No samples was collected due to the presence of mostly bedrock fragments | NA | |
| | 0.40 | Refusal at SANDSTONE BEDROCK | NA | NA | |
| TP11-6 | 0-0.30 | Grey brown sand and gravel and some sandstone cobbles and boulders 0.6x0.6 m (FILL) | SA1 (0.10-0.30) | 0.8 | Asphaltic and concrete pieces and traces of plastic and metal observed |
| | 0.30-0.37 | Dark brown TOPSOIL | NA | NA | Test pit dry |
| | 0.37-0.62 | Red-brown SAND and GRAVEL, some silt, trace organic matter and roots | **SA2 (0.45-0.62)** | **1.5** | |
| | 0.62 | Refusal at SANDSTONE BEDROCK | NA | NA | |
| TP11-9 | 0-0.30 | Brown and grey sand with organic matter, silty sand, trace gravel (FILL) | **SA1 (0.10-0.30)** | **1.3** | Trace of plastic pieces observed |
| | 0.30-0.40 | Dark brown silty sand, some gravel with trace organic matter (TOPSOIL) | NA | NA | Test pit dry |
| | 0.40-0.65 | Brown and grey brown silty SAND and GRAVEL, traces organic matter | **SA2 (0.41-0.65)** **SA12 (0.41-0.65)** (duplicate of SA2) | **1.9** | |
| | 0.65 | Refusal at SANDSTONE BEDROCK | NA | NA | |

**Note:**
Samples in bold indicate samples submitted for laboratory analysis.
NA -No samples or organic vapour readings were completed
mbgs-metres below ground surface

Logged by: PH

Checked by: AM

N:\Active\2011\1122 - Contaminated Lands\11-1122-0210 Ph. I and II ESA, 645 Longfields Dr., Sequoia Church\Phase II ESA\Ph. II ESA Report\Appendix B (Test Pit Records)\Test Pit Records Dec 2011.doc

# APPENDIX C

## Laboratory Certificates of Analyses

Your Project #: 11-1122-0210
Site#: COLONEL BY DRIVE.
Site Location: 645 LONGFIELDS DRIVE
Your C.O.C. #: 30502201, 305022-01-01

**Attention: Maria Staneva**
Golder Associates Ltd
32 Steacie Dr
Kanata, ON
K2K 2A9

**Report Date: 2011/12/09**

# CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B1I9199**
**Received: 2011/12/01, 08:30**

Sample Matrix: Water
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| Chloride by Automated Colourimetry (1) | 2 | N/A | 2011/12/06 | CAM SOP-00463 | SM 4500 Cl E |
| Petroleum Hydro. CCME F1 & BTEX in Water | 2 | N/A | 2011/12/03 | OTT SOP-00002 | CCME CWS |
| Petroleum Hydrocarbons F2-F4 in Water | 2 | 2011/12/02 | 2011/12/02 | OTT SOP-00001 | CCME Hydrocarbons |
| Dissolved Metals by ICPMS (1) | 1 | N/A | 2011/12/06 | CAM SOP-00447 | EPA 6020 |
| Dissolved Metals by ICPMS (1) | 1 | N/A | 2011/12/07 | CAM SOP-00447 | EPA 6020 |
| Volatile Organic Compounds in Water | 2 | N/A | 2011/12/08 | CAM SOP-00226 | EPA 8260 modified |

## Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act.

The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following the 'Alberta Environment Draft Addenda to the CWS-PHC, Appendix 6, Validation of Alternate Methods'. Documentation is available upon request. Maxxam has made the following improvements to the CWS-PHC reference benchmark method: (i) Headspace for F1; and, (ii) Mechanical extraction for F2-F4. Note: F4G cannot be added to the C6 to C50 hydrocarbons. The extraction date for samples field preserved with methanol for F1 and Volatile Organic Compounds is considered to be the date sampled.

Maxxam Analytics is accredited by SCC (Lab ID 97) for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

(1) This test was performed by Maxxam Analytics Mississauga

../2

Maxxam Job #: B1I9199
Report Date: 2011/12/09

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DRIVE
Sampler Initials: DK



Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

JULIE CLEMENT, Ottawa Customer Service
Email: JClement@maxxam.ca
Phone# (613) 274-3549

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

Maxxam Job #: B1I9199
Report Date: 2011/12/09

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DRIVE
Sampler Initials: DK

## RESULTS OF ANALYSES OF WATER

| Maxxam ID | | LV3115 | LV3116 | | |
|---|---|---|---|---|---|
| Sampling Date | | 2011/11/30 | 2011/11/30 | | |
| | **Units** | **MW/BH 11-8** | **MW/BH 11-88** | **RDL** | **QC Batch** |
| **Inorganics** | | | | | |
| Dissolved Chloride (Cl) | mg/L | 170 | 150 | 2 | 2702922 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

Maxxam Job #: B1I9199
Report Date: 2011/12/09

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DRIVE
Sampler Initials: DK

## ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

| Maxxam ID | | LV3115 | | LV3116 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2011/11/30 | | 2011/11/30 | | |
| | **Units** | **MW/BH 11-8** | **QC Batch** | **MW/BH 11-88** | **RDL** | **QC Batch** |
| **Metals** | | | | | | |
| Dissolved Cesium (Cs) | mg/L | <0.00020 | 2703329 | <0.00020 | 0.00020 | 2704597 |
| Dissolved Rubidium (Rb) | mg/L | 0.0037 | 2703329 | 0.0038 | 0.00020 | 2704597 |
| Dissolved Aluminum (Al) | mg/L | 0.0069 | 2703329 | 0.0067 | 0.0050 | 2704597 |
| Dissolved Antimony (Sb) | mg/L | <0.00050 | 2703329 | 0.0013 | 0.00050 | 2704597 |
| Dissolved Arsenic (As) | mg/L | <0.0010 | 2703329 | <0.0010 | 0.0010 | 2704597 |
| Dissolved Barium (Ba) | mg/L | 0.076 | 2703329 | 0.073 | 0.0020 | 2704597 |
| Dissolved Beryllium (Be) | mg/L | <0.00050 | 2703329 | <0.00050 | 0.00050 | 2704597 |
| Dissolved Bismuth (Bi) | mg/L | <0.0010 | 2703329 | 0.0011 | 0.0010 | 2704597 |
| Dissolved Boron (B) | mg/L | 0.032 | 2703329 | 0.037 | 0.010 | 2704597 |
| Dissolved Cadmium (Cd) | mg/L | 0.00012 | 2703329 | 0.00010 | 0.00010 | 2704597 |
| Dissolved Calcium (Ca) | mg/L | 120 | 2703329 | 130 | 0.20 | 2704597 |
| Dissolved Chromium (Cr) | mg/L | <0.0050 | 2703329 | <0.0050 | 0.0050 | 2704597 |
| Dissolved Cobalt (Co) | mg/L | 0.0092 | 2703329 | 0.0098 | 0.00050 | 2704597 |
| Dissolved Copper (Cu) | mg/L | 0.028 | 2703329 | 0.028 | 0.0010 | 2704597 |
| Dissolved Iron (Fe) | mg/L | <0.10 | 2703329 | <0.10 | 0.10 | 2704597 |
| Dissolved Lead (Pb) | mg/L | <0.00050 | 2703329 | <0.00050 | 0.00050 | 2704597 |
| Dissolved Lithium (Li) | mg/L | <0.0050 | 2703329 | <0.0050 | 0.0050 | 2704597 |
| Dissolved Magnesium (Mg) | mg/L | 13 | 2703329 | 14 | 0.050 | 2704597 |
| Dissolved Manganese (Mn) | mg/L | 0.42 | 2703329 | 0.44 | 0.0020 | 2704597 |
| Dissolved Molybdenum (Mo) | mg/L | 0.012 | 2703329 | 0.013 | 0.00050 | 2704597 |
| Dissolved Nickel (Ni) | mg/L | 0.032 | 2703329 | 0.033 | 0.0010 | 2704597 |
| Dissolved Phosphorus (P) | mg/L | <0.10 | 2703329 | <0.10 | 0.10 | 2704597 |
| Dissolved Potassium (K) | mg/L | 4.2 | 2703329 | 4.3 | 0.20 | 2704597 |
| Dissolved Selenium (Se) | mg/L | <0.0020 | 2703329 | <0.0020 | 0.0020 | 2704597 |
| Dissolved Silicon (Si) | mg/L | 2.9 | 2703329 | 2.9 | 0.050 | 2704597 |
| Dissolved Silver (Ag) | mg/L | <0.00010 | 2703329 | <0.00010 | 0.00010 | 2704597 |
| Dissolved Sodium (Na) | mg/L | 200 | 2703329 | 200 | 0.10 | 2704597 |
| Dissolved Strontium (Sr) | mg/L | 0.83 | 2703329 | 0.85 | 0.0010 | 2704597 |
| Dissolved Tellurium (Te) | mg/L | <0.0010 | 2703329 | <0.0010 | 0.0010 | 2704597 |
| Dissolved Thallium (Tl) | mg/L | <0.000050 | 2703329 | <0.000050 | 0.000050 | 2704597 |
| Dissolved Tin (Sn) | mg/L | <0.0010 | 2703329 | <0.0010 | 0.0010 | 2704597 |
| Dissolved Titanium (Ti) | mg/L | <0.0050 | 2703329 | <0.0050 | 0.0050 | 2704597 |
| Dissolved Tungsten (W) | mg/L | 1.1 | 2703329 | 1.1 | 0.010 | 2704597 |
| Dissolved Uranium (U) | mg/L | 0.0077 | 2703329 | 0.0082 | 0.00010 | 2704597 |
| Dissolved Vanadium (V) | mg/L | <0.00050 | 2703329 | <0.00050 | 0.00050 | 2704597 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B1I9199
Report Date: 2011/12/09

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DRIVE
Sampler Initials: DK

## ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

| Maxxam ID | | LV3115 | | LV3116 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2011/11/30 | | 2011/11/30 | | |
| | **Units** | **MW/BH 11-8** | **QC Batch** | **MW/BH 11-88** | **RDL** | **QC Batch** |
| Dissolved Zinc (Zn) | mg/L | 0.054 | 2703329 | 0.054 | 0.0050 | 2704597 |
| Dissolved Zirconium (Zr) | mg/L | <0.0010 | 2703329 | <0.0010 | 0.0010 | 2704597 |

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Maxxam Job #: B1I9199
Report Date: 2011/12/09

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DRIVE
Sampler Initials: DK

## VOLATILE ORGANICS BY GC/MS (WATER)

| Maxxam ID | | LV3115 | LV3116 | | |
|---|---|---|---|---|---|
| Sampling Date | | 2011/11/30 | 2011/11/30 | | |
| | **Units** | **MW/BH 11-8** | **MW/BH 11-88** | **RDL** | **QC Batch** |
| **Volatile Organics** | | | | | |
| Dichlorodifluoromethane (FREON 12) | ug/L | <0.5 | <0.5 | 0.5 | 2704039 |
| Hexane | ug/L | <0.5 | <0.5 | 0.5 | 2704039 |
| Acetone (2-Propanone) | ug/L | <10 | <10 | 10 | 2704039 |
| Benzene | ug/L | 0.4 | 0.4 | 0.1 | 2704039 |
| Bromodichloromethane | ug/L | 0.1 | 0.1 | 0.1 | 2704039 |
| Bromoform | ug/L | <0.2 | <0.2 | 0.2 | 2704039 |
| Bromomethane | ug/L | <0.5 | <0.5 | 0.5 | 2704039 |
| Carbon Tetrachloride | ug/L | <0.1 | <0.1 | 0.1 | 2704039 |
| Chlorobenzene | ug/L | <0.1 | <0.1 | 0.1 | 2704039 |
| Chloroform | ug/L | 1.8 | 1.9 | 0.1 | 2704039 |
| Dibromochloromethane | ug/L | <0.2 | <0.2 | 0.2 | 2704039 |
| 1,2-Dichlorobenzene | ug/L | <0.2 | <0.2 | 0.2 | 2704039 |
| 1,3-Dichlorobenzene | ug/L | <0.2 | <0.2 | 0.2 | 2704039 |
| 1,4-Dichlorobenzene | ug/L | <0.2 | <0.2 | 0.2 | 2704039 |
| 1,1-Dichloroethane | ug/L | <0.1 | <0.1 | 0.1 | 2704039 |
| 1,2-Dichloroethane | ug/L | <0.2 | <0.2 | 0.2 | 2704039 |
| 1,1-Dichloroethylene | ug/L | <0.1 | <0.1 | 0.1 | 2704039 |
| cis-1,2-Dichloroethylene | ug/L | <0.1 | <0.1 | 0.1 | 2704039 |
| trans-1,2-Dichloroethylene | ug/L | <0.1 | <0.1 | 0.1 | 2704039 |
| 1,2-Dichloropropane | ug/L | <0.1 | <0.1 | 0.1 | 2704039 |
| cis-1,3-Dichloropropene | ug/L | <0.2 | <0.2 | 0.2 | 2704039 |
| trans-1,3-Dichloropropene | ug/L | <0.2 | <0.2 | 0.2 | 2704039 |
| Ethylbenzene | ug/L | <0.1 | <0.1 | 0.1 | 2704039 |
| Ethylene Dibromide | ug/L | <0.2 | <0.2 | 0.2 | 2704039 |
| Methylene Chloride(Dichloromethane) | ug/L | <0.5 | <0.5 | 0.5 | 2704039 |
| Methyl Isobutyl Ketone | ug/L | <5 | <5 | 5 | 2704039 |
| Methyl Ethyl Ketone (2-Butanone) | ug/L | <5 | <5 | 5 | 2704039 |
| Methyl t-butyl ether (MTBE) | ug/L | <0.2 | <0.2 | 0.2 | 2704039 |
| Styrene | ug/L | <0.2 | <0.2 | 0.2 | 2704039 |
| 1,1,1,2-Tetrachloroethane | ug/L | <0.1 | <0.1 | 0.1 | 2704039 |
| 1,1,2,2-Tetrachloroethane | ug/L | <0.2 | <0.2 | 0.2 | 2704039 |
| Tetrachloroethylene | ug/L | <0.1 | <0.1 | 0.1 | 2704039 |
| Toluene | ug/L | 0.2 | 0.2 | 0.2 | 2704039 |
| 1,1,1-Trichloroethane | ug/L | <0.1 | <0.1 | 0.1 | 2704039 |
| 1,1,2-Trichloroethane | ug/L | <0.2 | <0.2 | 0.2 | 2704039 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B1I9199
Report Date: 2011/12/09

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DRIVE
Sampler Initials: DK

## VOLATILE ORGANICS BY GC/MS (WATER)

| Maxxam ID | | LV3115 | LV3116 | | |
|---|---|---|---|---|---|
| Sampling Date | | 2011/11/30 | 2011/11/30 | | |
| | **Units** | **MW/BH 11-8** | **MW/BH 11-88** | **RDL** | **QC Batch** |
| Trichloroethylene | ug/L | <0.1 | <0.1 | 0.1 | 2704039 |
| Vinyl Chloride | ug/L | <0.2 | <0.2 | 0.2 | 2704039 |
| p+m-Xylene | ug/L | <0.1 | <0.1 | 0.1 | 2704039 |
| o-Xylene | ug/L | <0.1 | <0.1 | 0.1 | 2704039 |
| Xylene (Total) | ug/L | <0.1 | <0.1 | 0.1 | 2704039 |
| Trichlorofluoromethane (FREON 11) | ug/L | <0.2 | <0.2 | 0.2 | 2704039 |
| **Surrogate Recovery (%)** | | | | | |
| 4-Bromofluorobenzene | % | 96 | 96 | | 2704039 |
| D4-1,2-Dichloroethane | % | 103 | 101 | | 2704039 |
| D8-Toluene | % | 97 | 99 | | 2704039 |

## PETROLEUM HYDROCARBONS (CCME)

| Maxxam ID | | LV3115 | LV3116 | | |
|---|---|---|---|---|---|
| Sampling Date | | 2011/11/30 | 2011/11/30 | | |
| | **Units** | **MW/BH 11-8** | **MW/BH 11-88** | **RDL** | **QC Batch** |
| **BTEX & F1 Hydrocarbons** | | | | | |
| F1 (C6-C10) | ug/L | <25 | <25 | 25 | 2701177 |
| F1 (C6-C10) - BTEX | ug/L | <25 | <25 | 25 | 2701177 |
| **F2-F4 Hydrocarbons** | | | | | |
| F2 (C10-C16 Hydrocarbons) | ug/L | <100 | <100 | 100 | 2700727 |
| F3 (C16-C34 Hydrocarbons) | ug/L | <100 | <100 | 100 | 2700727 |
| F4 (C34-C50 Hydrocarbons) | ug/L | <100 | <100 | 100 | 2700727 |
| Reached Baseline at C50 | ug/L | YES | YES | | 2700727 |
| **Surrogate Recovery (%)** | | | | | |
| 1,4-Difluorobenzene | % | 95 | 95 | | 2701177 |
| 4-Bromofluorobenzene | % | 98 | 112 | | 2701177 |
| D10-Ethylbenzene | % | 82 | 82 | | 2701177 |
| D4-1,2-Dichloroethane | % | 116 | 113 | | 2701177 |
| o-Terphenyl | % | 84 | 87 | | 2700727 |

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Maxxam Job #: B1I9199
Report Date: 2011/12/09

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DRIVE
Sampler Initials: DK

## Test Summary

**Maxxam ID** LV3115 **Collected** 2011/11/30
**Sample ID** MW/BH 11-8 **Shipped**
**Matrix** Water **Received** 2011/12/01

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Chloride by Automated Colourimetry | AC | 2702922 | N/A | 2011/12/06 | DEONARINE RAMNARINE |
| Petroleum Hydro. CCME F1 & BTEX in Wat | HSGC/MSFD | 2701177 | N/A | 2011/12/03 | STEVE ROBERTS |
| Petroleum Hydrocarbons F2-F4 in Water | GC/FID | 2700727 | 2011/12/02 | 2011/12/02 | LYNDSEY HART |
| Dissolved Metals by ICPMS | ICP/MS | 2703329 | N/A | 2011/12/06 | JOHN BOWMAN |
| Volatile Organic Compounds in Water | P&T/MS | 2704039 | N/A | 2011/12/08 | PAUL RUBINATO |

**Maxxam ID** LV3116 **Collected** 2011/11/30
**Sample ID** MW/BH 11-88 **Shipped**
**Matrix** Water **Received** 2011/12/01

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Chloride by Automated Colourimetry | AC | 2702922 | N/A | 2011/12/06 | DEONARINE RAMNARINE |
| Petroleum Hydro. CCME F1 & BTEX in Wat | HSGC/MSFD | 2701177 | N/A | 2011/12/03 | STEVE ROBERTS |
| Petroleum Hydrocarbons F2-F4 in Water | GC/FID | 2700727 | 2011/12/02 | 2011/12/02 | LYNDSEY HART |
| Dissolved Metals by ICPMS | ICP/MS | 2704597 | N/A | 2011/12/07 | JOHN BOWMAN |
| Volatile Organic Compounds in Water | P&T/MS | 2704039 | N/A | 2011/12/08 | PAUL RUBINATO |



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Maxxam Job #: B1I9199
Report Date: 2011/12/09

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DRIVE
Sampler Initials: DK

| | |
|---|---|
| Package 1 | -2.0°C |

Each temperature is the average of up to three cooler temperatures taken at receipt

**GENERAL COMMENTS**

Custody seal was not present on the cooler.



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Maxxam Job #: B1I9199
Report Date: 2011/12/09

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DRIVE
Sampler Initials: DK

**QUALITY ASSURANCE REPORT**

| | | | Matrix Spike | | Spiked Blank | | Method Blank | | RPD | |
|---|---|---|---|---|---|---|---|---|---|---|
| QC Batch | Parameter | Date | % Recovery | QC Limits | % Recovery | QC Limits | Value | Units | Value (%) | QC Limits |
| 2700727 | o-Terphenyl | 2011/12/02 | 91 | 30 - 130 | 91 | 30 - 130 | 86 | % | | |
| 2700727 | F2 (C10-C16 Hydrocarbons) | 2011/12/02 | 103 | 50 - 130 | 108 | 70 - 130 | <100 | ug/L | NC | 50 |
| 2700727 | F3 (C16-C34 Hydrocarbons) | 2011/12/02 | 103 | 50 - 130 | 108 | 70 - 130 | <100 | ug/L | NC | 50 |
| 2700727 | F4 (C34-C50 Hydrocarbons) | 2011/12/02 | 103 | 50 - 130 | 108 | 70 - 130 | <100 | ug/L | NC | 50 |
| 2701177 | 1,4-Difluorobenzene | 2011/12/03 | 89 | 70 - 130 | 91 | 70 - 130 | 92 | % | | |
| 2701177 | 4-Bromofluorobenzene | 2011/12/03 | 115 | 70 - 130 | 118 | 70 - 130 | 76 | % | | |
| 2701177 | D10-Ethylbenzene | 2011/12/03 | 86 | 70 - 130 | 84 | 70 - 130 | 83 | % | | |
| 2701177 | D4-1,2-Dichloroethane | 2011/12/03 | 106 | 70 - 130 | 92 | 70 - 130 | 108 | % | | |
| 2701177 | F1 (C6-C10) | 2011/12/03 | 98 | 70 - 130 | 104 | 70 - 130 | <25 | ug/L | NC | 40 |
| 2701177 | F1 (C6-C10) - BTEX | 2011/12/03 | | | | | <25 | ug/L | NC | 40 |
| 2702922 | Dissolved Chloride (Cl) | 2011/12/06 | NC | 75 - 125 | 105 | 80 - 120 | <1 | mg/L | 0.02 | 20 |
| 2703329 | Dissolved Cesium (Cs) | 2011/12/06 | 95 | 80 - 120 | 99 | 80 - 120 | <0.00020 | mg/L | | |
| 2703329 | Dissolved Rubidium (Rb) | 2011/12/06 | 97 | 80 - 120 | 100 | 80 - 120 | <0.00020 | mg/L | | |
| 2703329 | Dissolved Aluminum (Al) | 2011/12/06 | 98 | 80 - 120 | 103 | 80 - 120 | <0.0050 | mg/L | NC | 20 |
| 2703329 | Dissolved Antimony (Sb) | 2011/12/06 | 101 | 80 - 120 | 100 | 80 - 120 | <0.00050 | mg/L | | |
| 2703329 | Dissolved Arsenic (As) | 2011/12/06 | 97 | 80 - 120 | 97 | 80 - 120 | <0.0010 | mg/L | | |
| 2703329 | Dissolved Barium (Ba) | 2011/12/06 | 97 | 80 - 120 | 99 | 80 - 120 | <0.0020 | mg/L | | |
| 2703329 | Dissolved Beryllium (Be) | 2011/12/06 | 102 | 80 - 120 | 102 | 80 - 120 | <0.00050 | mg/L | | |
| 2703329 | Dissolved Bismuth (Bi) | 2011/12/06 | 97 | 80 - 120 | 98 | 80 - 120 | <0.0010 | mg/L | | |
| 2703329 | Dissolved Boron (B) | 2011/12/06 | 103 | 80 - 120 | 103 | 80 - 120 | <0.010 | mg/L | | |
| 2703329 | Dissolved Cadmium (Cd) | 2011/12/06 | 100 | 80 - 120 | 102 | 80 - 120 | <0.00010 | mg/L | | |
| 2703329 | Dissolved Calcium (Ca) | 2011/12/06 | NC | 80 - 120 | 97 | 80 - 120 | <0.20 | mg/L | 0.6 | 20 |
| 2703329 | Dissolved Chromium (Cr) | 2011/12/06 | 97 | 80 - 120 | 99 | 80 - 120 | <0.0050 | mg/L | | |
| 2703329 | Dissolved Cobalt (Co) | 2011/12/06 | 96 | 80 - 120 | 99 | 80 - 120 | <0.00050 | mg/L | | |
| 2703329 | Dissolved Copper (Cu) | 2011/12/06 | 93 | 80 - 120 | 97 | 80 - 120 | <0.0010 | mg/L | | |
| 2703329 | Dissolved Iron (Fe) | 2011/12/06 | 98 | 80 - 120 | 99 | 80 - 120 | <0.10 | mg/L | | |
| 2703329 | Dissolved Lead (Pb) | 2011/12/06 | 96 | 80 - 120 | 97 | 80 - 120 | <0.00050 | mg/L | | |
| 2703329 | Dissolved Lithium (Li) | 2011/12/06 | 101 | 80 - 120 | 98 | 80 - 120 | <0.0050 | mg/L | | |
| 2703329 | Dissolved Magnesium (Mg) | 2011/12/06 | NC | 80 - 120 | 100 | 80 - 120 | <0.050 | mg/L | 0.3 | 20 |
| 2703329 | Dissolved Manganese (Mn) | 2011/12/06 | 95 | 80 - 120 | 98 | 80 - 120 | <0.0020 | mg/L | | |
| 2703329 | Dissolved Molybdenum (Mo) | 2011/12/06 | 103 | 80 - 120 | 101 | 80 - 120 | <0.00050 | mg/L | | |
| 2703329 | Dissolved Nickel (Ni) | 2011/12/06 | 94 | 80 - 120 | 97 | 80 - 120 | <0.0010 | mg/L | | |
| 2703329 | Dissolved Phosphorus (P) | 2011/12/06 | 98 | 80 - 120 | 103 | 80 - 120 | <0.10 | mg/L | | |
| 2703329 | Dissolved Potassium (K) | 2011/12/06 | 95 | 80 - 120 | 99 | 80 - 120 | <0.20 | mg/L | | |
| 2703329 | Dissolved Selenium (Se) | 2011/12/06 | 100 | 80 - 120 | 101 | 80 - 120 | <0.0020 | mg/L | | |
| 2703329 | Dissolved Silicon (Si) | 2011/12/06 | 96 | 80 - 120 | 103 | 80 - 120 | <0.050 | mg/L | | |
| 2703329 | Dissolved Silver (Ag) | 2011/12/06 | 96 | 80 - 120 | 98 | 80 - 120 | <0.00010 | mg/L | | |
| 2703329 | Dissolved Sodium (Na) | 2011/12/06 | NC | 80 - 120 | 103 | 80 - 120 | <0.10 | mg/L | | |
| 2703329 | Dissolved Strontium (Sr) | 2011/12/06 | NC | 80 - 120 | 104 | 80 - 120 | <0.0010 | mg/L | | |
| 2703329 | Dissolved Tellurium (Te) | 2011/12/06 | 96 | 80 - 120 | 97 | 80 - 120 | <0.0010 | mg/L | | |



Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

Maxxam Job #: B1I9199
Report Date: 2011/12/09

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DRIVE
Sampler Initials: DK

## QUALITY ASSURANCE REPORT

| | | | Matrix Spike | | Spiked Blank | | Method Blank | | RPD | |
|---|---|---|---|---|---|---|---|---|---|---|
| QC Batch | Parameter | Date | % Recovery | QC Limits | % Recovery | QC Limits | Value | Units | Value (%) | QC Limits |
| 2703329 | Dissolved Thallium (Tl) | 2011/12/06 | 96 | 80 - 120 | 97 | 80 - 120 | <0.000050 | mg/L | | |
| 2703329 | Dissolved Tin (Sn) | 2011/12/06 | 102 | 80 - 120 | 104 | 80 - 120 | <0.0010 | mg/L | | |
| 2703329 | Dissolved Titanium (Ti) | 2011/12/06 | 97 | 80 - 120 | 99 | 80 - 120 | <0.0050 | mg/L | | |
| 2703329 | Dissolved Tungsten (W) | 2011/12/06 | 100 | 80 - 120 | 101 | 80 - 120 | <0.0010 | mg/L | | |
| 2703329 | Dissolved Uranium (U) | 2011/12/06 | 98 | 80 - 120 | 99 | 80 - 120 | <0.00010 | mg/L | | |
| 2703329 | Dissolved Vanadium (V) | 2011/12/06 | 99 | 80 - 120 | 99 | 80 - 120 | <0.00050 | mg/L | | |
| 2703329 | Dissolved Zinc (Zn) | 2011/12/06 | 97 | 80 - 120 | 100 | 80 - 120 | <0.0050 | mg/L | | |
| 2703329 | Dissolved Zirconium (Zr) | 2011/12/06 | 104 | 80 - 120 | 103 | 80 - 120 | <0.0010 | mg/L | | |
| 2704039 | 4-Bromofluorobenzene | 2011/12/08 | | | 101 | 70 - 130 | 96 | % | | |
| 2704039 | 4-Bromofluorobenzene DUP | 2011/12/08 | | | 100 | 70 - 130 | | | | |
| 2704039 | D4-1,2-Dichloroethane | 2011/12/08 | | | 98 | 70 - 130 | 103 | % | | |
| 2704039 | D4-1,2-Dichloroethane DUP | 2011/12/08 | | | 99 | 70 - 130 | | | | |
| 2704039 | D8-Toluene | 2011/12/08 | | | 101 | 70 - 130 | 96 | % | | |
| 2704039 | D8-Toluene DUP | 2011/12/08 | | | 102 | 70 - 130 | | | | |
| 2704039 | Dichlorodifluoromethane (FREON 12) | 2011/12/08 | | | 95 | 60 - 140 | <0.5 | ug/L | 13.0 | 40 |
| 2704039 | Dichlorodifluoromethane (FREON 12) DUP | 2011/12/08 | | | 108 | 60 - 140 | | | | |
| 2704039 | Hexane | 2011/12/08 | | | 94 | 70 - 130 | <0.5 | ug/L | 10.4 | 40 |
| 2704039 | Hexane DUP | 2011/12/08 | | | 105 | 70 - 130 | | | | |
| 2704039 | Acetone (2-Propanone) | 2011/12/08 | | | 85 | 60 - 140 | <10 | ug/L | 11.8 | 40 |
| 2704039 | Acetone (2-Propanone) DUP | 2011/12/08 | | | 95 | 60 - 140 | | | | |
| 2704039 | Benzene | 2011/12/08 | | | 94 | 70 - 130 | <0.1 | ug/L | 9.0 | 40 |
| 2704039 | Benzene DUP | 2011/12/08 | | | 103 | 70 - 130 | | | | |
| 2704039 | Bromodichloromethane | 2011/12/08 | | | 94 | 70 - 130 | <0.1 | ug/L | 9.0 | 40 |
| 2704039 | Bromodichloromethane DUP | 2011/12/08 | | | 103 | 70 - 130 | | | | |
| 2704039 | Bromoform | 2011/12/08 | | | 83 | 70 - 130 | <0.2 | ug/L | 10.3 | 40 |
| 2704039 | Bromoform DUP | 2011/12/08 | | | 92 | 70 - 130 | | | | |
| 2704039 | Bromomethane | 2011/12/08 | | | 94 | 60 - 140 | <0.5 | ug/L | 15.8 | 40 |
| 2704039 | Bromomethane DUP | 2011/12/08 | | | 110 | 60 - 140 | | | | |
| 2704039 | Carbon Tetrachloride | 2011/12/08 | | | 91 | 70 - 130 | <0.1 | ug/L | 10.3 | 40 |
| 2704039 | Carbon Tetrachloride DUP | 2011/12/08 | | | 101 | 70 - 130 | | | | |
| 2704039 | Chlorobenzene | 2011/12/08 | | | 94 | 70 - 130 | <0.1 | ug/L | 10.3 | 40 |
| 2704039 | Chlorobenzene DUP | 2011/12/08 | | | 104 | 70 - 130 | | | | |
| 2704039 | Chloroform | 2011/12/08 | | | 91 | 70 - 130 | <0.1 | ug/L | 9.9 | 40 |
| 2704039 | Chloroform DUP | 2011/12/08 | | | 101 | 70 - 130 | | | | |
| 2704039 | Dibromochloromethane | 2011/12/08 | | | 89 | 70 - 130 | <0.2 | ug/L | 9.2 | 40 |
| 2704039 | Dibromochloromethane DUP | 2011/12/08 | | | 97 | 70 - 130 | | | | |
| 2704039 | 1,2-Dichlorobenzene | 2011/12/08 | | | 94 | 70 - 130 | <0.2 | ug/L | 10.5 | 40 |
| 2704039 | 1,2-Dichlorobenzene DUP | 2011/12/08 | | | 105 | 70 - 130 | | | | |
| 2704039 | 1,3-Dichlorobenzene | 2011/12/08 | | | 96 | 70 - 130 | <0.2 | ug/L | 10.1 | 40 |
| 2704039 | 1,3-Dichlorobenzene DUP | 2011/12/08 | | | 106 | 70 - 130 | | | | |

Maxxam Job #: B1I9199
Report Date: 2011/12/09

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DRIVE
Sampler Initials: DK

**QUALITY ASSURANCE REPORT**

| | | | Matrix Spike | | Spiked Blank | | Method Blank | | RPD | |
|---|---|---|---|---|---|---|---|---|---|---|
| QC Batch | Parameter | Date | % Recovery | QC Limits | % Recovery | QC Limits | Value | Units | Value (%) | QC Limits |
| 2704039 | 1,4-Dichlorobenzene | 2011/12/08 | | | 97 | 70 - 130 | <0.2 | ug/L | 10.3 | 40 |
| 2704039 | 1,4-Dichlorobenzene DUP | 2011/12/08 | | | 107 | 70 - 130 | | | | |
| 2704039 | 1,1-Dichloroethane | 2011/12/08 | | | 92 | 70 - 130 | <0.1 | ug/L | 9.6 | 40 |
| 2704039 | 1,1-Dichloroethane DUP | 2011/12/08 | | | 102 | 70 - 130 | | | | |
| 2704039 | 1,2-Dichloroethane | 2011/12/08 | | | 93 | 70 - 130 | <0.2 | ug/L | 9.4 | 40 |
| 2704039 | 1,2-Dichloroethane DUP | 2011/12/08 | | | 102 | 70 - 130 | | | | |
| 2704039 | 1,1-Dichloroethylene | 2011/12/08 | | | 95 | 70 - 130 | <0.1 | ug/L | 9.8 | 40 |
| 2704039 | 1,1-Dichloroethylene DUP | 2011/12/08 | | | 105 | 70 - 130 | | | | |
| 2704039 | cis-1,2-Dichloroethylene | 2011/12/08 | | | 94 | 70 - 130 | <0.1 | ug/L | 10.2 | 40 |
| 2704039 | cis-1,2-Dichloroethylene DUP | 2011/12/08 | | | 104 | 70 - 130 | | | | |
| 2704039 | trans-1,2-Dichloroethylene | 2011/12/08 | | | 94 | 70 - 130 | <0.1 | ug/L | 10.3 | 40 |
| 2704039 | trans-1,2-Dichloroethylene DUP | 2011/12/08 | | | 105 | 70 - 130 | | | | |
| 2704039 | 1,2-Dichloropropane | 2011/12/08 | | | 93 | 70 - 130 | <0.1 | ug/L | 9.5 | 40 |
| 2704039 | 1,2-Dichloropropane DUP | 2011/12/08 | | | 103 | 70 - 130 | | | | |
| 2704039 | cis-1,3-Dichloropropene | 2011/12/08 | | | 96 | 70 - 130 | <0.2 | ug/L | 8.7 | 40 |
| 2704039 | cis-1,3-Dichloropropene DUP | 2011/12/08 | | | 105 | 70 - 130 | | | | |
| 2704039 | trans-1,3-Dichloropropene | 2011/12/08 | | | 110 | 70 - 130 | <0.2 | ug/L | 9.2 | 40 |
| 2704039 | trans-1,3-Dichloropropene DUP | 2011/12/08 | | | 92 | 70 - 130 | | | | |
| 2704039 | Ethylbenzene | 2011/12/08 | | | 93 | 70 - 130 | <0.1 | ug/L | 10.0 | 40 |
| 2704039 | Ethylbenzene DUP | 2011/12/08 | | | 102 | 70 - 130 | | | | |
| 2704039 | Ethylene Dibromide | 2011/12/08 | | | 96 | 70 - 130 | <0.2 | ug/L | 9.8 | 40 |
| 2704039 | Ethylene Dibromide DUP | 2011/12/08 | | | 106 | 70 - 130 | | | | |
| 2704039 | Methylene Chloride(Dichloromethane) | 2011/12/08 | | | 93 | 70 - 130 | <0.5 | ug/L | 7.6 | 40 |
| 2704039 | Methylene Chloride(Dichloromethane) DUP | 2011/12/08 | | | 100 | 70 - 130 | | | | |
| 2704039 | Methyl Isobutyl Ketone | 2011/12/08 | | | 99 | 70 - 130 | <5 | ug/L | 7.4 | 40 |
| 2704039 | Methyl Isobutyl Ketone DUP | 2011/12/08 | | | 106 | 70 - 130 | | | | |
| 2704039 | Methyl Ethyl Ketone (2-Butanone) | 2011/12/08 | | | 84 | 60 - 140 | <5 | ug/L | 5.7 | 40 |
| 2704039 | Methyl Ethyl Ketone (2-Butanone) DUP | 2011/12/08 | | | 89 | 60 - 140 | | | | |
| 2704039 | Methyl t-butyl ether (MTBE) | 2011/12/08 | | | 95 | 70 - 130 | <0.2 | ug/L | 7.5 | 40 |
| 2704039 | Methyl t-butyl ether (MTBE) DUP | 2011/12/08 | | | 102 | 70 - 130 | | | | |
| 2704039 | Styrene | 2011/12/08 | | | 103 | 70 - 130 | <0.2 | ug/L | 9.5 | 40 |
| 2704039 | Styrene DUP | 2011/12/08 | | | 113 | 70 - 130 | | | | |
| 2704039 | 1,1,1,2-Tetrachloroethane | 2011/12/08 | | | 94 | 70 - 130 | <0.1 | ug/L | 9.8 | 40 |
| 2704039 | 1,1,1,2-Tetrachloroethane DUP | 2011/12/08 | | | 104 | 70 - 130 | | | | |
| 2704039 | 1,1,2,2-Tetrachloroethane | 2011/12/08 | | | 96 | 70 - 130 | <0.2 | ug/L | 9.3 | 40 |
| 2704039 | 1,1,2,2-Tetrachloroethane DUP | 2011/12/08 | | | 105 | 70 - 130 | | | | |
| 2704039 | Tetrachloroethylene | 2011/12/08 | | | 92 | 70 - 130 | <0.1 | ug/L | 10.9 | 40 |
| 2704039 | Tetrachloroethylene DUP | 2011/12/08 | | | 103 | 70 - 130 | | | | |
| 2704039 | Toluene | 2011/12/08 | | | 94 | 70 - 130 | <0.2 | ug/L | 10.2 | 40 |
| 2704039 | Toluene DUP | 2011/12/08 | | | 105 | 70 - 130 | | | | |

Maxxam Job #: B1I9199
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Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DRIVE
Sampler Initials: DK

**QUALITY ASSURANCE REPORT**

| | | | Matrix Spike | | Spiked Blank | | Method Blank | | RPD | |
|---|---|---|---|---|---|---|---|---|---|---|
| QC Batch | Parameter | Date | % Recovery | QC Limits | % Recovery | QC Limits | Value | Units | Value (%) | QC Limits |
| 2704039 | 1,1,1-Trichloroethane | 2011/12/08 | | | 91 | 70 - 130 | <0.1 | ug/L | 10.8 | 40 |
| 2704039 | 1,1,1-Trichloroethane DUP | 2011/12/08 | | | 102 | 70 - 130 | | | | |
| 2704039 | 1,1,2-Trichloroethane | 2011/12/08 | | | 95 | 70 - 130 | <0.2 | ug/L | 8.4 | 40 |
| 2704039 | 1,1,2-Trichloroethane DUP | 2011/12/08 | | | 103 | 70 - 130 | | | | |
| 2704039 | Trichloroethylene | 2011/12/08 | | | 93 | 70 - 130 | <0.1 | ug/L | 9.9 | 40 |
| 2704039 | Trichloroethylene DUP | 2011/12/08 | | | 103 | 70 - 130 | | | | |
| 2704039 | Vinyl Chloride | 2011/12/08 | | | 98 | 70 - 130 | <0.2 | ug/L | 12.0 | 40 |
| 2704039 | p+m-Xylene | 2011/12/08 | | | 99 | 70 - 130 | <0.1 | ug/L | 11.0 | 40 |
| 2704039 | p+m-Xylene DUP | 2011/12/08 | | | 110 | 70 - 130 | | | | |
| 2704039 | o-Xylene | 2011/12/08 | | | 89 | 70 - 130 | <0.1 | ug/L | 10.7 | 40 |
| 2704039 | o-Xylene DUP | 2011/12/08 | | | 99 | 70 - 130 | | | | |
| 2704039 | Trichlorofluoromethane (FREON 11) | 2011/12/08 | | | 99 | 70 - 130 | <0.2 | ug/L | 10.7 | 40 |
| 2704039 | Trichlorofluoromethane (FREON 11) DUP | 2011/12/08 | | | 110 | 70 - 130 | | | | |
| 2704039 | Xylene (Total) | 2011/12/08 | | | | | <0.1 | ug/L | | |
| 2704597 | Dissolved Cesium (Cs) | 2011/12/07 | 96 | 80 - 120 | 96 | 80 - 120 | <0.00020 | mg/L | | |
| 2704597 | Dissolved Rubidium (Rb) | 2011/12/07 | 97 | 80 - 120 | 98 | 80 - 120 | <0.00020 | mg/L | | |
| 2704597 | Dissolved Aluminum (Al) | 2011/12/07 | 102 | 80 - 120 | 102 | 80 - 120 | <0.0050 | mg/L | | |
| 2704597 | Dissolved Antimony (Sb) | 2011/12/07 | 104 | 80 - 120 | 100 | 80 - 120 | <0.00050 | mg/L | NC | 20 |
| 2704597 | Dissolved Arsenic (As) | 2011/12/07 | 99 | 80 - 120 | 97 | 80 - 120 | <0.0010 | mg/L | NC | 20 |
| 2704597 | Dissolved Barium (Ba) | 2011/12/07 | 96 | 80 - 120 | 97 | 80 - 120 | <0.0020 | mg/L | 1.8 | 20 |
| 2704597 | Dissolved Beryllium (Be) | 2011/12/07 | 98 | 80 - 120 | 100 | 80 - 120 | <0.00050 | mg/L | NC | 20 |
| 2704597 | Dissolved Bismuth (Bi) | 2011/12/07 | 98 | 80 - 120 | 98 | 80 - 120 | <0.0010 | mg/L | | |
| 2704597 | Dissolved Boron (B) | 2011/12/07 | 103 | 80 - 120 | 101 | 80 - 120 | <0.010 | mg/L | NC | 20 |
| 2704597 | Dissolved Cadmium (Cd) | 2011/12/07 | 102 | 80 - 120 | 102 | 80 - 120 | <0.00010 | mg/L | NC | 20 |
| 2704597 | Dissolved Calcium (Ca) | 2011/12/07 | NC | 80 - 120 | 95 | 80 - 120 | <0.20 | mg/L | 0.5 | 20 |
| 2704597 | Dissolved Chromium (Cr) | 2011/12/07 | 100 | 80 - 120 | 99 | 80 - 120 | <0.0050 | mg/L | NC | 20 |
| 2704597 | Dissolved Cobalt (Co) | 2011/12/07 | 99 | 80 - 120 | 100 | 80 - 120 | <0.00050 | mg/L | NC | 20 |
| 2704597 | Dissolved Copper (Cu) | 2011/12/07 | 96 | 80 - 120 | 98 | 80 - 120 | <0.0010 | mg/L | NC | 20 |
| 2704597 | Dissolved Iron (Fe) | 2011/12/07 | 100 | 80 - 120 | 99 | 80 - 120 | <0.10 | mg/L | | |
| 2704597 | Dissolved Lead (Pb) | 2011/12/07 | 96 | 80 - 120 | 99 | 80 - 120 | <0.00050 | mg/L | NC | 20 |
| 2704597 | Dissolved Lithium (Li) | 2011/12/07 | 99 | 80 - 120 | 98 | 80 - 120 | <0.0050 | mg/L | | |
| 2704597 | Dissolved Magnesium (Mg) | 2011/12/07 | NC | 80 - 120 | 99 | 80 - 120 | <0.050 | mg/L | 3.4 | 20 |
| 2704597 | Dissolved Manganese (Mn) | 2011/12/07 | 100 | 80 - 120 | 100 | 80 - 120 | <0.0020 | mg/L | | |
| 2704597 | Dissolved Molybdenum (Mo) | 2011/12/07 | 103 | 80 - 120 | 102 | 80 - 120 | <0.00050 | mg/L | NC | 20 |
| 2704597 | Dissolved Nickel (Ni) | 2011/12/07 | 96 | 80 - 120 | 97 | 80 - 120 | <0.0010 | mg/L | NC | 20 |
| 2704597 | Dissolved Phosphorus (P) | 2011/12/07 | 100 | 80 - 120 | 103 | 80 - 120 | <0.10 | mg/L | | |
| 2704597 | Dissolved Potassium (K) | 2011/12/07 | 98 | 80 - 120 | 97 | 80 - 120 | <0.20 | mg/L | 1.9 | 20 |
| 2704597 | Dissolved Selenium (Se) | 2011/12/07 | 102 | 80 - 120 | 102 | 80 - 120 | <0.0020 | mg/L | NC | 20 |
| 2704597 | Dissolved Silicon (Si) | 2011/12/07 | 97 | 80 - 120 | 100 | 80 - 120 | <0.050 | mg/L | | |
| 2704597 | Dissolved Silver (Ag) | 2011/12/07 | 97 | 80 - 120 | 98 | 80 - 120 | <0.00010 | mg/L | NC | 20 |

Maxxam Job #: B1I9199
Report Date: 2011/12/09

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DRIVE
Sampler Initials: DK

**QUALITY ASSURANCE REPORT**

| | | | Matrix Spike | | Spiked Blank | | Method Blank | | RPD | |
|---|---|---|---|---|---|---|---|---|---|---|
| QC Batch | Parameter | Date | % Recovery | QC Limits | % Recovery | QC Limits | Value | Units | Value (%) | QC Limits |
| 2704597 | Dissolved Sodium (Na) | 2011/12/07 | 98 | 80 - 120 | 101 | 80 - 120 | <0.10 | mg/L | 2.3 | 20 |
| 2704597 | Dissolved Strontium (Sr) | 2011/12/07 | NC | 80 - 120 | 103 | 80 - 120 | <0.0010 | mg/L | | |
| 2704597 | Dissolved Tellurium (Te) | 2011/12/07 | 100 | 80 - 120 | 100 | 80 - 120 | <0.0010 | mg/L | | |
| 2704597 | Dissolved Thallium (Tl) | 2011/12/07 | 96 | 80 - 120 | 99 | 80 - 120 | <0.000050 | mg/L | NC | 20 |
| 2704597 | Dissolved Tin (Sn) | 2011/12/07 | 104 | 80 - 120 | 102 | 80 - 120 | <0.0010 | mg/L | | |
| 2704597 | Dissolved Titanium (Ti) | 2011/12/07 | 97 | 80 - 120 | 95 | 80 - 120 | <0.0050 | mg/L | | |
| 2704597 | Dissolved Tungsten (W) | 2011/12/07 | 98 | 80 - 120 | 100 | 80 - 120 | <0.0010 | mg/L | | |
| 2704597 | Dissolved Uranium (U) | 2011/12/07 | 100 | 80 - 120 | 102 | 80 - 120 | <0.00010 | mg/L | NC | 20 |
| 2704597 | Dissolved Vanadium (V) | 2011/12/07 | 100 | 80 - 120 | 98 | 80 - 120 | <0.00050 | mg/L | NC | 20 |
| 2704597 | Dissolved Zinc (Zn) | 2011/12/07 | 99 | 80 - 120 | 99 | 80 - 120 | <0.0050 | mg/L | NC | 20 |
| 2704597 | Dissolved Zirconium (Zr) | 2011/12/07 | 103 | 80 - 120 | 102 | 80 - 120 | <0.0010 | mg/L | | |

N/A = Not Applicable
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

# Validation Signature Page

**Maxxam Job #: B1I9199**

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).


EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

PAUL RUBINATO, Analyst, Maxxam Analytics

STEVE ROBERTS, Lab Supervisor, Ottawa

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



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Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5779 www.maxxam.ca

# CHAIN OF CUSTODY RECORD

Page 1 of 1

| INVOICE INFORMATION: | | REPORT INFORMATION (if differs from invoice): | | PROJECT INFORMATION: | |
|---|---|---|---|---|---|
| Company Name: | #14090 Golder Associates Ltd | Company Name: | | Quotation #: | A87099 |
| Contact Name: | Central Accounting | Contact Name: | Maria Staneva | P.O. #: | |
| Address: | 32 Steacie Dr | Address: | | Project #: | 11-1122-0210 |
| | Kanata ON K2K 2A9 | | | Project Name: | 645 Lougfields Drive |
| Phone: | (613)592-9600 Fax: (613)592-9601 | Phone: | Fax: | Site #: | COLONEL BY DRIVE. |
| Email: | maxxam@golder.com, OttawaAccounting@golder.c | Email: | Maria_Staneva@golder.com | Sampled By: | |

**Laboratory Use Only:**

| MAXXAM JOB #: | BOTTLE ORDER #: |
|---|---|
| | 305022 |
| **CHAIN OF CUSTODY #:** | **PROJECT MANAGER:** |
| C#305022-01-01 | JULIE CLEMENT |

**Regulation 153 (2011):** ☐ Table 1 ☐ Table 2 ☐ Table 3 ☒ Table 7 — ☒ Res/Park ☐ Ind/Comm ☐ Agri/Other — ☐ Medium/Fine ☒ Coarse — ☐ For RSC

**Other Regulations:** ☐ CCME ☐ Reg. 558 ☐ MISA ☐ PWQO ☐ Other — ☐ Sanitary Sewer Bylaw ☐ Storm Sewer Bylaw — Municipality _____

**SPECIAL INSTRUCTIONS**

*Include Criteria on Certificate of Analysis (Y/N)?* ___

*Note: For MOE regulated drinking water samples - please use the Drinking Water Chain of Custody Form*

**SAMPLES MUST BE KEPT COOL ( < 10°C ) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM**

**TURNAROUND TIME (TAT) REQUIRED:**

**PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS**

**Regular (Standard) TAT:** ☑
*(will be applied if Rush TAT is not specified):*
*Standard TAT = 5-7 Working days for most tests.*
*Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.*

**Job Specific Rush TAT (if applies to entire submission)**
Date Required: _____ Time Required: _____ ☐
Rush Confirmation Number: _____ *(call lab for #)*

| | Sample Barcode Label | Sample (Location) Identification | Date Sampled | Time Sampled | Matrix | Regulated Drinking Water ? (Y/N) | Metals Field Filtered ? (Y/N) | O'Reg 153 Petroleum Hydrocarbons | O'Reg 153 ~~Metals~~ VOCs | O'Reg 153 ICPMS Metals Short list | Sodium | Chloride | # of Bottles | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW/BH 11-8 | | | | GW | N | Y | ✓ | ✓ | ✓ | ✓ | ✓ | 7 | |
| 2 | MW/BH 11-88 | | | | GW | | | ✓ | ✓ | ✓ | ✓ | ✓ | 7 | |
| 3 | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |

1-Dec-11 08:30
JULIE CLEMENT
B1I9199
S_0 OTT-001

REC'D IN OTTAWA

| *RELINQUISHED BY: (Signature/Print) | Date: (YY/MM/DD) | Time: | RECEIVED BY: (Signature/Print) | Date: (YY/MM/DD) | Time: | # Jars Used and Not Submitted | Laboratory Use Only: Time Sensitive | Temperature (°C) on Receipt | Custody Seal | Yes | No |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dmy Timothy D. Kennedy | 11/11/30 | 1800 | Josh Freeman | 70111201 | 8:30 | | | -1/-2/-3 | Present | | ✓ |
| | | | | | | | | | Intact | | ✓ |

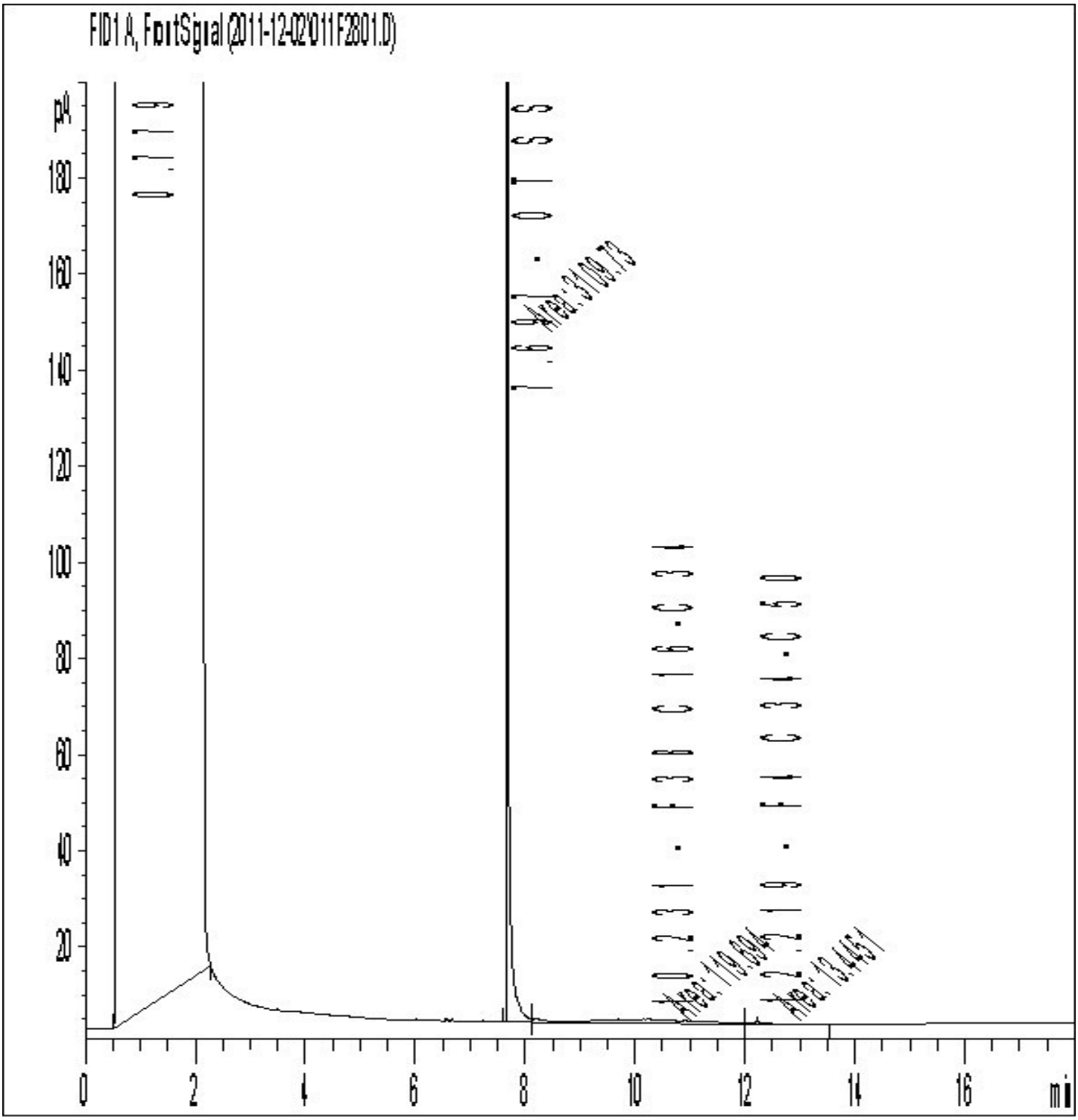
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

Report Date: 2011/12/09
Maxxam Job #: B1I9199
Maxxam Sample: LV3115

Golder Associates Ltd
Client Project #: 11-1122-0210
Project name: 645 LONGFIELDS DRIVE
Client ID: MW/BH 11-8

**Petroleum Hydrocarbons F2-F4 in Water Chromatogram**




**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**



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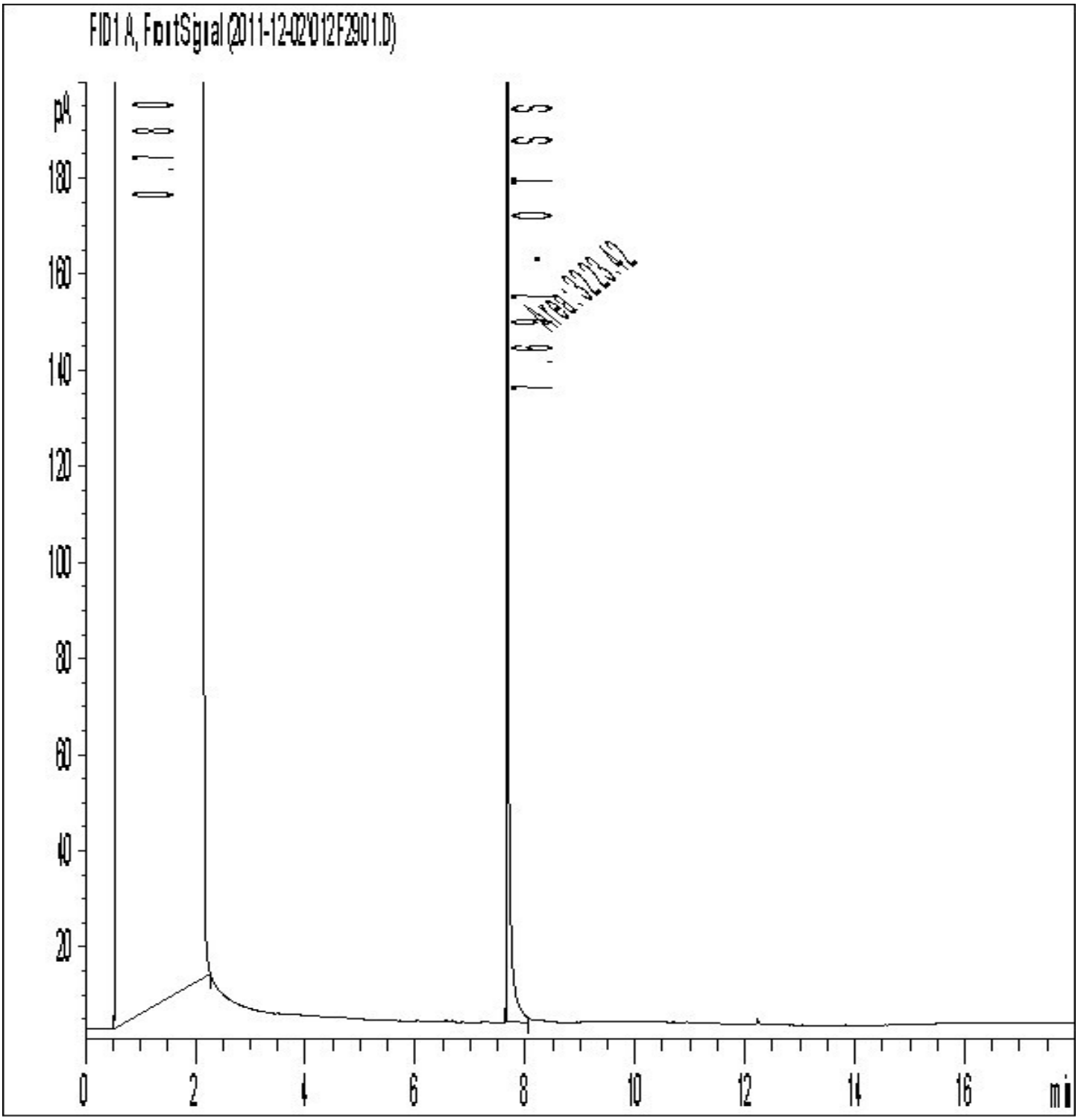
Report Date: 2011/12/09
Maxxam Job #: B1I9199
Maxxam Sample: LV3116

Golder Associates Ltd
Client Project #: 11-1122-0210
Project name: 645 LONGFIELDS DRIVE
Client ID: MW/BH 11-88

**Petroleum Hydrocarbons F2-F4 in Water Chromatogram**




**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**



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Your Project #: 11-1122-0210
Site#: COLONEL BY DRIVE.
Site Location: 645 LONGFIELDS DR.
Your C.O.C. #: 30502206, 305022-06-01

**Attention: Maria Staneva**
Golder Associates Ltd
32 Steacie Dr
Kanata, ON
K2K 2A9

**Report Date: 2011/12/07**

# CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B1I7378**
**Received: 2011/11/28, 14:15**

Sample Matrix: Soil
# Samples Received: 9

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| Hot Water Extractable Boron (1) | 3 | 2011/12/02 | 2011/12/02 | CAM SOP-00408 | R153 Ana. Prot. 2011 |
| Free (WAD) Cyanide (1) | 3 | N/A | 2011/12/02 | CAM SOP-00457 | SM 4500CN-I |
| Conductivity (1) | 3 | N/A | 2011/12/02 | CAM SOP-00414 | APHA 2510 |
| Hexavalent Chromium in Soil by IC (1,2) | 3 | N/A | 2011/12/05 | CAM SOP-00436 | EPA SW846-3060/7199 |
| Petroleum Hydro. CCME F1 & BTEX in Soil | 2 | 2011/11/30 | 2011/11/30 | OTT SOP-00002 | CCME CWS |
| Petroleum Hydro. CCME F1 & BTEX in Soil | 2 | 2011/11/30 | 2011/12/01 | OTT SOP-00002 | CCME CWS |
| Petroleum Hydrocarbons F2-F4 in Soil | 4 | 2011/11/30 | 2011/12/01 | OTT SOP-00001 | CCME CWS |
| Acid Extr. Metals (aqua regia) by ICPMS (1) | 5 | 2011/12/01 | 2011/12/02 | CAM SOP-00447 | EPA 6020 |
| Acid Extr. Metals (aqua regia) by ICPMS (1) | 3 | 2011/12/02 | 2011/12/02 | CAM SOP-00447 | EPA 6020 |
| MOISTURE | 4 | N/A | 2011/12/01 | CAM SOP-00445 | McKeague 2nd ed 1978 |
| Moisture (1) | 3 | N/A | 2011/12/01 | CAM SOP-00445 | McKeague 2nd ed 1978 |
| PAH Compounds in Soil by GC/MS (SIM) (1) | 3 | 2011/12/01 | 2011/12/02 | CAM SOP - 00318 | EPA 8270 |
| pH CaCl2 EXTRACT (1) | 4 | 2011/12/02 | 2011/12/02 | CAM SOP-00413 | SM 4500 H |
| Sodium Adsorption Ratio (SAR) (1) | 4 | 2011/11/29 | 2011/12/02 | CAM SOP-00102 | EPA 6010 |
| Sodium Adsorption Ratio (SAR) (1) | 2 | 2011/11/30 | 2011/12/02 | CAM SOP-00102 | EPA 6010 |
| Volatile Organic Compounds in Soil (1) | 3 | 2011/12/03 | 2011/12/06 | CAM SOP-00226 | EPA 8260 modified |

## Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act.

The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following the 'Alberta Environment Draft Addenda to the CWS-PHC, Appendix 6, Validation of Alternate Methods'. Documentation is available upon request. Maxxam has made the following improvements to the CWS-PHC reference benchmark method: (i) Headspace for F1; and, (ii) Mechanical extraction for F2-F4. Note: F4G cannot be added to the C6 to C50 hydrocarbons. The extraction date for samples field preserved with methanol for F1 and Volatile Organic Compounds is considered to be the date sampled.

Maxxam Analytics is accredited by SCC (Lab ID 97) for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

../2

Maxxam Job #: B1I7378
Report Date: 2011/12/07

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DR.
Sampler Initials: PH



Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

JULIE CLEMENT, Ottawa Customer Service
Email: JClement@maxxam.ca
Phone# (613) 274-3549

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

Maxxam Job #: B1I7378
Report Date: 2011/12/07

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DR.
Sampler Initials: PH

## RESULTS OF ANALYSES OF SOIL

| Maxxam ID | | LU3950 | LU3951 | LU3952 | | | LU3953 | | |
|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2011/11/24 | 2011/11/24 | 2011/11/24 | | | 2011/11/24 | | |
| | **Units** | **TP11-2 SA2** | **TP11-5 SA1** | **TP11-6 SA2** | **RDL** | **QC Batch** | **TP11-9 SA1** | **RDL** | **QC Batch** |
| **Calculated Parameters** | | | | | | | | | |
| Sodium Adsorption Ratio | N/A | 0.71 | 0.64 | 0.77 | | 2697048 | 0.28 | | 2697048 |
| **Inorganics** | | | | | | | | | |
| Chromium (VI) | ug/g | | | | | | 0.6 | 0.2 | 2700585 |
| Conductivity | mS/cm | | | | | | 0.13 | 0.002 | 2700550 |
| Free Cyanide | ug/g | | | | | | <0.01 | 0.01 | 2700097 |
| Moisture | % | 15 | | | 0.2 | 2698020 | 7 | 1 | 2699954 |
| Available (CaCl2) pH | pH | 4.46 | | | | 2700778 | 7.46 | | 2699483 |

| Maxxam ID | | LU3953 | | | LU3954 | LU3955 | LU3957 | | |
|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2011/11/24 | | | 2011/11/24 | 2011/11/24 | 2011/11/25 | | |
| | **Units** | **TP11-9 SA1 Lab-Dup** | **RDL** | **QC Batch** | **TP11-9 SA2** | **TP11-9 SA12** | **SA2** | **RDL** | **QC Batch** |
| **Calculated Parameters** | | | | | | | | | |
| Sodium Adsorption Ratio | N/A | | | 2697048 | 7.6 | 7.4 | | | 2698057 |
| **Inorganics** | | | | | | | | | |
| Chromium (VI) | ug/g | 0.5 | 0.2 | 2700585 | <0.2 | <0.2 | | 0.2 | 2700585 |
| Conductivity | mS/cm | | 0.002 | 2700550 | 0.33 | 0.34 | | 0.002 | 2700550 |
| Free Cyanide | ug/g | | 0.01 | 2700097 | <0.04(1) | <0.04(1) | | 0.04 | 2700097 |
| Moisture | % | | 1 | 2699954 | 31 | 31 | 20 | 0.2 | 2698020 |
| Available (CaCl2) pH | pH | | | 2699483 | 6.67 | 6.70 | | | 2700778 |

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Due to colour interferences, sample required dilution. Detection limit was adjusted accordingly.



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Maxxam Job #: B1I7378
Report Date: 2011/12/07

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DR.
Sampler Initials: PH

## ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

| Maxxam ID | | LU3950 | LU3951 | LU3952 | | LU3953 | LU3954 | | |
|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2011/11/24 | 2011/11/24 | 2011/11/24 | | 2011/11/24 | 2011/11/24 | | |
| | **Units** | **TP11-2 SA2** | **TP11-5 SA1** | **TP11-6 SA2** | **QC Batch** | **TP11-9 SA1** | **TP11-9 SA2** | **RDL** | **QC Batch** |
| **Metals** | | | | | | | | | |
| Hot Water Ext. Boron (B) | ug/g | | | | | 0.28 | 0.27 | 0.05 | 2700606 |
| Acid Extractable Antimony (Sb) | ug/g | <0.2 | <0.2 | <0.2 | 2699960 | <0.2 | <0.2 | 0.2 | 2700611 |
| Acid Extractable Arsenic (As) | ug/g | 3 | 2 | 2 | 2699960 | 1 | 1 | 1 | 2700611 |
| Acid Extractable Barium (Ba) | ug/g | 120 | 72 | 61 | 2699960 | 29 | 63 | 0.5 | 2700611 |
| Acid Extractable Beryllium (Be) | ug/g | 0.6 | 0.3 | 0.5 | 2699960 | <0.2 | 0.6 | 0.2 | 2700611 |
| Acid Extractable Boron (B) | ug/g | <5 | <5 | <5 | 2699960 | <5 | <5 | 5 | 2700611 |
| Acid Extractable Cadmium (Cd) | ug/g | 0.1 | 0.1 | 0.2 | 2699960 | 0.4 | 0.2 | 0.1 | 2700611 |
| Acid Extractable Chromium (Cr) | ug/g | 22 | 15 | 18 | 2699960 | 18 | 25 | 1 | 2700611 |
| Acid Extractable Cobalt (Co) | ug/g | 7.6 | 6.1 | 6.2 | 2699960 | 4.5 | 7.3 | 0.1 | 2700611 |
| Acid Extractable Copper (Cu) | ug/g | 15 | 17 | 17 | 2699960 | 20 | 32 | 0.5 | 2700611 |
| Acid Extractable Lead (Pb) | ug/g | 10 | 11 | 12 | 2699960 | 75 | 8 | 1 | 2700611 |
| Acid Extractable Molybdenum (Mo) | ug/g | <0.5 | 0.6 | 0.9 | 2699960 | 0.6 | 0.7 | 0.5 | 2700611 |
| Acid Extractable Nickel (Ni) | ug/g | 16 | 9.8 | 10 | 2699960 | 9.5 | 16 | 0.5 | 2700611 |
| Acid Extractable Selenium (Se) | ug/g | 0.6 | <0.5 | 0.5 | 2699960 | <0.5 | <0.5 | 0.5 | 2700611 |
| Acid Extractable Silver (Ag) | ug/g | <0.2 | <0.2 | <0.2 | 2699960 | <0.2 | <0.2 | 0.2 | 2700611 |
| Acid Extractable Thallium (Tl) | ug/g | 0.15 | 0.13 | 0.09 | 2699960 | 0.08 | 0.12 | 0.05 | 2700611 |
| Acid Extractable Uranium (U) | ug/g | 0.75 | 0.48 | 0.61 | 2699960 | 0.36 | 0.66 | 0.05 | 2700611 |
| Acid Extractable Vanadium (V) | ug/g | 31 | 26 | 31 | 2699960 | 20 | 39 | 5 | 2700611 |
| Acid Extractable Zinc (Zn) | ug/g | 26 | 39 | 35 | 2699960 | 79 | 44 | 5 | 2700611 |
| Acid Extractable Mercury (Hg) | ug/g | | | | | <0.05 | 0.08 | 0.05 | 2700611 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Maxxam Job #: B1I7378
Report Date: 2011/12/07

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DR.
Sampler Initials: PH

## ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

| Maxxam ID | | LU3955 | | LU3956 | LU3958 | LU3958 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2011/11/24 | | 2011/11/25 | 2011/11/25 | 2011/11/25 | | |
| | **Units** | **TP11-9 SA12** | **QC Batch** | **SA1** | **SA3** | **SA3 Lab-Dup** | **RDL** | **QC Batch** |
| **Metals** | | | | | | | | |
| Hot Water Ext. Boron (B) | ug/g | 0.25 | 2700606 | | | | 0.05 | |
| Acid Extractable Antimony (Sb) | ug/g | <0.2 | 2700611 | <0.2 | <0.2 | <0.2 | 0.2 | 2699960 |
| Acid Extractable Arsenic (As) | ug/g | 1 | 2700611 | 2 | <1 | <1 | 1 | 2699960 |
| Acid Extractable Barium (Ba) | ug/g | 64 | 2700611 | 98 | 27 | 25 | 0.5 | 2699960 |
| Acid Extractable Beryllium (Be) | ug/g | 0.8 | 2700611 | 0.4 | <0.2 | <0.2 | 0.2 | 2699960 |
| Acid Extractable Boron (B) | ug/g | <5 | 2700611 | <5 | <5 | <5 | 5 | 2699960 |
| Acid Extractable Cadmium (Cd) | ug/g | 0.2 | 2700611 | 0.2 | <0.1 | <0.1 | 0.1 | 2699960 |
| Acid Extractable Chromium (Cr) | ug/g | 25 | 2700611 | 16 | 7 | 8 | 1 | 2699960 |
| Acid Extractable Cobalt (Co) | ug/g | 7.4 | 2700611 | 6.7 | 3.4 | 3.5 | 0.1 | 2699960 |
| Acid Extractable Copper (Cu) | ug/g | 32 | 2700611 | 15 | 9.1 | 18(1) | 0.5 | 2699960 |
| Acid Extractable Lead (Pb) | ug/g | 9 | 2700611 | 13 | 4 | 4 | 1 | 2699960 |
| Acid Extractable Molybdenum (Mo) | ug/g | 0.7 | 2700611 | 0.7 | <0.5 | <0.5 | 0.5 | 2699960 |
| Acid Extractable Nickel (Ni) | ug/g | 16 | 2700611 | 12 | 6.5 | 6.5 | 0.5 | 2699960 |
| Acid Extractable Selenium (Se) | ug/g | <0.5 | 2700611 | <0.5 | <0.5 | <0.5 | 0.5 | 2699960 |
| Acid Extractable Silver (Ag) | ug/g | <0.2 | 2700611 | <0.2 | <0.2 | <0.2 | 0.2 | 2699960 |
| Acid Extractable Thallium (Tl) | ug/g | 0.12 | 2700611 | 0.14 | <0.05 | 0.05 | 0.05 | 2699960 |
| Acid Extractable Uranium (U) | ug/g | 0.64 | 2700611 | 0.59 | 0.50 | 0.43 | 0.05 | 2699960 |
| Acid Extractable Vanadium (V) | ug/g | 40 | 2700611 | 27 | 15 | 13 | 5 | 2699960 |
| Acid Extractable Zinc (Zn) | ug/g | 48 | 2700611 | 35 | 15 | 21 | 5 | 2699960 |
| Acid Extractable Mercury (Hg) | ug/g | 0.09 | 2700611 | | | | 0.05 | |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.



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Maxxam Job #: B1I7378
Report Date: 2011/12/07

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DR.
Sampler Initials: PH

## SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

| Maxxam ID | | LU3950 | LU3950 | | LU3954 | LU3955 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2011/11/24 | 2011/11/24 | | 2011/11/24 | 2011/11/24 | | |
| | **Units** | **TP11-2 SA2** | **TP11-2 SA2 Lab-Dup** | **RDL** | **TP11-9 SA2** | **TP11-9 SA12** | **RDL** | **QC Batch** |
| **Polyaromatic Hydrocarbons** | | | | | | | | |
| Acenaphthene | ug/g | <0.005 | <0.005 | 0.005 | <0.01 | <0.01 | 0.01 | 2700356 |
| Acenaphthylene | ug/g | <0.005 | <0.005 | 0.005 | <0.01 | <0.01 | 0.01 | 2700356 |
| Anthracene | ug/g | <0.005 | <0.005 | 0.005 | <0.01 | <0.01 | 0.01 | 2700356 |
| Benzo(a)anthracene | ug/g | <0.005 | <0.005 | 0.005 | <0.01 | <0.01 | 0.01 | 2700356 |
| Benzo(a)pyrene | ug/g | <0.005 | <0.005 | 0.005 | 0.01 | <0.01 | 0.01 | 2700356 |
| Benzo(b/j)fluoranthene | ug/g | <0.005 | <0.005 | 0.005 | 0.02 | 0.01 | 0.01 | 2700356 |
| Benzo(g,h,i)perylene | ug/g | <0.005 | <0.005 | 0.005 | 0.01 | <0.01 | 0.01 | 2700356 |
| Benzo(k)fluoranthene | ug/g | <0.005 | <0.005 | 0.005 | <0.01 | <0.01 | 0.01 | 2700356 |
| Chrysene | ug/g | <0.005 | <0.005 | 0.005 | 0.01 | <0.01 | 0.01 | 2700356 |
| Dibenz(a,h)anthracene | ug/g | <0.005 | <0.005 | 0.005 | <0.01 | <0.01 | 0.01 | 2700356 |
| Fluoranthene | ug/g | <0.005 | <0.005 | 0.005 | 0.02 | 0.02 | 0.01 | 2700356 |
| Fluorene | ug/g | <0.005 | <0.005 | 0.005 | <0.01 | <0.01 | 0.01 | 2700356 |
| Indeno(1,2,3-cd)pyrene | ug/g | <0.005 | <0.005 | 0.005 | 0.01 | <0.01 | 0.01 | 2700356 |
| 1-Methylnaphthalene | ug/g | <0.005 | <0.005 | 0.005 | <0.01 | <0.01 | 0.01 | 2700356 |
| 2-Methylnaphthalene | ug/g | <0.005 | <0.005 | 0.005 | <0.01 | <0.01 | 0.01 | 2700356 |
| Naphthalene | ug/g | <0.005 | <0.005 | 0.005 | <0.01 | <0.01 | 0.01 | 2700356 |
| Phenanthrene | ug/g | <0.005 | <0.005 | 0.005 | <0.01 | <0.01 | 0.01 | 2700356 |
| Pyrene | ug/g | <0.005 | <0.005 | 0.005 | 0.02 | 0.02 | 0.01 | 2700356 |
| **Surrogate Recovery (%)** | | | | | | | | |
| D10-Anthracene | % | 87 | 87 | | 88 | 86 | | 2700356 |
| D14-Terphenyl (FS) | % | 88 | 87 | | 88 | 87 | | 2700356 |
| D8-Acenaphthylene | % | 84 | 84 | | 85 | 83 | | 2700356 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Maxxam Job #: B1I7378
Report Date: 2011/12/07

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DR.
Sampler Initials: PH

## VOLATILE ORGANICS BY GC/MS (SOIL)

| Maxxam ID | | LU3950 | LU3954 | LU3955 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2011/11/24 | 2011/11/24 | 2011/11/24 | | |
| | **Units** | **TP11-2 SA2** | **TP11-9 SA2** | **TP11-9 SA12** | **RDL** | **QC Batch** |
| **Volatile Organics** | | | | | | |
| Acetone (2-Propanone) | ug/g | <0.5 | <0.5 | <0.5 | 0.5 | 2699172 |
| Benzene | ug/g | <0.02 | <0.02 | <0.02 | 0.02 | 2699172 |
| Bromodichloromethane | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| Bromoform | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| Bromomethane | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| Carbon Tetrachloride | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| Chlorobenzene | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| Chloroform | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| Dibromochloromethane | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| 1,2-Dichlorobenzene | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| 1,3-Dichlorobenzene | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| 1,4-Dichlorobenzene | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| Dichlorodifluoromethane (FREON 12) | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| 1,1-Dichloroethane | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| 1,2-Dichloroethane | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| 1,1-Dichloroethylene | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| cis-1,2-Dichloroethylene | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| trans-1,2-Dichloroethylene | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| 1,2-Dichloropropane | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| cis-1,3-Dichloropropene | ug/g | <0.03 | <0.03 | <0.03 | 0.03 | 2699172 |
| trans-1,3-Dichloropropene | ug/g | <0.04 | <0.04 | <0.04 | 0.04 | 2699172 |
| Ethylbenzene | ug/g | <0.02 | <0.02 | <0.02 | 0.02 | 2699172 |
| Ethylene Dibromide | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| Hexane | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| Methylene Chloride(Dichloromethane) | ug/g | <0.05 | 0.05(1) | <0.05 | 0.05 | 2699172 |
| Methyl Isobutyl Ketone | ug/g | <0.5 | <0.5 | <0.5 | 0.5 | 2699172 |
| Methyl Ethyl Ketone (2-Butanone) | ug/g | <0.5 | <0.5 | <0.5 | 0.5 | 2699172 |
| Methyl t-butyl ether (MTBE) | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| Styrene | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| 1,1,1,2-Tetrachloroethane | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| 1,1,2,2-Tetrachloroethane | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| Tetrachloroethylene | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| Toluene | ug/g | <0.02 | <0.02 | <0.02 | 0.02 | 2699172 |
| 1,1,1-Trichloroethane | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Trace positive value was detected for this analyte which was also detected in method blank below reporting limit. This compound is known to be a common laboratory artefact.



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Report Date: 2011/12/07

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DR.
Sampler Initials: PH

## VOLATILE ORGANICS BY GC/MS (SOIL)

| Maxxam ID | | LU3950 | LU3954 | LU3955 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2011/11/24 | 2011/11/24 | 2011/11/24 | | |
| | **Units** | **TP11-2 SA2** | **TP11-9 SA2** | **TP11-9 SA12** | **RDL** | **QC Batch** |
| 1,1,2-Trichloroethane | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| Trichloroethylene | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| Vinyl Chloride | ug/g | <0.02 | <0.02 | <0.02 | 0.02 | 2699172 |
| p+m-Xylene | ug/g | <0.02 | <0.02 | <0.02 | 0.02 | 2699172 |
| o-Xylene | ug/g | <0.02 | <0.02 | <0.02 | 0.02 | 2699172 |
| Xylene (Total) | ug/g | <0.02 | <0.02 | <0.02 | 0.02 | 2699172 |
| Trichlorofluoromethane (FREON 11) | ug/g | <0.05 | <0.05 | <0.05 | 0.05 | 2699172 |
| **Surrogate Recovery (%)** | | | | | | |
| 4-Bromofluorobenzene | % | 97 | 97 | 95 | | 2699172 |
| D10-o-Xylene | % | 102 | 100 | 90 | | 2699172 |
| D4-1,2-Dichloroethane | % | 95 | 94 | 97 | | 2699172 |
| D8-Toluene | % | 101 | 103 | 101 | | 2699172 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Sampler Initials: PH

## PETROLEUM HYDROCARBONS (CCME)

| Maxxam ID | | LU3950 | LU3954 | LU3955 | LU3957 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | 2011/11/24 | 2011/11/24 | 2011/11/24 | 2011/11/25 | | |
| | **Units** | **TP11-2 SA2** | **TP11-9 SA2** | **TP11-9 SA12** | **SA2** | **RDL** | **QC Batch** |
| **BTEX & F1 Hydrocarbons** | | | | | | | |
| Benzene | ug/g | | | | <0.02 | 0.02 | 2698091 |
| Toluene | ug/g | | | | <0.02 | 0.02 | 2698091 |
| Ethylbenzene | ug/g | | | | <0.02 | 0.02 | 2698091 |
| o-Xylene | ug/g | | | | <0.02 | 0.02 | 2698091 |
| p+m-Xylene | ug/g | | | | <0.04 | 0.04 | 2698091 |
| Total Xylenes | ug/g | | | | <0.04 | 0.04 | 2698091 |
| F1 (C6-C10) | ug/g | <10 | <10 | <10 | <10 | 10 | 2698091 |
| F1 (C6-C10) - BTEX | ug/g | <10 | <10 | <10 | <10 | 10 | 2698091 |
| **F2-F4 Hydrocarbons** | | | | | | | |
| F2 (C10-C16 Hydrocarbons) | ug/g | <10 | <10 | <10 | <10 | 10 | 2698077 |
| F3 (C16-C34 Hydrocarbons) | ug/g | <10 | <10 | <10 | <10 | 10 | 2698077 |
| F4 (C34-C50 Hydrocarbons) | ug/g | <10 | <10 | <10 | <10 | 10 | 2698077 |
| Reached Baseline at C50 | ug/g | YES | YES | YES | YES | | 2698077 |
| Hydrocarbon Resemblance | ug/g | NA | | | | N/A | 2698077 |
| **Surrogate Recovery (%)** | | | | | | | |
| 1,4-Difluorobenzene | % | 107 | 108 | 110 | 111 | | 2698091 |
| 4-Bromofluorobenzene | % | 80 | 98 | 98 | 92 | | 2698091 |
| D10-Ethylbenzene | % | 72 | 71 | 72 | 76 | | 2698091 |
| D4-1,2-Dichloroethane | % | 113 | 116 | 115 | 118 | | 2698091 |
| o-Terphenyl | % | 81 | 74 | 84 | 79 | | 2698077 |

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B1I7378
Report Date: 2011/12/07

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DR.
Sampler Initials: PH

## Test Summary

**Maxxam ID** LU3950 **Collected** 2011/11/24
**Sample ID** TP11-2 SA2 **Shipped**
**Matrix** Soil **Received** 2011/11/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Petroleum Hydro. CCME F1 & BTEX in Soil | HSGC/MSFD | 2698091 | 2011/11/30 | 2011/11/30 | STEVE ROBERTS |
| Petroleum Hydrocarbons F2-F4 in Soil | GC/FID | 2698077 | 2011/11/30 | 2011/12/01 | LYNDSEY HART |
| Acid Extr. Metals (aqua regia) by ICPMS | ICP/MS | 2699960 | 2011/12/01 | 2011/12/02 | HUA REN |
| MOISTURE | BAL | 2698020 | N/A | 2011/12/01 | HABIBA ESSAK |
| PAH Compounds in Soil by GC/MS (SIM) | GC/MS | 2700356 | 2011/12/01 | 2011/12/02 | DARRYL TILLER |
| pH CaCl2 EXTRACT | | 2700778 | 2011/12/02 | 2011/12/02 | XUANHONG QIU |
| Sodium Adsorption Ratio (SAR) | CALC/MET | 2697048 | 2011/12/02 | 2011/12/02 | AUTOMATED STATCHK |
| Volatile Organic Compounds in Soil | P&T/MS | 2699172 | 2011/12/03 | 2011/12/06 | DANIEL KIM |

**Maxxam ID** LU3950 Dup **Collected** 2011/11/24
**Sample ID** TP11-2 SA2 **Shipped**
**Matrix** Soil **Received** 2011/11/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH Compounds in Soil by GC/MS (SIM) | GC/MS | 2700356 | 2011/12/01 | 2011/12/02 | DARRYL TILLER |

**Maxxam ID** LU3951 **Collected** 2011/11/24
**Sample ID** TP11-5 SA1 **Shipped**
**Matrix** Soil **Received** 2011/11/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Acid Extr. Metals (aqua regia) by ICPMS | ICP/MS | 2699960 | 2011/12/01 | 2011/12/02 | HUA REN |
| Sodium Adsorption Ratio (SAR) | CALC/MET | 2697048 | 2011/12/02 | 2011/12/02 | AUTOMATED STATCHK |

Maxxam Job #: B1I7378
Report Date: 2011/12/07

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DR.
Sampler Initials: PH

## Test Summary

**Maxxam ID** LU3952 **Collected** 2011/11/24
**Sample ID** TP11-6 SA2 **Shipped**
**Matrix** Soil **Received** 2011/11/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Acid Extr. Metals (aqua regia) by ICPMS | ICP/MS | 2699960 | 2011/12/01 | 2011/12/02 | HUA REN |
| Sodium Adsorption Ratio (SAR) | CALC/MET | 2697048 | 2011/12/02 | 2011/12/02 | AUTOMATED STATCHK |

**Maxxam ID** LU3953 **Collected** 2011/11/24
**Sample ID** TP11-9 SA1 **Shipped**
**Matrix** Soil **Received** 2011/11/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Hot Water Extractable Boron | ICP | 2700606 | 2011/12/02 | 2011/12/02 | AZITA FAZAELI |
| Free (WAD) Cyanide | TECH | 2700097 | N/A | 2011/12/02 | LOUISE HARDING |
| Conductivity | COND | 2700550 | N/A | 2011/12/02 | NEIL DASSANAYAKE |
| Hexavalent Chromium in Soil by IC | IC/SPEC | 2700585 | N/A | 2011/12/05 | SALLY COUGHLIN |
| Acid Extr. Metals (aqua regia) by ICPMS | ICP/MS | 2700611 | 2011/12/02 | 2011/12/02 | VIVIANA CANZONIERI |
| Moisture | BAL | 2699954 | N/A | 2011/12/01 | VALENTINA KAFTANI |
| pH CaCl2 EXTRACT | | 2699483 | 2011/12/02 | 2011/12/02 | XUANHONG QIU |
| Sodium Adsorption Ratio (SAR) | CALC/MET | 2697048 | 2011/12/02 | 2011/12/02 | AUTOMATED STATCHK |

**Maxxam ID** LU3953 Dup **Collected** 2011/11/24
**Sample ID** TP11-9 SA1 **Shipped**
**Matrix** Soil **Received** 2011/11/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Hexavalent Chromium in Soil by IC | IC/SPEC | 2700585 | N/A | 2011/12/05 | SALLY COUGHLIN |



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Report Date: 2011/12/07

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Sampler Initials: PH

## Test Summary

**Maxxam ID** LU3954
**Sample ID** TP11-9 SA2
**Matrix** Soil

**Collected** 2011/11/24
**Shipped**
**Received** 2011/11/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Hot Water Extractable Boron | ICP | 2700606 | 2011/12/02 | 2011/12/02 | AZITA FAZAELI |
| Free (WAD) Cyanide | TECH | 2700097 | N/A | 2011/12/02 | LOUISE HARDING |
| Conductivity | COND | 2700550 | N/A | 2011/12/02 | NEIL DASSANAYAKE |
| Hexavalent Chromium in Soil by IC | IC/SPEC | 2700585 | N/A | 2011/12/05 | SALLY COUGHLIN |
| Petroleum Hydro. CCME F1 & BTEX in Soil | HSGC/MSFD | 2698091 | 2011/11/30 | 2011/11/30 | STEVE ROBERTS |
| Petroleum Hydrocarbons F2-F4 in Soil | GC/FID | 2698077 | 2011/11/30 | 2011/12/01 | LYNDSEY HART |
| Acid Extr. Metals (aqua regia) by ICPMS | ICP/MS | 2700611 | 2011/12/02 | 2011/12/02 | VIVIANA CANZONIERI |
| MOISTURE | BAL | 2698020 | N/A | 2011/12/01 | HABIBA ESSAK |
| Moisture | BAL | 2699954 | N/A | 2011/12/01 | VALENTINA KAFTANI |
| PAH Compounds in Soil by GC/MS (SIM) | GC/MS | 2700356 | 2011/12/01 | 2011/12/02 | DARRYL TILLER |
| pH CaCl2 EXTRACT | | 2700778 | 2011/12/02 | 2011/12/02 | XUANHONG QIU |
| Sodium Adsorption Ratio (SAR) | CALC/MET | 2698057 | 2011/12/02 | 2011/12/02 | AUTOMATED STATCHK |
| Volatile Organic Compounds in Soil | P&T/MS | 2699172 | 2011/12/03 | 2011/12/06 | DANIEL KIM |

**Maxxam ID** LU3955
**Sample ID** TP11-9 SA12
**Matrix** Soil

**Collected** 2011/11/24
**Shipped**
**Received** 2011/11/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Hot Water Extractable Boron | ICP | 2700606 | 2011/12/02 | 2011/12/02 | AZITA FAZAELI |
| Free (WAD) Cyanide | TECH | 2700097 | N/A | 2011/12/02 | LOUISE HARDING |
| Conductivity | COND | 2700550 | N/A | 2011/12/02 | NEIL DASSANAYAKE |
| Hexavalent Chromium in Soil by IC | IC/SPEC | 2700585 | N/A | 2011/12/05 | SALLY COUGHLIN |
| Petroleum Hydro. CCME F1 & BTEX in Soil | HSGC/MSFD | 2698091 | 2011/11/30 | 2011/12/01 | STEVE ROBERTS |
| Petroleum Hydrocarbons F2-F4 in Soil | GC/FID | 2698077 | 2011/11/30 | 2011/12/01 | LYNDSEY HART |
| Acid Extr. Metals (aqua regia) by ICPMS | ICP/MS | 2700611 | 2011/12/02 | 2011/12/02 | VIVIANA CANZONIERI |
| MOISTURE | BAL | 2698020 | N/A | 2011/12/01 | HABIBA ESSAK |
| Moisture | BAL | 2699954 | N/A | 2011/12/01 | VALENTINA KAFTANI |
| PAH Compounds in Soil by GC/MS (SIM) | GC/MS | 2700356 | 2011/12/01 | 2011/12/02 | DARRYL TILLER |
| pH CaCl2 EXTRACT | | 2700778 | 2011/12/02 | 2011/12/02 | XUANHONG QIU |
| Sodium Adsorption Ratio (SAR) | CALC/MET | 2698057 | 2011/12/02 | 2011/12/02 | AUTOMATED STATCHK |
| Volatile Organic Compounds in Soil | P&T/MS | 2699172 | 2011/12/03 | 2011/12/06 | DANIEL KIM |



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Report Date: 2011/12/07

Golder Associates Ltd
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Sampler Initials: PH

## Test Summary

**Maxxam ID** LU3956 **Collected** 2011/11/25
**Sample ID** SA1 **Shipped**
**Matrix** Soil **Received** 2011/11/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Acid Extr. Metals (aqua regia) by ICPMS | ICP/MS | 2699960 | 2011/12/01 | 2011/12/02 | HUA REN |

**Maxxam ID** LU3957 **Collected** 2011/11/25
**Sample ID** SA2 **Shipped**
**Matrix** Soil **Received** 2011/11/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Petroleum Hydro. CCME F1 & BTEX in Soil | HSGC/MSFD | 2698091 | 2011/11/30 | 2011/12/01 | STEVE ROBERTS |
| Petroleum Hydrocarbons F2-F4 in Soil | GC/FID | 2698077 | 2011/11/30 | 2011/12/01 | LYNDSEY HART |
| MOISTURE | BAL | 2698020 | N/A | 2011/12/01 | HABIBA ESSAK |

**Maxxam ID** LU3958 **Collected** 2011/11/25
**Sample ID** SA3 **Shipped**
**Matrix** Soil **Received** 2011/11/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Acid Extr. Metals (aqua regia) by ICPMS | ICP/MS | 2699960 | 2011/12/01 | 2011/12/02 | HUA REN |

**Maxxam ID** LU3958 Dup **Collected** 2011/11/25
**Sample ID** SA3 **Shipped**
**Matrix** Soil **Received** 2011/11/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Acid Extr. Metals (aqua regia) by ICPMS | ICP/MS | 2699960 | 2011/12/01 | 2011/12/02 | HUA REN |

Maxxam Job #: B1I7378
Report Date: 2011/12/07

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DR.
Sampler Initials: PH

| | |
|---|---|
| Package 1 | 9.3°C |

Each temperature is the average of up to three cooler temperatures taken at receipt

**GENERAL COMMENTS**

Custody seal was not present on the cooler.

Sample LU3950-01: SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Sample LU3953-01: SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Sample LU3954-01: PAH Analysis: Detection limits were adjusted for high moisture content.

Sample LU3955-01: PAH Analysis: Detection limits were adjusted for high moisture content.



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Report Date: 2011/12/07

Golder Associates Ltd
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Sampler Initials: PH

## QUALITY ASSURANCE REPORT

| | | | Matrix Spike | | Spiked Blank | | Method Blank | | RPD | | QC Standard | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QC Batch | Parameter | Date | % Recovery | QC Limits | % Recovery | QC Limits | Value | Units | Value (%) | QC Limits | % Recovery | QC Limits |
| 2698020 | Moisture | 2011/12/01 | | | | | | | 1.3 | 50 | | |
| 2698077 | o-Terphenyl | 2011/12/01 | 79 | 30 - 130 | 81 | 30 - 130 | 75 | % | | | | |
| 2698077 | F2 (C10-C16 Hydrocarbons) | 2011/12/01 | 114 | 50 - 130 | 113 | 70 - 130 | <10 | ug/g | NC | 50 | | |
| 2698077 | F3 (C16-C34 Hydrocarbons) | 2011/12/01 | 114 | 50 - 130 | 113 | 70 - 130 | <10 | ug/g | NC | 50 | | |
| 2698077 | F4 (C34-C50 Hydrocarbons) | 2011/12/01 | 114 | 50 - 130 | 113 | 70 - 130 | <10 | ug/g | NC | 50 | | |
| 2698091 | 1,4-Difluorobenzene | 2011/11/30 | 108 | 60 - 140 | 109 | 60 - 140 | 112 | % | | | | |
| 2698091 | 4-Bromofluorobenzene | 2011/11/30 | 103 | 60 - 140 | 98 | 60 - 140 | 83 | % | | | | |
| 2698091 | D10-Ethylbenzene | 2011/11/30 | 75 | 30 - 130 | 81 | 30 - 130 | 76 | % | | | | |
| 2698091 | D4-1,2-Dichloroethane | 2011/11/30 | 113 | 60 - 140 | 111 | 60 - 140 | 116 | % | | | | |
| 2698091 | Benzene | 2011/11/30 | 63 | 60 - 140 | 72 | 60 - 140 | <0.02 | ug/g | | | | |
| 2698091 | Toluene | 2011/11/30 | 67 | 60 - 140 | 75 | 60 - 140 | <0.02 | ug/g | | | | |
| 2698091 | Ethylbenzene | 2011/11/30 | 64 | 60 - 140 | 71 | 60 - 140 | <0.02 | ug/g | | | | |
| 2698091 | o-Xylene | 2011/11/30 | 66 | 60 - 140 | 72 | 60 - 140 | <0.02 | ug/g | | | | |
| 2698091 | p+m-Xylene | 2011/11/30 | 61 | 60 - 140 | 67 | 60 - 140 | <0.04 | ug/g | | | | |
| 2698091 | F1 (C6-C10) | 2011/11/30 | 97 | 60 - 140 | 88 | 60 - 140 | <10 | ug/g | NC | 50 | | |
| 2698091 | Total Xylenes | 2011/11/30 | | | | | <0.04 | ug/g | | | | |
| 2698091 | F1 (C6-C10) - BTEX | 2011/11/30 | | | | | <10 | ug/g | NC | 50 | | |
| 2699172 | 4-Bromofluorobenzene | 2011/12/06 | 98 | 60 - 140 | 106 | 60 - 140 | 96 | % | | | | |
| 2699172 | D10-o-Xylene | 2011/12/06 | 91 | 50 - 130 | 102 | 50 - 130 | 103 | % | | | | |
| 2699172 | D4-1,2-Dichloroethane | 2011/12/06 | 86 | 60 - 140 | 119 | 60 - 140 | 98 | % | | | | |
| 2699172 | D8-Toluene | 2011/12/06 | 99 | 60 - 140 | 99 | 60 - 140 | 100 | % | | | | |
| 2699172 | Acetone (2-Propanone) | 2011/12/05 | 96 | 60 - 140 | 133 | 60 - 140 | <0.5 | ug/g | NC | 50 | | |
| 2699172 | Benzene | 2011/12/05 | 100 | 60 - 140 | 105 | 60 - 140 | <0.02 | ug/g | 32.9 | 50 | | |
| 2699172 | Bromodichloromethane | 2011/12/05 | 90 | 60 - 140 | 118 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | Bromoform | 2011/12/05 | 105 | 60 - 140 | 128 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | Bromomethane | 2011/12/05 | 69 | 60 - 140 | 140 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | Carbon Tetrachloride | 2011/12/05 | 91 | 60 - 140 | 115 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | Chlorobenzene | 2011/12/05 | 98 | 60 - 140 | 104 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | Chloroform | 2011/12/05 | 92 | 60 - 140 | 113 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | Dibromochloromethane | 2011/12/05 | 99 | 60 - 140 | 116 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | 1,2-Dichlorobenzene | 2011/12/05 | 101 | 60 - 140 | 105 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | 1,3-Dichlorobenzene | 2011/12/05 | 101 | 60 - 140 | 103 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | 1,4-Dichlorobenzene | 2011/12/05 | 102 | 60 - 140 | 106 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | Dichlorodifluoromethane (FREON 12) | 2011/12/05 | 86 | 60 - 140 | 120 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | 1,1-Dichloroethane | 2011/12/05 | 92 | 60 - 140 | 110 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | 1,2-Dichloroethane | 2011/12/05 | 86 | 60 - 140 | 123 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | 1,1-Dichloroethylene | 2011/12/05 | 90 | 60 - 140 | 107 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | cis-1,2-Dichloroethylene | 2011/12/05 | 102 | 60 - 140 | 102 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | trans-1,2-Dichloroethylene | 2011/12/05 | 100 | 60 - 140 | 101 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | 1,2-Dichloropropane | 2011/12/05 | 94 | 60 - 140 | 110 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |

Maxxam Job #: B1I7378
Report Date: 2011/12/07

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DR.
Sampler Initials: PH

## QUALITY ASSURANCE REPORT

| | | | Matrix Spike | | Spiked Blank | | Method Blank | | RPD | | QC Standard | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QC Batch | Parameter | Date | % Recovery | QC Limits | % Recovery | QC Limits | Value | Units | Value (%) | QC Limits | % Recovery | QC Limits |
| 2699172 | cis-1,3-Dichloropropene | 2011/12/05 | 98 | 60 - 140 | 119 | 60 - 140 | <0.03 | ug/g | NC | 50 | | |
| 2699172 | trans-1,3-Dichloropropene | 2011/12/05 | 92 | 60 - 140 | 116 | 60 - 140 | <0.04 | ug/g | NC | 50 | | |
| 2699172 | Ethylbenzene | 2011/12/05 | 100 | 60 - 140 | 106 | 60 - 140 | <0.02 | ug/g | 156(1, 2) | 50 | | |
| 2699172 | Ethylene Dibromide | 2011/12/05 | 103 | 60 - 140 | 114 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | Hexane | 2011/12/05 | 92 | 60 - 140 | 109 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | Methylene Chloride(Dichloromethane) | 2011/12/05 | 97 | 60 - 140 | 100 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | Methyl Isobutyl Ketone | 2011/12/05 | 88 | 60 - 140 | 128 | 60 - 140 | <0.5 | ug/g | NC | 50 | | |
| 2699172 | Methyl Ethyl Ketone (2-Butanone) | 2011/12/05 | 97 | 60 - 140 | 133 | 60 - 140 | <0.5 | ug/g | NC | 50 | | |
| 2699172 | Methyl t-butyl ether (MTBE) | 2011/12/05 | 106 | 60 - 140 | 121 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | Styrene | 2011/12/05 | 102 | 60 - 140 | 109 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | 1,1,1,2-Tetrachloroethane | 2011/12/05 | 99 | 60 - 140 | 111 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | 1,1,2,2-Tetrachloroethane | 2011/12/05 | 95 | 60 - 140 | 118 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | Tetrachloroethylene | 2011/12/05 | 98 | 60 - 140 | 102 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | Toluene | 2011/12/05 | 98 | 60 - 140 | 100 | 60 - 140 | <0.02 | ug/g | 155(1, 2) | 50 | | |
| 2699172 | 1,1,1-Trichloroethane | 2011/12/05 | 89 | 60 - 140 | 112 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | 1,1,2-Trichloroethane | 2011/12/05 | 97 | 60 - 140 | 107 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | Trichloroethylene | 2011/12/05 | 103 | 60 - 140 | 104 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | Vinyl Chloride | 2011/12/05 | 96 | 60 - 140 | 100 | 60 - 140 | <0.02 | ug/g | NC | 50 | | |
| 2699172 | p+m-Xylene | 2011/12/05 | 98 | 60 - 140 | 104 | 60 - 140 | <0.02 | ug/g | 182(1, 2) | 50 | | |
| 2699172 | o-Xylene | 2011/12/05 | 94 | 60 - 140 | 105 | 60 - 140 | <0.02 | ug/g | 184(1, 2) | 50 | | |
| 2699172 | Trichlorofluoromethane (FREON 11) | 2011/12/05 | 104 | 60 - 140 | 105 | 60 - 140 | <0.05 | ug/g | NC | 50 | | |
| 2699172 | Xylene (Total) | 2011/12/05 | | | | | <0.02 | ug/g | 183(1, 2) | 50 | | |
| 2699954 | Moisture | 2011/12/01 | | | | | | | 0.9 | 20 | | |
| 2699960 | Acid Extractable Antimony (Sb) | 2011/12/02 | 97 | 75 - 125 | 104 | 75 - 125 | <0.2 | ug/g | NC | 30 | | |
| 2699960 | Acid Extractable Arsenic (As) | 2011/12/02 | 98 | 75 - 125 | 106 | 75 - 125 | <1 | ug/g | NC | 30 | | |
| 2699960 | Acid Extractable Barium (Ba) | 2011/12/02 | NC | 75 - 125 | 106 | 75 - 125 | <0.5 | ug/g | 8.9 | 30 | | |
| 2699960 | Acid Extractable Beryllium (Be) | 2011/12/02 | 93 | 75 - 125 | 102 | 75 - 125 | <0.2 | ug/g | NC | 30 | | |
| 2699960 | Acid Extractable Boron (B) | 2011/12/02 | 86 | 75 - 125 | 93 | 75 - 125 | <5 | ug/g | NC | 30 | | |
| 2699960 | Acid Extractable Cadmium (Cd) | 2011/12/02 | 95 | 75 - 125 | 102 | 75 - 125 | <0.1 | ug/g | NC | 30 | | |
| 2699960 | Acid Extractable Chromium (Cr) | 2011/12/02 | 99 | 75 - 125 | 107 | 75 - 125 | <1 | ug/g | 10.9 | 30 | | |
| 2699960 | Acid Extractable Cobalt (Co) | 2011/12/02 | 95 | 75 - 125 | 105 | 75 - 125 | <0.1 | ug/g | 2.6 | 30 | | |
| 2699960 | Acid Extractable Copper (Cu) | 2011/12/02 | 95 | 75 - 125 | 104 | 75 - 125 | <0.5 | ug/g | 65.0(1) | 30 | | |
| 2699960 | Acid Extractable Lead (Pb) | 2011/12/02 | 120 | 75 - 125 | 107 | 75 - 125 | <1 | ug/g | NC | 30 | | |
| 2699960 | Acid Extractable Molybdenum (Mo) | 2011/12/02 | 97 | 75 - 125 | 103 | 75 - 125 | <0.5 | ug/g | NC | 30 | | |
| 2699960 | Acid Extractable Nickel (Ni) | 2011/12/02 | 96 | 75 - 125 | 105 | 75 - 125 | <0.5 | ug/g | 0.4 | 30 | | |
| 2699960 | Acid Extractable Selenium (Se) | 2011/12/02 | 95 | 75 - 125 | 105 | 75 - 125 | <0.5 | ug/g | NC | 30 | | |
| 2699960 | Acid Extractable Silver (Ag) | 2011/12/02 | 96 | 75 - 125 | 104 | 75 - 125 | <0.2 | ug/g | NC | 30 | | |
| 2699960 | Acid Extractable Thallium (Tl) | 2011/12/02 | 96 | 75 - 125 | 104 | 75 - 125 | <0.05 | ug/g | NC | 30 | | |
| 2699960 | Acid Extractable Uranium (U) | 2011/12/02 | 101 | 75 - 125 | 107 | 75 - 125 | <0.05 | ug/g | 15.5 | 30 | | |
| 2699960 | Acid Extractable Vanadium (V) | 2011/12/02 | 96 | 75 - 125 | 101 | 75 - 125 | <5 | ug/g | NC | 30 | | |

Maxxam Job #: B1I7378
Report Date: 2011/12/07

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DR.
Sampler Initials: PH

## QUALITY ASSURANCE REPORT

| | | | Matrix Spike | | Spiked Blank | | Method Blank | | RPD | | QC Standard | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QC Batch | Parameter | Date | % Recovery | QC Limits | % Recovery | QC Limits | Value | Units | Value (%) | QC Limits | % Recovery | QC Limits |
| 2699960 | Acid Extractable Zinc (Zn) | 2011/12/02 | 96 | 75 - 125 | 105 | 75 - 125 | <5 | ug/g | NC | 30 | | |
| 2700097 | Free Cyanide | 2011/12/02 | 102 | 75 - 125 | 104 | 75 - 125 | <0.01 | ug/g | NC | 35 | | |
| 2700356 | D10-Anthracene | 2011/12/02 | 87 | 50 - 130 | 84 | 50 - 130 | 90 | % | | | | |
| 2700356 | D14-Terphenyl (FS) | 2011/12/02 | 88 | 50 - 130 | 86 | 50 - 130 | 89 | % | | | | |
| 2700356 | D8-Acenaphthylene | 2011/12/02 | 86 | 50 - 130 | 81 | 50 - 130 | 86 | % | | | | |
| 2700356 | Acenaphthene | 2011/12/02 | 82 | 50 - 130 | 80 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | Acenaphthylene | 2011/12/02 | 86 | 50 - 130 | 82 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | Anthracene | 2011/12/02 | 87 | 50 - 130 | 83 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | Benzo(a)anthracene | 2011/12/02 | 91 | 50 - 130 | 86 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | Benzo(a)pyrene | 2011/12/02 | 88 | 50 - 130 | 86 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | Benzo(b/j)fluoranthene | 2011/12/02 | 82 | 50 - 130 | 83 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | Benzo(g,h,i)perylene | 2011/12/02 | 89 | 50 - 130 | 93 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | Benzo(k)fluoranthene | 2011/12/02 | 86 | 50 - 130 | 82 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | Chrysene | 2011/12/02 | 88 | 50 - 130 | 87 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | Dibenz(a,h)anthracene | 2011/12/02 | 94 | 50 - 130 | 101 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | Fluoranthene | 2011/12/02 | 87 | 50 - 130 | 84 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | Fluorene | 2011/12/02 | 84 | 50 - 130 | 81 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | Indeno(1,2,3-cd)pyrene | 2011/12/02 | 88 | 50 - 130 | 93 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | 1-Methylnaphthalene | 2011/12/02 | 74 | 50 - 130 | 72 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | 2-Methylnaphthalene | 2011/12/02 | 75 | 50 - 130 | 72 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | Naphthalene | 2011/12/02 | 80 | 50 - 130 | 77 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | Phenanthrene | 2011/12/02 | 86 | 50 - 130 | 82 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700356 | Pyrene | 2011/12/02 | 90 | 50 - 130 | 88 | 50 - 130 | <0.005 | ug/g | NC | 50 | | |
| 2700550 | Conductivity | 2011/12/02 | | | | | <0.002 | mS/cm | 3.7 | 35 | 101 | 75 - 125 |
| 2700585 | Chromium (VI) | 2011/12/05 | 58 (1, 3) | 75 - 125 | 89 | 75 - 125 | <0.2 | ug/g | NC | 35 | 85 | 75 - 125 |
| 2700606 | Hot Water Ext. Boron (B) | 2011/12/02 | | | | | <0.05 | ug/g | NC | 35 | 98 | 85 - 115 |
| 2700611 | Acid Extractable Antimony (Sb) | 2011/12/02 | 92 | 75 - 125 | 99 | 75 - 125 | <0.2 | ug/g | | | | |
| 2700611 | Acid Extractable Arsenic (As) | 2011/12/02 | 97 | 75 - 125 | 98 | 75 - 125 | <1 | ug/g | 6.7 | 30 | | |
| 2700611 | Acid Extractable Barium (Ba) | 2011/12/02 | NC | 75 - 125 | 102 | 75 - 125 | <0.5 | ug/g | | | | |
| 2700611 | Acid Extractable Beryllium (Be) | 2011/12/02 | 99 | 75 - 125 | 105 | 75 - 125 | <0.2 | ug/g | | | | |
| 2700611 | Acid Extractable Boron (B) | 2011/12/02 | NC | 75 - 125 | 104 | 75 - 125 | <5 | ug/g | | | | |
| 2700611 | Acid Extractable Cadmium (Cd) | 2011/12/02 | 99 | 75 - 125 | 99 | 75 - 125 | <0.1 | ug/g | | | | |
| 2700611 | Acid Extractable Chromium (Cr) | 2011/12/02 | 101 | 75 - 125 | 100 | 75 - 125 | <1 | ug/g | | | | |
| 2700611 | Acid Extractable Cobalt (Co) | 2011/12/02 | 97 | 75 - 125 | 102 | 75 - 125 | <0.1 | ug/g | | | | |
| 2700611 | Acid Extractable Copper (Cu) | 2011/12/02 | NC | 75 - 125 | 100 | 75 - 125 | <0.5 | ug/g | | | | |
| 2700611 | Acid Extractable Lead (Pb) | 2011/12/02 | NC | 75 - 125 | 105 | 75 - 125 | <1 | ug/g | | | | |
| 2700611 | Acid Extractable Molybdenum (Mo) | 2011/12/02 | 101 | 75 - 125 | 100 | 75 - 125 | <0.5 | ug/g | | | | |
| 2700611 | Acid Extractable Nickel (Ni) | 2011/12/02 | 94 | 75 - 125 | 100 | 75 - 125 | <0.5 | ug/g | | | | |
| 2700611 | Acid Extractable Selenium (Se) | 2011/12/02 | 95 | 75 - 125 | 98 | 75 - 125 | <0.5 | ug/g | | | | |
| 2700611 | Acid Extractable Silver (Ag) | 2011/12/02 | 97 | 75 - 125 | 99 | 75 - 125 | <0.2 | ug/g | | | | |

Maxxam Job #: B1I7378
Report Date: 2011/12/07

Golder Associates Ltd
Client Project #: 11-1122-0210
Site Location: 645 LONGFIELDS DR.
Sampler Initials: PH

## QUALITY ASSURANCE REPORT

| | | | Matrix Spike | | Spiked Blank | | Method Blank | | RPD | | QC Standard | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QC Batch | Parameter | Date | % Recovery | QC Limits | % Recovery | QC Limits | Value | Units | Value (%) | QC Limits | % Recovery | QC Limits |
| 2700611 | Acid Extractable Thallium (Tl) | 2011/12/02 | 93 | 75 - 125 | 103 | 75 - 125 | <0.05 | ug/g | | | | |
| 2700611 | Acid Extractable Uranium (U) | 2011/12/02 | 99 | 75 - 125 | 103 | 75 - 125 | <0.05 | ug/g | | | | |
| 2700611 | Acid Extractable Vanadium (V) | 2011/12/02 | 100 | 75 - 125 | 97 | 75 - 125 | <5 | ug/g | | | | |
| 2700611 | Acid Extractable Zinc (Zn) | 2011/12/02 | NC | 75 - 125 | 107 | 75 - 125 | <5 | ug/g | | | | |
| 2700611 | Acid Extractable Mercury (Hg) | 2011/12/02 | NC | 75 - 125 | 95 | 75 - 125 | <0.05 | ug/g | | | | |

N/A = Not Applicable
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) - Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
(2) - Duplicate results exceeded RPD acceptance criteria. This may be due to sample heterogeneity.
(3) - The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample.



Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

## Validation Signature Page

**Maxxam Job #: B1I7378**

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

CRISTINA CARRIERE, Scientific Services

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

FLOYD MAYEDE, Senior Analyst

PAUL RUBINATO, Analyst, Maxxam Analytics



Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

# Validation Signature Page

**Maxxam Job #: B1I7378**

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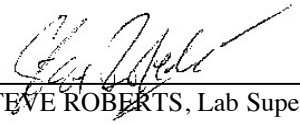
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



STEVE ROBERTS, Lab Supervisor, Ottawa

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5779 www.maxxam.ca

# CHAIN OF CUSTODY RECORD

Page of

| INVOICE INFORMATION: | | REPORT INFORMATION (if differs from invoice): | | PROJECT INFORMATION: | | Laboratory Use Only: | |
|---|---|---|---|---|---|---|---|
| Company Name: | #14090 Golder Associates Ltd | Company Name: | | Quotation #: | A87099 | MAXXAM JOB #: | BOTTLE ORDER #: 305022 |
| Contact Name: | Central Accounting | Contact Name: | Maria Staneva | P.O. #: | | | |
| Address: | 32 Steacie Dr<br>Kanata ON K2K 2A9 | Address: | | Project #: | 11-1122-0210 | | |
| Phone: | (613)592-9600 Fax: (613)592-9601 | Phone: | Fax: | Project Name: | | CHAIN OF CUSTODY #: C#305022-06-01 | PROJECT MANAGER: JULIE CLEMENT |
| Email: | maxxam@golder.com, OttawaAccounting@golder.c | Email: | Maria_Staneva@golder.com | Site #: | ~~COLONEL BY DRIVE~~ 645 Longfields Dr. | | |
| | | | | Sampled By: | Paul Hilan | | |

**Regulation 153 (2011):** ☐ Table 1 ☐ Table 2 ☐ Table 3 ☒ Table 7 ☐ Res/Park ☐ Ind/Comm ☐ Agri/Other ☐ Medium/Fine ☐ Coarse ☐ For RSC

**Other Regulations:** ☐ CCME ☐ Reg. 558 ☐ MISA ☐ PWQO ☐ Other ☐ Sanitary Sewer Bylaw ☐ Storm Sewer Bylaw Municipality

**SPECIAL INSTRUCTIONS**

*Include Criteria on Certificate of Analysis (Y/N)? ___*

*Note: For MOE regulated drinking water samples - please use the Drinking Water Chain of Custody Form*

**SAMPLES MUST BE KEPT COOL ( < 10ºC ) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM**

**TURNAROUND TIME (TAT) REQUIRED:**

**PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS**

**Regular (Standard) TAT:** ☑
*(will be applied if Rush TAT is not specified):*
*Standard TAT = 5-7 Working days for most tests.*
*Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.*

**Job Specific Rush TAT (if applies to entire submission)**
Date Required: _____ Time Required: _____ ☐
Rush Confirmation Number: _____ *(call lab for #)*

| | Sample Barcode Label | Sample (Location) Identification | Date Sampled | Time Sampled | Matrix | Regulated Drinking Water ? (Y/N) | Metals Field Filtered ? (Y/N) | O'Reg 153 Petroleum Hydrocarbons F1-F4 | O'Reg 153 PAHs | O'Reg 153 ICPMS Metals | SAR | pH | VOCs | # of Bottles | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | TP11-2 SA2 | | 24/11/11 | | S | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 5 | |
| 2 | TP11-5 SA1 | | 24/11/11 | | S | | | | | ✓ | ✓ | | | 5 | |
| 3 | TP11-6 SA2 | | 24/11/11 | | S | | | | | ✓ | ✓ | | | 5 | |
| 4 | TP11-9 SA1 | | 24/11/11 | | S | | | | | ✓ | ✓ | ✓ | | 5 | |
| 5 | TP11-9 SA2 | | 24/11/11 | | S | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 5 | |
| 6 | TP11-9 SA12 | | 24/11/11 | | S | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 5 | |
| 7 | SA1 | | 25/11/11 | | S | | | | | ✓ | | | | 3 | |
| 8 | SA2 | | 25/11/11 | | S | | | ✓ | | | | | | 3 | |
| 9 | SA3 | | 25/11/11 | | S | | | | | ✓ | | | | 3 | |
| 10 | | | | | | | | | | | | | | | ON ICE |

29-Nov-11 14:15
JULIE CLEMENT
B1I7378
S_0 OTT-002

REC'D IN OTTAWA

| *RELINQUISHED BY: (Signature/Print) | Date: (YY/MM/DD) | Time: | RECEIVED BY: (Signature/Print) | Date: (YY/MM/DD) | Time: | # Jars Used and Not Submitted |
|---|---|---|---|---|---|---|
| MARIA STANEVA | 2011/11/28 | | Madison Bingley | 11-11-28 | 14:15 | |

**Laboratory Use Only**

| Time Sensitive | Temperature (ºC) on Receipt | Custody Seal | Yes | No |
|---|---|---|---|---|
| | 9.9, 10 | Present | | ✓ |
| | | Intact | | ✓ |

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

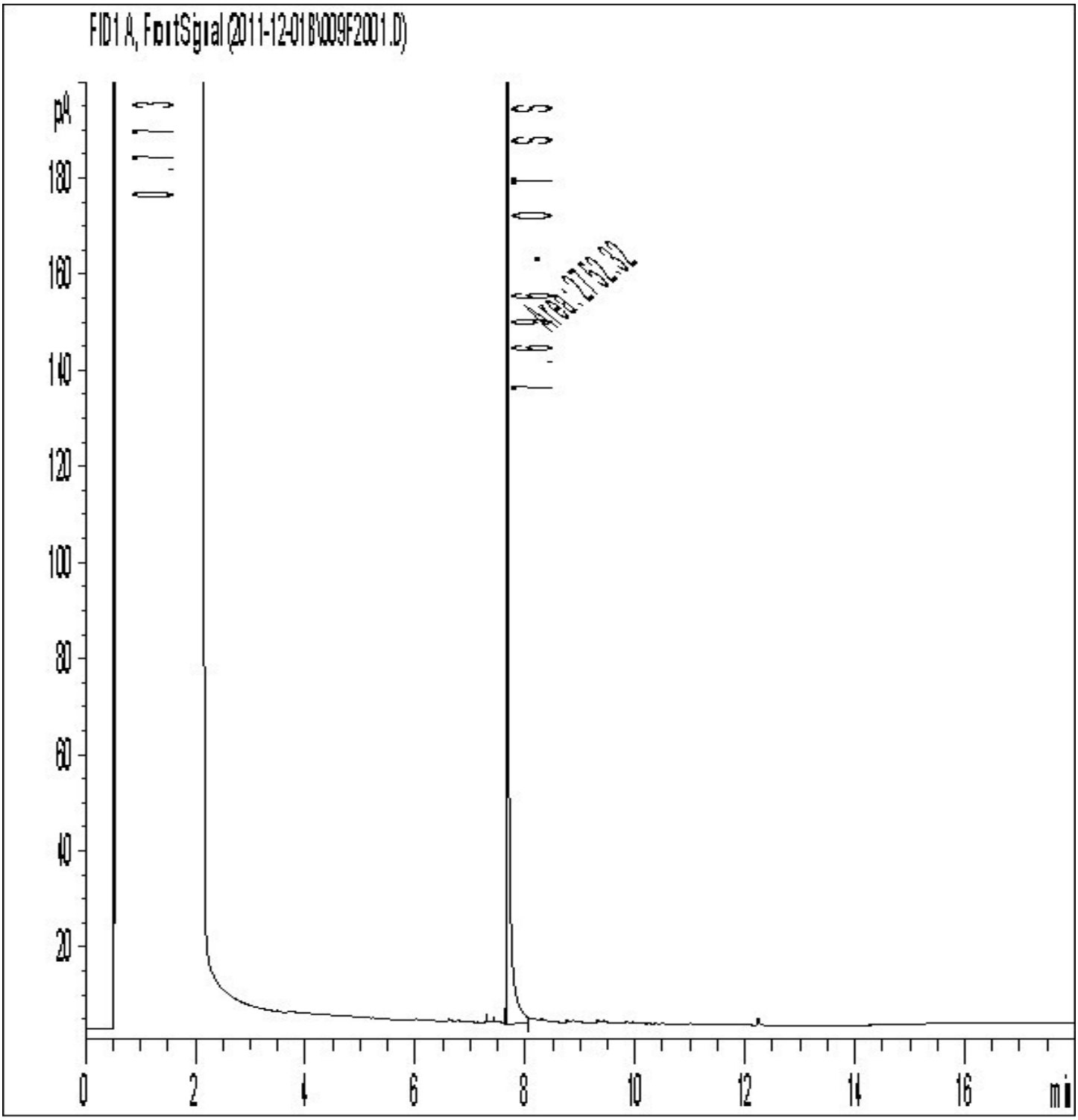
White: Maxxam Yellow: Client


Maxxam Analytics International Corporation o/a Maxxam Analytics

Report Date: 2011/12/07
Maxxam Job #: B1I7378
Maxxam Sample: LU3950

Golder Associates Ltd
Client Project #: 11-1122-0210
Project name: 645 LONGFIELDS DR.
Client ID: TP11-2 SA2

**Petroleum Hydrocarbons F2-F4 in Soil Chromatogram**




**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**



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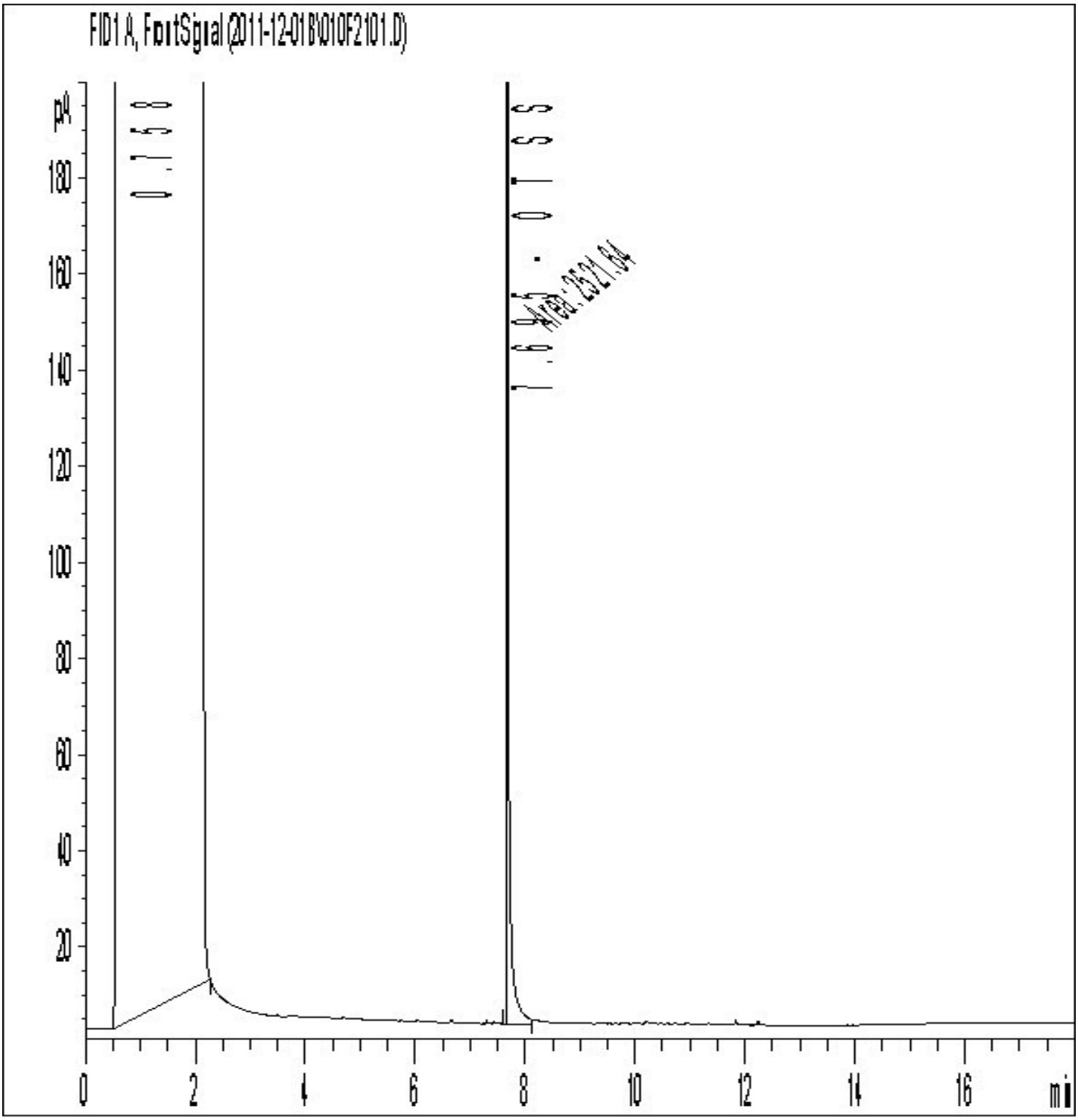
Report Date: 2011/12/07
Maxxam Job #: B1I7378
Maxxam Sample: LU3954

Golder Associates Ltd
Client Project #: 11-1122-0210
Project name: 645 LONGFIELDS DR.
Client ID: TP11-9 SA2

**Petroleum Hydrocarbons F2-F4 in Soil Chromatogram**

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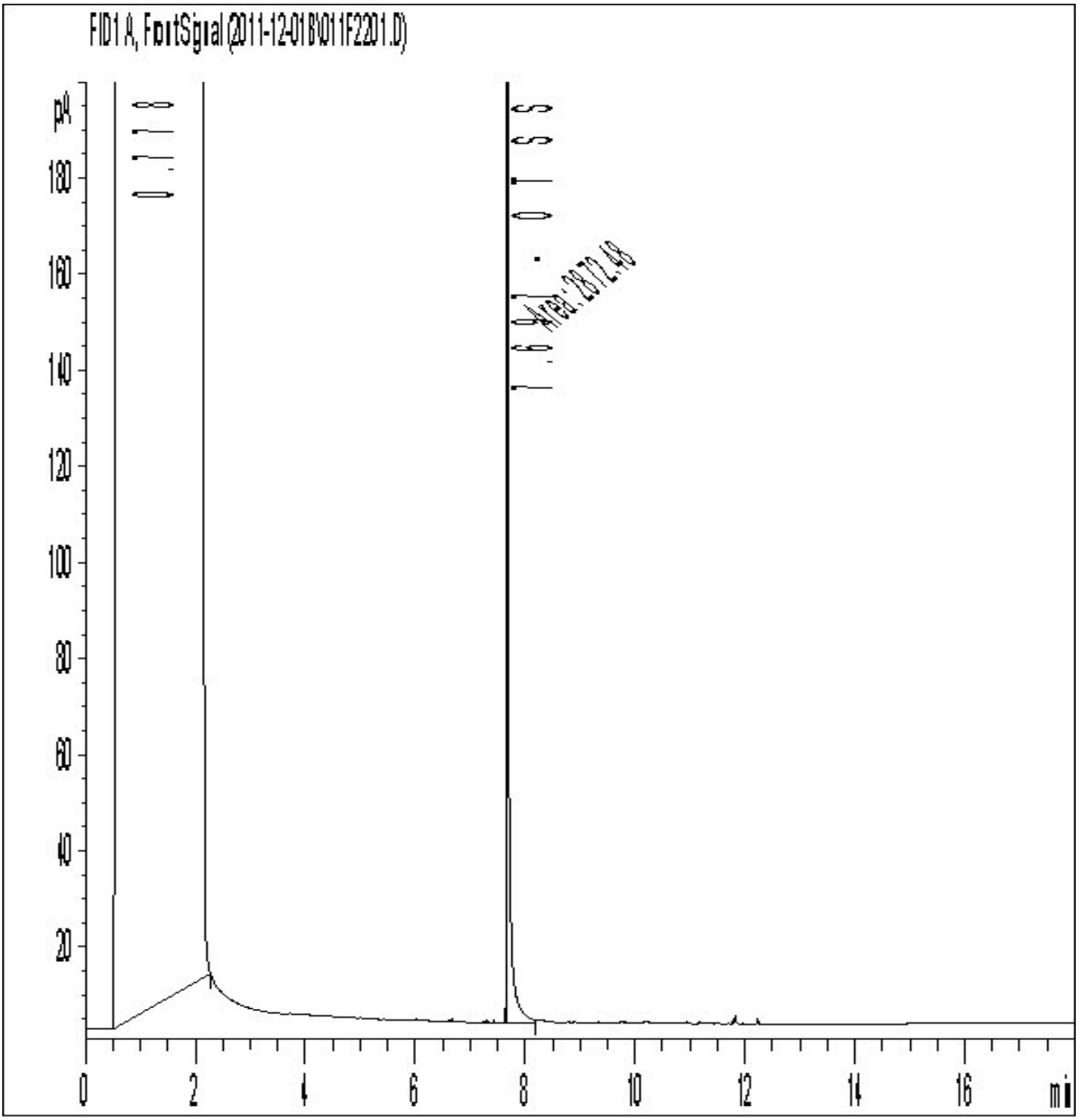
Report Date: 2011/12/07
Maxxam Job #: B1I7378
Maxxam Sample: LU3955

Golder Associates Ltd
Client Project #: 11-1122-0210
Project name: 645 LONGFIELDS DR.
Client ID: TP11-9 SA12

**Petroleum Hydrocarbons F2-F4 in Soil Chromatogram**

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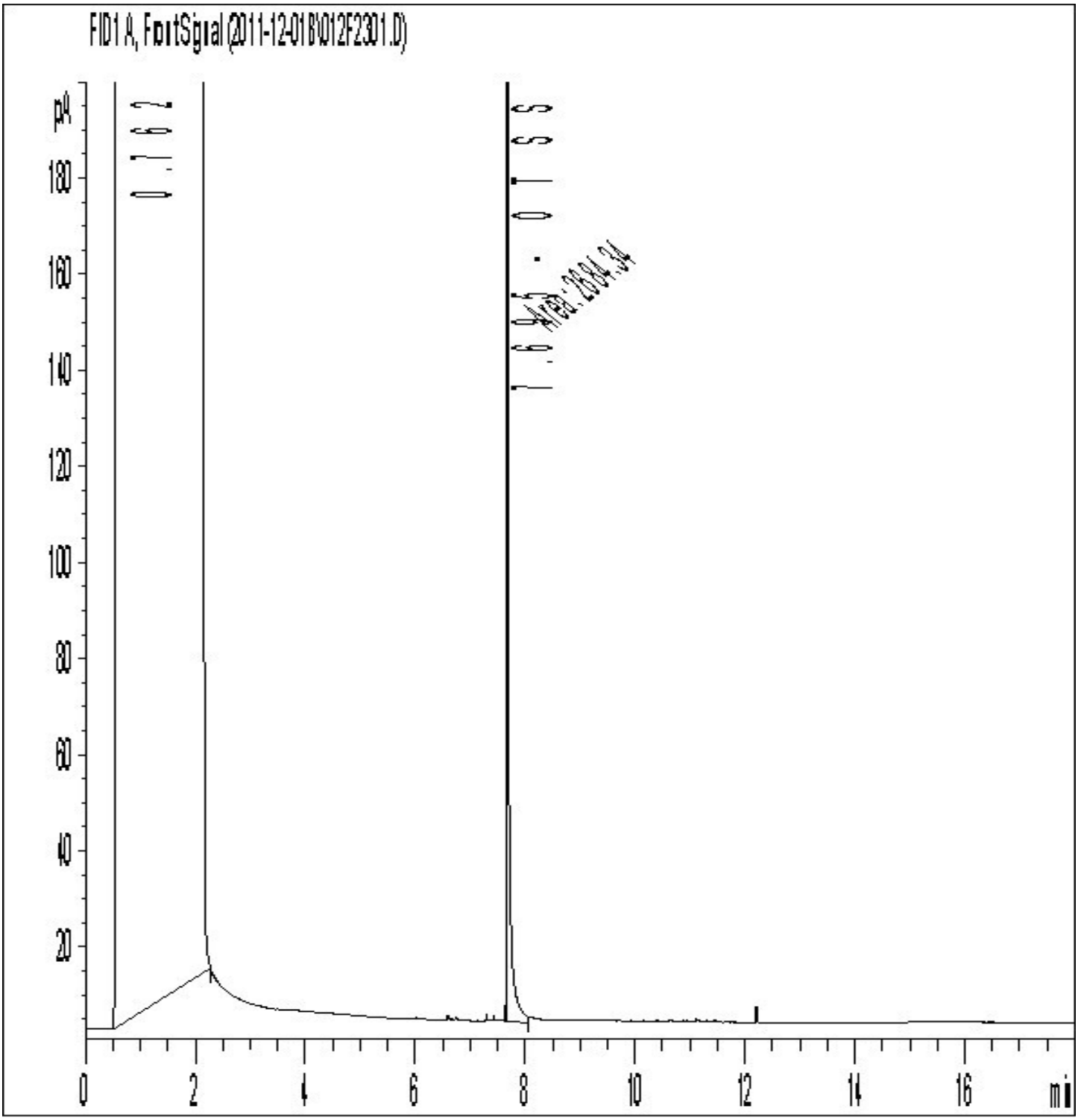
Report Date: 2011/12/07
Maxxam Job #: B1I7378
Maxxam Sample: LU3957

Golder Associates Ltd
Client Project #: 11-1122-0210
Project name: 645 LONGFIELDS DR.
Client ID: SA2

**Petroleum Hydrocarbons F2-F4 in Soil Chromatogram**

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At Golder Associates we strive to be the most respected global group of companies specializing in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organizational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.


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