August 2016

REPORT ON

Phase Two Environmental Site Assessment
Oblates Property RSC #1
175 Main Street
Ottawa, Ontario

Submitted to:
Greystone Village Inc.
1737 Woodward Drive, 2nd Floor
Ottawa, Ontario
K2C 0P9

Attention: Mr. Steve Cunliffe

REPORT

Report Number: 1525113-1000-1

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1.0 EXECUTIVE SUMMARY

Golder Associates Ltd. ("Golder") was retained by Greystone Village Inc. ("Greystone") c/o The Regional Group ("Regional") to conduct a Phase Two Environmental Site Assessment ("Phase Two ESA") of the Oblates property located at 175 Main Street in Ottawa, Ontario (herein after referred to as the "Property"), as shown on Figure 1. To proceed with the proposed development in an efficient manner, the Property has been split into three (3) separate parcels, each of which will have an individual Phase Two ESA to support the filling of a Record of Site Condition (RSC).

The three parcels have been identified as RSC #1, RSC #2, and RSC #3, as shown on Figure 2. This Phase Two ESA is for the parcel identified as RSC #1 (herein after referred to as the "Site" or "Phase Two Lands"), as shown on Figures 1 and 2. Information from the entire Property (RSC #1, RSC #2, and RSC #3) has been included for reference purposes.

Reference Name in Report	Description / Details	MOECC Terminology (1)
Property	Lands located at 175 Main Street, Ottawa, On Comprised of three parcels RSC #1, RSC #2, and RSC #3	NA
Site	Parcel identified as RSC #1 on Figure 2	"Phase Two Property" "RSC Property"

1 – MOECC Terminology as described in "Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04" June 2011.

Remediation of the Site (RSC #1) was completed based on the findings of this Phase Two ESA. The remediation is discussed in further detail in Appendix G (Remediation Report).

A Phase One ESA in accordance with Ontario Regulation 153/04 (O.Reg. 153/04) (as amended) was completed for the Property by Golder in November 2014 and updated in May 2016 as described in the report entitled *"Phase One Environmental Site Assessment, Proposed New Student Residence, Oblates Property, 175 Main Street, Ottawa, Ontario"*, dated November 2014, updated in May 2016. This report was updated to be Site specific in the report entitled "*Phase One Environmental Site Assessment Update, RSC #1 – 175 Main Street, Ottawa, Ontario*" dated August 2016 (Phase One ESA report). Both reports were prepared for 175 Main Street Regional Inc. (Regional). The Phase One ESA identified issues of Potentially Contaminating Activities (PCAs) and Areas of Potential Environmental Concern (APECs) for the Site. The following APECs were identified for the Site:

- Presence of fill containing construction debris, asphalt, concrete and potentially some refuse in the south part of the Property (APEC 1); and,
- Presence of the former St. Paul University Dump on the lands adjacent to the southwest of the Property, with the potential to have extended onto the Property (APEC 2).

Other PCAs identified in the Phase One ESA for the Property are located off-Site and generally are down- to cross-gradient from the Site. As such they were not interpreted to cause APECs for RSC #1 (see Section 3.2.1 for a detailed discussion of the APECs that are applicable to the Site).

A Phase Two ESA in accordance with O. Reg.153/04 (as amended) was completed at the Site to address the APECs identified in the Phase One ESA that are applicable for the Site. The Site is proposed to be redeveloped as a medium density residential development. The current and proposed Site land use is residential. Given that there is no change in the land use from less sensitive to more sensitive, there is no mandatory requirement for filing of a Record of Site Condition (RSC) pursuant to *Ontario Regulation 153/04 – Records of Site Condition – Part XV.1 of the Act*, made under the *Environmental Protection Act* for the Site from a provincial regulation (O.Reg 153/04) standpoint. However, given that APECs were identified at the Site during the Phase One ESA completed by Golder, filing of a RSC is expected to be required by the City of Ottawa as part of the Site Plan Approval and for the purpose of the City's Brownfields Redevelopment Program.

The Phase Two ESA work was completed in three stages. The first stage of the Phase Two ESA work was completed during Regional's due diligence process to acquire the Property for redevelopment in March and April 2014. The second stage Phase Two ESA was completed following the Property acquisition by Regional, and consisted of two parts: the initial investigation, completed in July and August of 2014 and a follow up investigation to comply with O. Reg. 153/04 as amended, completed in March 2015. The third stage was a final investigation completed concurrently with the remediation of RSC #1, which was completed from November 2015 to June 2016.

The Phase Two ESA was completed in conjunction with the geotechnical and archaeological investigations carried out at the Site by Golder.

Based on the completed scope of work and results of the Phase Two ESA, the following summary and conclusions are provided:

- Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, coarse-textured soil, April 15, 2011 are considered applicable and were used to assess the environmental quality of soil and groundwater at the Site;
- In general, the subsurface conditions encountered at the Site consist of topsoil, underlain by a layer of fill followed by native soils (silty clay). The topsoil thickness is greatest in the western portion of the Site, and typically is about 0.1 to 0.3 metres thick. Fill at the Site can be further categorized into soil fill and debris fill, and the total fill thickness (soil fill and debris fill) ranges from approximately 0.9 to 8 metres. The total thickness of the fill increases from the west to the east, with the thickest fill encountered in the east portion of the Site (up to 8 metres).
- The soil fill layer is present mainly on the western part of the Site, whereas the debris fill layer underlies only the eastern portion of the Site. In the western part of the Site, the soil fill layer generally consists of silty sand and is typically about 1 to 1.5 metres thick. In the eastern portion of the Site, the debris fill layer ranges in thickness from approximately 0.4 to 8 m (being thickest at the eastern portion of the Site), and is comprised of a mixture of silty sand and debris/refuse consisting of ash, wood, plastic, wire, paper, brick fragments, asphalt pieces, concrete, metal fragments and/or glass. Where the soil fill layer is discontinuously present beneath the debris fill, it ranges in thickness from 0 metres (i.e., not present) to up to approximately 2.4 metres, although it is typically less than 1.5 metres in thickness. In some localized areas in the east part of the Site, a layer of soil fill overlies the debris fill.
- A summary of the soil conditions at the Site based on the results of the Phase Two ESA by stratigraphic layer is as follows:

- *Topsoil* – One (1) soil sample out of the seven (7) samples analyzed for PAHs and/or metals marginally exceeded MOECC Table 3 Standards for PAHs (two PAH parameters). No metal exceedances were identified in the topsoil;
- *Debris Fill layer* – one (1) soil sample of the four (4) samples analyzed for PHCs F1 to F4 and BTEX exceeded MOECC Table 3 Standards for PHC F3; seven (7) of the thirteen (13) soil samples analyzed for metals exceeded MOECC Table 3 Standards for lead, antimony, cobalt, vanadium, barium and/or mercury; and nine (9) of the thirteen (13) samples analyzed for PAHs exceeded MOECC Table 3 Standards for PAHs (up to eleven PAHs parameters).
- *Soil Fill layer* – no exceedances were identified in any of the soil samples collected from the soil fill layer and submitted for laboratory analysis – one (1) soil sample was analyzed for PHCs F1 to F4 and BTEX, seven (7) samples were analyzed for metals and PAHs, and two (2) were analyzed for pH.
- *Native Silty Clay layer* – one (1) metals exceedance (vanadium in the duplicate sample only) was identified in the soil samples collected from the native soil and submitted for laboratory analysis – one (1) sample analyzed for PHCs F1 to F4 and BTEX, six (6) samples analyzed for metals and five (5) samples analyzed for PAHs. As discussed in Appendix G, Section 3.1, the presence of vanadium in the silty clay has been interpreted to be naturally occurring and not as a result of a PCA.

- Groundwater conditions at the Site: Groundwater sampling completed at the Site indicated that the concentrations of the PHCs F1 to F4, BTEX, PAHs and metals in each of the groundwater samples were below the applicable MOECC Table 3 Standards. This included nine (9) metals samples, eight (8) PAH samples, six (6) PHC samples and two (2) VOC samples. As such, the groundwater is not contaminated in terms of the regulation. The results indicated that the groundwater has not been impacted by the debris fill.
- The results of the Phase Two ESA indicate that PAHs, metals and isolated PHC F3 impacts are generally limited to the debris fill layer found on the eastern and southern sections of the Site. A single PAH exceedance was encountered in the topsoil layer.

Remediation was conducted from November 2015 to June 2016 to remove impacted soils identified on-Site. Refer to Appendix G for the details of the remediation of the RSC #1 Site.

Table of Contents

1.0 EXECUTIVE SUMMARY I

2.0 INTRODUCTION 1

2.1 Site Description 2

2.2 Property Ownership 2

2.3 Current and Proposed Future Uses 3

2.4 Applicable Site Condition Standards 3

2.5 Phase Two ESA Objectives 4

3.0 BACKGROUND INFORMATION 5

3.1 Physical Setting 5

3.2 Past Investigations 5

3.2.1 Phase One ESA 5

4.0 SCOPE OF THE PHASE TWO ESA INVESTIGATION 13

4.1 Overview of Site Investigation 13

4.2 Media Investigated 17

4.3 Phase One Conceptual Site Model 17

4.4 Deviations from Sampling and Analysis Plan 19

4.5 Impediments 20

5.0 INVESTIGATION METHOD 21

5.1 General 21

5.1.1 Site Specific Health and Safety 21

5.2 Drilling and Excavation 21

5.3 Soil: Sampling 22

5.3.1 Soil Sample Requirements 23

5.4 Field Screening Measurements 23

5.5 Groundwater: Monitoring Well Installation 24

5.6 Groundwater: Sampling 25

5.7 Sediment Sampling 26

5.8 Analytical Testing 26

5.9 Residue Management Procedures 26

5.10 Elevation Surveying 27
5.11 Quality Assurance and Quality Control Measures 27
6.0 REVIEW AND EVALUATION 29
6.1 Geology 29
6.2 Groundwater: Elevations and Flow Direction 30
6.3 Groundwater: Hydraulic Conductivity, Hydraulic Gradients and Velocity 31
6.3.1 Hydraulic Conductivity 31
6.3.2 Horizontal Hydraulic Gradient 32
6.3.3 Vertical Hydraulic Gradients 32
6.3.4 Groundwater Velocity 32
6.4 Soil: Texture 32
6.5 Soil: Field Screening 33
6.6 Soil: Quality 33
6.6.1 Discussion of Soils Exceedances By Stratigraphic Layer 37
6.7 Groundwater Quality 38
6.8 Sediment Quality 38
6.9 Quality Assurance and Quality Control Results 39
6.9.1 Precision 39
6.9.2 Accuracy 41
6.9.3 Completeness 41
6.9.4 Representativeness 41
6.9.5 Comparability 41
6.10 Phase Two Conceptual Site Model 42
7.0 CONCLUSIONS 51
8.0 LIMITATIONS 53
9.0 SIGNATURES 54
10.0 REFERENCES 55

TABLES

Table 1: Groundwater Monitoring Well Construction Details

Table 2: Groundwater Levels and Elevations

Table 3: Soil Data Details for Samples Submitted for Analysis

Table 4: Summary of Groundwater Samples Submitted for Analysis

Table 5A: Summary of Soil Analytical Results – General Chemistry, Metals, and Polycyclic Aromatic Hydrocarbons

Table 5B: Summary of Soil Analytical Results – Petroleum Hydrocarbons, Volatile Organic Compounds and Polychlorinated Biphenyls

Table 6: Summary of Groundwater Analytical Results - Metals, Petroleum Hydrocarbons, and Polycyclic Aromatic Hydrocarbons and Maximum Concentrations

Table 7: Soil Samples versus Laboratory Analysis Date

Table 8: Groundwater Samples versus Laboratory Analysis Date

FIGURES

Figure 1A: Site Plan and Areas of Potential Environmental Concern

Figure 1B: Site Plan and Future Proposed Buildings

Figure 2A: Groundwater Elevations, Interpreted Shallow Groundwater Flow Direction and Cross Section Locations

Figure 2B: Deeper Groundwater Elevations, Interpreted Deeper Groundwater Flow Direction and Cross Section Locations

Figure 3: Summary of Groundwater Analysis and Exceedances

Figure 4A: Metals Analysis and Exceedances in Debris Fill and Topsoil

Figure 4B: PAH Analysis and Exceedances in Debris Fill and Topsoil

Figure 4C: PHC Analysis and Exceedances in Debris Fill and Topsoil

Figure 5A: Metals Analysis and Exceedances in Soil Fill and Native Clay beneath Debris

Figure 5B: PAH Analysis and Exceedances in Soil Fill and Native Clay beneath Debris

Figure 5C: PHC Analysis and Exceedances in Soil Fill and Native Clay beneath Debris

Figure 6: Interpreted Native Clay Surface Elevation

Figure 7A: Cross-Section B-B' (Interpreted geological and hydrogeological conditions) with metals analysis and exceedances

Figure 7B: Cross-Section B-B' (Interpreted geological and hydrogeological conditions) with PAH analysis and exceedances

Figure 7C: Cross-Section B-B' (Interpreted geological and hydrogeological conditions) with PHC analysis and exceedances

Figure 8A: Cross-Section D-D' (Interpreted geological and hydrogeological conditions) with metals analysis and exceedances

Figure 8B: Cross-Section D-D' (Interpreted geological and hydrogeological conditions) with PAH analysis and exceedances

Figure 8C: Cross-Section D-D' (Interpreted geological and hydrogeological conditions) with PHC analysis and exceedances

Figure 8D: Cross-Section D-D' (Interpreted geological and hydrogeological conditions) with Groundwater analysis and exceedances

Figure 9: Conceptual Site Model Potential Receptor Pathways (Pre-Remediation)

APPENDICES

APPENDIX A
Sampling and Analysis Plan

APPENDIX B
Record of Borehole and Test Pit Logs

APPENDIX C
Laboratory Certificates of Analysis

APPENDIX D
Residue Management

APPENDIX E
Survey of Site

APPENDIX F
City of Ottawa Response to Use of Non Potable Groundwater Standards

APPENDIX G
Phase I A Remediation Report

APPENDIX H
Property Wide Features, Borehole, Trench, and Test Pit Locations

2.0 INTRODUCTION

Golder Associates Ltd. ("Golder") was retained by Greystone Village Inc. ("Greystone") c/o The Regional Group ("Regional") to conduct a Phase Two Environmental Site Assessment ("Phase Two ESA") of the Oblates property located at 175 Main Street in Ottawa, Ontario, (herein after referred to as the "Property"), as shown on Figures 1 (A and B). To proceed with the proposed development in an efficient manner, the Property has been split into three (3) separate parcels, each of which will have an individual Phase Two ESA for a filling of a Record of Site Condition (RSC).

The three parcels have been identified as RSC #1, RSC #2, and RSC #3 as shown in Appendix H. This Phase Two ESA is for the parcel identified as RSC #1 (the "Site" or "Phase Two Lands"). Information from the entire Property (RSC #1, RSC #2, and RSC #3) has been included for reference purposes.

Reference Name in Report	Description / Details	MOECC Terminology (1)
Property	Lands located at 175 Main Street, Ottawa, ON Comprised of three parcels RSC #1, RSC #2, and RSC #3	NA
Site	Parcel identified as RSC #1	"Phase One Property" "Phase Two Property" "RSC Property"

1 – MOECC Terminology as described in "Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04" June 2011.

Remediation of the Site (RSC #1) was completed based on the findings of this Phase Two ESA. The remediation is discussed in further detail in Appendix G Remediation Report.

A Phase One ESA in accordance with Ontario Regulation 153/04 (O.Reg. 153/04) (as amended) was completed for the Property by Golder in November 2014 and updated in May 2016 as described in the report entitled *"Phase One Environmental Site Assessment, Proposed New Student Residence, Oblates Property, 175 Main Street, Ottawa, Ontario"*, dated November 2014, updated in May 2016. This report was updated to be Site specific in the report entitled "*Phase One Environmental Site Assessment Update, RSC #1 – 175 Main Street, Ottawa, Ontario*" dated August 2016 (Phase One ESA report). Both reports were prepared for 175 Main Street Regional Inc. (Regional). The Phase One ESA identified issues of Potentially Contaminating Activities (PCAs) and Areas of Potential Environmental Concern (APECs) for the Site. The following APECs were identified for the Site:

- Presence of fill containing construction debris, asphalt, concrete and potentially some refuse in the south part of the Property (APEC 1); and,
- Presence of the former St. Paul University Dump on the lands adjacent to the southwest of the Property, with the potential to have extended onto the Property (APEC 2).

Other PCAs/APECS identified in the Phase One ESA for the Property are located off-Site and generally are down- to cross-gradient from the Site. All PCA/APECs identified for the Property are shown on Figure 1A. As such they were not interpreted to cause APECs for RSC #1 (see Section 3.2.1 for a detailed discussion of the APECs that are applicable to the Site).

This Phase Two ESA report addresses the APECs that are applicable for the Site identified in the Phase One ESA conducted for the Site and provides a summary and interpretation of the data relating to the Property. The purpose of this Phase Two ESA is to summarize the existing soil and groundwater conditions at the Property and ultimately file three RSC's with MOECC on completion of remediation of each parcel.

Notes regarding some of the terminology used in this Phase Two ESA report:

As per the Report Template for Phase Two Environmental Site Assessment Conducted in Accordance with Ontario Regulation 153/04, as amended, prepared by Association of Professional Geoscientists of Ontario, dated October, 2013 "*the term "aquifer" in the Regulation is used to generically describe the saturated zone, and does not require an aquifer to be capable of yielding a significant quantity of water to a well installed in the aquifer".*

"Undisturbed" soils used in this Phase Two ESA report is within the context of the Regulation stating that "the QP shall ensure that the following requirements concerning soil sampling are met: Soil samples for characterization or delineation shall be collected from undisturbed soils on, in or under the phase two property and not from soil which has been excavated, unless delineation is being undertaken after completion of actions to reduce the concentration of contaminants in which case soil samples shall be collected both from undisturbed soils on, in or under the phase two property and from stockpiles of soil which is intended to remain on the property permanently."

2.1 Site Description

The Site under investigation is the southern section of the Property located at 175 Main Street in Ottawa, Ontario, which is located between Main Street and the west bank of the Rideau River, and approximately between Springhurst Avenue and Clegg Street. Based on the survey plan provided by Regional, the legal description of the Site is Part of Lot "H", Concession "D", (Rideau Front), Geographic Township of Nepean, City of Ottawa, PIN 042030761 Parts 1, 2, 3 and 5. The Property has an area of 9.4 hectares (23.1 acres) and the Site has an area of 2.9 hectares (7.0 acres). The Site is part of the landscaped lawns surrounding the main Oblates Residence (Deschâtelets) complex.

The Site is bounded by the main Oblates Residence (Deschâtelets) building and surrounding landscaped lawns to the north, by residential houses and sport fields to the south, St. Paul University, residential houses and retail buildings to the west and the Rideau River (and 30 metre buffer of land) to the east.

Based on the approved Community Design Plan, the Property is proposed to be redeveloped as medium density residential.

A survey plan for the Site is included in Appendix E. The Site and Property locations are shown on the Site plan, provide on Figure 1A.

2.2 Property Ownership

The Property owner is Greystone Village Inc. The contact information for the Property owner is:

Site Owner / Client	Address	Contact Information
Greystone Village Inc.	1737 Woodward Drive, 2nd Floor Ottawa, ON K2C 0P9	Mr. Steve Cunliffe 175 Main Street Regional Inc. Tel: (613) 230-2100 ext. 7302 Fax:(613) 230-2962 Email: scunliffe@regionalgroup.com

2.3 Current and Proposed Future Uses

The Property is currently landscaped lawns associated with the Oblates Residence (Deschâtelets) complex and the current property use of the Property is residential land use. The Property is proposed to be redeveloped with a medium density residential development. Thus, the proposed future use of the Property is also residential.

Given that there is no change in the Property land use, no mandatory filing of an RSC is required for the Property.

2.4 Applicable Site Condition Standards

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 to compare the soil and groundwater analytical results:

- The Property and the surrounding lands are serviced by the municipal water system. No drinking water supply wells are known to be present on the Property or within 250 m of the Site. Golder contacted the City of Ottawa (the "City") asking if the City was in agreement with using non-potable groundwater standards. The City responded on June 15, 2016 indicating they did not object to using non-potable groundwater standards (see Appendix F). Thus, existing municipal water supply will not be adversely affected if non-potable groundwater standards are used for this Property;
- Based on the information obtained from the Phase Two ESA and the geotechnical investigations completed at the Property, bedrock was not encountered at any of the boreholes completed at the Property to depths ranging from 6.1 to greater than 20 mbgs nor in any of the test pits/trenches excavated to depths ranging from 1.3 to 4.35 mbgs. According to O.Reg.153/04 as amended, "shallow soil property" means a property of which 1/3 or more of the area consists of soil equal to or less than 2 metres in depth beneath the soil surface, excluding any non-soil surface treatment such as asphalt, concrete or aggregate. As such, based on the aforementioned considerations, the Property is not a shallow soil property;
- The Site and the developable area of the Property is not adjacent to a water body and does not contain land that is within 30 m of a water body;
- Based on the soil analytical results, the pH of soil was measured to be between 6.99 and 7.59. Based on Golder's research and observations to date, Golder is not aware of the confirmed presence of any species at risk or their associated habitats at the Property. As such, the Property is not considered an environmentally sensitive area;
- The current and proposed land use of the Property is residential; and,
- Based on observed soil conditions in the boreholes and test pits completed at the Property, soil and fill material with various compositions is present on the Property (silty clay, silty sand to sandy silt containing debris and waste). As such, a criteria associated with a coarse textured soil was used for the Property (conservative approach).

Based on the above considerations, the soil and groundwater analytical results were compared to *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, coarse-textured soil, dated April 15, 2011 (2011 MOECC Table 3).

2.5 Phase Two ESA Objectives

The Phase Two ESA work was completed in three stages. The first stage of the Phase Two ESA work was completed during Regional's due diligence process to acquire the Property for redevelopment in March 2014.

The objective of the first stage of the Phase Two ESA work was:

- To assess the presence/absence of subsurface impacts at the Property associated with the APECs identified during the Phase One ESA completed for the Property and to determine the location and concentration of contaminants in the land or water on, in or under the Property; and,
- To determine if the soil and groundwater quality at the Property met the applicable Ministry of the Environment and Climate Change (MOECC) site condition standards at the time of the Phase Two ESA.

During the first stage of the Phase Two ESA completed at the Property, fill material with various thicknesses, composition and quality (some of which exceeded the applicable generic standards) was identified at the Property. To further investigate the fill issues on the Property, a second stage Phase Two ESA was completed following the Property acquisition by Regional. The objective of the second stage of the Phase Two ESA was:

- To collect additional information regarding the thickness, the type, the distribution and environmental quality of the fill vertically and horizontally across the Property, including collecting sufficient subsurface information from the west part of the Property that had not been investigated during the first stage of the Phase Two ESA. In addition, groundwater quality and stratigraphy data were obtained to supplement the information collected during the due diligence Phase Two ESA.
- To obtain information about environmental conditions in the land or water on, in or under the Property necessary to undertake a risk assessment, in accordance with O.Reg. 153/04 (if required), with respect to one or more Contaminants of Concern (COC); and,
- To support the City of Ottawa Brownfields Program Grant application.

The third stage of the Phase Two ESA was the further investigation of the Site which was completed during the remediation stage. The objectives were to further delineate the extent of the impacted soils interpreted from previous investigations.

The objectives of the Phase Two ESA are achieved by:

- Developing an understanding of the geological and hydrogeological conditions at the Property; and,
- Conducting field sampling of soil and groundwater and analysis for all COCs associated with areas of potential environmental concern identified at the Property.

3.0 BACKGROUND INFORMATION

This section presents the background conditions of the Property including a description of the physical setting and a summary of past investigations conducted.

3.1 Physical Setting

The Property and the surrounding lands have a downward slope to the east (towards the Rideau River). The Rideau River is located greater than 30 m east of the Site. Surface water runoff is towards catch basins that are connected to the municipal storm sewer system, or overland towards the Rideau River.

There is a pronounced slope of the land downwards from west to east and from south to north. The south end of the Property is significantly higher in elevation than the area to the north due to in-filling activities, which reportedly occurred sometime between 1902 and 1922 to prevent flooding. This section of the Property was filled from the Rideau River's edge up to the south side of the Deschâtelets building.

Based on the Ontario base maps and previous investigations completed for the Property, the subsurface conditions at the Property consist of fill, underlain by silty clay and clayey silt, and then glacial till. The thickness of the fill is generally between 0-1 metres in the western section of the Site and up to 6-8 metres at the eastern part of the Site. The bedrock is Billings formation - shale, minor limestone and the depth to the bedrock according to geological mapping is typically 15 to 25 metres across the Site. The water table is in the overburden. The groundwater flow direction is to the east towards the Rideau River located east of the Property.

The surrounding properties to the Site include residential, community, institutional and parkland, as summarized below:

- **North:** Deschâtelets building and associated lawns and driveways.
- **West:** St. Paul University campus followed by Main Street, residential houses and some retail and office buildings
- **South:** Clegg Street followed by sports fields and residential houses.
- **East:** Rideau River (with 30 m buffer).

3.2 Past Investigations

A previous Phase One ESA (as summarized below) has been conducted at the Property. The information provided in that report was used to support the preparation of the Phase Two ESA for the Site.

3.2.1 Phase One ESA

A Phase One ESA in accordance with Ontario Regulation 153/04 (O.Reg. 153/04) (as amended) was completed for the Property by Golder in November 2014 and updated in May 2016 as described in the report entitled *"Phase One Environmental Site Assessment, Proposed New Student Residence, Oblates Property, 175 Main Street, Ottawa, Ontario"*, dated November 2014, updated in May 2016. This report was updated to be Site specific in the report entitled "*Phase One Environmental Site Assessment Update, RSC #1 – 175 Main Street, Ottawa, Ontario*" dated August 2016 (Phase One ESA report). Both reports were prepared for 175 Main Street Regional Inc. (Regional). The Phase One ESA was completed to assess the likelihood of soil and/or groundwater contamination resulting from historic or present activities at the Site and surrounding area. This included a review of available historical information on the Site and surrounding area, interviews with persons familiar with the Site and a Site reconnaissance. The findings of the Phase One ESA related to potential impacts on soil and/or groundwater are summarized in the following table.

APEC or PCA for the Phase One Property	Location of Area of Potential Environmental Concern in relation to the Site	Is the PCA identified for the Property considered an APEC for the Site? Reasoning	Potentially Contaminating Activity (PCA) and Description of the Activity	Contaminants of Potential Concern	Media Potentially Impacted (groundwater, soil and/or sediment)
PCA 1 – Former retail fuel outlet	Located approximately 220 m to the north east of the Site, hydraulically cross gradient	No, due to distance (220 m) and the PCA is cross gradient from the Site	**#28.** Gasoline and associated products storage in fixed tanks. Former retail fuel outlet	PHC F1-F4, BTEX.	Soil and groundwater.
PCA 2 - Former Riverside Drive Landfill (L-10),	Located approximately 100 m to the east of the Site, separated from the Site by the Rideau River	No, due to distance (100 m) and the PCA is downgradient from the Site and separated from the Site by the Rideau River	**#58** Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners. Former riverside landfill	PHC F1-F4, BTEX, PAH, metals.	Soil and groundwater.
PCA 3 - Former industrial site, Currie Products Ltd., and an associated landfill (L-12)	Located 650m northeast of the Site, hydraulically down gradient	No, due to distance (650 m) and the PCA is cross gradient from the Site	**#58** Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners. Former industrial site, Currie Products Ltd., activities unknown	PHC F1-F4, BTEX, PAH, metals.	Soil and groundwater.
PCA 4 – Lees Avenue closed landfill (L-28)	Approximately 300 m northeast of the Site.	No, due to distance (300 m) and the PCA is cross gradient from the Site.	**#58** Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners.	PHC F1-F4, BTEX, PAH, metals.	Soil and groundwater.

APEC or PCA for the Phase One Property	Location of Area of Potential Environmental Concern in relation to the Site	Is the PCA identified for the Property considered an APEC for the Site? Reasoning	Potentially Contaminating Activity (PCA) and Description of the Activity	Contaminants of Potential Concern	Media Potentially Impacted (groundwater, soil and/or sediment)
			The former landfill L-28 (Old Armoury) is located approximately 300 m to the northeast of the Site, at the northwest bank of the Rideau River, bounded by Lees Avenue to the north, Chestnut Avenue to the west, and the property line between 170 and 180 Lees Avenue to the east. There is the possibility that the southwest part of the closed landfill may have extended onto the northeast corner of the Property. It is reported that the refuse at the landfill was comprised mainly of cinder and ash with some brick, glass and metal fragments and is likely 1 to 2 metres deep. The landfill was closed in the late 1930s.		
PCA 5 - Former industrial site – Royal Canadian Engineers Workshop	Approximately 400 m northeast of the Site.	No, due to distance (400 m) and the PCA is cross gradient from the Site.	**#58** Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners. Group II former industrial site (Royal Canadian Engineers Workshops) was located	PHC F1-F4, BTEX, PAH, metals.	Soil and groundwater.

APEC or PCA for the Phase One Property	Location of Area of Potential Environmental Concern in relation to the Site	Is the PCA identified for the Property considered an APEC for the Site? Reasoning	Potentially Contaminating Activity (PCA) and Description of the Activity	Contaminants of Potential Concern	Media Potentially Impacted (groundwater, soil and/or sediment)
			approximately 400 m northeast of the Site. Oily seepage was noted on these lands during the classification (Interra report completed in 1988), which led to a designation of group II.		
PCA 6 - Former presence of a gasoline UST and a pump associated with the former presence of a private fuel station on the Property.	Approximately 200 m north from the Site, west of the laundry/ workshop building.	No, due to distance (200 m) and the PCA is cross gradient from the Site.	**#28.** Gasoline and associated products storage in fixed tanks. A historical gasoline UST was previously located west of the laundry/workshop building, which was used to fuel the vehicles of the convent's residents. The former UST was reported to be made of fibreglass and had a capacity of 100,000 L. The UST was reportedly decommissioned in the 1980s. No reports or data are available to confirm whether or not the UST was removed or whether or not soil and/or groundwater sampling and analysis were completed following the tank removal.	PHC F1-F4, BTEX.	Soil and groundwater.

APEC or PCA for the Phase One Property	Location of Area of Potential Environmental Concern in relation to the Site	Is the PCA identified for the Property considered an APEC for the Site? Reasoning	Potentially Contaminating Activity (PCA) and Description of the Activity	Contaminants of Potential Concern	Media Potentially Impacted (groundwater, soil and/or sediment)
PCA 7 - Fill of unknown composition and possible presence of ash.	Approximately 50 m northeast of the Site. It is assumed to be in the area east of the main building where the former coal storage and boilers were located; however it may have been deposited on other parts of the Property as well.	No, due to distance (50 m) and the PCA is cross gradient from the Site.	**#9** Coal Gasification Ash originating from historical coal burning was reportedly deposited on the Property.	PAH, metals.	Soil and groundwater.
PCA 8a, b, c, and d - Presence of four pole mounts transformers	Approximately 200 m north of the Site.	No, due to distance (200 m) and the PCA is cross gradient from the Site.	**#55** Transformer Manufacturing, Processing and Use There are four pole mounted transformers near the laundry/workshop building.	PHC F1-F4, BTEX, PCB.	Soil and groundwater
PCA 9 a, b, and c - Presence of three pad mounted transformers	Approximately 150 m north of the Site located in a Hydro Ottawa owned transformer room in the Deschâtelets building	No, due to distance (150 m) and the PCA is cross gradient from the Site.	**#55** Transformer Manufacturing, Processing and Use Four transformers were reportedly present in a transformer room in the basement of the Deschâtelets building.	PHC F1-F4, BTEX, PCB.	Soil and groundwater

APEC or PCA for the Phase One Property	Location of Area of Potential Environmental Concern in relation to the Site	Is the PCA identified for the Property considered an APEC for the Site? Reasoning	Potentially Contaminating Activity (PCA) and Description of the Activity	Contaminants of Potential Concern	Media Potentially Impacted (groundwater, soil and/or sediment)
PCA 10 - Presence of a private garage on the Property.	Approximately 150 m north of the Site.	No, due to distance (150 m) and the PCA is cross gradient from the Site.	**#28** Gasoline and Associated Products Storage in Fixed Tanks A small private garage located on the Property since the 1940s to the present was used for oil changes, maintenance and minor repairs for the convent's vehicles.	PHC F1-F4, VOC, PAH, metals.	Soil and groundwater.
PCA 11 – Diesel containing AST associated with backup generator	Approximately 150 m north of the Site.	No, due to distance (150 m) and the PCA is cross gradient from the Site.	**#28** Gasoline and Associated Products Storage in Fixed Tanks An AST is located at the northeast corner of the former coal storage room and is used to fuel the back-up generator located in the same area.	PHC F1-F4, BTEX.	Soil and groundwater.
PCA 12 – Diesel containing AST used to fuel landscaping and maintenance equipment	Approximately 200 m north of the Site.	No, due to distance (200 m) and the PCA is cross gradient from the Site.	**#28** Gasoline and Associated Products Storage in Fixed Tanks An AST is located in the northeast part of the laundry/workshop building and is used to fuel the Property landscaping and maintenance equipment.	PHC F1-F4, BTEX.	Soil and groundwater.

APEC or PCA for the Phase One Property	Location of Area of Potential Environmental Concern in relation to the Site	Is the PCA identified for the Property considered an APEC for the Site? Reasoning	Potentially Contaminating Activity (PCA) and Description of the Activity	Contaminants of Potential Concern	Media Potentially Impacted (groundwater, soil and/or sediment)
PCA 13 (APEC 2) – Former St. Paul dump	Adjacent to the west of the Site, potentially extending on to the Site.	Yes	**#58** Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners. The former St. Paul University dump was reportedly located on the adjacent lands west of the Site and potentially may have extended onto the Site.	PHC F1-F4, BTEX, PAH, metals.	Soil and groundwater.
PCA 14 (APEC 1) - Presence of fill of unknown composition and quality	Across the majority of the Site.	Yes	**#30** Importation of Fill Material of Unknown Quality. Fill containing construction debris, asphalt, concrete, brick, and potentially some refuse was reportedly placed across the Property to prevent flooding.	PHC F1-F4, BTEX, PAH, metals.	Soil and groundwater.

Notes
PHC F1-F4 - petroleum hydrocarbon fractions F1 to F4
BTEX- benzene, toluene, ethylbenzene, xylenes
VOC – volatile organic compounds (include BTEX)
PAHs-Polycyclic Aromatic Hydrocarbons
UST - underground storage tank
AST – above ground storage tank

In summary and as discussed in the above table, the only APECs relevant to the Site (i.e., RSC #1) are the following:

- Presence of fill containing construction debris, asphalt, concrete and potentially some refuse in the south part of the Property (APEC 1); and,
- Presence of the former St. Paul University Dump on the lands adjacent to the southwest of the Property, with the potential to have extended on to the Property (APEC 2).

The information obtained from the review of the Phase One ESA report was used to develop the current Phase Two ESA work program with respect to: 1) identifying the potentially contaminating activities associated with the historical use of the Property; 2) identifying the areas of potential environmental concern to be investigated; 3) obtaining preliminary information regarding the subsurface conditions at the Property (soil type, bedrock depth, depth to the groundwater); 4) planning the locations and depths of the boreholes, monitoring wells and test pits based on the APECs, PCAs and the subsurface conditions; and, 5) planning the soil and groundwater sampling and the parameters of concern to be analyzed.

4.0 SCOPE OF THE PHASE TWO ESA INVESTIGATION

The primary objectives of this Phase Two ESA were to assess the absence or presence of the COCs in relation to the potential environmental concerns identified in the Phase One ESA completed by Golder, to characterize the subsurface conditions at the Site and to assess the soil and groundwater quality at the Site. In addition, an attempt was made to delineate the horizontal and vertical extent of the subsurface impacts in soil (if present) at the Site during the Phase Two ESA.

4.1 Overview of Site Investigation

The Phase Two ESA work was completed in three stages. The first stage of the Phase Two ESA work was completed during Regional's due diligence process to acquire the Property for redevelopment in March and April 2014. The second stage Phase Two ESA was completed following the Property acquisition by Regional, and consisted of two parts: the initial investigation, completed in July and August of 2014 and a follow up investigation to comply with O Reg 153/04 as amended, completed in March 2015. The third stage was a final investigation completed concurrently with the remediation of the RSC #1 Site, which was completed from November 2015 to June 2016.

To achieve the objectives of the Phase Two ESA, the location of the boreholes, monitoring wells, and test pits and the parameters for chemical analysis of soil and groundwater samples were selected to assess the quality of soil and groundwater at the Site in relation to the APECs and PCAs identified in the Phase One ESA. The rationale for the soil and groundwater sampling locations and the parameters for analysis of soil and groundwater samples is provided in the Sampling and Analysis Plan in Appendix A. Note that the Sampling and Analysis Plan covers the entire Property; only APECs and investigation that relate to RSC #1 are applicable to the Site.

The Phase Two ESA was completed in conjunction with the geotechnical and archaeological investigations carried out at the Property by Golder.

Given that the Phase Two ESA was carried out in conjunction with the geotechnical investigations carried out at the Property, selected geotechnical boreholes and test pits were used for environmental purposes for soil and/or groundwater sampling and laboratory analysis. In addition, some of the archaeological trenches completed at the Property were used for environmental purposes. The geotechnical boreholes and test pits that were not used for environmental sampling were used to collect additional information on the stratigraphy at the Property and to determine the fill thickness and composition across the Property as part of the Phase Two ESA.

The scope of work included the following tasks:

- **Preparing a Health and Safety Plan**. A Health and Safety Plan for internal and subcontractor use was prepared prior to initiating any fieldwork at the Property.
- **Utility Clearance and Equipment Used**. Prior to drilling and test pitting for each stage of the Phase II ESA, excluding the third stage, Golder arranged for the completion of public and private utility clearances. A private utility location contractor (USL-1 Inc.) was retained to identify private and public utilities within the work area, to mark the locations of the utilities and clear the proposed drilling and test pit locations. The drilling equipment used for borehole drilling was a truck mounted drill rig CME-75, supplied and operated by Marathon Drilling ("Marathon") of Ottawa, Ontario. Marathon is licensed as a well contractor by the MOECC. The equipment used for excavation of the test pits and trenches was a rubber tire backhoe owned and operated by Glenn Wright Excavating of Ottawa, Ontario. During the remediation, Eastway Contracting Ltd. were responsible for the works at the Site and had overall responsibility for service locates and health and safety at the Site.

- **Review of Historical Data**. The previous Phase One ESA report completed for the Property as described in Section 3.2.1 of the report was reviewed to obtain information regarding the subsurface conditions at the Property, the APECs and PCAs used to guide the Phase Two ESA program and develop the conceptual site model.

- **Test Pitting** – Eighty one (81) test pits and five (5) trenches were advanced across the Property, of which thirty two (32) test pits and zero (0) trenches were completed on the Site. Test pits were advanced to a depth until the fill was penetrated and the underlying native soil was interpreted to have been reached. Soil samples were collected from nineteen (19) out of the thirty two (32) test pits for laboratory analysis of one or more chemicals of concern (COC) – petroleum hydrocarbons fractions 1 to 4 (PHC F1 to F4), benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), metals and/or pH. The laboratory analyses were completed by Maxxam Analytics of Ottawa, Ontario (Maxxam), who are accredited by the Standards Council of Canada (SCC).

  The rationale for the selected test pit locations across the Property is provided in the Sampling and Analysis Plan in Appendix A. The locations of the eighty one (81) test pits and five (5) trenches advanced over the Property during the Phase Two ESA are shown in Appendix H.

- **Borehole Drilling and Monitoring Well Installation** – thirty nine (39) boreholes were drilled across the Property, consisting of environmental and geotechnical boreholes. Of the thirty nine (39) boreholes advanced across the Property, thirteen (13) were located on the Site, four (4) of which had at least one soil sample submitted for laboratory analysis of metals, pH and/or PAHs. The drilling locations of the geo-environmental boreholes were selected such as to satisfy the requirements of the geotechnical program and the Phase Two ESA. Monitoring wells were installed for geo-environmental purposes in eighteen (18) of the boreholes across the Property, eight (8) of which are located on the Site. In addition, standpipes were installed in ten (10) of boreholes drilled for geotechnical purposes.

  The rationale for the borehole locations is provided in the Sampling and Analysis Plan in Appendix A. The locations of the boreholes/monitoring wells are shownAppendix H, and the monitoring well construction details are presented in Table 1 following the text of this report.

- **Soil Sampling and Analysis**. Selected soil samples collected from the boreholes, test pits and trenches were submitted for chemical analysis of one or more of the following parameters: PHCs F1 to F4, BTEX, PAHs, pH and/or metals (including mercury and hexavalent chromium).

- **Groundwater Monitoring, Sampling and Analysis**. Water levels were measured at each of the installed geo-environmental wells and at the standpipes installed for geotechnical purposes. Six (6) of the eight (8) monitoring wells installed on the Site had at least one groundwater sample submitted for laboratory analysis of metals (including mercury and hexavalent chromium), VOC, PHC F1 – F4, and/or PAHs. The laboratory analyses were completed by Maxxam Analytics of Ottawa, Ontario (Maxxam), who are accredited by the Standards Council of Canada (SCC).

- **Surveying**. An elevation survey relative to a geodetic benchmark was completed for each of the boreholes, test pits and trenches at the Property by Golder. In addition, the survey included the GPS northing and easting coordinates for each borehole, test pit and trench location.

- **Reporting**. Golder prepared this report summarizing the results of the Phase Two ESA.

The Phase Two ESA was conducted in accordance with O. Reg. 153/04 (as amended) and followed the framework of the Sampling and Analysis Plan, included as Appendix A. Subsurface investigation activities as summarized in this report were carried out in general accordance with Golder's Standard Operating Procedures (SOPs), which conform to the requirements of O. Reg. 153/04 and Golder's Quality Assurance Program. The applicable SOPs are provided in the Sampling and Analysis Plan. The information provided herein follows the Phase Two ESA report format required under O. Reg. 153/04 (as amended).

The rationale for selecting the borehole and test pit locations, samples collected, chemical analysis performed, sampling procedures, and SOPs, as required under O. Reg. 153/04, is provided in the Sampling and Analysis Plan included in Appendix A. A brief summary of the Phase Two ESA work completed on the Site is presented in the table below. The investigations completed Property-wide are included for reference purposes.

Phase Two ESA work program to investigate the APEC and PCAs identified by Phase One ESA

Area of Potential Environmental Concern (APEC)	Borehole/Test Pit/Trench ID	Monitoring Well Installation	Rationale	Summary of Analyses	
				Soil	Groundwater
APECs relating to the Site (RSC #1)					
APEC 1 - Presence of fill containing construction debris, asphalt, concrete	BH14-3	MW14-3	Investigate fill type and thickness, and potential impacts on groundwater quality	-	PHCs F1 to F4, BTEX, PAHs, metals, CrVI and Hg
	TP BJ, TP14-10, TP14-12, TP14-15	No monitoring wells installed	Test pits completed to investigate the fill quality, composition and thickness	PHCs F1-F4, BTEX, PAHs and metals	-
	TP14-11 TP15-202, TP15-203, TP15-204, TP15-205, TP15-206A/B/C, TP15-208, TP15-209A/B	No monitoring wells installed	Test pits to investigate the potential presence of refuse /debris in the fill and fill thickness	-	-
	TP15-201			Metals, PAH	-
	BH14-211	MW14-211	Investigate the fill thickness, composition and quality and obtain additional groundwater quality data from the east part of the Property where the thickest fill was found	Metals, PAHs	PHCs F1 to F4, BTEX, PAHs, metals, CrVI and Hg
	BH14-213	MW14-213A (deep) MW14-213 (shallow) Wells were installed for geotechnical purposes	Investigate the thickness of the fill in the berm area and the soil/fill quality and composition at the southeast corner of the Property.	Metals, PAHs	-

Area of Potential Environmental Concern (APEC)	Borehole/Test Pit/Trench ID	Monitoring Well Installation	Rationale	Summary of Analyses	
				Soil	Groundwater
APECs relating to the Site (RSC #1)					
	BH14-214, BH14-216, BH14-217	No monitoring wells installed	Investigate the thickness of the fill on the Property	-	-
	TP AH, TP AJ, TP AK, TPG14/E1,	No monitoring wells installed	Test pits completed to investigate the fill quality, composition and thickness	PAHs and metals	-
	BH15-101	MW15-101	Investigate the fill thickness, fill quality, and groundwater quality.	Metals, PAH	PHCs F1 to F4, VOC, PAHs, metals, CrVi and Hg
	BH16-02	BH16-02	Additional groundwater data for the filing of the RSC	-	PAHs and metals
APEC 1 and APEC 2 - Presence of fill containing construction debris, asphalt, concrete and former St Paul dump	BH14-210	MW14-210 A (deep)	Obtain additional groundwater quality data in the west central part of the Property.	-	-
		MW14-210B (shallow)		-	PHCs F1 to F4, BTEX, PAHs, metals, CrVi and Hg
	TP14-13, TP14-14, TP15, TP BB	No monitoring wells installed	Completed to investigate the potential presence of refuse /debris in the fill and fill thickness	-	-
	TP AG	No monitoring well installed	Investigate the fill thickness, composition and fill quality across the Property	Metals, PAHs	-
	TP AF	No monitoring wells installed	Investigate the fill thickness, composition and fill quality across the Property	Metals, PAHs, PHCs F1 to F4, BTEX	-
	BH14-212	MW14-212 Installed for geotechnical purposes	Investigate the fill thickness, composition and fill quality across the Property	-	-
	BH14-215	No monitoring well installed		-	-
	BH15-4	BH15-4	Investigate the fill thickness, fill quality, and groundwater quality.	-	Metals, PAHs
	BH15-100	MW15-100		Metals, PAH	PHCs F1 to F4, VOC, PAHs, metals, CrVi and Hg

Created by: TL
Checked by: PH

Notes:
BH-Borehole
MW-Monitoring Well
TP-Test Pit
TR-Trench
PHC - Petroleum Hydrocarbons
BTEX - benzene, toluene, ethylbenzene, and xylenes
VOC – Volatile organic compounds (includes BTEX)
PAHs-Polycyclic Aromatic Hydrocarbons
CrVI-hexavalent chromium
Hg-mercury

4.2 Media Investigated

To address the potential environmental issues identified in the Phase One ESA, the Phase Two ESA field program included sampling of subsurface and surface soil from boreholes, test pits and trenches and sampling of groundwater from standpipes and monitoring wells screened within the overburden on the Site. No sediment was present at the Site and therefore no sediment sampling was completed.

The sampling and analysis plan outlines the rationale for the field investigation activities carried out at the Property and the associated methodologies used to meet the objectives of this Phase Two ESA.

Soil and groundwater were sampled and analysed for the parameters of concern for the APECs to assess if soil and/or groundwater has been impacted by the APECs/PCAs identified in the Phase One ESA.

Details of the number and locations of boreholes, test pits, trenches and monitoring wells, number of samples, media and parameters investigated at the Phase Two Property are presented in the Sampling and Analysis Plan in Appendix A.

4.3 Phase One Conceptual Site Model

The Phase One ESA Conceptual Site Model ("CSM") for the Site described below is based on the results of the Phase One ESA report:

- The Site is the southern section of the Property located at 175 Main Street in Ottawa, Ontario. The Property has an area of 9.4 hectares (23.1 acres) and the Site has an area of 2.9 hectares (7.0 acres). At the time of the Phase I ESA, the Site is part of the landscaped lawns surrounding the main Oblates Residence (Deschâtelets) complex. The main Oblates Residence (Deschâtelets) building was built in 1885 and building additions/extensions were added to the main Deschâtelets building throughout the 1920s, 1940s, 1948, 1950, and 1958. The total building area is 14, 511 m^2 (156,200 sq.ft.). The older main parts of the complex built in 1885 and the entrance way off Main Street have heritage designation. The exterior areas (which include the Site) were landscaped grassed and treed lands and access driveways. Since the Property development in 1885 until the purchase by regional in 2014, the Property has been used by the Religious Order of the Oblates of Mary Immaculate as a convent and the operations carried out at the Property have been related to residential type activities. Remedial activities on the Site began in November 2015.

- At the time of the May 2016 Phase One ESA, the Site was used as a yard (landscaped trees and grass) for the main Oblates Residence (Deschâtelets) complex located to the north. At the time of this Phase One ESA Update, the site was fenced off and under development. No buildings or known underground services are present at the Site.

- There is a pronounced slope of the land downwards from west to east and from south to north. The Site is significantly higher in elevation than the northern part of the Property due to filling activities that reportedly occurred sometime between 1902 and 1922 to prevent flooding. The eastern half of Site was filled from the Rideau River's edge. It is understood that the fill was comprised of concrete, some asphalt, brick, ash, and potentially garbage (APEC 1). Along the western edge of the site, the Former St. Paul Dump may have extended onto the Site (APEC 2).

- Ash originating from the historical coal burning was reportedly deposited off-Site to the North (on the Property) in the past. The fill of suspect and/or unknown quality is considered a PCA for the Site (PCA 7).
- Off Site to the north (on the Property) general convent vehicle maintenance including oil changes and minor repairs was performed in a small garage building attached to the northwest side of the Deschâtelets building (PCA 10). The garage has been in operation since the 1940s until present. A historical gasoline UST was previously located at the north part of the Property and west of the laundry/workshop building, which was used to fuel the vehicles of the convent's residents (PCA 6). Neither of these PCAs were considered APECs due to the distance from the Site and they were inferred to be cross gradient from the Site.
- Seven transformers were identified off-Site but on the Property, four were pole mount transformers near the laundry/workshop building (PCA 8a, 8b, 8c, and 8d) and three were reportedly located in a transformer vault in the basement of the main building (PCA 9a, 9b, and 9c). The transformers on the Property were not considered APECs for the Site due to the distance separating them from the Site and they were inferred to be cross gradient from the Site.
- Two diesel containing ASTs were identified off-Site to the North (on the Property). One of the ASTs was used to fuel the backup generator (PCA 11) and the other AST was used to fuel landscape and maintenance equipment (PCA 12). The ASTs on the Property were not considered APECs due to the distance separating them from the Site and they were inferred to be cross gradient from the Site.
- Four former landfills were identified within 350 m of the Site:
  - St. Paul University Dump was located on adjacent lands to the southwest of the Property (APEC 2). This is considered an APEC for the Site;
  - Lee's Avenue (Old Armoury) Landfill (L-28) is present on lands to the northeast of the Property (PCA 4). This was not considered an APEC for the Site due to the distance between them and the inferred groundwater flow direction;
  - Former Riverside Drive Landfill is present approximately 100 m east of the Property, across the Rideau River (PCA 2); and,
  - Lees Avenue (near Hurdman Bridge) Landfill (L-12) is present approximately 350 m northeast of the Property (PCA 3) and is associated with the former industrial site Currie Products Ltd.
- There were two former industrial sites within the study area of the Phase I ESA:
  - Former Group II industrial site – Royal Canadian Engineers Workshop – with oil seeping noted during the classification process completed in 1988 (PCA 5). Not considered an APEC for the Site due to the distance separating them from the Site and they were inferred to be cross gradient from the Site.
  - Former Group I industrial site – Currie Products Ltd. – with an associated landfill (L-12) (PCA 3)
- A former retail fuel outlet was present approximately 100 m to the north of the western section of the Property (PCA 1)

- Surface water runoff is towards catch basins, which are connected to the municipal storm sewer system, or overland towards the Rideau River.
- Potable water on the Property is provided by the municipal drinking water system. No drinking water wells are present on the Property or on the Phase I ESA Study area.
- The Rideau River is located east of the Property and runs along the east Property boundary, however the Site is not within 30 metres of the River.
- At the time of the Phase I ESA, the neighbouring properties within the Phase One Study Area south, west and north of the Property were used for residential, community and parkland purposes and the Rideau River is located to the east.
- The subsurface conditions at the Property consist of fill, underlain by silty clay and clayey silt, overlying glacial till. The thickness of the fill is expected to be 7-8 metres at the southeast part of the Property. Based on the information obtained, the fill placed on the Property contains ash, cinders and pieces of asphalt, brick, concrete, wood and/or metal and potentially some refuse. Depth to the bedrock is expected to range between 15 and 25 metres. The depth to the water table is expected to be between 3 and 4 mbgs and to be in the overburden.
- Groundwater is anticipated to flow to the east towards the Rideau River located east of the Property.

Based on reviewing the Phase One ESA CSM, the following APECs for the Site have been identified:

- APEC 1 (PCA 14) – The presence of fill containing construction debris, asphalt, concrete and potentially some refuse in the southern part of the Site, and within the southeast part of the Site towards the west bank of the Rideau River; and,
- APEC 2 (PCA 13) – The presence of the former St Paul University Dump on the lands southwest of the site that potentially extended onto the Site.

4.4 Deviations from Sampling and Analysis Plan

As per the Sampling and Analysis Plan (provided in Appendix A), thirteen (13) combined geo-environmental and environmental boreholes were to be drilled on the Site and twenty six (26) geo-environmental and environmental test pits were to be excavated across the Property to investigate soil and groundwater impacts associated with APECs applicable to the Property identified during the Phase One ESA.

Based on the observations during the field work and the screening, additional test pits were excavated on the Property in order to better characterize the fill quality and composition and to achieve better spatial coverage of the Property.

As the Phase Two ESA program was carried out in conjunction with the geotechnical and archeological investigation, selected geotechnical boreholes, test pits and trenches were used for environmental purposes for soil and/or groundwater sampling and laboratory analysis. The geotechnical boreholes and test pits that were not used for environmental sampling and analysis were used to collect additional information on the stratigraphy at the Property and to determine the fill thickness and composition across the Property as part of the Phase Two ESA.

Insufficient return of groundwater resulted in a limited sample of groundwater from monitoring well BH14-211. Given that groundwater samples were collected from surrounding monitoring wells (BH14-3, BH15-4, BH15-100, BH15-101 and BH15-102) and PAH results at these locations met the MOECC Table 3 Standards, this deviation is not considered to materially affect the conclusions of the Phase Two ESA.

Given that the Phase Two ESA work program followed the Sampling and Analysis Plan with the two previously noted exceptions, and that that additional test pits were completed, it is considered that the objectives of the Phase Two ESA were satisfied and there were no deviations from the Sampling and Analysis Plan that were not covered by other investigations.

The general procedures set out in the Sampling and Analysis Plan were followed and fieldwork was carried out in accordance with Golder's SOPs with no material deviations.

4.5 Impediments

No impediments to the Phase Two ESA investigation were encountered.

5.0 INVESTIGATION METHOD

5.1 General

The following sections describe the pre-field work activities and field investigation methodology employed during the Phase Two ESA conducted at the Property. The field investigation methods were carried out in accordance with Golder's Quality Assurance Program and the SOPs included in the Sampling and Analysis Plan (Appendix A). Field methodology described below includes borehole drilling and test pitting, soil sampling, field screening, well installation, measurement of groundwater levels, well development, well purging and groundwater sampling. Details of analytical testing, residue management, elevation surveying and Quality Assurance / Quality Control ("QA/QC") measures are also included below.

5.1.1 Site Specific Health and Safety

Prior to initiating the fieldwork, Golder developed and implemented Property specific protocols to protect the health and safety of its employees and subcontractors through the preparation of a Property specific Health and Safety Plan. An assessment of potential health and safety hazards at the Phase Two Property and those associated with the proposed work was completed each day of the field program. Additionally, prior to any intrusive investigations, including drilling and test pitting, Golder retained USL-1 Inc. of Ottawa, Ontario to coordinate utility clearances with the local utility companies and to clear boreholes, test pit and trench locations.

5.2 Drilling and Excavation

Boreholes were advanced by Marathon using a truck mounted drill rig CME-75, and supplied and operated by Marathon Drilling ("Marathon") with the exception of two of the boreholes advanced by Strata Drilling Group ("Strata") using a Geomachine 100 equipped with disposable sample tubes.

Thirty four (34) environmental or geo-environmental boreholes were drilled on the Property during the Phase Two ESA. The purpose, the rationale and the location selection of each borehole were provided in the SAP included in Appendix A.

During borehole drilling activities, overburden soil samples were collected at 0.61 m intervals using a 0.61 m long, 50 mm diameter drive open steel casing ("split spoon") sampling system. The drill rig was equipped with a hydraulic equivalent of a 63.5 kg sampler hammer that was used to hammer the split spoon into the ground and collect a discrete soil sample. The split spoon sampler was cleaned with Alconox® soap and rinsed with distilled water between each sample to prevent cross contamination.

Test pits and trenches were advanced using a rubber tired backhoe supplies by Glenn Wright Excavating Ltd. (first and second investigation stage), or by Eastway Contracting Ltd. (third stage). The samples were retrieved directly from the excavator bucket using a clean, gloved hand at regular depth intervals (approximately every 0.5 to 1 m), from the fill (if observed), different soil layers, and/or from visually impacted soil layers (if observed). The test pitting activities were monitored in the field by a Golder technician. Once soil sampling from the test pits was completed, the excavated material was replaced back into the test pit and the test pit was compacted with the excavator bucket (except the hand dug test pits).

The purpose, the rationale and the location selection of eighty one (81) test pits and five (5) trenches were provided in the SAP included in Appendix A.

The locations of the boreholes, test pits, and trenches are shown in Appendix H. Record of Boreholes and Test Pits are included in Appendix B.

5.3 Soil: Sampling

During the Phase Two ESA, soil samples collected as part of the borehole drilling program were retrieved from environmental or geo-environmental boreholes at either 0.61 m intervals or continuous sampling using a 50 mm drive-open split-spoon sampler. Following the collection of a sample, the split spoon sampler was washed/scrubbed with a mixture of biodegradable Alconox® detergent and water and was subsequently rinsed with distilled water prior to further use.

The soil samples collected from test pits and trenches were retrieved directly from the excavator bucket or hand shovel, using a clean, gloved hand at regular depth intervals (approximately every 0.5 to 1 metre), and/or from different soil layers, and/or from visually impacted soil layers (if observed). Soil samples were collected from the test pits and trenches and samples were submitted for laboratory analysis of one or more chemicals of concern (COC) –PHC F1 to F4, BTEX, PAHs, metals and/or pH.

Disposable nitrile gloves were worn by Golder personnel during soil sampling, and gloves were changed between collection of discrete soil samples collected from the boreholes, test pits and trenches.

The soil conditions encountered in the boreholes, test pits and trenches were logged in terms of soil materials, texture and the presence of staining, odour and debris, if any, following SOP6 – *Soil Logging*. Field observations made during the advancement of boreholes and test pits are summarized on the Record of Borehole and Test Pit sheets in Appendix B and additional details of the subsurface conditions encountered are provided in Section 6.1.

Following logging, the soil samples were placed in glass jars and vials, supplied by the analytical laboratory, for possible chemical analysis. Where sufficient soil volume was recovered from the split spoon, representative portions of each sample were collected in sealed plastic bags for headspace organic vapour testing using a calibrated MiniRae 2000 photoionization detector (PID) as described further in Section 4.5 below. Samples to be submitted for PHC F1 or BTEX analysis were placed in 40 ml glass vials containing methanol preservative using pre-measured syringes to obtain 6 grams of soil sample. Soil samples were kept on ice until they were brought to our office and kept refrigerated prior to submission to the analytical laboratory. Selected soil samples submitted for chemical analysis of PHC F1 to F4, BTEX, PAHs, metals, and/or pH were placed in a cooler with ice and delivered under chain-of-custody procedures to Maxxam. Soil samples were selected for analysis based on visual and olfactory evidence; headspace vapour concentrations; soil type; borehole and test pit location; and target depth, and included samples considered to have the highest potential for impact. Details regarding the soil samples submitted for laboratory analysis, including quality assurance/quality control (QA/QC) samples are provided in Table 3 (Soil Data Summary Table) following the text of the report.

Visual and olfactory observations, results of soil headspace measurements and the rationale for selecting soil samples for analysis are presented in Table 3 following the text of this report and on the Record of Borehole and Test Pit sheets provided in Appendix B.

The “worst case” soil samples were selected based on visual and olfactory observations and PID readings, and/or from depth horizons at which potential contamination was considered most likely to have occurred, such as from fill material or near the water table.

A summary of the soil samples submitted for laboratory analysis, including QA/QC samples, is included in the table below.

Parameter	Number of Soil Samples Across the Property	Number of Duplicate Samples Across the Property	Number of Soil Samples on RSC #1	Number of Soil Samples on RSC #2	Number of Soil Samples on RSC #3
PHC F1-F4 and BTEX	24	3	5 (+ 1 dup)	4 (+ 1 dup)	12 (+ 1 dup)
Metals	92	7	25 (+ 2 dups)	27 (+ 3 dups)	33 (+ 2 dups)
PAHs	106	7	32 (+ 2 dups)	35 (+ 3 dups)	34 (+ 2 dups)
VOC	1	0	0	0	1
PCB	4	0	0	0	4
pH	6	0	5	0	1

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5.3.1 Soil Sample Requirements

All soil samples collected and submitted for chemical analysis were obtained from undisturbed soil (as defined in O.Reg. 153/04) from the Phase Two Property using the sampling equipment as described previously. When handling all soil samples, a clean gloved hand was used and equipment in contact with soils (the split spoon sampler) was washed between sample locations to prevent the potential of cross contamination.

As per the sampling and analysis plan provided in Appendix A, one to three soil samples were submitted from each of the environmental test pits, trenches and boreholes for laboratory analysis of one or more of the contaminants of concern (PHC F1 to F4, BTEX, PAHs, metals, VOC, PCB and pH).

5.4 Field Screening Measurements

Soil headspace measurements for organic vapour concentrations were conducted on the soil samples collected from the boreholes (where sufficient soil volume was recovered from the split spoon) and each of the environmental test pits and trenches using a MiniRae 2000 equipped with a 10.6 eV lamp.

The soil headspace measurements were conducted following SOP4 - *Headspace Screening.* Details regarding the equipment and calibration procedure are described in the table below:

Equipment	Make and Model	Parameters Detected	Detection Limits	Precision	Reading Accuracy	Calibration Standard	Calibration Procedure
Photo-ionization detector (PID) MiniRae 2000	MiniRae 2000, model number PGM7300 serial number 590-001605	Organic vapours	0%	N/A	+/- 3%	100 ppm Isobutylene	The PID was calibrated by a Golder technician prior to the field work

The PID was used to provide an estimate of the relative concentrations of organic vapours in the headspace of each soil sample and was used to support selection of soil samples for submission for laboratory analysis. The selection of "worst case" soil samples submitted for laboratory analysis of the COCs was based on professional judgement, which included a consideration of the highest organic vapour readings, visual and olfactory evidence of potential contamination (PHC odour, presence of ashes or debris/waste) and the depths of the soil sample collection (depth horizons at which potential impact would most likely have occurred, such as from the upper fill layer or near the water table).

The soil headspace vapour concentrations were measured in all soil samples where sufficient soil volume was recovered.

The results of soil headspace organic vapour measurements are presented on the Record of Borehole and Test Pit sheets (Appendix B) and in Table 3.

5.5 Groundwater: Monitoring Well Installation

Following the completion of borehole drilling and soil sampling, monitoring wells were installed in select locations across the Property. The monitoring wells were constructed of a 51 millimetre diameter PVC pipe, including a 3 m long (slot #10) screen installed within the overburden and a solid riser. The riser pipes were sealed with a slip cap. Silica sand backfill (granular filter) was placed in the boreholes around the screened portion of the monitoring wells up to approximately 0.50 metres above the screen portion of the well and bentonite was placed to seal the annular space between the PVC risers up to approximately 1.0 m above the sand portion or up to the ground surface. The monitoring wells were constructed in accordance with Ontario Regulation 903 and the following Golder SOP 1: *Monitoring Well Installation*. The monitoring wells were finished with either a locked stick-up well casing or a bolted flush mount casing. After the monitoring well installation, the monitoring wells were developed by removing approximately 10 well volumes or until dry three times. The development was completed using dedicated Waterra™ inertial pumps (polyethylene tubing and foot valve) following Golder SOP 5: *Monitoring Well Development*. No hydrocarbon odour or sheen was noted in any of the wells during the development.

Based on the PCAs and APECs identified at the Property and the physical and chemical properties of the associated contaminants of concern (light non-aqueous phase liquids (LNAPLs) associated with PHCs, relatively low water solubility and/or low subsurface mobility of PAHs and metals), and that the underlying silty clay layer is inferred to represent an aquitard that limits the potential for downward migration of potential groundwater impacts at the Property, it is expected that potential impacts to groundwater (if any) would be encountered in shallow groundwater and, as such, no deeper monitoring wells were installed at the Property during the Phase Two ESA. The silty clay with sand seams layer underlying the fill is inferred to represent the shallow water bearing soil unit (shallow "aquifer" as defined by Reg.153/04). As such, the screens of the monitoring wells were installed at a depth to intercept the shallow groundwater, which was encountered in the native silty clay layer with silty sand seams (refer to Table 1 following the text of this report for groundwater monitoring well installation details). The screens were positioned to straddle the inferred water table so that any hydrocarbon impact (with a floating phase) or any potential impacts associated with the fill would be detected in the well.

In addition to the monitoring wells installed for geo-environmental purposes, shallow and/or deep standpipes were installed in several geo-environmental and geotechnical boreholes across the Property to allow for groundwater level measurements. The standpipes were identified as deep (A) and shallow (B).

Monitoring well construction details are provided in Table 1 following the text of this report and are presented in the Record of Borehole sheets (Appendix B).

5.6 Groundwater: Sampling

As part of the Phase Two ESA, four (4) groundwater sampling events were completed to assess the presence/absence of impacts in groundwater due to identified APECs at the Property. The first groundwater sampling event was completed as part of the first stage of the Phase Two ESA on April 3, 2014. The second event was completed as part of the initial investigation of the second stage of the Phase Two ESA on August 26, 2014. The third event was completed during the follow up investigation part of the second stage of the Phase Two ESA on March 24 and 25, 2015. The fourth event was completed as part of the third stage of the Phase Two ESA from February 23 to 26, 2016. Each groundwater sampling event was a minimum of 24 hours following the development of the monitoring wells included in the event. Prior to the first three groundwater sampling events, the static water level was measured and recorded using a water level tape or an oil/water interface probe. The water level measurements were taken relative to the top of the pipe on April 3, 2014, August 26, 2014, and March 24, 2015 respectively. An additional round of water level measurements was completed on September 9, 2014. The results of the water level measurements are presented in Table 2 following the text of this report.

Prior to the groundwater sampling, the wells were purged by using dedicated Waterra® inertial samplers or a peristaltic pump. During the well purging, qualitative observations were made of water colour, clarity, the presence or absence of any hydrocarbon sheen and any odours present. Free phase product, odour or sheen were not observed or detected with the oil/water interface probe in any the monitoring wells during the groundwater purging or sampling during the four (4) groundwater sampling events.

Conventional groundwater sampling techniques using dedicated Waterra™ inertial pumps (polyethylene tubing and foot valve) or a peristaltic pump with dedicated Waterra™ polyethylene tubing was used to collect groundwater samples during the Phase Two ESA.

For each groundwater sampling event, groundwater samples were collected from selected monitoring wells into the laboratory-provided sample bottles and submitted to Maxxam under chain-of-custody procedures for chemical analysis of one or more of the following: PHCs F1 to F4, BTEX, PAHs and/or metals. In addition, one duplicate groundwater sample was collected for QA/QC purposes. For events with PHC F1, BTEX or VOC analysis, one trip blank was also submitted as required under Reg 153/04, as amended.

Groundwater samples collected for analysis of metals, including mercury and hexavalent chromium, were field filtered at the time of sample collection using in-line 0.45 µm Waterra® filters.

A summary of the groundwater analysis completed during the Phase Two ESA and details regarding the groundwater samples submitted for analysis are provided in Table 4 (Groundwater Data Summary) following the text of this report.

A summary of the groundwater samples submitted for laboratory analysis, including QA/QC samples, is included in the following table.

Parameter	RSC #1 Number of Groundwater Samples	RSC #2 Number of Groundwater Samples	RSC #3 Number of Groundwater Samples	Property Wide Number of Groundwater Samples
PHC F1-F4, BTEX	5 (plus 1 duplicate)	2	9 (plus 2 duplicates)	16 (plus 3 duplicates)
Metals	8 (plus 1 duplicate)	4 (plus 1 duplicate)	8 (plus 1 duplicate)	20 (plus 3 duplicates)
PAHs	7 (plus 1 duplicate)	4 (plus 1 duplicate)	8 (plus 1 duplicate)	19 (plus 3 duplicates)
VOCs	2	1	5 (plus 1 duplicate)	8 (plus 1 duplicate)

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5.7 Sediment Sampling

Sediment was not present at the Property and, therefore, no sediment samples were collected as part of the investigation.

5.8 Analytical Testing

Analytical soil and groundwater testing was conducted by Maxxam Laboratories Inc. ("Maxxam"). The contact information for the laboratory used is included below.

Maxxam Analytics
32 Colonnade Rd. N
Ottawa, ON K2E 7J6
Laboratory Contact: Ms. Julie Clement - 613 868 6079

Maxxam is a Standards Council of Canada (SCC) accredited laboratory which meets the international standard ISO/IEC 17025 (General requirement for Competence of Calibration and Testing Laboratories).

The review of the soil and groundwater analytical results indicated that the method detection limits required for the parameters analysed were met.

5.9 Residue Management Procedures

Soil cuttings from the drilling program, purged groundwater and fluids from equipment cleaning were collected and placed in sealed 205-litre drums for temporary on-Property storage pending the receipt of soil and groundwater analytical results to evaluate disposal options. Given that soil exceedances of MOECC Table 3 Standards were identified, the soil cuttings generated during the borehole drilling were stored for management as waste material. As no groundwater exceedances of MOECC Table 3 Standards were identified and no evidence of impact (i.e., odour, sheen or free phase product) was observed during the field program, the groundwater generated during the development and purging of the monitoring wells was discharged to ground surface. As one of the drums with purged water was mixed with other solid wastes and garbage, the drum was picked up from the Property by Veolia on September 4, 2014 for disposal. A copy of the documentation provided by Veolia associated with the residue management is included in Appendix D.

5.10 Elevation Surveying

Golder completed a geodetic survey of each drilling and test pit location using a Trimble R8 global positioning device with an accuracy +/- 2 cm on August 20, 2014 and March 5, 2015. The survey included the ground surface elevations and the GPS northing and easting coordinates for each borehole, test pit and trench location. The borehole, test pit and trench coordinates were reported in the MTM Zone 9 (NAD83 datum) coordinate system. The elevation survey was geodetic.

5.11 Quality Assurance and Quality Control Measures

Golder's quality assurance program for environmental investigations was implemented to ensure that analytical data obtained during the investigation were valid and representative. Quality assurance and quality control measures employed during each stage of Phase Two ESA generally followed the Golder internal document "Quality Assurance Program for Environmental Investigations". The quality assurance program included the following measures:

- The use of standard operating procedures for all field investigation activities.
- All monitoring wells were developed following installation to remove fine particles from the filter pack and any fluids introduced during drilling;
- Monitoring wells were appropriately purged prior to groundwater sample collection to remove stagnant water from the well bore and improve sample representativeness, minimizing sample agitation and aeration to the extent practicable;
- The collection of field duplicate samples at a minimum frequency of one duplicate for every ten samples;
- Initial calibration of field equipment was performed at the start of each field day, with a daily check of calibration using a standard of known concentration;

  Soil and groundwater samples were collected in pre-cleaned, labelled, laboratory-supplied bottles with preservation (as necessary) and handled with dedicated nitrile gloves. Samples were put in ice-filled coolers following collection and prior to submission to the laboratory. Soil samples submitted for PHC F1 or BTEX analysis were placed in 40 ml glass vials with methanol preservative using pre-measured syringes to obtain 6 grams of soil.

  Soil and groundwater samples were handled and stored in accordance with the sample collection and preservation requirement of the Ministry of the Environment ("MOECC") *Protocol for Analytical Methods Used in the Assessment of Properties Under Part XV.I of the Environmental Protection Act*, July 1, 2011.

  Samples were collected directly into pre-cleaned laboratory-supplied sample containers with the appropriate preservative for the analyte group. Upon collection, samples were placed in insulated coolers with ice for storage and transport to the analytical laboratory;
- Soil samples collected from the boreholes were collected directly from split spoon samplers, which were decontaminated using Alconox® and rinsed with distilled water between samples. Groundwater samples were collected using dedicated Waterra™ polyethylene tubing and a foot valve or a peristaltic pump with dedicated tubing at each location. Sampling personnel wore nitrile gloves while sampling and changed the gloves between each sample collected. All non-dedicated sampling equipment (e.g., water level meters, split spoons) was decontaminated between sampling locations. Sampling equipment in contact with soil and groundwater was: cleaned by mechanical means; washed with a laboratory-grade detergent (AlcoNox) and, if necessary, an appropriate desorbing wash solution; and thoroughly rinsed with distilled water;

- Detailed field records documenting the methods and circumstances of collection for each field sample were prepared at the time of sample collection. Each sample was assigned a unique sample identification number recorded in the field notes, along with the date and time of sample collection, the sample matrix, and the requested analyses; and,
- The submission of samples to the analytical laboratory in accordance with standard chain of custody procedures.

Laboratory analyses were completed by an analytical laboratory (Maxxam) accredited by the Standards Council of Canada (SCC).

Details of the parameters analysed for the duplicate soil and groundwater samples are also presented in Tables 3 and 4 following the text of this report.

6.0 REVIEW AND EVALUATION

This section of the report presents a review and evaluation of the results of the drilling, monitoring and sampling activities conducted as part of the Phase Two ESA described herein.

6.1 Geology

Details of the subsurface conditions encountered during the drilling and test pitting program completed during the three stages of the Phase Two ESA program are presented on the Record of Borehole sheets and Test Pit logs provided in Appendix B. The subsurface conditions are illustrated by stratigraphic layer and/or in cross-section view on Figures 4 to 8.

In general, the subsurface conditions encountered at the Property consist of topsoil, underlain by a layer of fill followed by native soils (silty clay). The topsoil thickness is greatest in the western portion of the Property, and typically is about 0.1 to 0.3 metres thick. Fill at the Property can be further categorized into soil fill and debris fill, and the total fill thickness (soil fill and debris fill) ranges from approximately 0.9 to 8 metres. The total thickness of the fill increases from the west to the east, with the thickest fill encountered in the southeastern portion of the Property, or the eastern portion of the Site (up to 8 metres).

The soil fill layer is present mainly in the western part of the Property, whereas the debris fill layer underlies only the eastern and south portions of the Property. In the western part of the Property, the soil fill layer generally consists of silty sand and is typically about 1 to 1.5 metres thick. In the eastern and south portions of the Property, the debris fill layer ranges in thickness from approximately 0.4 to 8 m (being thickest at the southeast portion of the Property), and is comprised of a mixture of silty sand and debris/refuse consisting of ash, wood, plastic, wire, paper, brick fragments, asphalt pieces, concrete, metal fragments and/or glass. Where the soil fill layer is discontinuously present beneath the debris fill it ranges in thickness from 0 metres (i.e., not present) to up to approximately 2.4 metres, although it is typically less than 1.5 metres in thickness. In some localized areas in the east part of the Property, a layer of soil fill overlies the debris fill.

Bedrock was not encountered at any of the boreholes or test pits. No groundwater seepage was observed in any of the test pits completed at the Property.

Discussion regarding each of the stratigraphic layers, in order as typically encountered at the Property, is provided below.

- Topsoil - the topsoil consists of silty sand with some gravel, roots and organic matter. The thickness of the topsoil ranged from 0 to 0.6 metres. In general, the thickness of the topsoil in the east and south parts of the Property is between 0 and 0.20 metres, with the exception of the area immediately east of the Deschâtelets building where thicker topsoil was noted. In the west part of the Property, the topsoil is thicker and is between 0.1 and 0.6 metres.
- Fill containing debris/refuse (debris fill) - fill consisting of a mixture of soil (silty sand with some gravel and traces of fines) and debris/refuse was found in the east and south parts of the Property. The debris/refuse consisted of ash, wood, plastic, wire, paper, brick fragments, asphalt pieces, concrete, metal fragments and/or glass. The thickness of the fill layer containing debris/refuse ranged from about 0.40 to 2.3 metres in the northeastern portion of the Property and from about 2 to 8 metres in the southeast portion of the Property. The thickest fill layer containing debris/refuse was encountered in the eastern section of the south portion of the Property and ranged from about 4 to 8 metres. Typically it was found that the fill with debris/refuse was

covered by topsoil and was underlain by native silty clay or, in some locations, fill/soil that contains little debris or no waste. In some locations in the northeast and southeast parts of the Property, the fill with debris/refuse was encountered between layers of fill/soil containing little refuse or waste.

No fill containing debris/refuse was found in the test pits or the boreholes completed in the west part of the Property.

- Soil fill – fill comprised of sandy silt or silty to fine sand with some clay and gravel, with little to no debris/refuse was encountered across the Property. The thickness of the soil fill layer ranged from about 0.5 to 2 metres in the west part of the Property and from 0 to about 2 metres in the east and south parts of the Property. Where encountered, the soil fill existed beneath the debris fill in the east and south parts of the Property. Sporadically across the Property, pockets of soil fill above the debris fill also exists.
- Native soil – underlying the fill, the native soil at the Property consists of silty clay starting from a depth of about 0.6 to 7.8 mbgs and extending to a depth of about 9 to 12 mbgs, followed by silty sand and then glacial till. As illustrated by the contour lines on Figure 6, the elevation of the surface of the silty clay is at about elevation 63.5 mASL in the western and central parts of the Property, and then declines towards the Rideau River to the east. The lowest silty clay surface elevations are towards the northeast and southeast at about elevation 56 to 57 mASL.

Based on the subsurface conditions encountered in boreholes and test pits, the shallow groundwater was encountered in the native soil in the silty clay layer.

Based on the PCAs and APECs identified at the Property and the physical and chemical properties of the associated contaminants of concern (potential LNAPLs) associated with the PHCs, and relatively low water solubility and/or low subsurface mobility (PAHs and metals), it is expected that potential impacts to groundwater (if any) would be encountered in shallow groundwater. The silty clay with sand seams layer is inferred to represent the shallow water bearing unit (shallow ”aquifer” as defined by Reg.153/04) located between 1.07 and 6.10 mbgs. As such, the screens of the monitoring wells (MW14-1, MW14-3, MW14-101C, MW14-208C, MW14-210B, MW14-211, MW15-100, MW15-101, MW15-102, MW15-103, MW15-104, MW15-105, MW15-106, MW15-107, MW16-01, and MW16-02) were installed at a depth to intercept the shallow groundwater, which was encountered in the silty clay layer with silty sand seams where the potential impacts in the shallow water bearing horizon would be found. Groundwater in these wells is considered to be representative of the shallow groundwater.

Given that potential groundwater impacts associated with the identified PCAs and APECs are expected to be restricted to the shallow groundwater and that no groundwater impacts were identified in the monitoring wells installed during the first stage of the Phase Two ESA, no deeper monitoring wells were installed at the Property during the Phase Two ESA. In addition, the underlying silty clay layer is inferred to represent an aquitard that limits the potential for downward migration of potential groundwater impacts at the Property.

For geotechnical purposes, deeper standpipes were installed in the geo-environmental boreholes within the silty clay or silty sand layer to allow for deeper groundwater level measurements.

6.2 Groundwater: Elevations and Flow Direction

Groundwater elevations were calculated by subtracting the depth to water table (from the ground surface) from the elevation of the ground surface.

During the first stage of the Phase Two ESA, the static water levels in the three installed geo-environmental wells (MW14-1 to MW14-3, MW14-101C) were measured and recorded using a Solinst water level meter on April 3, 2014. The water levels were also measured in the monitoring wells and standpipes during the second stage of the Phase Two ESA on August 26, 2014 and September 9, 2014. The water levels of the new monitoring wells (MW15-100 series) were collected on March 24, 2015.

In order to obtain representative measurements of the static water levels in all wells and standpipes (deep and shallow) installed on the Property, a round of water level measurements was completed by Golder on September 9, 2014 using a Solinst water level meter. The water levels measured in the shallow wells and standpipes ranged from 1.82 mbgs (MW14-210B) to 5.83 mbgs (MW14-211) and the water levels measured in the deeper standpipes installed in the silty clay were 5.43 mbgs (MW14-213A) and 7.53 mbgs (MW14-210B) on September 9, 2014. Water levels were measured more than 24 hours after the well development. The measured water levels and elevations of the monitoring wells and the standpipes are summarized in Table 2 following the text of the report.

Based on the observed subsurface conditions and the measured water level elevations, monitoring wells MW14-1, MW14-3, MW14-101C, MW14-208C, MW14-210B and MW14-211 and standpipes MW14-205B, MW14-209B, and MW14-213B were used in the interpretation of the shallow groundwater equipotential contours and shallow groundwater flow direction as the wells and the standpipes are considered to represent the shallow water bearing unit at the Phase Two Property. The deeper standpipes MW14-205A, MW14-208A, MW14-209A, MW14-210A, MW14-212A and MW14-213A installed in the silty sand were used in the interpretation of the deeper groundwater equipotential contours and deeper groundwater flow direction.

Based on the water level measurements on September 9, 2014, the shallow and deeper groundwater flow direction was interpreted to be to the east/ southeast towards the Rideau River. Seasonal fluctuations in water levels on the Phase Two Property may influence the water levels at the Property. The regional groundwater flow direction is interpreted to be to the east, towards the Rideau River which runs along the east Property boundary.

Shallow groundwater elevations and interpreted shallow groundwater flow direction are presented in Figure 2A.

Deeper groundwater elevations and interpreted deeper groundwater flow direction are presented in Figure 2B.

Monitoring for free phase product using an interface probe did not indicate the presence of free phase product in any of the wells during any of the sampling events.

Seasonal fluctuation in water levels on the Property should be expected. Given the limited number of monitoring events, seasonal trends could not be identified; however, shallow groundwater water levels are typically highest following the spring freshet, and decline throughout the summer and fall months.

6.3 Groundwater: Hydraulic Conductivity, Hydraulic Gradients and Velocity

6.3.1 Hydraulic Conductivity

Published hydraulic conductivity values were used to estimate the shallow and deeper groundwater velocity.

For silty sand, typical hydraulic conductivities range from approximately 10^{-3} to 10^{-7} m/s and for silty clay typical hydraulic conductivities range between 10^{-8} to 10^{-10} m/s (Freeze, R.A. and J.A. Cherry. 1979. Groundwater. Prentice-Hall, Inc.Englewood).

6.3.2 Horizontal Hydraulic Gradient

The average horizontal hydraulic gradient for shallow and deeper groundwater was calculated based on the water level contours presented in Figures 2A and 2B.

Shallow Groundwater

The average horizontal hydraulic gradient in the shallow groundwater is 0.026 m/m. The maximum horizontal hydraulic gradient estimated for the shallow groundwater was calculated to be 0.042 m/m and the minimum horizontal hydraulic gradient estimated for shallow groundwater conditions was calculated to be 0.014 m/m.

Deeper Groundwater

The average horizontal hydraulic gradient in the deeper groundwater in the silty sand is 0.0014 m/m. The maximum horizontal hydraulic gradient for the deeper groundwater was calculated to be 0.0019 m/m and the minimum horizontal hydraulic gradient estimated for deeper groundwater conditions was calculated to be 0.0009 m/m.

6.3.3 Vertical Hydraulic Gradients

The vertical hydraulic gradients were calculated for all standpipe pairs (shallow and deeper) located within the overburden based on the groundwater elevations measured on September 9, 2014 and the distance between the mid points of the deeper and shallow standpipe screen. The standpipes used in the calculation of the vertical gradient are: MW14-205A (deep) and MW14-205B (shallow), MW14-208A (deep) and MW14-208B (shallow), MW14-209A (deep) and MW14-209B (shallow), MW14-210A (deep) and MW14-210B (shallow), MW14-212A (deep) and MW14-212B (shallow), MW14-213A (deep) and MW14-213B (shallow).

The calculated vertical hydraulic gradients ranged from -0.39 (at MW14-208A and MW14-208B) to 0.01 (at MW14-213A and MW14-213B). The calculated vertical hydraulic gradients at all standpipe pairs were downward (or recharging) with the exception of MW14-213A/B based on groundwater elevations on September 9, 2014.

6.3.4 Groundwater Velocity

Shallow Groundwater

Based on an assumed hydraulic conductivity of 1×10^{-7} to 1×10^{-8} m/s for the upper portion of the silty clay, horizontal hydraulic gradient of 0.026 m/m and a porosity of 35% (for silty clay), the average linear shallow groundwater velocity is estimated to range from 0.24 metre per year (m/yr) to 0.024 m/yr.

Deeper Groundwater

Based on an assumed hydraulic conductivity of 1×10^{-5} m/s for the silty sand layer, horizontal hydraulic gradient of 0.0014 m/m and a porosity of 30% (for silty sand), the average linear groundwater velocity within the silty sand layer is estimated to be 1.5 m/yr.

6.4 Soil: Texture

Based on the field observations, soil and fill material with various compositions is present on the Property (silty clay, silty sand to sandy silt containing refuse and waste). Thus, a criteria associated with a coarse textured soil was used for the Property (conservative approach) and as such, no grain size analysis was performed as part of the Phase Two ESA.

6.5 Soil: Field Screening

Where sufficient soil volume was recovered, headspace organic vapour measurements were conducted on the soil samples collected from the test pits and boreholes. The measured organic vapour concentrations in each of the soil samples (where sufficient soil volume was recovered) were between 0 ppm and 20.4 ppm in soil sample SA2 (1.4 to 2.0 mbgs) collected from TP14-9, which was submitted for laboratory analysis of PHCs F1-F4, BTEX, PAHs and metals.

Some black staining was noted in the fill samples containing debris/refuse from TP BE at a depth between 2.10 and 3.00 mbgs and from the silty clay from TP BJ at a depth between 3.30 and 4.15 mbgs. However, no odour or elevated PID measurements were observed in these soil samples. The measured organic soil vapour concentrations in the two samples TP BE SA5 and TP BJ SA5 were 0.8 and 0.6 ppm, respectively. No odour was noted in any of the collected soil samples.

The results of headspace vapour measurements are presented on the Record of Borehole and Test Pit logs in Appendix B and in Table 3.

6.6 Soil: Quality

A summary of the soil samples submitted for analysis and the associated parameters analyzed is provided in Table 3 following the text of this report. Soil analytical results from each of the stages of the Phase Two ESA, compared to the MOECC Table 3 (Non-Potable Ground Water Condition), are presented in Tables 5A and 5B, following the text of this report. Identified soil exceedances by stratigraphic layer are shown on Figures 4 and 5 and on the cross section Figures 7 and 8. Laboratory Certificates of Analysis are provided in Appendix C.

A summary of the number of soil samples submitted for laboratory analysis by stratigraphic layer, the parameters analysed and the number of soil samples exceeding the MOECC Table 3 Standards is provided below:

Parameter	Topsoil layer		Soil Fill with little to no debris/refuse		Debris Fill		Native silty clay		Total Number of Soil Samples Analyzed	Total Number of soil samples exceeding the 2011 MOECC Table 3 Standards
	Number of Soil Samples Analyzed	Number of soil samples exceeding the 2011 MOECC Table 3 Standards	Number of Soil Samples Analyzed	Number of soil samples exceeding the 2011 MOECC Table 3 Standards	Number of Soil Samples Analyzed	Number of soil samples exceeding the 2011 MOECC Table 3 Standards	Number of Soil Samples Analyzed	Number of soil samples exceeding the 2011 MOECC Table 3 Standards		
Entire Property (RSC #1, #2, and #3)										
PHC F1-F4 and BTEX	0	NA	10 (1)	None	10 (2)	1	3	None	24 (3)	1
Metals	5	None	34 (3)	None	35 (2)	14 (1)	18 (2)	1 (1)	92 (6)	15 (2)
PAHs	19	4	35 (3)	None	35 (2)	21 (1)	17 (2)	None	106 (7)	25 (1)
VOCs	0	NA	0	NA	0	NA	1	None	1	None
PCBs	0	NA	0	NA	0	NA	4	None	4	None
pH	0	NA	2	None	4	None	0	NA	6	None
RSC #1										
PHC F1-F4 and BTEX	0	NA	1	None	4 (1)	1	1	None	6 (1)	1
Metals	1	None	7	None	13 (1)	7 (1)	6 (1)	1 (1)	27 (2)	8 (2)
PAHs	7	1	7	None	13 (1)	9	5 (1)	None	32 (2)	10
pH	0	NA	2	None	3	None	0	NA	5	None
RSC #2										
PHC F1-F4 and BTEX	0	NA	5 (1)	None	0	NA	0	NA	5 (1)	0
Metals	4	None	16 (2)	None	7 (1)	1	3	None	30 (3)	1
PAHs	12	3	16 (2)	None	7 (1)	3 (1)	3	None	38 (3)	6 (1)
RSC #3										

Parameter	Topsoil layer		Soil Fill with little to no debris/refuse		Debris Fill		Native silty clay		Total Number of Soil Samples Analyzed	Total Number of soil samples exceeding the 2011 MOECC Table 3 Standards
	Number of Soil Samples Analyzed	Number of soil samples exceeding the 2011 MOECC Table 3 Standards	Number of Soil Samples Analyzed	Number of soil samples exceeding the 2011 MOECC Table 3 Standards	Number of Soil Samples Analyzed	Number of soil samples exceeding the 2011 MOECC Table 3 Standards	Number of Soil Samples Analyzed	Number of soil samples exceeding the 2011 MOECC Table 3 Standards		
Entire Property (RSC #1, #2, and #3)										
PHC F1-F4 and BTEX	0	NA	4	None	6 (1)	None	2	None	13 (1)	0
Metals	0	NA	11 (1)	None	15	6	8 (1)	None	35 (2)	6
PAHs	0	NA	12 (1)	None	15	9	9 (1)	None	36 (2)	9
PCBs	0	NA	0	NA	0	NA	4	None	4	None
VOCs	0	NA	0	NA	0	NA	1	None	1	None
pH	0	NA	0	NA	1	None	0	NA	1	None

(*brackets*) Indicate the duplicates included in sample counts

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The soil analytical results are discussed below in terms of the chemicals of concern analyzed and stratigraphic layer.

Metals

The analytical results from the Phase Two ESA indicated that of the ninety-two (92) soil samples, including six (6) duplicates, collected from different soil/fill layers and submitted for metal analysis, fifteen (15) soil samples including two (2) duplicates exceeded the applicable MOECC Table 3 for lead, antimony, cobalt, vanadium, barium and/or mercury. Most of the soil samples that have metal exceedances had lead exceedances.

Fourteen (14) of the fifteen (15) metal exceedances (out of ninety-two (92) samples analyzed) identified during the Phase Two ESA were found to be in the soil samples collected from the debris fill layer in the east and south parts of the Property. One metal exceedance for vanadium was noted in the soil sample in the field duplicate of the sample collected from BH15-100 SA2. The original sample did not contain an exceedance. As discussed in Appendix G, Section 3.1, the presence of vanadium in the native silty clay has been interpreted to be naturally occurring and not as a result of a PCA.

Specifically related to the Site (RSC #1), seven (7) of the thirteen (13) samples in the debris fill exceeded the MOECC Table 3 Standards.

No other metal exceedances were found in the soil samples collected from the topsoil, native soil or the soil fill layer with no debris/refuse.

PHC F1 to F4 and BTEX

The analytical results indicated that of the twenty four (24) soil samples, including three (3) duplicate samples, collected from different soil/fill layers and submitted for PHC F1 to F4 and BTEX analysis, one (1) soil sample (TP14-15 SA5) collected from the debris fill layer from a depth between 3.0 and 3.6 mbgs exceeded the MOECC Table 3 Standards for PHC F3.

No observations of potential PHC impacts were noted in any of the surrounding test pits and boreholes, and as such the PHC F3 exceedence is interpreted as an isolated pocket of PHC impact to be addressed during the remediation.

No PHCs exceedances were found in the soil samples collected from the topsoil, native soil or the fill layer with no debris/refuse.

PAHs

The analytical results indicated that of the one hundred and six (106) soil samples, including seven (7) duplicate soil samples, collected from different soil/fill layers and submitted for PAHs analysis, twenty five (25) soil samples including one (1) duplicate soil sample exceeded the MOECC Table 3 Standards for at least one PAH compound. Four (4) of the PAHs soil exceedances were identified in the topsoil and the remaining twenty one (21) were found in the debris fill layer, as presented below.

Specifically related to the Site (RSC #1), nine (9) of the thirteen (13) samples in the debris fill exceeded the MOECC Table 3 Standards.

No PAH exceedances were identified in the soil fill layer with no debris/refuse or in the native silty clay.

VOCs

The analytical results indicated that the one (1) soil sample submitted for VOC analysis met the MOECC Table 3 Standards. The VOC sample was submitted from the native silty clay layer.

VOC samples were not required to address any PCA/APECs at the Site.

PCBs

The analytical results indicated that the four (4) soil samples submitted for PCB analysis met the MOECC Table 3 Standards. The PCB samples were submitted from the soil fill layer.

PCB samples were not required to address any PCA/APECs at the Site.

pH Soil Results

A review of the pH soil analytical results showed that the pH of the six soil samples (TP14-15 SA5, TP14-4 SA1, BH14-211 SA2, BH14-213 SA1, BH14-213 SA5 and BH14-217 SA8) analysed for pH (7.38, 7.63, 7.59, 6.99, 7.43, and 7.11, respectively) was in the MOECC acceptable pH range of 6 to 8.

6.6.1 Discussion of Soils Exceedances By Stratigraphic Layer

Based on the analytical results from the Phase Two ESA, the following exceedances were identified by a stratigraphic layer.

Topsoil Exceedances

Four (4) of the nineteen (19) samples collected from the topsoil and analyzed for PAHs had concentrations of one or more PAH compounds that exceeded the MOECC Table 3 Standards. The exceedances were found in the upper 0.3 to 0.5 metres in the west (TP W), north (TP X and TP15-106) and south (TP AJ) sections of the Property. Each of these locations were delineated during the investigation carried out concurrently with the remediation of the Site (RSC #1). The areas of PAH impacted topsoil are presented on Figure 4B and the cross section on Figure 7B.

Northern Topsoil Exceedance (TP X and TP15-106)

The northern topsoil exceedance has been delineated by TP15-107, TP15-108, TP15-110, and TP15-112. This area of impact is present on the RSC #2 parcel.

Western Topsoil Exceedance (TP W)

Once the survey of the test pits was completed, it was found that TP W was advanced off the Property, as it was moved to avoid the dripline of a tree, and the delineation test pits (TP15-103, TP15-104, and TP15-105) that were advanced at the closest locations to TP W on the Property were each found to meet the MOECC Table 3 Standards for PAH parameters. As such, this exceedance is considered closed (i.e., no longer an APEC) with respect to the Property.

Southern Topsoil Exceedance (TP AJ)

The southern topsoil exceedance is present on RSC #1 and was delineated by TP15-18, TP15-19, TP15-20, TP15-30, TP15-31, and TP15-32.

Debris Layer

The debris layer was found to exceed in fourteen (14) of thirty five (35) metals samples, twenty one (21) of thirty five (35) PAH samples and one (1) of ten (10) PHC samples with concentrations exceeding MOECC Table 3 Standards. Based on these results the entire debris layer was assumed to be impacted. The area of metals and PAH impacted debris fill are presented on Figures 4A and 4B, respectively, and on cross sections Figures 7 and 8 (A and B of each), respectively. As described in Section 6.1 of the report, the debris fill layer was encountered in the east and the south parts of the Property and, as such, the associated metals and PAH exceedances are identified across the east and south parts of the Property.

6.7 Groundwater Quality

Monitoring well construction details are summarized in Table 1 and a list of groundwater samples submitted for laboratory analysis during the Phase Two ESA is provided in Table 4. Groundwater analytical results compared to the MOECC Table 3 (Non-Potable Ground Water Condition) Standards are presented in Table 6, following the text of this report. Laboratory Certificates of Analysis are provided in Appendix C.

A summary of the number of groundwater samples and the parameters analysed is provided below:

Parameter	Number of groundwater samples analysed across the Property	Number of groundwater samples exceeding the 2011 MOECC Table 3 Standards
PHCs F1 to F4 and BTEX	19 (including 3 duplicates)	None
Metals including CrVI and Hg	23 (including 3 duplicates)	None
PAHs	22 (including 3 duplicates)	None
VOCs	9 (including 1 duplicate)	None

A review of the groundwater analytical results indicated that the concentrations of PHCs F1 to F4, VOC (including BTEX), PAHs, metals, mercury, and/or hexavalent chromium in the each of the groundwater samples (including the duplicates) collected from locations outlined on Table 6 were below the laboratory detection limit or were at measured concentrations below the applicable MOECC Table 3 Standards.

Therefore, the groundwater quality meets the applicable MOECC Table 3 Standards and is not contaminated in terms of the regulation.

In addition to numerical standards, the MOECC Table 3 Standard sets out non-numerical (aesthetic) standards relating to the presence of free phase product and hydrocarbon sheen. Specifically, a property does not meet the site specific standard if there is evidence of free product, including but not limited to, visible petroleum hydrocarbon film or sheen present on groundwater, surface water or in any groundwater or surface water samples. Sheen was not observed in any of the monitoring wells. Monitoring for free phase product at each monitoring well using an interface probe did not indicate the presence of product.

6.8 Sediment Quality

Sediment was not present at the Phase Two Property, therefore no sediment samples were collected as part of this investigation.

6.9 Quality Assurance and Quality Control Results

The data collected as part of the Phase Two ESA field program was evaluated according to the following criteria to evaluate its validity: precision, accuracy, completeness, representativeness and comparability. A discussion of each criterion as it relates to the QA/QC program is provided below.

6.9.1 Precision

Precision is a measurement of the repeatability of the methods employed, i.e., sampling methods. Precision is evaluated through the testing of blind field duplicate samples. As such, Golder implemented the following laboratory analytical quality control measures:

- Collection of 8 duplicate soil samples from samples TP14-10 SA2, TP AA SA3, TP BE SA2, TP S SA2, TP T SA2, TR E SA2, BH15-100 SA2, and BH15-106 SA3 and submission for analyses of PHC F1 to F4, BTEX, PAHs, and/or metals (details regarding the duplicate soil samples are provided in the table below and in the borehole / test pit logs in Appendix B):

Location (RSC#)	Original soil sample ID	Field duplicate ID	Parameters analyzed
On Site (RSC #1)	TP14-10 SA2	TP14-10 SA2A	PHC F1 to F4, BTEX, PAHs, and metals
	BH15-100 SA2	DUP-2	Metals and PAHs
Off Site (RSC #2)	TP BE SA2	DUP BE SA2	Metals and PAHs
	TP S SA2 DUP/S SA2	S SA2 DUP/S SA2 (Field Duplicate)	PHC F1 to F4, BTEX, PAHs, and metals
	TP T SA2	DUP T SA2	Metals and PAHs
Off Site (RSC #3)	TP AA SA3	DUP AA SA3	Metals and PAHs
	TR E SA2	DUP E SA2	PHC F1 to F4, BTEX
	BH15-106 SA3	DUP-4	Metals and PAHs

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- Collection of four (4) duplicate groundwater samples as outlined in the table below:

Location (RSC#)	Original soil sample ID	Field duplicate ID	Parameters analyzed
On Site (RSC #1)	14-210 B	14-225	PHC F1 to F4, BTEX, PAHs, and metals
Off Site (RSC #2)	BH16-01	DUP A	Metals and PAHs
Off Site (RSC #3)	BH14-101C	BH14-102	PHC F1 to F4, BTEX
	MW15-106	DUP-1	PHC F1 to F4, VOC, PAHs, and metals

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To determine the precision of the duplicate and original groundwater and soil sample results, the relative percent difference (RPD) was calculated according to the following equation:

$$RPD = \frac{|x_2 - x_1|}{\left(\frac{x_1 + x_2}{2}\right)} \times 100$$

Where, x_1 and x_2 are the original and duplicate concentrations. RPDs are calculated only if the concentrations of a parameter are greater than the analytical reportable detection limit (RDL) in both the duplicate and original samples. In addition, lower precision in the RPD calculation is expected when concentrations of the analytes are less than ten (10) times the RDL. Therefore, RPDs were calculated for the original and duplicate groundwater and soil samples only in cases where the measured concentrations of analytes in both samples were ten (10) times greater than the RDL.

The commonly accepted industry standard data quality objective (DQO) for the RPD in groundwater between a sample and its duplicate is 30% for PHCs, VOCs, and PAHs and 20% for metals, and in soil between a sample and its duplicate is 50% for VOCs, 40% for PHCs and PAHs, and 30% for metals.

Soil RPD

The calculated RPDs for the original and duplicate soil samples for metals were in general within the acceptable RPD percentages (30%) or the concentrations of the analytes were less than ten (10) times the RDL, with the following exceptions:

- TP T SA2 and its duplicate DUP TP T SA2 RPD for copper was 33%; and,
- BH15-100 SA2 and its duplicate DUP-2 for barium (92%), beryllium (62%), cobalt (91%), copper (93%), nickel (97%), and uranium (41%)

The RPDs for PHCs F1 to F4, BTEX and PAHs for the original and duplicate soil samples were in general within the acceptable RPD percentages (40%) or the concentrations of the analytes were less than ten (10) times the RDL, with the following exceptions:

- TP14-10 SA2 and its duplicate TP15-10 SA2A benzo [b,j] fluoranthene (60%), benzo[a]anthracene (60%), benzo[a]pyrene (67%), chrysene (56%), fluoranthene (66%), Indeno[1,2,3-cd]pyrene (66%), and pyrene (45%); and,
- TP BE SA2 and its duplicate DUP BE SA2 anthracene (80%), benzo [b,j] fluoranthene (43%), benzo[a]anthracene (46%), benzo[a]pyrene (41%), chrysene (52%), phenanthrene (107%), and pyrene (55%).

The elevated RPDs are interpreted to be due to the non-heterogeneous nature of soil.

Groundwater RPD

The RPDs for PHCs F1 to F4, BTEX, VOCs, metals and PAHs were in general within the acceptable RPD percentages and ranged between 0% and 13% with the exception of the RPDs that were not calculated as the detected concentrations were less than ten (10) times the RDL.

6.9.2 Accuracy

Accuracy is a measure of how close a measured value is to the true value. The accuracy of the laboratory data is generally evaluated by the laboratory through the use of matrix spikes or surrogate recoveries.

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

In addition, the laboratory QA/QC program included lab duplicates, spiked blanks and method blanks. The analytical results for the laboratory quality assurance samples, which are provided in Appendix C, indicate that the results of the internal quality control program were within the laboratory's specified control limits with a few exceptions for which it was indicated that the overall quality meets acceptability criteria.

Based on the above, the laboratory data presented herein are considered to be accurate.

6.9.3 Completeness

Completeness is evaluated by comparing the planned sampling program with the sampling program that was actually completed and evaluating discrepancies. Golder completed all planned sampling and analytical work for this Phase Two ESA program, so the information is considered to be complete.

6.9.4 Representativeness

Representativeness is the degree to which the samples collected during the Phase Two ESA program represent the soil and groundwater conditions from which they were collected. As part of the Phase Two ESA, Golder implemented the following measures to ensure that representative data was obtained:

- An appropriate and representative number of samples were analysed from each distinct overburden unit, and from the shallow water bearing unit;
- Use of dedicated or cleaned sampling equipment between sampling events;
- Use of calibrated field monitoring equipment (MiniRAE 2000);
- Use of appropriate laboratory supplied sampling jars and bottles;
- Analysis within an acceptable holding time as specified in the MOECC document "*Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act",* March 9, 2004 (amended as of July 1, 2011);
- Delivery of samples under a Chain of Custody; and,
- Laboratory analysis by SCC accredited laboratory (Maxxam).

Based on the above, it is considered that the data collected at the Property during the Phase Two ESA is representative of the Property environmental conditions at the time the work was completed.

6.9.5 Comparability

Comparability describes how well collected data can be compared to other sample results (current and previous investigations) or criteria. Consistent field procedures and analytical methods were used throughout each of the stages of the Phase Two ESA sampling program to allow for comparison of the data obtained in different sampling locations at the Property. Field procedures and analytical methods followed industry-approved standards to allow for comparison of data with the applicable MOECC standards.

Based on the above information, data collected as part of the Phase Two ESA field program are considered to be comparable.

Accordingly, the analytical data generated during the investigation are valid and representative and may be used in this Phase Two ESA without further qualification.

6.10 Phase Two Conceptual Site Model

The Phase Two Environmental Site Assessment ("ESA") Conceptual Site Model (CSM) described below is based on data from previous investigations and on the results of this Phase Two ESA. The CSM consists of diagrams, cross-sections and figures that show the current condition of the RSC Property. A narrative description is provided to explain the contents of the figures and an interpretation of the contaminant distribution.

The figures that comprise the Phase Two CSM include:

Figure 1A: Site Plan and Areas of Potential Environmental Concern

Figure 1B: Site Plan and Future Proposed Buildings

Figure 2A: Groundwater Elevations, Interpreted Shallow Groundwater Flow Direction and Cross Section Locations

Figure 2B: Deeper Groundwater Elevations, Interpreted Deeper Groundwater Flow Direction and Cross Section Locations

Figure 3: Summary of Groundwater Analysis and Exceedances

Figure 4A: Metals Analysis and Exceedances in Debris Fill and Topsoil

Figure 4B: PAH Analysis and Exceedances in Debris Fill and Topsoil

Figure 4C: PHC Analysis and Exceedances in Debris Fill and Topsoil

Figure 5A: Metals Analysis and Exceedances in Soil Fill and Native Clay beneath Debris

Figure 5B: PAH Analysis and Exceedances in Soil Fill and Native Clay beneath Debris

Figure 5C: PHC Analysis and Exceedances in Soil Fill and Native Clay beneath Debris

Figure 6: Interpreted Native Clay Surface Elevation

Figure 7A: Cross-Section B-B' (Interpreted geological and hydrogeological conditions) with metals analysis and exceedances

Figure 7B: Cross-Section B-B' (Interpreted geological and hydrogeological conditions) with PAH analysis and exceedances

Figure 7C: Cross-Section B-B' (Interpreted geological and hydrogeological conditions) with PHC analysis and exceedances

Figure 8A: Cross-Section D-D' (Interpreted geological and hydrogeological conditions) with metals analysis and exceedances

Figure 8B: Cross-Section D-D' (Interpreted geological and hydrogeological conditions) with PAH analysis and exceedances

Figure 8C: Cross-Section D-D' (Interpreted geological and hydrogeological conditions) with PHC analysis and exceedances

Figure 8D: Cross-Section D-D' (Interpreted geological and hydrogeological conditions) with Groundwater analysis and exceedances

Figure 9: Conceptual Site Model Potential Receptor Pathways (Pre-Remediation)

Figure G2: Final Bottom Elevation and Extent of Remedial Excavation

Figure G4: Extent of PHC Remediation at TP14-15 (PHC F1-F4 + BTEX)

Figure G5: Cross-Section B (RSC #1 Remediation) – B' (RSC #1 Remediation)

Figure G6: Cross-Section D (RSC #1 Remediation) – D' (RSC #1 Remediation)

The figures were prepared using data from the RSC Property however where applicable, data from areas of Property adjacent to the RSC Property were used to supplement the groundwater flow direction contours (Figures 2A and 2B), the debris fill thickness (Figures 4A, 4B and 4C) and the interpreted native silty clay elevation (Figure 6).

Physical Setting

The RSC Property is the southern portion of 175 Main Street in Ottawa, Ontario as shown on Figure 1A and has an area of 2.9 hectares (7.0 acres). The RSC Property is part of the landscaped lawns surrounding the main Oblates Residence (Deschâtelets) complex which is located to the North. The surrounding properties include residential, community, institutional and parkland, as summarized below:

- **North:** Deschâtelets building and associated lawns and driveways.
- **West:** St. Paul University campus followed by Main Street, residential houses and some retail and office buildings.
- **South:** Clegg Street followed by sports fields and residential houses.
- **East:** Rideau River (with 30 m buffer).

Topography and Drainage

The RSC Property topography slopes slightly downwards towards the Rideau River to the east. Surface water runoff at the Site is towards catch basins connected to the municipal storm sewer system, or overland towards the Rideau River.

Environmentally Sensitive Areas

Based on the soil analytical results, the pH of soil was measured to be between 6.99 and 7.63. Golder is not aware of the confirmed presence of any species at risk or their associated habitats at the Site. As such, the RSC Property is not considered an environmentally sensitive area as defined by O.Reg. 153/04 (as amended).

Shallow Soil Property or Water Body

Based on the information obtained from the Phase Two ESA and the geotechnical investigations completed at the Site, bedrock was not encountered within 20 mbgs. According to O.Reg.153/04 as amended, "shallow soil property" means a property of which 1/3 or more of the area consists of soil equal to or less than 2 metres in depth beneath the soil surface, excluding any non-soil surface treatment such as asphalt, concrete or aggregate. As such, based on the aforementioned considerations, the Site is not considered a shallow soil property.

The Rideau River is located greater than 30 metres east of the Site. As such, the Site does not include all or part of a water body and is not adjacent to a water body or include land that is within 30 metres of a water body.

Summary of Historical Site Use

The RSC Property is the southern portion of 175 Main Street and is comprised of landscaped lands (associated with the Deschâtelets building which is located to the north). The original Oblates Residence (Deschâtelets) building to the north of the RSC Property was built in 1885 and building additions/extensions were added to the main Deschâtelets building throughout the 1920s, 1940s, 1948, 1950, and 1958. It is assumed that during this timeframe the RSC Property would have been grassed and landscaped as the yard to the main residence.

A cemetery, which was removed in 1975/76, was located in the southwest corner of the RSC Property. A former structure use as a residence for the Oblates priests was located in the north east section of the RSC Property. A tennis court was present in the western section of the RSC Property.

North of the RSC Property general convent vehicle maintenance including oil changes and minor repairs were performed in a small garage building attached to the northwest side of the Deschâtelets building. The garage was in operation since the 1940s until 2015. A historical gasoline UST was previously located at the north part of the Property and west of the laundry/workshop building, which was used to fuel the vehicles of the convent's residents. Neither of these Potentially Contaminating Activities (PCAs) were interpreted to be APECs for the RSC Property due to the distance from the Site and they were inferred to be cross gradient from the Site in terms of groundwater flow direction.

Seven transformers were also located north of the RSC Property, four were pole mount transformers near the laundry/workshop building and three were reportedly located in a transformer vault in the basement of the main building. The transformers were not interpreted to be APECs for the Site due to the distance separating them from the Site and they were inferred to be cross gradient from the Site.

Two diesel containing ASTs were also identified north of the RSC Property. One of the ASTs was used to fuel the backup generator and the other AST was used to fuel landscape and maintenance equipment. The ASTs on the Property were not interpreted to be APECs for the Site due to the distance separating them from the Site and they were inferred to be cross gradient from the Site.

Potable Water Wells

No potable water wells are located on or within 250 metres of the RSC Property.

Subsurface Utilities

No utility drawings are available for the Site. Given that no groundwater impacts were identified it is considered that there are no preferential pathways for contaminant migration on the Site associated with the presence of subsurface utilities.

Geological Conditions

In general, the subsurface conditions encountered at the Site consist of topsoil, underlain by a layer of fill followed by native soils (silty clay). The topsoil thickness is greatest in the western portion of the Site, and typically is about 0.1 to 0.3 metres thick. Fill at the Site can be further categorized into soil fill and debris fill, and the total fill thickness (soil fill and debris fill) ranges from approximately 0.9 to 8 metres. The total thickness of the fill increases from the west to the east, with the thickest fill encountered in the east portion of the Site (up to 8 metres).

The soil fill layer is present mainly in the western part of the Site, whereas the debris fill layer underlies only the eastern portion of the Site. In the western part of the Site, the soil fill layer generally consists of silty sand and is typically about 1 to 1.5 metres thick. In the eastern portion of the Site, the debris fill layer ranges in thickness from approximately 0.4 to 8 m (being thickest at the eastern portion of the Site), and is comprised of a mixture of silty sand and debris/refuse consisting of ash, wood, plastic, wire, paper, brick fragments, asphalt pieces, concrete, metal fragments and/or glass. Where the soil fill layer is discontinuously present beneath the debris fill, it ranges in thickness from 0 metres (i.e., not present) to up to approximately 2.4 metres, although it is typically less than 1.5 metres in thickness. In some localized areas in the east part of the Site, a layer of soil fill overlies the debris fill.

The upper portion of the silty clay with sand seams is inferred to represent the shallow water bearing unit located between 1.07 and 8 mbgs. The underlying silty clay layer is inferred to represent an aquitard that limits the potential for downward migration of potential groundwater impacts at the Site.

Based on the Ontario base maps the bedrock at the Site is shale and the depth to the bedrock is expected to range between 15 and 25 metres. Bedrock was encountered at approximately 31 mbgs in BH15-3. No groundwater seepage was observed in any of the test pits completed at the Site. The shallow groundwater was encountered in the upper portion of the native silty clay.

Physical Hydrogeology

■ Groundwater Levels

Static groundwater levels for the Property were measured in the three shallow monitoring wells (MW14-3, MW14-210B and MW14-211) and one shallow standpipes (MW14-213B) and in the three deeper standpipes (MW14-210A, MW14-212A and MW14-213A) on September 9, 2014. The water levels measured in the shallow monitoring wells and standpipes were between 1.82 mbgs and 5.83 mbgs and the water levels measured in the deeper standpipes installed in the silty sand were between 5.43 mbgs and 7.53 mbgs. Based on the water level measurements on September 9, 2014, the groundwater elevations at the shallow monitoring wells and standpipes were between 63.94 mASL and 58.06 mASL and at the deeper standpipes installed in the silty sand were between 57.68 mASL and 58.23 mASL. Water levels were measured more than 24 hours after the well development. The groundwater elevations based on the measurements taken on September 9, 2014 and the interpreted shallow and deeper groundwater flow directions are shown on Figures 2A and 2B. Note that the groundwater flow directions are supplemented by groundwater data from the Property where applicable.

■ Groundwater Flow Directions

Based on the water level measurements on September 9, 2014, the shallow and deeper groundwater flow direction at the Site has been interpreted to be to the east, towards the Rideau River that runs along the east Property boundary. Seasonal fluctuations in water levels on the Site are anticipated.

■ Horizontal Hydraulic Gradients

Shallow groundwater

The average horizontal hydraulic gradient was calculated based on the water level contours presented in Figure 2. The average horizontal hydraulic gradient in the shallow groundwater is 0.026 m/m.

Given that no groundwater impacts were identified in the monitoring wells installed as part of the Phase II ESA, the physical and chemical properties of the COCs, and that the underlying silty clay layer is inferred to represent an aquitard that limits the potential for downward migration of potential groundwater impacts at the Property, no deeper monitoring wells were installed at the Property as part of the Phase Two ESA as no impacts to the deeper groundwater are expected.

Deeper standpipes were installed in the geo-environmental boreholes within the silty sand layer for geotechnical purposes, which were used to calculate the horizontal gradient in the deeper groundwater and the vertical gradient.

Deeper Groundwater

The average horizontal hydraulic gradient in the deeper groundwater within the silty sand is 0.0014 m/m.

■ *Vertical Hydraulic Gradient*

The vertical hydraulic gradients were calculated for all standpipe pairs (shallow and deeper) located within the overburden based on the groundwater elevations measured on September 9, 2014 and the distance between the mid points of the deeper and shallow standpipe screen. The calculated vertical hydraulic gradients ranged from 0.39 (at MW14-208A and MW14-208B located on the Property, north of the Site) to 0.01 (at MW14-213A and MW14-213B, located on the Site). The calculated vertical hydraulic gradients at all standpipe pairs were downward (or recharging) with the exception of MW14-213A/B based on groundwater elevations on September 9, 2014.

■ *Groundwater Velocity*

Shallow Groundwater

Based on an assumed hydraulic conductivity of 1×10^{-7} to 1×10^{-8} m/s for the upper portion of the silty clay with sandy seams, horizontal hydraulic gradient of 0.026 m/m and a porosity of 35% (for silty clay), the average linear shallow groundwater velocity is estimated to range from 0.24 m/yr to 0.024 m/yr.

Deeper Groundwater

Based on an assumed hydraulic conductivity of 1×10^{-5} m/s for the silty sand, horizontal hydraulic gradient of 0.0014 m/m and a porosity of 30% (for silty clay), the average linear groundwater velocity within the silty sand layer is estimated to be about 1.5 m/yr.

Proposed Buildings and Other Structures

Future use at the Site is understood to consist of residential development, including singles, townhomes and two condominiums as shown on Figure 1B. Below grade structures include single storey basements for the residential homes and below grade parking at the condominiums.

Potentially Contaminating Activities and Areas of Potential Environmental Concern

The following table summarizes the PCAs that resulted in APECs identified in the Phase One ESA based on the available information. Figure 1A shows the locations of the identified APECs and PCAs.

APEC / PCA ID	Location of APEC / PCA	Potentially Contaminating Activity (PCA) and Description of the Activity	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern
APEC 1 (PCA 14) – Presence of fill of unknown composition and quality	Across the majority of the Site	**#30** Importation of Fill Material of Unknown Quality. Fill containing construction debris, asphalt, concrete, brick, and potentially some refuse was reportedly placed across the Property to prevent flooding.	On-site	PHCs, BTEX, PAHs, metals, As, Sb, Se, Hg, Cr (VI)
APEC 2 (PCA 13) – Former St. Paul dump adjacent (west), may have extended onto the Site	Adjacent to the west of the Site, potentially extending on to the Site.	**#58** Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners. The former St. Paul University dump was reportedly located on the adjacent lands west of the Site and potentially may have extended onto the Site.	Off-Site potentially extending On-Site	PHCs, BTEX, PAHs, metals, As, Sb, Se, Hg, Cr (VI)

Notes:
PHC F1-F4 – petroleum hydrocarbon fractions F1 to F4
BTEX – benzene, toluene, ethylbenzene, xylenes
VOC – volatile organic compounds (include BTEX)
PAHs – Polycyclic Aromatic Hydrocarbons
UST – underground storage tank
AST – above ground storage tank

Findings of the Phase Two ESA with respect to the APECs and associated PCAs

To address the APECs and PCAs identified at the Site, soil and groundwater sampling and analysis for potential COCs was completed as part of this Phase Two ESA. MOECC Table 3 Standards (April 15, 2011) were used to compare the soil and groundwater analytical results. A summary of the findings of the Phase Two ESA with respect to the APECs and associated PCAs identified by the Phase One ESA with respect to the Site is provided in the table below. Findings related to APECs for the Property are included for reference purposes only.

Phase Two ESA Findings with respect to the Site (RSC #1) APECs and PCAs identified by Phase One ESA

Area of Potential Environmental Concern (APEC)	Borehole/ Monitoring Well/ Test Pit/ Trench ID	COCs Laboratory Analysis	Soil and/or Groundwater Exceedances of 2011 MOECC Table 3 Standards
APECs relating to the Site (RSC #1)			
APEC 1 - Presence of fill containing construction debris, asphalt, concrete	BH14-3	GW: PHCs F1 to F4, BTEX, PAHs, metals, CrVI and Hg	None
	TP BJ, TP14-10, TP14-12, TP14-15	Soil: PHCs F1-F4, BTEX, PAHs and metals	Metals and PAHs, and PHC F3
	TP15-201, BH14-213, TP AH, TP AJ, TP AK, TPG14/E1	Soil: Metals, PAH	Metals and PAHs
	BH14-211	Soil: Metals, PAHs	Metals and PAHs
		GW: PHCs F1 to F4, BTEX, PAHs, metals, CrVI and Hg	None
	BH15-101	Soil: Metals, PAHs	Metals and PAHs
		GW: PHCs F1 to F4, VOC, PAHs, metals, CrVi and Hg	None
	BH16-02	GW: PAHs and metals	None
APEC 1 and APEC 2 - Presence of fill containing construction debris, asphalt, concrete and former St Paul dump	BH14-210 (MW14-210B)	GW: PHCs F1 to F4, BTEX, PAHs, metals, CrVi and Hg	None
	TP AG	Soil: Metals, PAHs	None
	BH15-4	GW: Metals, PAHs	None
	TP AF	Soil: Metals, PAHs, PHCs F1 to F4, BTEX	None
	BH15-100	Soil: Metals, PAH	None
		GW: PHCs F1 to F4, VOC, PAHs, metals, CrVi and Hg	None

GW: Groundwater

The results of this Phase Two ESA indicate that some of the historical activities and practices on Site and on surrounding lands have impacted soil quality at the Site as follows:

- **APEC 1 –** The presence of fill containing construction debris, asphalt, concrete in the eastern and southern sections of the Property.

  Metals, PAHs, and/or PHC F3 exceedances in soil were identified in the debris fill layer at the test pits and boreholes completed at the Site. One (1) vanadium (metal) exceedance in a duplicate sample only was noted in the native soil but is believed to be naturally occurring and described in detail in further sections of this report and in section 3.1 of Appendix G. No other impacts were identified in the native soil or groundwater.

- **APEC 2 –** The former St. Paul dump was not indicated to extend onto the Site. No exceedances were identified in the test pits / boreholes / monitoring wells that were advanced / installed to investigate this APEC.

Vapour intrusion was not investigated as part of this Phase Two ESA as it is not considered to be a concern for the Site.

Summary of Current On-Site Conditions For RSC #1

- The following is a summary of the soil conditions at the Site based on the results of the Phase Two ESA by stratigraphic layer:
  - *Topsoil* – One (1) soil sample out of the seven (7) samples analyzed for PAHs and/or metals marginally exceeded MOECC Table 3 Standards for PAHs (two PAH parameters). No metal exceedances were identified in the topsoil.
  - *Debris Fill layer* – one (1) soil sample of the four (4) samples analyzed for PHCs F1 to F4 and BTEX exceeded MOECC Table 3 Standards for PHC F3; seven (7) of the thirteen (13) soil samples analyzed for metals exceeded MOECC Table 3 Standards for lead, antimony, cobalt, vanadium, barium and/or mercury; and nine (9) of the thirteen (13) samples analyzed for PAHs exceeded MOECC Table 3 Standards for PAHs (up to eleven PAHs parameters).
  - *Soil Fill layer* – no exceedances were identified in any of the soil samples collected from the soil fill layer and submitted for laboratory analysis – one (1) soil samples analyzed for PHCs F1 to F4 and BTEX, seven (7) samples analyzed for metals and PAHs, and 2 analyzed for pH.
  - *Native Silty Clay layer* – one (1) metals exceedance (vanadium in the duplicate sample only), interpreted to be naturally occurring (see Section 3 for details), was identified in the soil samples collected from the native soil and submitted for laboratory analysis – one (1) sample analyzed for PHCs F1 to F4 and BTEX, six (6) samples analyzed for metals and five (5) samples analyzed for PAHs.
- Groundwater conditions at the Site: Groundwater sampling completed at the Site indicated that the concentrations of the PHCs F1 to F4, BTEX, PAHs and metals in each of the groundwater samples were below the applicable MOECC Table 3 Standards. This included nine (9) metals samples, eight (8) PAH samples, six (6) PHC samples and two (2) VOC samples. As such, the groundwater is not contaminated in terms of the regulation. The results indicated that the groundwater has not been impacted by the debris fill.

- The results of the Phase Two ESA indicate that PAHs, metals and isolated PHC F3 impacts are generally limited to the debris fill layer found on the eastern and southern sections of the Site. A single PAH exceedance in the topsoil layer was identified and a single exceedance of vanadium (metal) was identified in the native silty clay layer. As discussed in Appendix G, Section 3.1, the presence of vanadium in the silty clay has been interpreted to be naturally occurring and not as a result of a PCA.
- The discontinuous soil fill layer beneath the debris fill layer and the native soil are not impacted. Given that no impacts were identified in the native silty clay layer beneath the soil fill layer and/or beneath the debris fill layer, that no impacts were identified in the groundwater at the Site, and the widespread presence of metal and PAHs impacts in the debris fill layer in the east and south parts of the Site and in a single topsoil exceedance, it is interpreted that the topsoil and the debris fill layer represent distinct horizons impacted by metals and/or PAHs, underlain by un-impacted soil fill and un-impacted native silty clay.

Meteorological and Climatic Considerations

Seasonal fluctuations in groundwater levels are expected at the Site. Based on the information obtained from this Phase Two ESA, the depth to the water table is between 1.8 mbgs and 7.5 mbgs and is located within the upper portion of the silty clay with sandy seams. The groundwater analytical results from the Phase Two ESA did not identify COCs exceeding the applicable MOECC Table 3 Standard, indicating that the COCs (metals, PAHs, PHCs F1 to F4, BTEX) identified in the debris fill layer have not migrated to the groundwater during seasonal groundwater level fluctuations when higher groundwater levels can be expected (during spring). In addition, given the relatively low water solubility of the COCs and that the debris fill layer where most of the exceedances were found is underlain by a silty clay deposit limiting the potential for downward migration of groundwater impacts, it is considered that the potential for migration of the identified COCs into groundwater is low. As such, based on the aforementioned considerations, it is considered that temporal fluctuations in the groundwater levels due to variable effects of climatic or meteorological conditions would not influence the distribution and migration of potential COCs identified in the debris fill layer.

Potential Exposure Pathways and Receptors

Potential human receptors at the Site might include outdoor workers and construction workers, teen and adult residents and visitors to the Site. Potential ecological receptors might include terrestrial plants, mammals, birds and soil invertebrates. Exposure pathways for potential human receptors include ingestion, dermal contact with contaminated soil, inhalation of soil particulates, inhalation of indoor and outdoor air or inhalation of air in trenches for construction worker receptors. The exposure pathways for potential ecological receptors include direct/dermal contact, root/direct uptake and/or ingestion.

Given that no groundwater exceedances above the applicable MOECC Table 3 Standards were identified in groundwater, there are no potential exposure pathways associated with contaminated groundwater.

The above identified potential exposure pathways and receptors are based only on a preliminary evaluation, which is provided in Figure 9, as such, the release mechanisms, potential exposure pathways, and receptors may change upon a completion of a risk assessment for the Site (should a future one be completed). Detailed evaluation of potential exposure pathways and receptors is beyond the scope of the Phase Two ESA work and, as such, it was not performed as part of this Phase Two ESA report.

7.0 CONCLUSIONS

A Phase Two ESA was carried out at the Phase Two Property in general accordance with O.Reg. 153/04 to address the APECs identified in the Phase One ESA completed for the Property. The two (2) APECs identified at the Site are as follows: presence of fill containing construction debris, asphalt, concrete and potentially at the Site (APEC 1) and presence of the former St. Paul University Dump on the lands adjacent to the southwest of the Property, with the potential to have extended onto the Property (APEC 2).

The Phase Two Site (RSC #1) is only a portion of the Property and, as such, not all APECs identified for the Property are APECs for the Site. Other PCAs and APECs are located off Site and generally are down to cross gradient from the Site (see Section 3.2.1 for a detailed discussion of the APECs that are applicable to the Site).

Based on the completed scope of work and results of the Phase Two ESA, the following summary and conclusions are provided:

- Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, coarse-textured soil, April 15, 2011 are considered applicable and were used to assess the environmental quality of soil and groundwater at the Site;
- In general, the subsurface conditions encountered at the Site consist of topsoil, underlain by a layer of fill followed by native soils (silty clay). The topsoil thickness is greatest in the western portion of the Site, and typically is about 0.1 to 0.3 metres thick. Fill at the Site can be further categorized into soil fill and debris fill, and the total fill thickness (soil fill and debris fill) ranges from approximately 0.9 to 8 metres. The total thickness of the fill increases from the west to the east, with the thickest fill encountered in the east portion of the Site (up to 8 metres).
- The soil fill layer is present mainly in the western part of the Site, whereas the debris fill layer underlies only the eastern portion of the Site. In the western part of the Site, the soil fill layer generally consists of silty sand and is typically about 1 to 1.5 metres thick. In the eastern portion of the Site, the debris fill layer ranges in thickness from approximately 0.4 to 8 m (being thickest at the eastern portion of the Site), and is comprised of a mixture of silty sand and debris/refuse consisting of ash, wood, plastic, wire, paper, brick fragments, asphalt pieces, concrete, metal fragments and/or glass. Where the soil fill layer is discontinuously present beneath the debris fill, it ranges in thickness from 0 metres (i.e., not present) to up to approximately 2.4 metres, although it is typically less than 1.5 metres in thickness. In some localized areas in the east part of the Site, a layer of soil fill overlies the debris fill.
- A summary of the soil conditions at the Site based on the results of the Phase Two ESA by stratigraphic layer is as follows:
  - *Topsoil* – one (1) soil sample out of the seven (7) samples analyzed for PAHs and/or metals marginally exceeded MOECC Table 3 Standards for PAHs (two PAH parameters). No metal exceedances were identified in the topsoil;
  - *Debris Fill layer* – one (1) soil sample of the four (4) samples analyzed for PHCs F1 to F4 and BTEX exceeded MOECC Table 3 Standards for PHC F3; seven (7) of the thirteen (13) soil samples analyzed for metals exceeded MOECC Table 3 Standards for lead, antimony, cobalt, vanadium, barium and/or mercury; and nine (9) of the thirteen (13) samples analyzed for PAHs exceeded MOECC Table 3 Standards for PAHs (up to eleven PAHs parameters).

- *Soil Fill layer* – no exceedances were identified in any of the soil samples collected from the soil fill layer and submitted for laboratory analysis – one (1) soil samples analyzed for PHCs F1 to F4 and BTEX, seven (7) samples analyzed for metals and PAHs, and 2 analyzed for pH.
- *Native Silty Clay layer* – one (1) metals exceedance (vanadium in the duplicate sample only, interpreted to be naturally occurring, see Section 3.1, Appendix G) was identified in the soil samples collected from the native soil and submitted for laboratory analysis – one (1) sample analyzed for PHCs F1 to F4 and BTEX, six (6) samples analyzed for metals and five (5) samples analyzed for PAHs.

- Groundwater conditions at the Site: Groundwater sampling completed at the Site indicated that the concentrations of the PHCs F1 to F4, BTEX, PAHs and metals in each of the groundwater samples were below the applicable MOECC Table 3 Standards. This included nine (9) metals samples, eight (8) PAH samples, six (6) PHC samples and two (2) VOC samples. As such, the groundwater is not contaminated in terms of the regulation. The results indicated that the groundwater has not been impacted by the debris fill.
- The results of the Phase Two ESA indicate that PAHs, metals and isolated PHC F3 impacts are limited to the debris fill layer found on the eastern and southern sections of the Site. A single PAH exceedance in the topsoil layer was identified. Given that no impacts were identified in the native silty clay layer beneath the soil fill layer and/or beneath the debris fill layer, that no impacts were identified in the groundwater at the Site, and the widespread presence of metal and PAHs impacts in the debris fill layer in the east and south parts of the Site and in a single topsoil exceedance, it is interpreted that the topsoil and the debris fill layer represent distinct horizons impacted by metals and/or PAHs, underlain by un-impacted soil fill and un-impacted native silty clay.
- The monitoring wells installed on the Site as part of the Phase Two ESA should be decommissioned in accordance with Ontario Regulation 903 if no longer required.

8.0 LIMITATIONS

This report was prepared for the exclusive use of Greystone Village Inc. The report, which specifically includes all tables, figures and appendices, is based on data and information collected during conducting the both stages of Phase Two ESA, and is based solely on the conditions of the property at the time of conducting investigations, supplemented by historical information and data obtained by Golder Ltd. as described in this report.

The assessment of environmental conditions at this Site has been made using the results of field screening techniques and chemical analysis of soil and groundwater samples at a limited number of locations. The Site conditions between sampling locations have been inferred based on conditions observed at the sampling locations. Conditions may vary from these sample locations. Additional study, including further 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 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 the drilling, soil, and groundwater sampling activities, our present understanding of the Site conditions, and our professional judgement in light of such information at the time of this report. This report provides a professional opinion and therefore no warranty is 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 Ltd. should be requested to re-evaluate the conclusions of this report, and to provide amendments as required.

The monitoring wells installed as part of this project have been constructed using licensed drilling/well contractors employing licensed well technicians. It is the owner's responsibility to have a licensed well technician properly abandon all monitoring wells if required.

9.0 SIGNATURES

The undersigned Qualified Person confirms that he/she was responsible for conducting and/or supervising this Phase Two ESA and the associated findings and conclusions.

We trust that you will find the contents of this report satisfactory for your current needs. Should you require clarification of the information provided, please do not hesitate to contact the undersigned.

GOLDER ASSOCIATES LTD.

Paul Hurst, P.Eng. QP
Environmental Consultant

Paul Smolkin, P.Eng.
Principal

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Phase One Environmental Site Assessment, Phase One Environmental Site Assessment, Oblates Property, 175 Main Street, Ottawa, Ontario", prepared by Golder for Regional, dated November, 2014.

Table 1: Groundwater Monitoring Well Construction Details
Oblates Property, 175 Main Street, Ottawa, Ontario

RSC #	Monitoring Well ID	Ground Surface Elevation (mASL)	Borehole Depth (mbgs)	Screen Interval (mbgs)	Screen Interval Elevation (mASL)	Sand pack depth interval (mbgs)	Bentonite depth intervals (mbgs)	Lithology at Screen	Date of Completion
1	MW14-3	64.467	27.74	2.4-5.4	62.07-59.07	2.1-5.9	1.5-2.1	Silty clay with silty sand seams, grey brown to grey (native)	24-Mar-14
	MW14-210B	65.758	25.3	2.0-5.0	63.76-60.76	1.5-5.5	0.8-1.5	Silty sand to sand, clayey silt , and silty clay (native)	11-Aug-14
	MW14-211	63.89	7.92	3.7-6.7	60.23-57.19	3.1-7.3	2.4-3.1	FILL - silty sand to clayey silt, silty clay, trace gravel; grey to black, with cinders and ash	18-Aug-14
	BH15-4	65.12	30.73	11.3-12.8	53.82-52.32	10.9-14.0	8.4-10.9	Silty sand to sand with silt, grey (native)	09-Mar-15
	BH15-100	65.08	12.8	9.1-12.2	55.98-52.88	8.6-12.2	7.0-8.6	Silty clay to clay, grey (native)	16-Mar-15
	BH15-101	63.13	9.75	6.1-9.2	57.03-53.98	5.5-9.2	4.0-5.5	Spanning: 1. FILL - silty sand some gravel; dark grey with wood, brick, mortar and ash 2. Silty clay, grey brown (native)	17-Mar-15
	BH16-02	NA	6.1	3.0-6.1	NA	2.8-6.1	0.3-2.8	FILL - silty sand to sandy silt, brown with brick and ash	18-Feb-16
2	BH14-2	64.46	9.75	NA (Standpipe)		7.0-8.3	6.1-7.0	Silty clay, grey with black mottling (native)	25-Mar-14
	MW14-208C	64.969	24.38	2.0-5.0	62.97-59.97	1.47-5.0	0.3-1.5	Silty sand to silty clay, clayey silt (native)	11-Aug-14
	BH15-102	63.56	9.75	6.1-9.2	57.46-54.36	5.5-9.2	4.0-5.5	Spanning: 1. FILL - sand, medium to fine, brown 2. Silty clay to clay, trace sand, grey (native)	16-Mar-15
	BH16-01	NA	7.62	4.5-7.6	NA	4.3-7.6	0.3-4.3	Spanning: 1. FILL - silty clay, grey 2. Clay, grey with black mottling (native)	18-Feb-16
3	BH14-1	59.246	22.83	1.5-4.5	57.75-54.75	1-5.20	0.0-1.0	Silty clay with silty sand seams, grey brown to grey (native)	26-Mar-14
	BH14-101C	64.05	6.1	3.1-6.1	60.95-57.95	2.7-6.1	2.1-2.7	Silty clay, grey brown to grey (native)	26-Mar-14
	BH15-103	63.36	7.62	4.5-7.6	58.86-55.76	4.0-7.6	2.7-4.0	Silty clay, grey brown to grey (native)	18-Mar-15
	BH15-104	59.84	6.71	3.0-6.1	56.84-53.74	1.2-6.1	0.0-1.2	Silty clay, grey (native)	17-Mar-15
	BH15-105	63.31	5.94	3.0-5.9	60.31-57.41	2.4-5.9	1.8-2.4	Silty clay, grey brown to grey (native)	18-Mar-15
	BH15-106	58.91	6.71	3.0-6.1	55.91-52.81	2.4-6.1	2.1-2.4	Silty clay, grey with rusty brown mottling (native)	17-Mar-15
	BH15-107	64.62	6.1	3.0-6.1	61.62-58.52	2.5-6.1	1.8-2.5	Silty clay, grey brown (native)	18-Mar-15

Notes:
1. mbgs = metres below ground surface
2. mASL = metres above sea level
NA = Not available

Prepared by: TL
Checked by: SRH

Table 2: Groundwater Levels and Elevations
Oblates Property, 175 Main Street, Ottawa, Ontario

RSC #	Monitoring Well/ Standpipe	Depth to Groundwater below TOP (mbTOP), April 3, 2014	Depth to Groundwater below TOP (mbTOP), August 26, 2014	Depth to Groundwater below TOP (mbTOP), September 9, 2014	Depth to Groundwater below ground surface (mbgs), September 9, 2014	Depth to Groundwater below ground surface (mbgs), March 24, 2015	Ground surface elevation (mASL)	Calculated Groundwater Elevation (mASL), September 9, 2014	Calculated Groundwater Elevation (mASL), March 24, 2015
1	MW14-3	4.96	5.76	5.45	4.49	-	64.467	59.98	-
	MW14-210A**	-	8.5	8.47	7.53	-	65.758	58.23	-
	MW14-210B	-	4.09	2.76	1.82	-	65.758	63.94	-
	MW14-211	-	6.76	6.74	5.83	-	63.89	58.06	-
	MW14-212A	-	7.96	8.03	7.18	-	65.143	57.96	-
	MW14-212B**	-	3.58	Not measured	-	-	65.143	-	-
	MW14-213A**	-	6.03	6.2	5.43	-	63.11	57.68	-
	MW14-213B**	-	6.2	6.26	5.56	-	63.11	57.55	-
	MW15-100	-	-	-	-	7.755	65.08	-	57.325
	MW15-101	-	-	-	-	6.035	63.13	-	57.095
2	MW14-2**	7.12	6.12	6.18	5.46	-	64.456	58.996	-
	MW14-208A**	-	6.73*	6.79*	6.79	-	64.926	58.14	-
	MW14-208B**	-	4.05*	4.05*	4.05	-	64.926	60.88	-
	MW14-208C	-	4.76	3.3	2.38	-	64.969	62.59	-
	MW15-102	-	-	-	-	6.206	63.56	-	57.354
3	MW14-1	4.65	3.89	2.74	1.86	-	59.246	57.39	-
	MW14-101C	4.25	4.68	3.79	3.16	-	64.05	60.89	-
	MW14-205A**	-	6.48*	6.45*	6.45	-	64.285	57.84	-
	MW14-205B**	-	3.27*	3.09*	3.09	-	64.285	61.2	-
	MW14-209A**	-	6.93*	6.79*	6.79	-	64.72	57.93	-
	MW14-209B**	-	2.66*	2.15*	2.15	-	64.72	62.57	-
	MW15-103	-	-	-	-	4.83	63.36	-	58.53
	MW15-104	-	-	-	-	2.575	59.84	-	57.265
	MW15-105	-	-	-	-	2.88	63.31	-	60.43
	MW15-106	-	-	-	-	2.945	58.91	-	55.965
	MW15-107	-	-	-	-	2.745	64.62	-	61.875

Notes:

mbTOP: metres below Top Of Pipe

mASL: metres above sea level

* Metres below ground surface

******- standpipes installed for geotechnical purposes

A- deep

B-shallow

C-shallowest monitoring well installed for environmental purposes

Prepared by: MS / TL

Checked by: BM / SRH

Table 3: Soil Data Details for Samples Submitted for Analysis
Oblates Property, 175 Main Street, Ottawa, Ontario

RSC #	Area of Potential Environmental Concern (APEC)	Sample Location	Sample ID	Soil Sample ID, Depth Interval (mbgs) and soil type	Date of Sample Collection	PID reading (ppm)	Odour, staining or waste observed	Rationale for selecting the soil sample for laboratory analysis	Parameters Analysed	Maxxam Analytical Report Reference Number	MOE Table 3 [(1)] Exceedances
1	**APEC 1 and APEC 2-** Former St. Paul University dump located on adjacent lands southwest of the Property and presence of fill containing construction debris, asphalt, concrete and potentially some refuse in the south part of the Property associated with the dump.	Test pits completed in the south and southeast parts of the Property to investigate the fill quality, composition and thickness	TP14-10	SA2 - 0.60-1.60 (FILL with debris) SA2A- duplicate of SA2	31-Mar-14	0.5	Ash, pieces of brick, wood, glass	The sample is considered to be "worst case". The soil sample was collected from the fill layer where ash and debris were observed and was submitted for analysis to characterize the fill quality.	PHCs F1-F4, BTEX, PAHs and metals	R2989634	**Antimony, lead**
			TP14-12	SA4- 2.0-2.7 (FILL with debris)	31-Mar-14	0.7	Some coal ashes, fragments of concrete blocks, brick, wood	The sample is considered to be "worst case". The soil sample was collected from the fill layer where ash and debris were observed and was submitted for analysis to characterize the fill quality.	PHCs F1-F4, BTEX, PAHs and metals	R2989634	**PAHs**
			TP14-15	SA5-3.0-3.6 (FILL with debris)	31-Mar-14	4.2	Brick fragments, ashes and cinders	The sample is considered to be "worst case". The soil sample was collected from the fill layer where ash and debris were observed and was submitted for analysis to characterize the fill quality.	PHCs F1-F4, BTEX, PAHs, metals, pH	R2989634	**PAHs, PHC F3**
				SA6-4.05-4.35 (native soil-silty clay/clayey silt)	31-Mar-14	9.1	None	To vertically delineate soil impacts (if identified in SA5), to investigate if the native soil is impacted and the potential for presence of naturally occuring metals in the native silty clay in concentrations exceeding MOE Table 3 Standards.	Metals	R2989634	None[2]
		Western section of RSC #1	BH15-100	SA1-0.76-1.37 sand (FILL)	16-Mar-15	0.0	None	To have spatial coverage of the Property and to collect and submit for laboratory analysis additional samples from native soil in order to better characterize the quality of the native soil and to demonstrate that native soil is not impacted by the debris fill.	Metals and PAHs	R3373376	None[2]
				SA2-1.52-2.13 silty clay (native soil) DUP-2-duplicate of SA2	16-Mar-15	0.0	None		Metals and PAHs	R3373376	**Vanadium (duplicate only)**
	APEC 1 and PCA 7 Presence of fill containing ash and building rubble across the Property	Borehole completed in the southeast part of the Property	BH14-211	SA2 (0.61 - 1.22) silty sand (FILL with debris)	15-Aug-2014	3.6	Ash, wood, brick fragments	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	Metals and PAHs, pH	R3136528	**Lead, PAHs**
				SA9 (4.88 - 5.49) sandy clayey silt (FILL)	15-Aug-2014	3.8	Some cinders	To characterize the quality of the fill layer that does not contain debris, waste or ash and to vertically delineate impacts if identified in the overlying fill with debris layer	Metals, PAHs	R3136528	None[2]
		Borehole completed in the southeast corner of the Property	BH14-213	SA1 (0-0.61) silty sand (FILL)	14-Aug-2014	1.9	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	pH	R3154165	None[2]
				SA5 (2.44-3.05) sand (FILL with debris)	14-Aug-2014	2.4	Ash, burnt odor	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	pH	R3154165	None[2]
				SA9 (4.88 - 5.48) sandy clayey silt (FILL with debris)	14-Aug-2014	5.9	Ash, brick fragments, black cinders	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	Metals, PAHs	R3136528	**Mercury, PAHs**
				SA11 (6.1-6.7) silty clay (native soil)	14-Aug-2014	3.3	None	To investigate potential impacts to the native soil associated with the APECs and vertically delineate impacts in the fill (if identified)	Metals, PAHs	R3136528	None[2]
		Borehole completed in the south part of the Property	BH14-217	SA8 (4.27-4.89) sandy clayey silt (FILL with debris)	18-Aug-2014	NM	Wood pieces, ash and cinders	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	pH	R3154165	None[2]
		Southeastern section of RSC #1	BH15-101	SA5-3.81-4.42 silty sand (FILL with debris)	17-Mar-15	1.4	Ash, mortar, wood, and brick	To have spatial coverage of the Property and to collect and submit for laboratory analysis additional samples from native soil in order to better characterize the quality of the native soil and to demonstrate that native soil is not impacted by the debris fill.	Metals and PAHs	R3373376	**Lead, PAHs**
				SA9-6.86-7.47 silty clay (native soil)	17-Mar-15	0.1	None		Metals and PAHs	R3373376	None[2]
		Eastern section of RSC #1	TP15-201	"Fill" 5.0-5.2 silty clay (FILL with debris)	25-Nov-15	NA	Brick, concrete, and ash	To characterize the depth and quality of fill in the area	Metals and PAHs	R3783308	**Lead, PAHs**
				"Native" 7.8-8.0 silty clay (native soil)	25-Nov-15	NA	None	To characterize the depth to native and quality of native in the area	Metals and PAHs	R3783308	None[2]

Table 3: Soil Data Details for Samples Submitted for Analysis
Oblates Property, 175 Main Street, Ottawa, Ontario

RSC #	Area of Potential Environmental Concern (APEC)	Sample Location	Sample ID	Soil Sample ID, Depth Interval (mbgs) and soil type	Date of Sample Collection	PID reading (ppm)	Odour, staining or waste observed	Rationale for selecting the soil sample for laboratory analysis	Parameters Analysed	Maxxam Analytical Report Reference Number	MOE Table 3 [(1)] Exceedances
1	**APEC 1 and PCA 7** Presence of fill containing ash and building rubble across the Property	Test pits were completed across the Property to investigate the fill thickness, composition and fill quality	TP AG	SA4 (1.5-1.6) sand (FILL)	29-Jul-2014	0.4	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	Metals, PAHs	R3127323	None[2]
			TP AH	SA2 (0.2-0.3) Ash	28-Jun-2014	0.8	Ash	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	Metals, PAHs	R3127323	None[2]
				SA3 (0.3-0.6) silty clay (FILL)	28-Jun-2014	1.1	None	To characterize the quality of the fill layer that does not contain debris, waste or ash and vertically delineate potentail impacts associated with the overlying ash layer	Metals, PAHs	R3127323	None[2]
				SA4 (0.6-1.2) silty sand (FILL)	28-Jun-2014	0.7	None	To characterize the quality of the fill layer that does not contain debris, waste or ash and vertically delineate impacts (if identified in the upper fill layer)	Metals, PAHs	R3127323	None[2]
			TP AJ	SA1 (0-0.25) Topsoil-silty sand	28-Jul-2014	0.2	None	To characterize the quality of the topsoil layer	Metals, PAHs	R3127323	**PAHs**
				SA3 (0.80-1.35) silty sand (FILL)	28-Jul-2014	0.6	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	Metals, PAHs	R3127323	None[2]
			TP AK	SA1 (0.2-0.3) Topsoil - sandy silt	29-Jul-2014	0.3	None	To characterize the quality of the topsoil layer	Metals, PAHs	R3127323	**PAHs**
				SA3 (1.20) silty sand (FILL with debris)	29-Jul-2014	1.2	Asphalt, brick	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	Metals, PAHs	R3127323	**PAHs**
			TPG14/E1	SA2 (1.00) silty sand (FILL with debris)	29-Jul-2014	0.6	trace to some asphalt, trace wood, trace paper	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	Metals, PAHs	R3127323	None[2]
			TP AF	SA1 (0.50 mbgs) silty sand (FILL)	28-Jun-2014	0.2	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	PHCs F1 to F4, BTEX	R3127323	None[2]
				SA3 (1.40 mbgs) silty sand (FILL)	28-Jun-2014	0.7	None	To characterize the quality of the fill layer that does not contain debris, waste or ash and to vertically delineate impacts if identified in the overlying fill layer.	Metals and PAHs	R3127323	None[2]
			TP BJ	SA3 (1.10-1.50) silty clay (FILL)	30-Jul-2014	0.8	some orange brick, trace decaying wood	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	Metals and PAHs	R3127323	**Metals, PAHs**
				SA5 (3.50-3.80) silty clay (native)	30-Jul-2014	0.6	some black staining	To investigate potential impacts to the native soil associated with the APECs and to vertically delineate impacts in the fill (if identified)	PHCs F1 to F4, BTEX	R3127323	None[2]
2	**APEC 1 and PCA 7** Presence of fill containing ash and building rubble across the Property	Boreholes and test pits were completed across the Property to investigate the fill thickness, composition and fill quality	BH15-102	SA3-2.29-2.90 silty sand (FILL with debris)	16-Mar-15	NA	Brick	To have spatial coverage of the Property and to collect and submit for laboratory analysis additional samples from native soil in order to better characterize the quality of the native soil and to demonstrate that native soil is not impacted by the debris fill.	Metals and PAHs	R3373376	**PAHs**
				SA8-6.10-6.71 silty clay to clay(native soil)	16-Mar-15	0.0	None		Metals and PAHs	R3373376	None[2]
			BH15-108	SA1-0.76-1.37 silty sand (FILL)	19-Mar-15	1.4	None	Collect additional subsurface information from the west part of the Property in order to better characterize the quality of the native soil and to demonstrate that native soil is not impacted by the debris fill.	Metals and PAHs	R3373376	None[2]
				SA3-2.29-2.90 silty clay (native soil)	19-Mar-15	1.2	None		Metals and PAHs	R3373376	None[2]
			BH15-109	SA1-0.76-1.37 sand (FILL with debris)	19-Mar-15	NA	Wood	Collect additional subsurface information from the west part of the Property in order to better characterize the quality of the native soil and to demonstrate that native soil is not impacted by the debris fill.	Metals and PAHs	R3373376	None[2]
				SA2-1.52-2.13 silty clay (native soil)	19-Mar-15	1.3	None		Metals and PAHs	R3373376	None[2]
			TP AP	SA3 (0.70-0.85) silty clay (FILL)	31-Jul-2014	1.6	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	Metals, PAHs	R3127323	None[2]
			TP AV	SA1 (0-0.20) Topsoil-silty sand	31-Jul-2014	3.1	None	To characterize the quality of the topsoil layer	Metals, PAHs	R3127323	None[2]
				SA3 (0.60-0.90) silt (FILL)	31-Jul-2014	7.1	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	Metals, PAHs	R3127323	None[2]
			TP BE	SA1 (0.40-0.80) silty clay (FILL with debris)	30-Jul-2014	1.1	trace orange brick and decomposing wood	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	Metals, PAHs	R3127323	None[2]
				SA2 (0.80-1.10) DUP SA2 (0.80-1.10) fine sand (FILL with debris)	30-Jul-2014	0.3	some asphalt	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	Metals, PAHs	R3127323	**PAHs**
				SA3 (1.20-1.50) silty clay (FILL)	30-Jul-2014	0.3	None	To characterize the quality of the fill layer that does not contain debris, waste or ash and to vertically delineate impacts if identified in the upper fill with debris layer	Metals, PAHs	R3127323	**Cobalt, vanadium**

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Oblates Property, 175 Main Street, Ottawa, Ontario

RSC #	Area of Potential Environmental Concern (APEC)	Sample Location	Sample ID	Soil Sample ID, Depth Interval (mbgs) and soil type	Date of Sample Collection	PID reading (ppm)	Odour, staining or waste observed	Rationale for selecting the soil sample for laboratory analysis	Parameters Analysed	Maxxam Analytical Report Reference Number	MOE Table 3 [(1)] Exceedances
2	**APEC 1 and PCA 7** Presence of fill containing ash and building rubble across the Property	Boreholes and test pits were completed across the Property to investigate the fill thickness, composition and fill quality	TP BK	SA1 (0.40-0.55) silty sand (FILL)	29-Jul-2014	1.2	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	Metals, PAHs	R3127323	None[2]
			TP R	SA2 (0.55-0.70) silty sand (FILL)	30-Jul-2014	0.1	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	Metals, PAHs	R3127323	None[2]
				SA3 (0.70-0.90) silty clay (FILL)	30-Jul-2014	0.5	None	To characterize the quality of the fill layer that does not contain debris, waste or ash and to vertically delineate impacts if identified in the upper fill with debris layer	Metals, PAHs	R3127323	None[2]
			TP T	SA2 (0.35-0.7) fine sand (FILL) DUP T SA2 (0.35-0.7) -field duplicate of SA2	31-Jul-2014	0.4	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	Metals, PAHs	R3127323	None[2]
				SA3 (0.70-0.80) silty clay (FILL)	31-Jul-2014	1.6	None	To characterize the quality of the different type of fill layer that does not contain debris, waste or ash and to vertically delineate impacts if identified in the upper fill with debris layer	Metals, PAHs	R3127323	None[2]
				SA4 (0.9-1.10) sandy silt (FILL)	31-Jul-2014	0.9	None	To characterize the quality of the different type fill layer that does not contain debris, waste or ash and to vertically delineate impacts if identified in the upper fill with debris layer	Metals, PAHs	R3127323	None[2]
			TP V	SA3 (0.55-0.80) sandy silt intermixed with fine sand (FILL)	31-Jul-2014	2.2	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	PHCs F1 to F4, BTEX	R3127323	None[2]
				SA5 (1.05-1.25) silty sand (FILL)	31-Jul-2014	2.5	None	To characterize the quality of the fill layer that does not contain debris, waste or ash and to vertically delineate impacts if identified in the upper fill layer.	Metals, PAHs	R3127323	None[2]
			TP W	SA1 (0-0.25) Topsoil-clayey silt	29-Jul-2014	4.1	None	To characterize the quality of the topsoil	Metals, PAHs	R3127323	**Fluoranthene**
			TP X	SA1 (0-0.50) Topsoil-silty sand	29-Jul-2014	0.3	None	To characterize the quality of the topsoil	Metals, PAHs	R3127323	**PAHs**
				SA2 (0.50-0.95) Silty sand to sandy silt (FILL)	29-Jul-2014	0.3	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	Metals, PAHs	R3127323	None[2]
			TR BN	SA1 (0.1-0.4) silty clay (FILL with debris)	01-Aug-2014	0.5	trace asphalt	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	Metals, PAHs	R3127323	None[2]
				SA3 (1.0-1.5) silty sand (FILL with debris)	01-Aug-2014	0.3	trace wood	To characterize the quality of the fill layer containing debris, waste or ash.	Metals, PAHs	R3127323	None[2]
			TP BM	SA2 (0.40-0.65) silty clay (FILL)	30-Jul-2014	17.2	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	Metals and PAHs	R3127323	None[2]
				SA3 (0.65-1.20) silty sand (FILL with debris)	30-Jul-2014	4.4	25 mm iron pipe and 100 mm clay pipe encountered at 1.0 mbgs	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	PHCs F1 to F4, BTEX	R3127323	None[2]
			TP S	SA1 (0-0.45) Topsoil - silty sand	29-Jul-2014	8.6	None	To characterize the quality of the topsoil	Metals and PAHs	R3127323	None[2]
				SA2 DUP/S SA2 (0.45-0.70) sandy silt (FILL) SA2 DUP/S SA2 (0.45-0.70) (Field Duplicate)	29-Jul-2014	6.2	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	Metals, PHCs F1 to F4, BTEX and PAHs	R3127323	None[2]
			TR N	SA3 (1.3-1.7) silty clay (FILL with debris)	01-Aug-2014	NM	Asphalt and brick	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	PHC F1 to F4, BTEX	R3127323	None[2]
3	**PCA 6-** Former presence of fuel UST	Environmental borehole completed in the vicinity of the former UST	BH14-101C	SA 5 - 3.81-4.42 (native soil-silty clay)	26-Mar-14	0.9	None	The soil sample was collected from near the water table zone where potential impacts due to presence of LNAPL (if present) in groundwater can be captured.	PHCs F1-F4, BTEX	R2989634	None[2]

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Oblates Property, 175 Main Street, Ottawa, Ontario

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3	**PCA 4, 5, and 7 -** Potential presence of ash spread across the Property and the former presence of an industrial site and Lees Avenue closed landfill L-28 on adjacent lands just to the northeast of the Property	Borehole and test pits completed in the northeast corner of the Property	TP Z	SA2 (0.30-0.70) silty sand (FILL with debris)	28-Jul-14	0.4	Brick, concrete rubble	The sample was collected from the fill layer where debris were observed and was submitted for analysis to characterize the quality of the fill layer.	Metals and PAHs	R3127323	**PAHs**
			TP14-4	SA1 - 0.14-1.1 sandy silt to silty sand (FILL with debris)	27-Mar-14	14.9	Ash, pieces of wood, brick, and steel pipe	The sample is considered to be "worst case". The soil sample was collected from the fill layer where ash and debris were observed and was submitted for analysis to characterize the fill quality.	PHCs F1-F4, BTEX, PAHs, pH and metals	R2989634	**Lead, mercury, PAHs**
			TP AS	SA1 (0.20-0.40) sandy silt (FILL)	30-Jul-14	NM	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	Metals and PAHs	R3127323	**PAHs**
				SA2 (0.70-1.30) silty sand (FILL)	30-Jul-14	NM	Trace orange brick, trace decayed wood	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	Metals and PAHs	R3127323	**Lead, PAHs**
			BH15-106	SA2-1.52-2.13 silty sand (FILL with debris)	17-Mar-15	0.0	Mortar	Further investigate potential subsurface impacts associated with APEC 3, 9 and 10 and obtain additional soil data to demonstrate that native soil is not impacted by the debris fill.	Metals and PAHs	R3373376	None[2]
				SA3-2.29-2.90 silty clay (native soil) DUP-4 (duplicate of SA3)	17-Mar-15	0.0	None		Metals and PAHs	R3373376	None[2]
	APEC 1 and PCA 7 Presence of fill containing ash and building rubble across the Property	Boreholes completed in the vicinity of the former coal storage and boilers	BH15-103	SA1-0.76-1.37 sand (FILL with debris)	18-Mar-15	0.0	Ash, mortar, wood, and brick	To investigate and delineate potential impacts associated with the fill and ash placed on the Property	Metals and PAHs	R3373376	None[2]
				SA2-1.52-2.13 silty clay (native soil)	18-Mar-15	0.0	None		Metals and PAHs	R3373376	None[2]
			BH15-104	SA1-0.76-1.37 silty sand (FILL)	17-Mar-15	0.0	Rust and black discolouration	To investigate and delineate potential impacts associated with the fill and ash placed on the Property	Metals and PAHs	R3373376	None[2]
				SA2-1.52-2.13 silty clay (native soil)	17-Mar-15	0.0	None		Metals and PAHs	R3373376	None[2]
			BH15-105	SA3-2.29-2.90 silty sand (FILL with debris)	18-Mar-15	NA	Ash, mortar, and brick	To investigate and delineate potential impacts associated with the fill and ash placed on the Property	Metals and PAHs	R3373376	**Lead**
				SA4-3.05-3.66 silty clay (native soil)	18-Mar-15	0.0	None		Metals and PAHs	R3373376	None[2]
		Test pit completed in the northeast part	TP14-5	SA2 - 0.93-1.95 (FILL with debris)	31-Mar-14	7.4	Ash, pieces of wood, brick, concrete, metal from old barrel, asphalt	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	PHCs F1-F4, BTEX, PAHs and metals	R2989634	None[2]
		Test pit completed in the east central part of the Property	TP14-9	SA2 - 1.40-2.0 (FILL with debris)	31-Mar-14	20.4	Asphalt pieces, decomposed wood, ash	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	PHCs F1-F4, BTEX, PAHs and metals	R2989634	None[2]
		Borehole completed in the northeast part of the Property	BH14-201	SA5 (2.44-3.05) (native soil -silty clay)	05-Aug-2014	0.2	None	To investigate potential impacts to the native soil associated with the APECs and vertically delineate impacts in the fill (if identified)	Metals and PAHs	R3136528	None[2]
		Borehole completed in the east part of the Property in the area where the former coal storage and historic buildings were located.	BH14-206	SA4 (1.83-2.44) (native soil -silty clay)	06-Aug-2014	NM	None	To investigate potential impacts to the native soil associated with the APECs and vertically delineate impacts in the fill (if identified)	Metals, PAHs	R3136528	None[2]
		Test pits were completed across the Property to investigate the fill thickness, composition and fill quality	TP AA	SA2 (0.60-0.90) silty sand (FILL)	28-Jun-2014	0.7	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	PAHs	R3127323	None[2]
				SA3 (0.90-1.10) silty sand (FILL) DUP AA SA3 (0.90-1.10) - field duplicate of SA3	28-Jun-2014	0.3	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	Metals, PAHs	R3127323	None[2]
			TP AB	SA1 (0-0.40) Mixture of soil (silty sand) and refuse/waste (FILL with debris).	28-Jun-2014	0.4	refuse/waste consisting of ash, brick fragments, cobbles, broken rock	To characterize the quality of the fill layer that does not contain debris, waste or ash	Metals, PAHs	R3127323	**Lead**
			TP AE	SA2 (1.10 mbgs) Mixture of soil (silty sand) and refuse/waste (FILL with debris)	28-Jun-2014	0.4	refuse/waste consisting of ash, fragments of brick, cobbles and broken rock	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	Metals, PAHs	R3127323	**PAHs**
			TP AX	SA2 (0.40-0.65) silty clay intermixed with sandy silt to clayey silt (FILL)	30-Jul-2014	0	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	Metals, PAHs	R3127323	None[2]
				SA3 (0.80-1.20) sand (FILL)	30-Jul-2014	0	None	To characterize the quality of the fill layer that does not contain debris, waste or ash and to vertically delineate impacts if identified in the upper fill layer.	Metals, PAHs	R3127323	None[2]

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3	**APEC 1 and PCA 7** Presence of fill containing ash and building rubble across the Property	Test pits were completed across the Property to investigate the fill thickness, composition and fill quality	TP Y	SA1 (0.10-0.30) silty sand (FILL with debris)	28-Jun-2014	0.4	Trace metal, orange bric	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	Metals, PAHs	R3127323	**Lead**
				SA2 (0.30-0.90) silty sand (FILL)	28-Jun-2014	0.2	None	To characterize the quality of the fill layer that does not contain debris, waste or ash and to vertically delineate impacts if identified in the overlying fill with debris layer	Metals, PAHs	R3127323	None[2]
			TR F	SA1 (0-0.60) silty sand (FILL with debris)	29-Jul-2014	7.4	traces orange brick, ash	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	Metals and PAHs	R3127323	**Lead, PAHs**
			TR J	SA2 (0.65-0.90) sandy silt to silty sand (FILL)	29-Jul-2014	0.4	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	Metals and PAHs	R3127323	None[2]
			TP AC	SA1 (0-0.37) silty sand (FILL with debris)	28-Jun-2014	0.3	large pieces of concrete, fragments of brick	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	Metals and PAHs	R3127323	**PAHs**
				SA3 (1.0-2.0) silty sand (FILL)	28-Jun-2014	0.4	None	To characterize the quality of the fill layer that does not contain debris, waste or ash and to vertically delineate impacts if identified in the overlying fill with debris layer.	Metals, PAHs, PHCs F1 to F4, BTEX	R3127323	None[2]
			TP BA	SA2 (0.70-1.00) silty clay (FILL)	30-Jul-2014	0	None	To characterize the quality of the fill layer that does not contain debris, waste or ash	Metals, PAHs	R3127323	None[2]
				SA3 (1.80-2.00) silty clay intermixed with clayeye silt (FILL with debris)	30-Jul-2014	0.3	Some orange brick, and decayed wood	To characterize the quality of the fill layer containing debris, waste or ash. The sample is considered to be the "worst case"	Metals, PAHs, PHCs F1 to F4, BTEX	R3127323	**PAHs**
			TR E	SA2 (0.55-1.00) DUP E SA2 (0.55-1.00)-field duplicate of SA2 silty sand (FILL with debris)	29-Jul-2014	6.8	some black cinders	To characterize the quality of the fill layer with some debris, waste or ash	Metals, PHC F1 to F4, BTEX and PAHs PHCs F1 to F4, BTEX	R3127323	**Fluoranthene**
				TP E (1.4-1.70) silty clay (native)	29-Jul-2014	NM	None	To investigate potential impacts to the native soil associated with the APECs and to vertically delineate impacts in the fill (if identified)	Metals and PAHs	R3145197	None[2]
	PCA 8a, 8b, 8c, 8d - Presence of transformers on the property	Northern section of the property, in areas beneath the pole mounted transformers	TP16-401	TP16-401, 0.25-0.35, silty sand (Fill)	25-May-16	NM	None	Investigate the potential impacts associated with the pole mounted transformers present on the Property	PHCs and PCBs	R4012263	None[2]
			TP16-402	TP16-402, 0.25-0.35, silty sand (Fill)	25-May-16	NM	None		PHCs and PCBs	R4012263	None[2]
			TP16-403	TP16-403, 0.25-0.35, silty sand (Fill)	25-May-16	NM	None		PHCs and PCBs	R4012263	None[2]
			TP16-404	TP16-404, 0.25-0.35, silty sand (Fill)	25-May-16	NM	None		PHCs and PCBs	R4012263	None[2]
	PCA 10 - Presence of a private garage on the Property.	An interior borehole inside the garage.	BH15-107	SA2-0.76-1.37 sand (FILL)	18-Mar-15	0.0	None	Investigate APEC 5 (private garage on the Site since the 1940s where oil changing, maintenance and minor repairs are performed for the convent's vehicles).	Metals and PAHs	R3373376	None[2]
				SA6-3.81-4.42 silty clay (native soil)	18-Mar-15	0.0	None		Metals and PAHs	R3373376	None[2]
			BH15-107A	SA4-1.83-2.44 silty clay (native soil)	13-May-15	10.7	None		PHCs and VOCs	R3441868	None[2]

Notes:

PHCs = Petroleum hydrocarbon fractions F1 to F4

BTEX = Benzene, toluene, ethylbenzene and xylenes

PAHs=Polycyclic Aromatic Hydrocarbons

PCBs=Polychlorinated biphenyls

Metals= Reg.153/04 list of metals

(1) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, coarse-textured soil, April 15, 2011 (MOE Table 3 Standards).

Bold and shaded parameters exceed MOE Table 3 Standards

2. None = Not detected above method detection limit and/ or does not exceed MOE Table 3 Standards

3. mbgs = metres below ground surface

4. ppm-parts per million

6. PID- photionization detector

7. Table to be read in conjunction with accompanying report

NM-not measured

Created by: MS/TL

Checked by: BM/SRH

Table 4: Summary of Groundwater Samples Submitted for Analysis
Oblates Property, 175 Main Street, Ottawa, Ontario

RSC #	Area of Potential Environmental Concern	Sample Location/Sample ID	Date of Sample Collection	Sampling Depth Interval (mbgs)	Groundwater Observations	Parameters Analysed	Maxxam Analytical Report Reference Number	MOE Table 3 (1) Exceedances
1	**APEC 1 -** Presence of fill containing construction debris, asphalt, concrete and potentially some refuse in the south part of the Property associated with the dump	MW14-3	03-Apr-14	2.4-5.4	slightly cloudy, no sediment, sheen or odour	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium and PAHs	R2990243	None
		MW14-211	26-Aug-14	3.7-6.7	slightly cloudy, no sediment, sheen or odour	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium	R3145197	None
		MW15-101	25-Mar-15	6.1-9.2	slightly cloudy, no sediment, sheen or odour	Metals, mercury, hexavalent chromium, PAHs, PHC + BTEX, VOCs	R3378941	None
		BH16-02	23-Feb-16	3.0-6.1	light brown, slightly turbid, little sediment, no odour or sheen	Metals, mercury, hexavalent chromium and PAHs	R3911604	None
	APEC 1 and 2 - Former St. Paul University dump located on adjacent land southwest of the Property and presence of fill containing construction debris, asphalt, concrete and potentially some refuse in the south part of the Property associated with the dump	MW14-210B	26-Aug-14	2.0-5.0	no sediment, no odour or sheen	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium and PAHs	R3145197	None
		MW14-225 (Duplicate of MW14-210B)	26-Aug-14	2.0-5.0	no sediment, no odour or sheen	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium and PAHs	R3145197	None
		MW15-100	25-Mar-15	9.1-12.2	clear, colourless, no odour or sheen	Metals, mercury, hexavalent chromium, PAHs, PHC + BTEX, VOCs	R3378916	None
		BH14-210B	23-Feb-16	2.0-5.0	clear, colourless, no sediment, no odour or sheen	Metals, mercury, hexavalent chromium and PAHs	R3911604	None
		BH15-4	23-Feb-16	11.3-12.8	light brown, slightly turbid, little sediment, no odour or sheen	Metals, mercury, hexavalent chromium and PAHs	R3911604	None
2	Groundwater quality across the Property	MW14-208C	26-Aug-14	2.0-5.0	slightly cloudy, no sediment, sheen or odour	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium and PAHs	R3145197	None
		BH15-102	24-Mar-15	6.1-9.2	light brown, slightly turbid, trace sediment, no odour or sheen	Metals, mercury, hexavalent chromium, PAHs, PHC + BTEX, VOCs	R3378941	None
		BH14-2	25-Feb-16	NA (Standpipe)	clear, colourless, no sediment, no odour or sheen	PAHs	R3913713	None
			26-Feb-16		clear, colourless, no sediment, no odour or sheen	metals, mercury, and hexavalent chromium	R3913713	None
		BH16-01	23-Feb-16	4.5-7.6	clear, colourless, no sediment, no odour or sheen	Metals, mercury, hexavalent chromium and PAHs	R3911604	None
		DUP-A (Duplicate of BH16-01)	23-Feb-16	4.5-7.6	clear, colourless, no sediment, no odour or sheen	Metals, mercury, hexavalent chromium and PAHs	R3911604	None
3	**PCA 6** - Former presence of fuel UST	MW14-101C	03-Apr-14	3.1-6.1	slightly cloudy, no sediment, sheen or odour	PHCs F1 to F4, BTEX	R2990243	None
			26-Aug-14	3.1-6.1	no sediment, no odour or sheen	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium and PAHs	R3145197	None
		MW14-102 duplicate of MW14-101C	03-Apr-14	3.1-6.1	slightly cloudy, no sediment, sheen or odour	PHCs F1 to F4, BTEX	R2990243	None
	PCA 7 - Presence of fill of unknown composition and possible presence of ash that was reportedly spread on the Site	MW14-1	03-Apr-14	1.5-4.5	cloudy, brown, no sediment, no sheen or odour	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium and PAHs	R2990243	None
			26-Aug-14	1.5-4.5	cloudy, brown, no sediment, no sheen or odour	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium and PAHs	R3145197	None
		MW15-103	24-Mar-16	4.5-7.6	clear, light brown, no sediment, no odour or sheen	Metals, mercury, hexavalent chromium, PAHs, PHC + BTEX, VOCs	R3377846	None
		MW15-104	24-Mar-16	3.0-6.1	clear, colourless, no sediment, no odour or sheen	Metals, mercury, hexavalent chromium, PAHs, PHC + BTEX, VOCs	R3378916	None
		MW15-105	24-Mar-16	3.0-6.1	clear, colourless, no sediment, no odour or sheen	Metals, mercury, hexavalent chromium, PAHs, PHC + BTEX, VOCs	R3377846	None
	PCA 4, 5, and 7 - Potential presence of ash spread across the Property and the former presence of an industrial site and Lees Avenue closed landfill L-28 on adjacent lands just to the northeast of the Property	MW15-106	25-Mar-16	3.0-6.1	clear, colourless, no sediment, no odour or sheen	Metals, mercury, hexavalent chromium, PAHs, PHC + BTEX, VOCs	R3378941	None
		DUP-1 (Field Duplicate of MW15-106)	25-Mar-16	3.0-6.1	clear, colourless, no sediment, no odour or sheen	Metals, mercury, hexavalent chromium, PAHs, PHC + BTEX, VOCs	R3378916	None
	PCA 10 - Presence of a private garage on the Site since the 1940s where oil changing, maintenance and minor repairs are performed for the convent's vehicles	MW15-107	24-Mar-16	3.0-6.1	clear, colourless, no sediment, no odour or sheen	Metals, mercury, hexavalent chromium, PAHs, PHC + BTEX, VOCs	R3377846	None

Notes:

PHCs - Petroleum hydrocarbon fractions F1 to F4

BTEX- Benzene, toluene, ethylbenzene and xylenes

PAHs - Polycyclic Aromatic Hydrocarbons

Metals- Reg.153/04 list of metals

mbgs - metres below ground surface

None- Not detected above method detection limit and/or does not exceed MOE Table 3 Standards

(1) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, All Types Property Use, coarse-textured soil, April 15, 2011 (MOE Table 3 Standards).

Prepared by: MS / TL
Checked by: BM /SRH

Table 5A - Summary of Soil Analytical Results
General Chemistry, Metals, and Polycyclic Aromatic Hydrocarbons

RSC #															
			BH 14-211	BH 14-211	BH 14-213	BH 14-213	BH 14-213	BH 14-213	BH 14-217	BH15-100	BH15-100	BH15-100	BH15-101	BH15-101	TP 14-10
			15-Aug-2014	18-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	14-Aug-2014	18-Jul-2014	16-Mar-2015	16-Mar-2015	16-Mar-2015	17-Mar-2015	17-Mar-2015	31-Mar-2014
Parameter	**Unit**		G11 SA2	G11 SA9	BH14-213SA1	BH14-213SA5	G13 SA9	G13 SA11	BH14-217SA8	BH15-100 SA1	BH15-100 SA2	DUP-2 (Field Duplicate)	BH15-101 SA5	BH15-101 SA9	TP14-10 SA2
Layer	-	**REG153 (11) T3-R/P/I**	Debris	Soil Fill	Soil Fill	Debris	Debris	Native Silty Clay	Soil Fill	Soil Fill	Native Silty Clay	Native Silty Clay	Debris	Native Silty Clay	Debris
Sample Depth	m	**SOIL COARSE** (1) (2)	0.61 - 1.22	4.88 - 5.49	0 - 0.61	2.44 - 3.05	4.88 - 5.48	6.1 - 6.7	4.27 - 4.89	0.76 - 1.37	1.52 - 2.13	1.52 - 2.13	3.81 - 4.42	6.86 - 7.47	0.6 - 1.6
General Chemistry															
Moisture, Percent	%	--	15	24	--	--	24	22	--	8.6	23	26	22	24	14
pH	-		7.59	--	6.99	7.43	--	--	7.11	--	--	--	--	--	--
Metals															
Antimony	ug/g	7.5	0.76	0.95	--	--	0.76	<0.20	--	<0.20	<0.20	<0.20	1.3	<0.20	**18**
Arsenic	ug/g	18	2.8	2.9	--	--	3.9	2.8	--	<1.0	1.3	1.1	3.1	1.8	2.5
Barium	ug/g	390	78	200	--	--	220	210	--	23	140	380	170	210	94
Beryllium	ug/g	4	0.23	0.53	--	--	0.64	0.71	--	0.21	0.43	0.82	0.41	0.64	0.24
Boron	ug/g	120	<5.0	<5.0	--	--	7.1	5.3	--	<5.0	<5.0	5.0	<5.0	7.2	<5.0
Boron, Hot Water Soluble	ug/g	1.5	--	--	--	--	--	--	--	--	--	--	--	--	0.11
Cadmium	ug/g	1.2	0.37	0.17	--	--	0.20	<0.10	--	<0.10	<0.10	0.11	<0.10	<0.10	0.50
Chromium	ug/g	160	18	62	--	--	45	50	--	11	31	95	46	52	11
Cobalt	ug/g	22	5.1	13	--	--	11	12	--	3.6	8.2	22	11	13	3.2
Copper	ug/g	140	21	38	--	--	31	28	--	5.4	19	52	31	28	13
Hexavalent Chromium	ug/g	8	--	--	--	--	--	--	--	--	--	--	--	--	<0.2
Lead	ug/g	120	**130**	86	--	--	110	7.6	--	1.9	4.3	6.8	**230**	7.1	**370**
Mercury	ug/g	0.27	0.12	0.11	--	--	**0.33**	<0.050	--	--	--	--	--	--	<0.050
Molybdenum	ug/g	6.9	0.71	0.58	--	--	0.93	<0.50	--	<0.50	<0.50	<0.50	0.88	<0.50	<0.50
Nickel	ug/g	100	13	36	--	--	28	29	--	6.5	18	52	26	28	7.3
Selenium	ug/g	2.4	<0.50	<0.50	--	--	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	ug/g	20	<0.20	<0.20	--	--	<0.20	<0.20	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	ug/g	1	0.091	0.26	--	--	0.22	0.27	--	<0.050	0.17	0.48	0.21	0.29	0.075
Uranium	ug/g	23	0.44	0.72	--	--	0.96	0.76	--	0.87	0.57	0.86	0.66	0.66	0.78
Vanadium	ug/g	86	24	62	--	--	50	59	--	22	47	**97**	48	63	14
Zinc	ug/g	340	93	110	--	--	99	88	--	12	50	130	81	86	200
Semi-VOCs															
1- & 2-Methylnaphthalene	ug/g	0.99 (9)	0.059	<0.0071	--	--	**2.5**	<0.0071	--	<0.0071	<0.0071	<0.0071	0.071	<0.0071	<0.0071
1-Methylnaphthalene	ug/g	0.99 (9)	0.028	<0.0050	--	--	0.93	<0.0050	--	<0.0050	<0.0050	<0.0050	0.034	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	0.99 (9)	0.031	<0.0050	--	--	**1.5**	<0.0050	--	<0.0050	<0.0050	<0.0050	0.037	<0.0050	<0.0050
Acenaphthene	ug/g	7.9	0.093	<0.0050	--	--	3.0	<0.0050	--	<0.0050	<0.0050	<0.0050	0.089	<0.0050	<0.0050
Acenaphthylene	ug/g	0.15	0.062	0.0067	--	--	0.12	<0.0050	--	<0.0050	<0.0050	<0.0050	0.059	<0.0050	0.012
Anthracene	ug/g	0.67	0.25	0.0092	--	--	**5.0**	<0.0050	--	<0.0050	<0.0050	<0.0050	0.24	<0.0050	0.017
Benzo [b,j] fluoranthene	ug/g	--	0.85	0.047	--	--	6.7	<0.0050	--	<0.0050	<0.0050	<0.0050	0.60	<0.0050	0.092
Benzo[a]anthracene	ug/g	0.5	**0.70**	0.031	--	--	**7.7**	<0.0050	--	<0.0050	<0.0050	<0.0050	**0.58**	<0.0050	0.070
Benzo[a]pyrene	ug/g	0.3	**0.66**	0.034	--	--	**5.8**	<0.0050	--	<0.0050	<0.0050	<0.0050	**0.48**	<0.0050	0.065
Benzo[g,h,i]perylene	ug/g	6.6	0.39	0.019	--	--	3.0	<0.0050	--	<0.0050	<0.0050	<0.0050	0.28	<0.0050	0.047
Benzo[k]fluoranthene	ug/g	0.78	0.31	0.018	--	--	**2.9**	<0.0050	--	<0.0050	<0.0050	<0.0050	0.21	<0.0050	0.033
Chrysene	ug/g	7	0.56	0.029	--	--	6.1	<0.0050	--	<0.0050	<0.0050	<0.0050	0.51	<0.0050	0.062
Dibenzo[a,h]anthracene	ug/g	0.1	0.092	<0.0050	--	--	**0.92**	<0.0050	--	<0.0050	<0.0050	<0.0050	0.068	<0.0050	0.011
Fluoranthene	ug/g	0.69	**1.5**	0.080	--	--	**15**	<0.0050	--	<0.0050	<0.0050	<0.0050	**1.3**	<0.0050	0.14
Fluorene	ug/g	62	0.093	<0.0050	--	--	2.9	<0.0050	--	<0.0050	<0.0050	<0.0050	0.093	<0.0050	0.0052
Indeno[1,2,3-cd]pyrene	ug/g	0.38	**0.40**	0.018	--	--	**3.0**	<0.0050	--	<0.0050	<0.0050	<0.0050	0.32	<0.0050	0.050
Naphthalene	ug/g	0.6	0.053	<0.0050	--	--	**3.7**	<0.0050	--	<0.0050	<0.0050	<0.0050	0.032	<0.0050	<0.0050
Phenanthrene	ug/g	6.2	0.88	0.034	--	--	**18**	<0.0050	--	<0.0050	<0.0050	<0.0050	0.77	<0.0050	0.076
Pyrene	ug/g	78	1.2	0.067	--	--	12	<0.0050	--	<0.0050	<0.0050	<0.0050	1.0	<0.0050	0.12

Table 5A - Summary of Soil Analytical Results
General Chemistry, Metals, and Polycyclic Aromatic Hydrocarbons

RSC #			RSC #1											
			TP 14-10	TP 14-12	TP 14-15	TP 14-15	TP15-18	TP15-19	TP15-20	TP15-30	TP15-31	TP15-32	TP15-201	TP15-201
			31-Mar-2014	31-Mar-2014 (5)	31-Mar-2014 (5)	31-Mar-2014	03-Nov-2015	03-Nov-2015	03-Nov-2015	03-Nov-2015	03-Nov-2015	03-Nov-2015	25-Nov-2015 (5)	25-Nov-2015
Parameter	**Unit**		TP14-10 SA2A (Field Duplicate)	TP14-12 SA4	TP14-15 SA5	TP14-15 SA6	TP15-18	TP15-19	TP15-20	TP15-30	TP15-31	TP15-32	TP15-201 FILL	TP15-201 Native Silty Clay
Layer	-	**REG153 (11) T3-R/P/I**	Debris	Debris	Debris	Native Silty Clay	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Debris	Native Silty Clay
Sample Depth	m	**SOIL COARSE (1) (2)**	0.6 - 1.6	2 - 2.7	3 - 3.6	4.05 - 4.35	0 - 0.1	0 - 0.2	0 - 0.2	0 - 0.2	0 - 0.3	0 - 0.2	5.0 - 5.2	7.8 - 8.0
General Chemistry														
Moisture, Percent	%	--	15	23	16	15							22	23
pH	-		--	--	7.38	--	--	--	--	--	--	--	--	--
Metals														
Antimony	ug/g	7.5	**18**	0.26	1.4	<0.20	--	--	--	--	--	--	0.27	<0.20
Arsenic	ug/g	18	2.5	1.8	4.9	1.6	--	--	--	--	--	--	1.9	2.1
Barium	ug/g	390	79	110	99	60	--	--	--	--	--	--	230	190
Beryllium	ug/g	4	0.24	0.35	0.27	0.32	--	--	--	--	--	--	0.50	0.59
Boron	ug/g	120	<5.0	<5.0	<5.0	<5.0	--	--	--	--	--	--	<5.0	<5.0
Boron, Hot Water Soluble	ug/g	1.5	0.13	0.71	0.67	0.099	--	--	--	--	--	--	--	--
Cadmium	ug/g	1.2	0.31	0.12	0.20	<0.10	--	--	--	--	--	--	0.27	<0.10
Chromium	ug/g	160	13	40	16	29	--	--	--	--	--	--	58	40
Cobalt	ug/g	22	3.9	8.4	4.3	6.3	--	--	--	--	--	--	12	13
Copper	ug/g	140	14	25	34	12	--	--	--	--	--	--	33	24
Hexavalent Chromium	ug/g	8	<0.2	<0.2	<0.2	<0.2	--	--	--	--	--	--	<0.2	<0.2
Lead	ug/g	120	**340**	28	120	4.0	--	--	--	--	--	--	**160**	6.1
Mercury	ug/g	0.27	<0.050	0.097	0.27	<0.050	--	--	--	--	--	--	0.14	<0.050
Molybdenum	ug/g	6.9	<0.50	<0.50	0.78	<0.50	--	--	--	--	--	--	<0.50	<0.50
Nickel	ug/g	100	7.8	22	13	15	--	--	--	--	--	--	33	27
Selenium	ug/g	2.4	<0.50	<0.50	0.72	<0.50	--	--	--	--	--	--	<0.50	<0.50
Silver	ug/g	20	<0.20	<0.20	<0.20	<0.20	--	--	--	--	--	--	<0.20	<0.20
Thallium	ug/g	1	0.078	0.14	0.14	0.11	--	--	--	--	--	--	0.27	0.23
Uranium	ug/g	23	0.61	0.58	0.36	0.79	--	--	--	--	--	--	0.63	0.53
Vanadium	ug/g	86	15	39	22	37	--	--	--	--	--	--	60	58
Zinc	ug/g	340	180	60	85	36	--	--	--	--	--	--	130	71
Semi-VOCs														
1- & 2-Methylnaphthalene	ug/g	0.99 (9)	<0.0071	0.055	**1.7**	--	0.014	0.011	<0.0071	<0.0071	<0.0071	<0.0071	**1.6**	<0.0071
1-Methylnaphthalene	ug/g	0.99 (9)	<0.0050	0.023	0.87	--	0.0065	0.0053	<0.0050	<0.0050	<0.0050	<0.0050	0.68	<0.0050
2-Methylnaphthalene	ug/g	0.99 (9)	<0.0050	0.033	0.87	--	0.0074	0.0061	<0.0050	<0.0050	<0.0050	<0.0050	0.89	<0.0050
Acenaphthene	ug/g	7.9	<0.0050	0.10	4.0	--	--	--	--	--	--	--	2.1	<0.0050
Acenaphthylene	ug/g	0.15	0.033	0.12	**1.0**	--	0.0061	0.0089	<0.0050	<0.0050	0.0073	<0.0050	**1.1**	<0.0050
Anthracene	ug/g	0.67	0.027	0.39	**9.0**	--	0.034	0.035	0.021	0.022	0.022	0.028	**6.7**	<0.0050
Benzo [b,j] fluoranthene	ug/g	--	0.17	1.0	12	--	0.032	0.039	0.016	0.016	0.025	0.022	13	<0.0050
Benzo[a]anthracene	ug/g	0.5	0.13	**1.0**	**15**	--	0.18	0.20	0.10	0.14	0.22	0.14	**14**	<0.0050
Benzo[a]pyrene	ug/g	0.3	0.13	**0.91**	**12**	--	0.14	0.16	0.063	0.095	0.15	0.099	**9.9**	<0.0050
Benzo[g,h,i]perylene	ug/g	6.6	0.092	0.53	6.0	--	--	--	--	--	--	--	4.6	<0.0050
Benzo[k]fluoranthene	ug/g	0.78	0.063	0.38	**4.6**	--	--	--	--	--	--	--	**4.4**	<0.0050
Chrysene	ug/g	7	0.11	0.75	**12**	--	0.060	0.075	0.034	0.055	0.086	0.049	**9.7**	<0.0050
Dibenzo[a,h]anthracene	ug/g	0.1	0.021	**0.14**	**1.5**	--	0.12	0.14	0.066	0.086	0.13	0.095	**1.2**	<0.0050
Fluoranthene	ug/g	0.69	0.22	**2.0**	**32**	--	0.020	0.024	0.011	0.015	0.016	0.017	**30**	0.0084
Fluorene	ug/g	62	0.0068	0.12	3.8	--	0.27	0.31	0.15	0.20	0.26	0.20	3.6	<0.0050
Indeno[1,2,3-cd]pyrene	ug/g	0.38	0.099	**0.64**	**7.3**	--	0.0087	0.012	0.0053	<0.0050	0.0066	0.0065	**5.9**	<0.0050
Naphthalene	ug/g	0.6	<0.0050	0.056	**0.82**	--	0.095	0.11	0.057	0.076	0.10	0.081	**1.7**	<0.0050
Phenanthrene	ug/g	6.2	0.088	1.2	**30**	--	--	--	--	--	--	--	**23**	<0.0050
Pyrene	ug/g	78	0.19	1.6	26	--	0.11	0.13	0.073	0.072	0.10	0.084	24	0.0065

Table 5A - Summary of Soil Analytical Results
General Chemistry, Metals, and Polycyclic Aromatic Hydrocarbons

RSC #															
			TP AF	TP AF	TP AG	TP AH	TP AH	TP AH	TP AJ	TP AJ	TP AK	TP AK	TP BJ	TP BJ	TP G14/E1
			28-Jul-2014	28-Jun-2014	29-Jul-2014	28-Jun-2014	28-Jun-2014	28-Jun-2014	28-Jul-2014	25-Jul-2014	29-Jul-2014	29-Jul-2014	30-Jul-2014	30-Jul-2014	29-Jul-2014
Parameter	**Unit**		AF SA1	AF SA3	AG SA4	AH SA2	AH SA3	AH SA4	AJ SA1	AJ SA3	AK SA1	AK SA3	BJ SA3	BJ SA5	G14/E1 SA 2
Layer	-	**REG153 (11) T3-R/P/I**	Soil Fill	Soil Fill	Soil Fill	Debris	Soil Fill	Soil Fill	Topsoil	Soil Fill	Debris	Debris	Debris	Native Silty Clay	Debris
Sample Depth	m	**SOIL COARSE** (1) (2)	0.5 - 0.5001	1.4 - 1.4	1.5 - 1.6	0.2 - 0.3	0.3 - 0.6	0.6 - 1.2	0 - 0.25	0.8 - 1.35	0.025 - 0.31	1.2 - 1.2001	1.1 - 1.5	3.5 - 3.8	1 - 1.0001
General Chemistry															
Moisture, Percent	%	--	9.5	12	20	18	20	16	7.8	18	9.1	13	27	28	17
pH	-		--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Antimony	ug/g	7.5	--	<0.20	<0.20	1.2	<0.20	<0.20	0.28	<0.20	<0.20	<0.20	0.42	--	<0.20
Arsenic	ug/g	18	--	1.3	2.4	8.6	3.1	<1.0	5.2	<1.0	2.4	2.9	2.2	--	2.3
Barium	ug/g	390	--	21	71	77	99	19	43	28	85	110	**400**	--	150
Beryllium	ug/g	4	--	<0.20	0.33	1.5	0.57	<0.20	0.26	0.23	0.39	0.42	0.79	--	0.47
Boron	ug/g	120	--	<5.0	<5.0	<5.0	5.8	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	<5.0
Boron, Hot Water Soluble	ug/g	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/g	1.2	--	<0.10	<0.10	0.21	<0.10	<0.10	0.22	<0.10	0.12	0.19	0.12	--	0.12
Chromium	ug/g	160	--	15	29	13	60	13	20	16	28	41	120	--	53
Cobalt	ug/g	22	--	3.6	7.7	11	8.9	2.5	4.6	3.4	6.6	8.9	**26**	--	12
Copper	ug/g	140	--	7.8	15	32	21	5.2	13	7.0	17	24	57	--	29
Hexavalent Chromium	ug/g	8	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/g	120	--	2.1	3.5	99	11	2.1	33	1.9	38	36	14	--	26
Mercury	ug/g	0.27	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/g	6.9	--	<0.50	0.60	2.9	<0.50	<0.50	<0.50	<0.50	<0.50	0.52	0.69	--	0.66
Nickel	ug/g	100	--	7.5	18	24	24	6.2	10	9.6	16	23	68	--	31
Selenium	ug/g	2.4	--	<0.50	<0.50	0.55	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50
Silver	ug/g	20	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	--	<0.20
Thallium	ug/g	1	--	<0.050	0.10	0.20	0.20	<0.050	0.097	0.059	0.14	0.16	0.46	--	0.19
Uranium	ug/g	23	--	0.94	1.8	0.57	2.4	1.2	0.74	0.56	0.68	0.72	0.67	--	1.0
Vanadium	ug/g	86	--	27	54	28	58	25	23	19	34	41	**120**	--	55
Zinc	ug/g	340	--	14	34	71	58	12	68	20	51	64	140	--	70
Semi-VOCs															
1- & 2-Methylnaphthalene	ug/g	0.99 (9)	--	<0.0071	<0.0071	0.018	<0.0071	<0.0071	0.017	<0.0071	0.032	0.072	0.089	--	<0.0071
1-Methylnaphthalene	ug/g	0.99 (9)	--	<0.0050	<0.0050	0.0091	<0.0050	<0.0050	0.011	<0.0050	0.016	0.032	0.043	--	<0.0050
2-Methylnaphthalene	ug/g	0.99 (9)	--	<0.0050	<0.0050	0.0091	<0.0050	<0.0050	0.0062	<0.0050	0.017	0.040	0.047	--	<0.0050
Acenaphthene	ug/g	7.9	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.049	<0.0050	0.11	0.11	0.17	--	<0.0050
Acenaphthylene	ug/g	0.15	--	<0.0050	<0.0050	0.012	<0.0050	<0.0050	0.038	<0.0050	0.043	0.11	0.013	--	0.021
Anthracene	ug/g	0.67	--	<0.0050	<0.0050	0.011	<0.0050	<0.0050	0.17	<0.0050	0.30	0.31	0.34	--	0.011
Benzo [b,j] fluoranthene	ug/g	--	--	<0.0050	<0.0050	0.092	<0.0050	0.0068	0.53	<0.0050	0.78	1.2	0.63	--	0.065
Benzo[a]anthracene	ug/g	0.5	--	<0.0050	<0.0050	0.053	<0.0050	<0.0050	0.42	<0.0050	**0.63**	**0.88**	**0.57**	--	0.032
Benzo[a]pyrene	ug/g	0.3	--	<0.0050	<0.0050	0.058	<0.0050	<0.0050	**0.35**	<0.0050	**0.56**	**0.82**	**0.44**	--	0.045
Benzo[g,h,i]perylene	ug/g	6.6	--	<0.0050	<0.0050	0.046	<0.0050	<0.0050	0.20	<0.0050	0.33	0.60	0.25	--	0.038
Benzo[k]fluoranthene	ug/g	0.78	--	<0.0050	<0.0050	0.032	<0.0050	<0.0050	0.17	<0.0050	0.25	0.45	0.24	--	0.021
Chrysene	ug/g	7	--	<0.0050	<0.0050	0.059	<0.0050	0.0052	0.39	<0.0050	0.54	0.74	0.47	--	0.037
Dibenzo[a,h]anthracene	ug/g	0.1	--	<0.0050	<0.0050	0.0091	<0.0050	<0.0050	0.060	<0.0050	0.087	**0.14**	0.072	--	0.0085
Fluoranthene	ug/g	0.69	--	<0.0050	<0.0050	0.12	<0.0050	0.0094	**0.96**	<0.0050	**1.4**	**1.9**	**1.4**	--	0.048
Fluorene	ug/g	62	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.057	<0.0050	0.14	0.13	0.19	--	<0.0050
Indeno[1,2,3-cd]pyrene	ug/g	0.38	--	<0.0050	<0.0050	0.043	<0.0050	<0.0050	0.23	<0.0050	0.36	**0.61**	0.28	--	0.040
Naphthalene	ug/g	0.6	--	<0.0050	<0.0050	0.0068	<0.0050	<0.0050	0.0057	<0.0050	0.026	0.096	0.11	--	<0.0050
Phenanthrene	ug/g	6.2	--	<0.0050	<0.0050	0.053	<0.0050	0.0052	0.64	<0.0050	1.1	1.2	1.4	--	0.019
Pyrene	ug/g	78	--	<0.0050	<0.0050	0.097	0.0074	0.0094	0.70	<0.0050	1.1	1.5	1.0	--	0.043

Table 5A - Summary of Soil Analytical Results
General Chemistry, Metals, and Polycyclic Aromatic Hydrocarbons

RSC #															
			BH15-102	BH15-102	BH15-108	BH15-108	BH15-109	BH15-109	TP15-103	TP15-104	TP15-105	TP15-106	TP15-107	TP15-108	TP15-110
			16-Mar-2015	16-Mar-2015	19-Mar-2015	19-Mar-2015	19-Mar-2015	19-Mar-2015	19-Nov-2015	19-Nov-2015	19-Nov-2015	19-Nov-2015	19-Nov-2015	19-Nov-2015	19-Nov-2015
Parameter	**Unit**		BH15-102 SA3	BH15-102 SA8	BH15-108 SA1	BH15-108 SA3	BH15-109 SA1	BH15-109 SA2	TP15-103	TP15-104	TP15-105	TP15-106	TP15-107	TP15-108	TP15-110
Layer	-	**REG153 (11) T3-R/P/I**	Debris	Native Silty Clay	Soil Fill	Native Silty Clay	Soil Fill	Native Silty Clay	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil
Sample Depth	m	**SOIL COARSE** (1) (2)	2.29 - 2.9	6.1 - 6.71	0.76 - 1.37	2.29 - 2.9	0.76 - 1.37	1.52 - 2.13	0 - 0.30	0 - 0.30	0 - 0.30	0 - 0.30	0 - 0.30	0 - 0.30	0 - 0.30
General Chemistry															
Moisture, Percent	%	--	26	20	20	25	19	23	14	18	19	18	18	25	22
pH	-		--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Antimony	ug/g	7.5	0.26	<0.20	<0.20	<0.20	<0.20	<0.20	--	--	--	--	--	--	--
Arsenic	ug/g	18	1.4	2.9	<1.0	1.8	<1.0	2.3	--	--	--	--	--	--	--
Barium	ug/g	390	220	190	46	160	30	160	--	--	--	--	--	--	--
Beryllium	ug/g	4	0.59	0.63	0.25	0.41	0.20	0.46	--	--	--	--	--	--	--
Boron	ug/g	120	5.4	6.1	<5.0	5.2	<5.0	<5.0	--	--	--	--	--	--	--
Boron, Hot Water Soluble	ug/g	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/g	1.2	0.17	<0.10	<0.10	<0.10	<0.10	<0.10	--	--	--	--	--	--	--
Chromium	ug/g	160	78	45	34	29	17	31	--	--	--	--	--	--	--
Cobalt	ug/g	22	15	13	5.8	8.9	2.9	9.4	--	--	--	--	--	--	--
Copper	ug/g	140	38	28	20	19	5.7	22	--	--	--	--	--	--	--
Hexavalent Chromium	ug/g	8	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/g	120	40	6.4	2.8	4.4	3.9	4.7	--	--	--	--	--	--	--
Mercury	ug/g	0.27	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/g	6.9	<0.50	<0.50	<0.50	0.96	<0.50	0.62	--	--	--	--	--	--	--
Nickel	ug/g	100	43	28	17	18	7.7	20	--	--	--	--	--	--	--
Selenium	ug/g	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
Silver	ug/g	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	--	--	--	--	--	--	--
Thallium	ug/g	1	0.31	0.23	0.13	0.17	<0.050	0.18	--	--	--	--	--	--	--
Uranium	ug/g	23	0.59	0.79	0.58	0.97	0.87	0.58	--	--	--	--	--	--	--
Vanadium	ug/g	86	72	63	27	45	23	51	--	--	--	--	--	--	--
Zinc	ug/g	340	100	75	27	51	19	51	--	--	--	--	--	--	--
Semi-VOCs															
1- & 2-Methylnaphthalene	ug/g	0.99 (9)	0.035	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	0.027	0.012	0.014	0.019
1-Methylnaphthalene	ug/g	0.99 (9)	0.017	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.015	0.0062	0.0067	0.0094
2-Methylnaphthalene	ug/g	0.99 (9)	0.018	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.012	0.0055	0.0075	0.0098
Acenaphthene	ug/g	7.9	0.066	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--	--	--	--	--
Acenaphthylene	ug/g	0.15	0.090	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.071	0.026	0.027	0.036
Anthracene	ug/g	0.67	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.014	0.022	0.030	0.084	0.020	0.023	0.021
Benzo [b,j] fluoranthene	ug/g	--	0.76	<0.0050	0.016	<0.0050	<0.0050	<0.0050	0.012	0.021	0.022	0.49	0.066	0.072	0.099
Benzo[a]anthracene	ug/g	0.5	**0.61**	<0.0050	0.012	<0.0050	<0.0050	<0.0050	0.089	0.14	0.18	1.5	0.25	0.37	0.40
Benzo[a]pyrene	ug/g	0.3	**0.65**	<0.0050	0.011	<0.0050	<0.0050	<0.0050	0.050	0.085	0.096	**1.2**	0.19	0.27	0.30
Benzo[g,h,i]perylene	ug/g	6.6	0.38	<0.0050	0.0076	<0.0050	<0.0050	<0.0050	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	0.78	0.26	<0.0050	0.0052	<0.0050	<0.0050	<0.0050	--	--	--	--	--	--	--
Chrysene	ug/g	7	0.47	<0.0050	0.0093	<0.0050	<0.0050	<0.0050	0.033	0.053	0.066	0.56	0.096	0.14	0.14
Dibenzo[a,h]anthracene	ug/g	0.1	0.092	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.050	0.087	0.11	1.0	0.18	0.25	0.27
Fluoranthene	ug/g	0.69	**1.2**	<0.0050	0.024	<0.0050	<0.0050	<0.0050	0.010	0.017	0.022	**0.17**	0.036	0.046	0.051
Fluorene	ug/g	62	0.067	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.11	0.19	0.24	**3.7**	0.44	0.61	0.68
Indeno[1,2,3-cd]pyrene	ug/g	0.38	**0.45**	<0.0050	0.0070	<0.0050	<0.0050	<0.0050	<0.0050	0.0068	0.0070	0.12	0.028	0.027	0.044
Naphthalene	ug/g	0.6	0.032	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.048	0.077	0.098	**0.83**	0.14	0.19	0.21
Phenanthrene	ug/g	6.2	0.47	<0.0050	0.015	<0.0050	<0.0050	<0.0050	--	--	--	--	--	--	--
Pyrene	ug/g	78	0.97	<0.0050	0.023	<0.0050	<0.0050	<0.0050	0.051	0.092	0.11	2.2	0.27	0.32	0.43

Table 5A - Summary of Soil Analytical Results
General Chemistry, Metals, and Polycyclic Aromatic Hydrocarbons

RSC #			RSC #2												
			TP15-112	TP AP	TP AV	TP AV	TP BE	TP BE	TP BE	TP BE	TP BK	TP BM	TP BM	TP R	TP R
			19-Nov-2015	31-Jul-2014	31-Jul-2014	31-Jul-2014	30-Jul-2014	30-Jul-2014	30-Jul-2014	30-Jul-2014	29-Jul-2014	30-Jul-2014	30-Jul-2014	30-Jul-2014	30-Jul-2014
Parameter	**Unit**		TP15-112	AP SA3	AV SA1	AV SA3	BE SA1	BE SA2	DUP BE SA2 (Field Duplicate)	BE SA3	BK SA1	BM SA2	BM SA3	R SA2	R SA3
Layer	-	**REG153 (11) T3-R/P/I**	Topsoil	Soil Fill	Topsoil	Soil Fill	Debris	Debris	Debris	Debris	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill
Sample Depth	m	**SOIL COARSE** (1) (2)	0 - 0.30	0.7 - 0.85	0 - 0.2	0.6 - 0.9	0.4 - 0.8	0.8 - 1.1	0.8 - 1.1	1.2 - 1.5	0.4 - 0.55	0.4 - 0.65	0.65 - 1.2	0.55 - 0.7	0.7 - 0.9
General Chemistry															
Moisture, Percent	%	--	20	16	17	17	18	16	18	33	7.0	22	18	9.9	18
pH	-		--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Antimony	ug/g	7.5	--	<0.20	0.24	<0.20	0.95	0.31	0.31	<0.20	<0.20	0.20	--	<0.20	<0.20
Arsenic	ug/g	18	--	1.4	3.5	1.2	2.8	1.8	1.7	2.9	<1.0	4.9	--	1.8	3.5
Barium	ug/g	390	--	48	52	29	230	110	120	350	26	140	--	38	110
Beryllium	ug/g	4	--	0.41	0.41	0.26	0.53	0.35	0.35	0.95	0.22	1.0	--	0.29	0.80
Boron	ug/g	120	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	6.1	--	<5.0	6.3
Boron, Hot Water Soluble	ug/g	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/g	1.2	--	<0.10	0.17	<0.10	0.17	0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10
Chromium	ug/g	160	--	34	26	23	61	35	38	130	18	65	--	24	59
Cobalt	ug/g	22	--	7.2	5.7	4.8	14	8.0	8.5	**29**	3.6	19	--	5.2	11
Copper	ug/g	140	--	6.7	10	4.7	33	19	23	59	6.8	29	--	11	35
Hexavalent Chromium	ug/g	8	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/g	120	--	5.3	37	3.4	51	20	19	8.5	2.6	10	--	5.0	9.6
Mercury	ug/g	0.27	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/g	6.9	--	<0.50	0.51	<0.50	0.89	<0.50	<0.50	<0.50	<0.50	0.52	--	<0.50	<0.50
Nickel	ug/g	100	--	17	13	11	36	21	23	73	11	32	--	12	29
Selenium	ug/g	2.4	--	<0.50	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
Silver	ug/g	20	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	--	<0.20	<0.20
Thallium	ug/g	1	--	0.11	0.13	0.095	0.28	0.14	0.16	0.44	0.069	0.20	--	0.067	0.18
Uranium	ug/g	23	--	0.97	0.76	0.66	0.84	0.59	0.61	0.78	0.88	2.8	--	0.80	1.3
Vanadium	ug/g	86	--	33	33	35	63	39	41	**110**	27	74	--	36	53
Zinc	ug/g	340	--	40	45	44	120	48	51	130	35	58	--	23	53
Semi-VOCs															
1- & 2-Methylnaphthalene	ug/g	0.99 (9)	0.034	<0.0071	<0.0071	<0.0071	<0.0071	<0.028	<0.028	<0.0071	<0.0071	<0.0071	--	<0.0071	<0.0071
1-Methylnaphthalene	ug/g	0.99 (9)	0.016	<0.0050	0.0054	<0.0050	<0.0050	<0.020	<0.020	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	0.99 (9)	0.018	<0.0050	<0.0050	<0.0050	<0.0050	0.022	0.020	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
Acenaphthene	ug/g	7.9	--	<0.0050	<0.0050	<0.0050	0.0096	0.031	<0.020	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
Acenaphthylene	ug/g	0.15	0.046	<0.0050	0.026	<0.0050	0.035	0.12	0.087	<0.0050	<0.0050	<0.0050	--	0.013	<0.0050
Anthracene	ug/g	0.67	0.029	<0.0050	0.019	<0.0050	0.036	0.14	0.060	<0.0050	<0.0050	<0.0050	--	0.0054	<0.0050
Benzo [b,j] fluoranthene	ug/g	--	0.10	<0.0050	0.19	<0.0050	0.22	0.71	0.46	0.011	<0.0050	<0.0050	--	0.053	<0.0050
Benzo[a]anthracene	ug/g	0.5	0.33	<0.0050	0.10	<0.0050	0.15	**0.51**	0.32	0.0088	<0.0050	<0.0050	--	0.026	<0.0050
Benzo[a]pyrene	ug/g	0.3	0.25	<0.0050	0.12	<0.0050	0.16	**0.53**	**0.35**	0.0082	<0.0050	<0.0050	--	0.032	<0.0050
Benzo[g,h,i]perylene	ug/g	6.6	--	<0.0050	0.082	<0.0050	0.10	0.37	0.26	<0.0050	<0.0050	<0.0050	--	0.026	<0.0050
Benzo[k]fluoranthene	ug/g	0.78	--	<0.0050	0.065	<0.0050	0.080	0.25	0.17	<0.0050	<0.0050	<0.0050	--	0.020	<0.0050
Chrysene	ug/g	7	0.12	<0.0050	0.11	<0.0050	0.13	0.41	0.24	0.0095	<0.0050	<0.0050	--	0.026	<0.0050
Dibenzo[a,h]anthracene	ug/g	0.1	0.23	<0.0050	0.020	<0.0050	0.027	0.088	0.063	<0.0050	<0.0050	<0.0050	--	0.0064	<0.0050
Fluoranthene	ug/g	0.69	0.042	<0.0050	0.23	<0.0050	0.26	**0.91**	0.49	0.019	<0.0050	<0.0050	--	0.050	<0.0050
Fluorene	ug/g	62	0.58	<0.0050	0.0059	<0.0050	0.0096	0.046	0.020	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrene	ug/g	0.38	0.054	<0.0050	0.087	<0.0050	0.11	**0.38**	0.26	<0.0050	<0.0050	<0.0050	--	0.027	<0.0050
Naphthalene	ug/g	0.6	0.17	<0.0050	<0.0050	<0.0050	0.0054	0.050	0.038	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
Phenanthrene	ug/g	6.2	--	<0.0050	0.099	<0.0050	0.11	0.56	0.17	0.0082	<0.0050	<0.0050	--	0.018	<0.0050
Pyrene	ug/g	78	0.43	<0.0050	0.19	<0.0050	0.21	0.76	0.43	0.016	<0.0050	<0.0050	--	0.041	<0.0050

Table 5A - Summary of Soil Analytical Results
General Chemistry, Metals, and Polycyclic Aromatic Hydrocarbons

RSC #														
			TP S	TP S	TP S	TP S	TP S	TP T	TP T	TP T	TP T	TP V	TP V	TP W
			29-Jul-2014	29-Jul-2014	29-Jul-2014	29-Jul-2014	29-Jul-2014	31-Jul-2014	31-Jul-2014	31-Jul-2014	31-Jul-2014	31-Jul-2014	31-Jul-2014	29-Jul-2014
Parameter	**Unit**		S SA1	S SA2 _ DUP	S SA2	DUP S SA2 (2) (Field Duplicate)	DUP S SA2 (Field Duplicate)	T SA2	DUP T SA2 (Field Duplicate)	T SA3	T SA4	V SA3	V SA5	W SA1
Layer	-	**REG153 (11) T3-R/P/I**	Topsoil	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Topsoil
Sample Depth	m	**SOIL COARSE** (1) (2)	0 - 0.45	0.45 - 0.7	0.45 - 0.7	0.45 - 0.7	0.45 - 0.7	0.35 - 0.7	0.35 - 0.7	0.7 - 0.8	0.9 - 1.1	0.55 - 0.8	1.05 - 1.25	0 - 0.25
General Chemistry														
Moisture, Percent	%	--	14	13	12	14	13	2.9	4.5	22	18	11	17	12
pH	-		--	--	--	--	--	--	--	--	--	--	--	--
Metals														
Antimony	ug/g	7.5	<0.20	<0.20	--	<0.20	--	<0.20	<0.20	<0.20	<0.20	--	<0.20	0.22
Arsenic	ug/g	18	2.8	1.5	--	1.5	--	<1.0	<1.0	3.1	1.9	--	1.3	2.8
Barium	ug/g	390	45	42	--	45	--	15	19	77	48	--	31	59
Beryllium	ug/g	4	0.30	0.34	--	0.35	--	<0.20	0.21	0.57	0.32	--	0.20	0.39
Boron	ug/g	120	<5.0	<5.0	--	<5.0	--	<5.0	<5.0	<5.0	<5.0	--	<5.0	<5.0
Boron, Hot Water Soluble	ug/g	1.5	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/g	1.2	0.13	<0.10	--	<0.10	--	<0.10	<0.10	<0.10	<0.10	--	<0.10	0.13
Chromium	ug/g	160	21	26	--	27	--	8.9	12	49	31	--	18	33
Cobalt	ug/g	22	4.1	5.3	--	5.6	--	2.6	3.0	8.7	5.8	--	3.6	6.1
Copper	ug/g	140	9.3	7.5	--	7.3	--	5.1	7.1	25	20	--	8.9	11
Hexavalent Chromium	ug/g	8	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/g	120	25	5.7	--	5.7	--	2.1	3.1	6.7	3.2	--	2.0	20
Mercury	ug/g	0.27	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/g	6.9	<0.50	<0.50	--	<0.50	--	<0.50	<0.50	<0.50	<0.50	--	<0.50	0.50
Nickel	ug/g	100	9.6	12	--	13	--	6.8	7.1	22	17	--	9.7	14
Selenium	ug/g	2.4	<0.50	<0.50	--	<0.50	--	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
Silver	ug/g	20	<0.20	<0.20	--	<0.20	--	<0.20	<0.20	<0.20	<0.20	--	<0.20	<0.20
Thallium	ug/g	1	0.10	0.082	--	0.084	--	<0.050	<0.050	0.12	0.077	--	0.055	0.14
Uranium	ug/g	23	0.52	0.67	--	0.64	--	0.32	0.45	0.85	0.64	--	0.75	1.7
Vanadium	ug/g	86	27	30	--	31	--	11	14	45	29	--	26	34
Zinc	ug/g	340	38	29	--	31	--	11	15	37	27	--	20	47
Semi-VOCs														
1- & 2-Methylnaphthalene	ug/g	0.99 (9)	<0.0071	<0.0071	--	<0.0071	--	<0.0071	<0.0071	<0.0071	<0.0071	--	<0.0071	0.012
1-Methylnaphthalene	ug/g	0.99 (9)	<0.0050	<0.0050	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	0.0053
2-Methylnaphthalene	ug/g	0.99 (9)	<0.0050	<0.0050	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	0.0062
Acenaphthene	ug/g	7.9	0.0055	<0.0050	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	0.050
Acenaphthylene	ug/g	0.15	0.065	<0.0050	--	0.0057	--	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	0.036
Anthracene	ug/g	0.67	0.033	<0.0050	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	0.14
Benzo [b,j] fluoranthene	ug/g	--	0.33	0.0096	--	0.020	--	0.0058	0.0075	<0.0050	<0.0050	--	<0.0050	0.43
Benzo[a]anthracene	ug/g	0.5	0.17	<0.0050	--	0.0098	--	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	0.32
Benzo[a]pyrene	ug/g	0.3	0.21	0.0063	--	0.012	--	<0.0050	0.0056	<0.0050	<0.0050	--	<0.0050	0.28
Benzo[g,h,i]perylene	ug/g	6.6	0.16	<0.0050	--	0.0098	--	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	0.17
Benzo[k]fluoranthene	ug/g	0.78	0.13	<0.0050	--	0.0062	--	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	0.14
Chrysene	ug/g	7	0.18	0.0063	--	0.013	--	<0.0050	0.0056	<0.0050	<0.0050	--	<0.0050	0.33
Dibenzo[a,h]anthracene	ug/g	0.1	0.040	<0.0050	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	0.047
Fluoranthene	ug/g	0.69	0.35	0.0096	--	0.019	--	0.0058	0.0089	<0.0050	<0.0050	--	<0.0050	**0.75**
Fluorene	ug/g	62	0.0080	<0.0050	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	0.062
Indeno[1,2,3-cd]pyrene	ug/g	0.38	0.17	<0.0050	--	0.010	--	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	0.19
Naphthalene	ug/g	0.6	0.0050	<0.0050	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	0.0058
Phenanthrene	ug/g	6.2	0.14	<0.0050	--	0.0072	--	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	0.57
Pyrene	ug/g	78	0.30	0.0087	--	0.016	--	0.0054	0.0080	<0.0050	<0.0050	--	<0.0050	0.57

Table 5A - Summary of Soil Analytical Results
General Chemistry, Metals, and Polycyclic Aromatic Hydrocarbons

RSC #							
			TP X	**TP X**	**TR BN**	**TR BN**	**TR N**
			29-Jul-2014	**29-Jul-2014**	**01-Aug-2014**	**01-Aug-2014**	**01-Aug-2014**
Parameter	**Unit**		X SA1	X SA2	BN SA1	BN SA3	N SA3
Layer	-	**REG153 (11) T3-R/P/I**	Topsoil	Soil Fill	Debris	Debris	Soil Fill
Sample Depth	m	**SOIL COARSE** (1) (2)	0 - 0.5	0.5 - 0.95	0.1 - 0.4	1 - 1.5	1.3 - 1.7
General Chemistry							
Moisture, Percent	%	--	23	11	16	17	31
pH	-		--	--	--	--	--
Metals							
Antimony	ug/g	7.5	<0.20	<0.20	<0.20	<0.20	--
Arsenic	ug/g	18	3.5	1.0	2.1	2.6	--
Barium	ug/g	390	160	22	230	41	--
Beryllium	ug/g	4	0.61	<0.20	0.66	0.34	--
Boron	ug/g	120	<5.0	<5.0	<5.0	<5.0	--
Boron, Hot Water Soluble	ug/g	1.5	--	--	--	--	--
Cadmium	ug/g	1.2	0.15	<0.10	<0.10	<0.10	--
Chromium	ug/g	160	56	16	88	31	--
Cobalt	ug/g	22	15	3.3	18	5.9	--
Copper	ug/g	140	26	7.3	40	16	--
Hexavalent Chromium	ug/g	8	--	--	--	--	--
Lead	ug/g	120	21	2.0	7.3	20	--
Mercury	ug/g	0.27	--	--	--	--	--
Molybdenum	ug/g	6.9	<0.50	<0.50	<0.50	<0.50	--
Nickel	ug/g	100	30	8.4	48	15	--
Selenium	ug/g	2.4	<0.50	<0.50	<0.50	<0.50	--
Silver	ug/g	20	<0.20	<0.20	<0.20	<0.20	--
Thallium	ug/g	1	0.23	0.22	0.29	0.10	--
Uranium	ug/g	23	1.1	0.79	0.90	0.90	--
Vanadium	ug/g	86	59	19	79	43	--
Zinc	ug/g	340	81	16	90	35	--
Semi-VOCs							
1- & 2-Methylnaphthalene	ug/g	0.99 (9)	0.053	<0.0071	<0.0071	<0.0071	--
1-Methylnaphthalene	ug/g	0.99 (9)	0.028	<0.0050	<0.0050	<0.0050	--
2-Methylnaphthalene	ug/g	0.99 (9)	0.025	<0.0050	<0.0050	<0.0050	--
Acenaphthene	ug/g	7.9	0.066	<0.0050	<0.0050	<0.0050	--
Acenaphthylene	ug/g	0.15	0.035	<0.0050	0.022	<0.0050	--
Anthracene	ug/g	0.67	0.15	<0.0050	0.0096	<0.0050	--
Benzo [b,j] fluoranthene	ug/g	--	0.45	<0.0050	0.073	0.0060	--
Benzo[a]anthracene	ug/g	0.5	0.37	<0.0050	0.033	<0.0050	--
Benzo[a]pyrene	ug/g	0.3	**0.31**	<0.0050	0.053	<0.0050	--
Benzo[g,h,i]perylene	ug/g	6.6	0.18	<0.0050	0.044	<0.0050	--
Benzo[k]fluoranthene	ug/g	0.78	0.16	<0.0050	0.026	<0.0050	--
Chrysene	ug/g	7	0.32	<0.0050	0.031	<0.0050	--
Dibenzo[a,h]anthracene	ug/g	0.1	0.049	<0.0050	0.011	<0.0050	--
Fluoranthene	ug/g	0.69	**0.87**	<0.0050	0.057	0.0071	--
Fluorene	ug/g	62	0.073	<0.0050	<0.0050	<0.0050	--
Indeno[1,2,3-cd]pyrene	ug/g	0.38	0.20	<0.0050	0.049	<0.0050	--
Naphthalene	ug/g	0.6	0.041	<0.0050	<0.0050	<0.0050	--
Phenanthrene	ug/g	6.2	0.65	<0.0050	0.024	<0.0050	--
Pyrene	ug/g	78	0.69	<0.0050	0.048	0.0060	--

RSC #															
			BH14-101C	**BH 14-201**	**BH 14-206**	**BH15-103**	**BH15-103**	**BH15-104**	**BH15-104**	**BH15-105**	**BH15-105**	**BH15-106**	**BH15-106**	**BH15-106**	**BH15-107**
			26-Mar-2014	**05-Aug-2014**	**06-Aug-2014**	**18-Mar-2015**	**18-Mar-2015**	**17-Mar-2015**	**17-Mar-2015**	**18-Mar-2015**	**18-Mar-2015**	**17-Mar-2015**	**17-Mar-2015**	**17-Mar-2015**	**18-Mar-2015**
Parameter	**Unit**		BH14-101C SA5	G1 SA5	G6 SA4	BH15-103 SA1	BH15-103 SA2	BH15-104 SA1	BH15-104 SA2	BH15-105 SA3	BH15-105 SA4	BH15-106 SA2	BH15-106 SA3	DUP-4 (Field Duplicate)	BH15-107 SA2
Layer	-	**REG153 (11) T3-R/P/I**	Native Silty Clay	Native Silty Clay	Native Silty Clay	Debris	Native Silty Clay	Soil Fill	Native Silty Clay	Debris	Native Silty Clay	Soil Fill	Native Silty Clay	Native Silty Clay	Soil Fill
Sample Depth	m	**SOIL COARSE** (1) (2)	3.81 - 4.42	2.44 - 3.05	1.83 - 2.44	0.76 - 1.37	1.52 - 2.13	0.76 - 1.37	1.52 - 2.13	2.29 - 2.9	3.05 - 3.66	1.52 - 2.13	2.29 - 2.9	2.29 - 2.9	0.76 - 1.37
General Chemistry															
Moisture, Percent	%	--	27	21	21	17	23	9.9	22	23	21	22	22	21	17
pH	-		--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Antimony	ug/g	7.5	--	<0.20	<0.20	0.53	<0.20	<0.20	<0.20	0.73	<0.20	0.44	<0.20	<0.20	<0.20
Arsenic	ug/g	18	--	3.7	2.2	5.7	1.5	<1.0	2.5	2.0	1.8	2.7	3.0	3.0	1.2
Barium	ug/g	390	--	200	120	96	250	15	190	51	110	130	240	250	35
Beryllium	ug/g	4	--	0.66	0.45	0.50	0.63	<0.20	0.66	<0.20	0.33	0.55	0.77	0.77	0.23
Boron	ug/g	120	--	<5.0	<5.0	5.0	<5.0	<5.0	5.3	<5.0	<5.0	6.1	6.6	6.9	<5.0
Boron, Hot Water Soluble	ug/g	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/g	1.2	--	<0.10	<0.10	0.14	<0.10	<0.10	<0.10	<0.10	<0.10	0.23	<0.10	<0.10	<0.10
Chromium	ug/g	160	--	45	31	36	57	11	43	9.6	22	33	51	55	20
Cobalt	ug/g	22	--	16	8.8	9.0	17	3.5	14	1.9	7.3	9.5	17	14	4.8
Copper	ug/g	140	--	28	20	19	31	3.1	26	6.5	14	17	32	30	7.5
Hexavalent Chromium	ug/g	8	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/g	120	--	6.5	4.6	60	5.8	1.5	6.0	**370**	3.7	37	7.6	7.2	4.3
Mercury	ug/g	0.27	--	<0.050	<0.050	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/g	6.9	--	<0.50	<0.50	0.80	<0.50	<0.50	<0.50	<0.50	<0.50	0.61	<0.50	<0.50	<0.50
Nickel	ug/g	100	--	31	19	20	34	7.0	27	5.8	13	17	34	32	9.7
Selenium	ug/g	2.4	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.59	<0.50	<0.50	<0.50
Silver	ug/g	20	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	ug/g	1	--	0.24	0.17	0.20	0.30	<0.050	0.24	0.059	0.12	0.20	0.28	0.32	0.058
Uranium	ug/g	23	--	0.57	0.69	1.1	1.1	0.36	0.81	0.36	0.55	1.1	0.64	0.65	0.72
Vanadium	ug/g	86	--	65	48	40	71	14	65	13	40	44	74	75	24
Zinc	ug/g	340	--	74	51	77	84	14	73	54	39	87	86	90	23
Semi-VOCs															
1- & 2-Methylnaphthalene	ug/g	0.99 (9)	--	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	0.047	<0.0071	0.011	<0.0071	<0.0071	<0.0071
1-Methylnaphthalene	ug/g	0.99 (9)	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.018	<0.0050	0.0060	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	0.99 (9)	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.028	<0.0050	0.0054	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	7.9	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.027	<0.0050	0.0066	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	0.15	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.028	<0.0050	0.018	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	0.67	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.064	<0.0050	0.024	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthene	ug/g	--	--	<0.0050	<0.0050	0.026	<0.0050	<0.0050	<0.0050	0.23	<0.0050	0.16	<0.0050	<0.0050	0.011
Benzo[a]anthracene	ug/g	0.5	--	<0.0050	<0.0050	0.020	<0.0050	<0.0050	<0.0050	0.22	<0.0050	0.11	<0.0050	<0.0050	0.0070
Benzo[a]pyrene	ug/g	0.3	--	<0.0050	<0.0050	0.020	<0.0050	<0.0050	<0.0050	0.19	<0.0050	0.11	<0.0050	<0.0050	0.0080
Benzo[g,h,i]perylene	ug/g	6.6	--	<0.0050	<0.0050	0.014	<0.0050	<0.0050	<0.0050	0.13	<0.0050	0.076	<0.0050	<0.0050	0.0059
Benzo[k]fluoranthene	ug/g	0.78	--	<0.0050	<0.0050	0.0090	<0.0050	<0.0050	<0.0050	0.085	<0.0050	0.055	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	7	--	<0.0050	<0.0050	0.016	<0.0050	<0.0050	<0.0050	0.18	<0.0050	0.12	<0.0050	<0.0050	0.0064
Dibenzo[a,h]anthracene	ug/g	0.1	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.028	<0.0050	0.017	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	0.69	--	<0.0050	<0.0050	0.041	<0.0050	<0.0050	<0.0050	0.40	<0.0050	0.28	<0.0050	<0.0050	0.013
Fluorene	ug/g	62	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.030	<0.0050	0.011	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrene	ug/g	0.38	--	<0.0050	<0.0050	0.015	<0.0050	<0.0050	<0.0050	0.14	<0.0050	0.089	<0.0050	<0.0050	0.0064
Naphthalene	ug/g	0.6	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.061	<0.0050	0.0060	<0.0050	<0.0050	<0.0050
Phenanthrene	ug/g	6.2	--	<0.0050	<0.0050	0.017	<0.0050	<0.0050	<0.0050	0.25	<0.0050	0.16	<0.0050	<0.0050	0.0064
Pyrene	ug/g	78	--	<0.0050	<0.0050	0.033	<0.0050	<0.0050	<0.0050	0.33	<0.0050	0.22	<0.0050	<0.0050	0.011

RSC #			RSC #3												
			BH15-107	BH15-107A	TP 14-4	TP 14-5	TP 14-9	TP16-401	TP16-402	TP16-403	TP16-404	TP AA	TP AA	TP AA	TP AB
			18-Mar-2015	13-May-2015	27-Mar-2014 (6)	27-Mar-2014	27-Mar-2014	25-May-2016	25-May-2016	25-May-2016	25-May-2016	28-Jun-2014	28-Jun-2014	28-Jun-2014	28-Jun-2014
Parameter	**Unit**		BH15-107 SA6	BH15-107A	TP14-4 SA1	TP14-5 SA2	TP14-9 SA2	TP16-401	TP16-402	TP16-403	TP16-404	AA SA2	AA SA3	DUP AA SA3 (Field Duplicate)	AB SA1
Layer	-	**REG153 (11) T3-R/P/I**	Native Silty Clay	Native Silty Clay	Debris	Debris	Debris	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Debris
Sample Depth	m	**SOIL COARSE (1) (2)**	3.81 - 4.42	1.83 - 2.44	0.14 - 1.1	0.93 - 1.95	1.4 - 2	0.25 - 0.35	0.25 - 0.35	0.25 - 0.35	0.25 - 0.35	0.6 - 0.9	0.9 - 1.1	0.9 - 1.1	0 - 0.4
General Chemistry															
Moisture, Percent	%	--	22	32	15	25	30	11	12	12	11	18	18	18	12
pH	-		--	--	7.63	--	--	--	--	--	--	--	--	--	--
Metals															
Antimony	ug/g	7.5	<0.20	--	3.5	<0.20	<0.20	--	--	--	--	--	<0.20	<0.20	0.47
Arsenic	ug/g	18	<1.0	--	5.1	3.4	2.1	--	--	--	--	--	1.1	1.1	2.1
Barium	ug/g	390	150	--	210	130	230	--	--	--	--	--	24	27	110
Beryllium	ug/g	4	0.39	--	0.31	0.66	0.50	--	--	--	--	--	0.22	0.24	0.24
Boron	ug/g	120	<5.0	--	<5.0	<5.0	<5.0	--	--	--	--	--	<5.0	<5.0	<5.0
Boron, Hot Water Soluble	ug/g	1.5	--	--	0.25	0.24	0.23	--	--	--	--	--	--	--	--
Cadmium	ug/g	1.2	<0.10	--	0.30	0.14	<0.10	--	--	--	--	--	<0.10	<0.10	0.11
Chromium	ug/g	160	30	--	17	51	57	--	--	--	--	--	19	20	19
Cobalt	ug/g	22	8.2	--	4.7	13	14	--	--	--	--	--	4.5	4.6	4.5
Copper	ug/g	140	18	--	23	30	32	--	--	--	--	--	5.4	5.1	12
Hexavalent Chromium	ug/g	8	--	--	<0.2	<0.2	<0.2	--	--	--	--	--	--	--	--
Lead	ug/g	120	4.3	--	**430**	20	5.0	--	--	--	--	--	6.2	2.3	**260**
Mercury	ug/g	0.27	--	--	**0.38**	<0.050	<0.050	--	--	--	--	--	--	--	--
Molybdenum	ug/g	6.9	<0.50	--	0.54	0.83	0.76	--	--	--	--	--	<0.50	<0.50	<0.50
Nickel	ug/g	100	16	--	11	30	34	--	--	--	--	--	10	11	11
Selenium	ug/g	2.4	<0.50	--	<0.50	<0.50	<0.50	--	--	--	--	--	<0.50	<0.50	<0.50
Silver	ug/g	20	<0.20	--	0.34	<0.20	<0.20	--	--	--	--	--	<0.20	<0.20	<0.20
Thallium	ug/g	1	0.16	--	0.12	0.17	0.31	--	--	--	--	--	0.073	0.063	0.095
Uranium	ug/g	23	0.63	--	0.48	1.0	0.98	--	--	--	--	--	0.34	0.38	0.54
Vanadium	ug/g	86	45	--	22	58	68	--	--	--	--	--	22	24	26
Zinc	ug/g	340	50	--	160	74	84	--	--	--	--	--	24	25	110
Semi-VOCs															
1- & 2-Methylnaphthalene	ug/g	0.99 (9)	<0.0071	--	0.037	0.011	<0.0071	--	--	--	--	<0.0071	<0.0071	<0.0071	<0.0071
1-Methylnaphthalene	ug/g	0.99 (9)	<0.0050	--	0.018	0.0051	<0.0050	--	--	--	--	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	0.99 (9)	<0.0050	--	0.019	0.0057	<0.0050	--	--	--	--	<0.0050	<0.0050	<0.0050	0.0050
Acenaphthene	ug/g	7.9	<0.0050	--	0.061	0.017	0.012	--	--	--	--	<0.0050	<0.0050	<0.0050	0.023
Acenaphthylene	ug/g	0.15	<0.0050	--	0.036	0.022	0.013	--	--	--	--	<0.0050	<0.0050	<0.0050	0.028
Anthracene	ug/g	0.67	<0.0050	--	0.13	0.039	0.0078	--	--	--	--	<0.0050	<0.0050	<0.0050	0.075
Benzo [b,j] fluoranthene	ug/g	--	<0.0050	--	0.46	0.13	0.045	--	--	--	--	0.0069	0.0069	<0.0050	0.40
Benzo[a]anthracene	ug/g	0.5	<0.0050	--	0.44	0.10	0.025	--	--	--	--	<0.0050	<0.0050	<0.0050	0.29
Benzo[a]pyrene	ug/g	0.3	<0.0050	--	**0.40**	0.095	0.036	--	--	--	--	<0.0050	<0.0050	<0.0050	0.27
Benzo[g,h,i]perylene	ug/g	6.6	<0.0050	--	0.24	0.065	0.024	--	--	--	--	<0.0050	<0.0050	<0.0050	0.17
Benzo[k]fluoranthene	ug/g	0.78	<0.0050	--	0.17	0.048	0.015	--	--	--	--	<0.0050	<0.0050	<0.0050	0.12
Chrysene	ug/g	7	<0.0050	--	0.36	0.096	0.020	--	--	--	--	<0.0050	<0.0050	<0.0050	0.28
Dibenzo[a,h]anthracene	ug/g	0.1	<0.0050	--	0.060	0.014	0.0052	--	--	--	--	<0.0050	<0.0050	<0.0050	0.043
Fluoranthene	ug/g	0.69	<0.0050	--	**0.85**	0.25	0.061	--	--	--	--	0.0090	0.0090	<0.0050	0.62
Fluorene	ug/g	62	<0.0050	--	0.053	0.017	0.017	--	--	--	--	<0.0050	<0.0050	<0.0050	0.025
Indeno[1,2,3-cd]pyrene	ug/g	0.38	<0.0050	--	0.26	0.069	0.027	--	--	--	--	<0.0050	<0.0050	<0.0050	0.18
Naphthalene	ug/g	0.6	<0.0050	--	0.037	0.0083	<0.0050	--	--	--	--	<0.0050	<0.0050	<0.0050	0.0065
Phenanthrene	ug/g	6.2	<0.0050	--	0.59	0.16	0.0091	--	--	--	--	0.0053	0.0053	<0.0050	0.31
Pyrene	ug/g	78	<0.0050	--	0.72	0.20	0.055	--	--	--	--	0.0074	0.0074	<0.0050	0.51

Table 5A - Summary of Soil Analytical Results
General Chemistry, Metals, and Polycyclic Aromatic Hydrocarbons

RSC #			TP AC	TP AC	TP AE	TP AS	TP AS	TP AX	TP AX	TP BA	TP BA	TP BA	TP Y	TP Y	TP Z
			28-Jun-2014	28-Jun-2014	28-Jun-2014	30-Jul-2014	30-Jul-2014	30-Jul-2014	30-Jul-2014	30-Jul-2014	30-Jul-2014	30-Jul-2014	28-Jun-2014	28-Jun-2014	28-Jun-2014
Parameter	**Unit**		AC SA1	AC SA3	AE SA2	AS SA1	AS SA2	AX SA2	AX SA3	BA SA2	BA SA3	BA SA3 (2)	Y SA1	Y SA2	Z SA2
Layer	-	**REG153 (11) T3-R/P/I**	Debris	Soil Fill	Debris	Debris	Debris	Soil Fill	Soil Fill	Soil Fill	Debris	Debris	Debris	Soil Fill	Debris
Sample Depth	m	**SOIL COARSE** (1) (2)	0 - 0.37	1 - 2	1.1 - 1.1	0.2 - 0.4	0.7 - 1.3	0.4 - 0.65	0.8 - 1.2	0.7 - 1	1.8 - 2	1.8 - 2	0.1 - 0.3	0.3 - 0.9	0.3 - 0.7
General Chemistry															
Moisture, Percent	%	--	9.8	16	13	17	21	11	11	17	20	16	15	11	15
pH	-		--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Antimony	ug/g	7.5	0.27	<0.20	<0.20	<0.20	0.32	<0.20	<0.20	<0.20	--	0.24	0.54	0.32	<0.20
Arsenic	ug/g	18	3.8	<1.0	1.7	2.9	2.5	1.9	1.3	2.8	--	2.8	4.2	1.7	2.0
Barium	ug/g	390	92	28	63	180	280	47	25	160	--	160	90	36	67
Beryllium	ug/g	4	0.40	0.22	0.30	0.56	0.53	0.29	<0.20	0.50	--	0.46	0.45	<0.20	0.39
Boron	ug/g	120	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	<5.0	<5.0	<5.0	<5.0
Boron, Hot Water Soluble	ug/g	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/g	1.2	0.18	<0.10	<0.10	0.13	0.12	0.12	<0.10	<0.10	--	0.11	0.27	<0.10	<0.10
Chromium	ug/g	160	26	16	24	73	72	22	15	40	--	44	28	15	29
Cobalt	ug/g	22	7.2	4.5	6.0	15	16	5.0	4.3	11	--	11	7.2	4.1	7.6
Copper	ug/g	140	16	5.6	15	38	39	7.9	5.1	24	--	25	18	4.1	13
Hexavalent Chromium	ug/g	8	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/g	120	59	2.0	7.9	39	**310**	14	4.9	8.6	--	45	**150**	12	27
Mercury	ug/g	0.27	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/g	6.9	<0.50	<0.50	<0.50	<0.50	0.59	<0.50	<0.50	0.67	--	1.1	<0.50	<0.50	<0.50
Nickel	ug/g	100	15	9.1	14	42	43	12	9.3	23	--	26	15	8.1	16
Selenium	ug/g	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50
Silver	ug/g	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	--	<0.20	<0.20	<0.20	<0.20
Thallium	ug/g	1	0.14	0.053	0.11	0.24	0.28	0.095	0.061	0.22	--	0.19	0.16	<0.050	0.13
Uranium	ug/g	23	0.72	0.55	0.78	0.86	0.96	0.64	0.39	0.64	--	0.78	0.61	0.40	0.77
Vanadium	ug/g	86	35	22	30	68	69	24	19	54	--	49	36	19	37
Zinc	ug/g	340	71	20	31	90	100	46	26	63	--	72	150	27	52
Semi-VOCs															
1- & 2-Methylnaphthalene	ug/g	0.99 (9)	0.13	<0.0071	<0.028	0.077	0.17	<0.0071	<0.0071	<0.0071	--	0.24	0.013	<0.0071	0.14
1-Methylnaphthalene	ug/g	0.99 (9)	0.061	<0.0050	<0.020	0.035	0.087	<0.0050	<0.0050	<0.0050	--	0.19	0.0072	<0.0050	0.067
2-Methylnaphthalene	ug/g	0.99 (9)	0.065	<0.0050	<0.020	0.042	0.087	<0.0050	<0.0050	<0.0050	--	0.046	0.0061	<0.0050	0.071
Acenaphthene	ug/g	7.9	0.49	<0.0050	<0.020	0.37	0.29	0.0076	<0.0050	<0.0050	--	0.33	0.026	<0.0050	0.70
Acenaphthylene	ug/g	0.15	0.040	<0.0050	**0.22**	0.013	0.048	0.018	<0.0050	0.034	--	**0.46**	0.051	0.011	0.10
Anthracene	ug/g	0.67	**1.3**	<0.0050	0.089	**1.0**	**0.76**	0.020	<0.0050	0.019	--	**0.73**	0.070	0.0099	**1.9**
Benzo [b,j] fluoranthene	ug/g	--	2.6	0.016	0.80	1.3	1.5	0.11	0.0080	0.14	--	1.8	0.45	0.075	3.1
Benzo[a]anthracene	ug/g	0.5	**2.6**	0.012	0.42	**1.6**	**1.5**	0.071	<0.0050	0.081	--	**1.4**	0.31	0.051	**3.1**
Benzo[a]pyrene	ug/g	0.3	**1.9**	0.011	**0.60**	**0.96**	**1.1**	0.075	0.0053	0.10	--	**1.4**	0.30	0.055	**2.5**
Benzo[g,h,i]perylene	ug/g	6.6	1.1	0.0069	0.44	0.45	0.57	0.051	<0.0050	0.068	--	0.87	0.21	0.038	1.6
Benzo[k]fluoranthene	ug/g	0.78	**1.0**	0.0063	0.30	0.49	0.55	0.035	<0.0050	0.045	--	0.75	0.16	0.030	**1.1**
Chrysene	ug/g	7	2.2	0.011	0.41	1.2	1.1	0.079	0.0064	0.081	--	1.1	0.27	0.049	2.4
Dibenzo[a,h]anthracene	ug/g	0.1	**0.32**	<0.0050	**0.11**	**0.14**	**0.18**	0.012	<0.0050	0.018	--	**0.22**	0.051	0.0089	**0.38**
Fluoranthene	ug/g	0.69	**5.6**	0.022	0.37	**3.7**	**3.2**	0.15	0.0096	0.12	--	**3.2**	0.60	0.10	**7.1**
Fluorene	ug/g	62	0.62	<0.0050	<0.030 (12)	0.42	0.41	0.0057	<0.0050	<0.0050	--	0.88	0.021	<0.0050	0.61
Indeno[1,2,3-cd]pyrene	ug/g	0.38	**1.1**	0.0074	**0.45**	**0.49**	**0.63**	0.053	<0.0050	0.077	--	**0.92**	0.22	0.038	**1.6**
Naphthalene	ug/g	0.6	0.094	<0.0050	0.043	0.11	0.58	<0.0050	<0.0050	<0.0050	--	0.12	0.0061	<0.0050	0.13
Phenanthrene	ug/g	6.2	4.9	0.010	0.14	3.9	2.8	0.073	<0.0050	0.043	--	2.9	0.28	0.039	**6.3**
Pyrene	ug/g	78	4.2	0.018	0.33	3.0	2.3	0.12	0.0080	0.11	--	2.5	0.49	0.092	5.6

RSC #								
			TR E	**TR E**	**TR E**	**TR E**	**TR F**	**TR J**
			29-Jul-2014	**29-Jul-2014**	**29-Jul-2014**	**25-Aug-2014**	**29-Jul-2014**	**29-Jul-2014**
Parameter	**Unit**		E SA2	E SA2 (2)	DUP E SA2 (Field Duplicate)	TP E	F SA1	J SA2
Layer	-	**REG153 (11) T3-R/P/I**	Debris	Debris	Debris	Native Silty Clay	Debris	Soil Fill
Sample Depth	m	**SOIL COARSE** (1) (2)	0.55 - 1	0.55 - 1	0.55 - 1	1.4 - 1.7	0 - 0.6	0.65 - 0.9
General Chemistry								
Moisture, Percent	%	--	7.3	7.0	6.5	21	11	15
pH	-		--	--	--	--	--	--
Metals								
Antimony	ug/g	7.5	--	<0.20	--	<0.20	1.2	<0.20
Arsenic	ug/g	18	--	1.6	--	3.3	7.5	1.3
Barium	ug/g	390	--	22	--	200	130	48
Beryllium	ug/g	4	--	0.22	--	0.69	0.59	0.30
Boron	ug/g	120	--	<5.0	--	<5.0	<5.0	<5.0
Boron, Hot Water Soluble	ug/g	1.5	--	--	--	0.18	--	--
Cadmium	ug/g	1.2	--	<0.10	--	<0.10	0.26	<0.10
Chromium	ug/g	160	--	15	--	42	33	19
Cobalt	ug/g	22	--	4.2	--	13	8.5	4.2
Copper	ug/g	140	--	5.2	--	24	25	5.3
Hexavalent Chromium	ug/g	8	--	--	--	<0.2	--	--
Lead	ug/g	120	--	10	--	6.1	**170**	3.2
Mercury	ug/g	0.27	--	--	--	<0.050	--	--
Molybdenum	ug/g	6.9	--	<0.50	--	<0.50	0.64	<0.50
Nickel	ug/g	100	--	9.3	--	24	21	9.3
Selenium	ug/g	2.4	--	<0.50	--	<0.50	<0.50	<0.50
Silver	ug/g	20	--	<0.20	--	<0.20	<0.20	<0.20
Thallium	ug/g	1	--	0.056	--	0.23	0.22	0.087
Uranium	ug/g	23	--	0.30	--	0.84	0.68	0.63
Vanadium	ug/g	86	--	18	--	59	40	27
Zinc	ug/g	340	--	24	--	66	110	29
Semi-VOCs								
1- & 2-Methylnaphthalene	ug/g	0.99 (9)	--	<0.0071	--	<0.0071	0.031	<0.0071
1-Methylnaphthalene	ug/g	0.99 (9)	--	<0.0050	--	<0.0050	0.015	<0.0050
2-Methylnaphthalene	ug/g	0.99 (9)	--	0.0053	--	<0.0050	0.015	<0.0050
Acenaphthene	ug/g	7.9	--	0.061	--	<0.0050	0.042	<0.0050
Acenaphthylene	ug/g	0.15	--	<0.0050	--	<0.0050	0.031	<0.0050
Anthracene	ug/g	0.67	--	0.17	--	<0.0050	0.13	<0.0050
Benzo [b,j] fluoranthene	ug/g	--	--	0.38	--	<0.0050	0.59	<0.0050
Benzo[a]anthracene	ug/g	0.5	--	0.35	--	<0.0050	0.48	<0.0050
Benzo[a]pyrene	ug/g	0.3	--	0.29	--	<0.0050	**0.45**	<0.0050
Benzo[g,h,i]perylene	ug/g	6.6	--	0.15	--	<0.0050	0.30	<0.0050
Benzo[k]fluoranthene	ug/g	0.78	--	0.15	--	<0.0050	0.21	<0.0050
Chrysene	ug/g	7	--	0.29	--	<0.0050	0.44	<0.0050
Dibenzo[a,h]anthracene	ug/g	0.1	--	0.046	--	<0.0050	0.074	<0.0050
Fluoranthene	ug/g	0.69	--	**0.72**	--	<0.0050	**0.95**	0.0052
Fluorene	ug/g	62	--	0.071	--	<0.0050	0.042	<0.0050
Indeno[1,2,3-cd]pyrene	ug/g	0.38	--	0.16	--	<0.0050	0.29	<0.0050
Naphthalene	ug/g	0.6	--	<0.0050	--	<0.0050	0.024	<0.0050
Phenanthrene	ug/g	6.2	--	0.62	--	<0.0050	0.55	<0.0050
Pyrene	ug/g	78	--	0.52	--	<0.0050	0.76	<0.0050

Table 5B - Summary of Soil Analytical Results
Petroleum Hydrocarbons, Volatile Organic Compounds, and Polychlorinated Biphenyls

RSC #			RSC #1					
			TP 14-10	TP 14-10	TP 14-12	TP 14-15	TP AF	TP BJ
			31-Mar-2014	31-Mar-2014	31-Mar-2014 (5)	31-Mar-2014 (5)	28-Jul-2014	30-Jul-2014
Parameter	Unit		TP14-10 SA2	TP14-10 SA2A (Field Duplicate)	TP14-12 SA4	TP14-15 SA5	AF SA1	BJ SA5
Layer	-	REG153 (11) T3-R/P/I	Debris	Debris	Debris	Debris	Soil Fill	Native Silty Clay
Sample Depth	m	SOIL COARSE (1) (2)	0.6 - 1.6	0.6 - 1.6	2 - 2.7	3 - 3.6	0.5 - 0.5001	3.5 - 3.8
Petroleum Hydrocarbons								
Benzene	ug/g	0.21	<0.02	<0.02	<0.02	<0.02	<0.020	<0.020
Ethylbenzene	ug/g	2	<0.02	<0.02	<0.02	<0.02	<0.020	<0.020
m,p-Xylenes	ug/g	--	<0.04	<0.04	<0.04	<0.04	<0.040	<0.040
o-Xylene	ug/g	--	<0.02	<0.02	<0.02	<0.02	<0.020	<0.020
Petroleum Hydrocarbons - F1 (C6-C10)	ug/g	55	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	ug/g	55	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F2 (C10-C16)	ug/g	98	<10	<10	15	20	<10	<10
Petroleum Hydrocarbons - F3 (C16-C34)	ug/g	300	200	120	64	**920**	<50	120
Petroleum Hydrocarbons - F4 (C34-C50)	ug/g	2800	270	<50	<50	510	<50	58
Petroleum Hydrocarbons - F4 Gravimetric	ug/g	2800	2100	--	--	--	--	--
Reached Baseline at C50	ug/g	--	0 (11)	1 (10)	1 (10)	1 (10)	-- (10)	-- (10)
Toluene	ug/g	2.3	<0.02	<0.02	<0.02	<0.02	<0.020	<0.020
Xylenes, Total	ug/g	3.1	<0.04	<0.04	<0.04	<0.04	<0.040	<0.040
VOCs								
1,1,1,2-Tetrachloroethane	ug/g	0.058	--	--	--	--	--	--
1,1,1-Trichloroethane	ug/g	0.38	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	ug/g	0.05	--	--	--	--	--	--
1,1,2-Trichloroethane	ug/g	0.05	--	--	--	--	--	--
1,1-Dichloroethane	ug/g	3.5	--	--	--	--	--	--
1,1-Dichloroethylene	ug/g	0.05	--	--	--	--	--	--
1,2-Dibromoethane	ug/g	0.05	--	--	--	--	--	--
1,2-Dichlorobenzene	ug/g	3.4	--	--	--	--	--	--
1,2-Dichloroethane	ug/g	0.05	--	--	--	--	--	--
1,2-Dichloropropane	ug/g	0.05	--	--	--	--	--	--
1,3-Dichlorobenzene	ug/g	4.8	--	--	--	--	--	--
1,3-Dichloropropene, Total	ug/g	0.05	--	--	--	--	--	--
1,4-Dichlorobenzene	ug/g	0.083	--	--	--	--	--	--
Methyl Ethyl Ketone	ug/g	16	--	--	--	--	--	--
Acetone	ug/g	16	--	--	--	--	--	--
Bromodichloromethane	ug/g	13	--	--	--	--	--	--
Bromoform	ug/g	0.27	--	--	--	--	--	--
Bromomethane	ug/g	0.05	--	--	--	--	--	--
Carbon Tetrachloride	ug/g	0.05	--	--	--	--	--	--
Chlorobenzene	ug/g	2.4	--	--	--	--	--	--
Chloroform	ug/g	0.05	--	--	--	--	--	--
cis-1,2-Dichloroethene	ug/g	3.4	--	--	--	--	--	--
cis-1,3-Dichloropropene	ug/g	--	--	--	--	--	--	--
Dibromochloromethane	ug/g	9.4	--	--	--	--	--	--
Dichlorodifluoromethane	ug/g	16	--	--	--	--	--	--
Methyl tert-Butyl Ether	ug/g	0.75	--	--	--	--	--	--
Methylene Chloride	ug/g	0.1	--	--	--	--	--	--
n-Hexane	ug/g	2.8	--	--	--	--	--	--
Tetrachloroethylene	ug/g	0.28	--	--	--	--	--	--
trans-1,2-Dichloroethene	ug/g	0.084	--	--	--	--	--	--
trans-1,3-Dichloropropene	ug/g	--	--	--	--	--	--	--
Trichloroethene	ug/g	0.061	--	--	--	--	--	--
Trichlorofluoromethane	ug/g	4	--	--	--	--	--	--
Vinyl Chloride	ug/g	0.02	--	--	--	--	--	--
4-Methyl-2-pentanone	ug/g	1.7	--	--	--	--	--	--
Styrene	ug/g	0.7	--	--	--	--	--	--
PCBs								
Aroclor 1242	ug/g	--	--	--	--	--	--	--
Aroclor 1248	ug/g	--	--	--	--	--	--	--
Aroclor 1254	ug/g	--	--	--	--	--	--	--
Aroclor 1260	ug/g	--	--	--	--	--	--	--
Polychlorinated Biphenyls	ug/g	0.35	--	--	--	--	--	--

Table 5B - Summary of Soil Analytical Results
Petroleum Hydrocarbons, Volatile Organic Compounds, and Polychlorinated Biphenyls

RSC #			RSC #2				
			TP BM	TP S	TP S	TP V	TR N
			30-Jul-2014	29-Jul-2014	29-Jul-2014	31-Jul-2014	01-Aug-2014
Parameter	**Unit**		BM SA3	S SA2	DUP S SA2 (Field Duplicate)	V SA3	N SA3
Layer	-	**REG153 (11) T3-R/P/I**	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill
Sample Depth	m	**SOIL COARSE** (1) (2)	0.65 - 1.2	0.45 - 0.7	0.45 - 0.7	0.55 - 0.8	1.3 - 1.7
Petroleum Hydrocarbons							
Benzene	ug/g	0.21	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	ug/g	2	<0.020	<0.020	<0.020	<0.020	<0.020
m,p-Xylenes	ug/g	--	<0.040	<0.040	<0.040	<0.040	<0.040
o-Xylene	ug/g	--	<0.020	<0.020	<0.020	<0.020	<0.020
Petroleum Hydrocarbons - F1 (C6-C10)	ug/g	55	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	ug/g	55	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F2 (C10-C16)	ug/g	98	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F3 (C16-C34)	ug/g	300	<50	<50	<50	<50	<50
Petroleum Hydrocarbons - F4 (C34-C50)	ug/g	2800	<50	<50	<50	<50	<50
Petroleum Hydrocarbons - F4 Gravimetric	ug/g	2800	--	--	--	--	--
Reached Baseline at C50	ug/g	--	-- (10)	-- (10)	-- (10)	-- (10)	-- (10)
Toluene	ug/g	2.3	<0.020	<0.020	<0.020	<0.020	<0.020
Xylenes, Total	ug/g	3.1	<0.040	<0.040	<0.040	<0.040	<0.040
VOCs							
1,1,1,2-Tetrachloroethane	ug/g	0.058	--	--	--	--	--
1,1,1-Trichloroethane	ug/g	0.38	--	--	--	--	--
1,1,2,2-Tetrachloroethane	ug/g	0.05	--	--	--	--	--
1,1,2-Trichloroethane	ug/g	0.05	--	--	--	--	--
1,1-Dichloroethane	ug/g	3.5	--	--	--	--	--
1,1-Dichloroethylene	ug/g	0.05	--	--	--	--	--
1,2-Dibromoethane	ug/g	0.05	--	--	--	--	--
1,2-Dichlorobenzene	ug/g	3.4	--	--	--	--	--
1,2-Dichloroethane	ug/g	0.05	--	--	--	--	--
1,2-Dichloropropane	ug/g	0.05	--	--	--	--	--
1,3-Dichlorobenzene	ug/g	4.8	--	--	--	--	--
1,3-Dichloropropene, Total	ug/g	0.05	--	--	--	--	--
1,4-Dichlorobenzene	ug/g	0.083	--	--	--	--	--
Methyl Ethyl Ketone	ug/g	16	--	--	--	--	--
Acetone	ug/g	16	--	--	--	--	--
Bromodichloromethane	ug/g	13	--	--	--	--	--
Bromoform	ug/g	0.27	--	--	--	--	--
Bromomethane	ug/g	0.05	--	--	--	--	--
Carbon Tetrachloride	ug/g	0.05	--	--	--	--	--
Chlorobenzene	ug/g	2.4	--	--	--	--	--
Chloroform	ug/g	0.05	--	--	--	--	--
cis-1,2-Dichloroethene	ug/g	3.4	--	--	--	--	--
cis-1,3-Dichloropropene	ug/g	--	--	--	--	--	--
Dibromochloromethane	ug/g	9.4	--	--	--	--	--
Dichlorodifluoromethane	ug/g	16	--	--	--	--	--
Methyl tert-Butyl Ether	ug/g	0.75	--	--	--	--	--
Methylene Chloride	ug/g	0.1	--	--	--	--	--
n-Hexane	ug/g	2.8	--	--	--	--	--
Tetrachloroethylene	ug/g	0.28	--	--	--	--	--
trans-1,2-Dichloroethene	ug/g	0.084	--	--	--	--	--
trans-1,3-Dichloropropene	ug/g	--	--	--	--	--	--
Trichloroethene	ug/g	0.061	--	--	--	--	--
Trichlorofluoromethane	ug/g	4	--	--	--	--	--
Vinyl Chloride	ug/g	0.02	--	--	--	--	--
4-Methyl-2-pentanone	ug/g	1.7	--	--	--	--	--
Styrene	ug/g	0.7	--	--	--	--	--
PCBs							
Aroclor 1242	ug/g	--	--	--	--	--	--
Aroclor 1248	ug/g	--	--	--	--	--	--
Aroclor 1254	ug/g	--	--	--	--	--	--
Aroclor 1260	ug/g	--	--	--	--	--	--
Polychlorinated Biphenyls	ug/g	0.35	--	--	--	--	--

Table 5B - Summary of Soil Analytical Results
Petroleum Hydrocarbons, Volatile Organic Compounds, and Polychlorinated Biphenyls

RSC #			RSC #3												
			BH14-101C	BH15-107A	TP 14-4	TP 14-5	TP 14-9	TP16-401	TP16-402	TP16-403	TP16-404	TP AC	TP BA	TR E	TR E
			26-Mar-2014	13-May-2015	27-Mar-2014 (6)	27-Mar-2014	27-Mar-2014	25-May-2016	25-May-2016	25-May-2016	25-May-2016	28-Jul-2014	30-Jul-2014	29-Jul-2014	29-Jul-2014
Parameter	**Unit**		BH14-101C SA5	BH15-107A	TP14-4 SA1	TP14-5 SA2	TP14-9 SA2	TP16-401	TP16-402	TP16-403	TP16-404	AC SA3	BA SA3	E SA2	DUP E SA2 (Field Duplicate)
Layer	-	**REG153 (11) T3-R/P/I**	Native Silty Clay	Native Silty Clay	Debris	Debris	Debris	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Debris	Debris	Debris
Sample Depth	m	**SOIL COARSE** (1) (2)	3.81 - 4.42	1.83 - 2.44	0.14 - 1.1	0.93 - 1.95	1.4 - 2	0.25 - 0.35	0.25 - 0.35	0.25 - 0.35	0.25 - 0.35	1 - 2	1.8 - 2	0.55 - 1	0.55 - 1
Petroleum Hydrocarbons															
Benzene	ug/g	0.21	<0.02	<0.020	<0.02	<0.02	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	ug/g	2	<0.02	<0.020	<0.02	<0.02	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
m,p-Xylenes	ug/g	--	<0.04	<0.020	<0.04	<0.04	<0.04	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
o-Xylene	ug/g	--	<0.02	<0.020	<0.02	<0.02	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Petroleum Hydrocarbons - F1 (C6-C10)	ug/g	55	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	ug/g	55	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F2 (C10-C16)	ug/g	98	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F3 (C16-C34)	ug/g	300	<50	<50	<50	<50	<50	<50	<50	<50	100	<50	110	<50	<50
Petroleum Hydrocarbons - F4 (C34-C50)	ug/g	2800	<50	<50	<50	<50	<50	<50	<50	<50	64	<50	51	<50	<50
Petroleum Hydrocarbons - F4 Gravimetric	ug/g	2800	--	--	--	--	--	--	--	--	--	--	--	--	--
Reached Baseline at C50	ug/g	--	1 (10)	-- (10)	1 (10)	1 (10)	1 (10)	1 (10)	1 (10)	1 (10)	1 (10)	-- (10)	-- (10)	-- (10)	-- (10)
Toluene	ug/g	2.3	<0.02	<0.020	<0.02	<0.02	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Xylenes, Total	ug/g	3.1	<0.04	<0.020	<0.04	<0.04	<0.04	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
VOCs															
1,1,1,2-Tetrachloroethane	ug/g	0.058	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	ug/g	0.38	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	ug/g	0.05	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	ug/g	0.05	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	ug/g	3.5	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethylene	ug/g	0.05	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromoethane	ug/g	0.05	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	ug/g	3.4	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	ug/g	0.05	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloropropane	ug/g	0.05	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	ug/g	4.8	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichloropropene, Total	ug/g	0.05	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	ug/g	0.083	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
Methyl Ethyl Ketone	ug/g	16	--	<0.50	--	--	--	--	--	--	--	--	--	--	--
Acetone	ug/g	16	--	<0.50	--	--	--	--	--	--	--	--	--	--	--
Bromodichloromethane	ug/g	13	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
Bromoform	ug/g	0.27	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
Bromomethane	ug/g	0.05	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
Carbon Tetrachloride	ug/g	0.05	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	ug/g	2.4	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
Chloroform	ug/g	0.05	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	ug/g	3.4	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	ug/g	--	--	<0.030	--	--	--	--	--	--	--	--	--	--	--
Dibromochloromethane	ug/g	9.4	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
Dichlorodifluoromethane	ug/g	16	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
Methyl tert-Butyl Ether	ug/g	0.75	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
Methylene Chloride	ug/g	0.1	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
n-Hexane	ug/g	2.8	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	ug/g	0.28	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	ug/g	0.084	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	ug/g	--	--	<0.040	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	ug/g	0.061	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane	ug/g	4	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	ug/g	0.02	--	<0.020	--	--	--	--	--	--	--	--	--	--	--
4-Methyl-2-pentanone	ug/g	1.7	--	<0.50	--	--	--	--	--	--	--	--	--	--	--
Styrene	ug/g	0.7	--	<0.050	--	--	--	--	--	--	--	--	--	--	--
PCBs															
Aroclor 1242	ug/g	--	--	--	--	--	--	<0.010	<0.010	<0.010	<0.010	--	--	--	--
Aroclor 1248	ug/g	--	--	--	--	--	--	<0.010	<0.010	<0.010	<0.010	--	--	--	--
Aroclor 1254	ug/g	--	--	--	--	--	--	<0.010	<0.010	<0.010	<0.010	--	--	--	--
Aroclor 1260	ug/g	--	--	--	--	--	--	<0.010	<0.010	<0.010	<0.010	--	--	--	--
Polychlorinated Biphenyls	ug/g	0.35	--	--	--	--	--	<0.010	<0.010	<0.010	<0.010	--	--	--	--

Footnotes:
Tables should be read in conjunction with the accompanying document.
< value = Indicates parameter not detected above laboratory method detection limit.
> value = Indicates parameter detected above equipment analytical range.
-- Chemical not analyzed or criteria not defined.
Grey background indicates exceedances.
(1) O.Reg 153 (2011) Table 3 Standards for residential/parkland/institutional property use for coarse textured soil in full depth generic site condition in a non-potable groundwater condition
(2) Bold Font = Parameter concentration greater than REG153 (11) T3-R/P/I SOIL COARSE
(3) PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.
(4) Collected of OLRT laydown yard at Brickhill Av
(5) PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.
(6) BTEX/F1: Both vials used for analysis, results were reported as found.
(7) PAH analysis: Detection limits were adjusted for high moisture content.

(8) PAH Analysis: Sample is visually heterogeneous but was well homogenized prior to extraction.
(9) The methyl naphthalene standards are applicable to both 1-methyl naphthalene and 2-methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.
(10) YES
(11) NO
(12) Detection Limit was raised due to matrix interferences.

Orange denotes sample location on Site (RSC #1)
Green denotes sample location off Site (RSC #2)
Blue denotes sample location off Site (RSC #3)

RSC #			RSC #1								
			BH 14-210	MW14-210B	MW14-210B	BH 14-211	BH14-3	BH15-4	BH15-100	BH15-101	BH16-02
		REG153 (11) T3-GW	23-Feb-2016 (3)	26-Aug-2014	26-Aug-2014	26-Aug-2014	03-Apr-2014	23-Feb-2016	25-Mar-2015 (4)	25-Mar-2015	23-Feb-2016 (3)
Parameter	Unit	COARSE (1) (2)	BH14-210B	14-210 B	14-225 (Field Duplicate)	14-211	BH14-3	BH15-4	MW15-100	MW15-101	BH16-02
Metals											
Antimony, dissolved	ug/l	20000	<0.5	0.52	0.85	<0.50	<0.5	<0.5	<0.50	<0.50	<0.5
Arsenic, dissolved	ug/l	1900	<1	<1.0	<1.0	1.3	<1	<1	<1.0	<1.0	<1
Barium, dissolved	ug/l	29000	100	110	110	150	65	150	130	100	92
Beryllium, dissolved	ug/l	67	<0.5	<0.50	<0.50	<0.50	<0.5	<0.5	<0.50	<0.50	<0.5
Boron, dissolved	ug/l	45000	12	25	26	120	38	50	72	210	200
Cadmium, dissolved	ug/l	2.7	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.10	<0.10	<0.1
Chromium, dissolved	ug/l	810	<5	<5.0	<5.0	<5.0	<5	<5	<5.0	<5.0	<5
Cobalt, dissolved	ug/l	66	<0.5	3.4	3.4	2.3	7.2	<0.5	<0.50	5.6	1.5
Copper, dissolved	ug/l	87	3	1.6	1.3	1.5	2	<1	<1.0	1.8	3
Hexavalent Chromium	ug/l	140	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.58	<0.50	<0.50
Lead, dissolved	ug/l	25	<0.5	<0.50	<0.50	<0.50	<0.5	<0.5	<0.50	<0.50	<0.5
Mercury	ug/l	0.29	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum, dissolved	ug/l	9200	1.3	5.4	5.8	<0.50	4.4	<0.5	6.1	3.4	2.9
Nickel, dissolved	ug/l	490	<5	5.8	7.0	1.7	13	<1	1.3	10	<5
Selenium, dissolved	ug/l	63	<2	<2.0	<2.0	<2.0	<2	<2	<2.0	<2.0	<2
Silver, dissolved	ug/l	1.5	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.10	<0.10	<0.1
Sodium, dissolved	ug/l	2.3e+006	310000	400000	410000	68000	34000	10000	8300	37000	38000
Thallium, dissolved	ug/l	510	<0.05	0.099	0.094	<0.050	0.12	<0.05	<0.050	<0.050	<0.05
Uranium, dissolved	ug/l	420	4.6	13	12	1.3	1.2	0.1	1.3	4.0	4.9
Vanadium, dissolved	ug/l	250	<0.5	<1.0 (7)	<1.0 (7)	1.1	<0.5	<0.5	0.72	2.1	5.5
Zinc, dissolved	ug/l	1100	12	<5.0	<5.0	<5.0	13	9	<5.0	6.4	12
Petroleum Hydrocarbons											
Benzene	ug/l	44	--	<0.20	<0.20	<0.20	<0.20	--	<0.20	<0.20	--
Ethylbenzene	ug/l	2300	--	<0.20	<0.20	<0.20	<0.20	--	<0.20	<0.20	--
m,p-Xylenes	ug/l	--	--	<0.40	<0.40	<0.40	<0.40	--	<0.20	<0.20	--
o-Xylene	ug/l	--	--	<0.20	<0.20	<0.20	<0.20	--	<0.20	<0.20	--
Petroleum Hydrocarbons - F1 (C6-C10)	ug/l	750	--	<25	<25	<25	<25	--	<25	<25	--
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	ug/l	750	--	<25	<25	<25	<25	--	<25	<25	--
Petroleum Hydrocarbons - F2 (C10-C16)	ug/l	150	--	<100	<100	<100	<100	--	<100	<100	--
Petroleum Hydrocarbons - F3 (C16-C34)	ug/l	500	--	<200	<200	<200	<200	--	<200	<200	--
Petroleum Hydrocarbons - F4 (C34-C50)	ug/l	500	--	<200	<200	<200	<200	--	<200	<200	--
Reached Baseline at C50	ug/l	--	--	-- (6)	-- (6)	-- (6)	1 (6)	--	--	-- (6)	--
Toluene	ug/l	18000	--	<0.20	<0.20	<0.20	<0.20	--	<0.20	0.20	--
Xylenes, Total	ug/l	4200	--	<0.40	<0.40	<0.40	<0.40	--	<0.20	<0.20	--
Semi-VOCs											
1- & 2-Methylnaphthalene	ug/l	--	<0.071	<0.071	<0.071	--	<0.071	<0.071	<0.071	<0.071	<0.071
1-Methylnaphthalene	ug/l	1800 (5)	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050
2-Methylnaphthalene	ug/l	1800 (5)	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050
4-Methyl-2-pentanone	ug/l	140000	--	--	--	--	--	--	<5.0	<5.0	--
Acenaphthene	ug/l	600	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050
Acenaphthylene	ug/l	1.8	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050
Anthracene	ug/l	2.4	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo [b,j] fluoranthene	ug/l	--	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[a]anthracene	ug/l	4.7	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[a]pyrene	ug/l	0.81	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo[g,h,i]perylene	ug/l	0.2	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[k]fluoranthene	ug/l	0.4	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050
Biphenyl	ug/l	1000	<0.050	--	--	--	--	<0.050	--	--	<0.050
Chrysene	ug/l	1	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050
Dibenzo[a,h]anthracene	ug/l	0.52	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	ug/l	130	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050
Fluorene	ug/l	400	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno[1,2,3-cd]pyrene	ug/l	0.2	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050
Naphthalene	ug/l	1400	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	0.065	<0.050
Phenanthrene	ug/l	580	<0.030	<0.030	<0.030	--	<0.030	<0.030	<0.030	0.065	<0.030
Pyrene	ug/l	68	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050
Styrene	ug/l	1300	--	--	--	--	--	--	<0.50	<0.50	--

RSC #			RSC #1								
			BH 14-210	MW14-210B	MW14-210B	BH 14-211	BH14-3	BH15-4	BH15-100	BH15-101	BH16-02
		REG153 (11) T3-GW	23-Feb-2016 (3)	26-Aug-2014	26-Aug-2014	26-Aug-2014	03-Apr-2014	23-Feb-2016	25-Mar-2015 (4)	25-Mar-2015	23-Feb-2016 (3)
Parameter	Unit	COARSE (1) (2)	BH14-210B	14-210 B	14-225 (Field Duplicate)	14-211	BH14-3	BH15-4	MW15-100	MW15-101	BH16-02
VOCs											
1,1,1,2-Tetrachloroethane	ug/l	3.3	--	--	--	--	--	--	<0.50	<0.50	--
1,1,1-Trichloroethane	ug/l	640	--	--	--	--	--	--	<0.20	<0.20	--
1,1,2,2-Tetrachloroethane	ug/l	3.2	--	--	--	--	--	--	<0.50	<0.50	--
1,1,2-Trichloroethane	ug/l	4.7	--	--	--	--	--	--	<0.50	<0.50	--
1,1-Dichloroethane	ug/l	320	--	--	--	--	--	--	<0.20	<0.20	--
1,1-Dichloroethylene	ug/l	1.6	--	--	--	--	--	--	<0.20	<0.20	--
1,2-Dibromoethane	ug/l	0.25	--	--	--	--	--	--	<0.20	<0.20	--
1,2-Dichlorobenzene	ug/l	4600	--	--	--	--	--	--	<0.50	<0.50	--
1,2-Dichloroethane	ug/l	1.6	--	--	--	--	--	--	<0.50	<0.50	--
1,2-Dichloropropane	ug/l	16	--	--	--	--	--	--	<0.20	<0.20	--
1,3-Dichlorobenzene	ug/l	9600	--	--	--	--	--	--	<0.50	<0.50	--
1,3-Dichloropropene, Total	ug/l	5.2	--	--	--	--	--	--	<0.50	<0.50	--
1,4-Dichlorobenzene	ug/l	8	--	--	--	--	--	--	<0.50	<0.50	--
Methyl Ethyl Ketone	ug/l	470000	--	--	--	--	--	--	<10	<10	--
Acetone	ug/l	130000	--	--	--	--	--	--	<10	<10	--
Bromodichloromethane	ug/l	85000	--	--	--	--	--	--	<0.50	<0.50	--
Bromoform	ug/l	380	--	--	--	--	--	--	<1.0	<1.0	--
Bromomethane	ug/l	5.6	--	--	--	--	--	--	<0.50	<0.50	--
Carbon Tetrachloride	ug/l	0.79	--	--	--	--	--	--	<0.20	<0.20	--
Chlorobenzene	ug/l	630	--	--	--	--	--	--	<0.20	<0.20	--
Chloroform	ug/l	2.4	--	--	--	--	--	--	<0.20	<0.20	--
cis-1,2-Dichloroethene	ug/l	1.6	--	--	--	--	--	--	<0.50	<0.50	--
cis-1,3-Dichloropropene	ug/l		--	--	--	--	--	--	<0.30	<0.30	--
Dibromochloromethane	ug/l	82000	--	--	--	--	--	--	<0.50	<0.50	--
Dichlorodifluoromethane	ug/l	4400	--	--	--	--	--	--	<1.0	<1.0	--
Methyl tert-Butyl Ether	ug/l	190	--	--	--	--	--	--	<0.50	<0.50	--
Methylene Chloride	ug/l	610	--	--	--	--	--	--	<2.0	<2.0	--
n-Hexane	ug/l	51	--	--	--	--	--	--	<1.0	<1.0	--
Tetrachloroethylene	ug/l	1.6	--	--	--	--	--	--	<0.20	<0.20	--
trans-1,2-Dichloroethene	ug/l	1.6	--	--	--	--	--	--	<0.50	<0.50	--
trans-1,3-Dichloropropene	ug/l		--	--	--	--	--	--	<0.40	<0.40	--
Trichloroethene	ug/l	1.6	--	--	--	--	--	--	<0.20	<0.20	--
Trichlorofluoromethane	ug/l	2500	--	--	--	--	--	--	<0.50	<0.50	--
Vinyl Chloride	ug/l	0.5	--	--	--	--	--	--	<0.20	<0.20	--

RSC #			RSC #2					
			BH14-2	BH14-2	MW14-208C	BH15-102	BH16-01	BH16-01
		REG153 (11) T3-GW	25-Feb-2016	26-Feb-2016	26-Aug-2014	24-Mar-2015	23-Feb-2016	23-Feb-2016
Parameter	**Unit**	**COARSE** (1) (2)	BH14-2 2016/02/25	BH14-2 2016/02/26	14-208C	MW15-102	BH16-01	DUP A (Field Duplicate)
Metals								
Antimony, dissolved	ug/l	20000	--	<0.5	<0.50	<0.50	<0.5	<0.5
Arsenic, dissolved	ug/l	1900	--	3	<1.0	<1.0	<1	<1
Barium, dissolved	ug/l	29000	--	62	55	90	230	230
Beryllium, dissolved	ug/l	67	--	<0.5	<0.50	<0.50	<0.5	<0.5
Boron, dissolved	ug/l	45000	--	43	19	62	23	23
Cadmium, dissolved	ug/l	2.7	--	<0.1	<0.10	<0.10	<0.1	<0.1
Chromium, dissolved	ug/l	810	--	<5	<5.0	<5.0	<5	<5
Cobalt, dissolved	ug/l	66	--	<0.5	1.1	1.8	0.7	0.7
Copper, dissolved	ug/l	87	--	1	2.1	<1.0	1	1
Hexavalent Chromium	ug/l	140	--	<0.50	<0.50	<0.50	<0.50	<0.50
Lead, dissolved	ug/l	25	--	<0.5	<0.50	<0.50	<0.5	<0.5
Mercury	ug/l	0.29	--	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum, dissolved	ug/l	9200	--	31	1.3	4.1	4.3	4.8
Nickel, dissolved	ug/l	490	--	1	2.9	4.8	1	2
Selenium, dissolved	ug/l	63	--	<2	<2.0	<2.0	<2	<2
Silver, dissolved	ug/l	1.5	--	<0.1	<0.10	<0.10	<0.1	<0.1
Sodium, dissolved	ug/l	2.3e+006	--	35000	8400	27000	40000	42000
Thallium, dissolved	ug/l	510	--	<0.05	0.089	<0.050	<0.05	<0.05
Uranium, dissolved	ug/l	420	--	5.1	0.88	1.8	2.8	3.1
Vanadium, dissolved	ug/l	250	--	1.6	<0.50	<0.50	<0.5	<0.5
Zinc, dissolved	ug/l	1100	--	<5	<5.0	<5.0	8	<5
Petroleum Hydrocarbons								
Benzene	ug/l	44	--	--	<0.20	<0.20	--	--
Ethylbenzene	ug/l	2300	--	--	<0.20	<0.20	--	--
m,p-Xylenes	ug/l	--	--	--	<0.40	<0.20	--	--
o-Xylene	ug/l	--	--	--	<0.20	<0.20	--	--
Petroleum Hydrocarbons - F1 (C6-C10)	ug/l	750	--	--	<25	<25	--	--
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	ug/l	750	--	--	<25	<25	--	--
Petroleum Hydrocarbons - F2 (C10-C16)	ug/l	150	--	--	<100	<100	--	--
Petroleum Hydrocarbons - F3 (C16-C34)	ug/l	500	--	--	<200	<200	--	--
Petroleum Hydrocarbons - F4 (C34-C50)	ug/l	500	--	--	<200	<200	--	--
Reached Baseline at C50	ug/l	--	--	--	-- (6)	-- (6)	--	--
Toluene	ug/l	18000	--	--	<0.20	<0.20	--	--
Xylenes, Total	ug/l	4200	--	--	<0.40	<0.20	--	--
Semi-VOCs								
1- & 2-Methylnaphthalene	ug/l	--	<0.071	--	<0.071	<0.071	0.075	<0.071
1-Methylnaphthalene	ug/l	1800 (5)	<0.050	--	<0.050	<0.050	<0.050	<0.050
2-Methylnaphthalene	ug/l	1800 (5)	<0.050	--	<0.050	<0.050	0.075	0.060
4-Methyl-2-pentanone	ug/l	140000	--	--	--	<5.0	--	--
Acenaphthene	ug/l	600	<0.050	--	<0.050	<0.050	<0.050	<0.050
Acenaphthylene	ug/l	1.8	<0.050	--	<0.050	<0.050	<0.050	<0.050
Anthracene	ug/l	2.4	<0.050	--	<0.050	<0.050	<0.050	<0.050
Benzo [b,j] fluoranthene	ug/l	--	<0.050	--	<0.050	<0.050	<0.050	<0.050
Benzo[a]anthracene	ug/l	4.7	<0.050	--	<0.050	<0.050	<0.050	<0.050
Benzo[a]pyrene	ug/l	0.81	<0.010	--	<0.010	0.029	<0.010	<0.010
Benzo[g,h,i]perylene	ug/l	0.2	<0.050	--	<0.050	<0.050	<0.050	<0.050
Benzo[k]fluoranthene	ug/l	0.4	<0.050	--	<0.050	<0.050	<0.050	<0.050
Biphenyl	ug/l	1000	<0.050	--	--	--	<0.050	<0.050
Chrysene	ug/l	1	<0.050	--	<0.050	<0.050	<0.050	<0.050
Dibenzo[a,h]anthracene	ug/l	0.52	<0.050	--	<0.050	<0.050	<0.050	<0.050
Fluoranthene	ug/l	130	<0.050	--	<0.050	0.11	<0.050	<0.050
Fluorene	ug/l	400	<0.050	--	<0.050	<0.050	<0.050	<0.050
Indeno[1,2,3-cd]pyrene	ug/l	0.2	<0.050	--	<0.050	<0.050	<0.050	<0.050
Naphthalene	ug/l	1400	<0.050	--	<0.050	<0.050	0.075	0.075
Phenanthrene	ug/l	580	<0.030	--	<0.030	0.12	0.070	0.065
Pyrene	ug/l	68	<0.050	--	<0.050	0.11	<0.050	<0.050
Styrene	ug/l	1300	--	--	--	<0.50	--	--

RSC #			RSC #2					
			BH14-2	BH14-2	MW14-208C	BH15-102	BH16-01	BH16-01
		REG153 (11) T3-GW	25-Feb-2016	26-Feb-2016	26-Aug-2014	24-Mar-2015	23-Feb-2016	23-Feb-2016
Parameter	**Unit**	**COARSE** (1) (2)	BH14-2 2016/02/25	BH14-2 2016/02/26	14-208C	MW15-102	BH16-01	DUP A (Field Duplicate)
VOCs								
1,1,1,2-Tetrachloroethane	ug/l	3.3	--	--	--	<0.50	--	--
1,1,1-Trichloroethane	ug/l	640	--	--	--	<0.20	--	--
1,1,2,2-Tetrachloroethane	ug/l	3.2	--	--	--	<0.50	--	--
1,1,2-Trichloroethane	ug/l	4.7	--	--	--	<0.50	--	--
1,1-Dichloroethane	ug/l	320	--	--	--	<0.20	--	--
1,1-Dichloroethylene	ug/l	1.6	--	--	--	<0.20	--	--
1,2-Dibromoethane	ug/l	0.25	--	--	--	<0.20	--	--
1,2-Dichlorobenzene	ug/l	4600	--	--	--	<0.50	--	--
1,2-Dichloroethane	ug/l	1.6	--	--	--	<0.50	--	--
1,2-Dichloropropane	ug/l	16	--	--	--	<0.20	--	--
1,3-Dichlorobenzene	ug/l	9600	--	--	--	<0.50	--	--
1,3-Dichloropropene, Total	ug/l	5.2	--	--	--	<0.50	--	--
1,4-Dichlorobenzene	ug/l	8	--	--	--	<0.50	--	--
Methyl Ethyl Ketone	ug/l	470000	--	--	--	<10	--	--
Acetone	ug/l	130000	--	--	--	<10	--	--
Bromodichloromethane	ug/l	85000	--	--	--	<0.50	--	--
Bromoform	ug/l	380	--	--	--	<1.0	--	--
Bromomethane	ug/l	5.6	--	--	--	<0.50	--	--
Carbon Tetrachloride	ug/l	0.79	--	--	--	<0.20	--	--
Chlorobenzene	ug/l	630	--	--	--	<0.20	--	--
Chloroform	ug/l	2.4	--	--	--	<0.20	--	--
cis-1,2-Dichloroethene	ug/l	1.6	--	--	--	<0.50	--	--
cis-1,3-Dichloropropene	ug/l		--	--	--	<0.30	--	--
Dibromochloromethane	ug/l	82000	--	--	--	<0.50	--	--
Dichlorodifluoromethane	ug/l	4400	--	--	--	<1.0	--	--
Methyl tert-Butyl Ether	ug/l	190	--	--	--	<0.50	--	--
Methylene Chloride	ug/l	610	--	--	--	<2.0	--	--
n-Hexane	ug/l	51	--	--	--	<1.0	--	--
Tetrachloroethylene	ug/l	1.6	--	--	--	<0.20	--	--
trans-1,2-Dichloroethene	ug/l	1.6	--	--	--	<0.50	--	--
trans-1,3-Dichloropropene	ug/l		--	--	--	<0.40	--	--
Trichloroethene	ug/l	1.6	--	--	--	<0.20	--	--
Trichlorofluoromethane	ug/l	2500	--	--	--	<0.50	--	--
Vinyl Chloride	ug/l	0.5	--	--	--	<0.20	--	--

RSC #			RSC #3										
			BH14-1	BH14-1	BH14-101C	BH14-101C	BH14-101C	BH15-103	BH15-104	BH15-105	BH15-106	BH15-106	BH15-107
		REG153 (11) T3-GW	03-Apr-2014	26-Aug-2014	03-Apr-2014	03-Apr-2014	26-Aug-2014	24-Mar-2015	24-Mar-2015	24-Mar-2015	25-Mar-2015	25-Mar-2015	24-Mar-2015
Parameter	**Unit**	**COARSE** (1) (2)	BH14-1	14-1	BH14-101C	BH14-102 (Field Duplicate)	14-101C	MW15-103	MW15-104	MW15-105	MW15-106	DUP-1 (Field Duplicate)	MW15-107
Metals													
Antimony, dissolved	ug/l	20000	0.6	0.75	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Arsenic, dissolved	ug/l	1900	<1	4.5	--	--	<1.0	<1.0	2.2	<1.0	<1.0	<1.0	<1.0
Barium, dissolved	ug/l	29000	44	46	--	--	110	83	58	92	49	46	190
Beryllium, dissolved	ug/l	67	<0.5	<0.50	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Boron, dissolved	ug/l	45000	120	110	--	--	20	44	52	60	92	84	25
Cadmium, dissolved	ug/l	2.7	<0.1	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium, dissolved	ug/l	810	<5	<5.0	--	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt, dissolved	ug/l	66	0.9	<0.50	--	--	2.0	1.7	0.78	1.2	1.2	1.2	0.80
Copper, dissolved	ug/l	87	1	<1.0	--	--	<1.0	1.4	1.1	1.1	<1.0	<1.0	1.2
Hexavalent Chromium	ug/l	140	<0.50	<0.50	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lead, dissolved	ug/l	25	<0.5	<0.50	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Mercury	ug/l	0.29	<0.1	<0.1	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum, dissolved	ug/l	9200	7.5	6.4	--	--	2.9	3.3	3.0	3.9	1.4	1.6	3.6
Nickel, dissolved	ug/l	490	3	3.0	--	--	2.0	4.0	1.8	2.7	3.7	3.3	2.9
Selenium, dissolved	ug/l	63	<2	<2.0	--	--	<2.0	2.2	<2.0	2.7	2.4	2.3	<2.0
Silver, dissolved	ug/l	1.5	<0.1	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium, dissolved	ug/l	2.3e+006	63000	45000	--	--	41000	31000	22000	49000	16000	15000	32000
Thallium, dissolved	ug/l	510	0.19	0.093	--	--	<0.050	<0.050	0.065	0.077	<0.050	<0.050	<0.050
Uranium, dissolved	ug/l	420	1.1	1.8	--	--	2.7	1.4	1.2	1.8	1.7	1.7	0.74
Vanadium, dissolved	ug/l	250	<0.5	2.2	--	--	<0.50	<0.50	<0.50	<0.50	1.7	1.6	1.7
Zinc, dissolved	ug/l	1100	<5	<5.0	--	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Petroleum Hydrocarbons													
Benzene	ug/l	44	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	ug/l	2300	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
m,p-Xylenes	ug/l	--	<0.40	<0.40	<0.40	<0.40	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
o-Xylene	ug/l	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Petroleum Hydrocarbons - F1 (C6-C10)	ug/l	750	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	ug/l	750	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
Petroleum Hydrocarbons - F2 (C10-C16)	ug/l	150	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Petroleum Hydrocarbons - F3 (C16-C34)	ug/l	500	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
Petroleum Hydrocarbons - F4 (C34-C50)	ug/l	500	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
Reached Baseline at C50	ug/l	--	1 (6)	-- (6)	1 (6)	1 (6)	-- (6)	-- (6)	--	-- (6)	-- (6)	--	-- (6)
Toluene	ug/l	18000	<0.20	<0.20	<0.20	<0.20	<0.20	0.24	<0.20	0.28	<0.20	<0.20	0.25
Xylenes, Total	ug/l	4200	<0.40	<0.40	<0.40	<0.40	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Semi-VOCs													
1- & 2-Methylnaphthalene	ug/l	--	<0.071	<0.071	--	--	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071
1-Methylnaphthalene	ug/l	1800 (5)	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2-Methylnaphthalene	ug/l	1800 (5)	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
4-Methyl-2-pentanone	ug/l	140000	--	--	--	--	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Acenaphthene	ug/l	600	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Acenaphthylene	ug/l	1.8	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Anthracene	ug/l	2.4	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo [b,j] fluoranthene	ug/l	--	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[a]anthracene	ug/l	4.7	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[a]pyrene	ug/l	0.81	<0.010	<0.010	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo[g,h,i]perylene	ug/l	0.2	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[k]fluoranthene	ug/l	0.4	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Biphenyl	ug/l	1000	--	--	--	--	--	--	--	--	--	--	--
Chrysene	ug/l	1	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibenzo[a,h]anthracene	ug/l	0.52	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	ug/l	130	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluorene	ug/l	400	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno[1,2,3-cd]pyrene	ug/l	0.2	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Naphthalene	ug/l	1400	0.13	<0.050	--	--	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050
Phenanthrene	ug/l	580	<0.030	<0.030	--	--	<0.030	0.060	<0.030	0.12	<0.030	<0.030	<0.030
Pyrene	ug/l	68	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Styrene	ug/l	1300	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

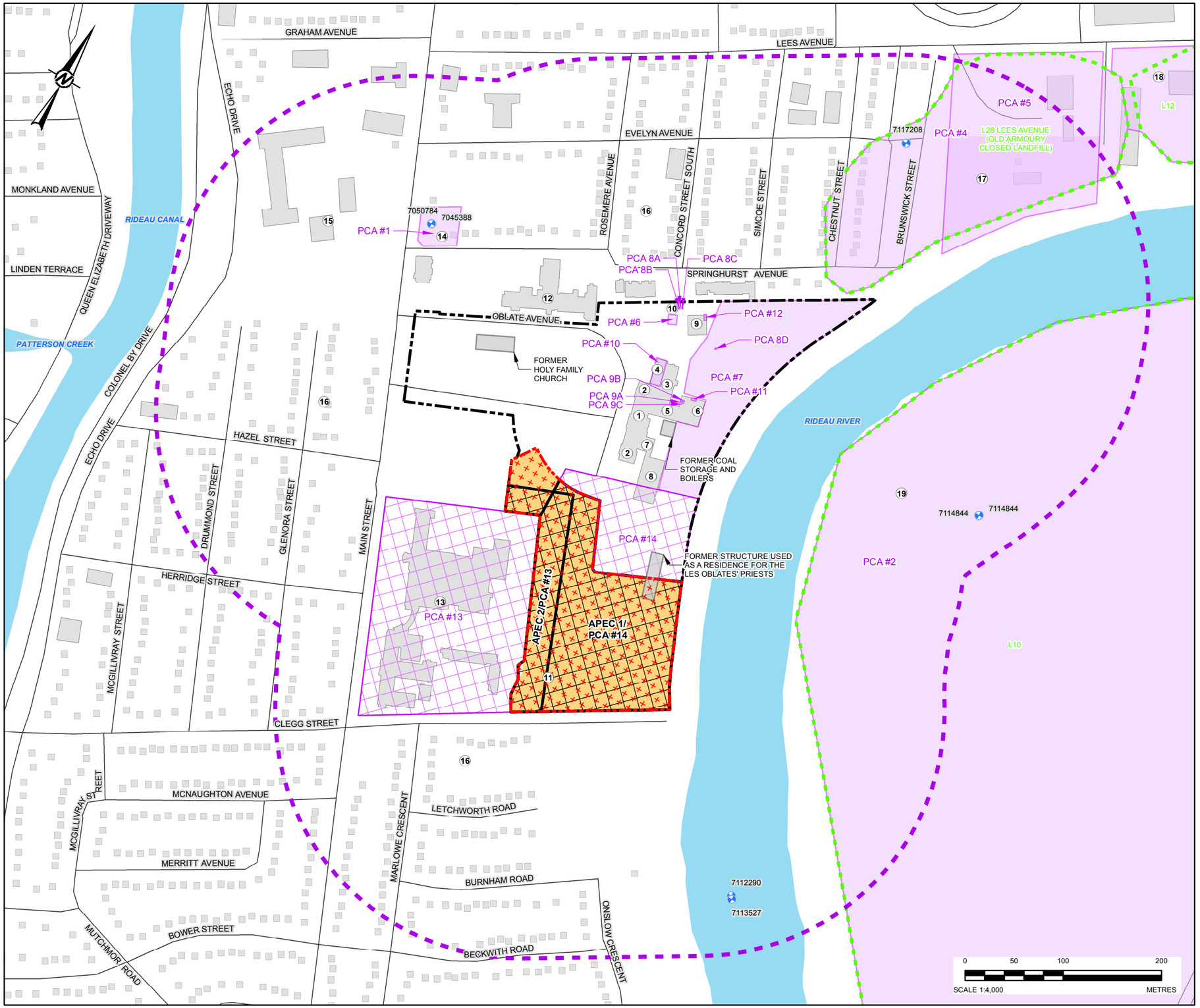
RSC #			RSC #3										
			BH14-1	BH14-1	BH14-101C	BH14-101C	BH14-101C	BH15-103	BH15-104	BH15-105	BH15-106	BH15-106	BH15-107
		REG153 (11) T3-GW	03-Apr-2014	26-Aug-2014	03-Apr-2014	03-Apr-2014	26-Aug-2014	24-Mar-2015	24-Mar-2015	24-Mar-2015	25-Mar-2015	25-Mar-2015	24-Mar-2015
Parameter	**Unit**	**COARSE** (1) (2)	BH14-1	14-1	BH14-101C	BH14-102 (Field Duplicate)	14-101C	MW15-103	MW15-104	MW15-105	MW15-106	DUP-1 (Field Duplicate)	MW15-107
VOCs													
1,1,1,2-Tetrachloroethane	ug/l	3.3	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1-Trichloroethane	ug/l	640	--	--	--	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,2,2-Tetrachloroethane	ug/l	3.2	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/l	4.7	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethane	ug/l	320	--	--	--	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1-Dichloroethylene	ug/l	1.6	--	--	--	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dibromoethane	ug/l	0.25	--	--	--	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	ug/l	4600	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloroethane	ug/l	1.6	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	ug/l	16	--	--	--	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Dichlorobenzene	ug/l	9600	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichloropropene, Total	ug/l	5.2	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	ug/l	8	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Ethyl Ketone	ug/l	470000	--	--	--	--	--	<10	<10	<10	<10	<10	<10
Acetone	ug/l	130000	--	--	--	--	--	22	<10	<10	<10	<10	11
Bromodichloromethane	ug/l	85000	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	ug/l	380	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	ug/l	5.6	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	ug/l	0.79	--	--	--	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	ug/l	630	--	--	--	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	ug/l	2.4	--	--	--	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,2-Dichloroethene	ug/l	1.6	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,3-Dichloropropene	ug/l		--	--	--	--	--	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Dibromochloromethane	ug/l	82000	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	ug/l	4400	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl tert-Butyl Ether	ug/l	190	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methylene Chloride	ug/l	610	--	--	--	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Hexane	ug/l	51	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethylene	ug/l	1.6	--	--	--	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
trans-1,2-Dichloroethene	ug/l	1.6	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,3-Dichloropropene	ug/l		--	--	--	--	--	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Trichloroethene	ug/l	1.6	--	--	--	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	ug/l	2500	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	ug/l	0.5	--	--	--	--	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

Footnotes:
Tables should be read in conjunction with the accompanying document.
< value = Indicates parameter not detected above laboratory method detection limit.
> value = Indicates parameter detected above equipment analytical range.
-- Chemical not analyzed or criteria not defined.
Grey background indicates exceedances.
(1) O.Reg 153 (2011) Table 3 Standards for all types of property use for groundwater in coarse textured soil in full depth generic site condition in a non-potable ground water condition
(2) Bold Font = Parameter concentration greater than REG153 (11) T3-GW COARSE
(3) Metal Analysis:RDL of Nickel was adjusted due to high concentration of Calcium.
(4) Total/Dissolved Chromium < Hexavalent Chromium: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.
(5) The methyl naphthalene standards are applicable to both 1-methyl naphthalene and 2-methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.
(6) YES
(7) Metal Analysis:Detection Limit was raised due to matrix interferences.

Orange denotes sample location on Site (RSC #1)
Green denotes sample location off Site (RSC #2)
Blue denotes sample location off Site (RSC #3)

Sample Location	Sample Name	Sample Collection Date	Laboratory Analysis Date
BH 14-211	G11 SA2	15-Aug-2014	pH (09/05/14), Metals (08/26/14), PAH (08/25/14)
BH 14-211	G11 SA9	18-Aug-2014	Metals (08/26/14), PAH (08/25/14)
BH 14-213	BH14-213SA1	14-Aug-2014	pH (09/11/14)
BH 14-213	BH14-213SA5	14-Aug-2014	pH (09/11/14)
BH 14-213	G13 SA9	14-Aug-2014	Metals (08/26/14), PAH (08/25/14)
BH 14-213	G13 SA11	14-Aug-2014	Metals (08/26/14), PAH (08/25/14)
BH 14-217	BH14-217SA8	18-Jul-2014	pH (09/11/14)
BH15-100	BH15-100 SA1	16-Mar-2015	Metals (03/25/15), PAH (03/23/15)
BH15-100	BH15-100 SA2	16-Mar-2015	Metals (03/25/15), PAH (03/23/15)
BH15-100	DUP-2 (Field Duplicate)	16-Mar-2015	Metals (03/25/15), PAH (03/23/15)
BH15-101	BH15-101 SA5	17-Mar-2015	Metals (03/25/15), PAH (03/23/15)
BH15-101	BH15-101 SA9	17-Mar-2015	Metals (03/25/15), PAH (03/23/15)
TP 14-10	TP14-10 SA2	31-Mar-2014	PHC F1 (04/08/14), PHC F2-F4 (04/07/14), Boron (HWS) (04/08/14), Metals (04/08/14), Chromium (VI) (04/05/14), PAH (04/04/14)
TP 14-10	TP14-10 SA2A (Field Duplicate)	31-Mar-2014	PHC F1 (04/08/14), PHC F2-F4 (04/07/14), Boron (HWS) (04/08/14), Metals (04/08/14), Chromium (VI) (04/05/14), PAH (04/04/14)
TP 14-12	TP14-12 SA4	31-Mar-14	PHC F1 (04/05/14), PHC F2-F4 (04/07/14), Boron (HWS) (04/08/14), Metals (04/08/14), Chromium (VI) (04/05/14), PAH (04/04/14)
TP 14-15	TP14-15 SA5	31-Mar-14	PHC F1 (04/05/14), PHC F2-F4 (04/07/14), Boron (HWS) (04/08/14), pH (04/03/14), Metals (04/08/14), Chromium (VI) (04/05/14), PAH (04/04/14)
TP 14-15	TP14-15 SA6	31-Mar-2014	Boron (HWS) (04/08/14), Metals (04/08/14), Chromium (VI) (04/05/14)
TP15-18	TP15-18	03-Nov-2015	PAH (11/05/15)
TP15-19	TP15-19	03-Nov-2015	PAH (11/05/15)
TP15-20	TP15-20	03-Nov-2015	PAH (11/05/15)
TP15-30	TP15-30	03-Nov-2015	PAH (11/05/15)
TP15-31	TP15-31	03-Nov-2015	PAH (11/05/15)
TP15-32	TP15-32	03-Nov-2015	PAH (11/05/15)
TP15-201	TP15-201 FILL	25-Nov-15	Metals (11/26/15), Chromium (VI) (11/26/15), PAH (11/26/15)
TP15-201	TP15-201 Native Silty Clay	25-Nov-2015	Metals (11/26/15), Chromium (VI) (11/26/15), PAH (11/26/15)
TP AF	AF SA1	28-Jul-2014	PHC F1 (08/12/14), PHC F2-F4 (08/12/14)
TP AF	AF SA3	28-Jun-2014	Metals (08/19/14), PAH (08/12/14)
TP AG	AG SA4	29-Jul-2014	Metals (08/19/14), PAH (08/12/14)
TP AH	AH SA2	28-Jun-2014	Metals (08/20/14), PAH (08/12/14)
TP AH	AH SA3	28-Jun-2014	Metals (08/19/14), PAH (08/12/14)
TP AH	AH SA4	28-Jun-2014	Metals (08/18/14), PAH (08/12/14)
TP AJ	AJ SA1	28-Jul-2014	Metals (08/18/14), PAH (08/12/14)
TP AJ	AJ SA3	25-Jul-2014	Metals (08/20/14), PAH (08/12/14)
TP AK	AK SA1	29-Jul-2014	Metals (08/19/14), PAH (08/12/14)
TP AK	AK SA3	29-Jul-2014	Metals (08/20/14), PAH (08/12/14)
TP BJ	BJ SA3	30-Jul-2014	Metals (08/20/14), PAH (08/12/14)
TP BJ	BJ SA5	30-Jul-2014	PHC F1 (08/12/14), PHC F2-F4 (08/12/14)
TP G14/E1	G14/E1 SA 2	29-Jul-2014	Metals (08/20/14), PAH (08/12/14), PAH (08/15/14)
TP 14-10	TP14-10 SA2	31-Mar-2014	PHC F1 (04/08/14), PHC F2-F4 (04/07/14), Boron (HWS) (04/08/14), Metals (04/08/14), Chromium (VI) (04/05/14), PAH (04/04/14)
TP 14-10	TP14-10 SA2A (Field Duplicate)	31-Mar-2014	PHC F1 (04/08/14), PHC F2-F4 (04/07/14), Boron (HWS) (04/08/14), Metals (04/08/14), Chromium (VI) (04/05/14), PAH (04/04/14)
TP 14-12	TP14-12 SA4	31-Mar-14	PHC F1 (04/05/14), PHC F2-F4 (04/07/14), Boron (HWS) (04/08/14), Metals (04/08/14), Chromium (VI) (04/05/14), PAH (04/04/14)
TP 14-15	TP14-15 SA5	31-Mar-14	PHC F1 (04/05/14), PHC F2-F4 (04/07/14), Boron (HWS) (04/08/14), pH (04/03/14), Metals (04/08/14), Chromium (VI) (04/05/14), PAH (04/04/14)
TP AF	AF SA1	28-Jul-2014	PHC F1 (08/12/14), PHC F2-F4 (08/12/14)
TP BJ	BJ SA5	30-Jul-2014	PHC F1 (08/12/14), PHC F2-F4 (08/12/14)

Sample Location	Sample Name	Sample Collection Date	Laboratory Analysis Date
BH 14-210	BH14-210B	23-Feb-16	Metals (02/26/16), Chromium (VI) (02/26/16), Mercury (02/26/16), PAH (02/26/16)
MW14-210B	14-210 B	26-Aug-2014	PHC F1 (09/02/14), PHC F2-F4 (09/03/14), Metals (09/03/14), Chromium (VI) (09/02/14), Mercury (09/03/14), PAH (09/03/14)
MW14-210B	14-225 (Field Duplicate)	26-Aug-2014	PHC F1 (09/02/14), PHC F2-F4 (09/03/14), Metals (09/03/14), Chromium (VI) (09/02/14), Mercury (09/03/14), PAH (09/03/14)
BH 14-211	14-211	26-Aug-2014	PHC F1 (09/03/14), PHC F2-F4 (09/03/14), Metals (09/03/14), Chromium (VI) (09/02/14), Mercury (09/03/14)
BH14-3	BH14-3	03-Apr-2014	PHC F1 (04/08/14), PHC F2-F4 (04/08/14), Metals (04/04/14), Chromium (VI) (04/07/14), Mercury (04/07/14), PAH (04/04/14), PAH (04/08/14)
BH15-4	BH15-4	23-Feb-2016	Metals (02/26/16), Chromium (VI) (02/26/16), Mercury (02/26/16), PAH (02/26/16)
BH15-100	MW15-100	25-Mar-15	PHC F1 (03/31/15), PHC F2-F4 (04/01/15), Metals (03/31/15), Chromium (VI) (03/30/15), Mercury (03/31/15), VOC (03/30/15), BTEX (03/31/15), PAH (04/01/15), PAH (03/31/15)
BH15-101	MW15-101	25-Mar-2015	PHC F1 (03/30/15), PHC F2-F4 (03/30/15), Metals (04/01/15), Chromium (VI) (03/30/15), Mercury (03/30/15), VOC (03/30/15), BTEX (03/31/15), PAH (03/30/15)
BH16-02	BH16-02	23-Feb-16	Metals (02/26/16), Chromium (VI) (02/26/16), Mercury (02/26/16), PAH (02/26/16)



LEGEND

- MOE WATER WELL LOCATION
- PHASE ONE STUDY AREA
- APPROXIMATE FORMER LANDFILL SITE BOUNDARY
- PHASE TWO PROPERTY
- PHASE ONE PROPERTY
- RSC PROPERTY
- APEC LOCATION
- OFF-SITE PCA RESULTING IN APEC FOR THE SITE
- PCA LOCATION (NOT RESULTING IN APEC FOR THE SITE)

APEC 1 / PCA #14: FILL CONTAINING CONSTRUCTION DEBRIS, ASPHALT, CONCRETE AND POTENTIALLY SOME REFUSE
APEC 2 / PCA #13: FORMER PRESENCE OF ST. PAUL UNIVERSITY DUMP ON THE ADJACENT LANDS SOUTHWEST OF THE SITE AND PARTIALLY ON THE SOUTHWEST PART OF THE SITE
PCA #1: FORMER RETAIL FUEL OUTLET
PCA #2: FORMER RIVERSIDE DRIVE LANDFILL (L-10)
PCA #3: FORMER GROUP I INDUSTRIAL SITE CURRIE PRODUCTS LTD. AND ASSOCIATED LANDFILL (L-12)
PCA #4: LEES AVENUE CLOSED LANDFILL (L-28)
PCA #5: FORMER PRESENCE OF THE GROUP II INDUSTRIAL SITE – ROYAL CANADIAN ENGINEERS WORKSHOP
PCA #6: FORMER GASOLINE UST AND A PUMP
PCA #7: FILL OF UNKNOWN COMPOSITION AND POSSIBLE PRESENCE OF ASH REPORTEDLY SPREAD ON THE SITE ORIGINATING FROM THE HISTORICAL COAL BURNING USED AS THE FORMER CONVENT HEATING FUEL BEFORE SWITCHING
PCA #8A, 8B, 8C, 8D: POLE MOUNT TRANSFORMERS
PCA 9A, 9B, 9C: TRANSFORMERS
PCA #10: GARAGE SINCE 1940
PCA #11: DIESEL CONTAINING AST ASSOCIATED WITH BACKUP GENERATOR
PCA #12: DIESEL CONTAINING AST USED TO FUEL LANDSCAPING EQUIPMENT

1. MAIN OBLATES RESIDENCE (DESCHATELETS) BUILDING, BUILT IN 1885, 5 STOREYS, USED FOR PRIEST RESIDENCE
2. NORTH AND SOUTH WINGS EXTENSIONS BUILT IN 1920, 4 STOREYS, USED FOR PRIEST RESIDENCE
3. CONVENT/OFFICES BUILT IN 1940, 4 STOREYS
4. GARAGE BUILT IN 1940 AND USED FOR GENERAL SMALL MAINTENANCE AND OIL CHANGE OF OBLATES RESIDENTS' VEHICLES
5. OLD CONVENT- OLD CHAPEL, DINING ROOM, KITCHEN, AND RESIDENCES BUILT IN 1950
6. BOILER ROOM, FORMER COAL STORAGE (CURRENTLY USED FOR STORAGE OF DRUMS WITH USED OIL, LAWN MOWERS AND TOOLS STORAGE), A BACKUP GENERATOR AND ASSOCIATED DIESEL ABOVEGROUND STORAGE TANK (AST)
7. LIBRARY/OFFICES BUILT IN 1950
8. ARCHIVES AND GYM BUILDING BUILT IN 1958 (2 STOREYS)
9. LAUNDRY, WOODSHOP AND LAWN MOWER STORAGE BUILT IN 1948. DIESEL AST IS LOCATED IN THIS BUILDING.
10. LOCATION OF THE FORMER GASOLINE UNDERGROUND STORAGE TANK AND A PUMP ASSOCIATED WITH THE FORMER PRIVATE FUEL STATION
11. FORMER CEMETERY, REMOVED IN 1975/76
12. CONVENT DE SACRE COEUR
13. ST. PAUL UNIVERSITY
14. FORMER RETAIL FUEL OUTLET
15. IMMACULATA HIGH SCHOOL
16. RESIDENTIAL HOUSES
17. FORMER INDUSTRIAL SITE, GROUP II- ROYAL CANADIAN ENGINEERS WORKSHOPS
18. INTERA FORMER INDUSTRIAL SITE, GROUP I- CURRIE PRODUCTS LTD.
19. FORMER RIVERSIDE DRIVE LANDFILL L-10

NOTES
THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

REFERENCE
LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2011
DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9 VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
SITE PLAN AND AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-07-06
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/1	0	1A

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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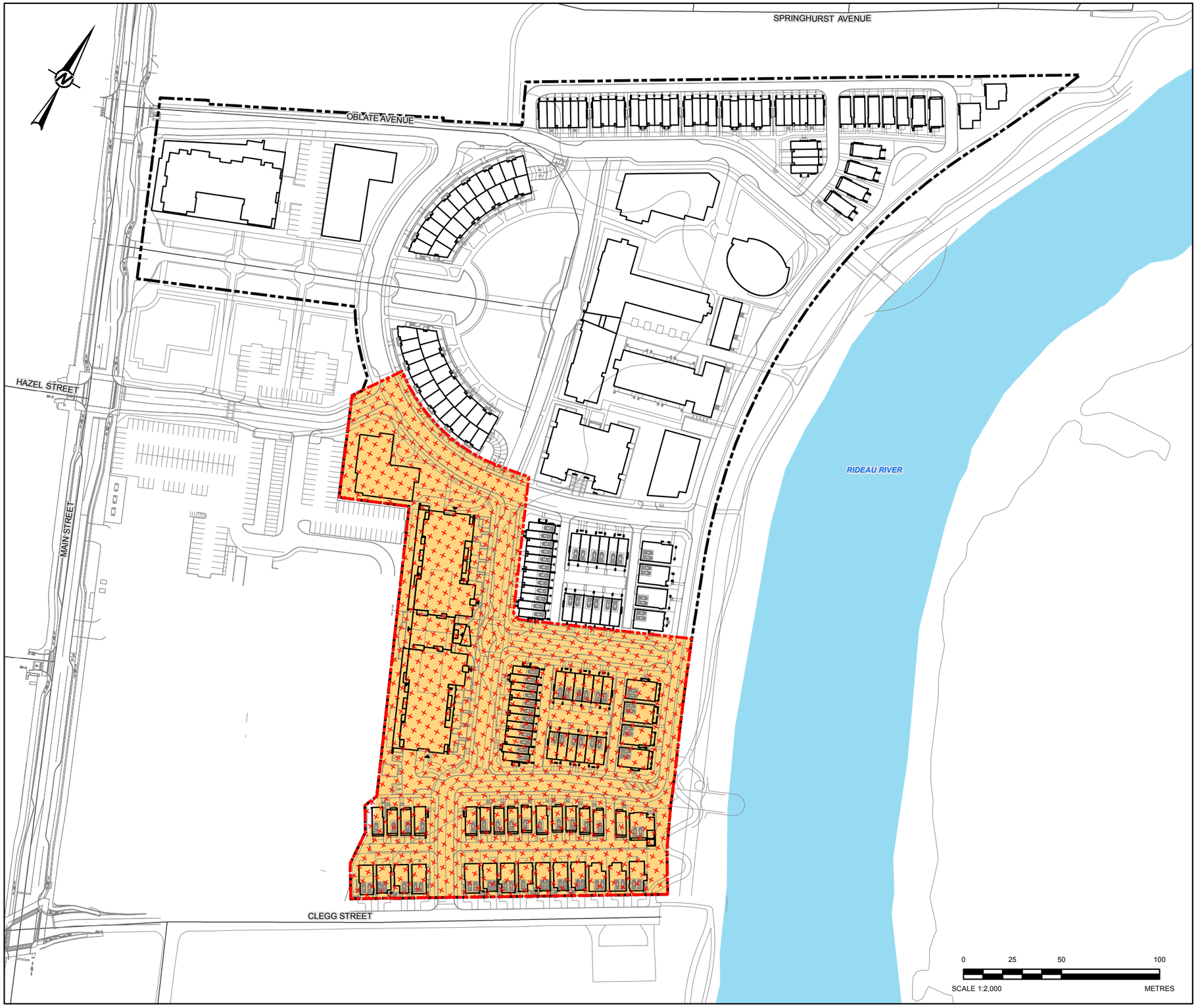

LEGEND

- FUTURE BUILDING FOOTPRINT
- DEVELOPMENT PLAN LINEWORK
- PHASE TWO PROPERTY
- PHASE ONE PROPERTY
- RSC PROPERTY

NOTES

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

REFERENCE

LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2011
DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9 VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
SITE PLAN AND FUTURE BUILDINGS

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-07-06
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/1	0	1B

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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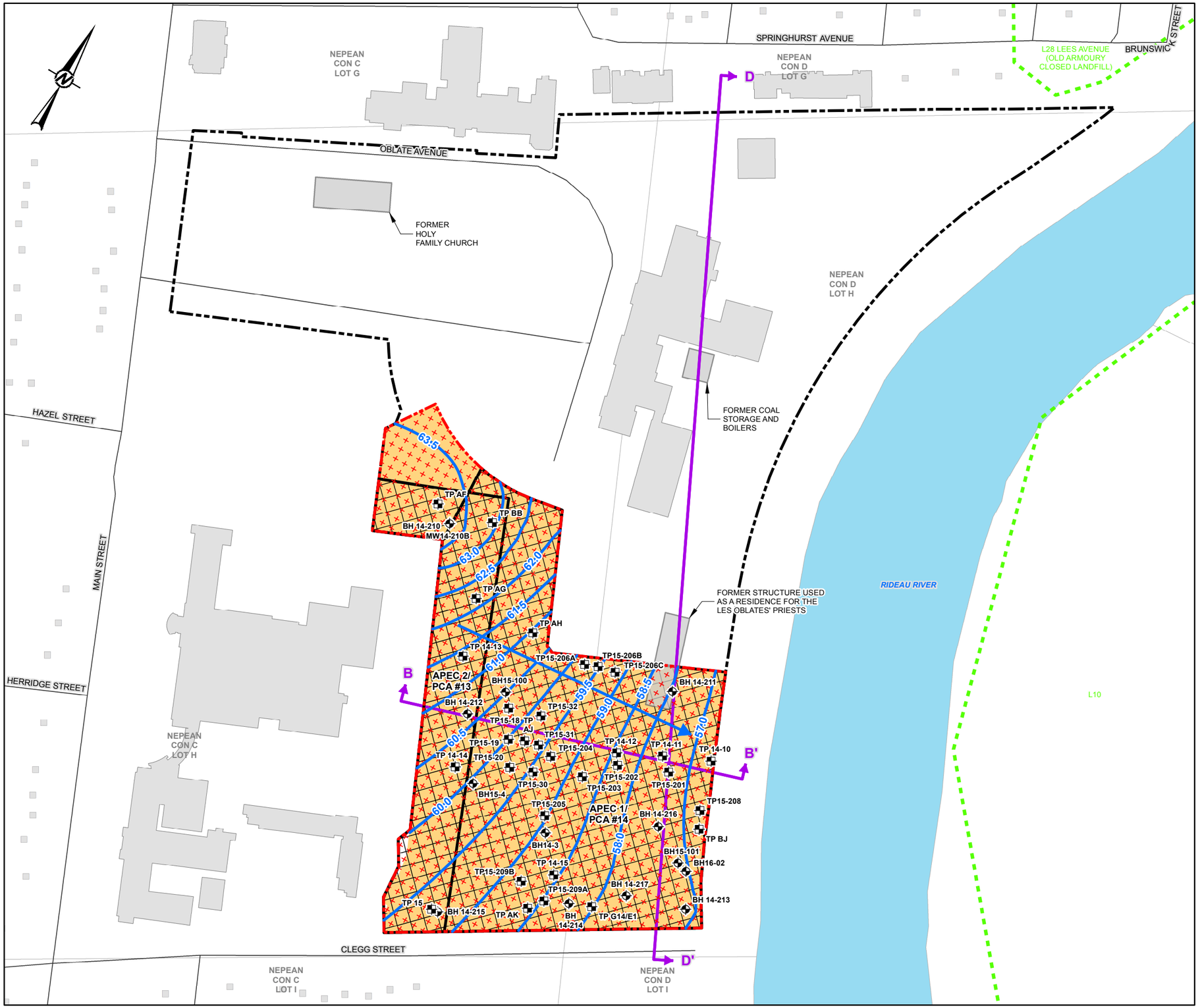

LEGEND

- BOREHOLE/MONITORING WELL LOCATION
- TEST PIT LOCATION
- TRENCH LOCATION
- CROSS SECTION LOCATION
- APPROXIMATE FORMER LANDFILL SITE BOUNDARY
- INTERPRETED SHALLOW GROUNDWATER EQUIPOTENTIAL CONTOUR, masl
- INTERPRETED SHALLOW GROUNDWATER FLOW DIRECTION
- PHASE TWO PROPERTY
- PHASE ONE PROPERTY
- RSC PROPERTY
- APEC LOCATION

APEC 1 FILL CONTAINING CONSTRUCTION DEBRIS, ASPHALT, CONCRETE AND POTENTIALLY SOME REFUSE
APEC 2 FORMER PRESENCE OF ST. PAUL UNIVERSITY DUMP ON THE ADJACENT LANDS SOUTHWEST OF THE SITE AND PARTIALLY ON THE SOUTHWEST PART OF THE SITE

0 25 50 100
SCALE 1:2,000 METRES

NOTES
THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

REFERENCE
LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2011
DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9 VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
GROUNDWATER ELEVATIONS, INTERPRETED SHALLOW GROUNDWATER FLOW DIRECTION AND CROSS SECTION LOCATIONS

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-07-06
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/1	0	2A

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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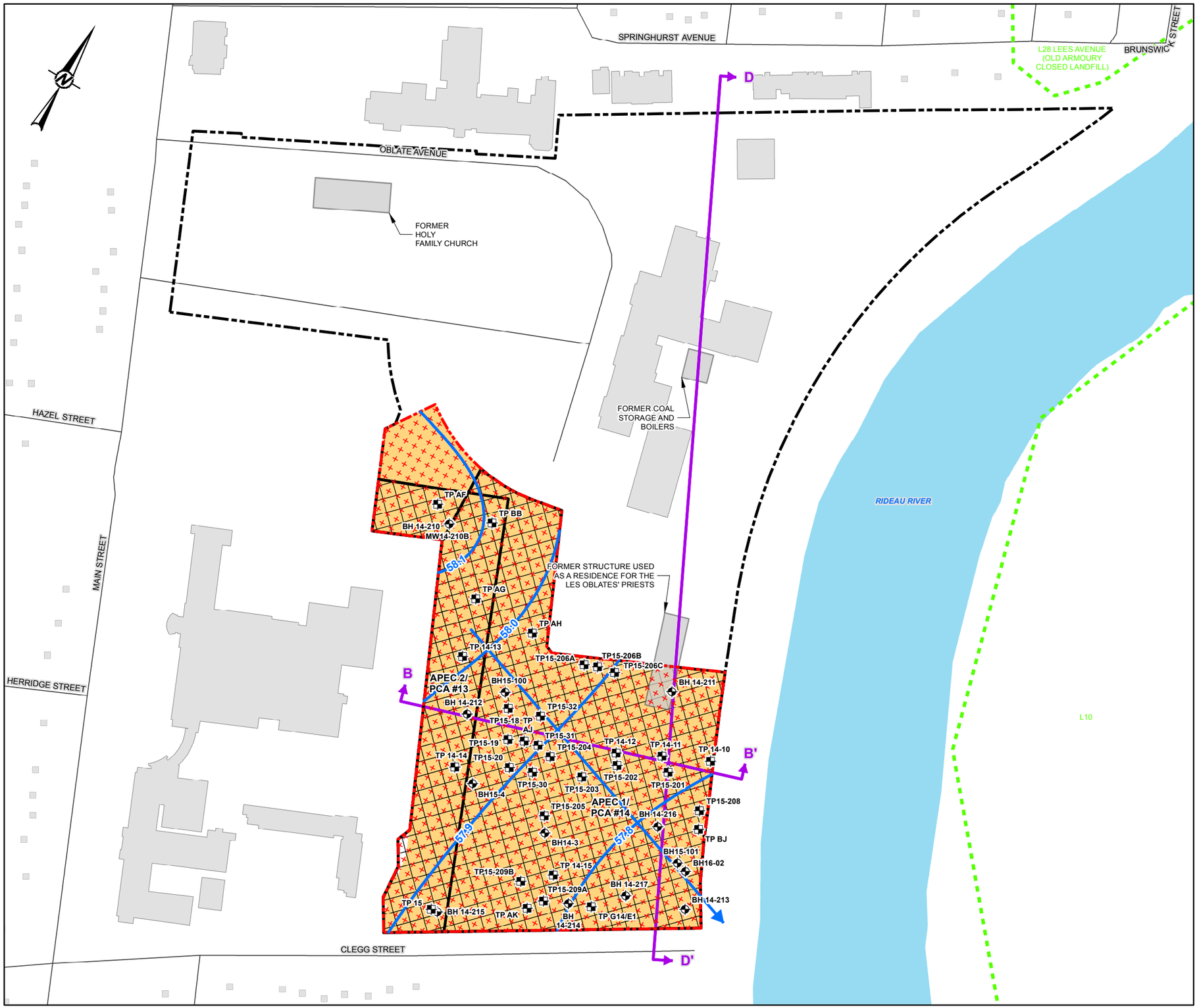

LEGEND

- BOREHOLE/MONITORING WELL LOCATION
- TEST PIT LOCATION
- TRENCH LOCATION
- CROSS SECTION LOCATION
- INTERPRETED DEEPER GROUNDWATER EQUIPOTENTIAL CONTOUR, masl
- INTERPRETED DEEPER GROUNDWATER FLOW DIRECTION
- APPROXIMATE FORMER LANDFILL SITE BOUNDARY
- PHASE TWO PROPERTY
- PHASE ONE PROPERTY
- RSC PROPERTY
- APEC LOCATION

APEC 1 FILL CONTAINING CONSTRUCTION DEBRIS, ASPHALT, CONCRETE AND POTENTIALLY SOME REFUSE
APEC 2 FORMER PRESENCE OF ST. PAUL UNIVERSITY DUMP ON THE ADJACENT LANDS SOUTHWEST OF THE SITE AND PARTIALLY ON THE SOUTHWEST PART OF THE SITE

0 25 50 100
SCALE 1:2,000 METRES

NOTES
THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

REFERENCE
LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2011
DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9 VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
DEEPER GROUNDWATER ELEVATIONS, INTERPRETED DEEPER GROUNDWATER FLOW DIRECTION AND CROSS SECTION LOCATIONS

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-07-06
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/1	0	**2B**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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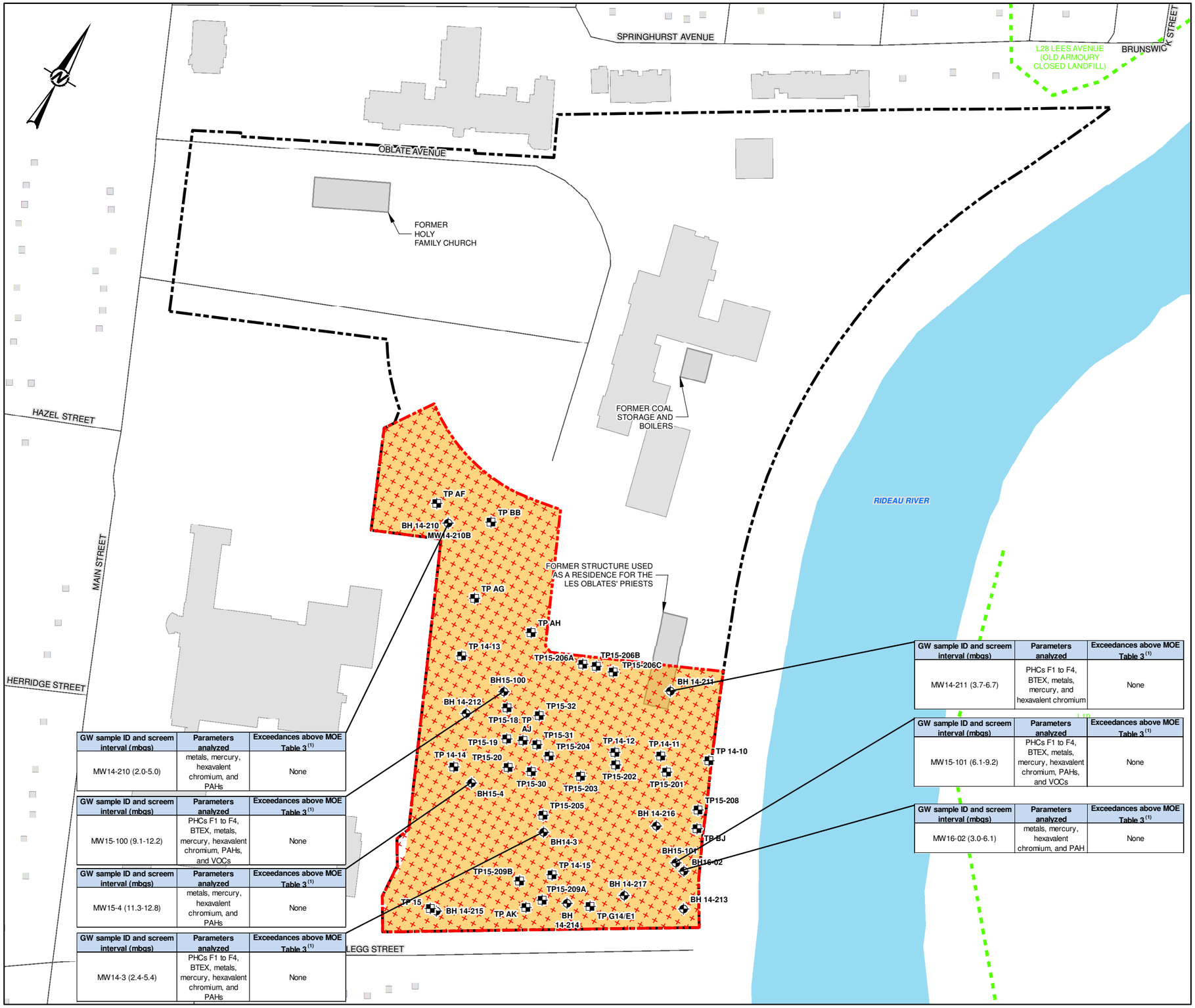

GW sample ID and screem interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW14-210 (2.0-5.0)	metals, mercury, hexavalent chromium, and PAHs	None

GW sample ID and screem interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW15-100 (9.1-12.2)	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium, PAHs, and VOCs	None

GW sample ID and screem interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW15-4 (11.3-12.8)	metals, mercury, hexavalent chromium, and PAHs	None

GW sample ID and screem interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW14-3 (2.4-5.4)	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium, and PAHs	None

GW sample ID and screem interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW14-211 (3.7-6.7)	PHCs F1 to F4, BTEX, metals, mercury, and hexavalent chromium	None

GW sample ID and screem interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW15-101 (6.1-9.2)	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium, PAHs, and VOCs	None

GW sample ID and screem interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW16-02 (3.0-6.1)	metals, mercury, hexavalent chromium, and PAH	None

LEGEND

- BOREHOLE/MONITORING WELL LOCATION
- TEST PIT LOCATION
- TRENCH LOCATION
- APPROXIMATE FORMER LANDFILL SITE BOUNDARY
- PHASE TWO PROPERTY
- PHASE ONE PROPERTY
- RSC PROPERTY

mbgs - metres below ground surface
µg/L - microgram per litre

0 25 50 100
SCALE 1:2,000 METRES

NOTES
1. SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE ENVIRONMENTAL PROTECTION ACT, TABLE 3 FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION, RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE, COARSE-TEXTURED SOIL, APRIL 15, 2011 (MOE TABLE 3 STANDARDS).
2. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

REFERENCE
LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2011
DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9 VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
SUMMARY OF GROUNDWATER ANALYSIS AND EXCEEDANCES

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-07-06
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/1	0	3

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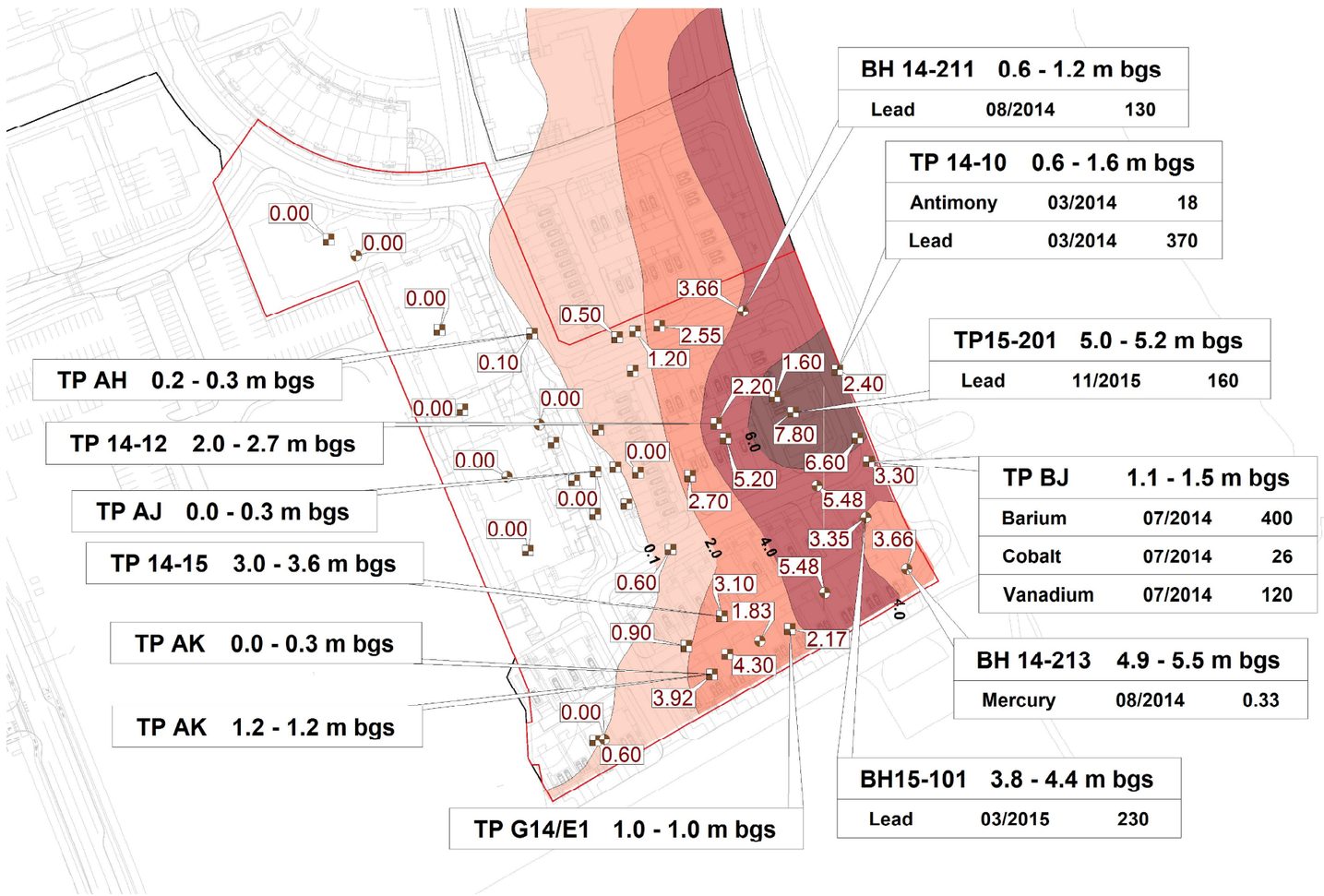
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:
25mm
0



LEGEND

- PHASE ONE PROPERTY
- RSC PROPERTY
- BOREHOLE LOCATION
- TEST PIT LOCATION
- 0.20 THICKNESS OF DEBRIS FILL
- TP AE SOIL SAMPLES SUBMITTED FOR LABORATORY ANALYSIS WITH NO EXCEEDANCES OF MOE TABLE 3 STANDARDS FOR THE PARAMETERS ANALYZED

SAMPLE LOCATION
SAMPLE DEPTH IN METRES BELOW GROUND SURFACE
SAMPLING DATE
PARAMETER EXCEEDING MOE TABLE 3 STANDARD
PARAMETER CONCENTRATION IN µg/g

Thickness of Fill (debris) (m)

- 0.1 - 2.0
- 2.0 - 4.0
- 4.0 - 6.0
- 6.0 - 8.0

0 25 50 100

SCALE 1:2,000 METRES

NOTES
1. DEPTH VALUES ARE SHOWN AS METRES BELOW GROUND SURFACE AND ARE ROUNDED.
2. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

REFERENCE
BASEMAP IMPORTED OUT FROM EQUIS AS AN IMAGE.
DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18 VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
METALS ANALYSIS AND EXCEEDENCES IN DEBRIS FILL AND TOPSOIL

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-07-06
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/1	0	4A

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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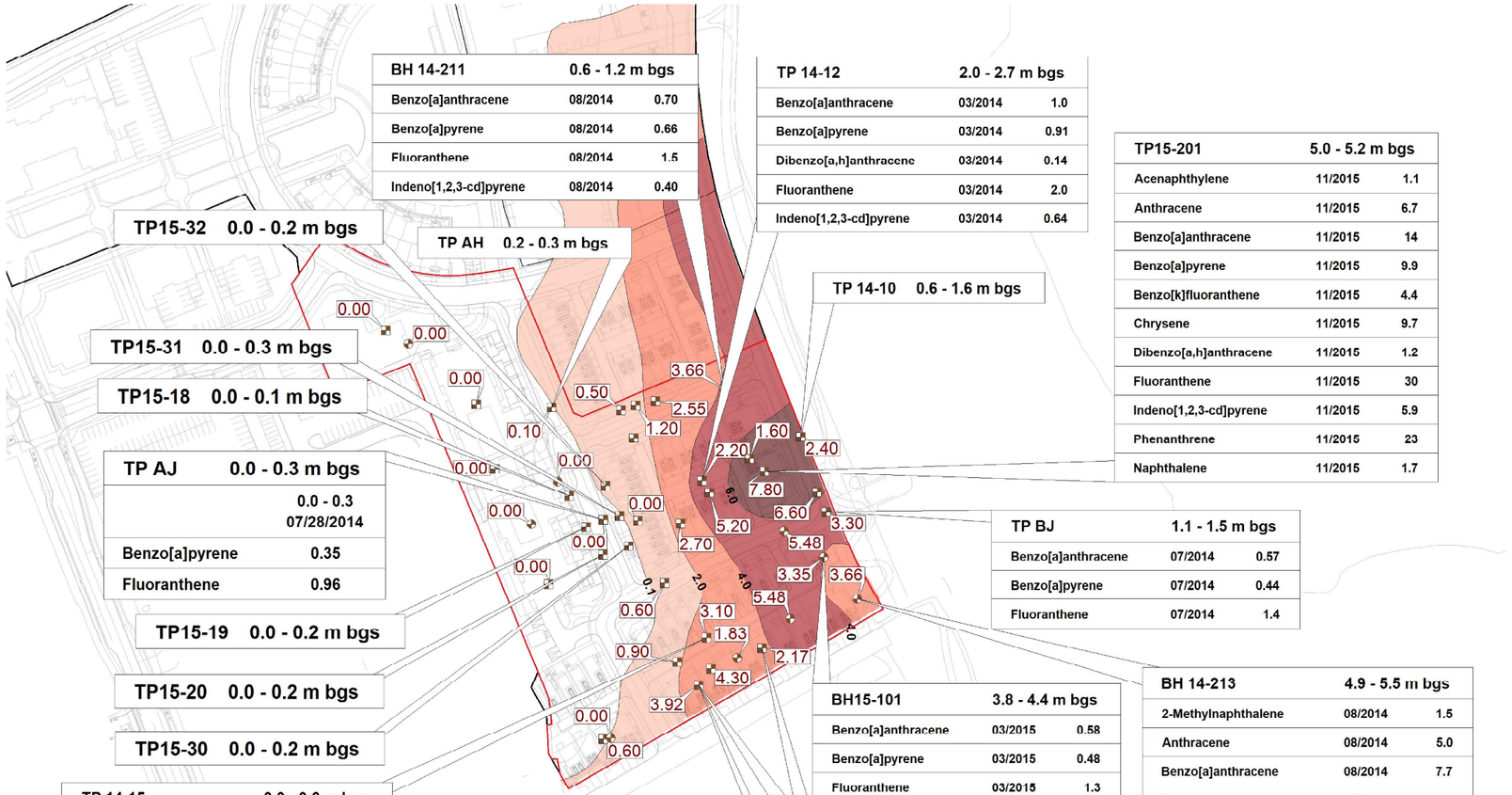


BH 14-211	0.6 - 1.2 m bgs	
Benzo[a]anthracene	08/2014	0.70
Benzo[a]pyrene	08/2014	0.66
Fluoranthene	08/2014	1.5
Indeno[1,2,3-cd]pyrene	08/2014	0.40

TP 14-12	2.0 - 2.7 m bgs	
Benzo[a]anthracene	03/2014	1.0
Benzo[a]pyrene	03/2014	0.91
Dibenzo[a,h]anthracene	03/2014	0.14
Fluoranthene	03/2014	2.0
Indeno[1,2,3-cd]pyrene	03/2014	0.64

TP15-201	5.0 - 5.2 m bgs	
Acenaphthylene	11/2015	1.1
Anthracene	11/2015	6.7
Benzo[a]anthracene	11/2015	14
Benzo[a]pyrene	11/2015	9.9
Benzo[k]fluoranthene	11/2015	4.4
Chrysene	11/2015	9.7
Dibenzo[a,h]anthracene	11/2015	1.2
Fluoranthene	11/2015	30
Indeno[1,2,3-cd]pyrene	11/2015	5.9
Phenanthrene	11/2015	23
Naphthalene	11/2015	1.7

TP BJ	1.1 - 1.5 m bgs	
Benzo[a]anthracene	07/2014	0.57
Benzo[a]pyrene	07/2014	0.44
Fluoranthene	07/2014	1.4

BH15-101	3.8 - 4.4 m bgs	
Benzo[a]anthracene	03/2015	0.58
Benzo[a]pyrene	03/2015	0.48
Fluoranthene	03/2015	1.3

BH 14-213	4.9 - 5.5 m bgs	
2-Methylnaphthalene	08/2014	1.5
Anthracene	08/2014	5.0
Benzo[a]anthracene	08/2014	7.7
Benzo[a]pyrene	08/2014	5.8
Benzo[k]fluoranthene	08/2014	2.9
Dibenzo[a,h]anthracene	08/2014	0.92
Fluoranthene	08/2014	15
Indeno[1,2,3-cd]pyrene	08/2014	3.0
Phenanthrene	08/2014	18
Naphthalene	08/2014	3.7

TP AJ	0.0 - 0.3 m bgs
	0.0 - 0.3 07/28/2014
Benzo[a]pyrene	0.35
Fluoranthene	0.96

TP 14-15	3.0 - 3.6 m bgs	
Acenaphthylene	03/2014	1.0
Anthracene	03/2014	9.0
Benzo[a]anthracene	03/2014	15
Benzo[a]pyrene	03/2014	12
Benzo[k]fluoranthene	03/2014	4.6
Chrysene	03/2014	12
Dibenzo[a,h]anthracene	03/2014	1.5
Fluoranthene	03/2014	32
Indeno[1,2,3-cd]pyrene	03/2014	7.3
Phenanthrene	03/2014	30
Naphthalene	03/2014	0.82

TP AK	0.0 - 0.3 m bgs	
Benzo[a]anthracene	07/2014	0.63
Benzo[a]pyrene	07/2014	0.56
Fluoranthene	07/2014	1.4

TP AK	1.2 - 1.2 m bgs	
Benzo[a]anthracene	07/2014	0.88
Benzo[a]pyrene	07/2014	0.82
Dibenzo[a,h]anthracene	07/2014	0.14
Fluoranthene	07/2014	1.9
Indeno[1,2,3-cd]pyrene	07/2014	0.61

TP15-32 0.0 - 0.2 m bgs

TP AH 0.2 - 0.3 m bgs

TP 14-10 0.6 - 1.6 m bgs

TP15-31 0.0 - 0.3 m bgs

TP15-18 0.0 - 0.1 m bgs

TP15-19 0.0 - 0.2 m bgs

TP15-20 0.0 - 0.2 m bgs

TP15-30 0.0 - 0.2 m bgs

TP G14/E1 1.0 - 1.0 m bgs

LEGEND

PHASE ONE PROPERTY

RSC PROPERTY

BOREHOLE LOCATION

TEST PIT LOCATION

0.20 THICKNESS OF DEBRIS FILL

TP AE SOIL SAMPLES SUBMITTED FOR LABORATORY ANALYSIS WITH NO EXCEEDANCES OF MOE TABLE 3 STANDARDS FOR THE PARAMETERS ANALYZED

SAMPLE LOCATION	
	SAMPLE DEPTH IN METRES BELOW GROUND SURFACE
	SAMPLING DATE
PARAMETER EXCEEDING MOE TABLE 3 STANDARD	
PARAMETER CONCENTRATION IN µg/g	

Thickness of Fill (debris) (m)

- 0.1 - 2.0
- 2.0 - 4.0
- 4.0 - 6.0
- 6.0 - 8.0

0 30 60 120

SCALE 1:2,500 METRES

NOTES

1. DEPTH VALUES ARE SHOWN AS METRES BELOW GROUND SURFACE AND ARE ROUNDED.
2. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

REFERENCE

BASEMAP IMPORTED OUT FROM EQUIS AS AN IMAGE.
DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18 VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
PAH ANALYSIS AND EXCEEDENCES IN DEBRIS FILL AND TOPSOIL

CONSULTANT

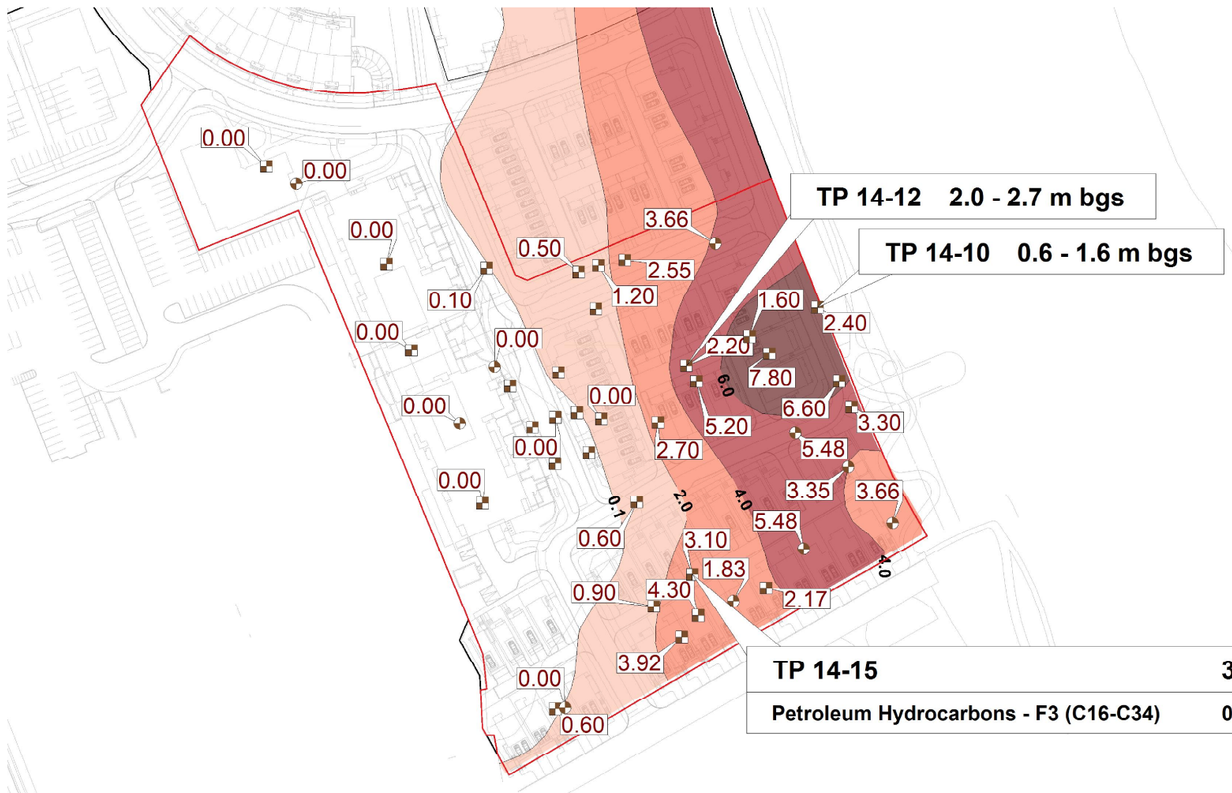
Golder Associates

YYYY-MM-DD	2016-07-06
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/1	0	4B

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

Path: N:\Active\Spatial_IM\The_Regional_Group\RegionalGroupOblatesPropOttawa\GIS\MXDs\1525113\Ph1000_AddPhIIESA\Reg153_04_PhIIESA\Phase1\1525113-1000-1-HS-0004B.mxd



LEGEND

- PHASE ONE PROPERTY
- RSC PROPERTY
- BOREHOLE LOCATION
- TEST PIT LOCATION
- 0.20 THICKNESS OF DEBRIS FILL
- TP AE SOIL SAMPLES SUBMITTED FOR LABORATORY ANALYSIS WITH NO EXCEEDANCES OF MOE TABLE 3 STANDARDS FOR THE PARAMETERS ANALYZED

SAMPLE LOCATION
SAMPLE DEPTH IN METRES BELOW GROUND SURFACE
SAMPLING DATE
PARAMETER EXCEEDING MOE TABLE 3 STANDARD
PARAMETER CONCENTRATION IN µg/g

Thickness of Fill (debris) (m)

- 0.1 - 2.0
- 2.0 - 4.0
- 4.0 - 6.0
- 6.0 - 8.0

0 25 50 100

SCALE 1:2,000 METRES

NOTES

1. DEPTH VALUES ARE SHOWN AS METRES BELOW GROUND SURFACE AND ARE ROUNDED.
2. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

REFERENCE

BASEMAP IMPORTED OUT FROM EQUIS AS AN IMAGE.DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18 VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
PHC ANALYSIS AND EXCEEDENCES IN DEBRIS FILL

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-07-06
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/1	0	4C

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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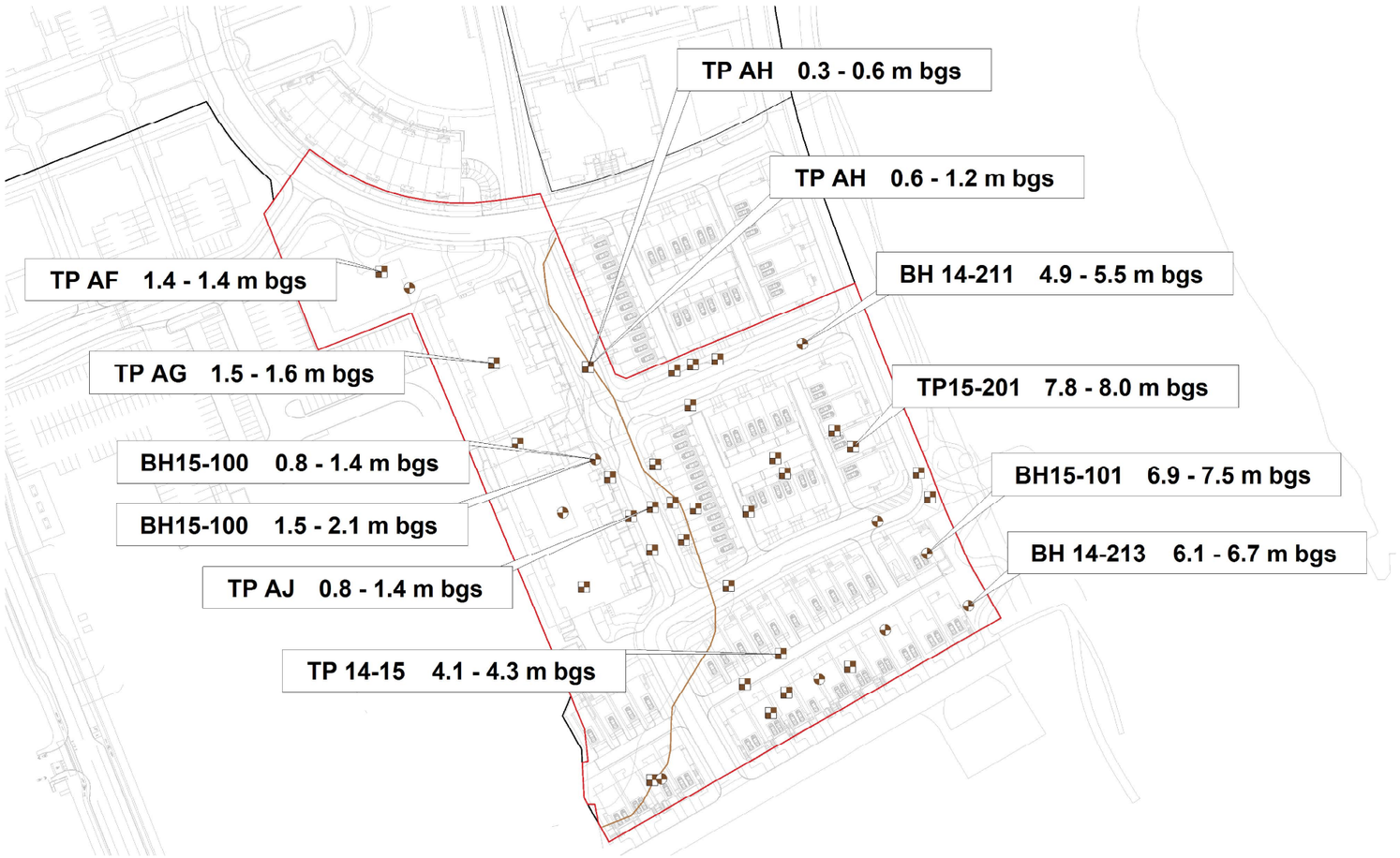

LEGEND

- PHASE ONE PROPERTY
- RSC PROPERTY
- EXTENT OF DEBRIS FILL LINE
- BOREHOLE LOCATION
- TEST PIT LOCATION
- TR E — SOIL SAMPLES SUBMITTED FOR LABORATORY ANALYSIS WITH NO EXCEEDANCES OF MOE TABLE 3 STANDARDS FOR THE PARAMETERS ANALYZED

SAMPLE LOCATION
SAMPLE DEPTH IN METRES BELOW GROUND SURFACE
SAMPLING DATE
PARAMETER EXCEEDING MOE TABLE 3 STANDARD
PARAMETER CONCENTRATION IN µg/g

0 25 50 100

SCALE 1:2,000 METRES

NOTES

1. DEPTH VALUES ARE SHOWN AS METRES BELOW GROUND SURFACE AND ARE ROUNDED.
2. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

REFERENCE

BASEMAP IMPORTED OUT FROM EQUIS AS AN IMAGE.
DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18 VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
METALS ANALYSIS AND EXCEEDENCES IN SOIL FILL AND NATIVE CLAY BENEATH DEBRIS

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-07-06
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/1	0	5A

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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LEGEND

- PHASE ONE PROPERTY
- RSC PROPERTY
- EXTENT OF DEBRIS FILL LINE
- BOREHOLE LOCATION
- TEST PIT LOCATION
- TR E — SOIL SAMPLES SUBMITTED FOR LABORATORY ANALYSIS WITH NO EXCEEDANCES OF MOE TABLE 3 STANDARDS FOR THE PARAMETERS ANALYZED

SAMPLE LOCATION
SAMPLE DEPTH IN METRES BELOW GROUND SURFACE
SAMPLING DATE
PARAMETER EXCEEDING MOE TABLE 3 STANDARD
PARAMETER CONCENTRATION IN µg/g

0 25 50 100

SCALE 1:2,000 METRES

NOTES

1. DEPTH VALUES ARE SHOWN AS METRES BELOW GROUND SURFACE AND ARE ROUNDED.
2. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

REFERENCE

BASEMAP IMPORTED OUT FROM EQUIS AS AN IMAGE.
DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18 VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
PAH ANALYSIS AND EXCEEDENCES IN SOIL FILL AND NATIVE CLAY BENEATH DEBRIS

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-07-06
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/1	0	5B

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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LEGEND

- PHASE ONE PROPERTY
- RSC PROPERTY
- EXTENT OF DEBRIS FILL LINE
- BOREHOLE LOCATION
- TEST PIT LOCATION
- TR E — SOIL SAMPLES SUBMITTED FOR LABORATORY ANALYSIS WITH NO EXCEEDANCES OF MOE TABLE 3 STANDARDS FOR THE PARAMETERS ANALYZED

SAMPLE LOCATION
SAMPLE DEPTH IN METRES BELOW GROUND SURFACE
SAMPLING DATE
PARAMETER EXCEEDING MOE TABLE 3 STANDARD
PARAMETER CONCENTRATION IN µg/g

0 25 50 100

SCALE 1:2,000 METRES

NOTES

1. DEPTH VALUES ARE SHOWN AS METRES BELOW GROUND SURFACE AND ARE ROUNDED.
2. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

REFERENCE

BASEMAP IMPORTED OUT FROM EQUIS AS AN IMAGE.
DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18 VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
PHC ANALYSIS AND EXCEEDENCES IN SOIL FILL AND NATIVE CLAY BENEATH DEBRIS

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-07-06
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/1	0	5C

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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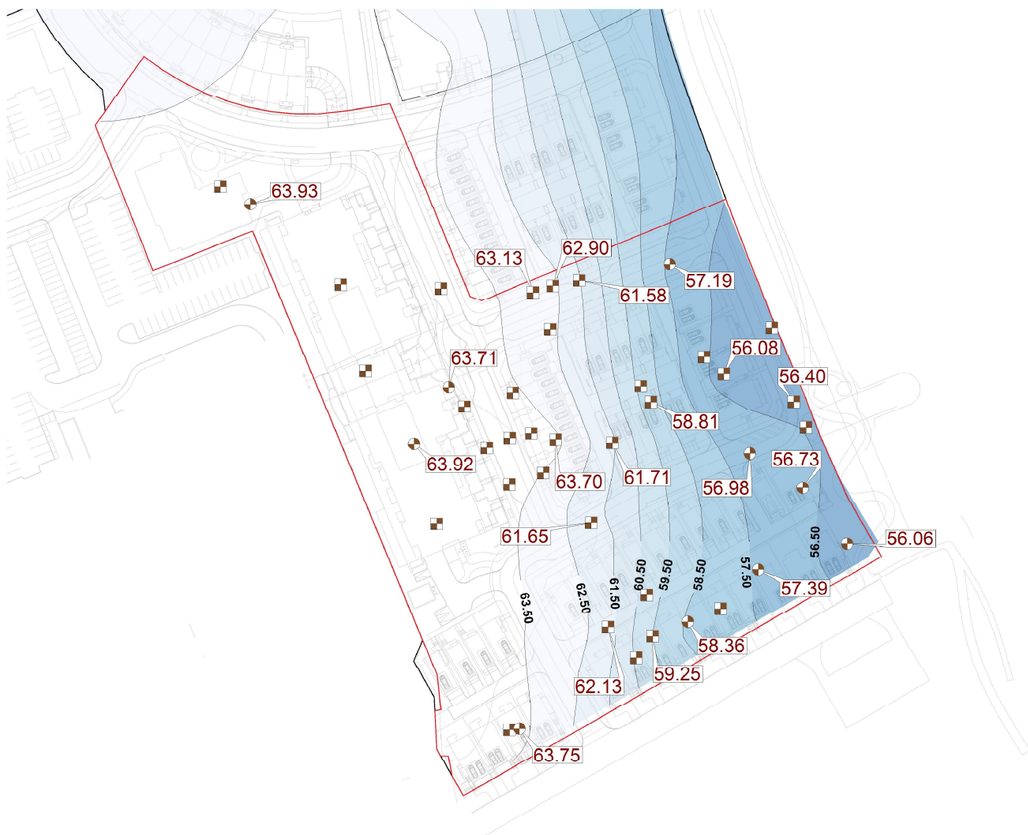

LEGEND

- APPROXIMATE SITE BOUNDARY (PHASE TWO LANDS, RSC #1)
- APPROXIMATE PROPERTY BOUNDARY
- BOREHOLE LOCATION
- TEST PIT LOCATION
- 56.54 ELEVATION OF SILTY CLAY, SURFACE METRES ABOVE SEA LEVEL
- — 58.50 — INTERPRETED SILTY CLAY SURFACE ELEVATION CONTOUR, METRES ABOVE SEA LEVEL

Upper Surface of Native Soils (m)

- 54.50 - 55.50
- 55.50 - 56.50
- 56.50 - 57.50
- 57.50 - 58.50
- 58.50 - 59.50
- 59.50 - 60.50
- 60.50 - 61.50
- 61.50 - 62.50
- 62.50 - 63.50

0 20 40 80

SCALE 1:2,000 METRES

NOTES

1. DEPTH VALUES ARE SHOWN AS METRES BELOW GROUND SURFACE AND ARE ROUNDED.
2. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

REFERENCE

BASEMAP IMPORTED OUT FROM EQUIS AS AN IMAGE.
PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: MTM ZONE 9
VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
INTERPRETED NATIVE CLAY SURFACE ELEVATION

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-07-06
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/1	0	6

IF THIS MEASURE IS NOT 25mm, THE SHEET SIZE HAS BEEN MODIFIED FROM:

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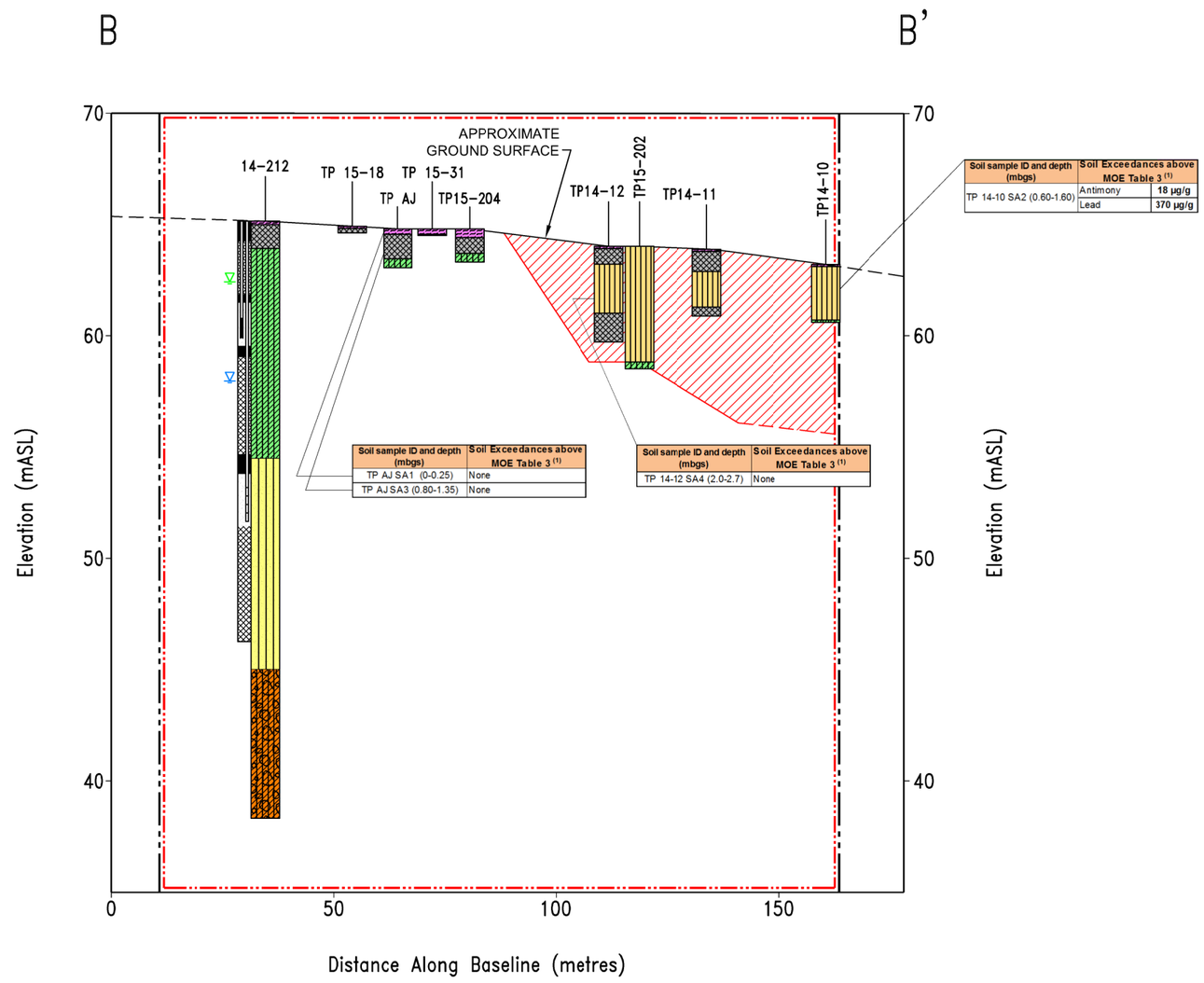

LEGEND

BOREHOLE/MONITORING WELL/TEST PIT IDENTIFIER → 14-01

SHALLOW WELL SCREEN
SHALLOW WELL STANDPIPE
GROUNDWATER LEVEL
STRATIGRAPHY
DEEP STANDPIPE

SHALLOW GROUNDWATER LEVEL, mbgs
DEEP GROUNDWATER LEVEL, mbgs

APPROXIMATE SITE BOUNDARY (PHASE 2 LANDS, RSC #1)

APPROXIMATE PROPERTY BOUNDARY

APPROXIMATE AREA OF DEBRIS FILL WITH CONCENTRATIONS EXCEEDING MOECC TABLE 3 RESIDENTIAL CRITERIA FOR METALS AND PAH'S

TOPSOIL: SILTY SAND WITH SOME GRAVEL, ROOTS AND ORGANIC MATTER

SOIL FILL : SANDY SILT OR SILTY TO FINE SAND WITH SOME CLAY AND GRAVEL, WITH LITTLE TO NO DEBRIS/REFUSE

DEBRIS FILL: MIXTURE OF SILTY SAND OR CLAYEY SILT WITH SOME GRAVEL AND TRACES OF FINES AND DEBRIS/REFUSE(ASH, WOOD, PLASTIC, WIRE, PAPER, BRICK FRAGMENTS, ASPHALT PIECES, CONCRETE, METAL FRAGMENTS AND/OR GLASS)

NATIVE SOIL: SILTY CLAY/CLAYEY SILT

NATIVE SOIL: SILTY SAND TO SILT

NATIVE SOIL: GLACIAL TILL

NOTES

WHERE NEARBY BOREHOLES AND/OR TEST PITS ARE NOT OF SUFFICIENT DEPTH, THE DEBRIS FILL HAS BEEN ASSUMED TO EXTEND TO THE ESTIMATED ELEVATION OF THE SILTY CLAY OUTLINED ON FIGURE 10.

FOR DETAILED SOIL STRATIGRAPHY AND OR GROUNDWATER CONDITIONS, REFER TO RECORD OF BOREHOLE AND TEST PIT SHEETS

1. SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE ENVIRONMENTAL PROTECTION ACT, TABLE 3 FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION, RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE, COARSE-TEXTURED SOIL, APRIL 15, 2011 (MOE TABLE 3 STANDARDS).

mbgs: METRES BELOW GROUND SURFACE
µg/g - MICROGRAM PER GRAM

SEE FIGURES 4A AND 4B FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 14-1122-0005/7101.

VERTICAL SCALE
0 5 10
1:250 METRES

HORIZONTAL SCALE
0 25 50
1:1,250 METRES

CLIENT
GREYSTONE VILLAGE INC.

CONSULTANT
Golder Associates

YYYY-MM-DD	2014-12-11
PREPARED	JEM
DESIGN	----
REVIEW	PH
APPROVED	PAS

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
CROSS-SECTION B-B' (INTERPRETED GEOLOGICAL AND HYDROGEOLOGICAL CONDITIONS) WITH METALS ANALYSIS AND EXCEEDANCES

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/1	0	7A

Path: \\golder.gds\gal\ottawa\Active\Spatial IM\The Regional Group\Regional Group\Oblates\ProjOttawa\CAD\1525113\PRODUCTION\Phase1000 Reg 153 04 Phase II ESA\ | File Name: 1525113-1000-1-HS-0007-0008.dwg
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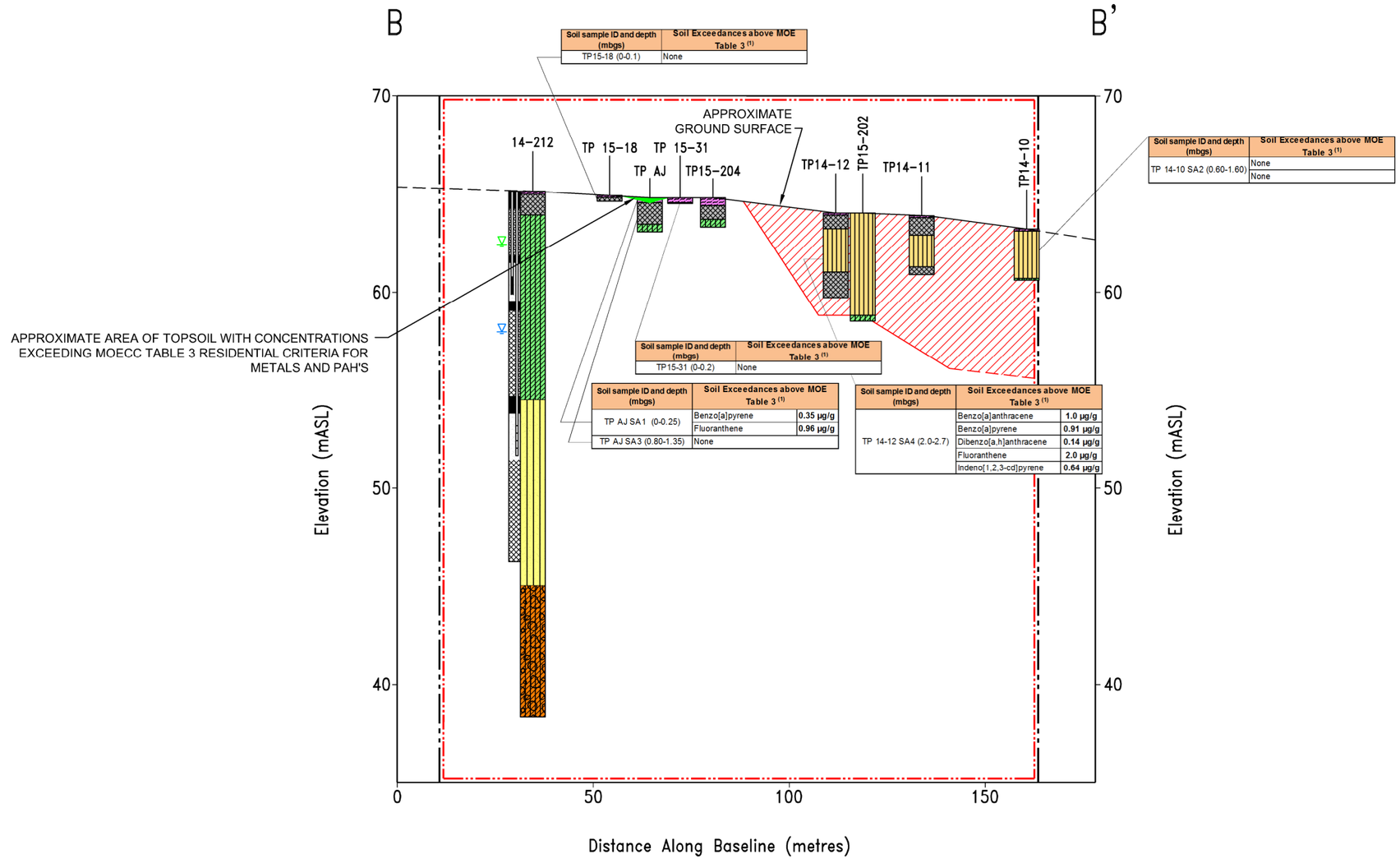


Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)
TP15-18 (0-0.1)	None

Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)
TP 14-10 SA2 (0.60-1.60)	None None

Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)
TP15-31 (0-0.2)	None

Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)	
TP AJ SA1 (0-0.25)	Benzo[a]pyrene	0.35 µg/g
	Fluoranthene	0.96 µg/g
TP AJ SA3 (0.80-1.35)	None	

Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)	
TP 14-12 SA4 (2.0-2.7)	Benzo[a]anthracene	1.0 µg/g
	Benzo[a]pyrene	0.91 µg/g
	Dibenzo[a,h]anthracene	0.14 µg/g
	Fluoranthene	2.0 µg/g
	Indeno[1,2,3-cd]pyrene	0.64 µg/g

LEGEND

BOREHOLE/MONITORING WELL/TEST PIT IDENTIFIER — 14-01

SHALLOW WELL SCREEN
SHALLOW WELL STANDPIPE
GROUNDWATER LEVEL
STRATIGRAPHY
DEEP STANDPIPE

SHALLOW GROUNDWATER LEVEL, mbgs
DEEP GROUNDWATER LEVEL, mbgs

APPROXIMATE SITE BOUNDARY (PHASE 2 LANDS, RSC #1)

APPROXIMATE PROPERTY BOUNDARY

APPROXIMATE AREA OF DEBRIS FILL WITH CONCENTRATIONS EXCEEDING MOECC TABLE 3 RESIDENTIAL CRITERIA FOR METALS AND PAH'S

APPROXIMATE AREA OF TOPSOIL WITH CONCENTRATIONS EXCEEDING MOECC TABLE 3 RESIDENTIAL CRITERIA FOR METALS AND PAH'S

TOPSOIL: SILTY SAND WITH SOME GRAVEL, ROOTS AND ORGANIC MATTER

SOIL FILL : SANDY SILT OR SILTY TO FINE SAND WITH SOME CLAY AND GRAVEL, WITH LITTLE TO NO DEBRIS/REFUSE

DEBRIS FILL: MIXTURE OF SILTY SAND OR CLAYEY SILT WITH SOME GRAVEL AND TRACES OF FINES AND DEBRIS/REFUSE (ASH, WOOD, PLASTIC, WIRE, PAPER, BRICK FRAGMENTS, ASPHALT PIECES, CONCRETE, METAL FRAGMENTS AND/OR GLASS)

NATIVE SOIL: SILTY CLAY/CLAYEY SILT

NATIVE SOIL: SILTY SAND TO SILT

NATIVE SOIL: GLACIAL TILL

NOTES

WHERE NEARBY BOREHOLES AND/OR TEST PITS ARE NOT OF SUFFICIENT DEPTH, THE DEBRIS FILL HAS BEEN ASSUMED TO EXTEND TO THE ESTIMATED ELEVATION OF THE SILTY CLAY OUTLINED ON FIGURE 10.

FOR DETAILED SOIL STRATIGRAPHY AND OR GROUNDWATER CONDITIONS, REFER TO RECORD OF BOREHOLE AND TEST PIT SHEETS

1. SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE ENVIRONMENTAL PROTECTION ACT, TABLE 3 FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION, RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE, COARSE-TEXTURED SOIL, APRIL 15, 2011 (MOE TABLE 3 STANDARDS).

mbgs: METRES BELOW GROUND SURFACE
µg/g - MICROGRAM PER GRAM

SEE FIGURES 4A AND 4B FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 14-1122-0005/7101.

VERTICAL SCALE
0 5 10
1:250 METRES

HORIZONTAL SCALE
0 25 50
1:1,250 METRES

CLIENT
GREYSTONE VILLAGE INC.

CONSULTANT
Golder Associates

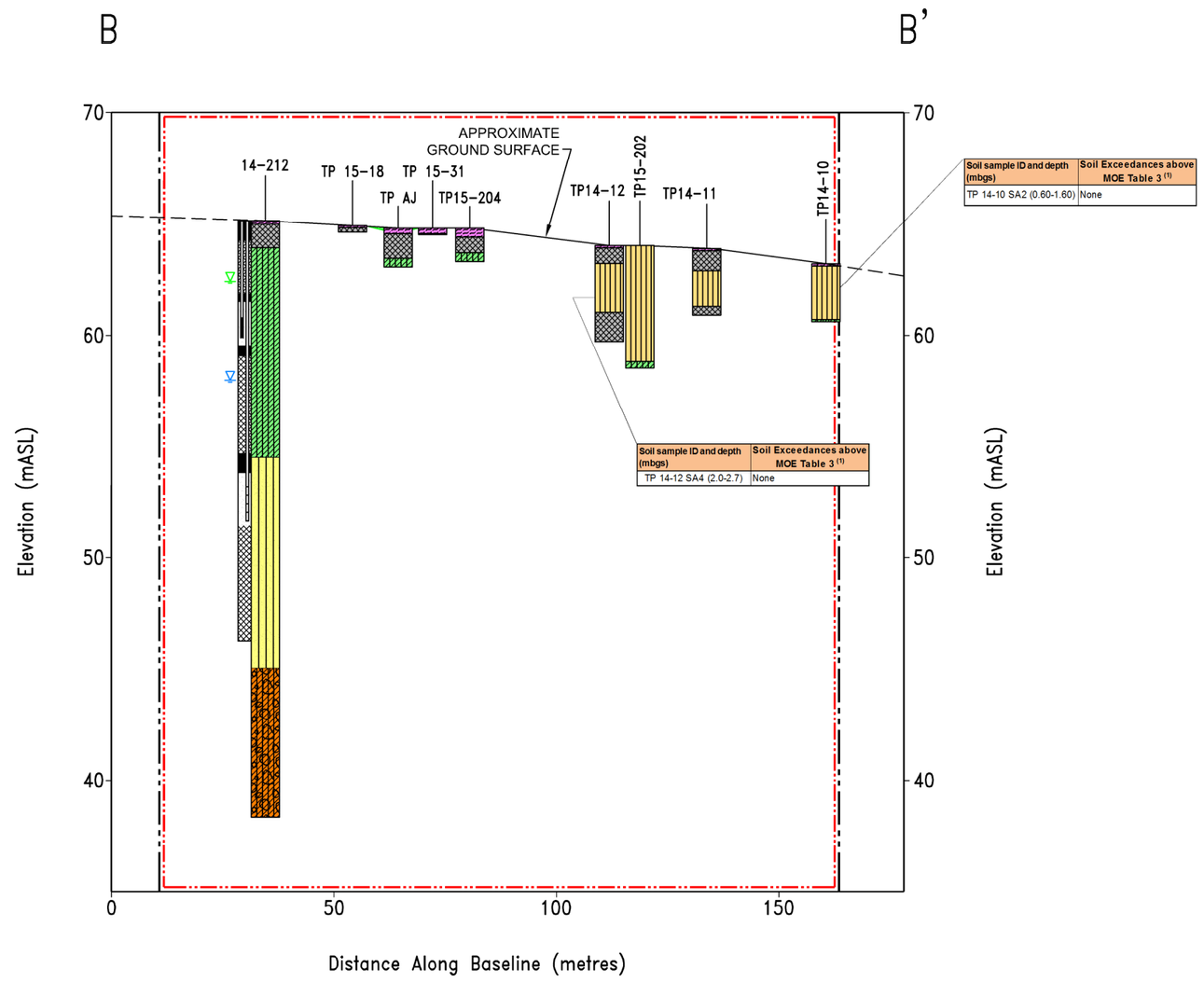
YYYY-MM-DD	2014-12-11
PREPARED	JEM
DESIGN	----
REVIEW	PH
APPROVED	PAS

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
CROSS-SECTION B-B' (INTERPRETED GEOLOGICAL AND HYDROGEOLOGICAL CONDITIONS) WITH PAH ANALYSIS AND EXCEEDANCES

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/1	0	7B

Path: \\golder.gds\gal\ottawa\Active\Spatial_MT\Re_Regional_Group\Regional\GroupOblatesProp\Ottawa\CAD\1525113\PRODUCTION\Phase1000_Reg 153_04 Phase II ESA\ | File Name: 1525113-1000-1-HS-0007-0008.dwg
25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)
TP 14-10 SA2 (0.60-1.60)	None

Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)
TP 14-12 SA4 (2.0-2.7)	None

LEGEND

BOREHOLE/MONITORING WELL/TEST PIT IDENTIFIER — 14-01

SHALLOW WELL SCREEN

GROUNDWATER LEVEL

STRATIGRAPHY

DEEP STANDPIPE

SHALLOW GROUNDWATER LEVEL, mbgs

DEEP GROUNDWATER LEVEL, mbgs

APPROXIMATE SITE BOUNDARY (PHASE 2 LANDS, RSC #1)

APPROXIMATE PROPERTY BOUNDARY

TOPSOIL: SILTY SAND WITH SOME GRAVEL, ROOTS AND ORGANIC MATTER

SOIL FILL : SANDY SILT OR SILTY TO FINE SAND WITH SOME CLAY AND GRAVEL, WITH LITTLE TO NO DEBRIS/REFUSE

DEBRIS FILL: MIXTURE OF SILTY SAND OR CLAYEY SILT WITH SOME GRAVEL AND TRACES OF FINES AND DEBRIS/REFUSE (ASH, WOOD, PLASTIC, WIRE, PAPER, BRICK FRAGMENTS, ASPHALT PIECES, CONCRETE, METAL FRAGMENTS AND/OR GLASS)

NATIVE SOIL: SILTY CLAY/CLAYEY SILT

NATIVE SOIL: SILTY SAND TO SILT

NATIVE SOIL: GLACIAL TILL

NOTES

FOR DETAILED SOIL STRATIGRAPHY AND OR GROUNDWATER CONDITIONS, REFER TO RECORD OF BOREHOLE AND TEST PIT SHEETS

1. SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE ENVIRONMENTAL PROTECTION ACT, TABLE 3 FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION, RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE, COARSE-TEXTURED SOIL, APRIL 15, 2011 (MOE TABLE 3 STANDARDS).

mbgs: METRES BELOW GROUND SURFACE
µg/g - MICROGRAM PER GRAM

SEE FIGURES 4A AND 4B FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 14-1122-0005/7101.

VERTICAL SCALE

0 5 10
1:250 METRES

HORIZONTAL SCALE

0 25 50
1:1,250 METRES

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

CONSULTANT

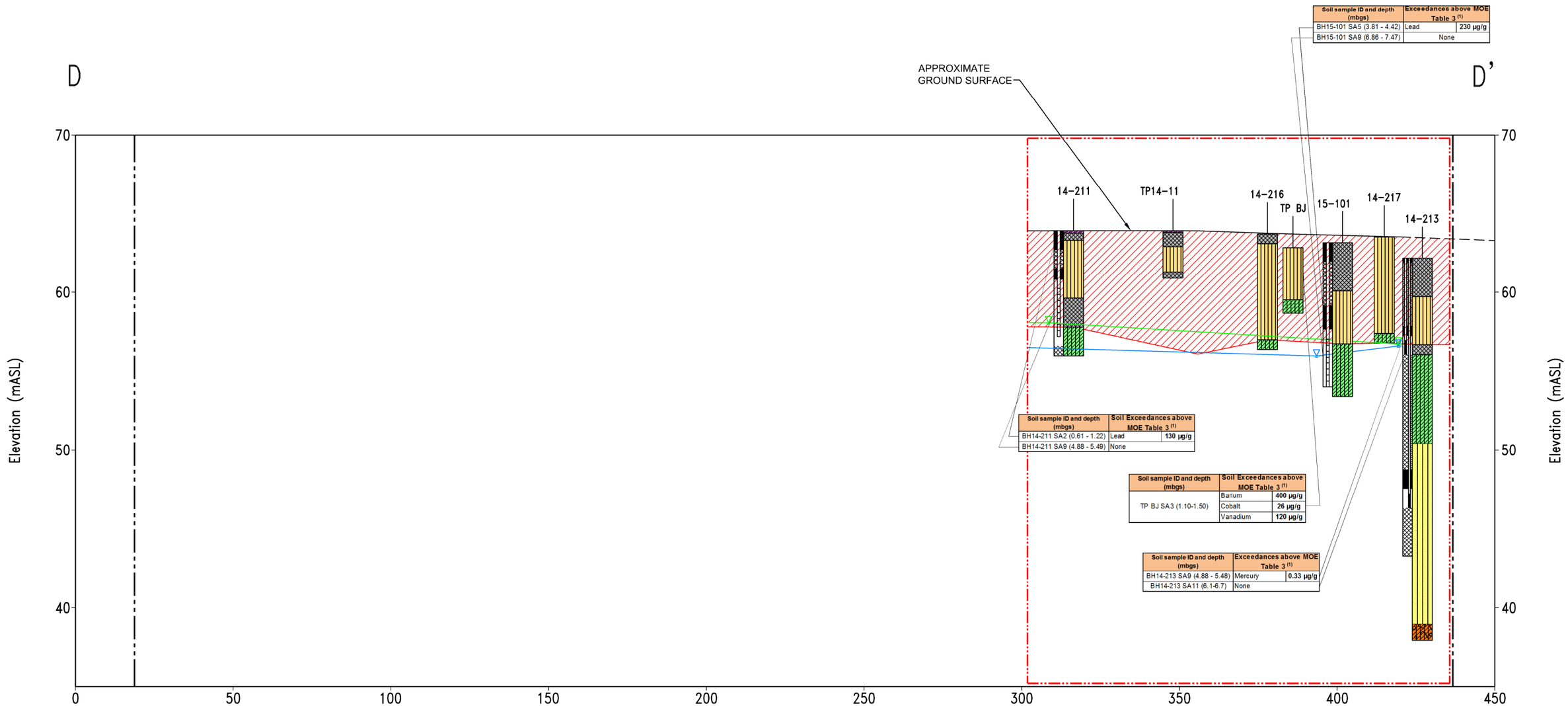
Golder Associates

YYYY-MM-DD	2014-12-11
PREPARED	JEM
DESIGN	----
REVIEW	PH
APPROVED	PAS

TITLE
CROSS-SECTION B-B' (INTERPRETED GEOLOGICAL AND HYDROGEOLOGICAL CONDITIONS) WITH PHC ANALYSIS AND EXCEEDANCES

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/1	0	7C

Path: \\golder.gds\gal\ottawa\Active\Spatial_MT\he_Regional_Group\Regional\GroupObletesProp\Ottawa\CAD\1525113\PRODUCTION\Phase1000_Reg 153_04 Phase II ESA\ | File Name: 1525113-1000-1-HS-0007-0008.dwg
25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



Soil sample ID and depth (mbgs)	Exceedances above MOE Table 3 (1)	
BH15-101 SA5 (3.81 - 4.42)	Lead	230 µg/g
BH15-101 SA9 (6.86 - 7.47)	None	

Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)	
BH14-211 SA2 (0.61 - 1.22)	Lead	130 µg/g
BH14-211 SA9 (4.88 - 5.49)	None	

Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)	
TP BJ SA3 (1.10-1.50)	Barium	400 µg/g
	Cobalt	26 µg/g
	Vanadium	120 µg/g

Soil sample ID and depth (mbgs)	Exceedances above MOE Table 3 (1)	
BH14-213 SA9 (4.88 - 5.48)	Mercury	0.33 µg/g
BH14-213 SA11 (6.1-6.7)	None	

LEGEND

BOREHOLE/MONITORING WELL/TEST PIT IDENTIFIER → 14-01

SHALLOW WELL SCREEN
SHALLOW WELL STANDPIPE
GROUNDWATER LEVEL
STRATIGRAPHY
DEEP STANDPIPE

SHALLOW GROUNDWATER LEVEL, mbgs
DEEP GROUNDWATER LEVEL, mbgs

APPROXIMATE SITE BOUNDARY (PHASE 2 LANDS. RSC #1)

APPROXIMATE PROPERTY BOUNDARY

APPROXIMATE AREA OF DEBRIS FILL WITH CONCENTRATIONS EXCEEDING MOECC TABLE 3 RESIDENTIAL CRITERIA FOR METALS AND PAH'S

TOPSOIL: SILTY SAND WITH SOME GRAVEL, ROOTS AND ORGANIC MATTER

SOIL FILL : SANDY SILT OR SILTY TO FINE SAND WITH SOME CLAY AND GRAVEL, WITH LITTLE TO NO DEBRIS/REFUSE

DEBRIS FILL: MIXTURE OF SILTY SAND OR CLAYEY SILT WITH SOME GRAVEL AND TRACES OF FINES AND DEBRIS/REFUSE (ASH, WOOD, PLASTIC, WIRE, PAPER, BRICK FRAGMENTS, ASPHALT PIECES, CONCRETE, METAL FRAGMENTS AND/OR GLASS)

NATIVE SOIL: SILTY CLAY/CLAYEY SILT

NATIVE SOIL: SILTY SAND TO SILT

NATIVE SOIL: GLACIAL TILL

NOTES

WHERE NEARBY BOREHOLES AND/OR TEST PITS ARE NOT OF SUFFICIENT DEPTH, THE DEBRIS FILL HAS BEEN ASSUMED TO EXTEND TO THE ESTIMATED ELEVATION OF THE SILTY CLAY OUTLINED ON FIGURE 10.

FOR DETAILED SOIL STRATIGRAPHY AND OR GROUNDWATER CONDITIONS, REFER TO RECORD OF BOREHOLE AND TEST PIT SHEETS

1. SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE ENVIRONMENTAL PROTECTION ACT, TABLE 3 FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION, RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE, COARSE-TEXTURED SOIL, APRIL 15, 2011 (MOE TABLE 3 STANDARDS).

mbgs: METRES BELOW GROUND SURFACE
µg/g - MICROGRAM PER GRAM

SEE FIGURES 4A AND 4B FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 14-1122-0005/7101.

VERTICAL SCALE
0 5 10
1:250 METRES

HORIZONTAL SCALE
0 25 50
1:1,250 METRES

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

CONSULTANT
Golder Associates

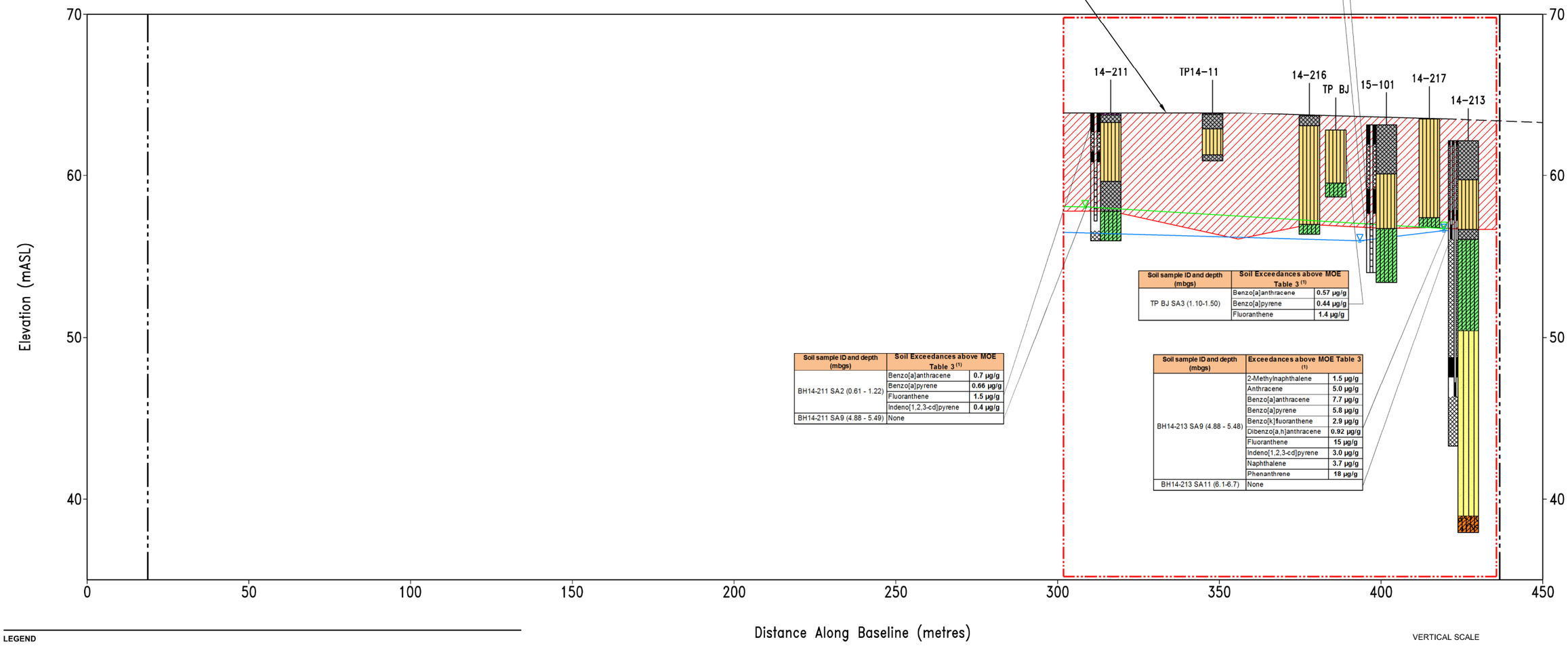
YYYY-MM-DD	2014-12-11
PREPARED	JEM
DESIGN	----
REVIEW	PH
APPROVED	PAS

TITLE
CROSS-SECTION D-D' (INTERPRETED GEOLOGICAL AND HYDROGEOLOGICAL CONDITIONS) WITH METALS ANALYSIS AND EXCEEDANCES

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/1	0	8A

Path: \\golder.gds\gal\ottawa\Active\Spatial_MI\The_Regional_Group\Regional\GroupOblates\ProOttawa\CAD\1525113\PRODUCTION\Phase1000_Reg 153_04 Phase II ESA\ | File Name: 1525113-1000-1-HS-0007-0008.dwg

25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



Soil sample ID and depth (mbgs)	Exceedances above MOE Table 3 (1)	
BH15-101 SA5 (3.81 - 4.42)	Benzo[a]anthracene	0.58 µg/g
	Benzo[a]pyrene	0.48 µg/g
	Fluoranthene	1.3 µg/g
BH15-101 SA9 (6.86 - 7.47)	None	

Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)	
TP BJ SA3 (1.10-1.50)	Benzo[a]anthracene	0.57 µg/g
	Benzo[a]pyrene	0.44 µg/g
	Fluoranthene	1.4 µg/g

Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)	
BH14-211 SA2 (0.61 - 1.22)	Benzo[a]anthracene	0.7 µg/g
	Benzo[a]pyrene	0.66 µg/g
	Fluoranthene	1.5 µg/g
	Indeno[1,2,3-cd]pyrene	0.4 µg/g
BH14-211 SA9 (4.88 - 5.49)	None	

Soil sample ID and depth (mbgs)	Exceedances above MOE Table 3 (1)	
BH14-213 SA9 (4.88 - 5.48)	2-Methylnaphthalene	1.5 µg/g
	Anthracene	5.0 µg/g
	Benzo[a]anthracene	7.7 µg/g
	Benzo[a]pyrene	5.8 µg/g
	Benzo[k]fluoranthene	2.9 µg/g
	Dibenzo[a,h]anthracene	0.92 µg/g
	Fluoranthene	15 µg/g
	Indeno[1,2,3-cd]pyrene	3.0 µg/g
	Naphthalene	3.7 µg/g
	Phenanthrene	18 µg/g
BH14-213 SA11 (6.1-6.7)	None	

LEGEND

BOREHOLE/MONITORING WELL/TEST PIT IDENTIFIER — 14-01

SHALLOW WELL SCREEN

SHALLOW WELL STANDPIPE

GROUNDWATER LEVEL

STRATIGRAPHY

DEEP STANDPIPE

SHALLOW GROUNDWATER LEVEL, mbgs

DEEP GROUNDWATER LEVEL, mbgs

APPROXIMATE SITE BOUNDARY (PHASE 2 LANDS. RSC #1)

APPROXIMATE PROPERTY BOUNDARY

APPROXIMATE AREA OF DEBRIS FILL WITH CONCENTRATIONS EXCEEDING MOECC TABLE 3 RESIDENTIAL CRITERIA FOR METALS AND PAH'S

TOPSOIL: SILTY SAND WITH SOME GRAVEL, ROOTS AND ORGANIC MATTER

SOIL FILL : SANDY SILT OR SILTY TO FINE SAND WITH SOME CLAY AND GRAVEL, WITH LITTLE TO NO DEBRIS/REFUSE

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NATIVE SOIL: SILTY CLAY/CLAYEY SILT

NATIVE SOIL: SILTY SAND TO SILT

NATIVE SOIL: GLACIAL TILL

NOTES

WHERE NEARBY BOREHOLES AND/OR TEST PITS ARE NOT OF SUFFICIENT DEPTH, THE DEBRIS FILL HAS BEEN ASSUMED TO EXTEND TO THE ESTIMATED ELEVATION OF THE SILTY CLAY OUTLINED ON FIGURE 10.

FOR DETAILED SOIL STRATIGRAPHY AND OR GROUNDWATER CONDITIONS, REFER TO RECORD OF BOREHOLE AND TEST PIT SHEETS

1. SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE ENVIRONMENTAL PROTECTION ACT, TABLE 3 FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION, RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE, COARSE-TEXTURED SOIL, APRIL 15, 2011 (MOE TABLE 3 STANDARDS).

mbgs: METRES BELOW GROUND SURFACE
µg/g - MICROGRAM PER GRAM

SEE FIGURES 4A AND 4B FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 14-1122-0005/7101.

VERTICAL SCALE
0 5 10
1:250 METRES

HORIZONTAL SCALE
0 25 50
1:1,250 METRES

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1 OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

CONSULTANT
Golder Associates

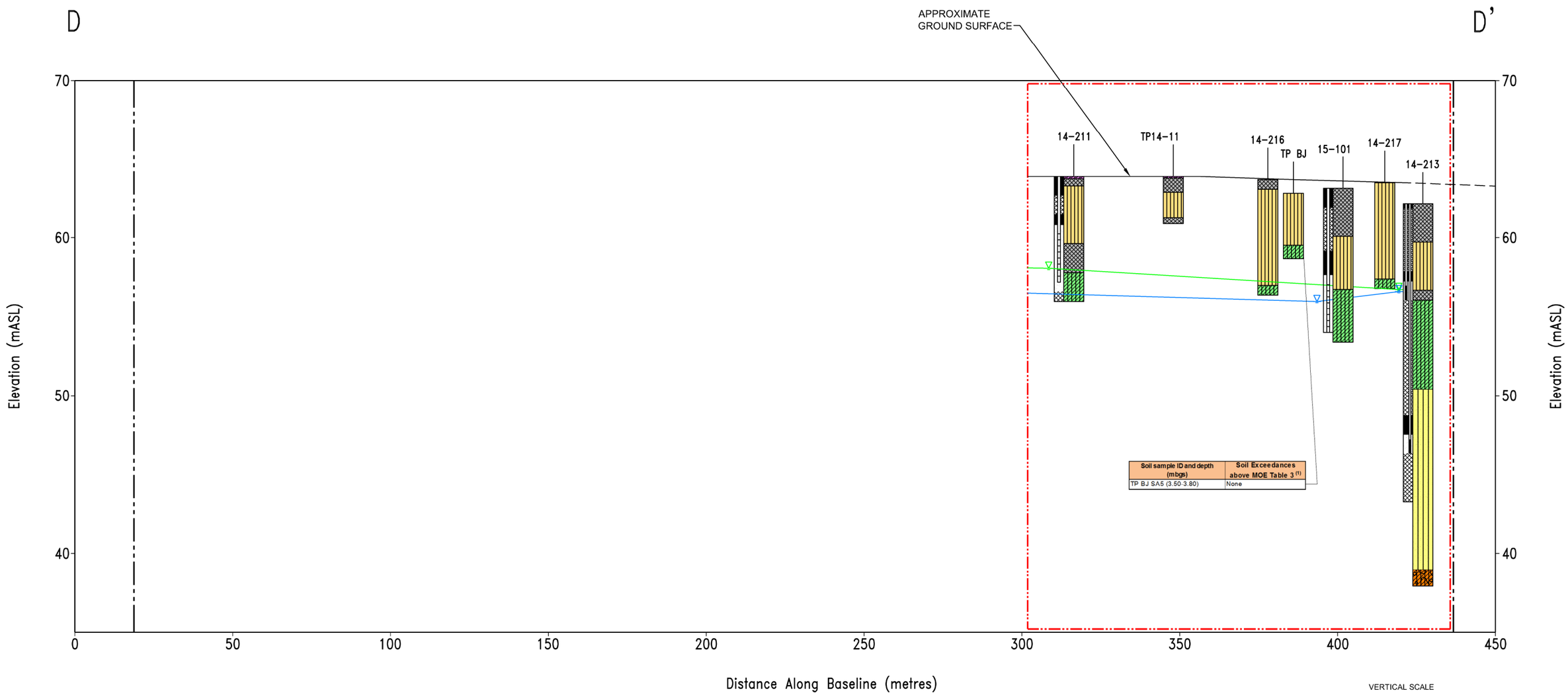
YYYY-MM-DD	2014-12-11
PREPARED	JEM
DESIGN	----
REVIEW	PH
APPROVED	PAS

TITLE
CROSS-SECTION D-D' (INTERPRETED GEOLOGICAL AND HYDROGEOLOGICAL CONDITIONS) WITH PAH ANALYSIS AND EXCEEDANCES

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/1	0	8B

Path: \\golder.gds\ga\ottawa\Active\Spatial_MI\The_Regional_Group\Regional\GroupOblates\ProOttawa\CAD\1525113\PRODUCTION\Phase1000_Reg 153_04 Phase II ESA\ | File Name: 1525113-1000-1-HS-0007-0008.dwg

25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)
TP BJ SA5 (3.50-3.80)	None

VERTICAL SCALE
0 5 10
1:250 METRES

HORIZONTAL SCALE
0 25 50
1:1,250 METRES

LEGEND

BOREHOLE/MONITORING WELL/TEST PIT IDENTIFIER — 14-01

SHALLOW WELL SCREEN

GROUNDWATER LEVEL

STRATIGRAPHY

DEEP STANDPIPE

SHALLOW GROUNDWATER LEVEL, mbgs

DEEP GROUNDWATER LEVEL, mbgs

APPROXIMATE SITE BOUNDARY (PHASE 2 LANDS, RSC #1)

APPROXIMATE PROPERTY BOUNDARY

TOPSOIL: SILTY SAND WITH SOME GRAVEL, ROOTS AND ORGANIC MATTER

SOIL FILL : SANDY SILT OR SILTY TO FINE SAND WITH SOME CLAY AND GRAVEL, WITH LITTLE TO NO DEBRIS/REFUSE

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NOTES

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mbgs: METRES BELOW GROUND SURFACE
µg/g - MICROGRAM PER GRAM

SEE FIGURES 4A AND 4B FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 14-1122-0005/7101.

CLIENT
GREYSTONE VILLAGE INC.

CONSULTANT
Golder Associates

YYYY-MM-DD	2014-12-11
PREPARED	JEM
DESIGN	----
REVIEW	PH
APPROVED	PAS

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
CROSS-SECTION D-D' (INTERPRETED GEOLOGICAL AND HYDROGEOLOGICAL CONDITIONS) WITH PHC ANALYSIS AND EXCEEDANCES

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/1	0	8C

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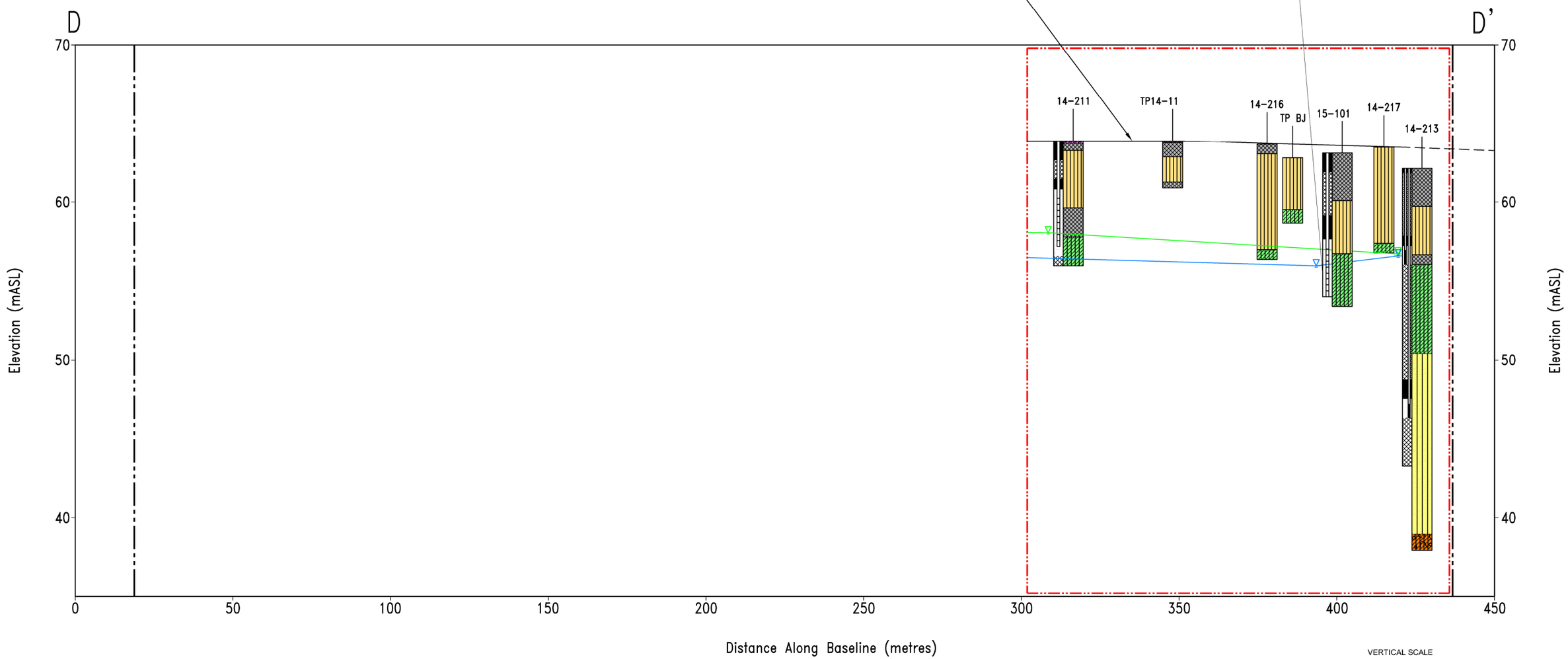
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
25 mm
0

GW sample ID and screem interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW15-101 (6.1-9.2)	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium, PAHs, and VOCs	None



LEGEND

BOREHOLE/MONITORING WELL/TEST PIT IDENTIFIER — 14-01

SHALLOW WELL SCREEN

GROUNDWATER LEVEL

STRATIGRAPHY

DEEP STANDPIPE

SHALLOW GROUNDWATER LEVEL, mbgs

DEEP GROUNDWATER LEVEL, mbgs

APPROXIMATE SITE BOUNDARY (PHASE 2 LANDS, RSC #1)

APPROXIMATE PROPERTY BOUNDARY

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NOTES

FOR DETAILED SOIL STRATIGRAPHY AND OR GROUNDWATER CONDITIONS, REFER TO RECORD OF BOREHOLE AND TEST PIT SHEETS

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mbgs: METRES BELOW GROUND SURFACE
µg/g - MICROGRAM PER GRAM

SEE FIGURES 4A AND 4B FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 14-1122-0005/7101.

VERTICAL SCALE

0 5 10
1:250 METRES

HORIZONTAL SCALE

0 25 50
1:1,250 METRES

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

CONSULTANT

Golder Associates

YYYY-MM-DD	2014-12-11
PREPARED	JEM
DESIGN	----
REVIEW	PH
APPROVED	PAS

TITLE
CROSS-SECTION D-D' (INTERPRETED GEOLOGICAL AND HYDROGEOLOGICAL CONDITIONS) WITH GROUNDWATER ANALYSIS AND EXCEEDANCES

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/1	0	8D

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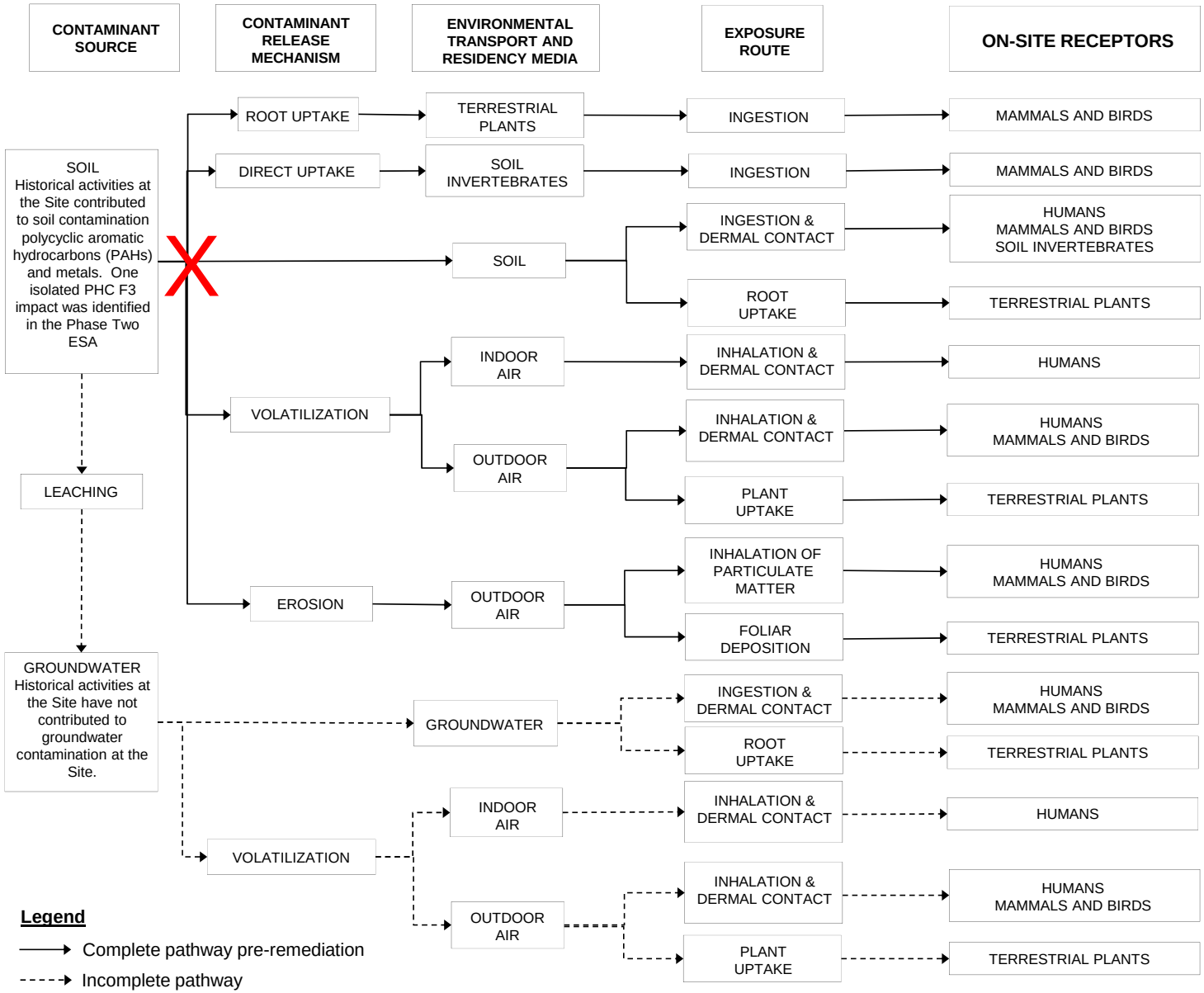
25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE WAS BEEN MODIFIED FROM: ANSI B

Conceptual Site Model, RSC #1, 175 Main Street, Ottawa, Ontario

FIGURE 9



Notes:
1. This diagram indicates all potential pathways which were considered to have the potential to result in exposure to contaminants to receptors at the Site pre-remediation.
2. Remediation at the Site consisted of the excavation of contaminated soil.
3. Post-remediation all soil related pathways are considered to be incomplete given that contaminated soil is no longer present at the Site.

Date: July 2016

Project Number: 1525113 / 1000-1

Golder Associates

CAD: PH

CKD: SR

APPENDIX A

Sampling and Analysis Plan

DATE July 23, 2014 **PROJECT No.** 14-1122-0005

TO Field Crew
Golder Associates Ltd.

FROM Paul Hurst, QPESA, P.Eng. **EMAIL** phurst@golder.com

SAMPLING AND ANALYSIS PLAN – JULY/AUGUST 2014 TEST PITTING
175 MAIN STREET, OTTAWA, ONTARIO

OBJECTIVE

The objective of this test pitting program is to investigate the presence or absence of environmental impacts to soil associated with the historic use of the Site as it relates to areas of potential environmental concern (APECs) 2, 3, and 8 as described below. Based on the Phase I ESA, the following have been identified and the investigation outline is described in Table 1.

- APEC 2 – Presence of fill containing construction debris, asphalt, concrete and potentially some refuse in the south part of the Site, and within the southeast part of the Site along the west bank of the Rideau River.
- APEC 3 – Fill of unknown composition and possible presence of ash that was reportedly spread on the Site and originated from the historical coal burning. Based on the location of the former coal storage area and boiler in the area at the east end of the convent, it is assumed that the ash would have been spread in the adjacent land area.
- APEC 8 - The former St. Paul University dump was reportedly located on the adjacent lands southwest of the Site and partially on the southwest part of the Site. The location of the former St. Paul University dump may coincide with the filled area in the southwest part of the Site.

Table 1: Potential contaminants and investigation outline for APECs

APEC	Investigation Outline	Potential Contaminants
APEC 2 – Presence of fill containing construction debris, asphalt, concrete and potentially some refuse	- 9 BH - 7 TP/TR - Up to 10 additional investigation locations depending on site conditions	Metals, PAHs, PHCs (if field evidence of impact)
APEC 3 – Fill of unknown composition and possible presence of ash	- 4 BH - 8 TP/TR - Up to 9 additional investigation locations depending on site conditions	Metals, PAHs, PHCs (if field evidence of impact)
APEC -8 – Former St. Paul University Dump	Covered by investigation for APEC 2	Metals, PAHs, PHCs (if field evidence of impact)

Notes:
BH – borehole; MW – monitoring well; TP – test pit; TR – test trench; TP – vapour probe; SS – shallow soil sample
PHCs – petroleum hydrocarbons; BTEX – benzene, toluene, ethylbenzene, and xylenes; VOCs – volatile organic compounds; PAHs – polycyclic aromatic hydrocarbons; metals – complete list of O.Reg. 511/09 metals/inorganics

CONCEPTUAL SITE MODEL

The subsurface conditions at the Site consist of fill, underlain by silty clay and clayey silt, overlying glacial till. The thickness of the fill is expected to be between 1-2 metres at the north part of the Site to 7-8 metres at the south part of the Site where fill berms along the south Site boundary are located. Based on the information obtained, the fill placed on the Site contains ash, cinders and pieces of asphalt, brick, concrete, wood and/or metal and potentially some refuse. Depth to the bedrock is expected to range between 25 and 50 metres in the western part of the Site near Main Street and between 15 and 25 metres in the remaining parts. The depth to the water table is expected to be between 3 and 4 mbgs and to be in the overburden. Groundwater is anticipated to flow to the east towards the Rideau River located approximately 40 metres east of the Site.

There is a pronounced slope of the land downwards from west to east and from south to north. The south part of the Site, (south of the archive/gym building) is significantly higher in elevation than the north part due to filling activities that reportedly occurred sometime between 1902 and 1922 to prevent flooding. The Site was filled from 5.5 to 7.5 metres above the Rideau River's edge up to the south side of the Deschâtelets building. It is understood that the soil fill contains concrete, some asphalt, brick, ash, and potentially garbage. In addition, ash originating from the historical coal burning was reportedly spread on the Site in the past.

Surface water runoff is towards catch basins which are connected to the municipal storm sewer system and through natural infiltration. The Rideau River is located approximately 40 metres east of the Site and runs along the east Site boundary. It is understood that the 30 metres wide land strip along the Rideau River is to be conveyed to the City and is not part of the Site to be developed. As such, the Site does not include all or part of a water body and is not adjacent to a water body or includes land that is within 30 metres of a water body.

APPLICABLE SITE CONDITION STANDARDS

The soil and groundwater results will be compared to the Ministry of the Environment O. Reg. 153/04 "Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition (hereafter referred to as "MOE Table 3 Standards"). The MOE Table 3 Standards are considered to apply to this site based on a) the presence of municipal supply of potable water in the area, b) the depth to bedrock greater than 2 metres and c) the lands will exclude the 30 stip of land adjacent to the Rideau river. The laboratory will be notified of the use of MOE Table 3 Standards on this project, to achieve reportable detection limits that meet the project objectives.

STANDARD OPERATING PROCEDURES (SOPS)

The following SOPs apply, and are attached to this document:

- Borehole drilling – SOP3
- Test pitting – SOP13
- Soil logging – SOP6
- Soil classification – SOP14
- Headspace screening – SOP4
- Equipment decontamination –SOP 11
- Conventional Groundwater Sample Collection - SOP 9
- Monitoring Well Development- SOP5
- Monitoring Well Installation - SOP1
- Water Level Measurements SOP2

BOREHOLE DRILLING, TEST PITTING AND SOIL SAMPLING

Complete the boreholes and excavate the test pits as per the attached Table 3 (detailed sampling and analysis plan). The rationale for the proposed borehole and test pit locations is provided in Table 1 (above) and the attached Table 3. The sampling system chosen for the Phase II ESA is judgmental and is based on information obtained from the Phase I ESA report and the first stage of the Phase II ESA recently completed by Golder at the Site. The locations of the proposed BH/MWs and test pits are chosen to target the APECs identified in the Phase I ESA on the Site where the highest contaminant concentrations in soil and/or groundwater are expected to be identified (if present). The proposed borehole/monitoring well and test pit locations are shown on Figure 1, attached. Details regarding the borehole locations, depths, and soil and groundwater sampling plan are provided in the attached Table 3. Boreholes will be advanced and soil samples will be collected continuously at two feet (0.61 m) intervals from each of the boreholes using a 0.61 m (2 feet) long, 50 mm (2.0 inch) diameter drive open steel split spoon as described in the attached Standard Operating Procedure 3 (SOP3), *Borehole Drilling and Sampling*.

Excavate test pits as outlined in the attached SOP13 - *Test Pit Excavation* and as described in Table 2. Collect soil samples from the test pits from the excavator bucket using a clean, gloved hand and/or trowel at regular depth intervals (approximately every 0.50 m), and/or from different soil layers, and/or from visually impacted soil layers.

The soil conditions encountered in the boreholes and test pits to be logged in terms of soil materials, texture and the presence of staining, odour and debris, if any following SOP6 –*Soil Logging.* Use the methanol preservation technique for the collection of the soil samples to be analysed for PHC F1 and BTEX. Soil samples collected from the boreholes and test pits to be field screened using a PID organic vapor gas detector following SOP4 - *Headspace Screening* (attached). One or two soil samples (one “worst case” and from below the worst case or from a different layer) will be selected from selected boreholes and test pits based on field screening results and visual or olfactory observations and will be submitted for laboratory analysis. Duplicate soil samples will be submitted for analysis at a minimum frequency of one duplicate sample for every ten soil samples submitted or for each parameter group.

A summary of soil samples including Quality Assurance/Quality Control (QA/QC) samples is provided in Table 3.

GROUNDWATER MONITORING WELL INSTALLATION

Selected boreholes to be installed with a monitoring well following the attached SOP1-*Monitoring Well Installation* (attached). After the monitoring well installation, develop the wells following the attached SOP5 - *Monitoring Well Development*.

After installation is complete, direct surveyor to survey horizontal and vertical locations of boreholes and monitoring wells.

GROUNDWATER SAMPLING

Measure water levels and free product (if present) using an oil/water interface probe and following SOP 2-*Water Level Measurements.* Sample the monitoring wells using conventional groundwater sampling procedures following SOP 9-*Conventional Groundwater Sample Collection* for the parameters in Table 3. Collect a groundwater sample from each of the monitoring wells after purging. Duplicate groundwater samples to be submitted for analysis at a minimum frequency of one duplicate sample for every ten groundwater samples submitted. The groundwater samples to be analysed for metals (including chromium six) to be field filtered using 0.45 µm filter.

A summary of the groundwater samples including QA/QC samples is provided in Table 4.

QUALITY ASSURANCE AND QUALITY CONTROL MEASURES

Quality assurance and quality control measures to be employed during the Phase II ESA generally have to follow the Golder internal document "*Quality Assurance Program for Environmental Investigations*".

Field instruments have to be calibrated prior to use if not calibrated by the equipment suppliers.

If non dedicated equipment is used, it must be decontaminated between sample locations following the requirements of Golder SOP11- *Equipment Decontamination* to remove traces of previously sampled material that could otherwise interfere with sample analysis. Any equipment that comes in contact with soil, groundwater, or sediment first have to be cleaned by mechanical means; washed with a laboratory-grade detergent (e.g., non-phosphate LiquiNox or AlcoNox) and, if necessary, an appropriate desorbing wash solution; and thoroughly rinsed with analyte-free water. Collect one duplicate soil and groundwater samples. Details of the parameters analysed for each duplicate soil sample and groundwater sample are presented in Tables 2 and 4 below.

Table 2: Summary of soil samples including QA/QC samples

Parameter	Soil samples	Duplicate samples
PHCs	20 (optional)	1 per 10
VOCs	0	0
PAHs	Up to 65	1 sample per 10 samples. Collected from samples with suspected impacts
metals	Up to 70	1 sample per 10 samples. Collected from samples with suspected impacts
Grain size	0	0
FOC	0	0
pH	5	1

Notes:
pH samples to be collected at shallow depths across site

Table 4: Summary of groundwater samples to be analysed including QA/QC samples

Parameter	Groundwater samples	Duplicate samples
PHC F1-F4 & BTEX	6	2
PAHs	6	1
Metals, including CrVI	6	1

DETAILED SAMPLING PLAN

Table 3, attached includes details on investigation locations and investigation requirements.

OTHER NOTES

- Critical importance is using this work to delineate different types of fill.
- Keep detailed notes on the fill types, please use test pit forms provided.
- Please take photos at each test pit.
- If in doubt, collect more samples. More jars can be obtained from the laboratory.

- Green test trenches on maps are combined archaeology/environmental test pits. Archaeologist will open up, and then we can get in and sample.
- During test pitting anywhere on site, the follow stop work conditions exist at which point contact the Archaeologist (Brandy, cell# 613 913 7184) and PM (Paul, 613 880 4598)
  - Stop work if you see lots of wood, an old wall, stones in a line, etc. Anything that looks like an old structure. Can be small (outhouse), or large.

PH/
\\golder.gds\gal\ottawa\active\2015\3 proj\1525113 regional oblates brownfields 175 main st\04_reporting\04 - rsc 1 phase ii esa\appendix a - sap\1 sampling and analysis plan july 2014.docx

Area of Potential Environmental Concern (APEC)	Investigation Outline	Borehole/ Test Pit/ ID	RSC # of BH / TP	Location	Rationale/Purpose	Borehole/ Test Pit/ Depth (mbgs)	Soil Approximate Sample Frequency (m)	Soil analyses	Well Installed (Y/N)	Groundwater analysis	QA/QC Samples (Analyses)
APEC 1- Former presence of fuel UST	Completion of a borehole installed with a monitoring well in the vicinity of the former UST to a depth of ~5 mbgs or until the water table is reached. Collecting soil and groundwater samples for analysis.	BH14-101C	3	In the area of the former UST	To investigate the potential for impacts on the soil and groundwater quality due to the presence of the former fuel UST	5	Every 0.60 m	PHCs F1 to F4, BTEX	Yes	PHCs F1 to F4, BTEX	1 soil sample per 10 samples. Collected from locations with suspected impacts
APEC 2 - Presence of fill containing construction debris, asphalt, concrete and potentially some refuse	Completion of 13 test pits to a depth of 4 mbgs, or until native soil is encountered. Completion of ten boreholes, with detailed sampling through the fill until native soil is encountered Collecting soil samples for analysis.	BH14-3	1	In the south area where fill containing construction debrisand refuse and the former St. Paul University dump are suspected to be located	Investigate fill type and thickness, and potential impacts on groundwater quality	5	Every 0.60 m	None	Yes	PHCs F1 to F4, BTEX, PAHs, metals, CrVI and Hg	
		TP14-10	1	Area of fill containing construction debris	To investigate the potential for subsurface impacts to soil due to the possible presence of debris, asphalt, concrete and potentially some refuse	4.0 (1)	One sample per soil horizon, or miniumum of every 0.50 metres	Metals, PAHs, PHC F1-F4 (if field evidence of impact) Samples to be submitted based on field screening	NA	NA	
		TP14-12	1								
		TP14-15	1								
		TP14-11	1								
		TP14-13	1								
		TP14-14	1								
		TP-AG	1								
		TP-AH	1								
		TP-AJ	1								
		TP-AK	1								
		TR-BN	2								
		TR-N	2		COMBINED ARCHAEOLOGY / ENVIRONMENTAL LOCATION - Archaeology team to advance TP, coordinate with environmental team for sampling' Investigate the potential for subsurface impacts to soil due to the possible presence of debris, asphalt, concrete and potentially some refuse						
		TR-P	1								
		BH14-209	3		To investigate the potential for subsurface impacts to soil due to the possible presence of debris, asphalt, concrete and potentially some refuse	4.0 (2)	Every 0.60 m	Metals, PAHs, PHC F1-F4 (if field evidence of impact) Samples to be submitted based on field screening	No	NA	
		BH14-210	1		Investigate fill type and thickness, and potential impacts on groundwater quality				Yes	PHCs F1 to F4, BTEX, PAHs, metals, CrVI and Hg	
		BH14-211	1						Yes	PHCs F1 to F4, BTEX, PAHs, metals, CrVI and Hg	
		BH14-212	1		To investigate the potential for subsurface impacts to soil due to the possible presence of debris, asphalt, concrete and potentially some refuse				No	NA	
		BH14-213	1								
		BH14-214	1								
		BH14-215	1								
		BH14-216	1								
		BH-E1	1								
		TP-X	2								

Area of Potential Environmental Concern (APEC)	Investigation Outline	Borehole/ Test Pit/ ID	RSC # of BH / TP	Location	Rationale/Purpose	Borehole/ Test Pit/ Depth (mbgs)	Soil Approximate Sample Frequency (m)	Soil analyses	Well Installed (Y/N)	Groundwater analysis	QA/QC Samples (Analyses)
APEC 3 – Fill of unknown composition and possible presence of ash that was reportedly spread on the Site	Completion of eight test pits to a depth of 4 mbgs, or until native soil is encountered. Completion of four boreholes, with detailed sampling through the fill until native soil is encountered Collecting soil samples for analysis.	TP-Y	3	Area of fill containing potential ash	To investigate the potential for subsurface impacts to soil due to unknown composition and possible presence of ash	4.0 (1)	One sample per soil horizon, or miniumum of every 0.50 metres	Metals, PAHs, PHC F1-F4 (if field evidence of impact) Samples to be submitted based on field screening	NA	NA	1 groundwater sample per 10 samples. Collected from monitoring wells with suspected impacts
		TP-Z	3								
		TP-AA	3								
		TP-AB	3								
		TP-AC	3								
		TP-AE	3								
		TR-J	3		COMBINED ARCHAEOLOGY / ENVIRONMENTAL LOCATION - Archaeology team to advance TP, coordinate with environmental team for sampling						
		TR-M	3								
		BH14-1	3		Investigate fill type and thickness, and potential impacts on groundwater quality	5.0	Every 0.60 m	Metals, PAHs (if field evidence of impact is observed)	Yes	PHCs F1 to F4, BTEX, PAHs, metals, CrVI	
		BH14-201	3		To investigate the potential for subsurface impacts to soil due to unknown composition and possible presence of ash	4.0 (2)	Every 0.60 m	Metals, PAHs, PHC F1-F4 (if field evidence of impact) Samples to be submitted based on field screening	No	NA	
		BH14-202	3								
		BH14-204	3								
		BH14-206	3								
APEC 5 - Presence of a private garage on the Site.	Completion of a borehole in the area of the garage, with detailed sampling through the fill until native soil is encountered	BH-205	3	Northeast of the garage	Preliminary investigation into the potential environmental impacts of the garage.	4.0 (2)	'Every 0.60 m	Metals, PAHs, PHC F1-F4 (if field evidence of impact) Samples to be submitted based on field screening	No	NA	
APEC 3, 9 and 10 - Fill of unknown composition and possible presence of ash that was reportedly spread on the Property, former presence of a former industrial site and Lees Avenue closed landfill L-28 on adjacent lands just to the northeast of the Property	Completion of three test pits to a depth of 4 mbgs, or until native soil is encountered. Collecting soil samples for analysis.	TP14-4	3	Test pit completed in the northeast corner of the Site	To investigate the fill quality, composition and thickness and the potential that the southwest part of the closed landfill may have extended onto the northeast corner of the Site	4.0 (2)	One sample per soil horizon, or miniumum of every 0.50 metres	PHCs F1-F4, BTEX, PAHs, pH and metals	No	NA	
		TP-Z	3					Metals, PAHs (if field evidence of impact) Samples to be submitted based on field screening			
		TP AS	3								
Fill Characterization	Completion of test pits to a depth of 4 mbgs, or until native soil is encountered. Completion of boreholes, with detailed sampling through the fill until native soil is encountered Collecting soil samples for analysis.	TP-R	2	Areas of site not covered by APEC 2 and APEC 3	To investigate unknown fill composition	4.0 (1)	One sample per soil horizon, or miniumum of every 0.50 metres	Metals, PAHs, PHC F1-F4 (if field evidence of impact) Samples to be submitted based on field screening	NA	NA	
		TP-S	2								
		TP-T	2								
		TP-V	2								
		TP-W	2								
		TP-X	2								
		TP-BK	2								
		TP-AF	1								
		BH-203	2		To investigate unknown fill composition						
		BH-207	2								

Area of Potential Environmental Concern (APEC)	Investigation Outline	Borehole/ Test Pit/ ID	RSC # of BH / TP	Location	Rationale/Purpose	Borehole/ Test Pit/ Depth (mbgs)	Soil Approximate Sample Frequency (m)	Soil analyses	Well Installed (Y/N)	Groundwater analysis	QA/QC Samples (Analyses)
		BH-208	2		Investigate fill type and thickness, and potential impacts on groundwater quality				Yes	PHCs F1 to F4, BTEX, PAHs, metals, CrVI	

Notes:

PHCs = Petroleum Hydrocarbons, PAHs = Polycyclic aromatic Hydrocarbons, PCB = Polychorinated Biphenyls, VOC = volatile Organic Compounds, BTEX = Benzene, Toluene, Ethylbenzene, and Xylene

(1) - Depth of test pit to extend through entire fill layer, and terminate at native soils. Depths expected to range from 1 to 4 mbgs.
(2) - Depth of environmental sampling to extend through entire fill layer, and terminate at native soils. Depths expected to range from 1 to 4 mbgs.
Modify test pit and borehole depth in discussion with project manager if warranted by field observations
Collect additional soil samples if warranted by field observations
Borehole and test pit locations shown on attached figure

INTERNAL MEMORANDUM

TO: Brandon McParlan

Project No.: 1525113

FROM: Maria Staneva

RE: **Additional Phase II ESA, 175 Main Street, Oblates Property**

Please review the following instructions for the sampling program at 175 Main Street. The environmental sampling is to be completed **in conjunction with the geotechnical investigation** to be carried out at the Site.

Drilling, soil and groundwater sampling and monitoring well installation in 10 BHs:

- Ten BHs to be drilled on the Site as shown on the attached figure. BH15-100 to BH15-107 to be installed with monitoring wells. No well installation is required in BH15-108 and BH15-109. Please collect soil samples almost continuously (every 2.5 ft) from each split spoon sample in accordance with the standard protocol from all ten BHs. Please collect soil samples from the native soil - silty clay underlying the fill. Discontinue the soil sampling until:
  - The fill is penetrated and the native soil (silty clay) is reached;
  - Soil samples from the silty clay underlying the fill are collected.
  - A soil sample from below the water table is collected.
- Clean the split spoon after each sample following the SOP (using Alconox soap and rinse it with distilled water, then use MeOH and rinse with water);
- Install monitoring wells as per the attached SAP. The groundwater is expected to be within the silty clay with sandy seams at depths ranging between 2 and 6 mbgs. Install max 10 ft (3 metres) screen within the shallow groundwater such that it straddles the water table. Ideally, the screen to be installed approximately 1 m below the water table.
- Note the observations of any debris or waste in borehole;
- Change your gloves between sampling events;
- Record your observations concerning the soil/fill and any evidence of contamination if present. If you observe a sample that appears contaminated, please collect a sample;
- Collect soil samples (into plastic bags) for headspace analysis when soil sample volume allows. If you do not have enough sample volume, fill jars first with no headspace, then headspace bag
- Collect a duplicate soil sample from a depth where potential impacts are suspected.
- Use calibrated field monitoring equipment (Photo ionization detector - PID);
- The soil samples including the duplicate to be analyzed for metals and PAHs;
- Fill one 120 and one 250 ml jar from each spoon. Label the jars correctly.

- Install Waterra tubing and a foot valve in the monitoring wells and develop them by removing ~ 10 well volumes;
- Please keep the soil samples in the fridge and give me the field notes and BH logs with PID readings so I can submit selected soil samples for lab analyses.

Groundwater sampling at the eight monitoring wells

- Please decontaminate the water level probe (as per SOP) and measure the groundwater levels at the wells prior to purging.
- Prior to sampling purge the monitoring wells by removing ~ three well volumes of water. Please make sure it is properly purged prior to sampling. Record the date of the sampling and the volume of the fluid removed from the well during purging;
- Record your observations concerning the purged water and any presence of contamination;
- Use conventional groundwater sampling technique;
- Collect GW samples from the 8 wells;
- Please collect one duplicate groundwater sample from the well that has the fastest recovery. The duplicate will be analyzed for PHCs, VOCs (including BTEX), PAHs, and metals (including Hg and CrVI);
- Have the trip blank (will be provided by the lab) in the cooler with the other groundwater samples. The trip blank sample has to be submitted with the other GW samples to the lab for analysis of VOCs;
- Submit the GW samples including the duplicate to Maxxam for analysis of PHC F1 to F4, VOC and metals (including Hg, Cr VI) as per the attached SAP;
- Metals - field filtered 0.45 micron;
- Mercury - field filtered 0.45 micron;
- Chromium VI- field filtered 0.45 micron;

Handy Contact Numbers:

Maxxam: (613) 274-0573
Golder office: 613-592-9600

Keith Dinelle at PVC Plus: 613-221-9832

Maria 613 868-2595

Thank You!

Area of Potential Environmental Concern (APEC)	Investigation Outline	Borehole/ Test Pit/ ID	RSC # of BH / TP	Location	Rationale/Purpose	Borehole/ Test Pit/ Depth (mbgs)	Soil Approximate Sample Frequency (m)	Soil analyses	Well Installed (Y/N)	Groundwater analysis	QA/QC Samples (Analyses)
APEC 2 - Presence of fill containing construction debris, asphalt, concrete and potentially some refuse	Drill three boreholes, each installed with a monitoring well. The boreholes will be drilled to a depth until the fill is penetrated, the water table and the native soil are reached. Two of the monitoring well will be installed along the east side of the Site at the 30 m buffer line. Two soil samples (one worst case and one from the native soil) will be submitted from each of the boreholes for laboratory analysis of PAHs and metals.	BH/MW15-100	1	At the west part of the Site where fill material with debris was previously identified, near BH15-2 drilled for geotechnical purposes.	To have spatial coverage of the Site and to collect and submit for laboratory analysis additional samples from native soil in order to better characterize the quality of the native soil and to demonstrate that native soil is not impacted by the debris fill.	6 mbgs	Every 2.5 ft	Two soil samples (one worst case and one from the native soil) will be submitted for analysis of PAHs, metals	Yes	PHCs F1 to F4, BTEX, PAHs, VOCs and metals (including mercury and hexavalent chromium).	1 soil sample per 10 samples. Collected from locations with suspected impacts 1 groundwater sample per 10 samples. Collected from monitoring wells with suspected impacts
		BH/MW15-101	1	Near 30 m buffer from Rideau River, along the east Site boundary	Characterize the groundwater quality near the west limit of the 30 metre buffer from the Rideau River to be able to assess the potential for contaminants leaching from soil to groundwater and migrating to surface water (Rideau River). Obtain additional soil data to demonstrate that native soil is not impacted by the debris fill.	6 mbgs	Every 2.5 ft	Two soil samples (one worst case and one from the native soil) will be submitted for analysis of 'PAHs, metals	Yes	PHCs F1 to F4, BTEX, PAHs, VOCs and metals (including mercury and hexavalent chromium).	
		BH/MW15-102	2	Near 30 m buffer from Rideau River, along the east Site boundary	Characterize the groundwater quality near the west limit of the 30 metre buffer from the Rideau River to be able to assess the potential for contaminants leaching from soil to groundwater and migrating to surface water (Rideau River). Obtain additional soil data to demonstrate that native soil is not impacted by the debris fill.	6 mbgs	Every 2.5 ft	Two soil samples (one worst case and one from the native soil) will be submitted for analysis of 'PAHs, metals	Yes	PHCs F1 to F4, BTEX, PAHs, VOCs and metals (including mercury and hexavalent chromium).	
APEC 3 – Fill of unknown composition and possible presence of ash that was reportedly spread on the Site	Drill three boreholes, each completed as a monitoring well. The boreholes will be drilled to a depth until the fill is penetrated and the native soil and water table are reached. One of the boreholes will be drilled near the 30 m buffer line.	BH/MW15-103	3	East of the Oblates building in the area where fill and ash might be placed	To investigate potential impacts associated with the fill and ash placed on the Site, to collect and submit for laboratory analysis additional soil and groundwater samples from the Phase III development stage where insufficient soil and groundwater analytical data are currently available to support a stand-alone Reg. 153/04 Phase II ESA report for the purpose of potential filing of an RSC for Phase III and to to meet the Reg.153/04 requirement to have a minimum of three monitoring wells on each of the RSC properties	6 mbgs	Every 2.5 ft	Two soil samples (one worst case and one from the native soil) will be submitted for analysis of 'PAHs, metals	Yes	PHCs F1 to F4, BTEX, PAHs, VOCs and metals (including mercury and hexavalent chromium).	
		BH/MW15-104	3	East of the Oblates building in the area where fill and ash might be placed		6 mbgs	Every 2.5 ft	Two soil samples (one worst case and one from the native soil) will be submitted for analysis of 'PAHs, metals	Yes	PHCs F1 to F4, BTEX, PAHs, VOCs and metals (including mercury and hexavalent chromium).	
		BH/MW15-105	3	East of the Oblates building in the area where the former coal storage shed was located		6 mbgs	Every 2.5 ft	Two soil samples (one worst case and one from the native soil) will be submitted for analysis of 'PAHs, metals	Yes	PHCs F1 to F4, BTEX, PAHs, VOCs and metals (including mercury and hexavalent chromium).	
APEC 5 - Presence of a private garage on the Site.	Drill interior borehole installed with a monitoring well in the garage (APEC 5). The borehole will be drilled to a depth of approximately 5 metres below ground surface (mbgs) or until the water table is reached.	BH/MW15-107	3	Inside the garage	Investigate APEC 5 (private garage on the Site since the 1940s where oil changing, maintenance and minor repairs are performed for the convent's vehicles). Reg. 153/04 requires that all APECs identified on the Site have to be investigated in order to identify potential soil and/or groundwater impacts associated with the APEC. Potential impacts associated with the private garage were not previously investigated and, as such, to comply with the regulation, additional work is now needed to address APEC 5	6 mbgs	Every 2.5 ft	One worst case soil sample (near the water table and/or where evidence of potential impacts is observed) will be submitted for laboratory analysis of PHCs F1 to F4, BTEX, PAHs, VOCs and metals. In addition, one soil sample will be submitted from the native soil (if different from the above) for analysis of PAHs and metals	Yes	PHCs F1 to F4, BTEX, PAHs, VOCs and metals (including mercury and hexavalent chromium).	
APEC 3, 9 and 10 - Fill of unknown composition and possible presence of ash that was reportedly spread on the Property, former presence of a former industrial site and Lees Avenue closed landfill L-28 on adjacent lands just to the northeast of the Property	Drill one (1) borehole to a depth until the fill is penetrated and native soil and/or the water table are reached. Borehole will be installed with a monitoring well.	BH/MW15-106	3	Near 30 m buffer from Rideau River, at the northeast corner of the Site	Characterize the groundwater quality near the west limit of the 30 metre buffer from the Rideau River to be able to assess the potential for contaminants leaching from soil to groundwater and migrating to surface water (Rideau River). Further investigate potential subsurface impacts associated with APEC 3 and 4 and obtain additional soil data to demonstrate that native soil is not impacted by the debris fill.	6 mbgs	Every 2.5 ft	Two soil samples (one worst case and one from the native soil) will be submitted for laboratory analysis of PAHs and metals.	Yes	PHCs F1 to F4, BTEX, PAHs, VOCs and metals (including mercury and hexavalent chromium).	
Fill Characterization	Drill two (2) boreholes to a depth until the fill is penetrated and native soil is reached.	BH15-108	2	West part of the Site	Collect additional subsurface information from the west part of the Site in order to better characterize the quality of the native soil and to demonstrate that native soil is not impacted by the debris fill.	6 mbgs	Every 2.5 ft	Two soil samples (one worst case and one from the native soil will be submitted for laboratory analysis of PAHs and metals.	No	NA	
		BH15-109	2	West part of the Site		6 mbgs	Every 2.5 ft	Two soil samples (one worst case and one from the native soil) will be submitted for laboratory analysis of PAHs and metals.	No	NA	

Notes:

PHCs = Petroleum Hydrocarbons, PAHs = Polycyclic aromatic Hydrocarbons, PCB = Polychorinated Biphenyls, VOC = volatile Organic Compounds, BTEX = Benzene, Toluene, Ethylbenzene, and Xylene

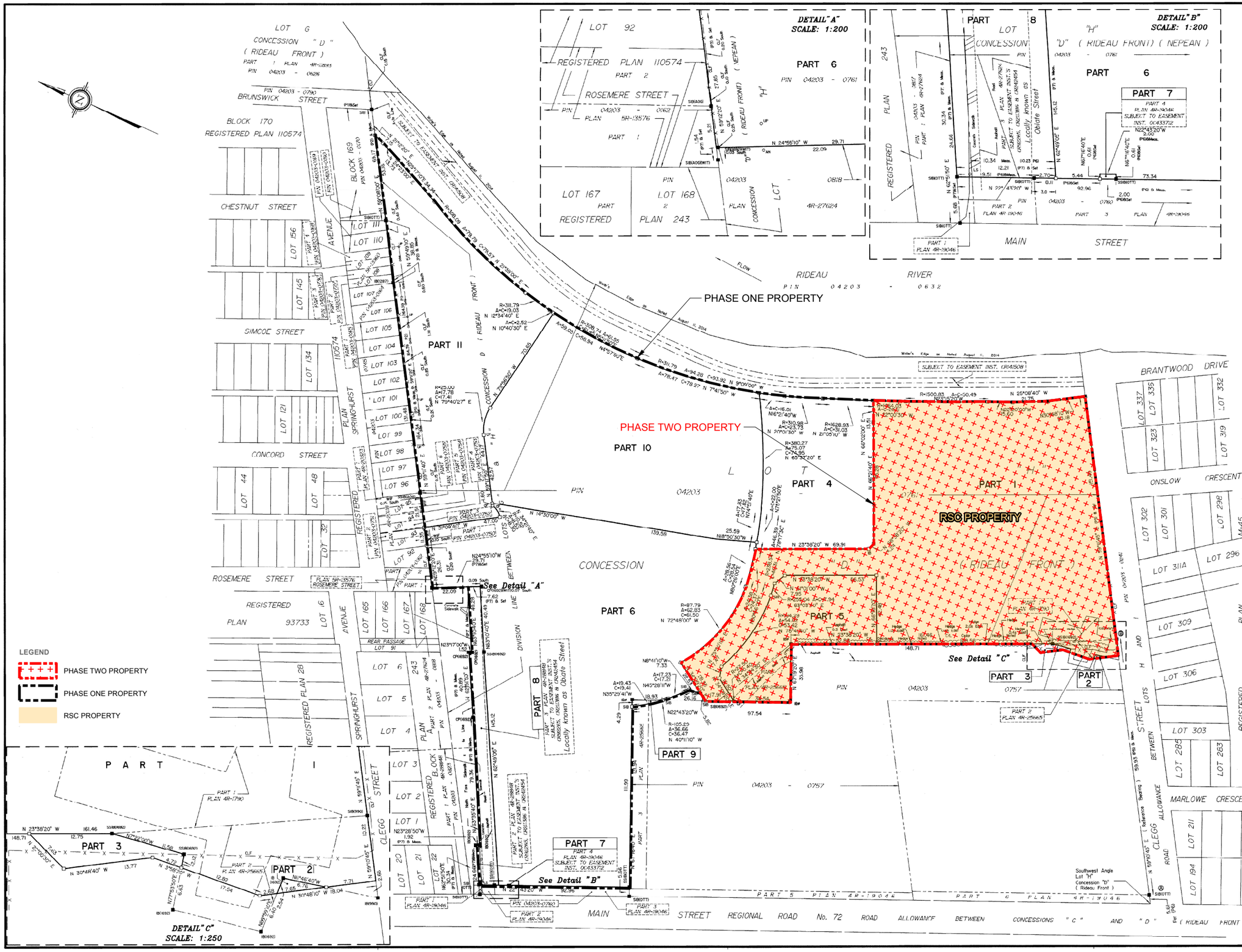
(1) - Depth of test pit to extend through entire fill layer, and terminate at native soils. Depths expected to range from 1 to 4 mbgs.

(2) - Depth of environmental sampling to extend through entire fill layer, and terminate at native soils. Depths expected to range from 1 to 4 mbgs.

Modify test pit and borehole depth in discussion with project manager if warranted by field observations

Collect additional soil samples if warranted by field observations

Borehole and test pit locations shown on attached figure



I REQUIRE THIS PLAN TO BE DEPOSITED UNDER THE LAND TITLES ACT.
DATE: Nov 18/2015
ANDRE ROY
ONTARIO LAND SURVEYOR

PLAN 4R-29138
RECEIVED AND DEPOSITED
DATE: Nov. 19/15
Amie M. McAllister
REPRESENTATIVE FOR LAND REGISTRAR FOR THE LAND TITLES DIVISION OF OTTAWA-CARLETON NO. 4.

SCHEDULE

PART	LOT	CONCESSION	PIN
1	PART OF "H"	"D" (RIDEAU FRONT)	PART OF 04203-0761
2			PART OF 04203-0757
3			
4			PART OF 04203-0761
5			
6			
7			
8			
9			PART OF 04203-0757
10			PART OF 04203-0761
11			

Part 7 is subject to Easement Instrument OC433712
Part 8 is subject to Easement Instrument CR92265, CR211386 & CR242454
Parts 1, 4, 5, 6, 7, 8, 10 and 11 comprise part of PIN 04203-0761
Parts 2, 3 and 9 comprise part of PIN 04203 0757

PLAN OF SURVEY OF

PART OF LOT "H"
CONCESSION "D"
(RIDEAU FRONT)

Geographic Township of Nepean
CITY OF OTTAWA

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 1000
40 30 20 10 0 20 40 Metres

Metric
DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the Land Titles Act and the regulations made under them.
2. The survey was completed on the 13th day of November, 2015.

Nov. 18/2015
Date

André Roy
Ontario Land Surveyor

Notes & Legend

—□—	Denotes	Survey Monument Planted
—■—	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
IB/O	"	Round Iron Bar
CP	"	Concrete Pin
(WIT)	"	Witness
(AOG)	"	Annis, O'Sullivan, Vollebekk Ltd.
Meas.	"	Measured
CLF	"	Chain Link Fence
WIF	"	Wrought Iron Fence
(P1)	"	Registered Plan 110574
(P2)	"	Plan 4R-11893
(P3)	"	(1692) Plan January 17, 2008
(P4)	"	Plan 5R-13576
(P5)	"	Plan 4R-25665
(P6)	"	Plan 4R-19046
(P7)	"	Plan 4R-27624
(D1)	"	Inst. CR376341
(D2)	"	

All set monuments are SSIB unless otherwise noted.

Distances shown on this plan are ground distances and can be converted to grid distances by multiplying by the combined scale factor of 0.999941.

Bearings are grid bearings, derived from the northerly limit of Clegg Street, shown to be N 59°10'45" E on Plan 4R-25665 and are referred to the Central Meridian of MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

Coordinates are derived from Can-Net 3.0 Real Time Network GPS observations referenced to Specified Control Points 01919680005 and 01919680105, MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

Coordinate values are to urban accuracy in accordance with O. Reg. 216/10.

. 01919680005	Northing	5027191.26	Easting	361496.76
. 01919680105	Northing	5024915.16	Easting	373971.65
. Point A	Northing	5029941.70	Easting	369281.56
. Point B	Northing	5030023.67	Easting	369418.90

Caution: Coordinates cannot, in themselves, be used to re-establish corners or boundaries shown on this plan.

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
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Nepean, Ont. K2E 7S8
Phone: (613) 727-0850 / Fax: (613) 727-1079
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Ontario Land Surveyors

Job No. 15746-15 Regional PL L.H.C.D. BF NP R DR AB

APPENDIX B

Record of Borehole and Test Pit Logs

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits completed during the first stage of the Phase Two ESA in March 2014					
TP14-4	0.0 - 0.1	FILL - TOPSOIL (ML) sandy SILT, brown; moist.	**SA1 (0.14 – 1.1)**	14.9	PHCs F1-F4, BTEX, PAHs, pH and metals
	0.1 - 1.7	FILL - (ML/SM) sandy SILT to SILTY SAND, trace to some gravel; brown, with cobbles, boulders, pieces of brick, wood, ash and steel pipe; non-cohesive, moist.	SA2 (1.1 – 1.7) SA3 (1.7 – 2.2)	12.2 2.0	
	1.7 - 2.2	(CI/CH) SILTY CLAY, trace sand; grey brown (WEATHERED CRUST); cohesive, w>PL.			
	2.2	End of Test Pit Note: Test pit dry upon completion.			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits completed during the first stage of the Phase Two ESA in March 2014					
TP14-5	0.0 - 0.2	FILL - TOPSOIL (ML) sandy SILT; brown; moist.	SA1 (0.2 – 0.9)	6.7	PHCs F1-F4, BTEX, PAHs and metals
	0.2 - 0.9	FILL - (ML) CLAYEY SILT, some sand; brown, with cobbles, pieces of asphalt, wood and organic matter; non-cohesive, moist.	**SA2 (0.9 – 2.0)** SA3 (2.0 – 2.6) SA4 2.6 – 2.7)	7.4 8.2 13.1	
	0.9 - 2.0	FILL - Mixture of soil and REFUSE/WASTE. Soil is (ML) sandy SILT, some silty clay; grey; non-cohesive, moist. REFUSE/WASTE includes ash, brick fragments and metal barrel.			
	2.0 - 2.6	FILL - (CI/CH) SILTY CLAY; grey brown to black, with ash; cohesive, w>PL.			
	2.6 - 2.7	(CI/CH) SILTY CLAY; grey brown, fissured (WEATHERED CRUST); cohesive, w>PL.			
	2.7	End of Test Pit Note: Test pit dry upon completion.			
TP14-6	0.0 - 0.1	FILL - TOPSOIL (ML) sandy SILT; brown; moist.	SA1 (0.2 – 0.7) SA2 (0.7 – 1.2) SA3 (1.2 – 1.7) SA4 (1.7 – 2.0)	0.3 0.4 0.5 14.4	-
	0.1 - 0.7	FILL - (SM) SILTY SAND, trace gravel; brown, with pieces of brick, asphalt, glass, ash and organic matter; non-cohesive, moist.			
	0.7 - 1.2	FILL - (SM) SILTY SAND; brown, with ash and organic matter; non-cohesive, moist.			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits completed during the first stage of the Phase Two ESA in March 2014					
	1.2 - 1.7	FILL - Mixture of soil and REFUSE/WASTE. Soil is (CI/CH) SILTY CLAY; grey brown to black; cohesive, w>PL. REFUSE includes ash and concrete blocks.			
	1.7 - 2.0	(CI/CH) SILTY CLAY; grey brown, with sand seams (WEATHERED CRUST); cohesive, w>PL.			
	2.0	End of Test Pit Note: Test pit dry upon completion.			
TP14-7	0.0 - 0.2	FILL - TOPSOIL (SM) SILTY SAND; brown; moist.	SA1 (0.2 – 1.0) SA2 (1.0 – 1.2) SA3 (1.2 – 1.3)	2.5 2.4 0.7	-
	0.2 - 1.2	FILL - (SP) SAND, fine; brown, with bottle; non-cohesive, moist.			
	1.2 - 1.3	(CI/CH) SILTY CLAY, trace sand; grey brown (WEATHERED CRUST); cohesive, w>PL.			
	1.3	End of Test Pit Note: Test pit dry upon completion.			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits completed during the first stage of the Phase Two ESA in March 2014					
TP14-8	0.0 - 0.1	FILL - TOPSOIL	SA1 (0.1 – 1.0) SA2 (1.6 – 1.7) SA3 (1.7 – 2.2)	2.4 1.7 2.5	-
	0.1 - 1.6	FILL - (SP) SAND, fine, some gravel and fines; brown, with cobbles, pieces of asphalt, wood and organic matter; non-cohesive, moist.			
	1.6 - 1.7	FILL - (ML) sandy CLAYEY SILT, trace gravel; brown, with organic matter and ash pocket between 1.5 to 1.7 m depth; non-cohesive, moist			
	1.7 - 2.2	(CI/CH) SILTY CLAY; grey; cohesive, w>PL			
	2.2	End of Test Pit Note: Test pit dry upon completion			
TP14-9	0.0 - 0.1	FILL - TOPSOIL (ML) sandy SILT; brown; moist.	SA1 (0.1 – 1.0) **SA2 (1.4 – 2.0)** SA3 (2.0 – 2.9)	15.5 20.4 18.5	PHCs F1-F4, BTEX, PAHs and metals
	0.1 -1.4	FILL - (CL-ML) CLAYEY SILT, some sand and gravel; dark brown, with cobbles, pieces of asphalt and ash; cohesive, w>PL.			
	1.4 - 2.0	FILL - (CI) SILTY CLAY, some sand; grey, with pieces of asphalt, wood, tree stump and ash; cohesive, w>PL.			
	2.0 - 2.9	(CI/CH) SILTY CLAY; grey; cohesive, w>PL.			
	2.9	End of Test Pit Note: Test pit dry upon completion.			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits completed during the first stage of the Phase Two ESA in March 2014					
TP14-10	0.0 - 0.1	FILL - TOPSOIL (ML) sandy SILT; brown; moist.	SA1 (0.1 – 0.6)	0.8	
	0.1 - 0.6	FILL - (ML) CLAYEY SILT, some sand; brown, with light brown ash, pieces of bricks, wood, and concrete; non-cohesive, moist.	**SA2 (0.6 – 1.5)** **SA2A duplicate of SA2 (0.6-1.5)** SA3 (1.5 – 2. 5) SA4 (2.5-2.6)	0.5 0.7 0.9	PHCs F1-F4, BTEX, PAHs and metals
	0.6 - 1.5	FILL - (ML) sandy SILT, some clay; grey brown, with pieces of brick, wood and glass; non-cohesive, moist.			
	1.5 - 2.5	FILL - (CI/CH) SILTY CLAY; grey, with pieces of brick and ash; cohesive, w>PL.			
	2.5 - 2.6	(CI/CH) SILTY CLAY; grey brown (WEATHERED CRUST); cohesive, w>PL.			
	2.6	End of Test Pit Note: Test pit dry upon completion.			
TP14-11	0.0 - 0.1	FILL - TOPSOIL	SA1 (0.1 – 1.0) SA2 (1.0 – 1.6) SA3 (1.6 – 2.3) SA4 (2.3 – 2.6) SA5 (2.6 – 3.0)	0.4 0.6 1.3 1.2 0.4	-
	0.1 - 1.0	FILL - (SM) SILTY SAND, some gravel and fines; grey brown with black mottling, with cobbles and ash; non-cohesive, moist			
	1.0 - 1.6	FILL – Mixture of soil and REFUSE/WASTE. Soil is (ML) CLAYEY SILT, some gravel; brown; cohesive, w>PL.			
	1.6 - 2.6	REFUSE/WASTE includes ash, with pieces of brick, , asphalt and concrete blocks.			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits completed during the first stage of the Phase Two ESA in March 2014					
	2.6 - 3.0	FILL - (CL-ML) SILTY CLAY to CLAYEY SILT; red and black with brown staining, with ash, pieces of brick, asphalt and concrete blocks; cohesive, w>PL.			
	3.0	(CI/CH) SILTY CLAY; grey (WEATHERED CRUST); cohesive, w>PL.			
	3.0	End of Test Pit			
		Note: Test pit dry upon completion.			
TP14-12	0.0 - 0.1	FILL - TOPSOIL	SA1 (0.1 – 0.8) SA2 (0.8 – 1.4)	1.1 1.7	PHCs F1-F4, BTEX, PAHs and metals
	0.1 - 0.8	FILL - (ML) CLAYEY SILT, some gravel, trace sand; brown, with organic matter; non-cohesive, moist.	SA3 (1.4 – 2.0) **SA4 (2.0 – 2.7)** SA5 (3.2 – 3.6)	1.3 0.7 1.5	
	0.8 - 1.4	FILL - (SM) SILTY SAND; brown, with pieces of brick, wood, asphalt and ash; non-cohesive, moist	SA6 (4.2 – 4.3)	0.5	
	1.4 - 3.0	FILL - (CI) SILTY CLAY; brown, with pieces of brick, wood, concrete blocks, ash and organic matter; cohesive, w>PL.			
	3.0 - 4.2	(CI/CH) SILTY CLAY, some sand, trace gravel; grey to black, with organic matter; cohesive, w>PL.			
	4.2 - 4.3	(CI/CH) SILTY CLAY; grey; cohesive, w>PL.			
	4.3	End of Test Pit			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits completed during the first stage of the Phase Two ESA in March 2014					
		Note: Test pit dry upon completion			
TP14-13	0.0 - 0.1 0.1 - 1.5 1.5 - 1.7 1.7	FILL - TOPSOIL FILL - (SP) SAND, fine to medium; brown with red staining, with pieces of bricks and organic matter; non-cohesive, moist. (CL-ML) SILTY CLAY to CLAYEY SILT; grey; cohesive, w>PL. End of Test Pit Note: Seepage at ground surface from melting ice and snow.	SA1 (0.1 – 0.7) SA2 (0.7 – 1.5) SA3 (1.5 – 1.7)	3.0 4.2 2.7	-
TP14-14	0.0 - 0.1 0.1 - 0.5 0.5 - 1.5 1.5 - 1.6 1.6	FILL - TOPSOIL FILL - (SM) SILTY SAND; dark brown, with ash and organic matter; non-cohesive, moist. FILL - (SP) SAND, fine to medium; brown; non-cohesive, wet. (CI/CH) SILTY CLAY; grey with brown staining (WEATHERED CRUST); cohesive, w>PL. End of Test Pit Note: Groundwater inflow at 1.1 mbgs.	SA1 (0.1 – 0.5) SA2 (0.5 – 1.5) SA3 (1.5 – 1.6)	3.7 3.2 4.8	-

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits completed during the first stage of the Phase Two ESA in March 2014					
TP14-15	0.0 - 0.1	FILL - TOPSOIL	SA1 (0.1 – 1.0)	3.3	
			SA2 (1.0 – 1.6)	2.4	
	0.1 – 1.0	FILL - (ML) CLAYEY SILT, some sand, trace gravel; brown, with organic matter; cohesive, w>PL.	SA3 (1.6 – 2.5)	3.9	
			SA4 (2.7 – 3.0)	3.7	
			SA5 (3.0 – 3.6)	4.2	PHCs F1-F4, BTEX, PAHs and metals
	1.0 - 1.6	FILL - (SM) SILTY SAND, some fines, trace gravel; brown, with pieces of brick, wood and organic matter; non-cohesive, moist.	**SA6 (4.1 – 4.4)**	9.1	Metals
	1.6 - 3.0	FILL - (CI/CH) SILTY CLAY, some sand, trace gravel; grey brown with red and black mottling, with pieces of brick and wood; cohesive, w>PL			
	3.0 - 4.1	FILL – Mixture of soil and REFUSE/WASTE. Soil is (SM) SILTY SAND, trace gravel; black; non-cohesive, moist. REFUSE/WASTE includes ash, cinders, and pieces of brick.			
	4.1 - 4.4	(CL-ML) SILTY CLAY to CLAYEY SILT, some sand; grey with red mottling, with organic matter; cohesive, w>PL			
	4.4	End of Test Pit			
		Note: Test pit dry upon completion.			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
TR E	0.0 - 0.10	TOPSOIL- (SM) SILTY SAND, dark brown, weeds, grass, trace gravel	SA1 (0-0.55)	3.9	
	0.10-0.62	FILL - (SM) SILTY SAND, reddish brown to light brown, trace gravel and ash, non-cohesive	**SA2 (0.55-1.00)** **DUP E SA2 (0.55-1.00)** (Duplicate of SA2)	6.8	Metals, PHC F1 to F4, BTEX and PAHs PHCs F1 to F4, BTEX
			TP E (1.4-1.70)	Not measured	Metals and PAHs
	0.62-0.70	FILL - (SM) SILTY SAND, brown grey, some black cinders, non-cohesive			
	0.70-1.40	FILL - (SM) SILTY SAND, light brown reddish, trace gravel, non-cohesive			
	1.40-1.70	(CI/CH) SILTY CLAY, brown (WEATHERED CRUST)			
	1.70	End of Test Pit Note: Test pit dry upon completion.			
TR F	0.0 - 0.6	FILL – (SM) SILTY SAND, brown, traces fines, some clay, traces orange brick, ash, cobbles, non-cohesive, moist	**SA1 (0-0.60)** SA2 (0.60-1.20)	7.4 5.6	Metals and PAHs
	0.6-1.20	FILL- (SW) fine SAND, trace fines, brown, non-cohesive , moist			
	1.20	End of Test Pit Note: Test pit dry upon completion.			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
TR J	0.0 - 0.2	TOPSOIL - (SM) SILTY SAND, grey brown, moist.	SA1 (0.2-0.65) **SA2 (0.65-0.90)** SA3 (0.90-1.65)	0.4 0.4 0.6	Metals and PAHs
	0.2-0.90	FILL - (ML/SM) SANDY SILT to SILTY SAND, brown, trace to some grey brown clay, non-cohesive, moist			
	0.90-1.15	(SW) fine SAND, trace medium sand, brown, non-cohesive, moist			
	1.15	End of Test Pit Note: Test pit dry upon completion.			
TR N	0-0.08	TOPSOIL- (SM) SILTY SAND, brown, trace organic matter	SA1 (0.10-0.85) SA2 (1.0-1.10) **SA3 (1.3-1.7)**	Not measured	PHC F1 to F4, BTEX
	0.08-0.60	FILL mixture of (CL/CH) SILTY CLAY, grey brown to grey and (SW) fine SAND, trace silt, gravel, asphalt and orange brick			
	0.60-1.10	FILL - (CI/CH) SILTY CLAY, trace sand, grey brown, cohesive, trace cobbles, fine sand and fragments brick			
	1.10-2.0	FILL - (CI/CH) SILTY CLAY, grey, with some brown sand, asphalt and brick, cohesive Concrete slab encountered at 2.70 mbgs			
	2.70	End of Test Pit Note: Test pit dry upon completion.			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
TR BN	0-0.80	FILL - (CI/CH) SILTY CLAY, trace sand, trace asphalt	**SA1 (0.1-0.4**) SA2 (0.4-0.8) **SA3 (1.0-1.5)**	0.5 0.3 0.3	Metals and PAHs Metals and PAHs
	0.8-1.0	FILL - (CI/CH and SM) Interbedded SILTY CLAY, grey brown, cohesive with SILTY SAND, dark brown, non-cohesive, moist			
	1.0-1.50	FILL - (SM) SILTY SAND, trace cobbles, trace wood			
	1.50	End of Test Pit Note: Test pit dry upon completion.			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
TP R	0-0.55	TOPSOIL - (SM) SILTY SAND, trace fines, brown, non-cohesive, moist	SA1 (0.3-0.5) **SA2 (0.55-0.70)** **SA3 (0.70-0.90)** SA4 (0.90-1.10)	0.2 0.1 0.5 0.5	 Metals and PAHs Metals and PAHs
	0.55-0.70	FILL - (SM) SILTY SAND, trace fines, brown, non-cohesive, moist			
	0.70-0.90	FILL - (SM) SILTY CLAY, grey brown, cohesive, wet			
	0.90-1.10	FILL - (SM-ML) SILTY SAND to SANDY SILT, brown, non-cohesive, moist			
	1.10-1.50	(CL/CH) SILTY CLAY, traces sand, grey brown, cohesive			
	1.50	End of Test Pit Note: Test pit dry upon completion.			
TP S	0-0.45	TOPSOIL - (SM) SILTY SAND, some fines, brown, non-cohesive, moist	**SA1 (0-0.45)**	8.6	Metals and PAHs
	0.45-0.70	FILL - (ML) SANDY SILT, brown to grey, non-cohesive, moist	**SA2 DUP/S SA2 (0.45-0.70)** **SA2 DUP/S SA2** (Field Duplicate) **(0.45-0.70)** SA3 (0.70-1.05)	6.2 5.4	Metals, PHCs F1 to F4, BTEX and PAHs Metals, PHCs F1 to F4, BTEX and PAHs
	0.70-1.05	FILL - (ML) SANDY SILT, trace fines, brown to grey brown, non-cohesive, moist			
	1.05-1.65	(CI/CH) SILTY CLAY, trace sand, grey brown, cohesive, moist to wet			
	1.65	End of Test Pit Note: Test pit dry upon			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
		completion.			
TP T	0-0.35	TOPSOIL - (SM) SILTY SAND, trace fines, brown, non-cohesive, moist	SA1 (0.2-0.35) **SA2 (0.4-0.6)** **DUP T SA2 (0.4-0.6)** (duplicate of SA2)	2.2 0.4	 Metals and PAHs Metals and PAHs
	0.35-0.70	FILL - (SW) fine SAND, trace to some silt, brown, non-cohesive, moist	**SA3 (0.70-0.80)** **SA4 (0.9-1.10)**	1.6 0.9	Metals and PAHs Metals and PAHs
	0.70-0.80	FILL - (CI/CH) SILTY CLAY, trace sand, some clayey silt, cohesive			
	0.80-1.30	FILL - (ML) SANDY SILT, some fine sand, brown, non-cohesive, moist			
	1.30-1.65	(CI/CH) SILTY CLAY, trace sand, grey brown, cohesive			
	1.65	End of Test Pit Note: Test pit dry upon completion.			
TP V	0-0.35	TOPSOIL - (SM) SANDY SILT, dark brown, non-cohesive, moist	SA1 (0-0.35) SA2 (0.35-0.55) **SA3 (0.55-0.80)** SA4 (0.80-1.05) **SA5 (1.05-1.25)**	0.2 0.8 2.2 1.9 2.5	 PHCs F1 to F4, BTEX Metals and PAHs
	0.35-0.55	FILL - (CI/CH) SILTY CLAY, trace sand, grey brown, non-cohesive, moist to wet			
	0.55-0.80	FILL - (ML/SW) SANDY SILT, some clay, intermixed with fine sand, trace silt, brown, non-cohesive, moist			
	0.80-1.05	FILL - (CI/CH) SILTY CLAY,			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
		trace sand, grey brown, cohesive			
	1.05-1.25	FILL- (SM) SILTY SAND, trace to some fines, brown, non-cohesive, moist			
	1.25	End of Test Pit			
		Note: Test pit dry upon completion.			
TP W	0-0.25	TOPSOIL - (ML) CLAYEY SILT, trace sand, brown, organic matter, non-cohesive, moist	**SA1 (0-0.25)** SA2 (0.25-0.60) SA3 (0.60-0.90)	4.1 2.3 1.8	Metals and PAHs
	0.25-0.60	FILL - (CI/CH) SILTY CLAY, trace sand, mottled grey brown, cohesive			
	0.60-0.95	(SW) SAND, some fines, trace silt, brown, non-cohesive, moist			
	0.95-1.50	(CI/CH) SILTY CLAY, trace sand, grey brown, cohesive			
	1.50	End of Test Pit			
		Note: Test pit dry upon completion.			
TP X	0-0.50	TOPSOIL - (SM) SILTY SAND, dark brown, non-cohesive, moist	**SA1 (0-0.50)** **SA2 (0.50-0.95)** SA3 (1.0-1.20) SA4 (2.10-2.40)	0.3 0.3 0.3 Not measured	Metals and PAHs Metals and PAHs
	0.50-0.95	FILL - (SM-ML) SILTY SAND to SANDY SILT, brown, moist, non-cohesive			
	0.95-1.45	FILL - (SM and CI/CH) SILTY SAND, some fines, brown, non-cohesive, moist with SILTY CLAY, grey brown, cohesive			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
	1.45-2.40 2.40	(CI/CH) SILTY CLAY, trace sand, grey brown, cohesive End of Test Pit Note: Test pit dry upon completion.			
TP Y	0-0.10 0.10-0.30 0.30-0.90 0.90-1.40 1.40	FILL - TOPSOIL (ML) SANDY SILT, brown, moist FILL - (SM) SILTY SAND, trace gravel and fines, trace metal, orange brick, non-cohesive, moist FILL - (SM) SILTY SAND, some fines, brown, non-cohesive, moist (CI/CH) SILTY CLAY, trace sand, grey, cohesive End of Test Pit Note: Test pit dry upon completion.	**SA1 (0.10-0.30)** **SA2 (0.30-0.90)**	0.4 0.2	Metals and PAHs Metals and PAHs
TP Z	0-0.30 0.30-0.70 0.70-1.10 1.10-1.50	FILL - (SM) SILTY SAND, brown, trace fines and cobbles, rootlets, non-cohesive, moist FILL - (SM) SILTY SAND, some fines, brown, trace gravel, grey silty clay, brick, concrete rubble FILL - (CI/CH) SILTY CLAY, some sand, trace gravel, cobbles pieces of brick, trace ash (CI/CH) SILTY CLAY, grey brown, cohesive	SA1 (0-0.30) **SA2 (0.30-0.70)** SA3 (0.70-1.10) SA4 (1.10-1.50)	0.4 0.4 0.4 0.6	Metals and PAHs

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
	1.50	End of Test Pit Note: Test pit dry upon completion.			
TP AA	0-0.60 0.60-1.10 1.10-2.25 2.25	FILL - (SM) SILTY SAND, trace fines, brown, some grey clay, non-cohesive, moist FILL - (SM) SILTY SAND, trace fines, brown to light brown, non-cohesive, moist (CI/CH) SILTY CLAY, trace sand, grey brown, cohesive End of Test Pit Note: Test pit dry upon completion.	SA1 (0-0.60) **SA2 (0.60-0.90)** **SA3 (0.90-1.10)** **DUP AA SA3 (0.90-1.10)** (duplicate of SA3)	0.2 0.7 0.3	 PAHs Metals and PAHs Metals and PAHs
TP AB	0-0.90 0.90-1.50 1.50	FILL – Mixture of soil and REFUSE/WASTE. Soil is (SM) SILTY SAND, trace gravel, brown, non-cohesive, moist. REFUSE/WASTE includes ash, brick fragments, cobbles, broken rock (CI/CH) SILTY CLAY, grey brown, cohesive End of Test Pit Note: Test pit dry upon completion.	**SA1 (0-0.40)** SA2 (1.50-0.90)	0.4 0.4	Metals and PAHs
TP AC	0-0.37	FILL - (SM) SILTY SAND, trace fines, dark brown, some clay, large pieces of concrete, fragments of brick, non-cohesive, moist	**SA1 (0-0.37)** SA2 (0.37-1.0) **SA3 (1.0-2.0)** SA4 (2.0-2.6)	0.3 0.2 0.4 Not measured	Metals, PAHs Metals, PHCs F1 to F4, BTEX and PAHs

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
	0.37-1.0 1.0-2.0 2.0-2.6 2.6	FILL - (SM) SILTY SAND, trace fines, trace gravel and clay FILL - (SM) SILTY SAND, trace fines, brown, non-cohesive, moist (CI/CH) SILTY CLAY, grey, cohesive End of Test Pit Note: Test pit dry upon completion.			
TP AE	0-1.40 1.40-2.0 2.0-3.0 3.0	FILL – Mixture of soil and REFUSE/WASTE. Soil is (SM) SILTY SAND, trace fines and gravel, non-cohesive, moist. REFUSE/WASTE includes ash, fragments of brick, cobbles and broken rock FILL - (CI/CH) SILTY CLAY, gray, with trace brick, with orange and brown staining, cohesive (CI/CH) SILTY CLAY, gray, cohesive End of Test Pit Note: Test pit dry upon completion.	SA1 (0-0.30) **SA2 (1.10 mbgs)** SA3 (1.40-2.0)	0.3 0.4 0.4	Metals and PAHs
TP AF	0-0.10 0.10-1.70	TOPSOIL - (SM) SILTY SAND, some fines, brown, roots, non-cohesive, moist FILL - (SM) SILTY SAND, trace fines, brown, non-cohesive,	**SA1 (0.50 mbgs)** SA2 (0.90 mbgs) **SA3 (1.40 mbgs)**	0.2 1.0 0.7	PHCs F1 to F4, BTEX Metals and PAHs

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
		moist			
	1.70-2.10	(CI/CH) SILTY CLAY, gray, cohesive			
	2.10	End of Test Pit			
		Note: Test pit dry upon completion.			
TP AG	0-0.1	TOPSOIL - (ML) SANDY SILT, brown, moist	SA1 (0.10-0.4) SA2 (0.4-0.9) SA3 (0.9-1.5) **SA4 (1.5-1.6)**	0.7 0.5 0.7 0.4	Metals and PAHs
	0.1-0.4	FILL - (SM) SILTY SAND, trace fines, brown, non-cohesive, moist			
	0.4-0.9	FILL - (SM-ML) SILTY SAND TO SANDY SILT, brown, non-cohesive, moist			
	0.9-1.50	FILL - (SM) SILTY SAND, trace fines and medium sand, brown, non-cohesive, moist			
	1.5-1.6	(FILL) - SAND, fine to coarse, trace fines, grey, non-cohesive, moist			
	1.60	End of Test Pit			
		Note: Test pit dry upon completion.			
TP AH	0-0.20	TOPSOIL - (ML) SANDY SILT, brown, moist	SA1 (0-0.2) **SA2 (0.2-0.3)** **SA3 (0.3-0.6)** **SA4 (0.6-1.2)**	0.5 0.8 1.1 0.7	 Metals and PAHs Metals and PAHs Metals and PAHs
	0.20-0.30	FILL - Ash – grey			
	0.30-0.60	FILL - (CI/CH) SILTY CLAY, trace sand, grey-brown, cohesive			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
	0.60-1.20 1.20-1.55 1.55	FILL- (SM) SILTY SAND, trace fines, trace medium sand, brown, non-cohesive, moist (CI/CH) SILTY CLAY, grey-brown, cohesive End of Test Pit Note: Test pit dry upon completion.			
TP AJ	0-0.25 0.25-0.80 0.80-1.35 1.35-1.75 1.75	TOPSOIL - (SM) SILTY SAND, trace fines, non-cohesive, moist FILL - (SM) SILTY SAND, trace fines, brown, non-cohesive, moist FILL - (SM) SILTY SAND, trace fines, light brown, non-cohesive, moist (CI/CH) SILTY CLAY, grey, cohesive End of Test Pit Note: Test pit dry upon completion.	**SA1 (0-0.25)** SA2 (0.25-0.80) **SA3 (0.80-1.35)**	0.2 0.4 0.6	Metals and PAHs Metals and PAHs
TP AK	0-0.20 0.20-0.30 0.30-3.95	TOPSOIL - (ML) SANDY SILT FILL - (SM) SILTY SAND, trace fines, brown, trace gravel and cobbles, orange brick, non-cohesive, moist FILL - (SM) SILTY SAND, trace fines, brown, some gravel, cobbles, asphalt, brick, clay, non-cohesive, moist	**SA1 (0.2-0.3)** SA2 (0.50) **SA3 (1.20)** SA4 (2.05) SA5 (2.85) SA6 (3.90-4.10)	0.3 0.1 1.2 0.1 0.2 0.5	Metals and PAHs Metals and PAHs

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
	1.70 – 2.0 3.95-4.10 4.10	Concrete slab and some boulders @1.7 – 2.0 m (ML) SANDY SILT, grey, non-cohesive, moist End of Test Pit Note: Test pit dry upon completion.			
TP AP	0-0.50 0.50-0.70 0.70-0.85 0.85-1.00 1.00-1.70 1.70	TOPSOIL - (ML) SANDY SILT, dark brown, non-cohesive, moist FILL - (SM) SILTY SAND, some fines, brown non-cohesive, moist FILL - (CI/CH) SILTY CLAY, trace sand, grey brown, cohesive FILL - (SM) SILTY SAND, some fines, brown, non-cohesive, moist (CI/CH) SILTY CLAY, trace sand, grey brown, cohesive End of Test Pit Note: Test pit dry upon completion.	SA1 (0-0.5) SA2 (0.50-0.70) **SA3 (0.70-0.85)** SA4 (0.85-1.00) SA5 (1.00-1.70)	0.7 1.6 1.6 0.9 Not measured	Metals and PAHs
TP AS	0-0.50 0.50-1.30	FILL - (ML) SANDY SILT, grey to grey-brown, trace gravel, cobbles, some clay FILL - (SM) fine SILTY SAND, trace fines, grey-brown, some clay, trace orange brick, trace decayed wood, non-cohesive,	**SA1 (0.20-0.40)** **SA2 (0.70-1.30)** SA3 (1.30-1.50)	Not measured	Metals and PAHs Metals and PAHs

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
		moist			
	1.30-1.50	FILL - (ML) SANDY SILT, some fines, grey, trace organic matter, non-cohesive, moist			
	1.50-1.80	(CI/CH) SILTY CLAY, trace sand, grey-brown, cohesive			
	1.80	End of Test Pit			
		Note: Test pit dry upon completion.			
TP AV	0-0.20	TOPSOIL - (SM) SILTY SAND, trace clay, brown, non-cohesive, moist	**SA1 (0-0.20)** SA2 (0.20-0.55) **SA3 (0.60-0.90)** SA4 (0.90-1.50)	3.1 0.6 7.1 3.2	Metals and PAHs Metals and PAHs
	0.20-0.55	FILL - (SM) SILTY SAND, trace fine sand, brown, non-cohesive, moist			
	0.55-0.60	FILL - (ML) SILT, some sand, dark brown, trace organic matter, non-cohesive, moist			
	0.60-0.90	FILL- (ML) SILT, trace fine sand, brown, non-cohesive, moist			
	0.90-1.50	(CI/CH) SILTY CLAY, trace sand, grey-brown, cohesive			
	1.50	End of Test Pit			
		Note: Test pit dry upon completion.			
TP AX	0-0.40	FILL - (ML) SANDY SILT, some fines, brown to grey, some clay, trace to some gravel	SA1 (0.20-0.40) **SA2 (0.40-0.65)** **SA3 (0.80-1.20)**	0 0 0	 Metals and PAHs Metals and PAHs
	0.40-0.65	FILL - (CI/CH/ML) SILTY CLAY, trace sand, grey-brown,			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
		cohesive, intermixed with sandy SILT to CLAYEY SILT, trace sand, grey, non-cohesive, moist			
	0.65-1.30	FILL - (SW) fine SAND, trace fines, brown, non-cohesive, moist			
	1.30-2.15	(CI/CH) SILTY CLAY, trace sand, grey brown, cohesive			
	2.15	End of Test Pit			
		Note: Test pit dry upon completion.			
TP G14/E1	0-0.20	TOPSOIL - (SM) SILTY SAND, grey, non-cohesive, moist	SA1 (0.4) **SA2 (1.00)** SA3 (1.70) SA4 (2.60)	0.4 0.6 0.6 0.4	Metals and PAHs
	0.20-2.20	FILL - (SM) SILTY SAND, some fines, some coarse sand, grey brown, trace to some asphalt, trace wood, trace paper			
	2.20-3.10	(CI/CH) SILTY CLAY, trace sand, grey-brown, cohesive			
	3.10	End of Test Pit			
		Note: Test pit dry upon completion.			
TP BA	0-0.15	TOPSOIL - (SM) SILTY SAND, trace fines, brown to grey, non-cohesive, moist	SA1 (0.25-0.50) **SA2 (0.70-1.00)** **SA3 (1.80-2.00)** SA4 (21.20-3.30) SA5 (3.30-4.0)	0 0 0.3 0.2 1.4	Metals and PAHs Metals and PAHs, PHCs F1 to F4, BTEX
	0.15-0.55	FILL - (SW) fine SAND, trace silt, brown, trace gravel, trace clay			
	0.55-1.25	FILL - (CI/CH) SILTY CLAY, trace sand, grey-brown, cohesive			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
	1.25-2.20	FILL - (CI/CH) SILTY CLAY, trace sand, grey brown, cohesive, intermixed with CLAYEY SILT, trace sand, some orange brick, cobbles and decayed wood			
	2.20-3.30	FILL - Mixture of soil and REFUSE/WASTE. Soil is (SM) SANDY SILT, grey, non-cohesive, moist. REFUSE/WASTE includes fragments of orange brick, asphalt pieces, decaying wood, concrete and metal fragments			
	3.30-4.00	(SW) SAND, trace fines, trace silt, non-cohesive, moist			
	4.00	End of Test Pit Note: Test pit dry upon completion.			
TP BE	0-0.80	FILL - (CI/CH) SILTY CLAY, trace sand, trace orange brick, some gravel, trace fine sand, trace decomposing wood	**SA1 (0.40-0.80)** **SA2 (0.80-1.10)** **DUP BE SA2 (0.80-1.10)** (Duplicate of SA2)	1.1 0.3	Metals and PAHs Metals and PAHs Metals and PAHs
	0.80-1.10	FILL - (SW) fine SAND, some silt, trace gravel, asphalt	**SA3 (1.20-1.50)**	0.3	Metals and PAHs
	1.10-1.60	FILL - (CI/CH) SILTY CLAY, trace sand, grey-brown, cohesive	SA4 (1.80-2.10) SA5 (2.20-2.50)	0.3 0.8	
	1.60-2.10	FILL (SM) gravelly SILTY SAND, brown, trace ash, brick and wood			
	2.10-3.00	FILL (SM) SILTY CLAY, trace sand, brown grey and REFUSE/WASTE composed of			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
		SILTY SAND, brown, non-cohesive, moist to wet, gravel, fragments of orange brick, black staining Refusal at 3.00 mbgs Note: Water seeping into test pit at 2.4 mbgs upon completion			
TP BJ	0-1.0	FILL - Mixture of soil and REFUSE/WASTE. Soil is (SM) SILTY SAND, trace fines, some gravel. REFUSE/WASTE includes plastic, wire, decomposed wood, paper	SA1 (0.3-0.5) SA2 (0.8-1.0) **SA3 (1.10-1.50)** SA4 (2.30-2.50) **SA5 (3.50-3.80)**	0.2 0.2 0.8 0.3 0.6	 Metals and PAHs PHCs F1 to F4, BTEX
	1.0-1.85	FILL - (CI/CH) SILTY CLAY, grey, some orange brick, trace decaying wood, brown sand			
	1.85-3.30	FILL – Mixture of soil and REFUSE/WASTE. Soil is (SW) fine SAND, trace fines. WASTE/REFUSE includes abundant orange brick, concrete, glass and ash			
	3.30-4.15	(CL/CI/ML) SILTY CLAY to CLAYEY SILT, trace sand, grey, black staining.			
	4.15	End of Test Pit Note: Test pit dry upon completion.			
TP BK	0-0.40	TOPSOIL - (SM) SILTY SAND, brown, non-cohesive, moist	**SA1 (0.40-0.55)** SA2 (0.55-0.75) SA3 (0.75-0.85)	1.2 0.3 0.8	Metals and PAHs
	0.40-0.55	FILL - (SM) SILTY SAND, brown, non-cohesive, moist			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
	0.55-0.75	FILL - (CI/CH) SILTY CLAY, trace sand, grey-brown, cohesive			
	0.75-0.85	FILL - (SW) fine SAND, trace silt, brown, non-cohesive, moist			
	0.85-1.35	(CI/CH) SILTY CLAY, trace sand, grey-brown, cohesive, with thinly bedded brown fine sand interbeds			
	1.35	End of Test Pit Note: Test pit dry upon completion.			
TP BM	0-0.25	TOPSOIL - (SW) SILTY SAND, trace fines, dark brown, non-cohesive, moist	SA1 (0.25-0.40) **SA2 (0.40-0.65)** **SA3 (0.65-1.20)**	1.4 17.2 4.4	 Metal and PAHs PHCs F1 to F4, BTEX
	0.25-0.40	FILL - (SW) fine SAND, trace silt, medium brown			
	0.40-0.65	FILL - (CI/CH) SILTY CLAY, trace sand, grey brown, cohesive			
	0.65-1.20	FILL - (SM/SW) SILTY SAND, fine sand, layered, brown, non-cohesive, moist 25 mm iron pipe and 100 mm clay pipe encountered at 1.0 mbgs			
	1.20-1.80	(CI/CH) SILTY CLAY, trace sand, grey-brown, cohesive			
	1.80	End of Test Pit Note: Test pit dry upon completion.			

Test Pit Number	Depth (mbgs)	Decscription	Sample ID (Depth in mbgs)	Headspace Soil Vapour Concentration measured with PID (ppm)	Parameters Analyzed
Test Pits and Trenches completed during the second stage of the Phase Two ESA (July and August 2014)					
TP15	0-0.30	FILL - (SM) SILTY SAND, traces gravel, dark brown, ash, cinders and silty sand between 0.25 and 0.30 mbgs	SA1 (0.25-0.30) SA2 (0.35-0.60) SA3 (0.60-1.0) SA4 (1.0-1.20) SA5 (1.20-1.40) SA6 (1.40-1.50) SA7 (1.50-1.60)	4.7 3.3 5.8 5.3 2.2 3.3 6.3	None
	0.30-0.60	FILL - (SM) SILTY SAND, traces gravel and silty clay, fine brick fragments			
	0.60-1.0	FILL- (SM) SILTY SAND, traces organic matter, roots			
	1.0-1.20	FILL-(ML) SANDY SILT/(SM) SILTY SAND, roots, organic odour			
	1.20-1.40	FILL- (SM) SILTY SAND, brown, roots, trace organic matter			
	1.40-1.50	FILL- (ML) SANDY SILT, organic odour			
	1.50-1.60	FILL- (SW) SAND, traces silt, brown-grey			
	1.60	Native (CI/CH) SILTY CLAY			
	1.60	End of Test Pit			
		Note: Test pit dry upon completion.			

Notes: 1. mbgs = metres below ground surface
2. Samples in **bold** indicate soil samples submitted for laboratory analysis.
PID-photoionization detector
ppm-parts per million

Logged by: DM

Checked by: PA

N:\Active\2014\1122 - CLG\14-1122-0005 Regional Group Oblates Property Ottawa\Phase 7100 - New Phase II ESA\Reg 153 Ph. II ESA Rpt\Appendix B- BH and TP logs\14-1122-0005 Record of Test Pit Sept 2014.doc

Test Pit Number	Ground Surface Elevation (masl)	Depth (mbgs)	Decscription	Parameters Analyzed
TP15-201	-	0.0 – 7.8 7.8 – 8.2	FILL with debris Native grey CLAY End of Test Pit Note: Test pit dry upon completion.	Metals, PAH (TP15-201 Fill) Metals, PAH (TP15-201 Native)
TP15-202	-	0.0 – 5.2 5.2 – 5.5	FILL with debris Native grey CLAY End of Test Pit Note: Test pit dry upon completion.	None
TP15-203	-	0.0 – 3.3 3.3 – 3.5	FILL with debris Native grey to grey brown CLAY End of Test Pit Note: Test pit dry upon completion.	None
TP15-204	-	0.0 – 0.4 0.4 – 1.1 1.1 – 1.5	Topsoil FILL – Light brown sand Native brown CLAY End of Test Pit Note: Test pit dry upon completion.	None
TP15-205	-	0.0 – 0.6 0.6 – 1.1 1.1 – 2.6 2.6 – 3	FILL with debris FILL – Light brown sand Native brown clayey SILT Native brown silty CLAY End of Test Pit Note: Test pit dry upon completion.	None

Test Pit Number	Ground Surface Elevation (masl)	Depth (mbgs)	Decscription	Parameters Analyzed
TP15-206A	-	0.0 – 0.5 0.5 – 1.0 1 – 1.2	Topsoil with debris FILL with debris Native brown CLAY End of Test Pit Note: Test pit dry upon completion.	None
TP15-206B	-	0.0 – 0.4 0.4 – 1.2 1.2 – 1.5	Topsoil with debris FILL with debris Native brown CLAY End of Test Pit Note: Test pit dry upon completion.	None
TP15-206C	-	0.0 – 0.05 0.05 – 2.6 2.6 – 3.0	Topsoil FILL with debris Native grey brown CLAY End of Test Pit Note: Test pit dry upon completion.	None
TP15-207	-	0.0 – 0.10 0.10 – 4.0	Topsoil FILL with debris End of Test Pit at 4m due to hitting the maximum reach of backhoe Note: Test pit dry upon completion.	None
TP15-208	63.00	0.0 – 6.6 6.6 – 7.3	FILL with debris Native grey CLAY End of Test Pit Note: Test pit dry upon completion.	None

Test Pit Number	Ground Surface Elevation (masl)	Depth (mbgs)	Decscription	Parameters Analyzed
TP15-209A	63.55	0.0 – 4.3 4.3 – 4.7	FILL with debris Native grey CLAY End of Test Pit Note: Test pit dry upon completion.	None
TP15-209B	63.83	0.0 – 0.9 0.9 – 1.7 1.7 – 2.2	FILL with debris FILL – Light brown sand Native grey CLAY End of Test Pit Note: Test pit dry upon completion.	None
TP15-210	63.43	0.0 – 5.8 5.8 – 6.1	FILL with debris Native grey CLAY End of Test Pit Note: Test pit dry upon completion.	None
TP15-211A	60.21	0.0 – 0.5 0.5 – 2.1 2.1 – 2.2	FILL with debris FILL – Light brown sand Native grey brown CLAY End of Test Pit Encountered sewer at bottom of test pit Note: Test pit dry upon completion.	None
TP15-211B	59.37	0.0 – 0.5 0.5 – 1.0 1.0 – 1.6 1.6 – 1.8	FILL with debris Topsoil FILL – Light brown sand Native brown CLAY End of Test Pit	None

Test Pit Number	Ground Surface Elevation (masl)	Depth (mbgs)	Decscription	Parameters Analyzed
			Note: Test pit dry upon completion.	
TP15-212A	59.60	0.0 – 0.65 0.65 – 1.1 1.1 – 1.2	FILL with debris FILL – Light brown sand Native brown CLAY End of Test Pit Note: Test pit dry upon completion.	None
TP15-212B	59.40	0.0 – 0.2 0.2 – 0.5 0.5 – 1.2 1.2 – 1.4	Topsoil FILL with debris FILL – Light brown sand Native brown CLAY End of Test Pit Note: Test pit dry upon completion.	None
TP15-212C	59.23	0.0 – 0.6 0.6 – 0.9 0.9 – 1.2 1.2 – 1.6	FILL with debris FILL – Light brown sand Topsoil with debris Native brown CLAY End of Test Pit Note: Test pit dry upon completion.	None

Notes: 1. Masl = metres above sea level
2. mbgs = metres below ground surface

Logged by: TL

Checked by: __

PROJECT: 14-1122-0005-5000

RECORD OF BOREHOLE: 14-1

SHEET 1 OF 2

LOCATION: See Site Plan

BORING DATE: March 26, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE – DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp ⊖W WI) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		59.25									
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - TOPSOIL		0.00									
		FILL - (SM/SW) SILTY SAND to SAND, some low plastic fines; brown; non-cohesive, moist, loose		0.20	1	SS	6						Bentonite Seal
1		(CI/CH) SILTY CLAY; grey brown, with silty sand seams (WEATHERED CRUST); cohesive, w>PL, stiff to very stiff		58.18 / 1.07	2	SS	5						Silica Sand
		(CI/CH) SILTY CLAY; grey; cohesive, w>PL, stiff		57.73 / 1.52	3	SS	2						
2													
3					4	SS	1						50 mm Diam. PVC #10 Slot Screen
4													
5					5	SS	WH						Silica Sand
6					6	SS	WH						
7									>96				Bentonite Seal
8					7	SS	WH						
9				50.11									
		(CL-ML) SILTY CLAY to CLAYEY SILT; grey; cohesive, w>PL, stiff		9.14	8	SS	WH						
10				48.89									WL in Screen at Elev. 57.39 m on Sept. 9, 2014
	DCPT	Possible Sand or Glacial Till		10.36									
11													
12													
13													
14				44.62									
		Possible Glacial Till		14.63									
15													

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5000

RECORD OF BOREHOLE: 14-1

LOCATION: See Site Plan

BORING DATE: March 26, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W WI) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
15	DCPT	Possible Glacial Till									
16											
17											
18											
19											
20											
21											
22									134		
				36.42					185		
23		End of Borehole Dynamic Cone Penetration Test Refusal		22.83					200		
24											
25											
26											
27											
28											
29											
30											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5000

RECORD OF BOREHOLE: 14-101A

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: March 25, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		64.05							
0	Power Auger 200 mm Diam. (Hollow Stem)	FILL - (SM) SILTY SAND, some fines, trace gravel; brown; non-cohesive, frozen, compact		0.00	1	SS	23				
				63.29							
1		(CL-ML) SILTY CLAY to CLAYEY SILT; brown, with silty sand seams (WEATHERED CRUST); cohesive, w<PL		0.76	2	SS	4				
				62.68							
		End of Borehole		1.37							
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5000

RECORD OF BOREHOLE: 14-101B

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: March 25, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W WI) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		64.05							
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (SM) SILTY SAND, some fines, trace gravel; brown; non-cohesive, compact		0.00 / 63.29							
1		(CL-ML) SILTY CLAY to CLAYEY SILT; brown, with silty sand seams (WEATHERED CRUST); cohesive, w<PL		0.76 / 62.53							
2		(CI/CH) SILTY CLAY; brown, with silty sand seams (WEATHERED CRUST); cohesive, w<PL, stiff to very stiff		1.52 / 61.16	1	SS	12				
					2	SS	10				
3		End of Borehole		2.89							
4		Note: Soil descriptions from 0.00 m to 1.52 m inferred from BH 14-101A.									
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5000

RECORD OF BOREHOLE: 14-101C

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: March 25-26, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		64.05							
0	Power Auger, 200 mm Diam. (Hollow Stem)	REFUSE/WASTE - grey, concrete chunks, with rebar and cobbles, some gravel		0.00							Bentonite Seal
1					1	SS	40	⊕			
				62.53							Native Backfill
		FILL - (SW) SAND; grey, with concrete and wood pieces; non-cohesive, moist, loose		1.52	2	SS	6	⊕			
2				61.77							
		(CI/CH) SILTY CLAY; grey brown, fissured (WEATHERED CRUST); cohesive, w>PL, stiff to very stiff		2.28	3	SS	13	⊕			Bentonite Seal
3											Silica Sand
					4	SS	5	⊕			
4					5	SS	2	⊕		PHCS F1-F4, BTEX	
				59.48							50 mm Diam. PVC #10 Slot Screen
		(CI/CH) SILTY CLAY; grey; cohesive, w>PL, stiff		4.57	6	SS	WH	⊕			
5					7	SS	WH	⊕			
6				57.95							
		End of Borehole		6.10							WL in Screen at Elev. 60.89 m on Sept. 9, 2014
7											
8											
9											
10											
11											
12											
13											
14											
15											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

MIS-BHS 001 1411220005-7100.GPJ GAL-MIS.GDT 11/26/14 JM

PROJECT: 14-1122-0005-5000

RECORD OF BOREHOLE: 14-101D

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: March 26, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W WI; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		64.05							
0	Power Auger 200 mm Diam. (Hollow Stem)	ASPHALTIC CONCRETE		0.05							
		FILL - (SW/GW) SAND and GRAVEL, crushed; grey (BASE); non-cohesive, moist		0.18 / 63.59							
		ASPHALTIC CONCRETE		0.46							
1		FILL - (SM) SILTY SAND, trace to some gravel; brown; non-cohesive, moist, compact		62.53	1	SS	17 ⊕				
		(CI/CH) SILTY CLAY; grey brown, fissured (WEATHERED CRUST); cohesive, w>PL, stiff to very stiff		1.52 / 61.92	2	SS	18				
2		End of Borehole		2.13							
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5000

RECORD OF BOREHOLE: 14-2

LOCATION: See Site Plan

BORING DATE: March 24-25, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

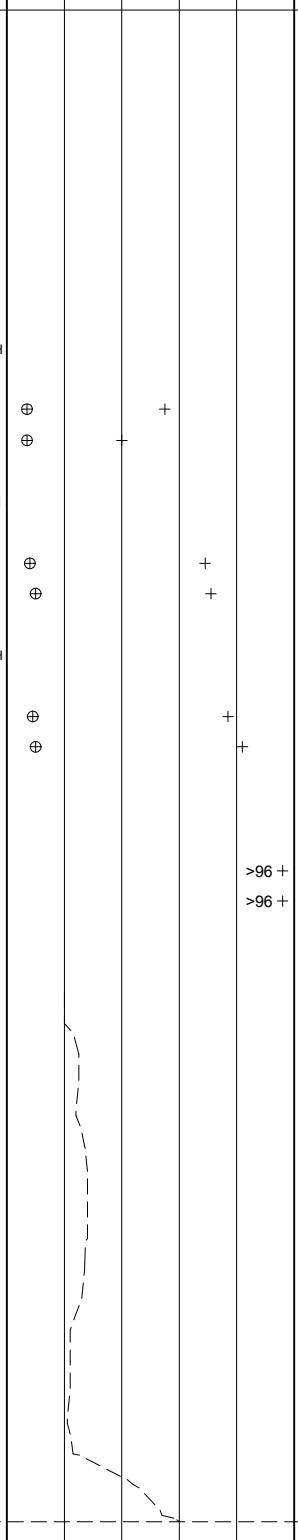
DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE – DESCRIPTION	ELEV. / DEPTH (m)	SAMPLES – NUMBER	TYPE	BLOWS/0.30m	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE	64.46					
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - TOPSOIL	0.05					
		FILL - (CI/CH) SILTY CLAY; brown, with organic matter; cohesive, w<PL	63.85	1	SS	5		Bentonite Seal
1		FILL - (ML) sandy SILT; brown; non-cohesive, moist, loose	0.61 / 62.94	2	SS	7		
2		(CI/CH) SILTY CLAY; grey brown, fissured, with silty sand seams (WEATHERED CRUST); cohesive, w>PL, stiff to very stiff	1.52 / 61.57	3	SS	2		
				4	SS	3		
3		(CI/CH) SILTY CLAY; grey with black mottling; cohesive, w>PL, firm to very stiff	2.89	5	SS	WH		Native Backfill
4								
5				6	SS	PH		
6				7	SS	WH		Bentonite Seal
7								Silica Sand
8				8	SS	2		Standpipe
9								Silica Sand
		(SM) SILTY SAND, fine; grey; non-cohesive, wet, compact	55.01 / 9.45 / 54.71	9	SS	16		Cave
10	DCPT	Possible Sand or Glacial Till	9.75					WL in Standpipe at Elev. 58.99 m on Sept. 9, 2014
11								
12								
13								
14								
		Possible Glacial Till	49.83 / 14.63					
15								

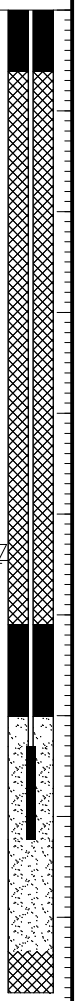
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m: 20, 40, 60, 80

SHEAR STRENGTH Cu, kPa: nat V. + Q - ●; rem V. ⊕ U - ○; 20, 40, 60, 80

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}

WATER CONTENT PERCENT: Wp ⊢—○W—⊣ Wl; 20, 40, 60, 80





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DEPTH SCALE 1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5000

RECORD OF BOREHOLE: 14-2

LOCATION: See Site Plan

BORING DATE: March 24-25, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W WI) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
15	DCPT	Possible Glacial Till							110		
16									121		
									128		
									115		
									126		
17									128		
									118		
									126		
18									104		
19									133		
									144		
									148		
									160		
20				44.42					178		
		End of Borehole Dynamic Cone Penetration Test Refusal		20.04							
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5000

RECORD OF BOREHOLE: 14-3

SHEET 1 OF 2

LOCATION: See Site Plan

BORING DATE: March 24, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE – DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		64.47					
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (SM) SILTY SAND; brown; non-cohesive, moist		0.00 / 63.84					Bentonite Seal
1		FILL - (SM) SILTY SAND, some gravel and low plastic fines; brown, with organic matter; non-cohesive, moist, compact		0.63 / 62.95	1	SS	16		Native Backfill
2		FILL - (ML) CLAYEY SILT, some sand and gravel; grey brown, with organic matter; cohesive, w>PL		1.52 / 61.88	2	SS	4		Bentonite Seal
					3	SS	9		Silica Sand
3		(CI/CH) SILTY CLAY; grey brown with brown mottling, with silty sand seams, fissured (WEATHERED CRUST); cohesive, w>PL, stiff to very stiff		2.59	4	SS	6		
4					5	SS	2		50 mm Diam. PVC #10 Slot Screen
5					6	SS	WH		
		(CI/CH) SILTY CLAY; grey; cohesive, w>PL, firm to stiff		58.98 / 5.49					Silica Sand
6					7	SS	WH		
7									
8					8	SS	WH		Bentonite Seal
9					9	SS	WH		
10									WL in Screen at Elev. 59.98 m on Sept. 9, 2014
	DCPT	Possible Silty Clay		54.11 / 10.36					
11									
12									
13				51.06					
		Possible Glacial Till		13.41					
14									
15									

DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m: 20, 40, 60, 80

SHEAR STRENGTH Cu, kPa: nat V. + Q - ●; rem V. ⊕ U - ○; 20, 40, 60, 80

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}

WATER CONTENT PERCENT: Wp ⊢—○ W —⊣ Wl; 20, 40, 60, 80

CONTINUED NEXT PAGE

DEPTH SCALE 1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5000

RECORD OF BOREHOLE: 14-3

LOCATION: See Site Plan

BORING DATE: March 24, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W WI) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
15	DCPT	Possible Glacial Till									
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26									106		
27											
				36.73					157		
		End of Borehole Dynamic Cone Penetration Test Refusal		27.74					176		
28											
29											
30											

DEPTH SCALE
1 : 75

Golder Associates

LOGGED: DWM
CHECKED: CK

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-201

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: August 5, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE – DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES – NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W WI; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		58.98							
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL/TOPSOIL - (ML) sandy SILT; brown; moist		0.00	1	SS	14 ⊕			Metals, PAHs	
		FILL - (SM) SILTY SAND, trace organics; brown; non-cohesive, dry, compact		0.15 / 58.37	2	SS	12 ⊕				
1		FILL - (ML) sandy CLAYEY SILT; brown, with ash; cohesive, w<PL, stiff		0.61 / 57.76	3	SS	4 ⊕				
		FILL - (ML) sandy CLAYEY SILT, some organics, trace gravel; dark grey; cohesive, moist, stiff to firm		1.22 / 57.15	4	SS	12 ⊕				
2		(CI-ML) SILTY CLAY to CLAYEY SILT; grey brown (WEATHERED CRUST); cohesive, w<PL, very stiff		1.83 / 56.54	5	SS	11 ⊕				
3		(CI/CH) SILTY CLAY to CLAY, trace to some sand; red brown to grey brown (WEATHERED CRUST); cohesive, w>PL, very stiff		2.44 / 55.17	6	SS	7				
4		(CI/CH) SILTY CLAY to CLAY; grey brown; cohesive, w>PL, stiff		3.81 / 54.41	7	SS	2				
5		(CI/CH) SILTY CLAY to CLAY; grey, with silt seams; cohesive, w>PL, stiff		4.57 / 51.36	8	SS	PH				
6					9	SS	PH				
7		End of Borehole		7.62							
8											
9											
10											
11											
12											
13											
14											
15											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

MIS-BHS 001 1411220005-7100.GPJ GAL-MIS.GDT 11/26/14 JM

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-202

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: August 5, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp ⊖W WI (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		60.81							
0	Power Auger, 200 mm Diam. (Hollow Stem)	ASPHALTIC CONCRETE		0.05							
		FILL - (GW) sandy GRAVEL, angular; grey (PAVEMENT STRUCTURE); non-cohesive, dry		0.30	1	SS	6 ⊕				
		FILL - (ML) sandy CLAYEY SILT; brown; cohesive, w<PL, stiff		59.90							
1		(ML) CLAYEY SILT, some sand; grey, with brown mottling (WEATHERED CRUST); w>PL, cohesive, stiff		0.91	2	SS	4 ⊕				
					3	SS	2				
2											
3		(CL-ML) SILTY CLAY to CLAYEY SILT, trace to some sand; grey, with black mottling; cohesive, w>PL, stiff		57.76 3.05	4	SS	PH				
4											
5					5	SS	PH				
6		(CL/CH) SILTY CLAY to CLAY; grey, with black streaks and white shells; cohesive, w>PL, stiff		54.71 6.10	6	SS	PH				
7				53.19							
		End of Borehole		7.62							
8											
9											
10											
11											
12											
13											
14											
15											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

MIS-BHS 001 1411220005-7100.GPJ GAL-MIS.GDT 11/26/14 JM

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-203

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: July 31, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80)	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp W Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		64.91									
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL/TOPSOIL - (ML) sandy SILT; brown; moist		0.00									
		FILL - (SM) SILTY SAND, trace organics; brown; non-cohesive, dry, very loose to loose		0.15 / 64.30	1	SS	4	⊕					
1		FILL - (SM) SILTY SAND, some clayey silt layers; grey brown; non-cohesive, moist, compact		0.61	2	SS	9	⊕					
				63.08	3	SS	12	⊕	ND				
2		(CI/CH) SILTY CLAY to CLAY, trace fine sand seams; brown (WEATHERED CRUST); cohesive, w<PL, very stiff		1.83	4	SS	9	⊕	ND				
3		(CI/CH) SILTY CLAY to CLAY, trace fine sand; grey brown; cohesive, w>PL, stiff		61.86 / 3.05	5	SS	2						
4		(ML) sandy CLAYEY SILT; grey; cohesive, w>PL, stiff		60.34 / 4.57	6	SS	PM						
5													
6		(CI/CH) SILTY CLAY to CLAY; grey with black mottling; cohesive, w>PL, stiff		58.81 / 6.10	7	SS	PH						
7				57.29									
		End of Borehole		7.62									
8													
9													
10													
11													
12													
13													
14													
15													

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

MIS-BHS 001 1411220005-7100.GPJ GAL-MIS.GDT 11/26/14 JM

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-204

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: August 31, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		60.07							
0	Power Auger, 200 mm Diam. (Hollow Stem)	ASPHALTIC CONCRETE		0.03							
		FILL - (SM) SILTY SAND, some clayey silt layers, trace gravel; grey brown; non-cohesive, moist, loose		59.46	1	SS	8	⊕			
1		FILL - (SP) SAND, fine, trace silt; grey brown; non-cohesive, moist to wet, loose		0.61	2	SS	8	⊕		MH	
				58.24	3	SS	7	⊕			
2		(ML) CLAYEY SILT, some sand; grey; cohesive, w>PL, stiff		1.83 / 57.63	4	SS	3	⊕			
		(CI/CH) SILTY CLAY to CLAY; grey, with sandy silt seams; cohesive, w>PL, stiff		2.44	5	SS	2				
3					6	SS	2				
4											
5					7	SS	2				
6					8	SS	PH				
7				52.45							
		End of Borehole		7.62							
8											
9											
10											
11											
12											
13											
14											
15											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

MIS-BHS 001 1411220005-7100.GPJ GAL-MIS.GDT 11/26/14 JM

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-205

SHEET 1 OF 2

LOCATION: See Site Plan

BORING DATE: August 1, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE – DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ○W Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		64.29							
0	Power Auger, 200 mm Diam. (Hollow Stem)	ASPHALTIC CONCRETE		0.05							Flush Mount Protective Casing
		FILL - (SM) SILTY SAND, some silty clay, trace to some gravel, trace organics; grey brown; non-cohesive, dry, loose		63.38	1	SS	6	⊕			Bentonite Seal
1		FILL - (ML) CLAYEY SILT, some fine sand; grey brown; cohesive, moist, stiff		0.91 / 62.77	2	SS	9	⊕			
		(CI/CH) SILTY CLAY to CLAY, trace fine sand; grey brown, fissured (WEATHERED CRUST); cohesive, w<PL, very stiff		1.52	3	SS	10	⊕	○		
2					4	SS	5		○		
3		(CL-ML) SILTY CLAY to CLAYEY SILT, trace fine sand; grey brown; cohesive, w>PL, stiff		61.24 / 3.05	5	SS	3		○		Native Backfill
4											
5					6	SS	PH		○		
											Bentonite Seal
6		(CI/CH) SILTY CLAY to CLAY, trace sand; grey with black streaks and mottling; cohesive, w>PL, stiff		58.19 / 6.10	7	TP	PH		○	C	Silica Sand / Standpipe 'B'
7											Silica Sand / Bentonite Seal
8					8	SS	PH		○		
9					9	TP	PH		○	C	
10											Native Backfill
11					10	SS	PH		○		
12		(CI/CH) SILTY CLAY to CLAY, trace silty sand and silt seams; grey; cohesive, w>PL, very stiff		52.10 / 12.19	11	SS	PH		○		
13								>96 / >96			
		(ML) CLAYEY SILT, some silty clay layers; grey; cohesive, w>PL, stiff		50.58 / 13.71	12	SS	WH		○		Bentonite Seal / Silica Sand
14		(ML) SILT, some sand, trace clay and gravel; grey; non-cohesive, wet, loose		49.84 / 14.45	13	SS	5		○		Standpipe 'A'
15		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

MIS-BHS 001 1411220005-7100.GPJ GAL-MIS.GDT 11/26/14 JM

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-205

SHEET 2 OF 2

LOCATION: See Site Plan

BORING DATE: August 1, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
15	Power Auger, 200 mm Diam. (Hollow Stem)			49.04							Standpipe 'A'
		(ML) SILT, some fine sand; grey; non-cohesive, wet, compact		15.25	14	SS	16				Silica Sand
16											
17					15	SS	11				Bentonite Seal
18				46.00							
		(SM) SILTY SAND, fine; grey, with silt seams; non-cohesive, wet, compact		18.29 / 45.40	16	SS	25			MH	Cave
19	DCPT	Possible Silty Sand		18.89							WL in Standpipe 'A' at Elev. 57.84 m on Sept. 9, 2014
20		Possible Glacial Till		44.18 / 20.11							WL in Standpipe 'B' at Elev. 61.20 m on Sept. 9, 2014
21											
22											
23											
24											
25											
26				37.47							
27		End of Borehole Dynamic Cone Penetration Test Refusal		26.82							
28											
29											
30											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

MIS-BHS 001 1411220005-7100.GPJ GAL-MIS.GDT 11/26/14 JM

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-206

SHEET 1 OF 2

LOCATION: See Site Plan

BORING DATE: August 6-7, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W WI; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		63.24							
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL/TOPSOIL - (SM) SILTY SAND; brown; moist		0.00							
		FILL - (SM) SILTY SAND, some gravel; brown, with cobbles; non-cohesive, dry to moist, compact to loose		0.15	1	SS	11	⊕			
1					2	SS	8				
		FILL - (CI/CL) SILTY CLAY, some sand; brown, friable; cohesive, w<PL, stiff		62.02 / 1.22	3	SS	2	⊕			
2		(ML) CLAYEY SILT, some sand; grey brown (WEATHERED CRUST); cohesive, w>PL, very stiff to stiff		61.41 / 1.83	4	SS	7	⊕		Metals, PAHs	
					5	SS	2				
3					6	SS	PH				
4								>96			
		(CI/CH) SILTY CLAY to CLAY; grey, with black streaks; cohesive, w>PL, stiff		58.67 / 4.57	7	SS	PH				
5											
6					8	TP	PH				
7											
8					9	SS	PH				
9					10	TP	PH				
10											
		(CI/CH) SILTY CLAY to CLAY, trace silt seams; grey, with black streaks and white shells; cohesive, w>PL, very stiff		52.57 / 10.67	11	SS	PH				
11								>96			
12								>96			
		(ML) SILT, trace fine sand; grey; non-cohesive, wet, very loose		51.05 / 12.19	12	SS	1				
13											
		(SM) SILTY SAND, fine; grey, with silt seams; non-cohesive, wet, very loose to compact		49.98 / 13.26	13	SS	1				
14					14	SS	3				
					15	SS	9				
15											

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-206

LOCATION: See Site Plan

BORING DATE: August 6-7, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
15	Power Auger, 200 mm Diam. (Hollow Stem)	(SM) SILTY SAND, fine; grey, with silt seams; non-cohesive, wet, very loose to compact									
					16	SS	8				
16											
17					17	SS	15				
18					18	SS	WR				
				44.34							
19	DCPT	Possible Silty Sand		18.90							
20				43.13							
		Possible Glacial Till		20.11							
21				41.60							
		End of Borehole Dynamic Cone Penetration Test Refusal		21.64							
22											
23											
24											
25											
26											
27											
28											
29											
30											

DEPTH SCALE
1 : 75

Golder Associates

LOGGED: DWM
CHECKED: CK

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-207

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: July 30, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		64.63							
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (SM) SILTY SAND, trace organics; brown; non-cohesive, dry, compact		0.00 / 64.02	1	SS	13	⊕			
		FILL - (SM) SILTY SAND, trace clayey silt layers; light brown; non-cohesive, dry, compact		0.61 / 63.41	2	SS	13	⊕			
1		(CL-ML) SILTY CLAY to sandy CLAYEY SILT; grey brown (WEATHERED CRUST); cohesive, w<PL, very stiff to stiff		1.22	3	SS	6	⊕ ND			
2					4	SS	2				
				61.58							
3		(ML) CLAYEY SILT, trace to some fine sand; grey brown; cohesive, w>PL, stiff to firm		3.05	5	SS	3				
4				60.06							
		(CI/CH) SILTY CLAY to CLAY, trace sand; grey; cohesive, w>PL, stiff		4.57	6	SS	PM				
5											
6					7	SS	PM				
7				57.01							
		End of Borehole		7.62							
8											
9											
10											
11											
12											
13											
14											
15											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-208

LOCATION: See Site Plan

BORING DATE: July 30-31, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		64.97							
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (SM) SILTY SAND; brown; non-cohesive, dry, loose		0.00 / 64.36	1	SS	5				Flush Mount Protective Casing
1		FILL - (SM) SILTY SAND; light brown, with clayey silt seams; non-cohesive, moist, loose		0.61 / 63.75	2	SS	6	ND			Native Backfill and Cuttings
		(SM) SILTY SAND; brown; non-cohesive, moist to wet, loose		1.22 / 63.14	3	SS	8	ND			Silica Sand
2		(CI/CL) SILTY CLAY; grey brown (WEATHERED CRUST); cohesive, w>PL, stiff		1.83 / 62.53							
		(CL-ML) SILTY CLAY to CLAYEY SILT; grey, with black mottling and streaks; cohesive, w>PL, stiff		2.44 / 60.40	4	SS	1				
3					5	SS	PM				50 mm Diam. PVC #10 Slot Screen 'C'
4											
		(CI/CH) SILTY CLAY to CLAY; grey, with black mottling; cohesive, w>PL, stiff		4.57	6	SS	PM				Native Backfill
5											
6					7	SS	PM				Bentonite Seal
7											Silica Sand
8					8	TP	PH			C	Standpipe 'B'
											Silica Sand
											Bentonite Seal
9					9	SS	PM				
10				54.61				>96			
		(CI/CH) SILTY CLAY to CLAY; grey; cohesive, w>PL, very stiff		10.36	10	TP	PH				
11											Native Backfill
								>96			
12				52.78				>96			
		(SM) SILTY SAND, fine; grey, with clayey silt seams; non-cohesive, wet, very loose to loose		12.19	11	SS	PM			MH	
13					12	SS	5				
				51.25							Bentonite Seal
14		(SM) SILTY SAND, fine; grey; non-cohesive, wet, compact		13.72	13	SS	23				Silica Sand
											Standpipe 'A'
15											

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DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-208

SHEET 2 OF 2

LOCATION: See Site Plan

BORING DATE: July 30-31, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
15	Power Auger, 200 mm Diam. (Hollow Stem)	(SM) SILTY SAND, fine; grey; non-cohesive, wet, compact			14	SS	22				Standpipe 'A'
16											Silica Sand
17					15	SS	21				Bentonite Seal
18					16	SS	17				Cave
				46.08							
19	DCPT	Possible Silty Sand		18.89							
20				44.24							
21		Possible Glacial Till		20.73							
22											
23											
24				40.59							
		End of Borehole Dynamic Cone Penetration Test Refusal		24.38							
25											
26											
27											
28											
29											
30											

WL in Standpipe 'A' at Elev. 58.18 m on Sept. 9, 2014

WL in Standpipe 'B' at Elev. 60.92 m on Sept. 9, 2014

WL in Screen 'C' at Elev. 62.59 m on Sept. 9, 2014

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-209

LOCATION: See Site Plan

BORING DATE: August 7-8, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE – DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W WI; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		64.72							Flush Mount Protective Casing Silica Sand and Cuttings
0	Power Auger, 200 mm Diam. (Hollow Stem)	ASPHALTIC CONCRETE		0.10							
		FILL - (GW) sandy GRAVEL, angular; grey (PAVEMENT STRUCTURE); non-cohesive, dry		64.11	1	SS	12				
		FILL - (SM) SILTY SAND, trace gravel; dark grey to black, with brick fragments and organics; non-cohesive, dry, compact		0.61 / 63.50	2	SS	13				Bentonite Seal
1		FILL - (SM) SILTY SAND, fine; brown; non-cohesive, moist, compact		1.22	3	SS	10				
		(CI/CH) SILTY CLAY to CLAY, trace fine sand seams; grey brown (WEATHERED CRUST); cohesive, w<PL, very stiff		62.44							
2		(ML) CLAYEY SILT, some sand; grey brown (WEATHRED CRUST); cohesive, w>PL, very stiff		2.28	4	SS	5				Native Backfill
3					5	SS	2				
4								>96 +			
								>96 +			Bentonite Seal
		(CI/CH) SILTY CLAY to CLAY, trace sand; grey, with white shells; cohesive, w>PL, stiff		60.15 / 4.57	6	SS	PH				
5											Silica Sand
6				58.62							Standpipe 'B'
		(CL-ML) SILTY CLAY to CLAYEY SILT; grey; cohesive, w>PL, stiff		6.10	7	TP	PH				
											Silica Sand
7				57.10							Bentonite Seal
		(CI/CH) SILTY CLAY to CLAY; grey, with black streaks; cohesive, w>PL, stiff to very stiff		7.62	8	SS	PH				
8											
9											
											Native Backfill
10					9	TP	PH				
11								>96 +			
				53.29				>96 +			
		(ML) SILT, trace to some sand; grey; non-cohesive, wet, very loose		11.43	10	SS	PH				
12				52.38							
		(SM) SILTY SAND; grey; non-cohesive, wet, loose to very loose		12.34	11	SS	6				Bentonite Seal
13					12	SS	PH				Silica Sand
				51.01							Standpipe 'A'
		(SM) SILTY SAND; grey, with silt seams; non-cohesive, wet, compact to loose		13.71	13	SS	16				
14					14	SS	21				Cave
15											

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-209

SHEET 2 OF 2

LOCATION: See Site Plan

BORING DATE: August 7-8, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W WI) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
15	Power Auger, 200 mm Diam. (Hollow Stem)	(SM) SILTY SAND; grey, with silt seams; non-cohesive, wet, compact to loose									
					15	SS	10				
16											
17					16	SS	5				Cave
18											
					17	SS	8				
				45.82							
19	DCPT	Possible Silty Sand		18.90							WL in Standpipe 'A' at Elev. 57.93 m on Sept. 9, 2014
20											WL in Standpipe 'B' at Elev. 62.57 m on Sept. 9, 2014
21											
22				42.17							
		Possible Glacial Till		22.55							
23											
24									105		
									109		
25									108		
26									112		
									130		
									145		
27									139		
									135		
									140		
28									137		
									128		
									120		
									125		
29									180		
									170		
				35.22							
		End of Borehole Dynamic Cone Penetration Test Refusal		29.50					190		
30											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-210

LOCATION: See Site Plan

BORING DATE: August 8-11, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80)	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl, 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE	65.76								
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL/TOPSOIL - (ML) sandy SILT; brown; moist	0.00	1	SS	9	⊕				Native Backfill and Bentonite
		FILL - (SM) SILTY SAND; light brown; non-cohesive, moist, loose	0.15 / 65.15								
1		FILL - (SM-SP) SILTY SAND to SAND, fine to medium, some silt; light brown to brown; non-cohesive, moist to wet, compact	0.61	2	SS	15	⊕				Bentonite Seal
				3	SS	11	⊕				Silica Sand
2		(ML) CLAYEY SILT, trace sand; grey; cohesive, w>PL, firm to stiff	63.93 / 1.83	4	SS	2	⊕				
3		(CI/CH) SILTY CLAY to CLAY, trace sand; grey, with black streaks; cohesive, w>PL, stiff	62.71 / 3.05	5	SS	1					50 mm Diam. PVC #10 Slot Screen 'B'
4											
				6	TP	PH					
5											Silica Sand
6		(CI/CH) SILTY CLAY to CLAY; grey; cohesive, w>PL, stiff to very stiff	59.66 / 6.10	7	SS	PH		>96			
7											Native Backfill
8				8	SS	PH		>96			
9		(SM) SILTY SAND, fine; grey; non-cohesive, wet, compact	56.62 / 9.14	9	TP	PH					Bentonite Seal
											Silica Sand
10				10	SS	25					
		(SM) SILTY SAND, fine; grey, with silt layers; non-cohesive, wet, compact	55.10 / 10.66								Standpipe 'A'
11				11	SS	27					
12				12	SS	23					
13											Cave
14		(SM) SILTY SAND, fine; grey; non-cohesive, wet, compact	52.05 / 13.71	13	SS	11					
15											

CONTINUED NEXT PAGE

DEPTH SCALE
1 : 75

Golder Associates

LOGGED: DWM
CHECKED: CK

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-210

SHEET 2 OF 2

LOCATION: See Site Plan

BORING DATE: August 8-11, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
15	Power Auger, 200 mm Diam. (Hollow Stem)	(SM) SILTY SAND, fine; grey; non-cohesive, wet, compact			14	SS	13				
16				49.00							
17		(SM) SILTY SAND, fine; grey, with silt seams; non-cohesive, wet, loose		16.76	15	SS	6				Cave
18				47.32							
		(ML) sandy SILT; grey; non-cohesive, wet, compact		18.44	16	SS	17				
				46.86							
19	DCPT	Possible sandy Silt		18.90							WL in Standpipe 'A' at Elev. 58.23 m on Sept. 9, 2014
				46.26							
		Possible Glacial Till		19.50							WL in Screen 'B' at Elev. 63.94 m on Sept. 9, 2014
20											
21											
22											
23											
24											
25				40.46							
		End of Borehole Dynamic Cone Penetration Test Refusal		25.30							
26											
27											
28											
29											
30											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-211

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: August 15-18, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80)	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		63.89									
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL/TOPSOIL - (ML) sandy SILT; brown; moist		0.00									
		FILL - (SM) SILTY SAND, some fines, trace gravel; grey brown, with cobbles and organics; non-cohesive, moist, dense		0.15 / 63.28	1	SS	38	⊕					Bentonite Seal
1		FILL - (SM) SILTY SAND, trace fines; brown to black, with ash, burnt wood fragments; non-cohesive, moist, compact to loose		0.61 / 62.06	2	SS	12	⊕				Metals, PAHs, pH	
		FILL - (CL-ML) SILTY CLAY to CLAYEY SILT, trace sand; grey brown, with ash, wood and brick fragments; cohesive, w>PL, stiff		1.83 / 61.45	3	SS	6						Native Backfill
2		FILL - (SM) SILTY SAND, trace gravel; grey brown, with ash and brick fragments; non-cohesive, moist, compact		2.44 / 60.84	4	SS	6	⊕					
		FILL - (ML) sandy CLAYEY SILT, trace gravel; grey to black, with cinders and ash; non-cohesive, moist to wet, loose		3.05 / 60.23	5	SS	24	⊕					Bentonite Seal
3		FILL - (CL-ML) SILTY CLAY to CLAYEY SILT, some sand; grey, with cinders and ash; cohesive, w>PL, stiff		3.66 / 59.62	6	SS	5	⊕					Silica Sand
		FILL - (ML) sandy CLAYEY SILT, trace gravel; grey brown, with cinders; non-cohesive, moist, compact		4.27 / 58.40	7	SS	13	⊕					
4		FILL - (SM) SILTY SAND, some fines; grey, with black streaks; non-cohesive, wet, loose		5.49 / 57.79	8	SS	16						
		(ML) CLAYEY SILT, trace fine sand and rootlets; grey brown (WEATHERED CRUST); cohesive, w>PL, stiff		6.10 / 57.19	9	SS	12					Metals, PAHs	50 mm Diam. PVC #10 Slot Screen
5		(CI/CH) SILTY CLAY to CLAY, trace sand; grey brown (WEATHERED CRUST); cohesive, w>PL, very stiff		6.70 / 55.97	10	SS	5						
					11	SS	9						
6					12	SS	9						Silica Sand
									>96				Cave
7		End of Borehole		7.92					>96				
8													WL in Screen at Elev. 58.06 m on Sept. 9, 2014
9													
10													
11													
12													
13													
14													
15													

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

MIS-BHS 001 1411220005-7100.GPJ GAL-MIS.GDT 11/26/14 JM

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-212

SHEET 1 OF 2

LOCATION: See Site Plan

BORING DATE: August 12, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE – DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		65.14							
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL/TOPSOIL - (ML) sandy SILT; brown; moist		0.00	1	SS	5	⊕			Bentonite Seal
		FILL - (SM) SILTY SAND, trace organics; brown; non-cohesive, moist, loose		0.15 / 64.53	2	SS	13	⊕			
1		FILL - (SP) SAND, fine to medium, some fines; brown; non-cohesive, moist, compact		0.61 / 63.92	3	SS	4	⊕			
		(ML) CLAYEY SILT, trace sand; grey (WEATHERED CRUST); cohesive, w>PL, very stiff		1.22 / 63.31	4	SS	4	⊕			Native Backfill
2		(ML) sandy CLAYEY SILT; grey brown; cohesive, w>PL, stiff to firm		1.83	5	SS	2				
3		(CL-ML) SILTY CLAY to CLAYEY SILT; grey; cohesive, w>PL, firm to stiff		62.09 / 3.05	6	SS	PH				Bentonite Seal
4											Silica Sand
5					7	TP	PH			C	Standpipe 'B'
											Silica Sand
											Bentonite Seal
6		(CL-ML) SILTY CLAY to CLAYEY SILT; grey, with black streaks and sand seams; cohesive, w>PL, stiff to very stiff		59.04 / 6.10	8	SS	PH				
7											
8					9	SS	PH				Native Backfill
9					10	TP	PH				
10								>96 / >96			
		(SM) SILTY SAND, trace fine gravel; grey, with silt seams; non-cohesive, wet, very loose to loose		54.48 / 10.66	11	SS	WR				Bentonite Seal
11					12	SS	9			MH	Silica Sand
12		(SM) SILTY SAND, fine; grey; non-cohesive, wet, compact		52.95 / 12.19	13	SS	19				50 mm Diam. PVC #10 Slot Screen 'A'
13					14	SS	31				Silica Sand
14					15	SS	24				Cave
		(SM-ML) SILTY SAND to sandy SILT; grey; non-cohesive, wet, compact		50.66 / 14.48	16	SS	19				
15											

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DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-212

SHEET 2 OF 2

LOCATION: See Site Plan

BORING DATE: August 12, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
15	Power Auger, 200 mm Diam. (Hollow Stem)			49.90							
		(SM) SILTY SAND, fine; grey, with thin silt seams; non-cohesive, wet, compact		15.24	17	SS	26				
16											
17					18	SS	17				Cave
18											
					19	SS	28				
				46.25							
19	DCPT	Possible Silty Sand		18.89							WL in Screen 'A' at Elev. 57.96 m on Sept. 9, 2014
20				45.03							WL in Screen 'B' at Elev. 62.41 m on Aug. 26, 2014
		Possible grey Glacial Till		20.11							
21											
22											
23											
24											
25											
26											
				38.32							
27		End of Borehole Dynamic Cone Penetration Test Refusal		26.82							
28											
29											
30											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

MIS-BHS 001 1411220005-7100.GPJ GAL-MIS.GDT 11/26/14 JM

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-213

LOCATION: See Site Plan

BORING DATE: August 14-15, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80)	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl, 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE	62.16								
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (SM) SILTY SAND, trace gravel and organics; dark grey; non-cohesive, moist, very loose	0.00 / 61.55	1	SS	3	⊕			pH	Bentonite Seal
1		FILL - (SM) SILTY SAND, trace gravel; dark grey, with ash, brick fragments and organics; non-cohesive, moist, loose to very loose	0.61 / 60.94	2	SS	4	⊕				
		FILL - (ML) CLAYEY SILT, some sand; brown, with ash and brick fragments; non-cohesive, moist, loose to compact	1.22 / 59.72	3	SS	7	⊕				
2				4	SS	11	⊕				Native Backfill
		REFUSE/WASTE - Light brown to brown, burnt odor, with ash, cinders, brick fragments and some silty sand	2.44 / 58.50	5	SS	14	⊕			pH	
3				6	SS	8	⊕				
		REFUSE/WASTE - Black, with cinders and some ash	3.66 / 57.89	7	SS	27	⊕				
4		FILL - MIXTURE OF SOIL and REFUSE/WASTE; SOIL is: (ML) sandy SILT, trace gravel; light brown to black; moist, compact; REFUSE/WASTE is: Ash and cinders	4.27 / 57.28	8	SS	13	⊕				Bentonite Seal
5		FILL - MIXTURE OF SOIL and REFUSE/WASTE; SOIL is: (ML) CLAYEY SILT, some silty sand, trace gravel; grey brown; cohesive, w>PL, moist; REFUSE/WASTE is: Ash, cinders and brick fragments	4.88 / 56.68	9	SS	5	⊕			Metals, PAHs	Silica Sand
			5.48 / 56.06	10	SS	10	⊕				Standipipe 'B'
6		FILL - (ML) CLAYEY SILT, some fine sand; grey brown; cohesive, w<PL, stiff	6.10	11	SS	13	⊕			Metals, PAHs	
7		(CL-ML) SILTY CLAY to CLAYEY SILT, trace to some fine sand; grey brown (WEATHERED CRUST); cohesive, w>PL, stiff	54.54	12	SS	4					
8		(ML) CLAYEY SILT, some sand; grey brown; cohesive, w>PL, stiff	7.62 / 53.02	13	SS	PH					
9		(CI/CH) SILTY CLAY to CLAY; grey; cohesive, w>PL, stiff to very stiff	9.14	14	TP	PH		>96			
10											Native Backfill
11			50.40	15	TP	PH					
12		(ML-SM) sandy SILT to SILTY SAND; grey; non-cohesive, wet, very loose to loose	11.76	16	SS	PH					
13				17	SS	5					
14			47.68	18	SS	7					Bentonite Seal
		(SM) SILTY SAND; grey; non-cohesive, wet, compact to loose	14.48	19	SS	14					Silica Sand
15											

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DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-213

SHEET 2 OF 2

LOCATION: See Site Plan

BORING DATE: August 14-15, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
15	Power Auger, 200 mm Diam. (Hollow Stem)	(SM) SILTY SAND; grey; non-cohesive, wet, compact to loose			20	SS	10				Standpipe 'A'
16											
17					21	SS	18				Cave
18											
				43.27	22	SS	9				
19	DCPT	Possible Silty Sand		18.89							WL in Standpipe 'A' at Elev. 56.72 m on Sept. 9, 2014
20											WL in Standpipe 'B' at Elev. 56.60 m on Sept. 9, 2014
21											
22											
23				39.00							
		Possible Glacial Till		23.16							
24				37.93							
		End of Borehole Dynamic Cone Penetration Test Refusal		24.23							
25											
26											
27											
28											
29											
30											

DEPTH SCALE
1 : 75

Golder Associates

LOGGED: DWM
CHECKED: CK

MIS-BHS 001 1411220005-7100.GPJ GAL-MIS.GDT 11/26/14 JM

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-214

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: August 19, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W WI) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		63.24							
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - TOPSOIL		0.00							
		FILL - (CL-ML) SILTY CLAY to CLAYEY SILT, trace sand and gravel; grey brown; cohesive, w>PL, stiff		0.15	1	SS	11				
1				62.02	2	SS	14				
		FILL - (CL-ML) SILTY CLAY to CLAYEY SILT, trace and gravel; grey brown, with ash; cohesive, w>PL, stiff		1.22	3	SS	5				
2				61.41							
		FILL - (ML) CLAYEY SILT, trace sand and gravel; grey brown; cohesive, w>PL, stiff		1.83	4	SS	8				
				60.80							
		FILL - (SM) SILTY SAND, some gravel, trace fines; grey brown to black, with cinders and ash; non-cohesive, moist, loose to compact		2.44	5	SS	6				
3					6	SS	17				
				59.58							
		FILL - (ML) sandy CLAYEY SILT, trace gravel; grey brown to black, with decomposed wood pieces; cohesive, w>PL, stiff		3.66	7	SS	10				
4				58.97							
		FILL - (ML) CLAYEY SILT, trace sand; red grey to dark grey, with wood pieces; cohesive, w>PL, stiff		4.27	8	SS	6				
				58.36							
5		(ML) CLAYEY SILT, trace sand; grey; cohesive, w<PL, very stiff		4.88	9	SS	12				
				57.75							
		End of Borehole		5.49							
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-215

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: August 19, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE – DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES – NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (20 40 60 80) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT Wp ⊖W Wl (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		64.36									
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - TOPSOIL		0.00									
		FILL - (SM) SILTY SAND, fine to medium, trace fines; light brown; non-cohesive, moist, loose		0.15 / 63.75	1	SS	7						
1		(CL-ML) SILTY CLAY to CLAYEY SILT; grey brown, with sand seams (WEATHERED CRUST); cohesive, w>PL, stiff		0.61	2	SS	5						
2					3	SS	2						
3				61.31									
		(CL-ML) SILTY CLAY to CLAYEY SILT; grey, with black streaks and sand seams; cohesive, w>PL, stiff		3.05	4	SS	PH						
4													
5					5	SS	PH						
6					6	SS	PH						
7				56.74									
		End of Borehole		7.62									
8													
9													
10													
11													
12													
13													
14													
15													

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-216

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: August 18, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W WI) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		63.68							
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (SM) SILTY SAND, some fines, trace gravel and organics; dark brown; non-cohesive, moist, loose		0.00 / 63.07	1	SS	5				
1		FILL - (ML) sandy CLAYEY SILT, trace gravel and organics; grey to dark brown, with cinders; cohesive, w>PL, stiff		0.61 / 62.46	2	SS	6				
		FILL - (ML) CLAYEY SILT, some sand; grey brown, with brick fragments and ash; cohesive, w>PL, stiff		1.22 / 61.85	3	SS	2				
2		FILL - (ML) CLAYEY SILT, trace sand; grey, with brick fragments, ash, cinders and wood pieces; cohesive, w>PL, stiff		1.83	4	SS	2				
					5	SS	2				
3					6	SS	6				
4					7	SS	9				
					8	SS	2				
5					9	SS	9				
				58.19							
		FILL - (ML) CLAYEY SILT, some sand; grey brown, with wood pieces and ash; cohesive, w>PL, stiff		5.49	10	SS	7				
6					11	SS	5				
				56.98							
7		(CI/CH) SILTY CLAY to CLAY, trace sand; grey brown (WEATHERED CRUST); cohesive, w<PL, very stiff		6.70 / 56.37	12	SS	18				
		End of Borehole		7.31							
8											
9											
10											
11											
12											
13											
14											
15											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

PROJECT: 14-1122-0005-5100

RECORD OF BOREHOLE: 14-217

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: August 18, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	ADDITIONAL LAB. TESTING
		GROUND SURFACE		63.49				
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (SM) SILTY SAND, some fines; brown to black, with asphalt fragments and burnt odour; non-cohesive, moist, compact		0.00	1	SS	12	
1					2	SS	14	
		FILL - (SM) SILTY SAND, trace fines; grey brown, with burnt odour; non-cohesive, moist, loose		62.27 / 1.22	3	SS	7	
2					4	SS	7	
		FILL - (ML) CLAYEY SILT, some sand, trace gravel; grey brown to black, with asphalt fragments, ash, cinders and wood pieces; cohesive, w>PL, stiff		61.05 / 2.44	5	SS	6	
3					6	SS	4	
		FILL - (ML) CLAYEY SILT, some sand, trace to some organics; grey to black, with wood pieces and ash; cohesive, w>PL, stiff		59.83 / 3.66	7	SS	12	
4		FILL - (ML) sandy CLAYEY SILT; grey brown to black, with wood pieces, cinders and ash; cohesive, w>PL, stiff		59.22 / 4.27	8	SS	5	pH
5		REFUSE/WASTE - Brown, with wood and brick fragments		58.60 / 4.89	9	SS	10	
		FILL - (ML) CLAYEY SILT, trace sand; grey, with brick fragments; cohesive, w>PL, stiff		58.00 / 5.49	10	SS	7	
6		(CI/CL) SILTY CLAY to CLAY, trace sand; grey; cohesive, w<PL, very stiff		57.39 / 6.10	11	SS	8	
		End of Borehole		56.79 / 6.70				
7								
8								
9								
10								
11								
12								
13								
14								
15								

DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m: 20 40 60 80

SHEAR STRENGTH Cu, kPa: nat V. + Q - ●; rem V. ⊕ U - ○; 20 40 60 80

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6} 10^{-5} 10^{-4} 10^{-3}

WATER CONTENT PERCENT: Wp ⊖W WI; 20 40 60 80

PIEZOMETER OR STANDPIPE INSTALLATION

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: DWM

CHECKED: CK

MIS-BHS 001 1411220005-7100.GPJ GAL-MIS.GDT 11/26/14 JM

PROJECT: 1524337

RECORD OF BOREHOLE: 15-1

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: March 5, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊢—○W—⊣ Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		65.24							
0	Power Auger, 200 mm Diam. (Hollow Stem)	TOPSOIL/FILL - (SM) SILTY SAND; brown; moist		0.00							
		FILL - (SP) SAND, fine to medium, trace fines; brown; non-cohesive, moist, compact		0.15							
1					1	SS	17				
		(CL) sandy SILTY CLAY; grey brown; cohesive, w>PL, firm		63.72 / 1.52							
2					2	SS	WH				
3		(CL/CI) SILTY CLAY; grey, with black mottling; cohesive, w>PL, firm to stiff		62.19 / 3.05							
					3	SS	WH				
4											
5					4	SS	WH				
					5	TP	PH				
6					6	SS	WH				
7											
					7	TP	PH				
8				57.11							
		End of Borehole		8.13							
9											
10											
11											
12											
13											
14											
15											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: HEC

CHECKED: SAT

PROJECT: 1524337

RECORD OF BOREHOLE: 15-2

SHEET 1 OF 2

LOCATION: See Site Plan

BORING DATE: March 10, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (20 40 60 80) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp ⊢—○W—⊣ Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		65.08									
0	Power Auger, 200 mm Diam. (Hollow Stem)	TOPSOIL/FILL - (ML) sandy SILT; brown; moist		0.00									
		FILL - (SM) sandy SILT; grey; non-cohesive, moist		0.15 / 64.32									
1		FILL - (SP) SAND, medium, trace fines; brown; non-cohesive, moist, compact		0.76 / 63.78	1	SS	16						
		(CI/CH) SILTY CLAY to CLAY; grey brown, with sand seams (WEATHERED CRUST); cohesive, w>PL, very stiff		1.30 / 63.18	2	SS	4						
2		(CL/ML) SILTY CLAY to CLAYEY SILT, trace sand; grey brown; cohesive, w>PL, stiff		1.90									
3					3	SS	2				○		
4		(CL/CI) SILTY CLAY; grey, with sand seams; cohesive, w>PL, stiff to very stiff		61.12 / 3.96									
5					4	SS	WH	⊕	+				
6					5	SS	WH				⊢—○—⊣		
7								⊕	+				
8					6	SS	WH						
9					7	TP	PH						
10	Wash Boring, NW Casing								>96 +				
					8	SS	2				○		
11				53.50									
		(SM) SILTY SAND; grey; non-cohesive, wet, compact to dense		11.58									
12					9	SS	24				○	MH	
13													
14					10	SS	33						
15													

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: HEC

CHECKED: SAT

PROJECT: 1524337

RECORD OF BOREHOLE: 15-2

LOCATION: See Site Plan

BORING DATE: March 10, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W WI) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
15	Wash Boring / NW Casing	(SM) SILTY SAND; grey; non-cohesive, wet, compact to dense			11	SS	24				
16											
					12	SS	32				
17											
18					13	SS	42				
19				45.57							
		(ML) sandy SILT; grey; non-cohesive, wet, compact		19.51 / 45.12	14	SS	11				
20		(SM) SILTY SAND; grey; non-cohesive, wet, dense to very dense		19.96							
21					15	SS	61				
22											
23					16	SS	57				
24					17	SS	45				
25											
26		(ML) sandy SILT, some gravel to gravelly; dark grey, with cobbles/boulders (GLACIAL TILL); non-cohesive, wet, compact		39.10 / 25.98	18	SS	5				
27					19	SS	24				
				37.34							
28		End of Borehole		27.74							
29											
30											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: HEC

CHECKED: SAT

PROJECT: 1524337

RECORD OF BOREHOLE: 15-3

LOCATION: See Site Plan

BORING DATE: February 26 - March 4, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80); SHEAR STRENGTH Cu, kPa nat V. + Q - ● rem V. ⊕ U - ○ (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}); WATER CONTENT PERCENT Wp ⊢—○W—⊣ Wl (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		65.19							
0	Power Auger 200 mm Diam. (Hollow Stem)	TOPSOIL/FILL - (ML) CLAYEY SILT; brown, moist		0.08							
		FILL - (CI/CH) SILTY CLAY; grey brown, with brick; cohesive, moist		64.58 0.61							
1		FILL - (SM) SILTY SAND, trace medium sand; brown; non-cohesive, moist		63.67 1.52							
2		(CL/ML) SILTY CLAY to CLAYEY SILT, trace sand; grey brown; cohesive, w>PL, firm			1	SS	1			CHEM	
3		(CI/CH) SILTY CLAY to CLAY; grey; cohesive, w>PL, stiff to very stiff		62.14 3.05	2	SS	1				
4											
5					3	SS	2		○		
6					4	SS	1				
7											76 mm Diam. PVC Casing
8					5	SS	2		⊢—○⊣		Bentonite-Cement Grout
9					6	SS	1	>96 + >96 +			
10											
11		(SM/SP) SILTY SAND to SAND, some silt; grey; non-cohesive, wet, loose to very dense		54.52 10.67	7	SS	WR				
12	Wash Boring HW Casing				8	SS	14				
13											
14					9	SS	31		○	MH	
15											

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: HEC

CHECKED: SAT

MIS-BHS 001 1524337.GPJ GAL-MIS.GDT 07/23/15 JM

PROJECT: 1524337

RECORD OF BOREHOLE: 15-3

LOCATION: See Site Plan

BORING DATE: February 26 - March 4, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ○W WI) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
15	Wash Boring, HW Casing	(SM/SP) SILTY SAND to SAND, some silt; grey; non-cohesive, wet, loose to very dense									
					10	SS	34				
16											
17					11	SS	64				
18											
					12	SS	62				
19											
20					13	SS	48		○		
21											
					14	SS	>100				
22											76 mm Diam. PVC Casing; Bentonite-Cement Grout
23					15	SS	78				
24				40.91							
		(ML) sandy SILT; grey; non-cohesive, wet, dense		24.28	16	SS	49				
				40.40							
25		(ML) sandy SILT, some gravel to gravelly; dark grey, with cobbles/boulders (GLACIAL TILL); non-cohesive, wet, dense to very dense		24.79							
26					17	SS	38		○		
27	Rotary Drill, HQ Core				18	RC	DD				
					19	SS	70				
28					20	RC	DD				
29					21	RC	DD				
30		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: HEC

CHECKED: SAT

PROJECT: 1524337

RECORD OF BOREHOLE: 15-3

LOCATION: See Site Plan

BORING DATE: February 26 - March 4, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W WI) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
30	Rotary Drill / HQ Core	(ML) sandy SILT, some gravel to gravelly; dark grey, with cobbles/boulders (GLACIAL TILL); non-cohesive, wet, dense to very dense			21	RC	DD				
					22	RC	DD				
31				34.08	C1	RC	DD				
		Borehole continued on RECORD OF DRILLHOLE 15-3		31.11							
32											
33											
34											
35											
36											
37											
38											
39											
40											
41											
42											
43											
44											
45											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: HEC

CHECKED: SAT

PROJECT: 1524337

RECORD OF DRILLHOLE: 15-3

LOCATION: See Site Plan

DRILLING DATE: February 26 - March 4, 2015

DATUM: Geodetic

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 850

DRILLING CONTRACTOR: Marathon Drilling

JN - Joint, FLT - Fault, SHR- Shear, VN - Vein, CJ - Conjugate, BD- Bedding, FO- Foliation, CO- Contact, OR- Orthogonal, CL - Cleavage, PL - Planar, CU- Curved, UN- Undulating, ST - Stepped, IR - Irregular, PO- Polished, K - Slickensided, SM- Smooth, Ro - Rough, MB- Mechanical Break, BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	RUN No.	COLOUR / % RETURN / FLUSH	RECOVERY: TOTAL CORE %	RECOVERY: SOLID CORE %	R.Q.D. %	FRACT. INDEX PER 0.25 m	DISCONTINUITY DATA: B Angle	DISCONTINUITY DATA: DIP w.r.t. CORE AXIS	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	Jcon	Jr	Ja	HYDRAULIC CONDUCTIVITY K, cm/sec	Diametral Point Load Index (MPa)	RMC -Q' AVG.	
		BEDROCK SURFACE		34.08																
32	Rotary Drill / HQ Core	Fresh, laminated to thinly bedded, black, fine grained, porous, non-calcareous SHALE, occasional thin (~1 mm) near-vertical calcite vein. Rare calcite vein parallel to bedding. Sulphides present in rock in the form of crystals.		31.11	1	100														
33					2	100														
34					3	100														76 mm Diam. PVC Casing Bentonite-Cement Grout
35					4	100														
36				28.61																
		End of Drillhole		36.58																
37																				
38																				
39																				
40																				
41																				
42																				
43																				
44																				
45																				
46																				

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: HEC

CHECKED: SAT

PROJECT: 1524337

RECORD OF BOREHOLE: 15-4

SHEET 1 OF 3

LOCATION: See Site Plan

BORING DATE: March 9, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE – DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊢—○W—⊣ Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		65.12							
0	Power Auger, 200 mm Diam. (Hollow Stem)	TOPSOIL - (ML) sandy SILT; brown; moist		0.00							
		FILL - (SM) sandy SILT; brown; non-cohesive, moist		0.15 / 64.51							
		FILL - (SP) SAND, fine; brown; non-cohesive, moist		0.61 / 63.90							
		(CI/CH) SILTY CLAY to CLAY, trace sand; grey brown (WEATHERED CRUST); w>PL, very stiff		1.22							
1					1	SS	10		○		
2											
3				62.07							Native Backfill and Bentonite
		(CL/ML) SILTY CLAY to CLAYEY SILT, trace sand; grey brown; cohesive, w>PL, very stiff		3.05 / 61.46	2	SS	2				
		(CL/CI) SILTY CLAY, trace sand; grey, with black mottling; cohesive, w>PL, stiff to very stiff		3.66							
4											
5					3	SS	WH	⊕	+		
6					4	SS	WH				Bentonite Seal
7					5	TP	PH		⊢—○—⊣		Standpipe
8					6	SS	WH				Silica Sand
									>96 +		
									>96 +		
9	Wash Boring, NW Casing				7	SS	2		○		Bentonite Seal
10		(SM) SILTY SAND; grey, with sand seams; non-cohesive, wet, compact		55.04 / 10.08					>96 +		
					8	SS	18				
11											Silica Sand
		(SM/SP) SILTY SAND to SAND, some silt; grey; non-cohesive, wet, compact to dense		53.54 / 11.58							
12					9	SS	21		○	MH	38 mm Diam. PVC #10 Slot Screen
13											Silica Sand
					10	SS	24				
14											Cave
15											

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: HEC

CHECKED: SAT

PROJECT: 1524337

RECORD OF BOREHOLE: 15-4

LOCATION: See Site Plan

BORING DATE: March 9, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W WI) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
15	Wash Boring / NW Casing	(SM/SP) SILTY SAND to SAND, some silt; grey; non-cohesive, wet, compact to dense			11	SS	27				
16											
					12	SS	29				
17											
18					13	SS	41				
19											
					14	SS	36				
20											
21				44.09 / 21.03							
		(ML) sandy SILT; grey; non-cohesive, wet, very loose to loose			15	SS	3		○		
22											Cave
					16	SS	8				
23				41.96 / 23.16							
		(SM) SILTY SAND; grey; wet, loose to compact									
24					17	SS	22				
				40.58 / 24.54							
		(ML) sandy SILT, some gravel to gravelly; dark grey, with cobbles/boulders (GLACIAL TILL); non-cohesive, wet, dense to very dense									
25											
26					18	SS	46				
27											
					19	SS	38				
28											
29					20	SS	44				
30		*CONTINUED NEXT PAGE*									

DEPTH SCALE
1 : 75

Golder Associates

LOGGED: HEC
CHECKED: SAT

PROJECT: 1524337

RECORD OF BOREHOLE: 15-4

LOCATION: See Site Plan

BORING DATE: March 9, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊢—○W—⊣ Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
30	NW Casing			34.39	21	SS	89		○		Cave
		End of Borehole Auger Refusal		30.73							
31											WL in Screen at Elev. 57.26 m on Mar. 20, 2015
32											WL in Standpipe at Elev. 59.63 m on Mar. 20, 2015
33											
34											
35											
36											
37											
38											
39											
40											
41											
42											
43											
44											
45											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: HEC

CHECKED: SAT

PROJECT: 1524337

RECORD OF BOREHOLE: 15-5

SHEET 1 OF 2

LOCATION: See Site Plan

BORING DATE: March 6, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	ADDITIONAL LAB. TESTING
		GROUND SURFACE		65.22				
0	Power Auger, 200 mm Diam. (Hollow Stem)	TOPSOIL/FILL - (ML) sandy SILT; brown, moist		0.00				
		FILL - (ML) sandy SILT; brown; non-cohesive, moist		0.15				
1				63.70				
		(CL/ML) sandy SILTY CLAY to CLAYEY SILT; grey brown; cohesive, w>PL, very stiff		1.52	1	SS	4	
2								
3				62.02				
		(CL/CI) SILTY CLAY; grey, with black mottling; cohesive, w>PL, stiff to very stiff		3.20	2	SS	WH	
4								
5					3	SS	WH	
6					4	TP	PH	C
7								
8					5	SS	2	
9				55.97				
		(SM) SILTY SAND to SAND, some silt; grey; non-cohesive, wet, very loose to dense		9.25	6	TP	PH	
10								
11					7	SS	1	MH
12	Wash Boring, NW Casing				8	SS	21	
13								
14					9	SS	21	
15		CONTINUED NEXT PAGE						

DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20, 40, 60, 80)

SHEAR STRENGTH Cu, kPa (20, 40, 60, 80): nat V. + Q - ●; rem V. ⊕ U - ○

HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6}, 10^{-5}, 10^{-4}, 10^{-3})

WATER CONTENT PERCENT (20, 40, 60, 80): Wp ⊢—○ W —⊣ Wl

PIEZOMETER OR STANDPIPE INSTALLATION

>96 +

>96 +

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: HEC

CHECKED: SAT

PROJECT: 1524337

RECORD OF BOREHOLE: 15-5

LOCATION: See Site Plan

BORING DATE: March 6, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
15	Wash Boring, NW Casing	(SM) SILTY SAND to SAND, some silt; grey; non-cohesive, wet, very loose to dense			10	SS	30				
16											
17					11	SS	41				
18											
					12	SS	37				
19											
20					13	SS	29				
21				44.04							
		(ML) sandy SILT; grey; non-cohesive, wet, loose		21.18	14	SS	6				
22				42.51							
		(SM) SILTY SAND; grey; non-cohesive, wet, compact		22.71							
23					15	SS	20				
24				40.76							
		(ML) sandy SILT, some gravel to gravelly; dark grey, with cobbles/boulders (GLACIAL TILL); non-cohesive, wet, dense		24.46	16	SS	48				
25											
26					17	SS	32				
				38.85							
		End of Borehole		26.37							
27											
28											
29											
30											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: HEC

CHECKED: SAT

PROJECT: 1525113

RECORD OF MONITORING WELL: 15-100

LOCATION: N 5030156.3 ;E 369402.5

BORING DATE: March 16, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80)	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) WATER CONTENT PERCENT (Wp W Wl 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		65.08								
0	Power Auger 200 mm Diam. (Hollow Stem)	FILL - (SM) SILTY SAND; dark brown; non-cohesive, moist		0.00 / 64.78								
		FILL - (SW) SAND, coarse, trace fines; light brown; non-cohesive; moist, compact		0.30 / 63.71								Bentonite Seal
1					1	SS	15	ND				
		(CI/CH) SILTY CLAY; grey brown to brown, mottling; cohesive, w>PL		1.37 / 61.42								
2					2	SS	6	ND				
					3	SS	2	ND				
3					4	SS	2	ND				
		(CI/CH) SILTY CLAY; grey; cohesive, w>PL		3.66 / 55.94								
4					5	SS	WH	ND				Native Backfill
5					6	SS	WH	ND				
					7	SS	WH	ND				
6					8	SS	WH	ND				
7					9	SS	3	ND				
					10	SS	2	ND				Bentonite Seal
8					11	SS	2	ND				Silica Sand
9		(CI/CH) SILTY CLAY to CLAY; grey; cohesive, w>PL		9.14	12	SS	2					51 mm Diam. PVC #10 Slot Screen
10												

CONTINUED NEXT PAGE

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: BM
CHECKED: TDR

PROJECT: 1525113

RECORD OF MONITORING WELL: 15-100

LOCATION: N 5030156.3 ;E 369402.5

BORING DATE: March 16, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
10	Power Auger 200 mm Diam. (Hollow Stem)	(CI/CH) SILTY CLAY to CLAY; grey; cohesive, w>PL									
		- possible sand seams between 10.67 to 12.8 m depth									
11					13	SS	4				51 mm Diam. PVC #10 Slot Screen
12					14	SS					W.L. in Screen at 7.755 m depth on March 24, 2015
				52.28							
		End of Borehole		12.80							
13											
14											
15											
16											
17											
18											
19											
20											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: BM

CHECKED: TDR

PROJECT: 1525113

RECORD OF MONITORING WELL: 15-101

SHEET 1 OF 1

LOCATION: N 5030124.9 ;E 369521.9

BORING DATE: March 17, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80)	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp W Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		63.13									
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (SM) SILTY SAND; dark brown; non-cohesive		0.00									Bentonite Seal
				62.37									
1		FILL - (SM) SILTY SAND, trace gravel; dark brown; non-cohesive, moist, loose		0.76	1	SS	4						
				61.61									
2		FILL - (SM) SILTY SAND, trace gravel; dark brown to grey; non-cohesive, moist, very loose		1.52	2	SS	3	⊕					
				60.84									
3		FILL - (SM) SILTY SAND; grey brown; non-cohesive, moist, very loose		2.29	3	SS	3	⊕					Native Backfill
				60.08									
		FILL - (CI/CL) SILTY CLAY; grey to grey brown, contains ash, mortar, wood, and brick; cohesive, w>PL		3.05	4	SS	3	⊕					
				59.47									
4		FILL - (SM) SILTY SAND, some gravel; dark grey, contains wood, brick, mortar, and ash; non-cohesive, loose to compact		3.66	5	SS	8	⊕					
5					6	SS	21						Bentonite Seal
					7	SS	6	⊕					Silica Sand
6					8	SS	15	⊕					
				56.73									
		(CI/CH) SILTY CLAY; grey brown; cohesive, w>PL		6.40									
7					9	SS	10	⊕					▽
8					10	SS	1	⊕	ND				51 mm Diam. PVC #10 Slot Screen
				54.75									
		(CI/CH) SILTY CLAY; grey; cohesive, w>PL		8.38	11	SS	4	⊕	ND				
9					12	SS	WH						W.L. in Screen at 7.160 m depth on March 24, 2015
				53.38									
		End of Borehole		9.75									
10													

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: BM

CHECKED: TDR

MIS-BHS 001 1525113-1000.GPJ GAL-MIS.GDT 07/06/16 JEM

PROJECT: 1525113

RECORD OF MONITORING WELL: 15-102

SHEET 1 OF 1

LOCATION: N 5030264.9 ;E 369470.9

BORING DATE: March 16, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80)	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		63.56									
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL		0.00									Bentonite Seal
				62.80									
1		FILL - (ML) sandy CLAYEY SILT; grey, contains mortar fragments; non-cohesive, moist, very loose		0.76	1	SS	3	ND					
				61.73	2	SS	4						
2		FILL - (SM) SILTY SAND, trace gravel; dark brown; non-cohesive, moist, loose		1.83									
				61.27									
		FILL - (SM) SILTY SAND, some gravel; grey to dark grey, contains brick; non-cohesive, moist, compact		2.29	3	SS	16						Native Backfill
3				60.51									
		FILL - (CL-ML) SILTY CLAY to CLAYEY SILT; grey, contains mortar, brick, and ash; cohesive, w>PL		3.05	4	SS	2	ND					
4					5	SS	3						
				58.99									
		FILL - (SW) SAND, trace gravel and fines; grey, contains ash; non-cohesive, moist, dense		4.57	6	SS	49						Bentonite Seal
5				58.23									
		FILL - (SP) SAND, medium to fine; brown; non-cohesive, moist, compact		5.33	7	SS	13	ND					Silica Sand
6				57.46									
		(CI/CH) SILTY CLAY to CLAY, trace sand; grey; cohesive, w>PL		6.10	8	SS	11	ND					
7					9	SS	24						51 mm Diam. PVC #10 Slot Screen
8					10	SS	25						
					11	SS	2	ND					
9					12	SS	WH	ND					W.L. in Screen at 6.206 m depth on March 24, 2015
				53.81									
		End of Borehole		9.75									
10													

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: BM

CHECKED: TDR

MIS-BHS 001 1525113-1000.GPJ GAL-MIS.GDT 07/06/16 JEM

PROJECT: 1525113

RECORD OF MONITORING WELL: 15-103

SHEET 1 OF 1

LOCATION: N 5030324.8 ;E 369420.7

BORING DATE: March 18, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		63.36							
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (GW) sandy GRAVEL; non-cohesive, moist		0.00							Bentonite Seal
				62.60							
1		FILL - (SM) SILTY SAND; brown, contains ash, wood, brick, and mortar; non-cohesive, moist, compact		0.76	1	SS	19	ND			
				61.99							
		(CI/CH) SILTY CLAY; grey brown; cohesive, w>PL		1.37							
2					2	SS	17	ND			Native Backfill
					3	SS	7	ND			
3					4	SS	5	ND			Bentonite Seal
4					5	SS	5	ND			Silica Sand
5					6	SS	2				
				58.03							
		(CI/CH) SILTY CLAY; grey; cohesive, w>PL		5.33	7	SS	1				
				57.42							
6		Probable (CI/CH) SILTY CLAY; grey; cohesive		5.94							51 mm Diam. PVC #10 Slot Screen
7				55.74							
		End of Borehole		7.62							
8											W.L. in Screen at 4.830 m depth on March 24, 2015
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: BM

CHECKED: TDR

MIS-BHS 001 1525113-1000.GPJ GAL-MIS.GDT 07/06/16 JEM

PROJECT: 1525113

RECORD OF MONITORING WELL: 15-104

SHEET 1 OF 1

LOCATION: N 5030376.5 ;E 369442.5

BORING DATE: March 17, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80)	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp W Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		59.84									
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (SM) SILTY SAND; dark brown; non-cohesive, moist		0.00									Bentonite Seal
				59.08									
1		FILL - (SW) SAND, some low plastic fines; contains rust and black discolouration; non-cohesive, moist, compact		0.76	1	SS	14	ND					
				58.32									
		(CI/CH) SILTY CLAY; grey brown, contains silty sand seams; cohesive, w>PL		1.52	2	SS	6	ND					
2													Silica Sand
				57.55									
		(CI/CH) SILTY CLAY; grey; cohesive, w>PL		2.29	3	SS	4	ND					
3					4	SS	4	ND					
4					5	SS	3	ND					
													51 mm Diam. PVC #10 Slot Screen
5					6	SS	WH						
					7	SS	WH						
6					8	SS	WH						W.L. in Screen at 2.575 m depth on March 24, 2015
				53.13									
		End of Borehole		6.71									
7													
8													
9													
10													

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: BM

CHECKED: TDR

MIS-BHS 001 1525113-1000.GPJ GAL-MIS.GDT 07/06/16 JEM

PROJECT: 1525113

RECORD OF MONITORING WELL: 15-105

SHEET 1 OF 1

LOCATION: N 5030351.0 ;E 369407.9

BORING DATE: March 18, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80)	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		63.31									
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (GW) sandy GRAVEL; brown; non-cohesive, moist		0.00									Bentonite Seal
				62.55									
1		FILL - (SM) SILTY SAND, trace gravel; dark brown to black, contains ash, brick, and mortar; non-cohesive, moist, loose to dense		0.76	1	SS	8						Native Backfill
					2	SS	7						
2													Bentonite Seal
					3	SS	38						Silica Sand
3				60.26									
		(CI/CH) SILTY CLAY; grey brown; cohesive, w>PL		3.05	4	SS	6	ND					
4					5	SS	4	ND					51 mm Diam. PVC #10 Slot Screen
				58.74									
		(CI/CH) SILTY CLAY; grey; cohesive, w>PL		4.57	6	SS	WH	ND					
5					7	SS	WH	ND					
				57.37									
6		End of Borehole		5.94									W.L. in Screen at 2.880 m depth on March 24, 2015
7													
8													
9													
10													

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: BM

CHECKED: TDR

MIS-BHS 001 1525113-1000.GPJ GAL-MIS.GDT 07/06/16 JEM

PROJECT: 1525113

RECORD OF MONITORING WELL: 15-106

SHEET 1 OF 1

LOCATION: N 5030512.7 ;E 369485.1

BORING DATE: March 17, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ (ND = Not Detected)	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT PERCENT (Wp, W, Wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		58.91							
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL (SM) SILTY SAND, trace gravel; dark brown; non-cohesive, moist		0.00							Bentonite Seal
				58.15							
1		FILL - (SM) SILTY SAND, trace gravel; brown, contains mortar; non-cohesive, moist, loose		0.76	1	SS	4	ND			
				57.39							
		FILL - (SM) SILTY SAND; light brown, contains mortar; cohesive, loose		1.52							Native Backfill
				57.08	2	SS	6	ND			
2		FILL - (SM) SILTY SAND; dark brown to grey; non-cohesive, moist, loose		1.83							
				56.62							Bentonite Seal
		(CI/CH) SILTY CLAY; grey, contains rusty brown mottling; cohesive, w>PL		2.29	3	SS	8	ND			Silica Sand
3					4	SS	8	ND			
4					5	SS	4	ND			
				54.49							
		(CI/CH) SILTY CLAY; grey; cohesive, w>PL		4.42							51 mm Diam. PVC #10 Slot Screen
5					6	SS	WH	ND			
					7	SS	4	ND			
6											
					8	SS	4				W.L. in Screen at 2.945 m depth on March 24, 2015
				52.20							
		End of Borehole		6.71							
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: BM

CHECKED: TDR

MIS-BHS 001 1525113-1000.GPJ GAL-MIS.GDT 07/06/16 JEM

PROJECT: 1525113

RECORD OF MONITORING WELL: 15-107

SHEET 1 OF 1

LOCATION: N 5030396.9 ;E 369366.5

BORING DATE: March 18, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		64.62							
0	NW Rods / Open Hole	Portland Cement CONCRETE		0.00							Bentonite Seal
		FILL - (SW) SAND, trace non-plastic fines; brown; non-cohesive, moist		0.15	1	SS	-	ND			
1					2	SS	-	ND			Native Backfill
				63.25							
		FILL - (CI/CH) SILTY CLAY; brown, contains sand seams; cohesive, w>PL		1.37	3	SS	-	ND			
				62.64							
2		(CI/CH) SILTY CLAY; grey brown; cohesive, w>PL		1.98	4	SS	-	ND			Bentonite Seal
					5	SS	-	ND			Silica Sand
3					6	SS	-				
4					7	SS	-	ND			
					8	SS	-				51 mm Diam. PVC #10 Slot Screen
5					9	SS	-				
6				58.52							
		End of Borehole		6.10							W.L. in Screen at 1.810 m depth on March 24, 2015
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: BM

CHECKED: TDR

MIS-BHS 001 1525113-1000.GPJ GAL-MIS.GDT 07/06/16 JEM

PROJECT: 14-1122-0005

RECORD OF BOREHOLE: 15-107A

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: May 13, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W WI; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		64.62							
0	Jack Hammer	CONCRETE slab		0.00							
		(SM) SILTY SAND, with gravel; grey to brown; wet		0.13 / 64.01	1	SS	JH				
1		(SW) SAND, fine; brown; dry		0.61 / 63.40	2	SS	JH ⊕				
		(CI/CH) SILTY CLAY; grey, reddish brown mottling; moist		1.22	3	SS	JH ⊕	ND			
2					4	SS	JH	⊕			
					5	SS	JH ⊕				
3		End of Borehole		61.57 / 3.05							
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

DEPTH SCALE

1 : 75

Golder Associates

LOGGED:

CHECKED:

PROJECT: 1525113

RECORD OF BOREHOLE: 15-108

SHEET 1 OF 1

LOCATION: N 5030337.5 ;E 369214.6

BORING DATE: March 19, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE									
0	Power Auger 200 mm Diam. (Hollow Stem)	FILL - (SM) SILTY SAND; dark brown; non-cohesive		0.00							
1		FILL (SM) SILTY SAND; brown, contains clayey silt seams; non-cohesive, moist, compact		0.76	1	SS	12	⊕			
		FILL - (SW) SAND, coarse; brown; non-cohesive		1.52							
2		(CI/CL) SILTY CLAY; grey brown; cohesive, w>PL		1.83	2	SS	11	⊕			
		(CI/CH) SILTY CLAY; grey; cohesive, w>PL		2.29	3	SS	WH	⊕			
3					4	SS	WH	⊕			
		End of Borehole		3.66							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: BM

CHECKED: TDR

PROJECT: 1525113

RECORD OF BOREHOLE: 15-109

SHEET 1 OF 1

LOCATION: N 5030276.3 ;E 369227.8

BORING DATE: March 19, 2015

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		64.86							
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (SM) SILTY SAND; dark brown; non-cohesive, moist		0.00							
				64.10							
1		FILL - (SW) SAND, trace fines; brown, contains silty clay pockets and wood; non-cohesive, moist, loose		0.76	1	SS	8				
				63.49							
2		(CI/CH) SILTY CLAY; grey brown; cohesive, w>PL		1.37	2	SS	6	⊕			
					3	SS	4	⊕			
3				61.81							
		(CI/CH) SILTY CLAY; grey; cohesive, w>PL		3.05	4	SS	WH	⊕			
4					5	SS	WH	⊕			
				60.44							
		End of Borehole		4.42							
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: BM

CHECKED: TDR

MIS-BHS 001 1525113-1000.GPJ GAL-MIS.GDT 07/06/16 JEM

PROJECT: 1525113

RECORD OF BOREHOLE: 16-01

SHEET 1 OF 1

LOCATION: N 5030416.2 ;E 369307.5

BORING DATE: February 18, 2016

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖W WI) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE									
0	Geoprobe, Direct Push	TOPSOIL - sandy SILT; brown, trace organics		0.00							Silica Sand and Concrete
		SILTY CLAY, trace clay; brown; dry		0.30	1	DP	-				
1											
2		SILTY CLAY, trace sand; brown; moist		1.83	2	DP	-				Bentonite Seal
3		SILTY CLAY; grey; moist to wet		3.05	3	DP	-				
4											Silica Sand
5					4	DP	-				
6		CLAY; grey, with black mottling; wet		6.10							51 mm Diam. PVC #10 Slot Screen
7					5	DP	-				
		End of Borehole		7.62							
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: _____

MIS-BHS 001 1525113-1000.GPJ GAL-MIS.GDT 06/08/16 JEM

PROJECT: 1525113

RECORD OF BOREHOLE: 16-02

SHEET 1 OF 1

LOCATION: N 5030123.2 ;E 369527.5

BORING DATE: February 18, 2016

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE							
0	Geoprobe, Direct Push	CLAYEY SILT, trace sand; brown, with brick debris; dry to moist		0.00					Silica Sand and Concrete
		SILTY SAND; brown, with ash and brick debris; moist		0.61	1	DP	-		
1									Bentonite Seal
2					2	DP	-		
3									Silica Sand
					3	DP	-		
4		Sandy SILT, trace clay; brown, trace ash and brick debris; moist to wet		3.96					51 mm Diam. PVC #10 Slot Screen
5					4	DP	-		
6									
		End of Borehole		6.10					
7									
8									
9									
10									

DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m: 20 40 60 80

SHEAR STRENGTH Cu, kPa: nat V. + Q - ●; rem V. ⊕ U - ○; 20 40 60 80

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6} 10^{-5} 10^{-4} 10^{-3}

WATER CONTENT PERCENT: Wp ⊖W WI; 20 40 60 80

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: _____

APPENDIX C

Laboratory Certificates of Analysis

Soil

Maxxam

Success Through Science®

Your Project #: 14-1122-0005
Site#: 6147
Your C.O.C. #: na

Attention: Paul Hurst
Golder Associates Ltd
32 Steacie Dr
Kanata, ON
K2K 2A9

Report Date: 2014/08/20
Report #: R3127323
Version: 2

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B4E2676
Received: 2014/08/08, 16:00

Sample Matrix: Soil
Samples Received: 64

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Methylnaphthalene Sum (1)	53	N/A	2014/08/15	CAM SOP-00301	EPA 8270 m
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	11	2014/08/11	2014/08/12	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1)	11	2014/08/11	2014/08/12	CAM SOP-00316	CCME CWS
Strong Acid Leachable Metals by ICPMS (1)	21	2014/08/14	2014/08/19	CAM SOP-00447	EPA 6020 m
Strong Acid Leachable Metals by ICPMS (1)	27	2014/08/14	2014/08/20	CAM SOP-00447	EPA 6020 m
Strong Acid Leachable Metals by ICPMS (1)	5	2014/08/15	2014/08/18	CAM SOP-00447	EPA 6020 m
Moisture (1)	1	N/A	2014/08/11	CAM SOP-00445	R.Carter,1993
Moisture (1)	10	N/A	2014/08/13	CAM SOP-00445	R.Carter,1993
Moisture (1)	53	N/A	2014/08/14	CAM SOP-00445	R.Carter,1993
PAH Compounds in Soil by GC/MS (SIM) (1)	19	2014/08/11	2014/08/12	CAM SOP - 00318	EPA 8270 m
PAH Compounds in Soil by GC/MS (SIM) (1)	34	2014/08/12	2014/08/12	CAM SOP - 00318	EPA 8270 m

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. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

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 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

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 #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Encryption Key

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

Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========
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 #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		XA9626		XA9627		XA9628	XA9629	XA9629	XA9630	XA9631		
Sampling Date		2014/07/28		2014/07/25		2014/07/31	2014/07/31	2014/07/31	2014/07/29	2014/07/29		
	Units	**AJ SA1**	**QC Batch**	**AJ SA3**	**QC Batch**	**AV SA1**	**AV SA3**	**AV SA3 Lab-Dup**	**S SA1**	**S SA2 _ DUP**	**RDL**	**QC Batch**
Metals												
Acid Extractable Antimony (Sb)	ug/g	0.28	3712490	<0.20	3711451	0.24	<0.20	<0.20	<0.20	<0.20	0.20	3711349
Acid Extractable Arsenic (As)	ug/g	5.2	3712490	<1.0	3711451	3.5	1.2	1.2	2.8	1.5	1.0	3711349
Acid Extractable Barium (Ba)	ug/g	43	3712490	28	3711451	52	29	28	45	42	0.50	3711349
Acid Extractable Beryllium (Be)	ug/g	0.26	3712490	0.23	3711451	0.41	0.26	0.25	0.30	0.34	0.20	3711349
Acid Extractable Boron (B)	ug/g	<5.0	3712490	<5.0	3711451	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	3711349
Acid Extractable Cadmium (Cd)	ug/g	0.22	3712490	<0.10	3711451	0.17	<0.10	<0.10	0.13	<0.10	0.10	3711349
Acid Extractable Chromium (Cr)	ug/g	20	3712490	16	3711451	26	23	23	21	26	1.0	3711349
Acid Extractable Cobalt (Co)	ug/g	4.6	3712490	3.4	3711451	5.7	4.8	4.7	4.1	5.3	0.10	3711349
Acid Extractable Copper (Cu)	ug/g	13	3712490	7.0	3711451	10	4.7	4.5	9.3	7.5	0.50	3711349
Acid Extractable Lead (Pb)	ug/g	33	3712490	1.9	3711451	37	3.4	3.3	25	5.7	1.0	3711349
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	3712490	<0.50	3711451	0.51	<0.50	<0.50	<0.50	<0.50	0.50	3711349
Acid Extractable Nickel (Ni)	ug/g	10	3712490	9.6	3711451	13	11	11	9.6	12	0.50	3711349
Acid Extractable Selenium (Se)	ug/g	<0.50	3712490	<0.50	3711451	0.50	<0.50	<0.50	<0.50	<0.50	0.50	3711349
Acid Extractable Silver (Ag)	ug/g	<0.20	3712490	<0.20	3711451	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3711349
Acid Extractable Thallium (Tl)	ug/g	0.097	3712490	0.059	3711451	0.13	0.095	0.10	0.10	0.082	0.050	3711349
Acid Extractable Uranium (U)	ug/g	0.74	3712490	0.56	3711451	0.76	0.66	0.66	0.52	0.67	0.050	3711349
Acid Extractable Vanadium (V)	ug/g	23	3712490	19	3711451	33	35	33	27	30	5.0	3711349
Acid Extractable Zinc (Zn)	ug/g	68	3712490	20	3711451	45	44	45	38	29	5.0	3711349

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 #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		XA9632		XA9633		XA9634		XA9635		XA9636		
Sampling Date		2014/07/29		2014/07/29		2014/07/29		2014/07/29		2014/07/29		
	Units	**DUP S SA2 (2)**	**QC Batch**	**W SA1**	**QC Batch**	**X SA1**	**QC Batch**	**X SA2**	**QC Batch**	**J SA2**	**RDL**	**QC Batch**
Metals												
Acid Extractable Antimony (Sb)	ug/g	<0.20	3711349	0.22	3712490	<0.20	3711349	<0.20	3711297	<0.20	0.20	3711001
Acid Extractable Arsenic (As)	ug/g	1.5	3711349	2.8	3712490	3.5	3711349	1.0	3711297	1.3	1.0	3711001
Acid Extractable Barium (Ba)	ug/g	45	3711349	59	3712490	160	3711349	22	3711297	48	0.50	3711001
Acid Extractable Beryllium (Be)	ug/g	0.35	3711349	0.39	3712490	0.61	3711349	<0.20	3711297	0.30	0.20	3711001
Acid Extractable Boron (B)	ug/g	<5.0	3711349	<5.0	3712490	<5.0	3711349	<5.0	3711297	<5.0	5.0	3711001
Acid Extractable Cadmium (Cd)	ug/g	<0.10	3711349	0.13	3712490	0.15	3711349	<0.10	3711297	<0.10	0.10	3711001
Acid Extractable Chromium (Cr)	ug/g	27	3711349	33	3712490	56	3711349	16	3711297	19	1.0	3711001
Acid Extractable Cobalt (Co)	ug/g	5.6	3711349	6.1	3712490	15	3711349	3.3	3711297	4.2	0.10	3711001
Acid Extractable Copper (Cu)	ug/g	7.3	3711349	11	3712490	26	3711349	7.3	3711297	5.3	0.50	3711001
Acid Extractable Lead (Pb)	ug/g	5.7	3711349	20	3712490	21	3711349	2.0	3711297	3.2	1.0	3711001
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	3711349	0.50	3712490	<0.50	3711349	<0.50	3711297	<0.50	0.50	3711001
Acid Extractable Nickel (Ni)	ug/g	13	3711349	14	3712490	30	3711349	8.4	3711297	9.3	0.50	3711001
Acid Extractable Selenium (Se)	ug/g	<0.50	3711349	<0.50	3712490	<0.50	3711349	<0.50	3711297	<0.50	0.50	3711001
Acid Extractable Silver (Ag)	ug/g	<0.20	3711349	<0.20	3712490	<0.20	3711349	<0.20	3711297	<0.20	0.20	3711001
Acid Extractable Thallium (Tl)	ug/g	0.084	3711349	0.14	3712490	0.23	3711349	0.22	3711297	0.087	0.050	3711001
Acid Extractable Uranium (U)	ug/g	0.64	3711349	1.7	3712490	1.1	3711349	0.79	3711297	0.63	0.050	3711001
Acid Extractable Vanadium (V)	ug/g	31	3711349	34	3712490	59	3711349	19	3711297	27	5.0	3711001
Acid Extractable Zinc (Zn)	ug/g	31	3711349	47	3712490	81	3711349	16	3711297	29	5.0	3711001

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		XA9637	XA9638		XA9639		XA9640	XA9641	XA9641	XA9642		
Sampling Date		2014/07/29	2014/07/29		2014/07/29		2014/06/28	2014/06/28	2014/06/28	2014/06/28		
	Units	**G14/E1 SA 2**	**AK SA3**	**QC Batch**	**AK SA1**	**QC Batch**	**AA SA3**	**DUP AA SA3**	**DUP AA SA3 Lab-Dup**	**AC SA1**	**RDL**	**QC Batch**
Metals												
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	3711001	<0.20	3711297	<0.20	<0.20	<0.20	0.27	0.20	3711001
Acid Extractable Arsenic (As)	ug/g	2.3	2.9	3711001	2.4	3711297	1.1	1.1	1.1	3.8	1.0	3711001
Acid Extractable Barium (Ba)	ug/g	150	110	3711001	85	3711297	24	27	27	92	0.50	3711001
Acid Extractable Beryllium (Be)	ug/g	0.47	0.42	3711001	0.39	3711297	0.22	0.24	0.25	0.40	0.20	3711001
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	3711001	<5.0	3711297	<5.0	<5.0	<5.0	<5.0	5.0	3711001
Acid Extractable Cadmium (Cd)	ug/g	0.12	0.19	3711001	0.12	3711297	<0.10	<0.10	<0.10	0.18	0.10	3711001
Acid Extractable Chromium (Cr)	ug/g	53	41	3711001	28	3711297	19	20	21	26	1.0	3711001
Acid Extractable Cobalt (Co)	ug/g	12	8.9	3711001	6.6	3711297	4.5	4.6	4.9	7.2	0.10	3711001
Acid Extractable Copper (Cu)	ug/g	29	24	3711001	17	3711297	5.4	5.1	5.7	16	0.50	3711001
Acid Extractable Lead (Pb)	ug/g	26	36	3711001	38	3711297	6.2	2.3	2.4	59	1.0	3711001
Acid Extractable Molybdenum (Mo)	ug/g	0.66	0.52	3711001	<0.50	3711297	<0.50	<0.50	<0.50	<0.50	0.50	3711001
Acid Extractable Nickel (Ni)	ug/g	31	23	3711001	16	3711297	10	11	11	15	0.50	3711001
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	3711001	<0.50	3711297	<0.50	<0.50	<0.50	<0.50	0.50	3711001
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	3711001	<0.20	3711297	<0.20	<0.20	<0.20	<0.20	0.20	3711001
Acid Extractable Thallium (Tl)	ug/g	0.19	0.16	3711001	0.14	3711297	0.073	0.063	0.070	0.14	0.050	3711001
Acid Extractable Uranium (U)	ug/g	1.0	0.72	3711001	0.68	3711297	0.34	0.38	0.37	0.72	0.050	3711001
Acid Extractable Vanadium (V)	ug/g	55	41	3711001	34	3711297	22	24	24	35	5.0	3711001
Acid Extractable Zinc (Zn)	ug/g	70	64	3711001	51	3711297	24	25	26	71	5.0	3711001

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		XA9643	XA9644	XA9645	XA9646	XA9647	XA9648	XA9649	XA9650	XA9651		
Sampling Date		2014/06/28	2014/06/28	2014/06/28	2014/07/30	2014/07/30	2014/07/30	2014/07/30	2014/07/30	2014/07/30		
	Units	**AE SA2**	**Y SA1**	**Y SA2**	**BA SA3 (2)**	**BE SA1**	**BE SA3**	**BA SA2**	**BE SA2**	**DUP BE SA2**	**RDL**	**QC Batch**
Metals												
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.54	0.32	0.24	0.95	<0.20	<0.20	0.31	0.31	0.20	3711001
Acid Extractable Arsenic (As)	ug/g	1.7	4.2	1.7	2.8	2.8	2.9	2.8	1.8	1.7	1.0	3711001
Acid Extractable Barium (Ba)	ug/g	63	90	36	160	230	350	160	110	120	0.50	3711001
Acid Extractable Beryllium (Be)	ug/g	0.30	0.45	<0.20	0.46	0.53	0.95	0.50	0.35	0.35	0.20	3711001
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	3711001
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.27	<0.10	0.11	0.17	<0.10	<0.10	0.10	<0.10	0.10	3711001
Acid Extractable Chromium (Cr)	ug/g	24	28	15	44	61	130	40	35	38	1.0	3711001
Acid Extractable Cobalt (Co)	ug/g	6.0	7.2	4.1	11	14	29	11	8.0	8.5	0.10	3711001
Acid Extractable Copper (Cu)	ug/g	15	18	4.1	25	33	59	24	19	23	0.50	3711001
Acid Extractable Lead (Pb)	ug/g	7.9	150	12	45	51	8.5	8.6	20	19	1.0	3711001
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	<0.50	1.1	0.89	<0.50	0.67	<0.50	<0.50	0.50	3711001
Acid Extractable Nickel (Ni)	ug/g	14	15	8.1	26	36	73	23	21	23	0.50	3711001
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3711001
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3711001
Acid Extractable Thallium (Tl)	ug/g	0.11	0.16	<0.050	0.19	0.28	0.44	0.22	0.14	0.16	0.050	3711001
Acid Extractable Uranium (U)	ug/g	0.78	0.61	0.40	0.78	0.84	0.78	0.64	0.59	0.61	0.050	3711001
Acid Extractable Vanadium (V)	ug/g	30	36	19	49	63	110	54	39	41	5.0	3711001
Acid Extractable Zinc (Zn)	ug/g	31	150	27	72	120	130	63	48	51	5.0	3711001

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O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		XA9652	XA9653	XA9654	XA9655	XA9656		XA9657		XA9658		
Sampling Date		2014/06/28	2014/07/30	2014/08/01	2014/08/01	2014/06/28		2014/06/28		2014/06/28		
	Units	**Z SA2**	**BJ SA3**	**BN SA1**	**BN SA3**	**AH SA2**	**QC Batch**	**AH SA3**	**QC Batch**	**AH SA4**	**RDL**	**QC Batch**
Metals												
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.42	<0.20	<0.20	1.2	3711001	<0.20	3711349	<0.20	0.20	3712490
Acid Extractable Arsenic (As)	ug/g	2.0	2.2	2.1	2.6	8.6	3711001	3.1	3711349	<1.0	1.0	3712490
Acid Extractable Barium (Ba)	ug/g	67	400	230	41	77	3711001	99	3711349	19	0.50	3712490
Acid Extractable Beryllium (Be)	ug/g	0.39	0.79	0.66	0.34	1.5	3711001	0.57	3711349	<0.20	0.20	3712490
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	<5.0	<5.0	<5.0	3711001	5.8	3711349	<5.0	5.0	3712490
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.12	<0.10	<0.10	0.21	3711001	<0.10	3711349	<0.10	0.10	3712490
Acid Extractable Chromium (Cr)	ug/g	29	120	88	31	13	3711001	60	3711349	13	1.0	3712490
Acid Extractable Cobalt (Co)	ug/g	7.6	26	18	5.9	11	3711001	8.9	3711349	2.5	0.10	3712490
Acid Extractable Copper (Cu)	ug/g	13	57	40	16	32	3711001	21	3711349	5.2	0.50	3712490
Acid Extractable Lead (Pb)	ug/g	27	14	7.3	20	99	3711001	11	3711349	2.1	1.0	3712490
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	0.69	<0.50	<0.50	2.9	3711001	<0.50	3711349	<0.50	0.50	3712490
Acid Extractable Nickel (Ni)	ug/g	16	68	48	15	24	3711001	24	3711349	6.2	0.50	3712490
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	0.55	3711001	<0.50	3711349	<0.50	0.50	3712490
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	3711001	<0.20	3711349	<0.20	0.20	3712490
Acid Extractable Thallium (Tl)	ug/g	0.13	0.46	0.29	0.10	0.20	3711001	0.20	3711349	<0.050	0.050	3712490
Acid Extractable Uranium (U)	ug/g	0.77	0.67	0.90	0.90	0.57	3711001	2.4	3711349	1.2	0.050	3712490
Acid Extractable Vanadium (V)	ug/g	37	120	79	43	28	3711001	58	3711349	25	5.0	3712490
Acid Extractable Zinc (Zn)	ug/g	52	140	90	35	71	3711001	58	3711349	12	5.0	3712490

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O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		XA9659	XA9660		XA9661		XA9662	XA9663	XA9664	XA9665		
Sampling Date		2014/06/28	2014/07/30		2014/07/30		2014/06/28	2014/07/30	2014/07/30	2014/07/31		
	Units	**AC SA3**	**AS SA1**	**QC Batch**	**AS SA2**	**QC Batch**	**AF SA3**	**R SA2**	**R SA3**	**T SA2**	**RDL**	**QC Batch**
Metals												
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	3711349	0.32	3711451	<0.20	<0.20	<0.20	<0.20	0.20	3711349
Acid Extractable Arsenic (As)	ug/g	<1.0	2.9	3711349	2.5	3711451	1.3	1.8	3.5	<1.0	1.0	3711349
Acid Extractable Barium (Ba)	ug/g	28	180	3711349	280	3711451	21	38	110	15	0.50	3711349
Acid Extractable Beryllium (Be)	ug/g	0.22	0.56	3711349	0.53	3711451	<0.20	0.29	0.80	<0.20	0.20	3711349
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	3711349	<5.0	3711451	<5.0	<5.0	6.3	<5.0	5.0	3711349
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.13	3711349	0.12	3711451	<0.10	<0.10	<0.10	<0.10	0.10	3711349
Acid Extractable Chromium (Cr)	ug/g	16	73	3711349	72	3711451	15	24	59	8.9	1.0	3711349
Acid Extractable Cobalt (Co)	ug/g	4.5	15	3711349	16	3711451	3.6	5.2	11	2.6	0.10	3711349
Acid Extractable Copper (Cu)	ug/g	5.6	38	3711349	39	3711451	7.8	11	35	5.1	0.50	3711349
Acid Extractable Lead (Pb)	ug/g	2.0	39	3711349	310	3711451	2.1	5.0	9.6	2.1	1.0	3711349
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	3711349	0.59	3711451	<0.50	<0.50	<0.50	<0.50	0.50	3711349
Acid Extractable Nickel (Ni)	ug/g	9.1	42	3711349	43	3711451	7.5	12	29	6.8	0.50	3711349
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	3711349	<0.50	3711451	<0.50	<0.50	<0.50	<0.50	0.50	3711349
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	3711349	<0.20	3711451	<0.20	<0.20	<0.20	<0.20	0.20	3711349
Acid Extractable Thallium (Tl)	ug/g	0.053	0.24	3711349	0.28	3711451	<0.050	0.067	0.18	<0.050	0.050	3711349
Acid Extractable Uranium (U)	ug/g	0.55	0.86	3711349	0.96	3711451	0.94	0.80	1.3	0.32	0.050	3711349
Acid Extractable Vanadium (V)	ug/g	22	68	3711349	69	3711451	27	36	53	11	5.0	3711349
Acid Extractable Zinc (Zn)	ug/g	20	90	3711349	100	3711451	14	23	53	11	5.0	3711349

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O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		XA9666		XA9667		XA9668		XA9669		XA9670		
Sampling Date		2014/07/31		2014/07/31		2014/07/31		2014/07/29		2014/07/29		
	Units	**T SA4**	**QC Batch**	**DUP T SA2**	**QC Batch**	**T SA3**	**QC Batch**	**BK SA1**	**QC Batch**	**AG SA4**	**RDL**	**QC Batch**
Metals												
Acid Extractable Antimony (Sb)	ug/g	<0.20	3711349	<0.20	3712490	<0.20	3711349	<0.20	3711451	<0.20	0.20	3711349
Acid Extractable Arsenic (As)	ug/g	1.9	3711349	<1.0	3712490	3.1	3711349	<1.0	3711451	2.4	1.0	3711349
Acid Extractable Barium (Ba)	ug/g	48	3711349	19	3712490	77	3711349	26	3711451	71	0.50	3711349
Acid Extractable Beryllium (Be)	ug/g	0.32	3711349	0.21	3712490	0.57	3711349	0.22	3711451	0.33	0.20	3711349
Acid Extractable Boron (B)	ug/g	<5.0	3711349	<5.0	3712490	<5.0	3711349	<5.0	3711451	<5.0	5.0	3711349
Acid Extractable Cadmium (Cd)	ug/g	<0.10	3711349	<0.10	3712490	<0.10	3711349	<0.10	3711451	<0.10	0.10	3711349
Acid Extractable Chromium (Cr)	ug/g	31	3711349	12	3712490	49	3711349	18	3711451	29	1.0	3711349
Acid Extractable Cobalt (Co)	ug/g	5.8	3711349	3.0	3712490	8.7	3711349	3.6	3711451	7.7	0.10	3711349
Acid Extractable Copper (Cu)	ug/g	20	3711349	7.1	3712490	25	3711349	6.8	3711451	15	0.50	3711349
Acid Extractable Lead (Pb)	ug/g	3.2	3711349	3.1	3712490	6.7	3711349	2.6	3711451	3.5	1.0	3711349
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	3711349	<0.50	3712490	<0.50	3711349	<0.50	3711451	0.60	0.50	3711349
Acid Extractable Nickel (Ni)	ug/g	17	3711349	7.1	3712490	22	3711349	11	3711451	18	0.50	3711349
Acid Extractable Selenium (Se)	ug/g	<0.50	3711349	<0.50	3712490	<0.50	3711349	<0.50	3711451	<0.50	0.50	3711349
Acid Extractable Silver (Ag)	ug/g	<0.20	3711349	<0.20	3712490	<0.20	3711349	<0.20	3711451	<0.20	0.20	3711349
Acid Extractable Thallium (Tl)	ug/g	0.077	3711349	<0.050	3712490	0.12	3711349	0.069	3711451	0.10	0.050	3711349
Acid Extractable Uranium (U)	ug/g	0.64	3711349	0.45	3712490	0.85	3711349	0.88	3711451	1.8	0.050	3711349
Acid Extractable Vanadium (V)	ug/g	29	3711349	14	3712490	45	3711349	27	3711451	54	5.0	3711349
Acid Extractable Zinc (Zn)	ug/g	27	3711349	15	3712490	37	3711349	35	3711451	34	5.0	3711349

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Sampler Initials: HC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		XA9671		XA9672		XA9673	XA9674		
Sampling Date		2014/07/31		2014/07/30		2014/07/29	2014/07/30		
	Units	**V SA5**	**QC Batch**	**BM SA2**	**QC Batch**	**F SA1**	**AX SA2**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	<0.20	3711451	0.20	3712490	1.2	<0.20	0.20	3711349
Acid Extractable Arsenic (As)	ug/g	1.3	3711451	4.9	3712490	7.5	1.9	1.0	3711349
Acid Extractable Barium (Ba)	ug/g	31	3711451	140	3712490	130	47	0.50	3711349
Acid Extractable Beryllium (Be)	ug/g	0.20	3711451	1.0	3712490	0.59	0.29	0.20	3711349
Acid Extractable Boron (B)	ug/g	<5.0	3711451	6.1	3712490	<5.0	<5.0	5.0	3711349
Acid Extractable Cadmium (Cd)	ug/g	<0.10	3711451	<0.10	3712490	0.26	0.12	0.10	3711349
Acid Extractable Chromium (Cr)	ug/g	18	3711451	65	3712490	33	22	1.0	3711349
Acid Extractable Cobalt (Co)	ug/g	3.6	3711451	19	3712490	8.5	5.0	0.10	3711349
Acid Extractable Copper (Cu)	ug/g	8.9	3711451	29	3712490	25	7.9	0.50	3711349
Acid Extractable Lead (Pb)	ug/g	2.0	3711451	10	3712490	170	14	1.0	3711349
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	3711451	0.52	3712490	0.64	<0.50	0.50	3711349
Acid Extractable Nickel (Ni)	ug/g	9.7	3711451	32	3712490	21	12	0.50	3711349
Acid Extractable Selenium (Se)	ug/g	<0.50	3711451	<0.50	3712490	<0.50	<0.50	0.50	3711349
Acid Extractable Silver (Ag)	ug/g	<0.20	3711451	<0.20	3712490	<0.20	<0.20	0.20	3711349
Acid Extractable Thallium (Tl)	ug/g	0.055	3711451	0.20	3712490	0.22	0.095	0.050	3711349
Acid Extractable Uranium (U)	ug/g	0.75	3711451	2.8	3712490	0.68	0.64	0.050	3711349
Acid Extractable Vanadium (V)	ug/g	26	3711451	74	3712490	40	24	5.0	3711349
Acid Extractable Zinc (Zn)	ug/g	20	3711451	58	3712490	110	46	5.0	3711349

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Sampler Initials: HC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		XA9675		XA9676		XA9677		XA9678		
Sampling Date		2014/07/31		2014/07/30		2014/07/29		2014/06/28		
	Units	**AP SA3**	**QC Batch**	**AX SA3**	**QC Batch**	**E SA2 (2)**	**QC Batch**	**AB SA1**	**RDL**	**QC Batch**
Metals										
Acid Extractable Antimony (Sb)	ug/g	<0.20	3711349	<0.20	3711451	<0.20	3711349	0.47	0.20	3711451
Acid Extractable Arsenic (As)	ug/g	1.4	3711349	1.3	3711451	1.6	3711349	2.1	1.0	3711451
Acid Extractable Barium (Ba)	ug/g	48	3711349	25	3711451	22	3711349	110	0.50	3711451
Acid Extractable Beryllium (Be)	ug/g	0.41	3711349	<0.20	3711451	0.22	3711349	0.24	0.20	3711451
Acid Extractable Boron (B)	ug/g	<5.0	3711349	<5.0	3711451	<5.0	3711349	<5.0	5.0	3711451
Acid Extractable Cadmium (Cd)	ug/g	<0.10	3711349	<0.10	3711451	<0.10	3711349	0.11	0.10	3711451
Acid Extractable Chromium (Cr)	ug/g	34	3711349	15	3711451	15	3711349	19	1.0	3711451
Acid Extractable Cobalt (Co)	ug/g	7.2	3711349	4.3	3711451	4.2	3711349	4.5	0.10	3711451
Acid Extractable Copper (Cu)	ug/g	6.7	3711349	5.1	3711451	5.2	3711349	12	0.50	3711451
Acid Extractable Lead (Pb)	ug/g	5.3	3711349	4.9	3711451	10	3711349	260	1.0	3711451
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	3711349	<0.50	3711451	<0.50	3711349	<0.50	0.50	3711451
Acid Extractable Nickel (Ni)	ug/g	17	3711349	9.3	3711451	9.3	3711349	11	0.50	3711451
Acid Extractable Selenium (Se)	ug/g	<0.50	3711349	<0.50	3711451	<0.50	3711349	<0.50	0.50	3711451
Acid Extractable Silver (Ag)	ug/g	<0.20	3711349	<0.20	3711451	<0.20	3711349	<0.20	0.20	3711451
Acid Extractable Thallium (Tl)	ug/g	0.11	3711349	0.061	3711451	0.056	3711349	0.095	0.050	3711451
Acid Extractable Uranium (U)	ug/g	0.97	3711349	0.39	3711451	0.30	3711349	0.54	0.050	3711451
Acid Extractable Vanadium (V)	ug/g	33	3711349	19	3711451	18	3711349	26	5.0	3711451
Acid Extractable Zinc (Zn)	ug/g	40	3711349	26	3711451	24	3711349	110	5.0	3711451

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O.REG 153 PAHS (SOIL)

Maxxam ID		XA9626	XA9626	XA9627		XA9628	XA9628	XA9629	XA9630		XA9631		
Sampling Date		2014/07/28	2014/07/28	2014/07/25		2014/07/31	2014/07/31	2014/07/31	2014/07/29		2014/07/29		
	Units	**AJ SA1**	**AJ SA1 Lab-Dup**	**AJ SA3**	**QC Batch**	**AV SA1**	**AV SA1 Lab-Dup**	**AV SA3**	**S SA1**	**QC Batch**	**$ SA2 _ DUP**	**RDL**	**QC Batch**
Inorganics													
Moisture	%	7.8		18	3710992	17	17	17	14	3710992	13	1.0	3710992
Calculated Parameters													
Methylnaphthalene, 2-(1-)	ug/g	0.017	<0.0071	<0.0071	3706374	<0.0071		<0.0071	<0.0071	3706374	<0.0071	0.0071	3706374
Polyaromatic Hydrocarbons													
Acenaphthene	ug/g	0.049	0.0056	<0.0050	3707364	<0.0050		<0.0050	0.0055	3707621	<0.0050	0.0050	3707364
Acenaphthylene	ug/g	0.038	0.027	<0.0050	3707364	0.026		<0.0050	0.065	3707621	<0.0050	0.0050	3707364
Anthracene	ug/g	0.17	0.023	<0.0050	3707364	0.019		<0.0050	0.033	3707621	<0.0050	0.0050	3707364
Benzo(a)anthracene	ug/g	0.42	0.092(1)	<0.0050	3707364	0.10		<0.0050	0.17	3707621	<0.0050	0.0050	3707364
Benzo(a)pyrene	ug/g	0.35	0.10(1)	<0.0050	3707364	0.12		<0.0050	0.21	3707621	0.0063	0.0050	3707364
Benzo(b/j)fluoranthene	ug/g	0.53	0.16(1)	<0.0050	3707364	0.19		<0.0050	0.33	3707621	0.0096	0.0050	3707364
Benzo(g,h,i)perylene	ug/g	0.20	0.074(1)	<0.0050	3707364	0.082		<0.0050	0.16	3707621	<0.0050	0.0050	3707364
Benzo(k)fluoranthene	ug/g	0.17	0.043(1)	<0.0050	3707364	0.065		<0.0050	0.13	3707621	<0.0050	0.0050	3707364
Chrysene	ug/g	0.39	0.10(1)	<0.0050	3707364	0.11		<0.0050	0.18	3707621	0.0063	0.0050	3707364
Dibenz(a,h)anthracene	ug/g	0.060	0.018	<0.0050	3707364	0.020		<0.0050	0.040	3707621	<0.0050	0.0050	3707364
Fluoranthene	ug/g	0.96	0.20(1)	<0.0050	3707364	0.23		<0.0050	0.35	3707621	0.0096	0.0050	3707364
Fluorene	ug/g	0.057	0.0065	<0.0050	3707364	0.0059		<0.0050	0.0080	3707621	<0.0050	0.0050	3707364
Indeno(1,2,3-cd)pyrene	ug/g	0.23	0.080(1)	<0.0050	3707364	0.087		<0.0050	0.17	3707621	<0.0050	0.0050	3707364
1-Methylnaphthalene	ug/g	0.011	<0.0050	<0.0050	3707364	0.0054		<0.0050	<0.0050	3707621	<0.0050	0.0050	3707364
2-Methylnaphthalene	ug/g	0.0062	<0.0050	<0.0050	3707364	<0.0050		<0.0050	<0.0050	3707621	<0.0050	0.0050	3707364
Naphthalene	ug/g	0.0057	<0.0050	<0.0050	3707364	<0.0050		<0.0050	0.0050	3707621	<0.0050	0.0050	3707364
Phenanthrene	ug/g	0.64	0.089(1)	<0.0050	3707364	0.099		<0.0050	0.14	3707621	<0.0050	0.0050	3707364
Pyrene	ug/g	0.70	0.17(1)	<0.0050	3707364	0.19		<0.0050	0.30	3707621	0.0087	0.0050	3707364
Surrogate Recovery (%)													
D10-Anthracene	%	85	84	94	3707364	86		89	83	3707621	94		3707364
D14-Terphenyl (FS)	%	84	83	89	3707364	90		90	90	3707621	91		3707364
D8-Acenaphthylene	%	87	85	87	3707364	81		82	76	3707621	90		3707364

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 #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

O.REG 153 PAHS (SOIL)

Maxxam ID		XA9632	XA9633		XA9634		XA9635	XA9635	XA9636		XA9637		
Sampling Date		2014/07/29	2014/07/29		2014/07/29		2014/07/29	2014/07/29	2014/07/29		2014/07/29		
	Units	**DUP S SA2 (2)**	**W SA1**	**QC Batch**	**X SA1**	**QC Batch**	**X SA2**	**X SA2 Lab-Dup**	**J SA2**	**QC Batch**	**G14/E1 SA 2**	**RDL**	**QC Batch**
Inorganics													
Moisture	%	14	12	3710992	23	3710992	11		15	3710943	17	1.0	3710943
Calculated Parameters													
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.012	3706374	0.053	3706374	<0.0071	<0.0071	<0.0071	3706374	<0.0071	0.0071	3706374
Polyaromatic Hydrocarbons													
Acenaphthene	ug/g	<0.0050	0.050	3707364	0.066	3707621	<0.0050	<0.0050	<0.0050	3707008	<0.0050	0.0050	3707364
Acenaphthylene	ug/g	0.0057	0.036	3707364	0.035	3707621	<0.0050	<0.0050	<0.0050	3707008	0.021	0.0050	3707364
Anthracene	ug/g	<0.0050	0.14	3707364	0.15	3707621	<0.0050	<0.0050	<0.0050	3707008	0.011	0.0050	3707364
Benzo(a)anthracene	ug/g	0.0098	0.32	3707364	0.37	3707621	<0.0050	<0.0050	<0.0050	3707008	0.032	0.0050	3707364
Benzo(a)pyrene	ug/g	0.012	0.28	3707364	0.31	3707621	<0.0050	<0.0050	<0.0050	3707008	0.045	0.0050	3707364
Benzo(b/j)fluoranthene	ug/g	0.020	0.43	3707364	0.45	3707621	<0.0050	<0.0050	<0.0050	3707008	0.065	0.0050	3707364
Benzo(g,h,i)perylene	ug/g	0.0098	0.17	3707364	0.18	3707621	<0.0050	<0.0050	<0.0050	3707008	0.038	0.0050	3707364
Benzo(k)fluoranthene	ug/g	0.0062	0.14	3707364	0.16	3707621	<0.0050	<0.0050	<0.0050	3707008	0.021	0.0050	3707364
Chrysene	ug/g	0.013	0.33	3707364	0.32	3707621	<0.0050	<0.0050	<0.0050	3707008	0.037	0.0050	3707364
Dibenz(a,h)anthracene	ug/g	<0.0050	0.047	3707364	0.049	3707621	<0.0050	<0.0050	<0.0050	3707008	0.0085	0.0050	3707364
Fluoranthene	ug/g	0.019	0.75	3707364	0.87	3707621	<0.0050	<0.0050	0.0052	3707008	0.048	0.0050	3707364
Fluorene	ug/g	<0.0050	0.062	3707364	0.073	3707621	<0.0050	<0.0050	<0.0050	3707008	<0.0050	0.0050	3707364
Indeno(1,2,3-cd)pyrene	ug/g	0.010	0.19	3707364	0.20	3707621	<0.0050	<0.0050	<0.0050	3707008	0.040	0.0050	3707364
1-Methylnaphthalene	ug/g	<0.0050	0.0053	3707364	0.028	3707621	<0.0050	<0.0050	<0.0050	3707008	<0.0050	0.0050	3707364
2-Methylnaphthalene	ug/g	<0.0050	0.0062	3707364	0.025	3707621	<0.0050	<0.0050	<0.0050	3707008	<0.0050	0.0050	3707364
Naphthalene	ug/g	<0.0050	0.0058	3707364	0.041	3707621	<0.0050	<0.0050	<0.0050	3707008	<0.0050	0.0050	3707364
Phenanthrene	ug/g	0.0072	0.57	3707364	0.65	3707621	<0.0050	<0.0050	<0.0050	3707008	0.019	0.0050	3707364
Pyrene	ug/g	0.016	0.57	3707364	0.69	3707621	<0.0050	<0.0050	<0.0050	3707008	0.043	0.0050	3707364
Surrogate Recovery (%)													
D10-Anthracene	%	90	83	3707364	87	3707621	89	90	90	3707008	91		3707364
D14-Terphenyl (FS)	%	87	81	3707364	91	3707621	93	93	91	3707008	89		3707364
D8-Acenaphthylene	%	90	82	3707364	79	3707621	83	85	85	3707008	90		3707364

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Sampler Initials: HC

O.REG 153 PAHS (SOIL)

Maxxam ID		XA9638			XA9639		XA9640	XA9641	XA9642		XA9643		
Sampling Date		2014/07/29			2014/07/29		2014/06/28	2014/06/28	2014/06/28		2014/06/28		
	Units	**AK SA3**	**RDL**	**QC Batch**	**AK SA1**	**QC Batch**	**AA SA3**	**DUP AA SA3**	**AC SA1**	**RDL**	**AE SA2**	**RDL**	**QC Batch**
Inorganics													
Moisture	%	13	1.0	3710943	9.1	3710943	18	18	9.8	1.0	13	1.0	3710943
Calculated Parameters													
Methylnaphthalene, 2-(1-)	ug/g	0.072	0.028	3706374	0.032	3706374	<0.0071	<0.0071	0.13	0.0071	<0.028	0.028	3706374
Polyaromatic Hydrocarbons													
Acenaphthene	ug/g	0.11	0.020	3707008	0.11	3707364	<0.0050	<0.0050	0.49	0.0050	<0.020	0.020	3707008
Acenaphthylene	ug/g	0.11	0.020	3707008	0.043	3707364	<0.0050	<0.0050	0.040	0.0050	0.22	0.020	3707008
Anthracene	ug/g	0.31	0.020	3707008	0.30	3707364	<0.0050	<0.0050	1.3	0.0050	0.089	0.020	3707008
Benzo(a)anthracene	ug/g	0.88	0.020	3707008	0.63	3707364	<0.0050	<0.0050	2.6	0.0050	0.42	0.020	3707008
Benzo(a)pyrene	ug/g	0.82	0.020	3707008	0.56	3707364	<0.0050	<0.0050	1.9	0.0050	0.60	0.020	3707008
Benzo(b/j)fluoranthene	ug/g	1.2	0.020	3707008	0.78	3707364	0.0069	<0.0050	2.6	0.0050	0.80	0.020	3707008
Benzo(g,h,i)perylene	ug/g	0.60	0.020	3707008	0.33	3707364	<0.0050	<0.0050	1.1	0.0050	0.44	0.020	3707008
Benzo(k)fluoranthene	ug/g	0.45	0.020	3707008	0.25	3707364	<0.0050	<0.0050	1.0	0.0050	0.30	0.020	3707008
Chrysene	ug/g	0.74	0.020	3707008	0.54	3707364	<0.0050	<0.0050	2.2	0.0050	0.41	0.020	3707008
Dibenz(a,h)anthracene	ug/g	0.14	0.020	3707008	0.087	3707364	<0.0050	<0.0050	0.32	0.0050	0.11	0.020	3707008
Fluoranthene	ug/g	1.9	0.020	3707008	1.4	3707364	0.0090	<0.0050	5.6	0.0050	0.37	0.020	3707008
Fluorene	ug/g	0.13	0.020	3707008	0.14	3707364	<0.0050	<0.0050	0.62	0.0050	<0.030(1)	0.030	3707008
Indeno(1,2,3-cd)pyrene	ug/g	0.61	0.020	3707008	0.36	3707364	<0.0050	<0.0050	1.1	0.0050	0.45	0.020	3707008
1-Methylnaphthalene	ug/g	0.032	0.020	3707008	0.016	3707364	<0.0050	<0.0050	0.061	0.0050	<0.020	0.020	3707008
2-Methylnaphthalene	ug/g	0.040	0.020	3707008	0.017	3707364	<0.0050	<0.0050	0.065	0.0050	<0.020	0.020	3707008
Naphthalene	ug/g	0.096	0.020	3707008	0.026	3707364	<0.0050	<0.0050	0.094	0.0050	0.043	0.020	3707008
Phenanthrene	ug/g	1.2	0.020	3707008	1.1	3707364	0.0053	<0.0050	4.9	0.0050	0.14	0.020	3707008
Pyrene	ug/g	1.5	0.020	3707008	1.1	3707364	0.0074	<0.0050	4.2	0.0050	0.33	0.020	3707008
Surrogate Recovery (%)													
D10-Anthracene	%	92		3707008	88	3707364	91	91	90		102		3707008
D14-Terphenyl (FS)	%	95		3707008	87	3707364	92	96	92		95		3707008
D8-Acenaphthylene	%	81		3707008	93	3707364	87	85	85		97		3707008

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Detection Limit was raised due to matrix interferences.

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Golder Associates Ltd
Client Project #: 14-1122-0005

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O.REG 153 PAHS (SOIL)

Maxxam ID		XA9644	XA9645	XA9645		XA9646		XA9647	XA9648		XA9649		
Sampling Date		2014/06/28	2014/06/28	2014/06/28		2014/07/30		2014/07/30	2014/07/30		2014/07/30		
	Units	**Y SA1**	**Y SA2**	**Y SA2 Lab-Dup**	**RDL**	**BA SA3 (2)**	**RDL**	**BE SA1**	**BE SA3**	**QC Batch**	**BA SA2**	**RDL**	**QC Batch**
Inorganics													
Moisture	%	15	11	11	1.0	16	1.0	18	33	3710943	17	1.0	3710943
Calculated Parameters													
Methylnaphthalene, 2-(1-)	ug/g	0.013	<0.0071		0.0071	0.24	0.028	<0.0071	<0.0071	3706374	<0.0071	0.0071	3706374
Polyaromatic Hydrocarbons													
Acenaphthene	ug/g	0.026	<0.0050		0.0050	0.33	0.020	0.0096	<0.0050	3707008	<0.0050	0.0050	3707364
Acenaphthylene	ug/g	0.051	0.011		0.0050	0.46	0.020	0.035	<0.0050	3707008	0.034	0.0050	3707364
Anthracene	ug/g	0.070	0.0099		0.0050	0.73	0.020	0.036	<0.0050	3707008	0.019	0.0050	3707364
Benzo(a)anthracene	ug/g	0.31	0.051		0.0050	1.4	0.020	0.15	0.0088	3707008	0.081	0.0050	3707364
Benzo(a)pyrene	ug/g	0.30	0.055		0.0050	1.4	0.020	0.16	0.0082	3707008	0.10	0.0050	3707364
Benzo(b/j)fluoranthene	ug/g	0.45	0.075		0.0050	1.8	0.020	0.22	0.011	3707008	0.14	0.0050	3707364
Benzo(g,h,i)perylene	ug/g	0.21	0.038		0.0050	0.87	0.020	0.10	<0.0050	3707008	0.068	0.0050	3707364
Benzo(k)fluoranthene	ug/g	0.16	0.030		0.0050	0.75	0.020	0.080	<0.0050	3707008	0.045	0.0050	3707364
Chrysene	ug/g	0.27	0.049		0.0050	1.1	0.020	0.13	0.0095	3707008	0.081	0.0050	3707364
Dibenz(a,h)anthracene	ug/g	0.051	0.0089		0.0050	0.22	0.020	0.027	<0.0050	3707008	0.018	0.0050	3707364
Fluoranthene	ug/g	0.60	0.10		0.0050	3.2	0.020	0.26	0.019	3707008	0.12	0.0050	3707364
Fluorene	ug/g	0.021	<0.0050		0.0050	0.88	0.020	0.0096	<0.0050	3707008	<0.0050	0.0050	3707364
Indeno(1,2,3-cd)pyrene	ug/g	0.22	0.038		0.0050	0.92	0.020	0.11	<0.0050	3707008	0.077	0.0050	3707364
1-Methylnaphthalene	ug/g	0.0072	<0.0050		0.0050	0.19	0.020	<0.0050	<0.0050	3707008	<0.0050	0.0050	3707364
2-Methylnaphthalene	ug/g	0.0061	<0.0050		0.0050	0.046	0.020	<0.0050	<0.0050	3707008	<0.0050	0.0050	3707364
Naphthalene	ug/g	0.0061	<0.0050		0.0050	0.12	0.020	0.0054	<0.0050	3707008	<0.0050	0.0050	3707364
Phenanthrene	ug/g	0.28	0.039		0.0050	2.9	0.020	0.11	0.0082	3707008	0.043	0.0050	3707364
Pyrene	ug/g	0.49	0.092		0.0050	2.5	0.020	0.21	0.016	3707008	0.11	0.0050	3707364
Surrogate Recovery (%)													
D10-Anthracene	%	90	91			94		89	89	3707008	89		3707364
D14-Terphenyl (FS)	%	90	94			100		84	90	3707008	86		3707364
D8-Acenaphthylene	%	88	87			85		86	78	3707008	88		3707364

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Sampler Initials: HC

O.REG 153 PAHS (SOIL)

Maxxam ID		XA9650	XA9651		XA9652	XA9653	XA9654		XA9655	XA9656		
Sampling Date		2014/07/30	2014/07/30		2014/06/28	2014/07/30	2014/08/01		2014/08/01	2014/06/28		
	Units	**BE SA2**	**DUP BE SA2**	**RDL**	**Z SA2**	**BJ SA3**	**BN SA1**	**QC Batch**	**BN SA3**	**AH SA2**	**RDL**	**QC Batch**
Inorganics												
Moisture	%	16	18	1.0	15	27	16	3710943	17	18	1.0	3710992
Calculated Parameters												
Methylnaphthalene, 2-(1-)	ug/g	<0.028	<0.028	0.028	0.14	0.089	<0.0071	3706809	<0.0071	0.018	0.0071	3706809
Polyaromatic Hydrocarbons												
Acenaphthene	ug/g	0.031	<0.020	0.020	0.70	0.17	<0.0050	3707008	<0.0050	<0.0050	0.0050	3707008
Acenaphthylene	ug/g	0.12	0.087	0.020	0.10	0.013	0.022	3707008	<0.0050	0.012	0.0050	3707008
Anthracene	ug/g	0.14	0.060	0.020	1.9	0.34	0.0096	3707008	<0.0050	0.011	0.0050	3707008
Benzo(a)anthracene	ug/g	0.51	0.32	0.020	3.1	0.57	0.033	3707008	<0.0050	0.053	0.0050	3707008
Benzo(a)pyrene	ug/g	0.53	0.35	0.020	2.5	0.44	0.053	3707008	<0.0050	0.058	0.0050	3707008
Benzo(b/j)fluoranthene	ug/g	0.71	0.46	0.020	3.1	0.63	0.073	3707008	0.0060	0.092	0.0050	3707008
Benzo(g,h,i)perylene	ug/g	0.37	0.26	0.020	1.6	0.25	0.044	3707008	<0.0050	0.046	0.0050	3707008
Benzo(k)fluoranthene	ug/g	0.25	0.17	0.020	1.1	0.24	0.026	3707008	<0.0050	0.032	0.0050	3707008
Chrysene	ug/g	0.41	0.24	0.020	2.4	0.47	0.031	3707008	<0.0050	0.059	0.0050	3707008
Dibenz(a,h)anthracene	ug/g	0.088	0.063	0.020	0.38	0.072	0.011	3707008	<0.0050	0.0091	0.0050	3707008
Fluoranthene	ug/g	0.91	0.49	0.020	7.1	1.4	0.057	3707008	0.0071	0.12	0.0050	3707008
Fluorene	ug/g	0.046	0.020	0.020	0.61	0.19	<0.0050	3707008	<0.0050	<0.0050	0.0050	3707008
Indeno(1,2,3-cd)pyrene	ug/g	0.38	0.26	0.020	1.6	0.28	0.049	3707008	<0.0050	0.043	0.0050	3707008
1-Methylnaphthalene	ug/g	<0.020	<0.020	0.020	0.067	0.043	<0.0050	3707008	<0.0050	0.0091	0.0050	3707008
2-Methylnaphthalene	ug/g	0.022	0.020	0.020	0.071	0.047	<0.0050	3707008	<0.0050	0.0091	0.0050	3707008
Naphthalene	ug/g	0.050	0.038	0.020	0.13	0.11	<0.0050	3707008	<0.0050	0.0068	0.0050	3707008
Phenanthrene	ug/g	0.56	0.17	0.020	6.3	1.4	0.024	3707008	<0.0050	0.053	0.0050	3707008
Pyrene	ug/g	0.76	0.43	0.020	5.6	1.0	0.048	3707008	0.0060	0.097	0.0050	3707008
Surrogate Recovery (%)												
D10-Anthracene	%	94	93		91	94	92	3707008	90	87		3707008
D14-Terphenyl (FS)	%	92	93		95	95	96	3707008	92	90		3707008
D8-Acenaphthylene	%	84	85		87	90	86	3707008	85	82		3707008

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 PAHS (SOIL)

Maxxam ID		XA9657	XA9658		XA9659	XA9660	XA9661	XA9662	XA9663		XA9664		
Sampling Date		2014/06/28	2014/06/28		2014/06/28	2014/07/30	2014/07/30	2014/06/28	2014/07/30		2014/07/30		
	Units	**AH SA3**	**AH SA4**	**QC Batch**	**AC SA3**	**AS SA1**	**AS SA2**	**AF SA3**	**R SA2**	**QC Batch**	**R SA3**	**RDL**	**QC Batch**
Inorganics													
Moisture	%	20	16	3710992	16	17	21	12	9.9	3710992	18	1.0	3710992
Calculated Parameters													
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	<0.0071	3706809	<0.0071	0.077	0.17	<0.0071	<0.0071	3706809	<0.0071	0.0071	3706809
Polyaromatic Hydrocarbons													
Acenaphthene	ug/g	<0.0050	<0.0050	3707364	<0.0050	0.37	0.29	<0.0050	<0.0050	3707621	<0.0050	0.0050	3707364
Acenaphthylene	ug/g	<0.0050	<0.0050	3707364	<0.0050	0.013	0.048	<0.0050	0.013	3707621	<0.0050	0.0050	3707364
Anthracene	ug/g	<0.0050	<0.0050	3707364	<0.0050	1.0	0.76	<0.0050	0.0054	3707621	<0.0050	0.0050	3707364
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	3707364	0.012	1.6	1.5	<0.0050	0.026	3707621	<0.0050	0.0050	3707364
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	3707364	0.011	0.96	1.1	<0.0050	0.032	3707621	<0.0050	0.0050	3707364
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.0068	3707364	0.016	1.3	1.5	<0.0050	0.053	3707621	<0.0050	0.0050	3707364
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	3707364	0.0069	0.45	0.57	<0.0050	0.026	3707621	<0.0050	0.0050	3707364
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	3707364	0.0063	0.49	0.55	<0.0050	0.020	3707621	<0.0050	0.0050	3707364
Chrysene	ug/g	<0.0050	0.0052	3707364	0.011	1.2	1.1	<0.0050	0.026	3707621	<0.0050	0.0050	3707364
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	3707364	<0.0050	0.14	0.18	<0.0050	0.0064	3707621	<0.0050	0.0050	3707364
Fluoranthene	ug/g	<0.0050	0.0094	3707364	0.022	3.7	3.2	<0.0050	0.050	3707621	<0.0050	0.0050	3707364
Fluorene	ug/g	<0.0050	<0.0050	3707364	<0.0050	0.42	0.41	<0.0050	<0.0050	3707621	<0.0050	0.0050	3707364
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	3707364	0.0074	0.49	0.63	<0.0050	0.027	3707621	<0.0050	0.0050	3707364
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	3707364	<0.0050	0.035	0.087	<0.0050	<0.0050	3707621	<0.0050	0.0050	3707364
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	3707364	<0.0050	0.042	0.087	<0.0050	<0.0050	3707621	<0.0050	0.0050	3707364
Naphthalene	ug/g	<0.0050	<0.0050	3707364	<0.0050	0.11	0.58	<0.0050	<0.0050	3707621	<0.0050	0.0050	3707364
Phenanthrene	ug/g	<0.0050	0.0052	3707364	0.010	3.9	2.8	<0.0050	0.018	3707621	<0.0050	0.0050	3707364
Pyrene	ug/g	0.0074	0.0094	3707364	0.018	3.0	2.3	<0.0050	0.041	3707621	<0.0050	0.0050	3707364
Surrogate Recovery (%)													
D10-Anthracene	%	92	94	3707364	91	85	89	89	87	3707621	97		3707364
D14-Terphenyl (FS)	%	86	92	3707364	93	90	95	91	88	3707621	92		3707364
D8-Acenaphthylene	%	89	87	3707364	82	82	84	83	80	3707621	95		3707364

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

O.REG 153 PAHS (SOIL)

Maxxam ID		XA9665		XA9666	XA9667	XA9668	XA9669	XA9670		XA9671	XA9672		
Sampling Date		2014/07/31		2014/07/31	2014/07/31	2014/07/31	2014/07/29	2014/07/29		2014/07/31	2014/07/30		
	Units	**T SA2**	**QC Batch**	**T SA4**	**DUP T SA2**	**T SA3**	**BK SA1**	**AG SA4**	**QC Batch**	**V SA5**	**BM SA2**	**RDL**	**QC Batch**
Inorganics													
Moisture	%	2.9	3710992	18	4.5	22	7.0	20	3711301	17	22	1.0	3711301
Calculated Parameters													
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	3706809	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	3706809	<0.0071	<0.0071	0.0071	3706809
Polyaromatic Hydrocarbons													
Acenaphthene	ug/g	<0.0050	3707621	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
Acenaphthylene	ug/g	<0.0050	3707621	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
Anthracene	ug/g	<0.0050	3707621	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
Benzo(a)anthracene	ug/g	<0.0050	3707621	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
Benzo(a)pyrene	ug/g	<0.0050	3707621	<0.0050	0.0056	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
Benzo(b/j)fluoranthene	ug/g	0.0058	3707621	<0.0050	0.0075	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
Benzo(g,h,i)perylene	ug/g	<0.0050	3707621	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
Benzo(k)fluoranthene	ug/g	<0.0050	3707621	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
Chrysene	ug/g	<0.0050	3707621	<0.0050	0.0056	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
Dibenz(a,h)anthracene	ug/g	<0.0050	3707621	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
Fluoranthene	ug/g	0.0058	3707621	<0.0050	0.0089	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
Fluorene	ug/g	<0.0050	3707621	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	3707621	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
1-Methylnaphthalene	ug/g	<0.0050	3707621	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
2-Methylnaphthalene	ug/g	<0.0050	3707621	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
Naphthalene	ug/g	<0.0050	3707621	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
Phenanthrene	ug/g	<0.0050	3707621	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
Pyrene	ug/g	0.0054	3707621	<0.0050	0.0080	<0.0050	<0.0050	<0.0050	3707364	<0.0050	<0.0050	0.0050	3707621
Surrogate Recovery (%)													
D10-Anthracene	%	90	3707621	96	93	98	92	98	3707364	91	86		3707621
D14-Terphenyl (FS)	%	92	3707621	91	88	93	91	90	3707364	90	85		3707621
D8-Acenaphthylene	%	86	3707621	93	93	92	96	95	3707364	82	79		3707621

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Sampler Initials: HC

O.REG 153 PAHS (SOIL)

Maxxam ID		XA9673		XA9674	XA9675	XA9676		XA9677		XA9678		
Sampling Date		2014/07/29		2014/07/30	2014/07/31	2014/07/30		2014/07/29		2014/06/28		
	Units	**F SA1**	**QC Batch**	**AX SA2**	**AP SA3**	**AX SA3**	**QC Batch**	**E SA2 (2)**	**QC Batch**	**AB SA1**	**RDL**	**QC Batch**
Inorganics												
Moisture	%	11	3711301	11	16	11	3711301	7.0	3711301	12	1.0	3711301
Calculated Parameters												
Methylnaphthalene, 2-(1-)	ug/g	0.031	3706809	<0.0071	<0.0071	<0.0071	3706809	<0.0071	3706809	<0.0071	0.0071	3706809
Polyaromatic Hydrocarbons												
Acenaphthene	ug/g	0.042	3707621	0.0076	<0.0050	<0.0050	3707364	0.061	3707621	0.023	0.0050	3707364
Acenaphthylene	ug/g	0.031	3707621	0.018	<0.0050	<0.0050	3707364	<0.0050	3707621	0.028	0.0050	3707364
Anthracene	ug/g	0.13	3707621	0.020	<0.0050	<0.0050	3707364	0.17	3707621	0.075	0.0050	3707364
Benzo(a)anthracene	ug/g	0.48	3707621	0.071	<0.0050	<0.0050	3707364	0.35	3707621	0.29	0.0050	3707364
Benzo(a)pyrene	ug/g	0.45	3707621	0.075	<0.0050	0.0053	3707364	0.29	3707621	0.27	0.0050	3707364
Benzo(b/j)fluoranthene	ug/g	0.59	3707621	0.11	<0.0050	0.0080	3707364	0.38	3707621	0.40	0.0050	3707364
Benzo(g,h,i)perylene	ug/g	0.30	3707621	0.051	<0.0050	<0.0050	3707364	0.15	3707621	0.17	0.0050	3707364
Benzo(k)fluoranthene	ug/g	0.21	3707621	0.035	<0.0050	<0.0050	3707364	0.15	3707621	0.12	0.0050	3707364
Chrysene	ug/g	0.44	3707621	0.079	<0.0050	0.0064	3707364	0.29	3707621	0.28	0.0050	3707364
Dibenz(a,h)anthracene	ug/g	0.074	3707621	0.012	<0.0050	<0.0050	3707364	0.046	3707621	0.043	0.0050	3707364
Fluoranthene	ug/g	0.95	3707621	0.15	<0.0050	0.0096	3707364	0.72	3707621	0.62	0.0050	3707364
Fluorene	ug/g	0.042	3707621	0.0057	<0.0050	<0.0050	3707364	0.071	3707621	0.025	0.0050	3707364
Indeno(1,2,3-cd)pyrene	ug/g	0.29	3707621	0.053	<0.0050	<0.0050	3707364	0.16	3707621	0.18	0.0050	3707364
1-Methylnaphthalene	ug/g	0.015	3707621	<0.0050	<0.0050	<0.0050	3707364	<0.0050	3707621	<0.0050	0.0050	3707364
2-Methylnaphthalene	ug/g	0.015	3707621	<0.0050	<0.0050	<0.0050	3707364	0.0053	3707621	0.0050	0.0050	3707364
Naphthalene	ug/g	0.024	3707621	<0.0050	<0.0050	<0.0050	3707364	<0.0050	3707621	0.0065	0.0050	3707364
Phenanthrene	ug/g	0.55	3707621	0.073	<0.0050	<0.0050	3707364	0.62	3707621	0.31	0.0050	3707364
Pyrene	ug/g	0.76	3707621	0.12	<0.0050	0.0080	3707364	0.52	3707621	0.51	0.0050	3707364
Surrogate Recovery (%)												
D10-Anthracene	%	90	3707621	97	94	94	3707364	87	3707621	87		3707364
D14-Terphenyl (FS)	%	90	3707621	96	89	91	3707364	87	3707621	85		3707364
D8-Acenaphthylene	%	85	3707621	101	92	97	3707364	82	3707621	90		3707364

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		XA9615	XA9615		XA9616	XA9617	XA9618	XA9619		
Sampling Date		2014/07/28	2014/07/28		2014/07/28	2014/07/29	2014/07/29	2014/07/29		
	Units	**AF SA1**	**AF SA1 Lab-Dup**	**QC Batch**	**AC SA3**	**S SA2**	**DUP S SA2**	**E SA2**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	9.5		3707203	16	12	13	7.3	1.0	3709662
BTEX & F1 Hydrocarbons										
Benzene	ug/g	<0.020	<0.020	3707053	<0.020	<0.020	<0.020	<0.020	0.020	3707053
Toluene	ug/g	<0.020	<0.020	3707053	<0.020	<0.020	<0.020	<0.020	0.020	3707053
Ethylbenzene	ug/g	<0.020	<0.020	3707053	<0.020	<0.020	<0.020	<0.020	0.020	3707053
o-Xylene	ug/g	<0.020	<0.020	3707053	<0.020	<0.020	<0.020	<0.020	0.020	3707053
p+m-Xylene	ug/g	<0.040	<0.040	3707053	<0.040	<0.040	<0.040	<0.040	0.040	3707053
Total Xylenes	ug/g	<0.040	<0.040	3707053	<0.040	<0.040	<0.040	<0.040	0.040	3707053
F1 (C6-C10)	ug/g	<10	<10	3707053	<10	<10	<10	<10	10	3707053
F1 (C6-C10) - BTEX	ug/g	<10	<10	3707053	<10	<10	<10	<10	10	3707053
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	3707086	<10	<10	<10	<10	10	3707086
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	3707086	<50	<50	<50	<50	50	3707086
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	3707086	<50	<50	<50	<50	50	3707086
Reached Baseline at C50	ug/g	YES	YES	3707086	YES	YES	YES	YES		3707086
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	97	95	3707053	98	97	98	97		3707053
4-Bromofluorobenzene	%	97	98	3707053	97	98	97	97		3707053
D10-Ethylbenzene	%	88	96	3707053	89	88	90	91		3707053
D4-1,2-Dichloroethane	%	102	101	3707053	103	101	103	103		3707053
o-Terphenyl	%	87	86	3707086	88	89	87	89		3707086

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Report Date: 2014/08/20

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Sampler Initials: HC

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		XA9620	XA9621	XA9622	XA9623	XA9624	XA9625		
Sampling Date		2014/07/29	2014/07/31	2014/08/01	2014/07/30	2014/07/30	2014/07/30		
	Units	**DUP E SA2**	**V SA3**	**N SA3**	**BM SA3**	**BA SA3**	**BJ SA5**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	6.5	11	31	18	20	28	1.0	3709662
BTEX & F1 Hydrocarbons									
Benzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	3707053
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	3707053
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	3707053
o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	3707053
p+m-Xylene	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	3707053
Total Xylenes	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	3707053
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	<10	10	3707053
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	<10	10	3707053
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	<10	10	3707086
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	<50	<50	110	120	50	3707086
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	<50	51	58	50	3707086
Reached Baseline at C50	ug/g	YES	YES	YES	YES	YES	YES		3707086
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	97	98	97	99	97	96		3707053
4-Bromofluorobenzene	%	98	98	95	98	97	97		3707053
D10-Ethylbenzene	%	88	93	95	98	94	96		3707053
D4-1,2-Dichloroethane	%	103	104	102	104	102	101		3707053
o-Terphenyl	%	88	87	85	89	87	88		3707086

RDL = Reportable Detection Limit
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Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9615 **Collected** 2014/07/28
Sample ID AF SA1 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3707053	2014/08/11	2014/08/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3707086	2014/08/11	2014/08/12	Zhiyue (Frank) Zhu
Moisture	BAL	3707203	N/A	2014/08/11	Valentina Kaftani

Maxxam ID XA9615 Dup **Collected** 2014/07/28
Sample ID AF SA1 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3707053	2014/08/11	2014/08/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3707086	2014/08/11	2014/08/12	Zhiyue (Frank) Zhu

Maxxam ID XA9616 **Collected** 2014/07/28
Sample ID AC SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3707053	2014/08/11	2014/08/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3707086	2014/08/11	2014/08/12	Zhiyue (Frank) Zhu
Moisture	BAL	3709662	N/A	2014/08/13	Valentina Kaftani

Maxxam ID XA9617 **Collected** 2014/07/29
Sample ID S SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3707053	2014/08/11	2014/08/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3707086	2014/08/11	2014/08/12	Zhiyue (Frank) Zhu
Moisture	BAL	3709662	N/A	2014/08/13	Valentina Kaftani

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Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9618 **Collected** 2014/07/29
Sample ID DUP S SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3707053	2014/08/11	2014/08/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3707086	2014/08/11	2014/08/12	Zhiyue (Frank) Zhu
Moisture	BAL	3709662	N/A	2014/08/13	Valentina Kaftani

Maxxam ID XA9619 **Collected** 2014/07/29
Sample ID E SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3707053	2014/08/11	2014/08/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3707086	2014/08/11	2014/08/12	Zhiyue (Frank) Zhu
Moisture	BAL	3709662	N/A	2014/08/13	Valentina Kaftani

Maxxam ID XA9620 **Collected** 2014/07/29
Sample ID DUP E SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3707053	2014/08/11	2014/08/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3707086	2014/08/11	2014/08/12	Zhiyue (Frank) Zhu
Moisture	BAL	3709662	N/A	2014/08/13	Valentina Kaftani

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9621 **Collected** 2014/07/31
Sample ID V SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3707053	2014/08/11	2014/08/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3707086	2014/08/11	2014/08/12	Zhiyue (Frank) Zhu
Moisture	BAL	3709662	N/A	2014/08/13	Valentina Kaftani

Maxxam ID XA9622 **Collected** 2014/08/01
Sample ID N SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3707053	2014/08/11	2014/08/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3707086	2014/08/11	2014/08/12	Zhiyue (Frank) Zhu
Moisture	BAL	3709662	N/A	2014/08/13	Valentina Kaftani

Maxxam ID XA9623 **Collected** 2014/07/30
Sample ID BM SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3707053	2014/08/11	2014/08/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3707086	2014/08/11	2014/08/12	Zhiyue (Frank) Zhu
Moisture	BAL	3709662	N/A	2014/08/13	Valentina Kaftani

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Report Date: 2014/08/20

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Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9624 **Collected** 2014/07/30
Sample ID BA SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3707053	2014/08/11	2014/08/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3707086	2014/08/11	2014/08/12	Zhiyue (Frank) Zhu
Moisture	BAL	3709662	N/A	2014/08/13	Valentina Kaftani

Maxxam ID XA9625 **Collected** 2014/07/30
Sample ID BJ SA5 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3707053	2014/08/11	2014/08/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3707086	2014/08/11	2014/08/12	Zhiyue (Frank) Zhu
Moisture	BAL	3709662	N/A	2014/08/13	Valentina Kaftani

Maxxam ID XA9626 **Collected** 2014/07/28
Sample ID AJ SA1 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3712490	2014/08/15	2014/08/18	Kevin Comerford
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9626 Dup
Sample ID AJ SA1
Matrix Soil

Collected 2014/07/28
Shipped
Received 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/19	Automated Statchk
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9627
Sample ID AJ SA3
Matrix Soil

Collected 2014/07/25
Shipped
Received 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711451	2014/08/14	2014/08/20	Kevin Comerford
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9628
Sample ID AV SA1
Matrix Soil

Collected 2014/07/31
Shipped
Received 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707621	2014/08/12	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9628 Dup **Collected** 2014/07/31
Sample ID AV SA1 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani

Maxxam ID XA9629 **Collected** 2014/07/31
Sample ID AV SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707621	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9629 Dup **Collected** 2014/07/31
Sample ID AV SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman

Maxxam ID XA9630 **Collected** 2014/07/29
Sample ID S SA1 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707621	2014/08/12	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9631 **Collected** 2014/07/29
Sample ID S SA2 _ DUP **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9632 **Collected** 2014/07/29
Sample ID DUP S SA2 (2) **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9633 **Collected** 2014/07/29
Sample ID W SA1 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3712490	2014/08/15	2014/08/18	Kevin Comerford
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9634 **Collected** 2014/07/29
Sample ID X SA1 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707621	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9635 **Collected** 2014/07/29
Sample ID X SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711297	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

Maxxam ID XA9635 Dup **Collected** 2014/07/29
Sample ID X SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/19	Automated Statchk
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9636 **Collected** 2014/07/29
Sample ID J SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

Maxxam ID XA9637 **Collected** 2014/07/29
Sample ID G14/E1 SA 2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9638 **Collected** 2014/07/29
Sample ID AK SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9639 **Collected** 2014/07/29
Sample ID AK SA1 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711297	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9640 **Collected** 2014/06/28
Sample ID AA SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

Maxxam ID XA9641 **Collected** 2014/06/28
Sample ID DUP AA SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9641 Dup
Sample ID DUP AA SA3
Matrix Soil

Collected 2014/06/28
Shipped
Received 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman

Maxxam ID XA9642
Sample ID AC SA1
Matrix Soil

Collected 2014/06/28
Shipped
Received 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

Maxxam ID XA9643
Sample ID AE SA2
Matrix Soil

Collected 2014/06/28
Shipped
Received 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9644 **Collected** 2014/06/28
Sample ID Y SA1 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

Maxxam ID XA9645 **Collected** 2014/06/28
Sample ID Y SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

Maxxam ID XA9645 Dup **Collected** 2014/06/28
Sample ID Y SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9646 **Collected** 2014/07/30
Sample ID BA SA3 (2) **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

Maxxam ID XA9647 **Collected** 2014/07/30
Sample ID BE SA1 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

Maxxam ID XA9648 **Collected** 2014/07/30
Sample ID BE SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9649 **Collected** 2014/07/30
Sample ID BA SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706374	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9650 **Collected** 2014/07/30
Sample ID BE SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

Maxxam ID XA9651 **Collected** 2014/07/30
Sample ID DUP BE SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9652 **Collected** 2014/06/28
Sample ID Z SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

Maxxam ID XA9653 **Collected** 2014/07/30
Sample ID BJ SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

Maxxam ID XA9654 **Collected** 2014/08/01
Sample ID BN SA1 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9655 **Collected** 2014/08/01
Sample ID BN SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

Maxxam ID XA9656 **Collected** 2014/06/28
Sample ID AH SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711001	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707008	2014/08/11	2014/08/12	Darryl Tiller

Maxxam ID XA9657 **Collected** 2014/06/28
Sample ID AH SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9658 **Collected** 2014/06/28
Sample ID AH SA4 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3712490	2014/08/15	2014/08/18	Kevin Comerford
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9659 **Collected** 2014/06/28
Sample ID AC SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707621	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9660 **Collected** 2014/07/30
Sample ID AS SA1 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707621	2014/08/12	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9661 **Collected** 2014/07/30
Sample ID AS SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711451	2014/08/14	2014/08/20	Kevin Comerford
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707621	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9662 **Collected** 2014/06/28
Sample ID AF SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707621	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9663 **Collected** 2014/07/30
Sample ID R SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707621	2014/08/12	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9664 **Collected** 2014/07/30
Sample ID R SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9665 **Collected** 2014/07/31
Sample ID T SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3710992	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707621	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9666 **Collected** 2014/07/31
Sample ID T SA4 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3711301	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9667 **Collected** 2014/07/31
Sample ID DUP T SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3712490	2014/08/15	2014/08/18	Kevin Comerford
Moisture	BAL	3711301	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9668 **Collected** 2014/07/31
Sample ID T SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3711301	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9669 **Collected** 2014/07/29
Sample ID BK SA1 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711451	2014/08/14	2014/08/20	Kevin Comerford
Moisture	BAL	3711301	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9670 **Collected** 2014/07/29
Sample ID AG SA4 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3711301	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9671 **Collected** 2014/07/31
Sample ID V SA5 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711451	2014/08/14	2014/08/20	Kevin Comerford
Moisture	BAL	3711301	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707621	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9672 **Collected** 2014/07/30
Sample ID BM SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3712490	2014/08/15	2014/08/18	Kevin Comerford
Moisture	BAL	3711301	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707621	2014/08/12	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9673 **Collected** 2014/07/29
Sample ID F SA1 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/20	John Bowman
Moisture	BAL	3711301	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707621	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9674 **Collected** 2014/07/30
Sample ID AX SA2 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3711301	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9675 **Collected** 2014/07/31
Sample ID AP SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3711301	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

Test Summary

Maxxam ID XA9676 **Collected** 2014/07/30
Sample ID AX SA3 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711451	2014/08/14	2014/08/20	Kevin Comerford
Moisture	BAL	3711301	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9677 **Collected** 2014/07/29
Sample ID E SA2 (2) **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711349	2014/08/14	2014/08/19	John Bowman
Moisture	BAL	3711301	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707621	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9678 **Collected** 2014/06/28
Sample ID AB SA1 **Shipped**
Matrix Soil **Received** 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3706809	N/A	2014/08/15	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3711451	2014/08/14	2014/08/20	Kevin Comerford
Moisture	BAL	3711301	N/A	2014/08/14	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3707364	2014/08/12	2014/08/12	Darryl Tiller

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Package 1	8.0°C
Package 2	9.3°C

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

GENERAL COMMENTS

Note: Sample ID AJ SA1 updated to AS SA1 and E SA1 updated to BESA1.

Sample XA9638-01: PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample XA9643-01: PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample XA9646-01: PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample XA9650-01: PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample XA9651-01: PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

O.REG 153 PAHS (SOIL)

PAH Compounds in Soil by GC/MS (SIM): Duplicate results exceeded RPD acceptance criteria due to the sample heterogeneity. The sample heterogeneity had been confirmed by reanalysis. The variability in the results for flagged analytes may be more pronounced.

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

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
3707008	D10-Anthracene	2014/08/12	90	50 - 130	94	50 - 130	90	%		
3707008	D14-Terphenyl (FS)	2014/08/12	92	50 - 130	99	50 - 130	93	%		
3707008	D8-Acenaphthylene	2014/08/12	87	50 - 130	91	50 - 130	85	%		
3707008	Acenaphthene	2014/08/12	78	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
3707008	Acenaphthylene	2014/08/12	78	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
3707008	Anthracene	2014/08/12	79	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
3707008	Benzo(a)anthracene	2014/08/12	80	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
3707008	Benzo(a)pyrene	2014/08/12	78	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
3707008	Benzo(b/j)fluoranthene	2014/08/12	82	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
3707008	Benzo(g,h,i)perylene	2014/08/12	73	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
3707008	Benzo(k)fluoranthene	2014/08/12	85	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
3707008	Chrysene	2014/08/12	78	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
3707008	Dibenz(a,h)anthracene	2014/08/12	74	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
3707008	Fluoranthene	2014/08/12	81	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
3707008	Fluorene	2014/08/12	75	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
3707008	Indeno(1,2,3-cd)pyrene	2014/08/12	77	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
3707008	1-Methylnaphthalene	2014/08/12	79	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
3707008	2-Methylnaphthalene	2014/08/12	79	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
3707008	Naphthalene	2014/08/12	76	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
3707008	Phenanthrene	2014/08/12	78	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
3707008	Pyrene	2014/08/12	85	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
3707053	1,4-Difluorobenzene	2014/08/12	95	60 - 140	97	60 - 140	97	%		
3707053	4-Bromofluorobenzene	2014/08/12	96	60 - 140	97	60 - 140	97	%		
3707053	D10-Ethylbenzene	2014/08/12	87	60 - 140	83	60 - 140	79	%		
3707053	D4-1,2-Dichloroethane	2014/08/12	100	60 - 140	101	60 - 140	101	%		
3707053	Benzene	2014/08/12	81	60 - 140	84	60 - 140	<0.020	ug/g	NC	50
3707053	Toluene	2014/08/12	82	60 - 140	86	60 - 140	<0.020	ug/g	NC	50
3707053	Ethylbenzene	2014/08/12	89	60 - 140	98	60 - 140	<0.020	ug/g	NC	50
3707053	o-Xylene	2014/08/12	93	60 - 140	98	60 - 140	<0.020	ug/g	NC	50
3707053	p+m-Xylene	2014/08/12	85	60 - 140	89	60 - 140	<0.040	ug/g	NC	50
3707053	F1 (C6-C10)	2014/08/12	75	60 - 140	87	80 - 120	<10	ug/g	NC	30
3707053	Total Xylenes	2014/08/12					<0.040	ug/g	NC	50
3707053	F1 (C6-C10) - BTEX	2014/08/12					<10	ug/g	NC	30
3707086	o-Terphenyl	2014/08/12	87	50 - 130	87	50 - 130	89	%		
3707086	F2 (C10-C16 Hydrocarbons)	2014/08/12	96	50 - 130	97	80 - 120	<10	ug/g	NC	30
3707086	F3 (C16-C34 Hydrocarbons)	2014/08/12	95	50 - 130	94	80 - 120	<50	ug/g	NC	30
3707086	F4 (C34-C50 Hydrocarbons)	2014/08/12	97	50 - 130	99	80 - 120	<50	ug/g	NC	30
3707203	Moisture	2014/08/11							0	20
3707364	D10-Anthracene	2014/08/12	82	50 - 130	95	50 - 130	101	%		
3707364	D14-Terphenyl (FS)	2014/08/12	81	50 - 130	89	50 - 130	95	%		

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: HC

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
3707364	D8-Acenaphthylene	2014/08/12	85	50 - 130	92	50 - 130	96	%		
3707364	Acenaphthene	2014/08/12	72	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
3707364	Acenaphthylene	2014/08/12	85	50 - 130	90	50 - 130	<0.0050	ug/g	33.4	40
3707364	Anthracene	2014/08/12	53	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
3707364	Benzo(a)anthracene	2014/08/12	NC	50 - 130	90	50 - 130	<0.0050	ug/g	128(1)	40
3707364	Benzo(a)pyrene	2014/08/12	NC	50 - 130	88	50 - 130	<0.0050	ug/g	108(1)	40
3707364	Benzo(b/j)fluoranthene	2014/08/12	NC	50 - 130	90	50 - 130	<0.0050	ug/g	108(1)	40
3707364	Benzo(g,h,i)perylene	2014/08/12	55	50 - 130	89	50 - 130	<0.0050	ug/g	94.2(1)	40
3707364	Benzo(k)fluoranthene	2014/08/12	61	50 - 130	92	50 - 130	<0.0050	ug/g	120(1)	40
3707364	Chrysene	2014/08/12	NC	50 - 130	89	50 - 130	<0.0050	ug/g	117(1)	40
3707364	Dibenz(a,h)anthracene	2014/08/12	74	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
3707364	Fluoranthene	2014/08/12	NC	50 - 130	87	50 - 130	<0.0050	ug/g	131(1)	40
3707364	Fluorene	2014/08/12	75	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
3707364	Indeno(1,2,3-cd)pyrene	2014/08/12	53	50 - 130	89	50 - 130	<0.0050	ug/g	95.3(1)	40
3707364	1-Methylnaphthalene	2014/08/12	76	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
3707364	2-Methylnaphthalene	2014/08/12	73	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
3707364	Naphthalene	2014/08/12	69	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
3707364	Phenanthrene	2014/08/12	NC	50 - 130	86	50 - 130	<0.0050	ug/g	151(1)	40
3707364	Pyrene	2014/08/12	NC	50 - 130	90	50 - 130	<0.0050	ug/g	123(1)	40
3707621	D10-Anthracene	2014/08/12	90	50 - 130	88	50 - 130	90	%		
3707621	D14-Terphenyl (FS)	2014/08/12	93	50 - 130	94	50 - 130	94	%		
3707621	D8-Acenaphthylene	2014/08/12	84	50 - 130	83	50 - 130	87	%		
3707621	Acenaphthene	2014/08/12	90	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
3707621	Acenaphthylene	2014/08/12	87	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
3707621	Anthracene	2014/08/12	91	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
3707621	Benzo(a)anthracene	2014/08/12	94	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
3707621	Benzo(a)pyrene	2014/08/12	90	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
3707621	Benzo(b/j)fluoranthene	2014/08/12	95	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
3707621	Benzo(g,h,i)perylene	2014/08/12	92	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
3707621	Benzo(k)fluoranthene	2014/08/12	96	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
3707621	Chrysene	2014/08/12	93	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
3707621	Dibenz(a,h)anthracene	2014/08/12	93	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
3707621	Fluoranthene	2014/08/12	91	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
3707621	Fluorene	2014/08/12	90	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
3707621	Indeno(1,2,3-cd)pyrene	2014/08/12	91	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
3707621	1-Methylnaphthalene	2014/08/12	77	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
3707621	2-Methylnaphthalene	2014/08/12	74	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
3707621	Naphthalene	2014/08/12	84	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
3707621	Phenanthrene	2014/08/12	90	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
3707621	Pyrene	2014/08/12	92	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40

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Golder Associates Ltd
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Sampler Initials: HC

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
3709662	Moisture	2014/08/13							0.6	20
3710943	Moisture	2014/08/14							0	20
3710992	Moisture	2014/08/14							0	20
3711001	Acid Extractable Antimony (Sb)	2014/08/20	96	75 - 125	106	80 - 120	<0.20	ug/g	NC	30
3711001	Acid Extractable Arsenic (As)	2014/08/20	100	75 - 125	102	80 - 120	<1.0	ug/g	NC	30
3711001	Acid Extractable Barium (Ba)	2014/08/20	NC	75 - 125	101	80 - 120	<0.50	ug/g	0.4	30
3711001	Acid Extractable Beryllium (Be)	2014/08/20	102	75 - 125	105	80 - 120	<0.20	ug/g	NC	30
3711001	Acid Extractable Boron (B)	2014/08/20	100	75 - 125	101	80 - 120	<5.0	ug/g	NC	30
3711001	Acid Extractable Cadmium (Cd)	2014/08/20	105	75 - 125	105	80 - 120	<0.10	ug/g	NC	30
3711001	Acid Extractable Chromium (Cr)	2014/08/20	NC	75 - 125	101	80 - 120	<1.0	ug/g	2.6	30
3711001	Acid Extractable Cobalt (Co)	2014/08/20	100	75 - 125	102	80 - 120	<0.10	ug/g	6.8	30
3711001	Acid Extractable Copper (Cu)	2014/08/20	100	75 - 125	102	80 - 120	<0.50	ug/g	11.0	30
3711001	Acid Extractable Lead (Pb)	2014/08/20	103	75 - 125	105	80 - 120	<1.0	ug/g	NC	30
3711001	Acid Extractable Molybdenum (Mo)	2014/08/20	104	75 - 125	106	80 - 120	<0.50	ug/g	NC	30
3711001	Acid Extractable Nickel (Ni)	2014/08/20	100	75 - 125	101	80 - 120	<0.50	ug/g	4.8	30
3711001	Acid Extractable Selenium (Se)	2014/08/20	99	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
3711001	Acid Extractable Silver (Ag)	2014/08/20	106	75 - 125	107	80 - 120	<0.20	ug/g	NC	30
3711001	Acid Extractable Thallium (Tl)	2014/08/20	97	75 - 125	97	80 - 120	<0.050	ug/g	NC	30
3711001	Acid Extractable Uranium (U)	2014/08/20	100	75 - 125	103	80 - 120	<0.050	ug/g	2.7	30
3711001	Acid Extractable Vanadium (V)	2014/08/20	NC	75 - 125	100	80 - 120	<5.0	ug/g	NC	30
3711001	Acid Extractable Zinc (Zn)	2014/08/20	NC	75 - 125	99	80 - 120	<5.0	ug/g	NC	30
3711297	Acid Extractable Antimony (Sb)	2014/08/19	100	75 - 125	104	80 - 120	<0.20	ug/g	NC	30
3711297	Acid Extractable Arsenic (As)	2014/08/19	103	75 - 125	101	80 - 120	<1.0	ug/g	NC	30
3711297	Acid Extractable Barium (Ba)	2014/08/19	NC	75 - 125	101	80 - 120	<0.50	ug/g	7.6	30
3711297	Acid Extractable Beryllium (Be)	2014/08/19	110	75 - 125	106	80 - 120	<0.20	ug/g	NC	30
3711297	Acid Extractable Boron (B)	2014/08/19	112	75 - 125	106	80 - 120	<5.0	ug/g	NC	30
3711297	Acid Extractable Cadmium (Cd)	2014/08/19	101	75 - 125	101	80 - 120	<0.10	ug/g	NC	30
3711297	Acid Extractable Chromium (Cr)	2014/08/19	109	75 - 125	105	80 - 120	<1.0	ug/g	1.6	30
3711297	Acid Extractable Cobalt (Co)	2014/08/19	105	75 - 125	106	80 - 120	<0.10	ug/g	5.0	30
3711297	Acid Extractable Copper (Cu)	2014/08/19	93	75 - 125	105	80 - 120	<0.50	ug/g	27.7	30
3711297	Acid Extractable Lead (Pb)	2014/08/19	NC	75 - 125	102	80 - 120	<1.0	ug/g	36.5 (1)	30
3711297	Acid Extractable Molybdenum (Mo)	2014/08/19	108	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
3711297	Acid Extractable Nickel (Ni)	2014/08/19	102	75 - 125	105	80 - 120	<0.50	ug/g	0.5	30
3711297	Acid Extractable Selenium (Se)	2014/08/19	101	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
3711297	Acid Extractable Silver (Ag)	2014/08/19	102	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
3711297	Acid Extractable Thallium (Tl)	2014/08/19	91	75 - 125	96	80 - 120	<0.050	ug/g	NC	30
3711297	Acid Extractable Uranium (U)	2014/08/19	103	75 - 125	101	80 - 120	<0.050	ug/g	6.9	30
3711297	Acid Extractable Vanadium (V)	2014/08/19	109	75 - 125	103	80 - 120	<5.0	ug/g	NC	30
3711297	Acid Extractable Zinc (Zn)	2014/08/19	NC	75 - 125	102	80 - 120	<5.0	ug/g	34.0 (1)	30
3711301	Moisture	2014/08/14							0	20

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Maxxam Job #: B4E2676
Report Date: 2014/08/20

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Client Project #: 14-1122-0005

Sampler Initials: HC

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
3711349	Acid Extractable Antimony (Sb)	2014/08/19	98	75 - 125	106	80 - 120	<0.20	ug/g	NC	30
3711349	Acid Extractable Arsenic (As)	2014/08/19	97	75 - 125	102	80 - 120	<1.0	ug/g	NC	30
3711349	Acid Extractable Barium (Ba)	2014/08/19	NC	75 - 125	105	80 - 120	<0.50	ug/g	2.7	30
3711349	Acid Extractable Beryllium (Be)	2014/08/19	102	75 - 125	104	80 - 120	<0.20	ug/g	NC	30
3711349	Acid Extractable Boron (B)	2014/08/19	99	75 - 125	104	80 - 120	<5.0	ug/g	NC	30
3711349	Acid Extractable Cadmium (Cd)	2014/08/19	99	75 - 125	101	80 - 120	<0.10	ug/g	NC	30
3711349	Acid Extractable Chromium (Cr)	2014/08/19	NC	75 - 125	105	80 - 120	<1.0	ug/g	1.3	30
3711349	Acid Extractable Cobalt (Co)	2014/08/19	101	75 - 125	105	80 - 120	<0.10	ug/g	2.8	30
3711349	Acid Extractable Copper (Cu)	2014/08/19	98	75 - 125	107	80 - 120	<0.50	ug/g	3.8	30
3711349	Acid Extractable Lead (Pb)	2014/08/19	98	75 - 125	103	80 - 120	<1.0	ug/g	NC	30
3711349	Acid Extractable Molybdenum (Mo)	2014/08/19	99	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
3711349	Acid Extractable Nickel (Ni)	2014/08/19	98	75 - 125	104	80 - 120	<0.50	ug/g	0.9	30
3711349	Acid Extractable Selenium (Se)	2014/08/19	99	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
3711349	Acid Extractable Silver (Ag)	2014/08/19	99	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
3711349	Acid Extractable Thallium (Tl)	2014/08/19	89	75 - 125	93	80 - 120	<0.050	ug/g	NC	30
3711349	Acid Extractable Uranium (U)	2014/08/19	98	75 - 125	99	80 - 120	<0.050	ug/g	0.9	30
3711349	Acid Extractable Vanadium (V)	2014/08/19	NC	75 - 125	102	80 - 120	<5.0	ug/g	3.3	30
3711349	Acid Extractable Zinc (Zn)	2014/08/19	NC	75 - 125	108	80 - 120	<5.0	ug/g	1.9	30
3711451	Acid Extractable Antimony (Sb)	2014/08/20	99	75 - 125	107	80 - 120	<0.20	ug/g	NC	30
3711451	Acid Extractable Arsenic (As)	2014/08/20	105	75 - 125	105	80 - 120	<1.0	ug/g	NC	30
3711451	Acid Extractable Barium (Ba)	2014/08/20	NC	75 - 125	103	80 - 120	<0.50	ug/g	7.0	30
3711451	Acid Extractable Beryllium (Be)	2014/08/20	104	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
3711451	Acid Extractable Boron (B)	2014/08/20	95	75 - 125	100	80 - 120	<5.0	ug/g	NC	30
3711451	Acid Extractable Cadmium (Cd)	2014/08/20	108	75 - 125	106	80 - 120	<0.10	ug/g	NC	30
3711451	Acid Extractable Chromium (Cr)	2014/08/20	NC	75 - 125	102	80 - 120	<1.0	ug/g	1.5	30
3711451	Acid Extractable Cobalt (Co)	2014/08/20	NC	75 - 125	105	80 - 120	<0.10	ug/g	1.6	30
3711451	Acid Extractable Copper (Cu)	2014/08/20	NC	75 - 125	105	80 - 120	<0.50	ug/g	15.8	30
3711451	Acid Extractable Lead (Pb)	2014/08/20	NC	75 - 125	105	80 - 120	<1.0	ug/g	11.9	30
3711451	Acid Extractable Molybdenum (Mo)	2014/08/20	108	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
3711451	Acid Extractable Nickel (Ni)	2014/08/20	NC	75 - 125	106	80 - 120	<0.50	ug/g	0.3	30
3711451	Acid Extractable Selenium (Se)	2014/08/20	106	75 - 125	107	80 - 120	<0.50	ug/g	NC	30
3711451	Acid Extractable Silver (Ag)	2014/08/20	109	75 - 125	106	80 - 120	<0.20	ug/g	NC	30
3711451	Acid Extractable Thallium (Tl)	2014/08/20	103	75 - 125	107	80 - 120	<0.050	ug/g	NC	30
3711451	Acid Extractable Uranium (U)	2014/08/20	112	75 - 125	108	80 - 120	<0.050	ug/g	3.9	30
3711451	Acid Extractable Vanadium (V)	2014/08/20	NC	75 - 125	105	80 - 120	<5.0	ug/g	0.01	30
3711451	Acid Extractable Zinc (Zn)	2014/08/20	NC	75 - 125	105	80 - 120	<5.0	ug/g	4.6	30
3712490	Acid Extractable Antimony (Sb)	2014/08/18	98	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
3712490	Acid Extractable Arsenic (As)	2014/08/18	98	75 - 125	98	80 - 120	<1.0	ug/g	NC	30
3712490	Acid Extractable Barium (Ba)	2014/08/18	NC	75 - 125	98	80 - 120	<0.50	ug/g	0.3	30
3712490	Acid Extractable Beryllium (Be)	2014/08/18	103	75 - 125	102	80 - 120	<0.20	ug/g	NC	30

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Sampler Initials: HC

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
3712490	Acid Extractable Boron (B)	2014/08/18	100	75 - 125	102	80 - 120	<5.0	ug/g	NC	30
3712490	Acid Extractable Cadmium (Cd)	2014/08/18	101	75 - 125	97	80 - 120	<0.10	ug/g	NC	30
3712490	Acid Extractable Chromium (Cr)	2014/08/18	NC	75 - 125	99	80 - 120	<1.0	ug/g	1.6	30
3712490	Acid Extractable Cobalt (Co)	2014/08/18	99	75 - 125	99	80 - 120	<0.10	ug/g	1.4	30
3712490	Acid Extractable Copper (Cu)	2014/08/18	95	75 - 125	99	80 - 120	<0.50	ug/g	47.3(1)	30
3712490	Acid Extractable Lead (Pb)	2014/08/18	94	75 - 125	99	80 - 120	<1.0	ug/g	0.7	30
3712490	Acid Extractable Molybdenum (Mo)	2014/08/18	102	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
3712490	Acid Extractable Nickel (Ni)	2014/08/18	99	75 - 125	101	80 - 120	<0.50	ug/g	2.4	30
3712490	Acid Extractable Selenium (Se)	2014/08/18	100	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
3712490	Acid Extractable Silver (Ag)	2014/08/18	102	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
3712490	Acid Extractable Thallium (Tl)	2014/08/18	90	75 - 125	96	80 - 120	<0.050	ug/g	NC	30
3712490	Acid Extractable Uranium (U)	2014/08/18	100	75 - 125	100	80 - 120	<0.050	ug/g	0.2	30
3712490	Acid Extractable Vanadium (V)	2014/08/18	NC	75 - 125	98	80 - 120	<5.0	ug/g	NC	30
3712490	Acid Extractable Zinc (Zn)	2014/08/18	NC	75 - 125	98	80 - 120	<5.0	ug/g	10.1	30

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).
(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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Validation Signature Page

Maxxam Job #: B4E2676

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

Brad Newman, Scientific Specialist

Suzana Popovic, Supervisor, Hydrocarbons

Medhat Riskallah, Manager, Hydrocarbon Department

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Validation Signature Page

Maxxam Job #: B4E2676

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

Cristina Carriere, Scientific Services

==========

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 IMMEDIATE TEST

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Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION	REPORT INFORMATION (if differs from invoice)	PROJECT INFORMATION	TURNAROUND TIME (TAT) REQUIRED
Company Name: Golder Associates	Company Name:	Quotation #: B44309	[X] Regular TAT (5-7 days)
Contact Name: Paul Hurst / Jillian Lachey	Contact Name:	P.O. #:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 32 Steacie Drive	Address:	Project #: 14-1122-0005	Rush TAT (Applicable Surcharge)
		Site Location:	[ ] 1 Day (100%)
Phone: 613 - 592 - 9600 Fax:	Phone: Fax:	Site #:	[ ] 2 Days (50%)
Email: phurst@golder.com / jlachey@golder.com	Email:	Sampled By: Harold Cameron	[ ] 3-4 Days (25%)

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

REGULATION 153 (2011)	OTHER REGULATIONS
[X] Table 1 [ ] Res/Park [ ] Med/Fine	[ ] CCME [ ] Sanitary Sewer Bylaw
[ ] Table 2 [ ] Ind/Comm [ ] Coarse	[ ] MISA [ ] Storm Sewer Bylaw
[ ] Table 3 [ ] Agri/Other	[ ] PWQO Municipality:
[ ] Table ___	[ ] Other (Specify):
FOR RSC (PLEASE CIRCLE) YES / NO	[ ] REG 558 (MINIMUM 3 DAY TAT REQUIRED)

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

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

ANALYSIS REQUESTED

Rush Confirmation #:

Date Required:

LABORATORY USE ONLY

CUSTODY SEAL (Y/N)		Temperature (°C) on Receipt
Present	Y	4/8/12
Intact	Y	
COOLING MEDIA PRESENT (Y / N)	Y	9/7/12

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX	# OF CONT.	FIELD FILTERED (PLEASE CIRCLE) Metals / Hg / CrVI	PAH	Metals (ICPMS)	PHC F1 - F4 + BTEX	COMMENTS / TAT COMMENTS
1	AF SA1	June 28, '14		S	3	N			✓	
2	AC SA3	June 28		S	3	N			✓	
3	S SA2	June 29		S	3	N			✓	
4	DUP S SA2	June 29		S	3	N			✓	
5	E SA2	June 29		S	3	N			✓	
6	DUP E SA2	June 29		S	3	N			✓	
7	V SA3	June 31		S	3	N			✓	
8	N SA3	Aug 1		S	3	N			✓	
9	BM SA3	July 30		S	3	N			✓	
10	BA SA3	July 30		S	3	N			✓	

REC'D IN OTTAWA

8-Aug-14 16:00
Parnian Baber
B4E2676
HG1 ENV-763

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	# JARS AND I SUBMI
Tony Lyon	8/8/2014	13:00	C. Bergman	2014/08/08	16:00	
			H.S Grewal HARMAN GREWAL	2014/08/09	10:15	

8/7/1°C
9/3/3°C

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CHAIN OF CUSTODY RECORD

INVOICE INFORMATION	REPORT INFORMATION (if differs from invoice)	PROJECT INFORMATION	TURNAROUND TIME (TAT) REQUIRED
Company Name: Golder Associates	Company Name:	Quotation #: B44309	[X] Regular TAT (5-7 days)
Contact Name: Paul Hurst	Contact Name:	P.O. #:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 32 Steacie Drive	Address:	Project #: 14-1122-0005	Rush TAT (Applicable Surcharge)
		Site Location:	[ ] 1 Day (100%)
Phone: 613 - 592 - 9600 Fax:	Phone: Fax:	Site #:	[ ] 2 Days (50%)
Email: phurst@golder.com	Email:	Sampled By: Harold Cameron	[ ] 3-4 Days (25%)

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

REGULATION 153 (2011)	OTHER REGULATIONS
[X] Table 1 [ ] Res/Park [ ] Med/Fine	[ ] CCME [ ] Sanitary Sewer Bylaw
[ ] Table 2 [ ] Ind/Comm [ ] Coarse	[ ] MISA [ ] Storm Sewer Bylaw
[ ] Table 3 [ ] Agri/Other	[ ] PWQO Municipality:
[ ] Table ___	[ ] Other (Specify):
FOR RSC (PLEASE CIRCLE) YES / NO	[ ] REG 558 (MINIMUM 3 DAY TAT REQUIRED)

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

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

ANALYSIS REQUESTED

Rush Confirmation #:

Date Required:

LABORATORY USE ONLY

CUSTODY SEAL (Y/N)		Temperature (°C) on Receipt
Present	Y	4/8/12
Intact	Y	
COOLING MEDIA PRESENT (Y/N)	Y	9/7/12

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX	# OF CONT.	FIELD FILTERED (PLEASE CIRCLE) Metals / Hg / CrVI	PAH	Metals (ICPMS)	PHC F1 - F4 + BTEX	COMMENTS / TAT COMMENTS
1	BJ SA5	July 30		S	3	N			✓	
2	AJ SA1	July 28		S	2	N	✓	✓		
3	AJ SA3	July 25		S	2	N	✓	✓		
4	AV SA1	July 31		S	2	N	✓	✓		
5	AV SA3	July 31		S	2	N	✓	✓		
6	S SA1	July 29		S	2	N	✓	✓		
7	S SA2	July 29		S	2	N	✓	✓		REC'D IN OTTAWA
8	DUP S SA2	July 29		S	2	N	✓	✓		
9	W SA1	July 29		S	2	N	✓	✓		
10	X SA1	July 29		S	2	N	✓	✓		

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	# JARS USED AND NOT SUBMITTED	MAXXAM JOB #
Tony Lyon	8/8/2014	13:00	C. Bergeron	2014/08/08	16:00		
			H.S Grewal HARRY GREWAL	2014/08/04	10:15		

8/7/1°C
9/3/3°C
8/4/10°C

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CHAIN OF CUSTODY RECORD

Page 3 of 7

INVOICE INFORMATION		REPORT INFORMATION (if differs from invoice)		PROJECT INFORMATION		TURNAROUND TIME (TAT) REQUIRED
Company Name:	Golder Associates	Company Name:		Quotation #:	B44309	[X] Regular TAT (5-7 days)
Contact Name:	Paul Hurst	Contact Name:		P.O. #:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	32 Steacie Drive	Address:		Project #:	14-1122-0005	Rush TAT (Applicable Surcharge)
				Site Location:		[ ] 1 Day (100%)
Phone:	613 - 592 - 9600 Fax:	Phone:	Fax:	Site #:		[ ] 2 Days (50%)
Email:	phurst@golder.com	Email:		Sampled By:	Harold Cameron	[ ] 3-4 Days (25%)

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

REGULATION 153 (2011)

[X] Table 1 [ ] Res/Park [ ] Med/Fine
[ ] Table 2 [ ] Ind/Comm [ ] Coarse
[ ] Table 3 [ ] Agri/Other
[ ] Table ___

FOR RSC (PLEASE CIRCLE) YES / NO

OTHER REGULATIONS

[ ] CCME [ ] Sanitary Sewer Bylaw
[ ] MISA [ ] Storm Sewer Bylaw
[ ] PWQO Municipality:
[ ] Other (Specify):
[ ] REG 558 (MINIMUM 3 DAY TAT REQUIRED)

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

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

ANALYSIS REQUESTED

Rush Confirmation #:

Date Required:

LABORATORY USE ONLY

CUSTODY SEAL (Y/N)		Temperature (°C) on Receipt
Present	Y	4/8/12
Intact	Y	
COOLING MEDIA PRESENT (Y/N)	Y	9/7/12

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX	# OF CONT.	FIELD FILTERED (PLEASE CIRCLE) Metals / Hg / CrVI	PAH	Metals (ICPMS)	PHC F1 - F4 + BTEX	COMMENTS / TAT COMMENTS
1	X SA2	July 29		S	3	N	✓	✓		
2	J SA2	July 29		S	2	N	✓	✓		
3	G14/E1 SA 2	July 29		S	2	N	✓	✓		
4	AK SA3	July 29		S	2	N	✓	✓		
5	AK SA1	July 29		S	2	N	✓	✓		
6	AA SA3	July 28		S	2	N	✓	✓		REC'D IN OTTAWA
7	DUP AA SA3	July 28		S	2	N	✓	✓		
8	AC SA1	July 28		S	2	N	✓	✓		
9	AE SA2	July 28		S	2	N	✓	✓		
10	Y SA1	July 28		S	2	N	✓	✓		

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	# JARS USED AND NOT SUBMITTED	MAXXAM JOB #
Tony Lyon [signature]	8/8/2014	13:00	[signature] C. Bergeron	2014/08/08	16:00		
			H. Grenal Harman Grenal	2014/08/09	10:15		

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8/7/1°C
9/3/3°C
8/9/1°C

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CHAIN OF CUSTODY RECORD

INVOICE INFORMATION	REPORT INFORMATION (if differs from invoice)	PROJECT INFORMATION	TURNAROUND TIME (TAT) REQUIRED
Company Name: Golder Associates	Company Name:	Quotation #: B44309	[X] Regular TAT (5-7 days)
Contact Name: Paul Hurst	Contact Name:	P.O. #:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 32 Steacie Drive	Address:	Project #: 14-1122-0005	Rush TAT (Applicable Surcharge)
		Site Location:	[ ] 1 Day (100%)
Phone: 613 - 592 - 9600 Fax:	Phone: Fax:	Site #:	[ ] 2 Days (50%)
Email: phurst@golder.com	Email:	Sampled By: Harold Cameron	[ ] 3-4 Days (25%)

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

REGULATION 153 (2011)	OTHER REGULATIONS
[X] Table 1 [ ] Res/Park [ ] Med/Fine	[ ] CCME [ ] Sanitary Sewer Bylaw
[ ] Table 2 [ ] Ind/Comm [ ] Coarse	[ ] MISA [ ] Storm Sewer Bylaw
[ ] Table 3 [ ] Agri/Other	[ ] PWQO Municipality:
[ ] Table ___	[ ] Other (Specify):
FOR RSC (PLEASE CIRCLE) YES / NO	[ ] REG 558 (MINIMUM 3 DAY TAT REQUIRED)

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

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

ANALYSIS REQUESTED

Rush Confirmation #:

Date Required:

LABORATORY USE ONLY

CUSTODY SEAL (Y/N)		Temperature (°C) on Receipt
Present	Y	4/8/12
Intact	Y	
COOLING MEDIA PRESENT (Y/N) Y		9/7/12

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX	# OF CONT.	FIELD FILTERED (PLEASE CIRCLE) Metals / Hg / CrVI	PAH	Metals (ICPMS)	PHC F1 - F4 + BTEX	COMMENTS / TAT COMMENTS
1	Y SA 2	July 28		S	2	N	✓	✓		
2	BA SA 3	July 30		S	2	N	✓	✓		
3	BE SA1	July 30		S	2	N	✓	✓		
4	BE SA3	July 30		S	2	N	✓	✓		
5	BA SA 2	July 30		S	2	N	✓	✓		REC'D IN OTTAWA
6	BE SA2	July 30		S	2	N	✓	✓		
7	DUP BE SA 2	July 30		S	2	N	✓	✓		
8	Z SA2	July 28		S	2	N	✓	✓		
9	BJ SA3	July 30		S	2	N	✓	✓		
10	BN SA1	Aug 1		S	2	N	✓	✓		

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	# JARS USED AND NOT SUBMITTED	MAXXAM JOB #
Tony Lyon	8/8/2014	13:00	C. Bergeron	2014/08/08	16:00		
			H.S Grewal HARMAN GREWAL	2014/08/09	10:15		

8/7/12
9/13/12

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CHAIN OF CUSTODY RECORD

Page 5 of 7

INVOICE INFORMATION		REPORT INFORMATION (if differs from invoice)		PROJECT INFORMATION		TURNAROUND TIME (TAT) REQUIRED
Company Name:	Golder Associates	Company Name:		Quotation #:	B44309	[X] Regular TAT (5-7 days)
Contact Name:	Paul Hurst	Contact Name:		P.O. #:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	32 Steacie Drive	Address:		Project #:	14-1122-0005	Rush TAT (Applicable Surcharge)
				Site Location:		[ ] 1 Day (100%)
Phone:	613 - 592 - 9600 Fax:	Phone:	Fax:	Site #:		[ ] 2 Days (50%)
Email:	phurst@golder.com	Email:		Sampled By:	Harold Cameron	[ ] 3-4 Days (25%)

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

REGULATION 153 (2011)

[X] Table 1 [ ] Res/Park [ ] Med/Fine
[ ] Table 2 [ ] Ind/Comm [ ] Coarse
[ ] Table 3 [ ] Agri/Other
[ ] Table ___

FOR RSC (PLEASE CIRCLE) YES / NO

OTHER REGULATIONS

[ ] CCME [ ] Sanitary Sewer Bylaw
[ ] MISA [ ] Storm Sewer Bylaw
[ ] PWQO Municipality:
[ ] Other (Specify):
[ ] REG 558 (MINIMUM 3 DAY TAT REQUIRED)

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

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

ANALYSIS REQUESTED

Rush Confirmation #:

Date Required:

LABORATORY USE ONLY

CUSTODY SEAL (Y/N)		Temperature (°C) on Receipt
Present	Y	4/8/12
Intact	Y	
COOLING MEDIA PRESENT (Y/N)	Y	9/7/12

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX	# OF CONT.	FIELD FILTERED (PLEASE CIRCLE) Metals / Hg / CrVI	PAH	Metals (ICPMS)	PHC F1 - F4 + BTEX	COMMENTS / TAT COMMENTS
1	BN SA3	Aug 1		S	2	N	✓	✓		
2	AH SA2	July 28		S	2	N	✓	✓		
3	AH SA3	July 28		S	2	N	✓	✓		
4	AH SA4	July 28		S	2	N	✓	✓		
5	AC SA3	July 28		S	2	N	✓	✓		
6	AJ SA1	July 30		S	2	N	✓	✓		
7	AS SA2	July 30		S	2	N	✓	✓		REC'D IN OTTAWA
8	AF SA3	July 28		S	2	N	✓	✓		
9	R SA2	July 30		S	2	N	✓	✓		
10	R SA3	July 30		S	2	N	✓	✓		

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	# JARS USED AND NOT SUBMITTED	MAXXAM JOB #
Tony Lyon [signature]	8/8/2014	13:00	[signature] C. Bergeron	2014/08/08	16:00		
			H.S Grewal HARMAN GREWAL	2014/08/09	10:15		

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8/7/1°C
~~9/3/31~~ H.G 2014/08/09 9/3/3°C

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CHAIN OF CUSTODY RECORD

Page 6 of 7

INVOICE INFORMATION	REPORT INFORMATION (if differs from invoice)	PROJECT INFORMATION	TURNAROUND TIME (TAT) REQUIRED
Company Name: Golder Associates	Company Name:	Quotation #: B44309	[X] Regular TAT (5-7 days)
Contact Name: Paul Hurst	Contact Name:	P.O. #:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 32 Steacie Drive	Address:	Project #: 14-1122-0005	Rush TAT (Applicable Surcharge)
		Site Location:	[ ] 1 Day (100%)
Phone: 613 - 592 - 9600 Fax:	Phone: Fax:	Site #:	[ ] 2 Days (50%)
Email: phurst@golder.com	Email:	Sampled By: Harold Cameron	[ ] 3-4 Days (25%)

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

REGULATION 153 (2011)	OTHER REGULATIONS
[X] Table 1 [ ] Res/Park [ ] Med/Fine	[ ] CCME [ ] Sanitary Sewer Bylaw
[ ] Table 2 [ ] Ind/Comm [ ] Coarse	[ ] MISA [ ] Storm Sewer Bylaw
[ ] Table 3 [ ] Agri/Other	[ ] PWQO Municipality:
[ ] Table ___	[ ] Other (Specify):
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Include Criteria on Certificate of Analysis (Y/N)? N

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

ANALYSIS REQUESTED

Rush Confirmation #:

Date Required:

LABORATORY USE ONLY

CUSTODY SEAL (Y/N)		Temperature (°C) on Receipt
Present	Y	4/8/12
Intact	Y	
COOLING MEDIA PRESENT (Y/N)	Y	9/7/12

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX	# OF CONT.	FIELD FILTERED (PLEASE CIRCLE) Metals / Hg / CrVI	PAH	Metals (ICPMS)	PHC F1 - F4 + BTEX	COMMENTS / TAT COMMENTS
1	T SA 2	July 31		S	2	N	✓	✓		
2	T SA 4	July 31		S	2	N	✓	✓		
3	DUP T SA 2	July 31		S	2	N	✓	✓		REC'D IN OTTAWA
4	T SA 3	July 31		S	2	N	✓	✓		
5	BK SA 1	July 29		S	2	N	✓	✓		
6	AG SA 4	July 28/29		S	2	N	✓	✓		-will call with correct date
7	V SA5	July 31		S	2	N	✓	✓		
8	BM SA 2	July 30		S	2	N	✓	✓		
9	F SA 1	July 29		S	2	N	✓	✓		
10	AX SA 2	July 30		S	2	N	✓	✓		

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	# JARS USED AND NOT SUBMITTED	MAXXAM JOB #
Tony Lyon [signature]	8/8/2014	13:00	[signature] C. Bergeron	2014/08/08	16:00		
			H. S Grewal Harman Grewal	2014/08/09	10:15		

Maxxam Analytics International Corporation o/a Maxxam Analytics

8/7/1°C
9/3/3°C

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CHAIN OF CUSTODY RECORD

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Company Name: Golder Associates	Company Name:	Quotation #: B44309	[X] Regular TAT (5-7 days)
Contact Name: Paul Hurst	Contact Name:	P.O. #:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 32 Steacie Drive	Address:	Project #: 14-1122-0005	Rush TAT (Applicable Surcharge)
		Site Location:	[ ] 1 Day (100%)
Phone: 613 - 592 - 9600 Fax:	Phone: Fax:	Site #:	[ ] 2 Days (50%)
Email: phurst@golder.com	Email:	Sampled By: Harold Cameron	[ ] 3-4 Days (25%)

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

REGULATION 153 (2011)	OTHER REGULATIONS
[X] Table 1 [ ] Res/Park [ ] Med/Fine	[ ] CCME [ ] Sanitary Sewer Bylaw
[ ] Table 2 [ ] Ind/Comm [ ] Coarse	[ ] MISA [ ] Storm Sewer Bylaw
[ ] Table 3 [ ] Agri/Other	[ ] PWQO Municipality:
[ ] Table ___	[ ] Other (Specify):
FOR RSC (PLEASE CIRCLE) YES / NO	[ ] REG 558 (MINIMUM 3 DAY TAT REQUIRED)

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

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

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX	# OF CONT.	FIELD FILTERED (PLEASE CIRCLE) Metals / Hg / CrVI	PAH	Metals (ICPMS)	PHC F1 - F4 + BTEX
1	AP SA3	Jul, 31		S	2	N	✓	✓	
2	AX SA3	Jul, 30		S	2	N	✓	✓	
3	E SA2	Jul, 29		S	2	N	✓	✓	
4	AB SA1	Jul, 28		S	2	N	✓	✓	
5				S		N			
6				S		N			
7				S		N			
8				S		N			
9				S		N			
10				S		N			

Rush Confirmation #:

Date Required:

LABORATORY USE ONLY

CUSTODY SEAL (Y/N)		Temperature (°C) on Receipt
Present	Y	4/8/12
Intact	Y	
COOLING MEDIA PRESENT (Y / N)	Y	9/7/12

COMMENTS / TAT COMMENTS

REC'D IN OTTAWA

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	# JARS USED AND NOT SUBMITTED	MAXXAM JOB,#
Tony Lyon	8/8/2014	13:00	C. Bergeron	2014/08/08	16:00		
			H.S Greenal Harman Greenal	2014/08/09	10:15		

8/7/1°C
9/3/3°C

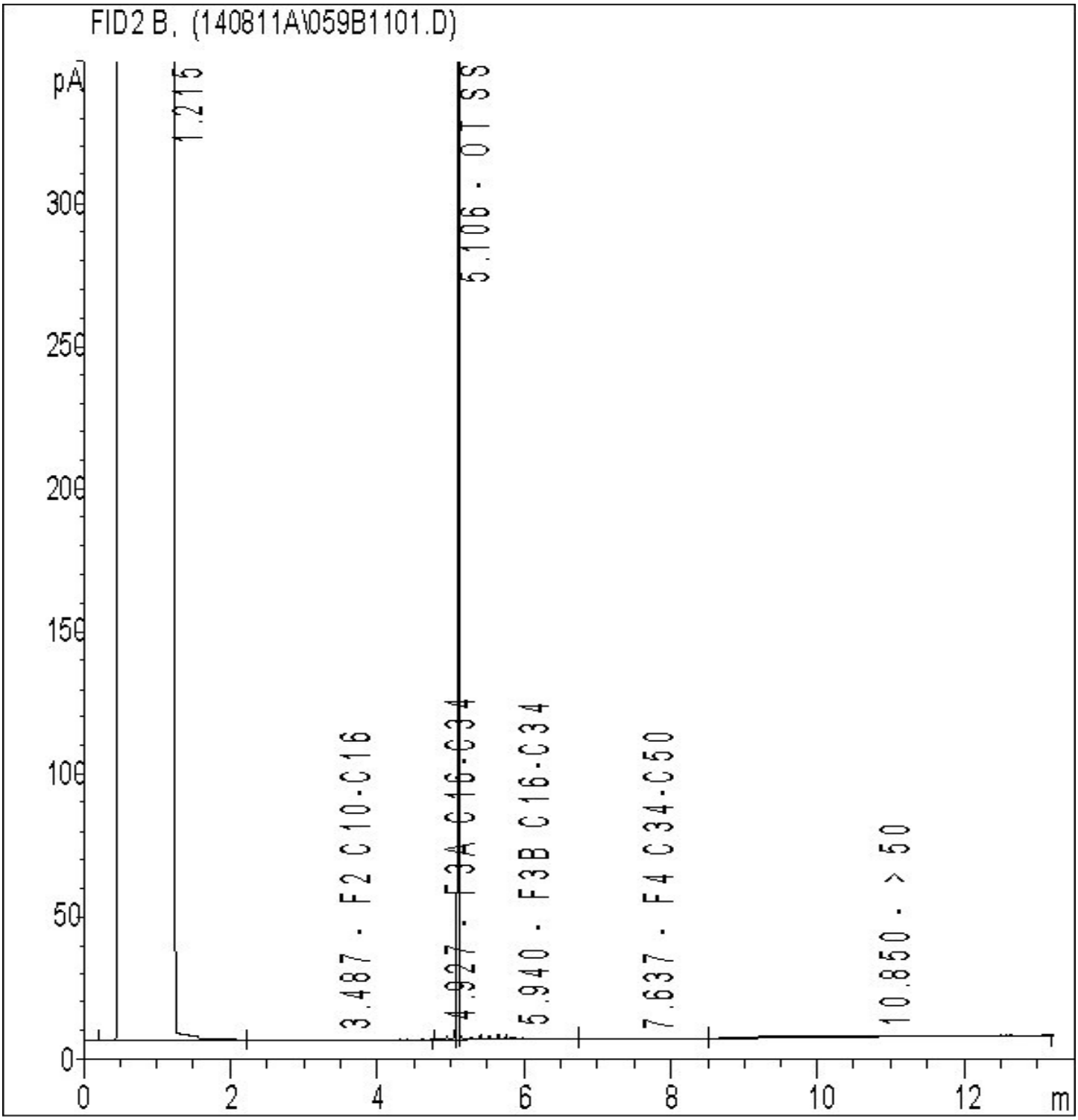
Maxxam Analytics International Corporation o/a Maxxam Analytics

Report Date: 2014/08/20
Maxxam Job #: B4E2676
Maxxam Sample: XA9615

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: AF SA1

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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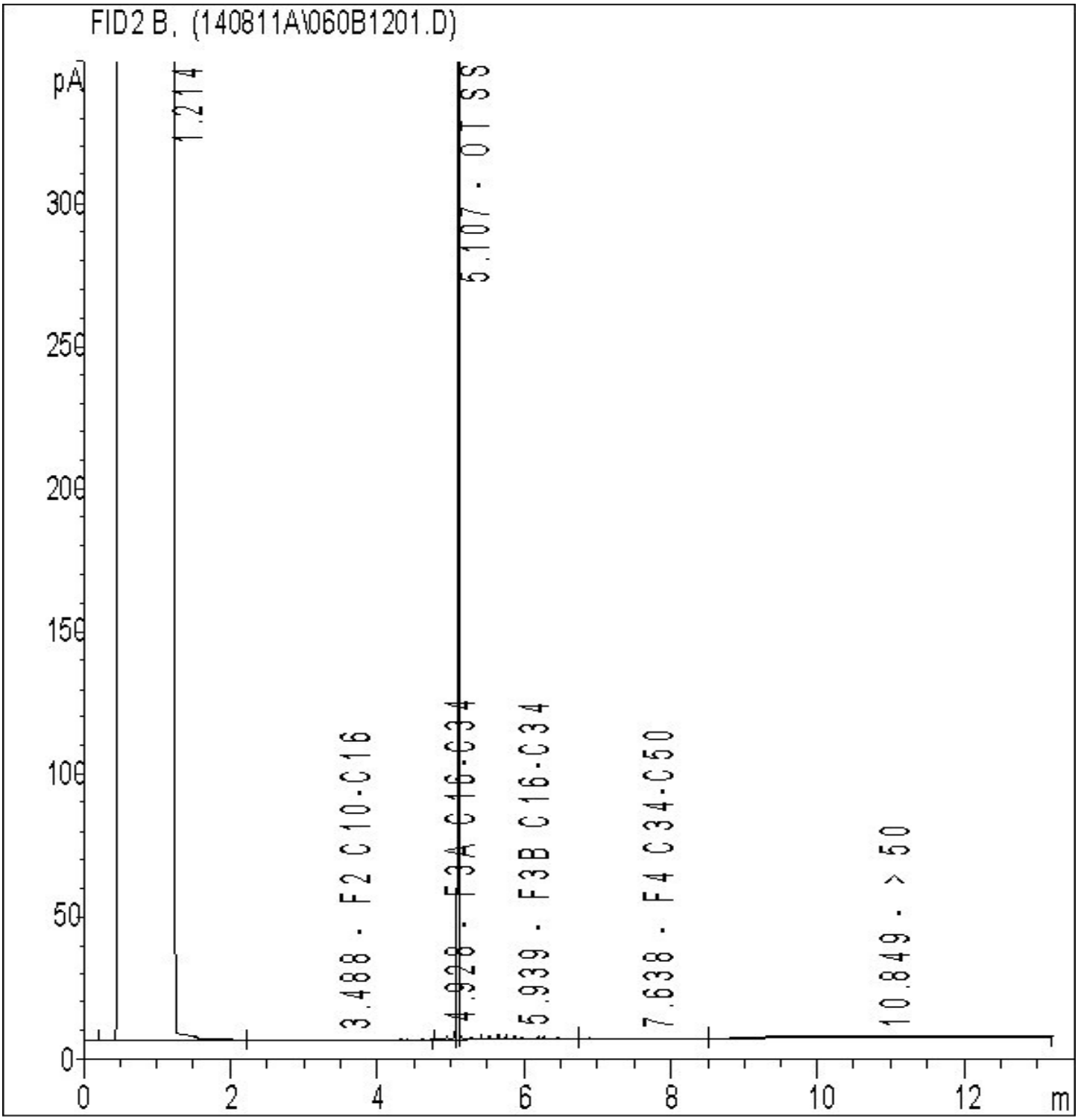
Report Date: 2014/08/20
Maxxam Job #: B4E2676
Maxxam Sample: XA9615 Lab-Dup

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: AF SA1

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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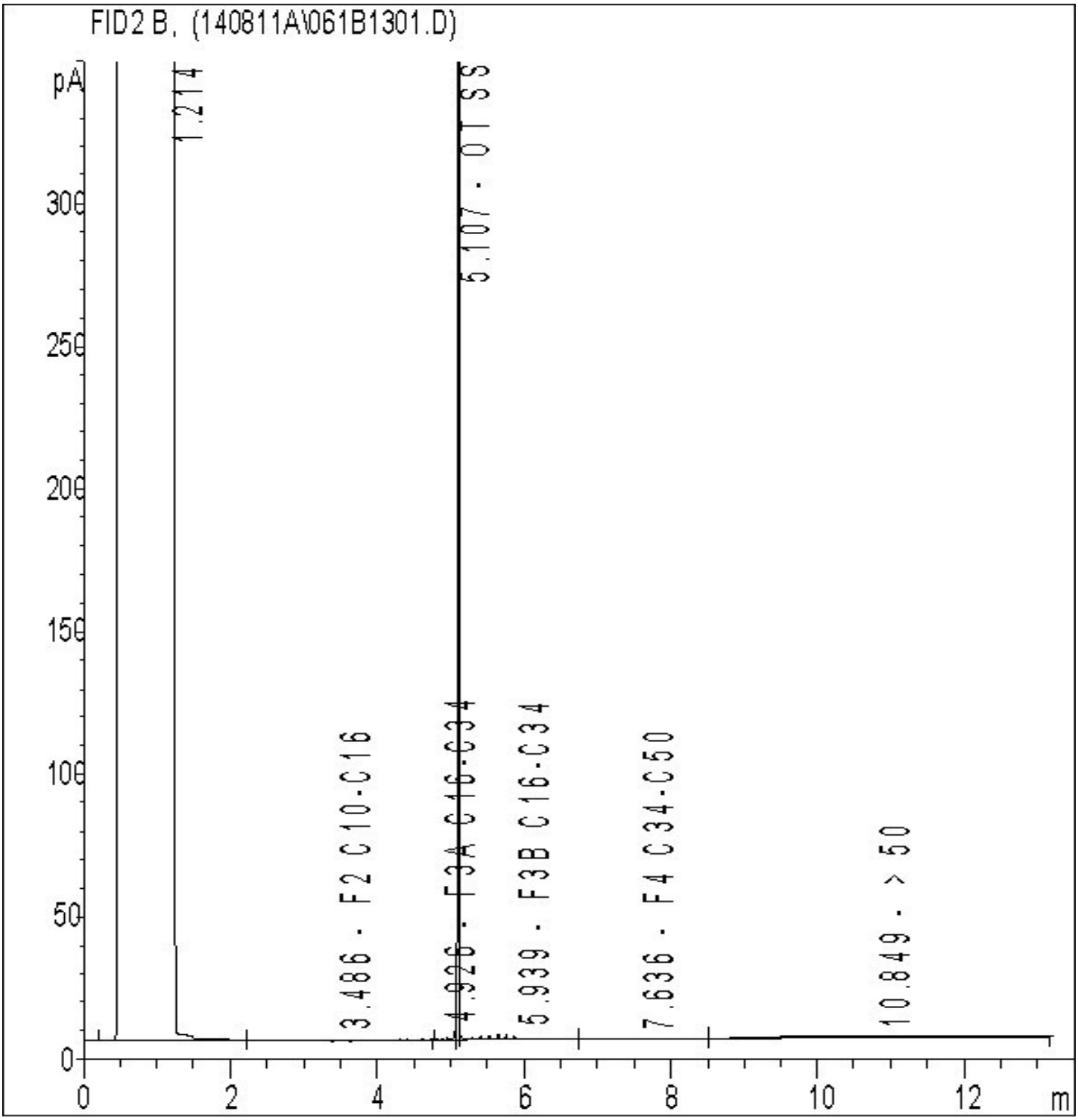
Report Date: 2014/08/20
Maxxam Job #: B4E2676
Maxxam Sample: XA9616

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: AC SA3

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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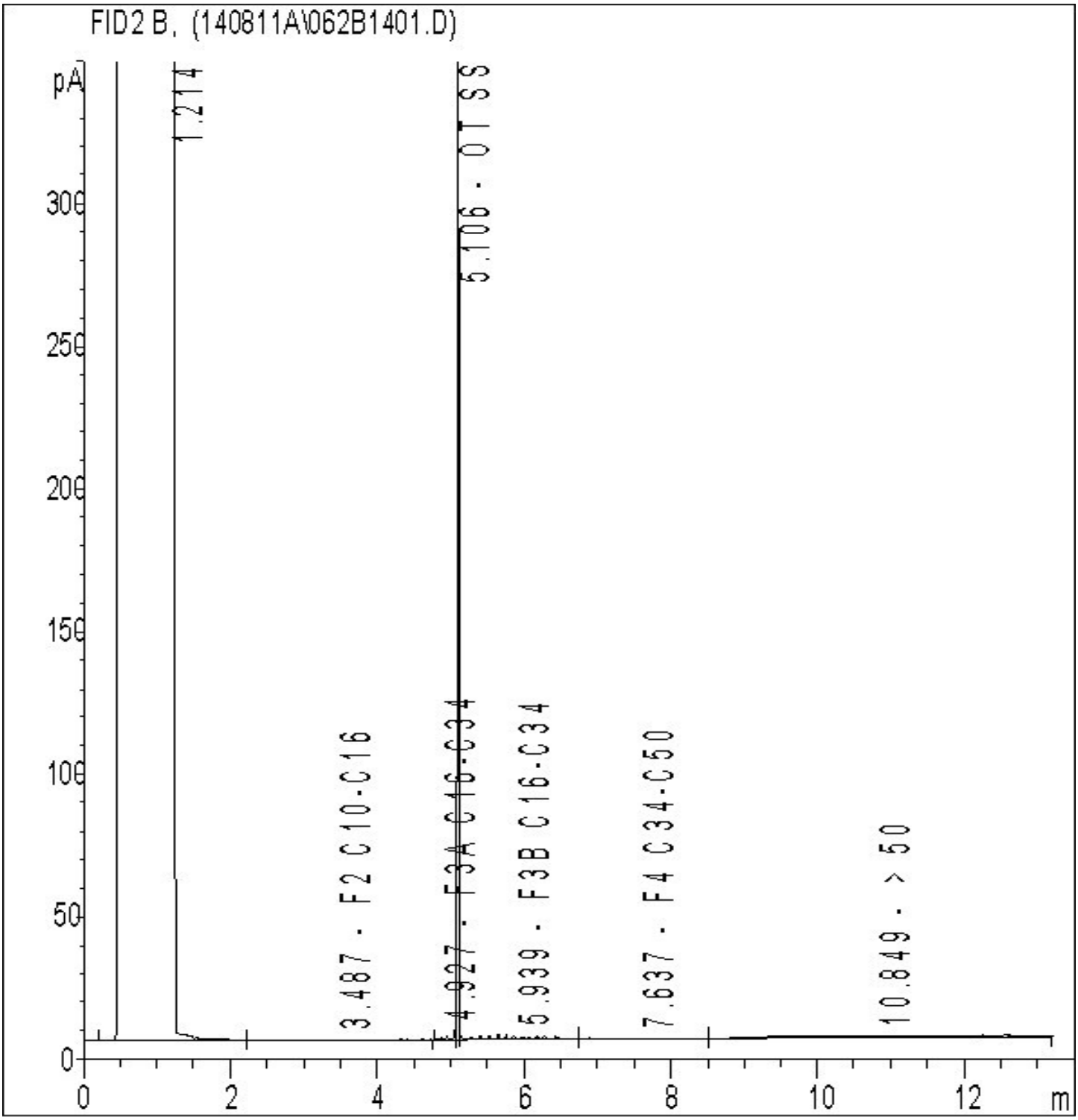
Report Date: 2014/08/20
Maxxam Job #: B4E2676
Maxxam Sample: XA9617

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: S 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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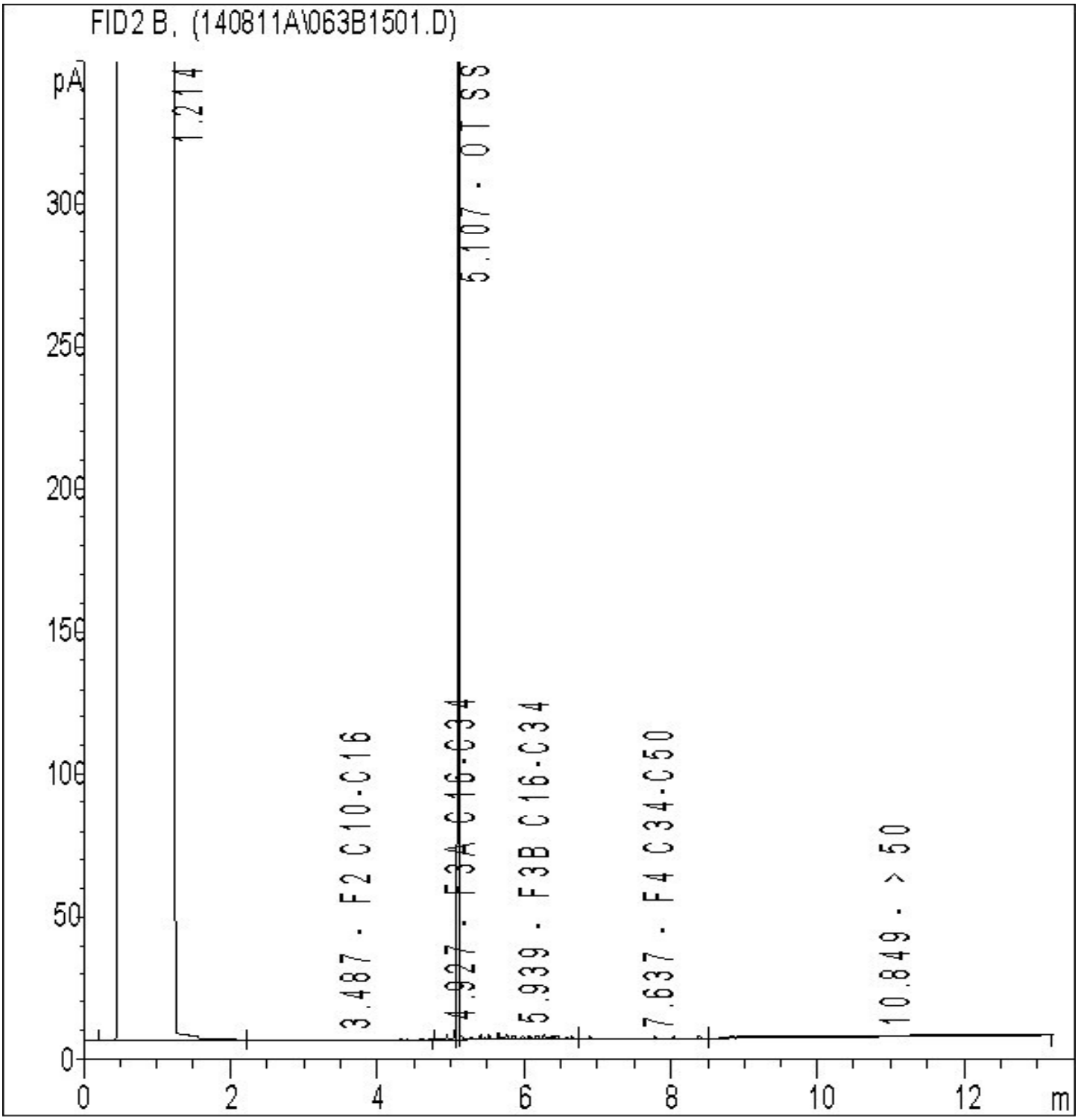
Report Date: 2014/08/20
Maxxam Job #: B4E2676
Maxxam Sample: XA9618

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: DUP S 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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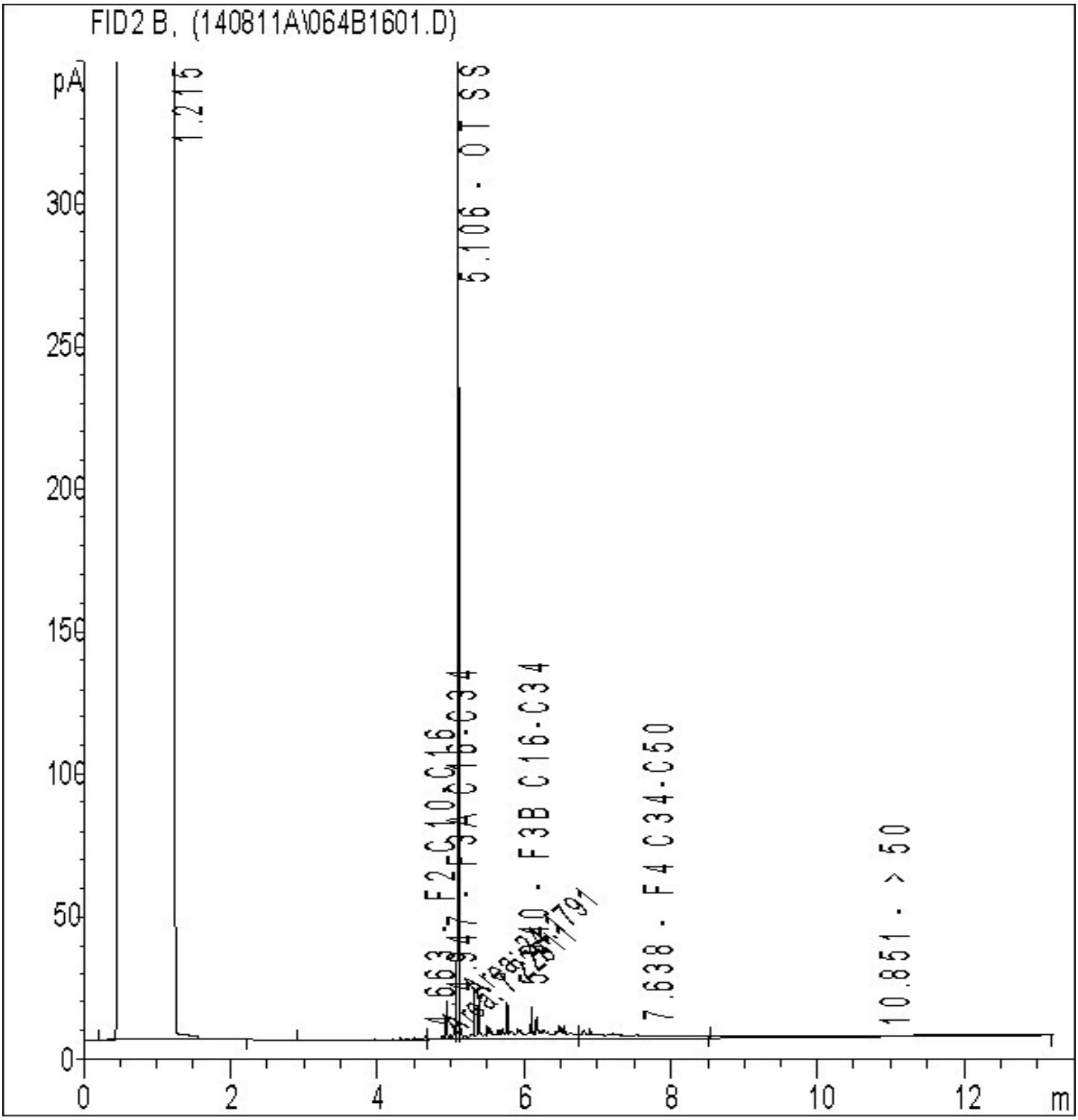
Report Date: 2014/08/20
Maxxam Job #: B4E2676
Maxxam Sample: XA9619

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: E 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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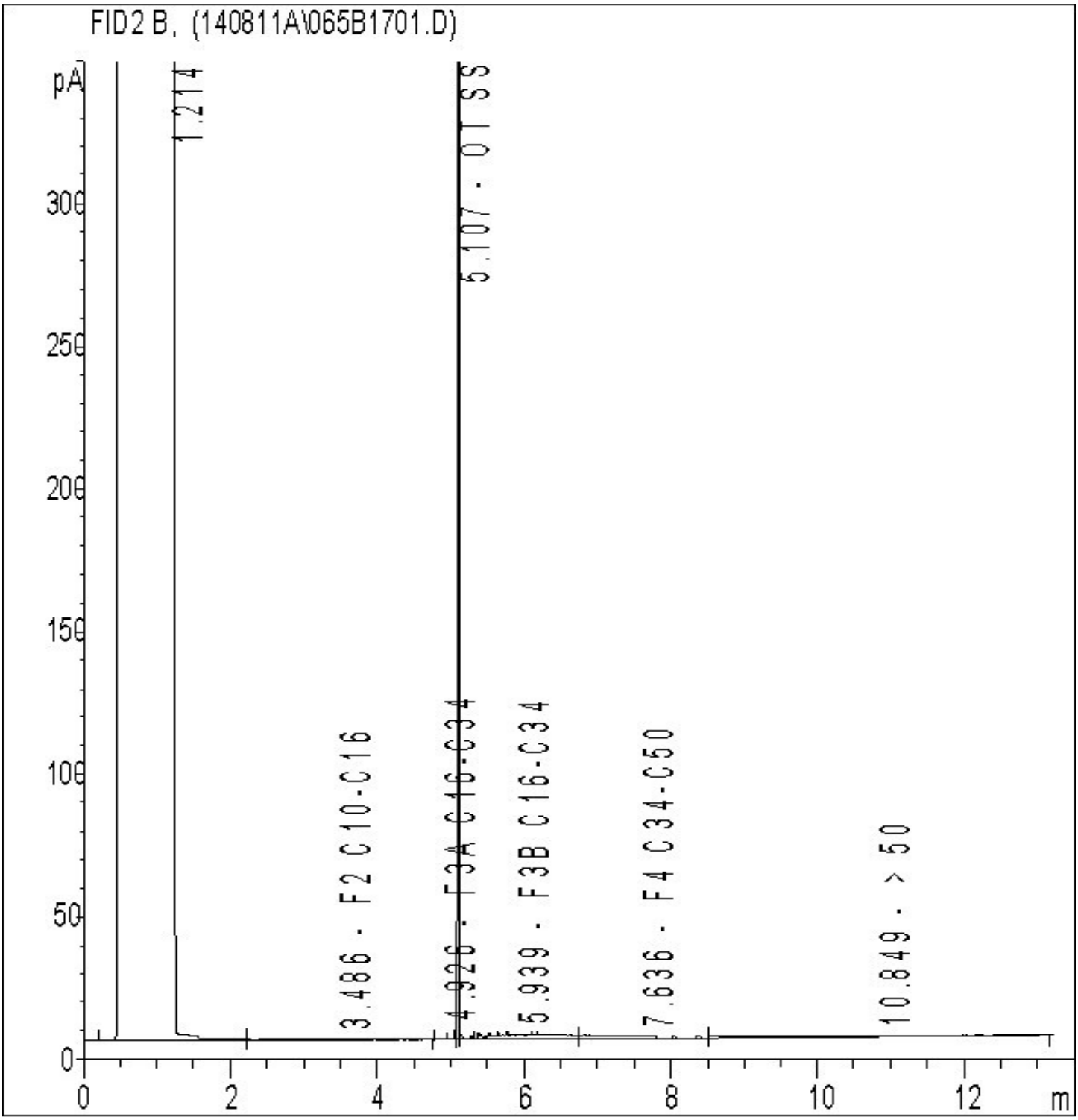
Report Date: 2014/08/20
Maxxam Job #: B4E2676
Maxxam Sample: XA9620

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: DUP E 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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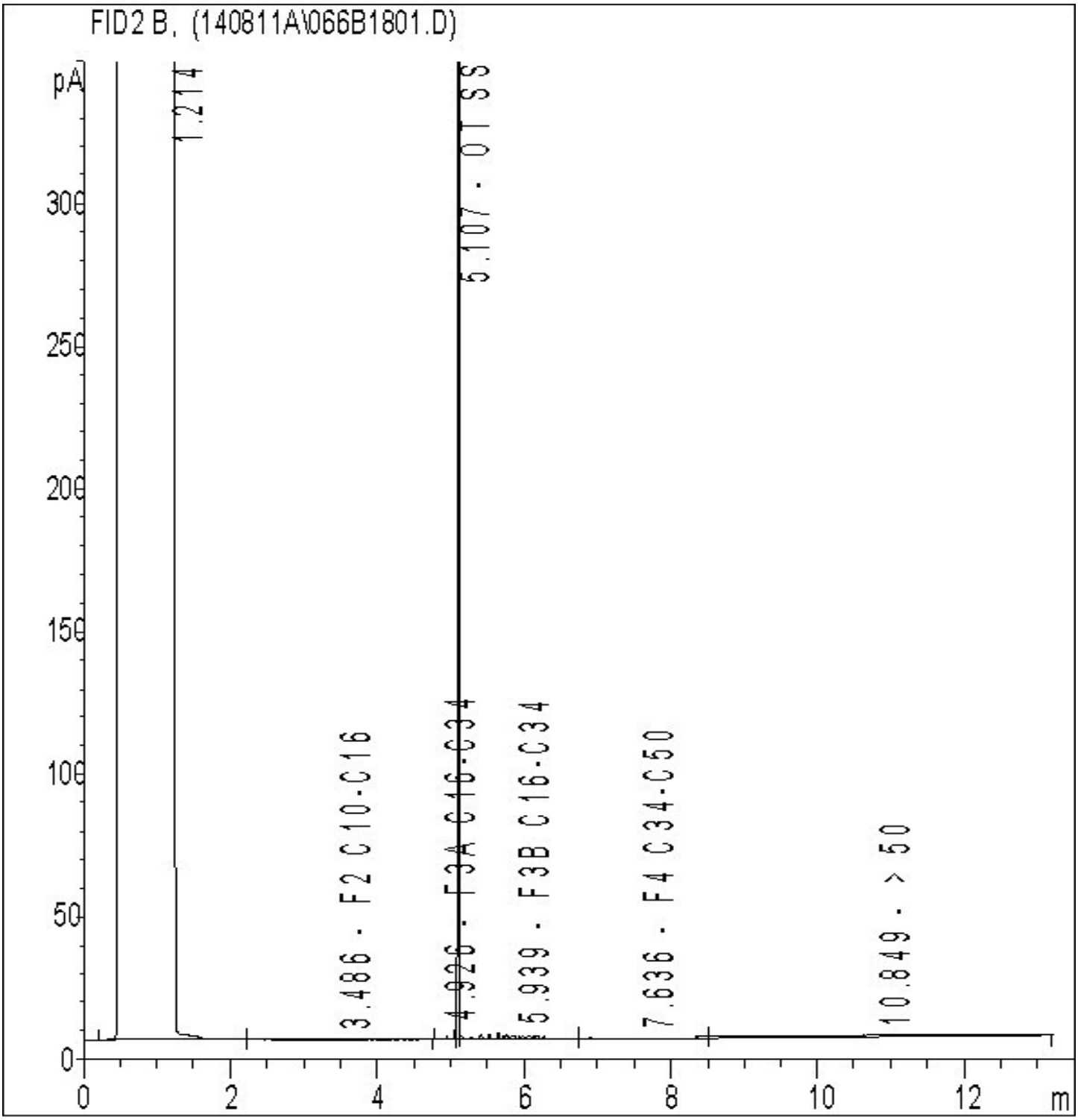
Report Date: 2014/08/20
Maxxam Job #: B4E2676
Maxxam Sample: XA9621

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: V SA3

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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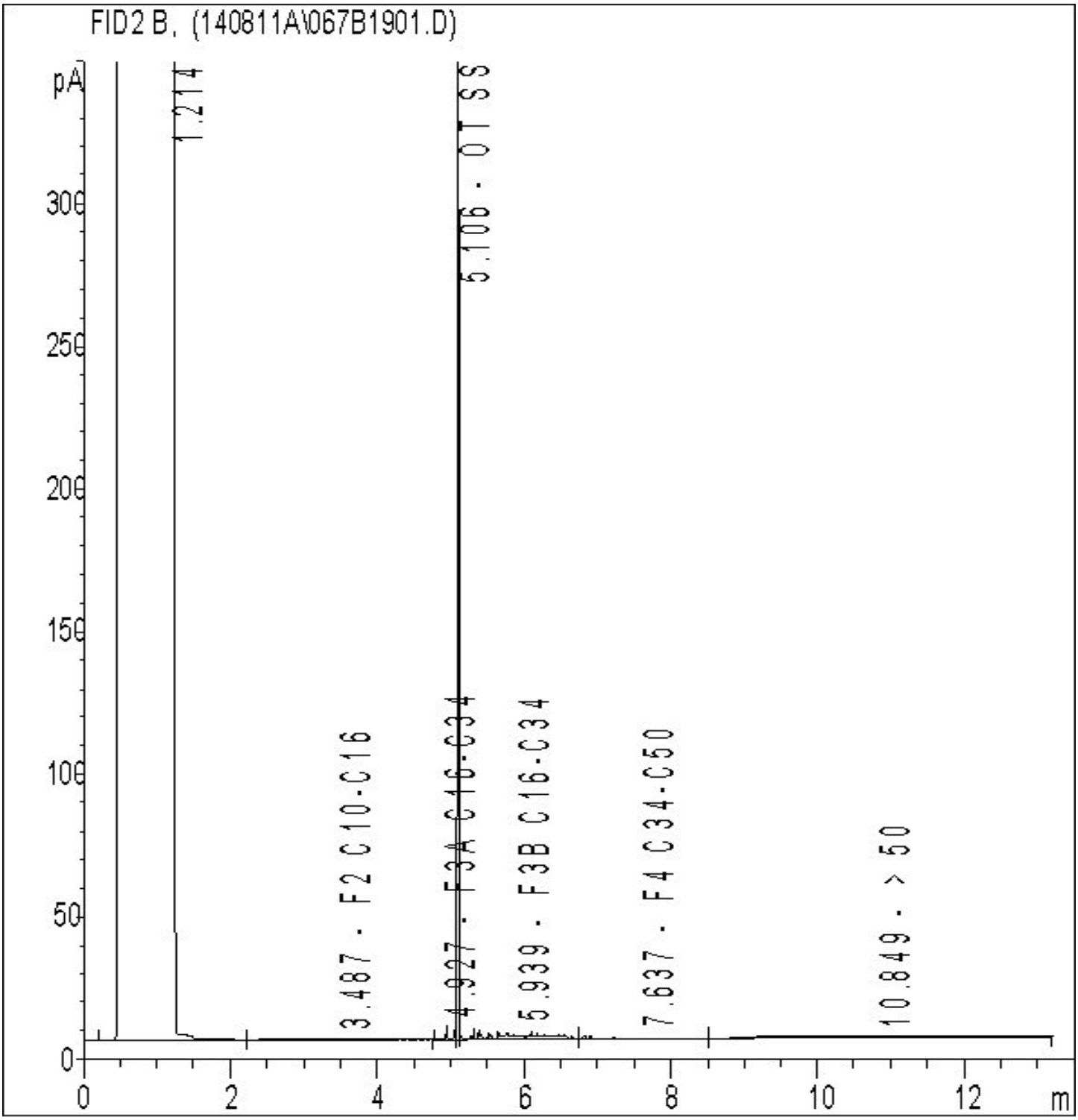
Report Date: 2014/08/20
Maxxam Job #: B4E2676
Maxxam Sample: XA9622

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: N SA3

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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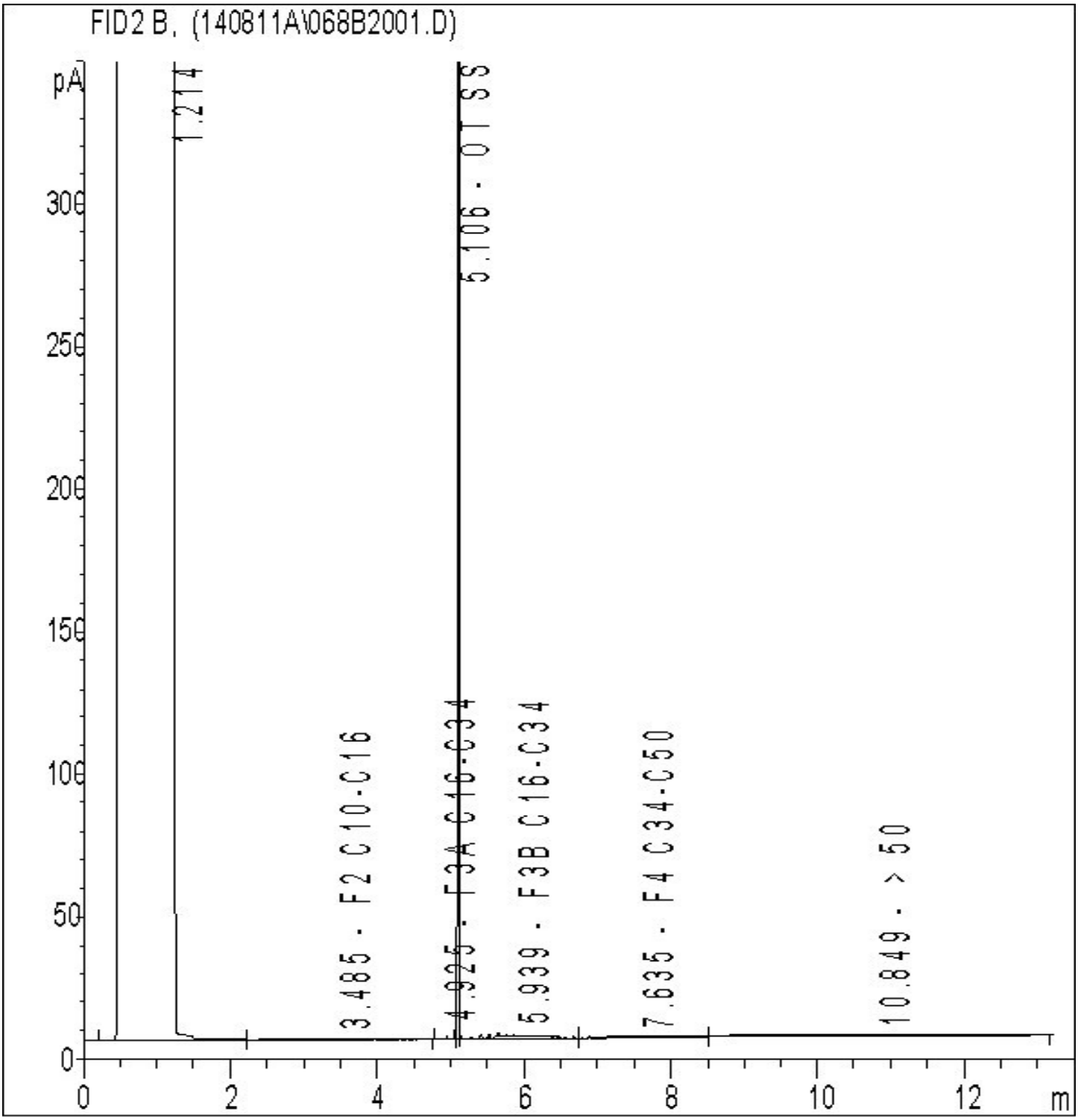
Report Date: 2014/08/20
Maxxam Job #: B4E2676
Maxxam Sample: XA9623

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: BM SA3

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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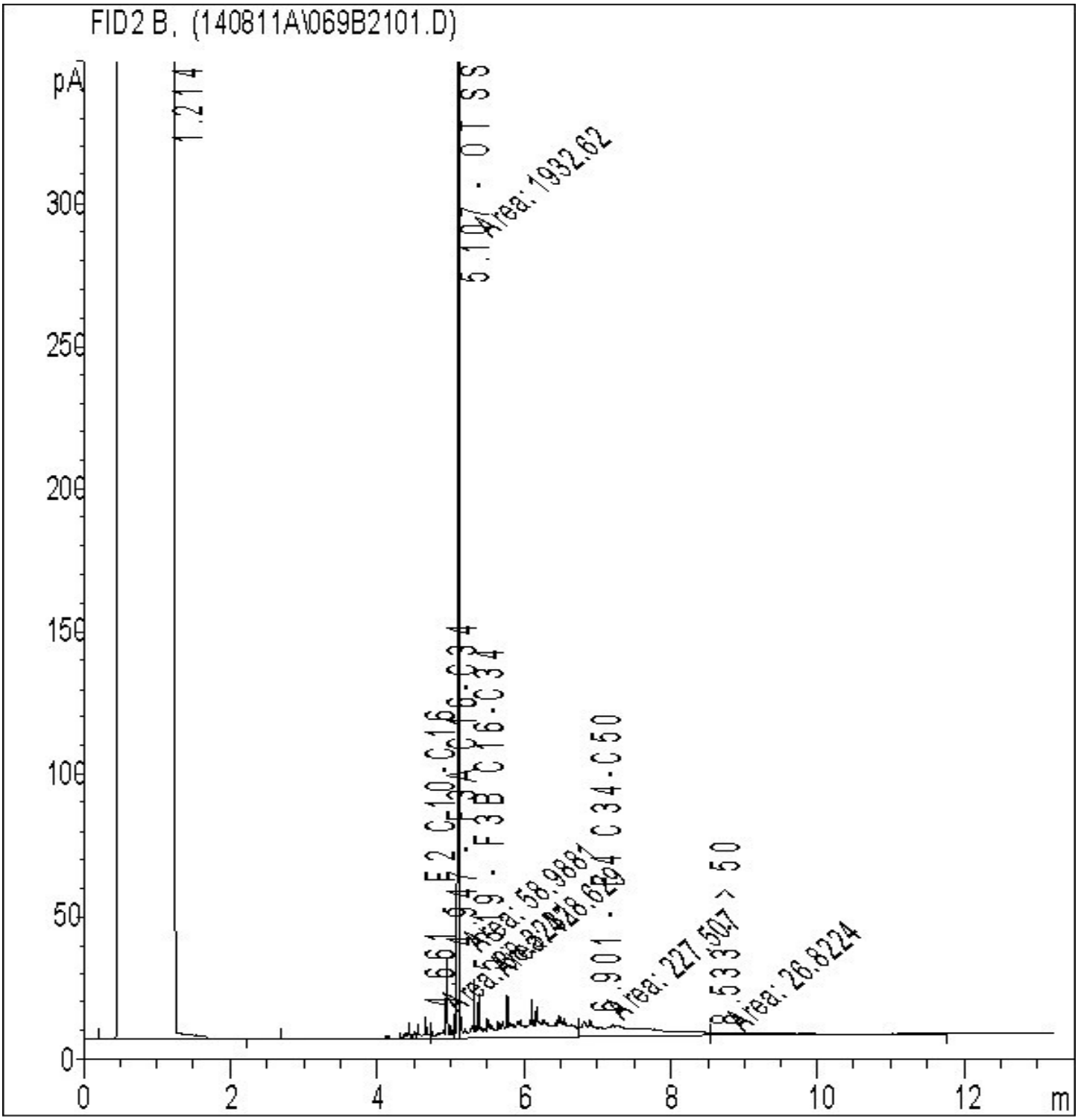
Report Date: 2014/08/20
Maxxam Job #: B4E2676
Maxxam Sample: XA9624

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: BA SA3

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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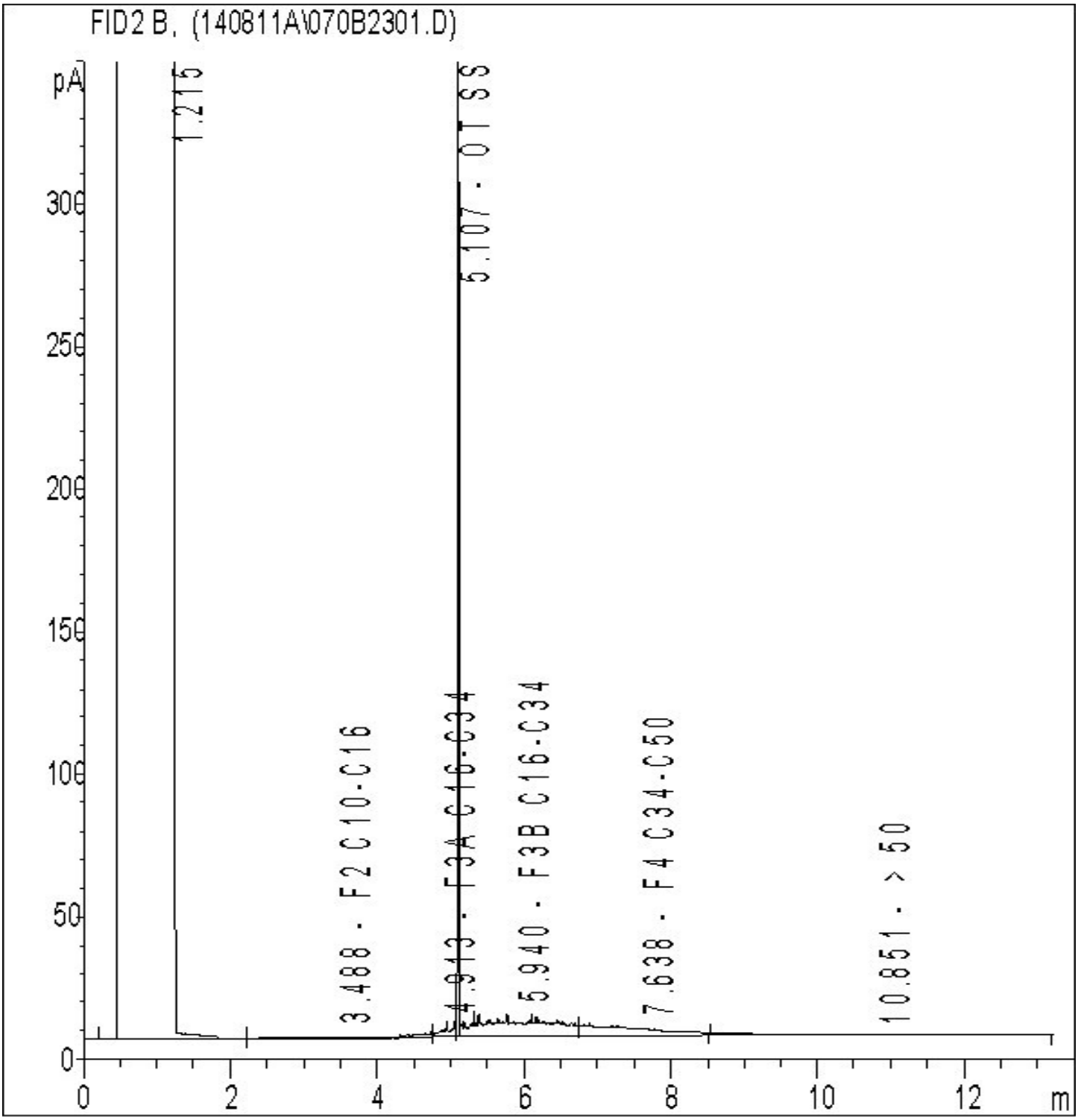
Report Date: 2014/08/20
Maxxam Job #: B4E2676
Maxxam Sample: XA9625

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: BJ SA5

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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Success Through Science®

Your Project #: 14-1122-0005
Site Location: OBLATES
Your C.O.C. #: na

Attention:Paul Hurst

Golder Associates Ltd
32 Steacie Dr
Kanata, ON
K2K 2A9

Report Date: 2014/08/27
Report #: R3136528
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B4F2927
Received: 2014/08/21, 15:00

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	6	N/A	2014/08/26	CAM SOP-00301	EPA 8270 m
Strong Acid Leachable Metals by ICPMS (1)	6	2014/08/25	2014/08/26	CAM SOP-00447	EPA 6020 m
Moisture (1)	6	N/A	2014/08/23	CAM SOP-00445	R.Carter,1993
PAH Compounds in Soil by GC/MS (SIM) (1)	5	2014/08/25	2014/08/25	CAM SOP - 00318	EPA 8270 m
PAH Compounds in Soil by GC/MS (SIM) (1)	1	2014/08/25	2014/08/26	CAM SOP - 00318	EPA 8270 m

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 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.

(1) This test was performed by Maxxam Analytics Mississauga

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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 Job #: B4F2927
Report Date: 2014/08/27

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		XG1345	XG1346	XG1347	XG1348	XG1349	XG1350		
Sampling Date		2014/08/14	2014/08/14	2014/08/05	2014/08/18	2014/08/15	2014/08/06		
COC Number		na	na	na	na	na	na		
	Units	**G13 SA9**	**G13 SA11**	**G1 SA5**	**G11 SA9**	**G11 SA2**	**G6 SA4**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	0.76	<0.20	<0.20	0.95	0.76	<0.20	0.20	3723757
Acid Extractable Arsenic (As)	ug/g	3.9	2.8	3.7	2.9	2.8	2.2	1.0	3723757
Acid Extractable Barium (Ba)	ug/g	220	210	200	200	78	120	0.50	3723757
Acid Extractable Beryllium (Be)	ug/g	0.64	0.71	0.66	0.53	0.23	0.45	0.20	3723757
Acid Extractable Boron (B)	ug/g	7.1	5.3	<5.0	<5.0	<5.0	<5.0	5.0	3723757
Acid Extractable Cadmium (Cd)	ug/g	0.20	<0.10	<0.10	0.17	0.37	<0.10	0.10	3723757
Acid Extractable Chromium (Cr)	ug/g	45	50	45	62	18	31	1.0	3723757
Acid Extractable Cobalt (Co)	ug/g	11	12	16	13	5.1	8.8	0.10	3723757
Acid Extractable Copper (Cu)	ug/g	31	28	28	38	21	20	0.50	3723757
Acid Extractable Lead (Pb)	ug/g	110	7.6	6.5	86	130	4.6	1.0	3723757
Acid Extractable Molybdenum (Mo)	ug/g	0.93	<0.50	<0.50	0.58	0.71	<0.50	0.50	3723757
Acid Extractable Nickel (Ni)	ug/g	28	29	31	36	13	19	0.50	3723757
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3723757
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3723757
Acid Extractable Thallium (Tl)	ug/g	0.22	0.27	0.24	0.26	0.091	0.17	0.050	3723757
Acid Extractable Uranium (U)	ug/g	0.96	0.76	0.57	0.72	0.44	0.69	0.050	3723757
Acid Extractable Vanadium (V)	ug/g	50	59	65	62	24	48	5.0	3723757
Acid Extractable Zinc (Zn)	ug/g	99	88	74	110	93	51	5.0	3723757
Acid Extractable Mercury (Hg)	ug/g	0.33	<0.050	<0.050	0.11	0.12	<0.050	0.050	3723757

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B4F2927
Report Date: 2014/08/27

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

O.REG 153 PAHS (SOIL)

Maxxam ID		XG1345		XG1346	XG1346	XG1347	XG1348		XG1349		
Sampling Date		2014/08/14		2014/08/14	2014/08/14	2014/08/05	2014/08/18		2014/08/15		
COC Number		na		na	na	na	na		na		
	Units	**G13 SA9**	**RDL**	**G13 SA11**	**G13 SA11 Lab-Dup**	**G1 SA5**	**G11 SA9**	**RDL**	**G11 SA2**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	24	1.0	22		21	24	1.0	15	1.0	3722814
Calculated Parameters											
Methylnaphthalene, 2-(1-)	ug/g	2.5	0.028	<0.0071		<0.0071	<0.0071	0.0071	0.059	0.014	3721739
Polyaromatic Hydrocarbons											
Acenaphthene	ug/g	3.0	0.020	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.093	0.010	3724153
Acenaphthylene	ug/g	0.12	0.020	<0.0050	<0.0050	<0.0050	0.0067	0.0050	0.062	0.010	3724153
Anthracene	ug/g	5.0	0.020	<0.0050	<0.0050	<0.0050	0.0092	0.0050	0.25	0.010	3724153
Benzo(a)anthracene	ug/g	7.7	0.020	<0.0050	<0.0050	<0.0050	0.031	0.0050	0.70	0.010	3724153
Benzo(a)pyrene	ug/g	5.8	0.020	<0.0050	<0.0050	<0.0050	0.034	0.0050	0.66	0.010	3724153
Benzo(b/j)fluoranthene	ug/g	6.7	0.020	<0.0050	<0.0050	<0.0050	0.047	0.0050	0.85	0.010	3724153
Benzo(g,h,i)perylene	ug/g	3.0	0.020	<0.0050	<0.0050	<0.0050	0.019	0.0050	0.39	0.010	3724153
Benzo(k)fluoranthene	ug/g	2.9	0.020	<0.0050	<0.0050	<0.0050	0.018	0.0050	0.31	0.010	3724153
Chrysene	ug/g	6.1	0.020	<0.0050	<0.0050	<0.0050	0.029	0.0050	0.56	0.010	3724153
Dibenz(a,h)anthracene	ug/g	0.92	0.020	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.092	0.010	3724153
Fluoranthene	ug/g	15	0.020	<0.0050	<0.0050	<0.0050	0.080	0.0050	1.5	0.010	3724153
Fluorene	ug/g	2.9	0.020	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.093	0.010	3724153
Indeno(1,2,3-cd)pyrene	ug/g	3.0	0.020	<0.0050	<0.0050	<0.0050	0.018	0.0050	0.40	0.010	3724153
1-Methylnaphthalene	ug/g	0.93	0.020	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.028	0.010	3724153
2-Methylnaphthalene	ug/g	1.5	0.020	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.031	0.010	3724153
Naphthalene	ug/g	3.7	0.020	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.053	0.010	3724153
Phenanthrene	ug/g	18	0.020	<0.0050	<0.0050	<0.0050	0.034	0.0050	0.88	0.010	3724153
Pyrene	ug/g	12	0.020	<0.0050	<0.0050	<0.0050	0.067	0.0050	1.2	0.010	3724153
Surrogate Recovery (%)											
D10-Anthracene	%	98		103	99	97	94		77		3724153
D14-Terphenyl (FS)	%	101		93	94	95	95		94		3724153
D8-Acenaphthylene	%	88		82	85	89	88		85		3724153

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B4F2927
Report Date: 2014/08/27

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

O.REG 153 PAHS (SOIL)

Maxxam ID		XG1350	XG1350		
Sampling Date		2014/08/06	2014/08/06		
COC Number		na	na		
	Units	**G6 SA4**	**G6 SA4 Lab-Dup**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	21	21	1.0	3722814
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	<0.0071		0.0071	3721739
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	<0.0050		0.0050	3724153
Acenaphthylene	ug/g	<0.0050		0.0050	3724153
Anthracene	ug/g	<0.0050		0.0050	3724153
Benzo(a)anthracene	ug/g	<0.0050		0.0050	3724153
Benzo(a)pyrene	ug/g	<0.0050		0.0050	3724153
Benzo(b/j)fluoranthene	ug/g	<0.0050		0.0050	3724153
Benzo(g,h,i)perylene	ug/g	<0.0050		0.0050	3724153
Benzo(k)fluoranthene	ug/g	<0.0050		0.0050	3724153
Chrysene	ug/g	<0.0050		0.0050	3724153
Dibenz(a,h)anthracene	ug/g	<0.0050		0.0050	3724153
Fluoranthene	ug/g	<0.0050		0.0050	3724153
Fluorene	ug/g	<0.0050		0.0050	3724153
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050		0.0050	3724153
1-Methylnaphthalene	ug/g	<0.0050		0.0050	3724153
2-Methylnaphthalene	ug/g	<0.0050		0.0050	3724153
Naphthalene	ug/g	<0.0050		0.0050	3724153
Phenanthrene	ug/g	<0.0050		0.0050	3724153
Pyrene	ug/g	<0.0050		0.0050	3724153
Surrogate Recovery (%)					
D10-Anthracene	%	101			3724153
D14-Terphenyl (FS)	%	94			3724153
D8-Acenaphthylene	%	88			3724153

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B4F2927
Report Date: 2014/08/27

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

TEST SUMMARY

Maxxam ID: XG1345
Sample ID: G13 SA9
Matrix: Soil

Collected: 2014/08/14
Shipped:
Received: 2014/08/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3721739	N/A	2014/08/26	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3723757	2014/08/25	2014/08/26	Grace Bu
Moisture	BAL	3722814	N/A	2014/08/23	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3724153	2014/08/25	2014/08/25	Darryl Tiller

Maxxam ID: XG1346
Sample ID: G13 SA11
Matrix: Soil

Collected: 2014/08/14
Shipped:
Received: 2014/08/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3721739	N/A	2014/08/26	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3723757	2014/08/25	2014/08/26	Grace Bu
Moisture	BAL	3722814	N/A	2014/08/23	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3724153	2014/08/25	2014/08/25	Darryl Tiller

Maxxam ID: XG1346 Dup
Sample ID: G13 SA11
Matrix: Soil

Collected: 2014/08/14
Shipped:
Received: 2014/08/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3724153	2014/08/25	2014/08/25	Darryl Tiller

Maxxam ID: XG1347
Sample ID: G1 SA5
Matrix: Soil

Collected: 2014/08/05
Shipped:
Received: 2014/08/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3721739	N/A	2014/08/26	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3723757	2014/08/25	2014/08/26	Grace Bu
Moisture	BAL	3722814	N/A	2014/08/23	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3724153	2014/08/25	2014/08/25	Darryl Tiller

Maxxam ID: XG1348
Sample ID: G11 SA9
Matrix: Soil

Collected: 2014/08/18
Shipped:
Received: 2014/08/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3721739	N/A	2014/08/26	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3723757	2014/08/25	2014/08/26	Grace Bu
Moisture	BAL	3722814	N/A	2014/08/23	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3724153	2014/08/25	2014/08/25	Darryl Tiller

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Maxxam Job #: B4F2927
Report Date: 2014/08/27

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

TEST SUMMARY

Maxxam ID: XG1349
Sample ID: G11 SA2
Matrix: Soil

Collected: 2014/08/15
Shipped:
Received: 2014/08/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3721739	N/A	2014/08/26	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3723757	2014/08/25	2014/08/26	Grace Bu
Moisture	BAL	3722814	N/A	2014/08/23	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3724153	2014/08/25	2014/08/25	Darryl Tiller

Maxxam ID: XG1350
Sample ID: G6 SA4
Matrix: Soil

Collected: 2014/08/06
Shipped:
Received: 2014/08/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3721739	N/A	2014/08/26	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3723757	2014/08/25	2014/08/26	Grace Bu
Moisture	BAL	3722814	N/A	2014/08/23	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3724153	2014/08/25	2014/08/26	Darryl Tiller

Maxxam ID: XG1350 Dup
Sample ID: G6 SA4
Matrix: Soil

Collected: 2014/08/06
Shipped:
Received: 2014/08/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3722814	N/A	2014/08/23	Valentina Kaftani

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Report Date: 2014/08/27

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

GENERAL COMMENTS

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

Package 1	8.3°C

Sample XG1345-01 : PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample XG1349-01 : PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B4F2927
Report Date: 2014/08/27

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3724153	D10-Anthracene	2014/08/25	94	50 - 130	95	50 - 130	109	%		
3724153	D14-Terphenyl (FS)	2014/08/25	94	50 - 130	88	50 - 130	98	%		
3724153	D8-Acenaphthylene	2014/08/25	87	50 - 130	86	50 - 130	92	%		
3722814	Moisture	2014/08/23							0	20
3723757	Acid Extractable Antimony (Sb)	2014/08/26	92	75 - 125	101	80 - 120	<0.20	ug/g		
3723757	Acid Extractable Arsenic (As)	2014/08/26	96	75 - 125	101	80 - 120	<1.0	ug/g		
3723757	Acid Extractable Barium (Ba)	2014/08/26	NC	75 - 125	98	80 - 120	<0.50	ug/g		
3723757	Acid Extractable Beryllium (Be)	2014/08/26	99	75 - 125	105	80 - 120	<0.20	ug/g		
3723757	Acid Extractable Boron (B)	2014/08/26	83	75 - 125	98	80 - 120	<5.0	ug/g		
3723757	Acid Extractable Cadmium (Cd)	2014/08/26	98	75 - 125	100	80 - 120	<0.10	ug/g		
3723757	Acid Extractable Chromium (Cr)	2014/08/26	NC	75 - 125	99	80 - 120	<1.0	ug/g		
3723757	Acid Extractable Cobalt (Co)	2014/08/26	95	75 - 125	101	80 - 120	<0.10	ug/g		
3723757	Acid Extractable Copper (Cu)	2014/08/26	NC	75 - 125	104	80 - 120	<0.50	ug/g		
3723757	Acid Extractable Lead (Pb)	2014/08/26	NC	75 - 125	103	80 - 120	<1.0	ug/g		
3723757	Acid Extractable Mercury (Hg)	2014/08/26	97	75 - 125	100	80 - 120	<0.050	ug/g		
3723757	Acid Extractable Molybdenum (Mo)	2014/08/26	97	75 - 125	99	80 - 120	<0.50	ug/g		
3723757	Acid Extractable Nickel (Ni)	2014/08/26	NC	75 - 125	102	80 - 120	<0.50	ug/g		
3723757	Acid Extractable Selenium (Se)	2014/08/26	94	75 - 125	97	80 - 120	<0.50	ug/g		
3723757	Acid Extractable Silver (Ag)	2014/08/26	99	75 - 125	103	80 - 120	<0.20	ug/g		
3723757	Acid Extractable Thallium (Tl)	2014/08/26	98	75 - 125	102	80 - 120	<0.050	ug/g		
3723757	Acid Extractable Uranium (U)	2014/08/26	96	75 - 125	98	80 - 120	<0.050	ug/g		
3723757	Acid Extractable Vanadium (V)	2014/08/26	NC	75 - 125	96	80 - 120	<5.0	ug/g		
3723757	Acid Extractable Zinc (Zn)	2014/08/26	NC	75 - 125	100	80 - 120	<5.0	ug/g		
3724153	1-Methylnaphthalene	2014/08/25	92	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
3724153	2-Methylnaphthalene	2014/08/25	88	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
3724153	Acenaphthene	2014/08/25	95	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
3724153	Acenaphthylene	2014/08/25	93	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
3724153	Anthracene	2014/08/25	92	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
3724153	Benzo(a)anthracene	2014/08/25	94	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
3724153	Benzo(a)pyrene	2014/08/25	92	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
3724153	Benzo(b/j)fluoranthene	2014/08/25	95	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
3724153	Benzo(g,h,i)perylene	2014/08/25	78	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40

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Maxxam Job #: B4F2927
Report Date: 2014/08/27

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3724153	Benzo(k)fluoranthene	2014/08/25	98	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
3724153	Chrysene	2014/08/25	93	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
3724153	Dibenz(a,h)anthracene	2014/08/25	69	50 - 130	59	50 - 130	<0.0050	ug/g	NC	40
3724153	Fluoranthene	2014/08/25	97	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
3724153	Fluorene	2014/08/25	92	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
3724153	Indeno(1,2,3-cd)pyrene	2014/08/25	70	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
3724153	Naphthalene	2014/08/25	88	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
3724153	Phenanthrene	2014/08/25	93	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
3724153	Pyrene	2014/08/25	98	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B4F2927
Report Date: 2014/08/27

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

VALIDATION SIGNATURE PAGE

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

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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Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE INFORMATION	REPORT INFORMATION (if differs from invoice)	PROJECT INFORMATION	TURNAROUND TIME (TAT) REQUIRED
Company Name:	Company Name: Golder Associates	Quotation #: B44309	[X] Regular TAT (5-7 days)
Contact Name:	Contact Name: Paul Hurst	P.O. #:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	Address: 32 Steacie Drive	Project #: 14-1122-0005	Rush TAT (Applicable Surcharge)
	Kanata, ON	Site Location: Oblates	[ ] 1 Day (100%)
Phone: Fax:	Phone: ## Fax:	Site #: EQUIS FACILITY 6147	[ ] 2 Days (50%)
Email:	Email: paul_hurst@maxxam.com	Sampled By:	[ ] 3-4 Days (25%)

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

REGULATION 153 (2011)	OTHER REGULATIONS
[X] Table 1 [ ] Res/Park [ ] Med/Fine	[ ] CCME [ ] Sanitary Sewer Bylaw
[ ] Table 2 [ ] Ind/Comm [ ] Coarse	[ ] MISA [ ] Storm Sewer Bylaw
[ ] Table 3 [ ] Agri/Other	[ ] PWQO Municipality:
[ ] Table ___	[ ] Other (Specify):
FOR RSC (PLEASE CIRCLE) YES / NO	[ ] REG 558 (MINIMUM 3 DAY TAT REQUIRED)

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

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

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX	# OF CONT.	FIELD FILTERED (PLEASE CIRCLE) Metals / Hg / CrVI	PAHs	Metals (including Hg and Cr(VI))
1	G13 SA9	Aug 14					X	X
2	G13 SA11	Aug 14					X	X
3	G1 SA5	Aug 5					X	X
4	G11 SA9	Aug 18					X	X
5	G11 SA2	Aug 15					X	X
6	G6 SA4	Aug 6					X	X
7								
8								
9								
10								

Rush Confirmation #:

Date Required:

LABORATORY USE ONLY

CUSTODY SEAL (Y/N)		Temperature (°C) on Receipt
Present	Y	8/9/18
Intact	Y	8/4/6
COOLING MEDIA PRESENT (Y / N)	Y	

COMMENTS / TAT COMMENTS

Please send results to Paul Hurst

REC'D IN OTTAWA

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	# JARS US AND NO SUBMITT
Jill Lackey [signature]	2014/08/21		[signature] / Shawn Colbert	2014/08/21	15:00	
			[signature] Mark Pearl	2014/08/22	09:40	

22-Aug-14 09:40
Parnian Baber
B4F2927
AAF ENV-784

Maxxam Analytics International Corporation o/a Maxxam Analytics

Purolator 330 229 765 392

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Your Project #: 14-1122-0005
Site Location: OBLATES
Your C.O.C. #: na

Attention:Paul Hurst

Golder Associates Ltd
32 Steacie Dr
Kanata, ON
K2K 2A9

Report Date: 2014/09/05
Report #: R3146449
Version: 2R

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B4F2927
Received: 2014/08/21, 15:00

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	6	N/A	2014/08/26	CAM SOP-00301	EPA 8270 m
Strong Acid Leachable Metals by ICPMS (1)	6	2014/08/25	2014/08/26	CAM SOP-00447	EPA 6020 m
Moisture (1)	6	N/A	2014/08/23	CAM SOP-00445	R.Carter,1993
PAH Compounds in Soil by GC/MS (SIM) (1)	5	2014/08/25	2014/08/25	CAM SOP - 00318	EPA 8270 m
PAH Compounds in Soil by GC/MS (SIM) (1)	1	2014/08/25	2014/08/26	CAM SOP - 00318	EPA 8270 m
pH CaCl2 EXTRACT (1)	1	2014/09/05	2014/09/05	CAM SOP-00413	EPA 9045 D m

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 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.

(1) This test was performed by Maxxam Analytics Mississauga

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Your Project #: 14-1122-0005
Site Location: OBLATES
Your C.O.C. #: na

Attention:Paul Hurst

Golder Associates Ltd
32 Steacie Dr
Kanata, ON
K2K 2A9

Report Date: 2014/09/05
Report #: R3146449
Version: 2R

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B4F2927
Received: 2014/08/21, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573
==========
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 Job #: B4F2927
Report Date: 2014/09/05

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		XG1345	XG1346	XG1347	XG1348	XG1349	XG1350		
Sampling Date		2014/08/14	2014/08/14	2014/08/05	2014/08/18	2014/08/15	2014/08/06		
COC Number		na	na	na	na	na	na		
	Units	**G13 SA9**	**G13 SA11**	**G1 SA5**	**G11 SA9**	**G11 SA2**	**G6 SA4**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	0.76	<0.20	<0.20	0.95	0.76	<0.20	0.20	3723757
Acid Extractable Arsenic (As)	ug/g	3.9	2.8	3.7	2.9	2.8	2.2	1.0	3723757
Acid Extractable Barium (Ba)	ug/g	220	210	200	200	78	120	0.50	3723757
Acid Extractable Beryllium (Be)	ug/g	0.64	0.71	0.66	0.53	0.23	0.45	0.20	3723757
Acid Extractable Boron (B)	ug/g	7.1	5.3	<5.0	<5.0	<5.0	<5.0	5.0	3723757
Acid Extractable Cadmium (Cd)	ug/g	0.20	<0.10	<0.10	0.17	0.37	<0.10	0.10	3723757
Acid Extractable Chromium (Cr)	ug/g	45	50	45	62	18	31	1.0	3723757
Acid Extractable Cobalt (Co)	ug/g	11	12	16	13	5.1	8.8	0.10	3723757
Acid Extractable Copper (Cu)	ug/g	31	28	28	38	21	20	0.50	3723757
Acid Extractable Lead (Pb)	ug/g	110	7.6	6.5	86	130	4.6	1.0	3723757
Acid Extractable Molybdenum (Mo)	ug/g	0.93	<0.50	<0.50	0.58	0.71	<0.50	0.50	3723757
Acid Extractable Nickel (Ni)	ug/g	28	29	31	36	13	19	0.50	3723757
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3723757
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3723757
Acid Extractable Thallium (Tl)	ug/g	0.22	0.27	0.24	0.26	0.091	0.17	0.050	3723757
Acid Extractable Uranium (U)	ug/g	0.96	0.76	0.57	0.72	0.44	0.69	0.050	3723757
Acid Extractable Vanadium (V)	ug/g	50	59	65	62	24	48	5.0	3723757
Acid Extractable Zinc (Zn)	ug/g	99	88	74	110	93	51	5.0	3723757
Acid Extractable Mercury (Hg)	ug/g	0.33	<0.050	<0.050	0.11	0.12	<0.050	0.050	3723757

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B4F2927
Report Date: 2014/09/05

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

O.REG 153 PAHS (SOIL)

Maxxam ID		XG1345		XG1346	XG1346	XG1347	XG1348		XG1349		
Sampling Date		2014/08/14		2014/08/14	2014/08/14	2014/08/05	2014/08/18		2014/08/15		
COC Number		na		na	na	na	na		na		
	Units	**G13 SA9**	**RDL**	**G13 SA11**	**G13 SA11 Lab-Dup**	**G1 SA5**	**G11 SA9**	**RDL**	**G11 SA2**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	24	1.0	22		21	24	1.0	15	1.0	3722814
Calculated Parameters											
Methylnaphthalene, 2-(1-)	ug/g	2.5	0.028	<0.0071		<0.0071	<0.0071	0.0071	0.059	0.014	3721739
Polyaromatic Hydrocarbons											
Acenaphthene	ug/g	3.0	0.020	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.093	0.010	3724153
Acenaphthylene	ug/g	0.12	0.020	<0.0050	<0.0050	<0.0050	0.0067	0.0050	0.062	0.010	3724153
Anthracene	ug/g	5.0	0.020	<0.0050	<0.0050	<0.0050	0.0092	0.0050	0.25	0.010	3724153
Benzo(a)anthracene	ug/g	7.7	0.020	<0.0050	<0.0050	<0.0050	0.031	0.0050	0.70	0.010	3724153
Benzo(a)pyrene	ug/g	5.8	0.020	<0.0050	<0.0050	<0.0050	0.034	0.0050	0.66	0.010	3724153
Benzo(b/j)fluoranthene	ug/g	6.7	0.020	<0.0050	<0.0050	<0.0050	0.047	0.0050	0.85	0.010	3724153
Benzo(g,h,i)perylene	ug/g	3.0	0.020	<0.0050	<0.0050	<0.0050	0.019	0.0050	0.39	0.010	3724153
Benzo(k)fluoranthene	ug/g	2.9	0.020	<0.0050	<0.0050	<0.0050	0.018	0.0050	0.31	0.010	3724153
Chrysene	ug/g	6.1	0.020	<0.0050	<0.0050	<0.0050	0.029	0.0050	0.56	0.010	3724153
Dibenz(a,h)anthracene	ug/g	0.92	0.020	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.092	0.010	3724153
Fluoranthene	ug/g	15	0.020	<0.0050	<0.0050	<0.0050	0.080	0.0050	1.5	0.010	3724153
Fluorene	ug/g	2.9	0.020	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.093	0.010	3724153
Indeno(1,2,3-cd)pyrene	ug/g	3.0	0.020	<0.0050	<0.0050	<0.0050	0.018	0.0050	0.40	0.010	3724153
1-Methylnaphthalene	ug/g	0.93	0.020	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.028	0.010	3724153
2-Methylnaphthalene	ug/g	1.5	0.020	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.031	0.010	3724153
Naphthalene	ug/g	3.7	0.020	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.053	0.010	3724153
Phenanthrene	ug/g	18	0.020	<0.0050	<0.0050	<0.0050	0.034	0.0050	0.88	0.010	3724153
Pyrene	ug/g	12	0.020	<0.0050	<0.0050	<0.0050	0.067	0.0050	1.2	0.010	3724153
Surrogate Recovery (%)											
D10-Anthracene	%	98		103	99	97	94		77		3724153
D14-Terphenyl (FS)	%	101		93	94	95	95		94		3724153
D8-Acenaphthylene	%	88		82	85	89	88		85		3724153

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B4F2927
Report Date: 2014/09/05

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

O.REG 153 PAHS (SOIL)

Maxxam ID		XG1350	XG1350		
Sampling Date		2014/08/06	2014/08/06		
COC Number		na	na		
	Units	**G6 SA4**	**G6 SA4 Lab-Dup**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	21	21	1.0	3722814
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	<0.0071		0.0071	3721739
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	<0.0050		0.0050	3724153
Acenaphthylene	ug/g	<0.0050		0.0050	3724153
Anthracene	ug/g	<0.0050		0.0050	3724153
Benzo(a)anthracene	ug/g	<0.0050		0.0050	3724153
Benzo(a)pyrene	ug/g	<0.0050		0.0050	3724153
Benzo(b/j)fluoranthene	ug/g	<0.0050		0.0050	3724153
Benzo(g,h,i)perylene	ug/g	<0.0050		0.0050	3724153
Benzo(k)fluoranthene	ug/g	<0.0050		0.0050	3724153
Chrysene	ug/g	<0.0050		0.0050	3724153
Dibenz(a,h)anthracene	ug/g	<0.0050		0.0050	3724153
Fluoranthene	ug/g	<0.0050		0.0050	3724153
Fluorene	ug/g	<0.0050		0.0050	3724153
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050		0.0050	3724153
1-Methylnaphthalene	ug/g	<0.0050		0.0050	3724153
2-Methylnaphthalene	ug/g	<0.0050		0.0050	3724153
Naphthalene	ug/g	<0.0050		0.0050	3724153
Phenanthrene	ug/g	<0.0050		0.0050	3724153
Pyrene	ug/g	<0.0050		0.0050	3724153
Surrogate Recovery (%)					
D10-Anthracene	%	101			3724153
D14-Terphenyl (FS)	%	94			3724153
D8-Acenaphthylene	%	88			3724153

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Report Date: 2014/09/05

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

RESULTS OF ANALYSES OF SOIL

Maxxam ID		XG1349	
Sampling Date		2014/08/15	
COC Number		na	
	Units	**G11 SA2**	**QC Batch**
Inorganics			
Available (CaCl2) pH	pH	7.59	3737036
QC Batch = Quality Control Batch			

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Maxxam Job #: B4F2927
Report Date: 2014/09/05

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

TEST SUMMARY

Maxxam ID: XG1345
Sample ID: G13 SA9
Matrix: Soil

Collected: 2014/08/14
Shipped:
Received: 2014/08/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3721739	N/A	2014/08/26	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3723757	2014/08/25	2014/08/26	Grace Bu
Moisture	BAL	3722814	N/A	2014/08/23	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3724153	2014/08/25	2014/08/25	Darryl Tiller

Maxxam ID: XG1346
Sample ID: G13 SA11
Matrix: Soil

Collected: 2014/08/14
Shipped:
Received: 2014/08/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3721739	N/A	2014/08/26	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3723757	2014/08/25	2014/08/26	Grace Bu
Moisture	BAL	3722814	N/A	2014/08/23	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3724153	2014/08/25	2014/08/25	Darryl Tiller

Maxxam ID: XG1346 Dup
Sample ID: G13 SA11
Matrix: Soil

Collected: 2014/08/14
Shipped:
Received: 2014/08/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3724153	2014/08/25	2014/08/25	Darryl Tiller

Maxxam ID: XG1347
Sample ID: G1 SA5
Matrix: Soil

Collected: 2014/08/05
Shipped:
Received: 2014/08/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3721739	N/A	2014/08/26	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3723757	2014/08/25	2014/08/26	Grace Bu
Moisture	BAL	3722814	N/A	2014/08/23	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3724153	2014/08/25	2014/08/25	Darryl Tiller

Maxxam ID: XG1348
Sample ID: G11 SA9
Matrix: Soil

Collected: 2014/08/18
Shipped:
Received: 2014/08/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3721739	N/A	2014/08/26	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3723757	2014/08/25	2014/08/26	Grace Bu
Moisture	BAL	3722814	N/A	2014/08/23	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3724153	2014/08/25	2014/08/25	Darryl Tiller

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Maxxam Job #: B4F2927
Report Date: 2014/09/05

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

TEST SUMMARY

Maxxam ID: XG1349
Sample ID: G11 SA2
Matrix: Soil

Collected: 2014/08/15
Shipped:
Received: 2014/08/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3721739	N/A	2014/08/26	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3723757	2014/08/25	2014/08/26	Grace Bu
Moisture	BAL	3722814	N/A	2014/08/23	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3724153	2014/08/25	2014/08/25	Darryl Tiller
pH CaCl2 EXTRACT		3737036	2014/09/05	2014/09/05	Neil Dassanayake

Maxxam ID: XG1350
Sample ID: G6 SA4
Matrix: Soil

Collected: 2014/08/06
Shipped:
Received: 2014/08/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3721739	N/A	2014/08/26	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3723757	2014/08/25	2014/08/26	Grace Bu
Moisture	BAL	3722814	N/A	2014/08/23	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3724153	2014/08/25	2014/08/26	Darryl Tiller

Maxxam ID: XG1350 Dup
Sample ID: G6 SA4
Matrix: Soil

Collected: 2014/08/06
Shipped:
Received: 2014/08/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3722814	N/A	2014/08/23	Valentina Kaftani

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Report Date: 2014/09/05

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

GENERAL COMMENTS

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

Package 1	8.3°C

Sample XG1345-01 : PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample XG1349-01 : PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3724153	D10-Anthracene	2014/08/25	94	50 - 130	95	50 - 130	109	%		
3724153	D14-Terphenyl (FS)	2014/08/25	94	50 - 130	88	50 - 130	98	%		
3724153	D8-Acenaphthylene	2014/08/25	87	50 - 130	86	50 - 130	92	%		
3722814	Moisture	2014/08/23							0	20
3723757	Acid Extractable Antimony (Sb)	2014/08/26	92	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
3723757	Acid Extractable Arsenic (As)	2014/08/26	96	75 - 125	101	80 - 120	<1.0	ug/g	NC	30
3723757	Acid Extractable Barium (Ba)	2014/08/26	NC	75 - 125	98	80 - 120	<0.50	ug/g	2.6	30
3723757	Acid Extractable Beryllium (Be)	2014/08/26	99	75 - 125	105	80 - 120	<0.20	ug/g	NC	30
3723757	Acid Extractable Boron (B)	2014/08/26	83	75 - 125	98	80 - 120	<5.0	ug/g	NC	30
3723757	Acid Extractable Cadmium (Cd)	2014/08/26	98	75 - 125	100	80 - 120	<0.10	ug/g	NC	30
3723757	Acid Extractable Chromium (Cr)	2014/08/26	NC	75 - 125	99	80 - 120	<1.0	ug/g	7.6	30
3723757	Acid Extractable Cobalt (Co)	2014/08/26	95	75 - 125	101	80 - 120	<0.10	ug/g	3.5	30
3723757	Acid Extractable Copper (Cu)	2014/08/26	NC	75 - 125	104	80 - 120	<0.50	ug/g	3.1	30
3723757	Acid Extractable Lead (Pb)	2014/08/26	NC	75 - 125	103	80 - 120	<1.0	ug/g	2.3	30
3723757	Acid Extractable Mercury (Hg)	2014/08/26	97	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
3723757	Acid Extractable Molybdenum (Mo)	2014/08/26	97	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
3723757	Acid Extractable Nickel (Ni)	2014/08/26	NC	75 - 125	102	80 - 120	<0.50	ug/g	3.1	30
3723757	Acid Extractable Selenium (Se)	2014/08/26	94	75 - 125	97	80 - 120	<0.50	ug/g	NC	30
3723757	Acid Extractable Silver (Ag)	2014/08/26	99	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
3723757	Acid Extractable Thallium (Tl)	2014/08/26	98	75 - 125	102	80 - 120	<0.050	ug/g	NC	30
3723757	Acid Extractable Uranium (U)	2014/08/26	96	75 - 125	98	80 - 120	<0.050	ug/g	0.51	30
3723757	Acid Extractable Vanadium (V)	2014/08/26	NC	75 - 125	96	80 - 120	<5.0	ug/g	4.9	30
3723757	Acid Extractable Zinc (Zn)	2014/08/26	NC	75 - 125	100	80 - 120	<5.0	ug/g	0.17	30
3724153	1-Methylnaphthalene	2014/08/25	92	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
3724153	2-Methylnaphthalene	2014/08/25	88	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
3724153	Acenaphthene	2014/08/25	95	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
3724153	Acenaphthylene	2014/08/25	93	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
3724153	Anthracene	2014/08/25	92	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
3724153	Benzo(a)anthracene	2014/08/25	94	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
3724153	Benzo(a)pyrene	2014/08/25	92	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
3724153	Benzo(b/j)fluoranthene	2014/08/25	95	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
3724153	Benzo(g,h,i)perylene	2014/08/25	78	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40

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QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3724153	Benzo(k)fluoranthene	2014/08/25	98	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
3724153	Chrysene	2014/08/25	93	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
3724153	Dibenz(a,h)anthracene	2014/08/25	69	50 - 130	59	50 - 130	<0.0050	ug/g	NC	40
3724153	Fluoranthene	2014/08/25	97	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
3724153	Fluorene	2014/08/25	92	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
3724153	Indeno(1,2,3-cd)pyrene	2014/08/25	70	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
3724153	Naphthalene	2014/08/25	88	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
3724153	Phenanthrene	2014/08/25	93	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
3724153	Pyrene	2014/08/25	98	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
3737036	Available (CaCl2) pH	2014/09/05			100	97 - 103			1.4	N/A

N/A = Not Applicable

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Golder Associates Ltd
Client Project #: 14-1122-0005
Site Location: OBLATES
Sampler Initials: JL

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Eva Pranjic

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE INFORMATION	REPORT INFORMATION (if differs from invoice)	PROJECT INFORMATION	TURNAROUND TIME (TAT) REQUIRED
Company Name:	Company Name: Golder Associates	Quotation #: B44309	[X] Regular TAT (5-7 days)
Contact Name:	Contact Name: Paul Hurst	P.O. #:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:	Address: 32 Steacie Drive	Project: 14-1122-0005	Rush TAT (Applicable Surcharge)
	Kanata, ON	Site Location: Oblates	[ ] 1 Day (100%)
Phone: Fax:	Phone: ## Fax:	EQUIS FACILITY 6147	[ ] 2 Days (50%)
Email:	Email: paul_hurst@maxxam.com	Sampled By:	[ ] 3-4 Days (25%)

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

REGULATION 153 (2011)	OTHER REGULATIONS
[X] Table 1 [ ] Res/Park [ ] Med/Fine	[ ] CCME [ ] Sanitary Sewer Bylaw
[ ] Table 2 [ ] Ind/Comm [ ] Coarse	[ ] MISA [ ] Storm Sewer Bylaw
[ ] Table 3 [ ] Agri/Other	[ ] PWQO Municipality:
[ ] Table ___	[ ] Other (Specify):
FOR RSC (PLEASE CIRCLE) YES / NO	[ ] REG 558 (MINIMUM 3 DAY TAT REQUIRED)

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

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

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX	# OF CONT.	FIELD FILTERED (PLEASE CIRCLE) Metals / Hg / CrVI	PAHs	Metals (including Hg and Cr(VI))
1	G13 SA9	Aug 14					X	X
2	G13 SA11	Aug 14					X	X
3	G1 SA5	Aug 5					X	X
4	G11 SA9	Aug 15					X	X
5	G11 SA2	Aug 5					X	X
6	G6 SA4	Aug 6					X	X
7								
8								
9								
10								

Rush Confirmation #:

Date Required:

LABORATORY USE ONLY

CUSTODY SEAL (Y/N)		Temperature (°C) on Receipt
Present	Y	
Intact	Y	8/9/18
COOLING MEDIA PRESENT (Y / N)	Y	8/4/6

COMMENTS / TAT COMMENTS

Please send results to Paul Hurst

REC'D IN OTTAWA

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME:	# JARS USED AND NOT SUBMITTED
Jill Lackey	2014/08/21		Shawn Colbert	2014/08/21	15:00	
				2014/08/22	09:40	

22-Aug-14 09:40
Parnian Baber
B4F2927
AAF ENV-784

Maxxam Analytics International Corporation o/a Maxxam Analytics

Daniel 330 229 765 392

Your Project #: 14-1122-0005
Your C.O.C. #: 48289002, 482890-02-01

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

Report Date: 2014/09/04
Report #: R3145197
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B4F6345
Received: 2014/08/26, 15:22

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Methylnaphthalene Sum	1	N/A	2014/09/03	CAM SOP-00301	EPA 8270 m
Hot Water Extractable Boron	1	2014/09/02	2014/09/02	CAM SOP-00408	R153 Ana. Prot. 2011
Hexavalent Chromium in Soil by IC (1)	1	2014/09/02	2014/09/03	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS	1	2014/09/02	2014/09/03	CAM SOP-00447	EPA 6020 m
Moisture	1	N/A	2014/08/29	CAM SOP-00445	R.Carter,1993
PAH Compounds in Soil by GC/MS (SIM)	1	2014/08/30	2014/09/02	CAM SOP - 00318	EPA 8270 m

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Methylnaphthalene Sum	5	N/A	2014/09/03	CAM SOP-00301	EPA 8270 m
Chromium (VI) in Water	6	N/A	2014/09/02	CAM SOP-00436	EPA 7199 m
Petroleum Hydro. CCME F1 & BTEX in Water	5	N/A	2014/09/02	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydro. CCME F1 & BTEX in Water	1	N/A	2014/09/03	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water	6	2014/09/02	2014/09/03	CAM SOP-00316	CCME PHC-CWS m
Mercury	6	2014/09/02	2014/09/03	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	6	N/A	2014/09/03	CAM SOP-00447	EPA 6020 m
PAH Compounds in Water by GC/MS (SIM)	5	2014/08/29	2014/09/02	CAM SOP-00318	EPA 8270 m

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 for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is limited in liability to the

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Maxxam Job #: B4F6345
Report Date: 2014/09/04

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

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) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

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

Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (905) 817-5700

==========
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

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Sampler Initials: DM

RESULTS OF ANALYSES OF SOIL

Maxxam ID		XH7916		
Sampling Date		2014/08/25		
	Units	**TP E**	**RDL**	**QC Batch**
Inorganics				
Chromium (VI)	ug/g	<0.2	0.2	3732611
Moisture	%	21	1.0	3731138

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		XH7916		
Sampling Date		2014/08/25		
	Units	**TP E**	**RDL**	**QC Batch**
Metals				
Hot Water Ext. Boron (B)	ug/g	0.18	0.050	3732269
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.20	3732395
Acid Extractable Arsenic (As)	ug/g	3.3	1.0	3732395
Acid Extractable Barium (Ba)	ug/g	200	0.50	3732395
Acid Extractable Beryllium (Be)	ug/g	0.69	0.20	3732395
Acid Extractable Boron (B)	ug/g	<5.0	5.0	3732395
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.10	3732395
Acid Extractable Chromium (Cr)	ug/g	42	1.0	3732395
Acid Extractable Cobalt (Co)	ug/g	13	0.10	3732395
Acid Extractable Copper (Cu)	ug/g	24	0.50	3732395
Acid Extractable Lead (Pb)	ug/g	6.1	1.0	3732395
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	0.50	3732395
Acid Extractable Nickel (Ni)	ug/g	24	0.50	3732395
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	3732395
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	3732395
Acid Extractable Thallium (Tl)	ug/g	0.23	0.050	3732395
Acid Extractable Uranium (U)	ug/g	0.84	0.050	3732395
Acid Extractable Vanadium (V)	ug/g	59	5.0	3732395
Acid Extractable Zinc (Zn)	ug/g	66	5.0	3732395
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.050	3732395

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B4F6345
Report Date: 2014/09/04

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		XH7916		
Sampling Date		2014/08/25		
	Units	**TP E**	**RDL**	**QC Batch**
Calculated Parameters				
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.0071	3728629
Polyaromatic Hydrocarbons				
Acenaphthene	ug/g	<0.0050	0.0050	3731492
Acenaphthylene	ug/g	<0.0050	0.0050	3731492
Anthracene	ug/g	<0.0050	0.0050	3731492
Benzo(a)anthracene	ug/g	<0.0050	0.0050	3731492
Benzo(a)pyrene	ug/g	<0.0050	0.0050	3731492
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.0050	3731492
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	3731492
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	3731492
Chrysene	ug/g	<0.0050	0.0050	3731492
Dibenz(a,h)anthracene	ug/g	<0.0050	0.0050	3731492
Fluoranthene	ug/g	<0.0050	0.0050	3731492
Fluorene	ug/g	<0.0050	0.0050	3731492
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	3731492
1-Methylnaphthalene	ug/g	<0.0050	0.0050	3731492
2-Methylnaphthalene	ug/g	<0.0050	0.0050	3731492
Naphthalene	ug/g	<0.0050	0.0050	3731492
Phenanthrene	ug/g	<0.0050	0.0050	3731492
Pyrene	ug/g	<0.0050	0.0050	3731492
Surrogate Recovery (%)				
D10-Anthracene	%	95		3731492
D14-Terphenyl (FS)	%	97		3731492
D8-Acenaphthylene	%	86		3731492

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B4F6345
Report Date: 2014/09/04

Golder Associates Ltd
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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		XH7910	XH7910	XH7911	XH7912		XH7913	XH7914		XH7915		
Sampling Date		2014/08/26 11:30	2014/08/26 11:30	2014/08/26 12:15	2014/08/26 08:50		2014/08/26 09:50	2014/08/26 10:30		2014/08/26 10:55		
	Units	**14-1**	**14-1 Lab-Dup**	**14-101C**	**14-208C**	**RDL**	**14-210 B**	**14-225**	**RDL**	**14-211**	**RDL**	**QC Batch**
Metals												
Chromium (VI)	ug/L	<0.50		<0.50	<0.50	0.50	<0.50	<0.50	0.50	<0.50	0.50	3731457
Mercury (Hg)	ug/L	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.1	<0.1	0.1	3733251
Dissolved Antimony (Sb)	ug/L	0.75	0.57	<0.50	<0.50	0.50	0.52	0.85	0.50	<0.50	0.50	3733745
Dissolved Arsenic (As)	ug/L	4.5	4.6	<1.0	<1.0	1.0	<1.0	<1.0	1.0	1.3	1.0	3733745
Dissolved Barium (Ba)	ug/L	46	49	110	55	2.0	110	110	2.0	150	2.0	3733745
Dissolved Beryllium (Be)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	0.50	<0.50	0.50	3733745
Dissolved Boron (B)	ug/L	110	110	20	19	10	25	26	10	120	10	3733745
Dissolved Cadmium (Cd)	ug/L	<0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	0.10	<0.10	0.10	3733745
Dissolved Chromium (Cr)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	<5.0	<5.0	5.0	<5.0	5.0	3733745
Dissolved Cobalt (Co)	ug/L	<0.50	<0.50	2.0	1.1	0.50	3.4	3.4	0.50	2.3	0.50	3733745
Dissolved Copper (Cu)	ug/L	<1.0	1.7	<1.0	2.1	1.0	1.6	1.3	1.0	1.5	1.0	3733745
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	0.50	<0.50	0.50	3733745
Dissolved Molybdenum (Mo)	ug/L	6.4	6.0	2.9	1.3	0.50	5.4	5.8	0.50	<0.50	0.50	3733745
Dissolved Nickel (Ni)	ug/L	3.0	2.8	2.0	2.9	1.0	5.8	7.0	1.0	1.7	1.0	3733745
Dissolved Selenium (Se)	ug/L	<2.0	<2.0	<2.0	<2.0	2.0	<2.0	<2.0	2.0	<2.0	2.0	3733745
Dissolved Silver (Ag)	ug/L	<0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	0.10	<0.10	0.10	3733745
Dissolved Sodium (Na)	ug/L	45000	47000	41000	8400	100	400000	410000	100	68000	100	3733745
Dissolved Thallium (Tl)	ug/L	0.093	0.076	<0.050	0.089	0.050	0.099	0.094	0.050	<0.050	0.050	3733745
Dissolved Uranium (U)	ug/L	1.8	1.6	2.7	0.88	0.10	13	12	0.10	1.3	0.10	3733745
Dissolved Vanadium (V)	ug/L	2.2	2.3	<0.50	<0.50	0.50	<1.0(1)	<1.0(1)	1.0	1.1	0.50	3733745
Dissolved Zinc (Zn)	ug/L	<5.0	5.2	<5.0	<5.0	5.0	<5.0	<5.0	5.0	<5.0	5.0	3733745

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Metal Analysis:Detection Limit was raised due to matrix interferences.

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Maxxam Job #: B4F6345
Report Date: 2014/09/04

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		XH7910	XH7911	XH7911	XH7912	XH7913	XH7914		
Sampling Date		2014/08/26 11:30	2014/08/26 12:15	2014/08/26 12:15	2014/08/26 08:50	2014/08/26 09:50	2014/08/26 10:30		
	Units	**14-1**	**14-101C**	**14-101C Lab-Dup**	**14-208C**	**14-210 B**	**14-225**	**RDL**	**QC Batch**
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071		<0.071	<0.071	<0.071	0.071	3728385
Polyaromatic Hydrocarbons									
Acenaphthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3731137
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3731137
Anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3731137
Benzo(a)anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3731137
Benzo(a)pyrene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	3731137
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3731137
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3731137
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3731137
Chrysene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3731137
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3731137
Fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3731137
Fluorene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3731137
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3731137
1-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3731137
2-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3731137
Naphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3731137
Phenanthrene	ug/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	3731137
Pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	3731137
Surrogate Recovery (%)									
D10-Anthracene	%	106	104	100	101	107	105		3731137
D14-Terphenyl (FS)	%	107	96	93	95	90	93		3731137
D8-Acenaphthylene	%	108	109	104	104	108	106		3731137

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B4F6345
Report Date: 2014/09/04

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		XH7910	XH7910	XH7911	XH7912	XH7913	XH7914	XH7915		
Sampling Date		2014/08/26 11:30	2014/08/26 11:30	2014/08/26 12:15	2014/08/26 08:50	2014/08/26 09:50	2014/08/26 10:30	2014/08/26 10:55		
	Units	**14-1**	**14-1 Lab-Dup**	**14-101C**	**14-208C**	**14-210 B**	**14-225**	**14-211**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons										
Benzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3732562
Toluene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3732562
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3732562
o-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3732562
p+m-Xylene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	3732562
Total Xylenes	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	3732562
F1 (C6-C10)	ug/L	<25	<25	<25	<25	<25	<25	<25	25	3732562
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	<25	<25	<25	<25	25	3732562
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/L	<100		<100	<100	<100	<100	<100	100	3733208
F3 (C16-C34 Hydrocarbons)	ug/L	<200		<200	<200	<200	<200	<200	200	3733208
F4 (C34-C50 Hydrocarbons)	ug/L	<200		<200	<200	<200	<200	<200	200	3733208
Reached Baseline at C50	ug/L	YES		YES	YES	YES	YES	YES		3733208
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	102	109	99	101	102	102	101		3732562
4-Bromofluorobenzene	%	97	90	92	98	96	101	92		3732562
D10-Ethylbenzene	%	104	101	99	100	100	102	103		3732562
D4-1,2-Dichloroethane	%	95	101	94	94	95	96	95		3732562
o-Terphenyl	%	95		95	92	96	95	103		3733208

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B4F6345
Report Date: 2014/09/04

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

Test Summary

Maxxam ID XH7910 **Collected** 2014/08/26
Sample ID 14-1 **Shipped**
Matrix Water **Received** 2014/08/26

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3728385	N/A	2014/09/03	Automated Statchk
Chromium (VI) in Water	IC	3731457	N/A	2014/09/02	Lang Le
Petroleum Hydro. CCME F1 & BTEX in Wat	HSGC/MSFD	3732562	N/A	2014/09/02	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3733208	2014/09/02	2014/09/03	Zhiyue (Frank) Zhu
Mercury	CVAA	3733251	2014/09/02	2014/09/03	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3733745	N/A	2014/09/03	Prempal Bhatti
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3731137	2014/08/29	2014/09/02	Lingyun Feng

Maxxam ID XH7910 Dup **Collected** 2014/08/26
Sample ID 14-1 **Shipped**
Matrix Water **Received** 2014/08/26

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Wat	HSGC/MSFD	3732562	N/A	2014/09/02	Domnica Andronescu
Mercury	CVAA	3733251	2014/09/02	2014/09/03	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3733745	N/A	2014/09/03	Prempal Bhatti

Maxxam ID XH7911 **Collected** 2014/08/26
Sample ID 14-101C **Shipped**
Matrix Water **Received** 2014/08/26

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3728385	N/A	2014/09/03	Automated Statchk
Chromium (VI) in Water	IC	3731457	N/A	2014/09/02	Lang Le
Petroleum Hydro. CCME F1 & BTEX in Wat	HSGC/MSFD	3732562	N/A	2014/09/02	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3733208	2014/09/02	2014/09/03	Zhiyue (Frank) Zhu
Mercury	CVAA	3733251	2014/09/02	2014/09/03	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3733745	N/A	2014/09/03	Prempal Bhatti
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3731137	2014/08/29	2014/09/02	Lingyun Feng

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Maxxam Job #: B4F6345
Report Date: 2014/09/04

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

Test Summary

Maxxam ID XH7911 Dup
Sample ID 14-101C
Matrix Water

Collected 2014/08/26
Shipped
Received 2014/08/26

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3731137	2014/08/29	2014/09/02	Lingyun Feng

Maxxam ID XH7912
Sample ID 14-208C
Matrix Water

Collected 2014/08/26
Shipped
Received 2014/08/26

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3728385	N/A	2014/09/03	Automated Statchk
Chromium (VI) in Water	IC	3731457	N/A	2014/09/02	Lang Le
Petroleum Hydro. CCME F1 & BTEX in Wat	HSGC/MSFD	3732562	N/A	2014/09/02	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3733208	2014/09/02	2014/09/03	Zhiyue (Frank) Zhu
Mercury	CVAA	3733251	2014/09/02	2014/09/03	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3733745	N/A	2014/09/03	Prempal Bhatti
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3731137	2014/08/29	2014/09/02	Lingyun Feng

Maxxam ID XH7913
Sample ID 14-210 B
Matrix Water

Collected 2014/08/26
Shipped
Received 2014/08/26

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3728385	N/A	2014/09/03	Automated Statchk
Chromium (VI) in Water	IC	3731457	N/A	2014/09/02	Lang Le
Petroleum Hydro. CCME F1 & BTEX in Wat	HSGC/MSFD	3732562	N/A	2014/09/02	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3733208	2014/09/02	2014/09/03	Zhiyue (Frank) Zhu
Mercury	CVAA	3733251	2014/09/02	2014/09/03	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3733745	N/A	2014/09/03	Prempal Bhatti
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3731137	2014/08/29	2014/09/02	Lingyun Feng

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Maxxam Job #: B4F6345
Report Date: 2014/09/04

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

Test Summary

Maxxam ID XH7914
Sample ID 14-225
Matrix Water

Collected 2014/08/26
Shipped
Received 2014/08/26

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3728385	N/A	2014/09/03	Automated Statchk
Chromium (VI) in Water	IC	3731457	N/A	2014/09/02	Lang Le
Petroleum Hydro. CCME F1 & BTEX in Wat	HSGC/MSFD	3732562	N/A	2014/09/02	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3733208	2014/09/02	2014/09/03	Zhiyue (Frank) Zhu
Mercury	CVAA	3733251	2014/09/02	2014/09/03	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3733745	N/A	2014/09/03	Prempal Bhatti
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3731137	2014/08/29	2014/09/02	Lingyun Feng

Maxxam ID XH7915
Sample ID 14-211
Matrix Water

Collected 2014/08/26
Shipped
Received 2014/08/26

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Chromium (VI) in Water	IC	3731457	N/A	2014/09/02	Lang Le
Petroleum Hydro. CCME F1 & BTEX in Wat	HSGC/MSFD	3732562	N/A	2014/09/03	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3733208	2014/09/02	2014/09/03	Zhiyue (Frank) Zhu
Mercury	CVAA	3733251	2014/09/02	2014/09/03	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3733745	N/A	2014/09/03	Prempal Bhatti

Maxxam ID XH7916
Sample ID TP E
Matrix Soil

Collected 2014/08/25
Shipped
Received 2014/08/26

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3728629	N/A	2014/09/03	Automated Statchk
Hot Water Extractable Boron	ICP	3732269	2014/09/02	2014/09/02	Archana Patel
Hexavalent Chromium in Soil by IC	IC/SPEC	3732611	2014/09/02	2014/09/03	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	3732395	2014/09/02	2014/09/03	Viviana Canzonieri
Moisture	BAL	3731138	N/A	2014/08/29	Jessy Mathew Vinod
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3731492	2014/08/30	2014/09/02	Lingyun Feng

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Maxxam Job #: B4F6345
Report Date: 2014/09/04

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

Package 1	11.3°C

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

GENERAL COMMENTS

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Maxxam Job #: B4F6345
Report Date: 2014/09/04

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

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
3731137	D10-Anthracene	2014/09/02	106	50 - 130	105	50 - 130	104	%				
3731137	D14-Terphenyl (FS)	2014/09/02	105	50 - 130	95	50 - 130	95	%				
3731137	D8-Acenaphthylene	2014/09/02	108	50 - 130	110	50 - 130	108	%				
3731137	Acenaphthene	2014/09/02	106	50 - 130	102	50 - 130	<0.050	ug/L	NC	30		
3731137	Acenaphthylene	2014/09/02	116	50 - 130	113	50 - 130	<0.050	ug/L	NC	30		
3731137	Anthracene	2014/09/02	107	50 - 130	107	50 - 130	<0.050	ug/L	NC	30		
3731137	Benzo(a)anthracene	2014/09/02	102	50 - 130	98	50 - 130	<0.050	ug/L	NC	30		
3731137	Benzo(a)pyrene	2014/09/02	92	50 - 130	87	50 - 130	<0.010	ug/L	NC	30		
3731137	Benzo(b/j)fluoranthene	2014/09/02	101	50 - 130	94	50 - 130	<0.050	ug/L	NC	30		
3731137	Benzo(g,h,i)perylene	2014/09/02	98	50 - 130	74	50 - 130	<0.050	ug/L	NC	30		
3731137	Benzo(k)fluoranthene	2014/09/02	101	50 - 130	105	50 - 130	<0.050	ug/L	NC	30		
3731137	Chrysene	2014/09/02	99	50 - 130	96	50 - 130	<0.050	ug/L	NC	30		
3731137	Dibenz(a,h)anthracene	2014/09/02	102	50 - 130	82	50 - 130	<0.050	ug/L	NC	30		
3731137	Fluoranthene	2014/09/02	107	50 - 130	89	50 - 130	<0.050	ug/L	NC	30		
3731137	Fluorene	2014/09/02	114	50 - 130	107	50 - 130	<0.050	ug/L	NC	30		
3731137	Indeno(1,2,3-cd)pyrene	2014/09/02	98	50 - 130	79	50 - 130	<0.050	ug/L	NC	30		
3731137	1-Methylnaphthalene	2014/09/02	95	50 - 130	88	50 - 130	<0.050	ug/L	NC	30		
3731137	2-Methylnaphthalene	2014/09/02	91	50 - 130	83	50 - 130	<0.050	ug/L	NC	30		
3731137	Naphthalene	2014/09/02	94	50 - 130	92	50 - 130	<0.050	ug/L	NC	30		
3731137	Phenanthrene	2014/09/02	106	50 - 130	103	50 - 130	<0.030	ug/L	NC	30		
3731137	Pyrene	2014/09/02	105	50 - 130	85	50 - 130	<0.050	ug/L	NC	30		
3731138	Moisture	2014/08/29							0.9	20		
3731457	Chromium (VI)	2014/09/02	102	80 - 120	97	80 - 120	<0.50	ug/L	NC	20		
3731492	D10-Anthracene	2014/09/02	85	50 - 130	87	50 - 130	95	%				
3731492	D14-Terphenyl (FS)	2014/09/02	95	50 - 130	95	50 - 130	99	%				
3731492	D8-Acenaphthylene	2014/09/02	87	50 - 130	89	50 - 130	90	%				
3731492	Acenaphthene	2014/09/02	90	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40		
3731492	Acenaphthylene	2014/09/02	90	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40		
3731492	Anthracene	2014/09/02	89	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40		
3731492	Benzo(a)anthracene	2014/09/02	99	50 - 130	99	50 - 130	<0.0050	ug/g				
3731492	Benzo(a)pyrene	2014/09/02	89	50 - 130	92	50 - 130	<0.0050	ug/g				
3731492	Benzo(b/j)fluoranthene	2014/09/02	93	50 - 130	96	50 - 130	<0.0050	ug/g				
3731492	Benzo(g,h,i)perylene	2014/09/02	76	50 - 130	83	50 - 130	<0.0050	ug/g				
3731492	Benzo(k)fluoranthene	2014/09/02	94	50 - 130	95	50 - 130	<0.0050	ug/g				
3731492	Chrysene	2014/09/02	94	50 - 130	96	50 - 130	<0.0050	ug/g				
3731492	Dibenz(a,h)anthracene	2014/09/02	78	50 - 130	85	50 - 130	<0.0050	ug/g				
3731492	Fluoranthene	2014/09/02	96	50 - 130	95	50 - 130	<0.0050	ug/g	7.7	40		
3731492	Fluorene	2014/09/02	97	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40		
3731492	Indeno(1,2,3-cd)pyrene	2014/09/02	79	50 - 130	84	50 - 130	<0.0050	ug/g				
3731492	1-Methylnaphthalene	2014/09/02	91	50 - 130	98	50 - 130	<0.0050	ug/g	3.2	40		

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Maxxam Job #: B4F6345
Report Date: 2014/09/04

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

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
3731492	2-Methylnaphthalene	2014/09/02	89	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40		
3731492	Naphthalene	2014/09/02	82	50 - 130	91	50 - 130	<0.0050	ug/g	1.8	40		
3731492	Phenanthrene	2014/09/02	88	50 - 130	89	50 - 130	<0.0050	ug/g	7.6	40		
3731492	Pyrene	2014/09/02	97	50 - 130	96	50 - 130	<0.0050	ug/g				
3732269	Hot Water Ext. Boron (B)	2014/09/02	99	75 - 125	99	75 - 125	<0.050	ug/g	NC	40		
3732395	Acid Extractable Antimony (Sb)	2014/09/03	99	75 - 125	107	80 - 120	<0.20	ug/g				
3732395	Acid Extractable Arsenic (As)	2014/09/03	99	75 - 125	105	80 - 120	<1.0	ug/g				
3732395	Acid Extractable Barium (Ba)	2014/09/03	NC	75 - 125	104	80 - 120	<0.50	ug/g				
3732395	Acid Extractable Beryllium (Be)	2014/09/03	103	75 - 125	97	80 - 120	<0.20	ug/g				
3732395	Acid Extractable Boron (B)	2014/09/03	102	75 - 125	97	80 - 120	<5.0	ug/g				
3732395	Acid Extractable Cadmium (Cd)	2014/09/03	105	75 - 125	103	80 - 120	<0.10	ug/g				
3732395	Acid Extractable Chromium (Cr)	2014/09/03	NC	75 - 125	105	80 - 120	<1.0	ug/g				
3732395	Acid Extractable Cobalt (Co)	2014/09/03	102	75 - 125	105	80 - 120	<0.10	ug/g				
3732395	Acid Extractable Copper (Cu)	2014/09/03	96	75 - 125	105	80 - 120	<0.50	ug/g				
3732395	Acid Extractable Lead (Pb)	2014/09/04	101	75 - 125	104	80 - 120	<1.0	ug/g	2.9	30		
3732395	Acid Extractable Molybdenum (Mo)	2014/09/03	108	75 - 125	105	80 - 120	<0.50	ug/g				
3732395	Acid Extractable Nickel (Ni)	2014/09/03	NC	75 - 125	103	80 - 120	<0.50	ug/g				
3732395	Acid Extractable Selenium (Se)	2014/09/03	100	75 - 125	105	80 - 120	<0.50	ug/g				
3732395	Acid Extractable Silver (Ag)	2014/09/03	103	75 - 125	104	80 - 120	<0.20	ug/g				
3732395	Acid Extractable Thallium (Tl)	2014/09/03	97	75 - 125	99	80 - 120	<0.050	ug/g				
3732395	Acid Extractable Uranium (U)	2014/09/03	101	75 - 125	100	80 - 120	<0.050	ug/g				
3732395	Acid Extractable Vanadium (V)	2014/09/03	NC	75 - 125	106	80 - 120	<5.0	ug/g				
3732395	Acid Extractable Zinc (Zn)	2014/09/03	NC	75 - 125	105	80 - 120	<5.0	ug/g				
3732395	Acid Extractable Mercury (Hg)	2014/09/03	103	75 - 125	103	80 - 120	<0.050	ug/g				
3732562	1,4-Difluorobenzene	2014/09/02	101	70 - 130	99	70 - 130	98	%				
3732562	4-Bromofluorobenzene	2014/09/02	116	70 - 130	118	70 - 130	97	%				
3732562	D10-Ethylbenzene	2014/09/02	103	70 - 130	99	70 - 130	97	%				
3732562	D4-1,2-Dichloroethane	2014/09/02	93	70 - 130	99	70 - 130	99	%				
3732562	Benzene	2014/09/02	109	70 - 130	108	70 - 130	<0.20	ug/L	NC	30		
3732562	Toluene	2014/09/02	107	70 - 130	101	70 - 130	<0.20	ug/L	NC	30		
3732562	Ethylbenzene	2014/09/02	120	70 - 130	114	70 - 130	<0.20	ug/L	NC	30		
3732562	o-Xylene	2014/09/02	122	70 - 130	119	70 - 130	<0.20	ug/L	NC	30		
3732562	p+m-Xylene	2014/09/02	113	70 - 130	108	70 - 130	<0.40	ug/L	NC	30		
3732562	F1 (C6-C10)	2014/09/02	91	70 - 130	104	70 - 130	<25	ug/L	NC	30		
3732562	Total Xylenes	2014/09/02					<0.40	ug/L	NC	30		
3732562	F1 (C6-C10) - BTEX	2014/09/02					<25	ug/L	NC	30		
3732611	Chromium (VI)	2014/09/03	83	75 - 125	98	80 - 120	<0.2	ug/g	NC	35	95	80 - 120
3733208	o-Terphenyl	2014/09/02	96	60 - 130	96	60 - 130	97	%				
3733208	F2 (C10-C16 Hydrocarbons)	2014/09/03	98	50 - 130	84	60 - 130	<100	ug/L	NC	30		
3733208	F3 (C16-C34 Hydrocarbons)	2014/09/03	98	50 - 130	88	60 - 130	<200	ug/L	NC	30		

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Maxxam Job #: B4F6345
Report Date: 2014/09/04

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Client Project #: 14-1122-0005

Sampler Initials: DM

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
3733208	F4 (C34-C50 Hydrocarbons)	2014/09/03	104	50 - 130	95	60 - 130	<200	ug/L	NC	30		
3733251	Mercury (Hg)	2014/09/03	107	75 - 125	103	80 - 120	<0.1	ug/L	NC	20		
3733745	Dissolved Antimony (Sb)	2014/09/03	98	80 - 120	95	80 - 120	<0.50	ug/L	NC	20		
3733745	Dissolved Arsenic (As)	2014/09/03	98	80 - 120	95	80 - 120	<1.0	ug/L	NC	20		
3733745	Dissolved Barium (Ba)	2014/09/03	93	80 - 120	92	80 - 120	<2.0	ug/L	4.6	20		
3733745	Dissolved Beryllium (Be)	2014/09/03	100	80 - 120	98	80 - 120	<0.50	ug/L	NC	20		
3733745	Dissolved Boron (B)	2014/09/03	99	80 - 120	95	80 - 120	<10	ug/L	5.0	20		
3733745	Dissolved Cadmium (Cd)	2014/09/03	98	80 - 120	96	80 - 120	<0.10	ug/L	NC	20		
3733745	Dissolved Chromium (Cr)	2014/09/03	97	80 - 120	95	80 - 120	<5.0	ug/L	NC	20		
3733745	Dissolved Cobalt (Co)	2014/09/03	97	80 - 120	95	80 - 120	<0.50	ug/L	NC	20		
3733745	Dissolved Copper (Cu)	2014/09/03	93	80 - 120	92	80 - 120	<1.0	ug/L	NC	20		
3733745	Dissolved Lead (Pb)	2014/09/03	95	80 - 120	94	80 - 120	<0.50	ug/L	NC	20		
3733745	Dissolved Molybdenum (Mo)	2014/09/03	98	80 - 120	94	80 - 120	<0.50	ug/L	5.7	20		
3733745	Dissolved Nickel (Ni)	2014/09/03	93	80 - 120	93	80 - 120	<1.0	ug/L	NC	20		
3733745	Dissolved Selenium (Se)	2014/09/03	97	80 - 120	95	80 - 120	<2.0	ug/L	NC	20		
3733745	Dissolved Silver (Ag)	2014/09/03	75 (1)	80 - 120	90	80 - 120	<0.10	ug/L	NC	20		
3733745	Dissolved Sodium (Na)	2014/09/03	NC	80 - 120	96	80 - 120	440, RDL=100	ug/L	4.5	20		
3733745	Dissolved Thallium (Tl)	2014/09/03	95	80 - 120	94	80 - 120	<0.050	ug/L	NC	20		
3733745	Dissolved Uranium (U)	2014/09/03	95	80 - 120	93	80 - 120	0.12, RDL=0.10	ug/L	9.0	20		
3733745	Dissolved Vanadium (V)	2014/09/03	96	80 - 120	94	80 - 120	<0.50	ug/L	NC	20		
3733745	Dissolved Zinc (Zn)	2014/09/03	97	80 - 120	94	80 - 120	<5.0	ug/L	NC	20		

N/A = Not Applicable
RDL = Reportable Detection Limit
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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).
(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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Validation Signature Page

Maxxam Job #: B4F6345

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

Medhat Riskallah, Manager, Hydrocarbon Department

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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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CHAIN OF CUSTODY RECORD

IMMEDIATE TEST

INVOICE INFORMATION:		REPORT INFORMATION(if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B40279	Maxxam Job #:	Bottle Order #: 482890
Contact Name:	Central Accounting	Contact Name:	Maria Staneva	P.O. #:			
Address:	32 Steacie Dr Kanata ON K2K 2A9	Address:		Project #:	14-1122-0005/7100	Chain of Custody #: C#482890-02-01	Project Manager: Parnian Baber
Phone:	(613) 592-9600 Fax: (613) 592-9601	Phone:	Fax:	Project Name:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Maria_Staneva@golder.com	Site #:			
				Sampled By:			

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☑ Res/Park ☐ Medium/Fine; ☐ Table 2 ☐ Ind/Comm ☐ Coarse; ☑ Table 3 ☐ Agri/Other ☑ For RSC; ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw; ☐ Reg 558 ☐ Storm Sewer Bylaw; ☐ MISA Municipality ___; ☐ PWQO; ☐ Other ___

Special Instructions: See 14-211

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

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 #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O/Reg 153 Petroleum Hydrocarbons (Water)	O/Reg 153 PAHs (Water)	O/Reg 153 Metals Package (ICPMS Metals, HG, CRS)	PHC F1-F4	PAH's	Metals	Hg	Cr VI	BTEX		# of Bottles	Comments
1		14-1	26 AUG	11:30	GW	Y	✓	✓	✓								10	26-Aug-14 15:22
2		14-101C	"	12:15	GW	Y	✓	✓	✓								10	Parnian Baber
3		14-208C	"	08:50	GW	Y	✓	✓	✓								10	B4F6345
4		14-210B	"	9:50	GW	Y	✓	✓	✓								10	CG2 ENV-760
5		14-225	26 AUG	10:30	GW	Y	✓	✓	✓								10	REC'D IN OTTAWA
6		14-211	26 AUG	10:55	GW	Y	✓	✓	✓			✓	✓	✓	✓		6½	14-211 Monitoring well went dry - NO more water
7																		Run tests if possible on ½ Bottle
8	TPE	TPE	25 AUG		SOIL						✓	✓	✓	✓	✓		2	
9	TP 14-10	TP 14-10	25 AUG		SOIL						✓	✓	✓				2	
10																		on ice

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Daniel Millson	2014/08/26	15:20	Kelsey Pilon Kelsey Pilon	14/08/26	15:22	
			MAUS FERREL	2014/08/27	09:30	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	11,12,11	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

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

White: Maxxam Yellow: Client

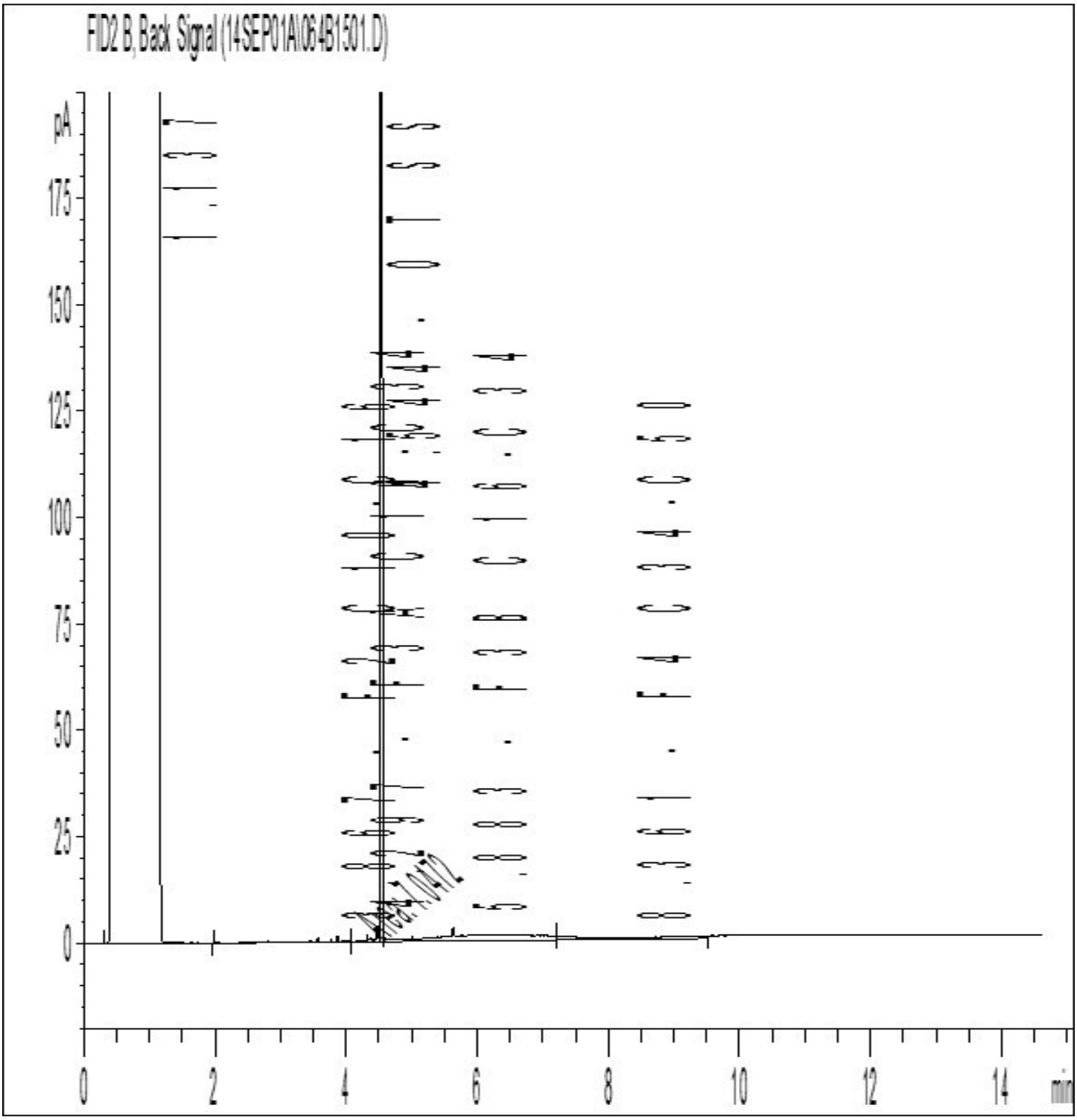
9/5/18 9/5/18

Report Date: 2014/09/04
Maxxam Job #: B4F6345
Maxxam Sample: XH7910

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: 14-1

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.

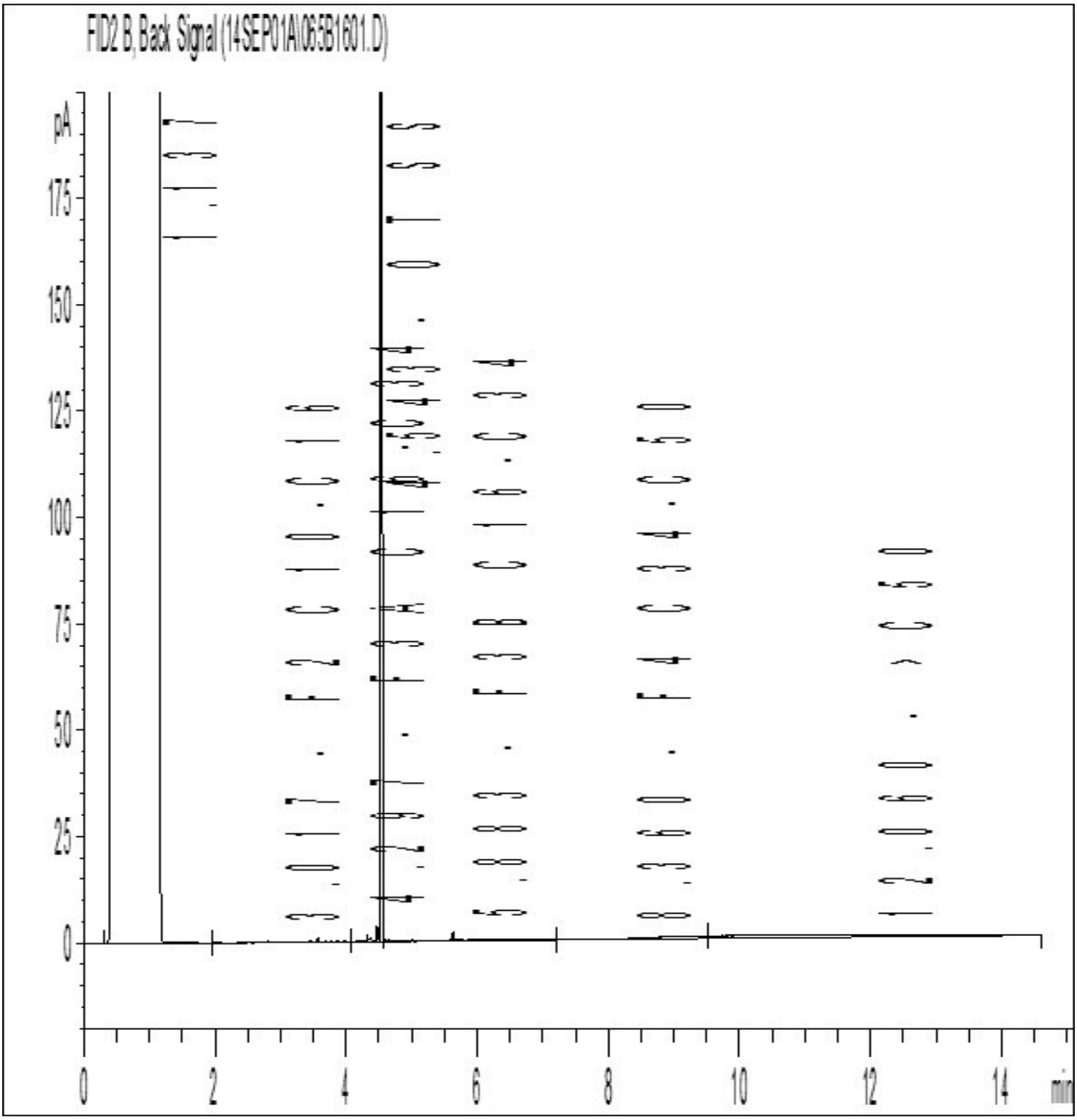
Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Report Date: 2014/09/04
Maxxam Job #: B4F6345
Maxxam Sample: XH7911

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: 14-101C

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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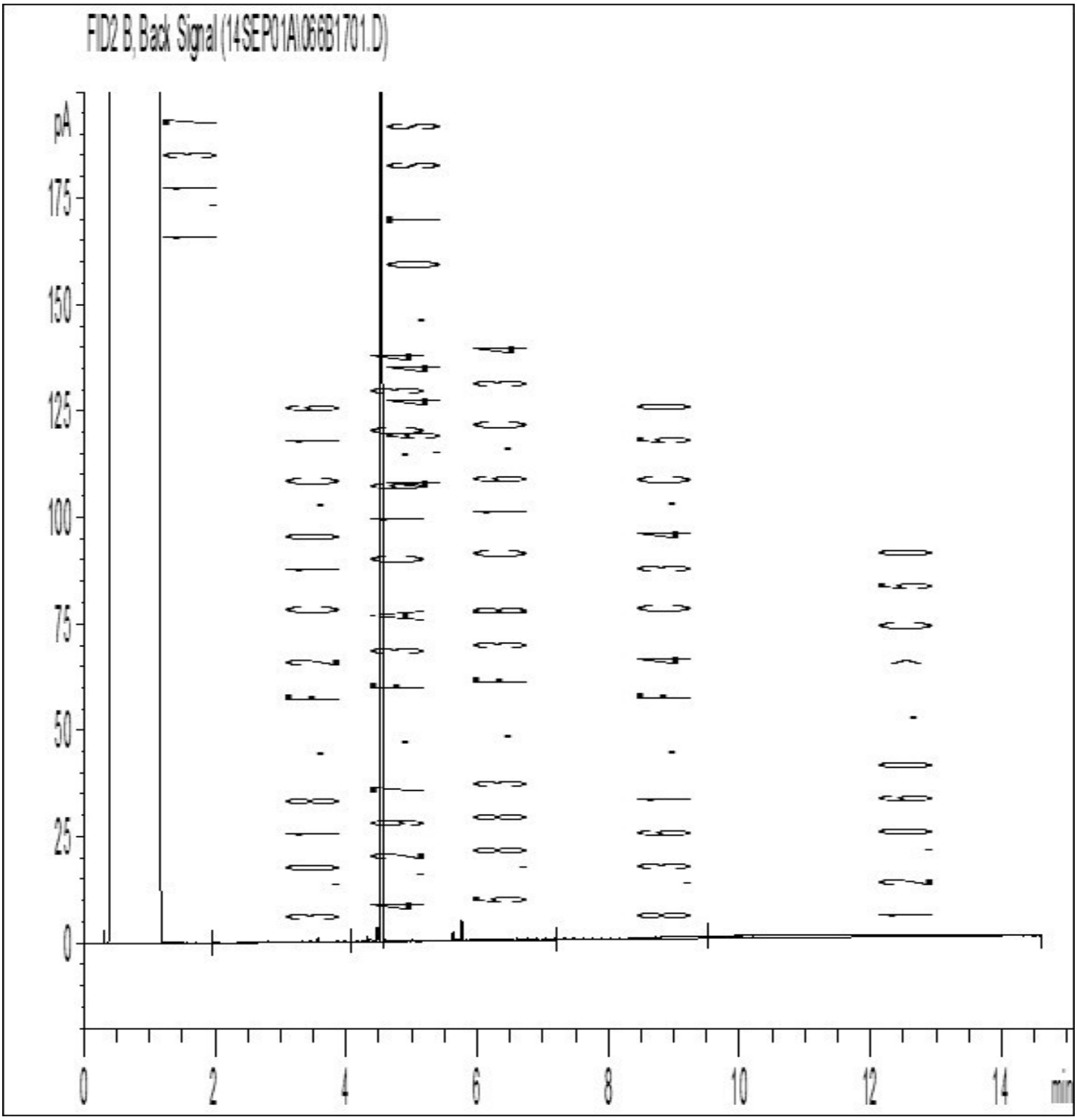
Report Date: 2014/09/04
Maxxam Job #: B4F6345
Maxxam Sample: XH7912

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: 14-208C

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.

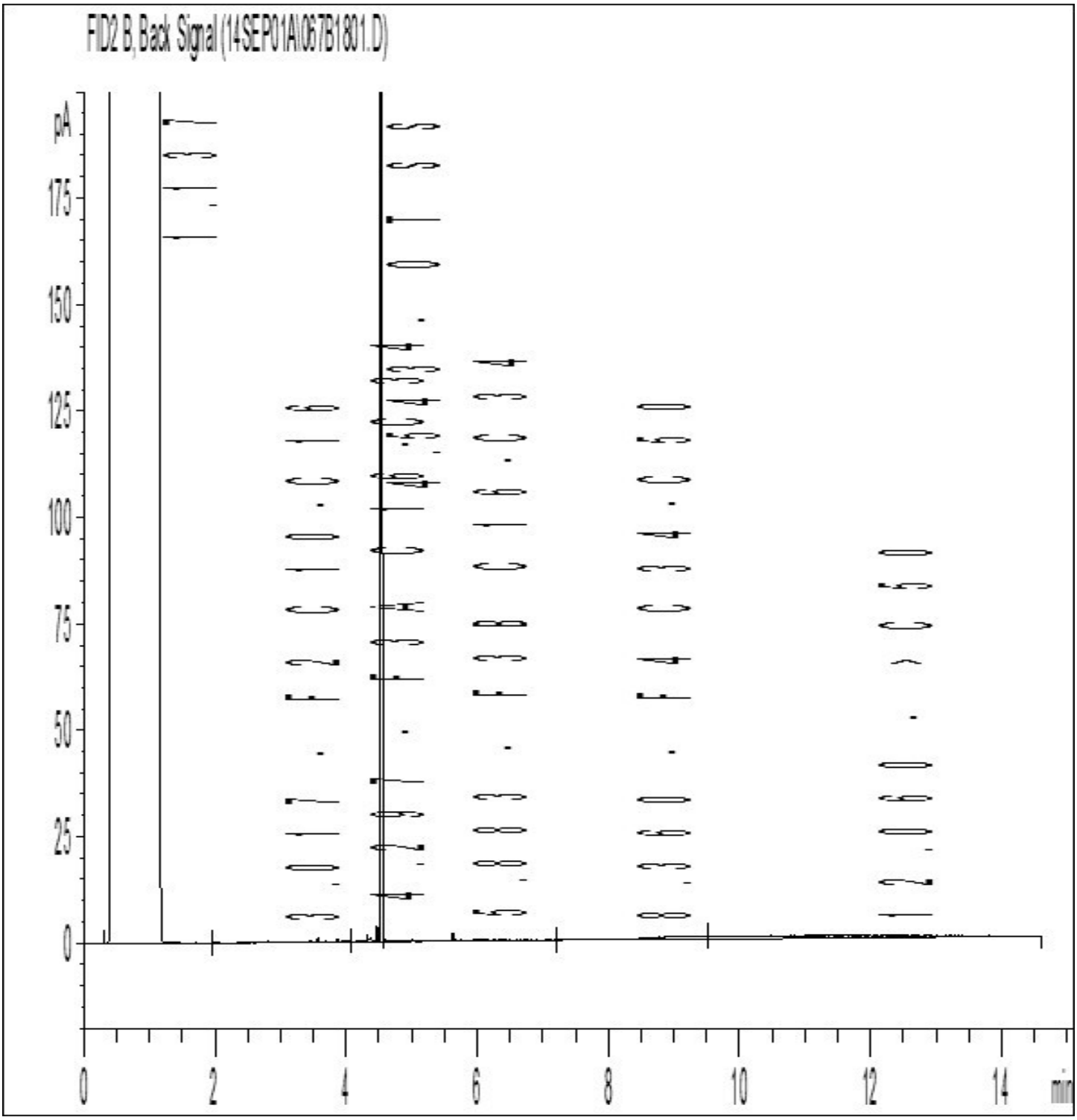
Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Report Date: 2014/09/04
Maxxam Job #: B4F6345
Maxxam Sample: XH7913

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: 14-210 B

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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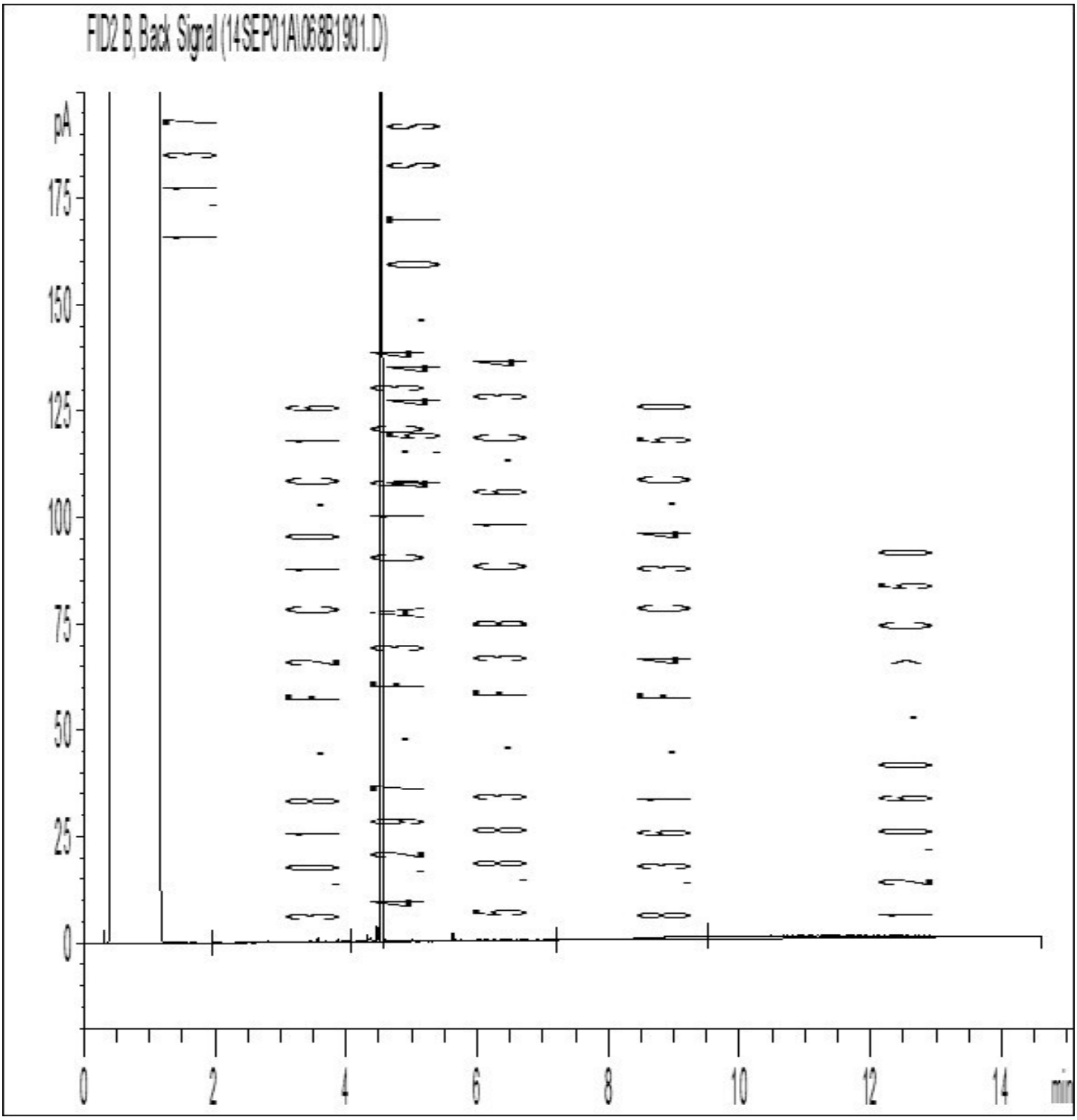
Report Date: 2014/09/04
Maxxam Job #: B4F6345
Maxxam Sample: XH7914

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: 14-225

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.

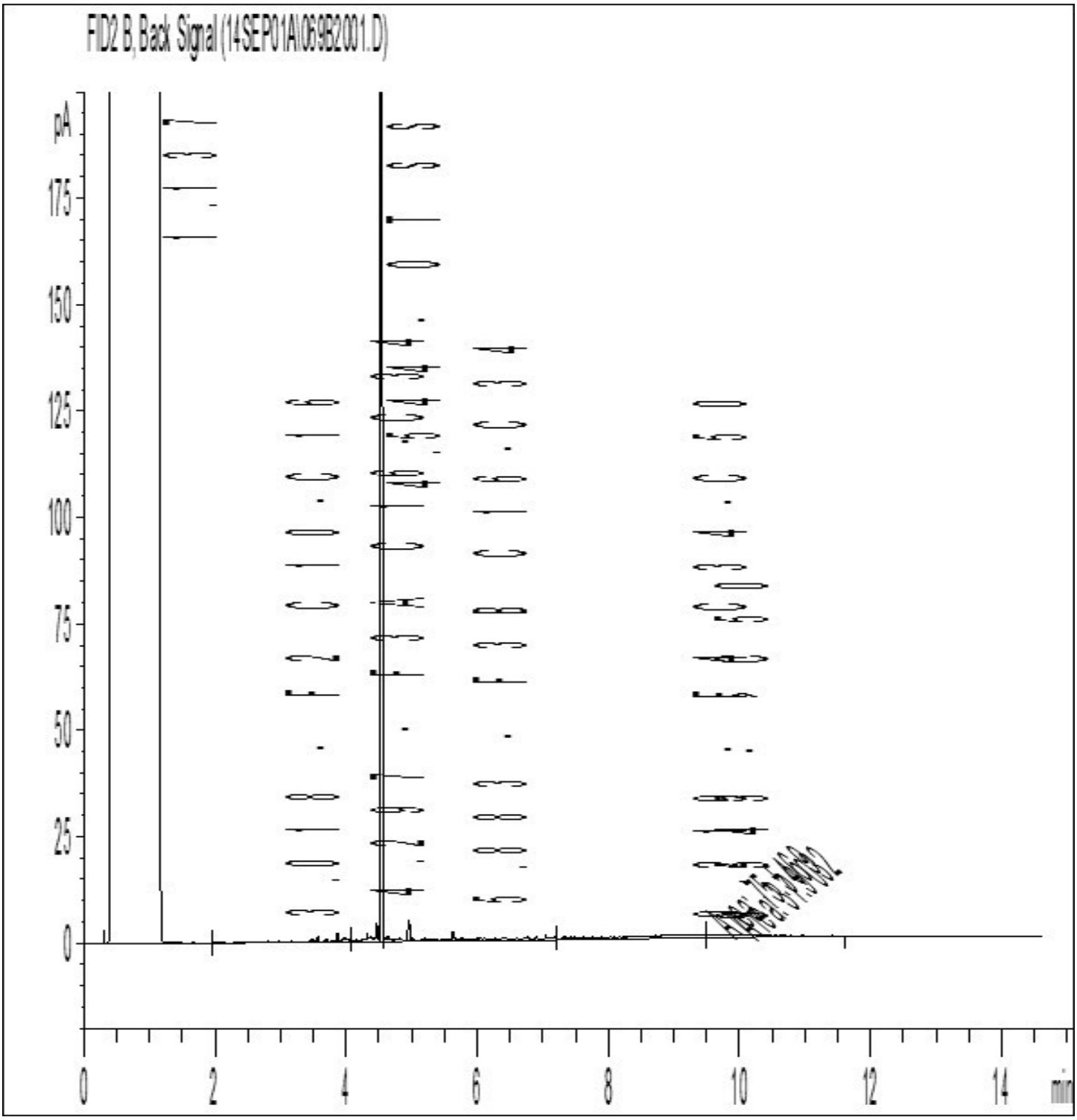
Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Report Date: 2014/09/04
Maxxam Job #: B4F6345
Maxxam Sample: XH7915

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: 14-211

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.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Your Project #: 14-1122-0005
Site#: 6147
Your C.O.C. #: 46382405, 463824-05-01

Attention:Maria Staneva

Golder Associates Ltd
32 Steacie Dr
Kanata, ON
K2K 2A9

Report Date: 2014/09/12
Report #: R3154165
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B4G4086
Received: 2014/09/08, 13:40

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
pH CaCl2 EXTRACT (1)	3	2014/09/11	2014/09/11	CAM SOP-00413	EPA 9045 D m

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 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.

(1) This test was performed by Maxxam Analytics Mississauga

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573
==========
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.maxxam.ca

Maxxam Job #: B4G4086
Report Date: 2014/09/12

Golder Associates Ltd
Client Project #: 14-1122-0005
Sampler Initials: MS

RESULTS OF ANALYSES OF SOIL

Maxxam ID		XL7501	XL7502	XL7503	
Sampling Date		2014/08/14	2014/08/14	2014/07/18	
COC Number		463824-05-01	463824-05-01	463824-05-01	
	Units	**BH14-213SA1**	**BH14-213SA5**	**BH14-217SA8**	**QC Batch**
Inorganics					
Available (CaCl2) pH	pH	6.99	7.43	7.11	3744225
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.maxxam.ca

Maxxam Job #: B4G4086
Report Date: 2014/09/12

Golder Associates Ltd
Client Project #: 14-1122-0005
Sampler Initials: MS

TEST SUMMARY

Maxxam ID: XL7501
Sample ID: BH14-213SA1
Matrix: Soil

Collected: 2014/08/14
Shipped:
Received: 2014/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT		3744225	2014/09/11	2014/09/11	Neil Dassanayake

Maxxam ID: XL7502
Sample ID: BH14-213SA5
Matrix: Soil

Collected: 2014/08/14
Shipped:
Received: 2014/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT		3744225	2014/09/11	2014/09/11	Neil Dassanayake

Maxxam ID: XL7503
Sample ID: BH14-217SA8
Matrix: Soil

Collected: 2014/07/18
Shipped:
Received: 2014/09/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT		3744225	2014/09/11	2014/09/11	Neil Dassanayake

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.maxxam.ca

Maxxam Job #: B4G4086
Report Date: 2014/09/12

Golder Associates Ltd
Client Project #: 14-1122-0005
Sampler Initials: MS

GENERAL COMMENTS

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

Package 1	16.3°C

Custody seal was not present.

Results relate only to the items tested.

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Maxxam Job #: B4G4086
Report Date: 2014/09/12

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 14-1122-0005
Sampler Initials: MS

			Spiked Blank		RPD	
QC Batch	**Parameter**	**Date**	**% Recovery**	**QC Limits**	**Value (%)**	**QC Limits**
3744225	Available (CaCl2) pH	2014/09/11	100	97 - 103	0.86	N/A

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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Maxxam Job #: B4G4086
Report Date: 2014/09/12

Golder Associates Ltd
Client Project #: 14-1122-0005
Sampler Initials: MS

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

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

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-653-6266 Fax:(905) 817-5779 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page of

INVOICE INFORMATION:

Company Name: #14090 Golder Associates Ltd
Contact Name: Central Accounting
Address: 32 Steacie Dr
Kanata ON K2K 2A9
Phone: (613)592-9600 Fax: (613)592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAc

REPORT INFORMATION (if differs from invoice):

Company Name:
Contact Name: Maria Staneva
Address:
Phone: Fax:
Email: Maria_Staneva@golder.com

PROJECT INFORMATION:

Quotation #: B40279
P.O. #:
Project #: 14-1122-0005
Project Name:
Site #: 7000
Sampled By:

Laboratory Use Only:

MAXXAM JOB #:
BOTTLE ORDER #: 463824
CHAIN OF CUSTODY #: C#463824-05-01
PROJECT MANAGER: Parnian Baber

Regulation 153 (2011)

- [ ] Table 1
- [ ] Table 2
- [x] Table 3
- [ ] Table ___
- [x] 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

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [x]
(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 (Soil)~~	O'Reg 153 PAHs (Soil)	~~O'Reg 153 Metals Package (Soil)~~	pH CaCl2 EXTRACT							# of Bottles	Comments
1		BH14-213 SA1	Aug.14/2014		SOIL						✓							1	
2		BH 14-213 SA5	Aug.14/2014		SOIL						✓							1	
3		BH 14-217 SA8	Aug.18/2014		SOIL						✓							1	
4					SOIL														
5					SOIL														
6					SOIL														
7					SOIL														
8					SOIL														
9					SOIL														
10					SOIL														

8-Sep-14 13:40
Parnian Baber
B4G4086
FHB OTT-002

REC'D IN OTTAWA

on ice packs

*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
[signature]	2014/09/08	12:30	Kelsey Pelon Kelsey Pelon	14/09/08	13:40			16.16.17	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

Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 537168-07-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2015/11/26
Report #: R3783308
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5O2409
Received: 2015/11/25, 15:35

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	4	N/A	2015/11/26	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	4	2015/11/26	2015/11/26	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	4	2015/11/26	2015/11/26	CAM SOP-00447	EPA 6020A m
Moisture (1)	4	N/A	2015/11/26	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	4	2015/11/26	2015/11/26	CAM SOP-00318	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: EGitej@maxxam.ca
Phone# (905)817-5829

==========

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.maxxam.ca

Maxxam Job #: B5O2409
Report Date: 2015/11/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BKL584	BKL585	BKL586	BKL587		
Sampling Date			2015/11/25 12:30	2015/11/25 12:40	2015/11/25 13:00	2015/11/25 13:10		
COC Number			537168-07-01	537168-07-01	537168-07-01	537168-07-01		
	UNITS	**Criteria**	**VS006**	**VS007**	**TP15-201 FILL**	**TP15-201 NATIVE**	**RDL**	**QC Batch**
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	1.1	<0.20	0.27	<0.20	0.20	4288178
Acid Extractable Arsenic (As)	ug/g	**18**	3.9	1.4	1.9	2.1	1.0	4288178
Acid Extractable Barium (Ba)	ug/g	**390**	330	88	230	190	0.50	4288178
Acid Extractable Beryllium (Be)	ug/g	**4**	0.74	0.39	0.50	0.59	0.20	4288178
Acid Extractable Boron (B)	ug/g	**120**	6.2	<5.0	<5.0	<5.0	5.0	4288178
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.20	<0.10	0.27	<0.10	0.10	4288178
Acid Extractable Chromium (Cr)	ug/g	**160**	86	24	58	40	1.0	4288178
Acid Extractable Cobalt (Co)	ug/g	**22**	18	9.7	12	13	0.10	4288178
Acid Extractable Copper (Cu)	ug/g	**140**	66	8.2	33	24	0.50	4288178
Acid Extractable Lead (Pb)	ug/g	**120**	120	5.5	**160**	6.1	1.0	4288178
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	1.3	<0.50	<0.50	<0.50	0.50	4288178
Acid Extractable Nickel (Ni)	ug/g	**100**	49	12	33	27	0.50	4288178
Acid Extractable Selenium (Se)	ug/g	**2.4**	0.58	<0.50	<0.50	<0.50	0.50	4288178
Acid Extractable Silver (Ag)	ug/g	**20**	0.28	<0.20	<0.20	<0.20	0.20	4288178
Acid Extractable Thallium (Tl)	ug/g	**1**	0.36	0.13	0.27	0.23	0.050	4288178
Acid Extractable Uranium (U)	ug/g	**23**	0.80	0.92	0.63	0.53	0.050	4288178
Acid Extractable Vanadium (V)	ug/g	**86**	82	36	60	58	5.0	4288178
Acid Extractable Zinc (Zn)	ug/g	**340**	140	36	130	71	5.0	4288178
Acid Extractable Mercury (Hg)	ug/g	**0.27**	0.14	<0.050	0.14	<0.050	0.050	4288178

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5O2409
Report Date: 2015/11/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BKL584	BKL584	BKL585		BKL586		
Sampling Date			2015/11/25 12:30	2015/11/25 12:30	2015/11/25 12:40		2015/11/25 13:00		
COC Number			537168-07-01	537168-07-01	537168-07-01		537168-07-01		
	UNITS	Criteria	VS006	VS006 Lab-Dup	VS007	RDL	TP15-201 FILL	RDL	QC Batch
Inorganics									
Moisture	%	-	26		21	1.0	22	1.0	4287764
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	0.082		<0.0071	0.0071	**1.6**	0.071	4285749
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	0.085	0.045 (1)	<0.0050	0.0050	2.1	0.050	4287757
Acenaphthylene	ug/g	**0.15**	0.091	0.013 (2)	<0.0050	0.0050	**1.1**	0.050	4287757
Anthracene	ug/g	**0.67**	0.32	0.093 (2)	<0.0050	0.0050	**6.7**	0.050	4287757
Benzo(a)anthracene	ug/g	**0.5**	**0.76**	0.20 (2)	<0.0050	0.0050	**14**	0.050	4287757
Benzo(a)pyrene	ug/g	**0.3**	**0.59**	0.15 (2)	<0.0050	0.0050	**9.9**	0.050	4287757
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.76	0.19 (2)	0.0066	0.0050	**13**	0.050	4287757
Benzo(g,h,i)perylene	ug/g	**6.6**	0.33	0.080 (2)	<0.0050	0.0050	4.6	0.050	4287757
Benzo(k)fluoranthene	ug/g	**0.78**	0.24	0.075 (2)	<0.0050	0.0050	**4.4**	0.050	4287757
Chrysene	ug/g	**7**	0.55	0.15 (2)	<0.0050	0.0050	**9.7**	0.050	4287757
Dibenz(a,h)anthracene	ug/g	**0.1**	0.080	0.020 (2)	<0.0050	0.0050	**1.2**	0.050	4287757
Fluoranthene	ug/g	**0.69**	**2.0**	0.54 (2)	0.012	0.0050	**30**	0.050	4287757
Fluorene	ug/g	**62**	0.12	0.045 (2)	<0.0050	0.0050	3.6	0.050	4287757
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	**0.40**	0.099 (2)	<0.0050	0.0050	**5.9**	0.050	4287757
1-Methylnaphthalene	ug/g	**0.99**	0.038	0.012 (2)	<0.0050	0.0050	0.68	0.050	4287757
2-Methylnaphthalene	ug/g	**0.99**	0.043	0.014 (2)	<0.0050	0.0050	0.89	0.050	4287757
Naphthalene	ug/g	**0.6**	0.073	0.021 (2)	<0.0050	0.0050	**1.7**	0.050	4287757
Phenanthrene	ug/g	**6.2**	1.3	0.37 (2)	0.0071	0.0050	**23**	0.050	4287757
Pyrene	ug/g	**78**	1.7	0.43 (2)	0.0087	0.0050	24	0.050	4287757
Surrogate Recovery (%)									
D10-Anthracene	%	-	80	92	87		83		4287757
D14-Terphenyl (FS)	%	-	85	91	76		80		4287757
D8-Acenaphthylene	%	-	76	86	86		74		4287757

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

(1) Duplicate results exceeded RPD acceptance criteria due to heterogeneity. The variability in the results for flagged analytes may be more pronounced.

(2) 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 #: B5O2409
Report Date: 2015/11/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BKL587		
Sampling Date			2015/11/25 13:10		
COC Number			537168-07-01		
	UNITS	Criteria	TP15-201 NATIVE	RDL	QC Batch
Inorganics					
Moisture	%	-	23	1.0	4287764
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.0071	0.0071	4285749
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	4287757
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	4287757
Anthracene	ug/g	**0.67**	<0.0050	0.0050	4287757
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	4287757
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	4287757
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	4287757
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0050	4287757
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	4287757
Chrysene	ug/g	**7**	<0.0050	0.0050	4287757
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	4287757
Fluoranthene	ug/g	**0.69**	0.0084	0.0050	4287757
Fluorene	ug/g	**62**	<0.0050	0.0050	4287757
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	4287757
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4287757
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4287757
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	4287757
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	4287757
Pyrene	ug/g	**78**	0.0065	0.0050	4287757
Surrogate Recovery (%)					
D10-Anthracene	%	-	85		4287757
D14-Terphenyl (FS)	%	-	77		4287757
D8-Acenaphthylene	%	-	69		4287757

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5O2409
Report Date: 2015/11/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

RESULTS OF ANALYSES OF SOIL

Maxxam ID			BKL584	BKL585	BKL586	BKL587		
Sampling Date			2015/11/25 12:30	2015/11/25 12:40	2015/11/25 13:00	2015/11/25 13:10		
COC Number			537168-07-01	537168-07-01	537168-07-01	537168-07-01		
	UNITS	**Criteria**	**VS006**	**VS007**	**TP15-201 FILL**	**TP15-201 NATIVE**	**RDL**	**QC Batch**
Inorganics								
Chromium (VI)	ug/g	**8**	<0.2	<0.2	<0.2	<0.2	0.2	4287113

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5O2409
Report Date: 2015/11/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BKL584
Sample ID: VS006
Matrix: Soil

Collected: 2015/11/25
Shipped:
Received: 2015/11/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4285749	N/A	2015/11/26	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4287113	2015/11/26	2015/11/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4288178	2015/11/26	2015/11/26	Viviana Canzonieri
Moisture	BAL	4287764	N/A	2015/11/26	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4287757	2015/11/26	2015/11/26	Lingyun Feng

Maxxam ID: BKL584 Dup
Sample ID: VS006
Matrix: Soil

Collected: 2015/11/25
Shipped:
Received: 2015/11/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4287757	2015/11/26	2015/11/26	Lingyun Feng

Maxxam ID: BKL585
Sample ID: VS007
Matrix: Soil

Collected: 2015/11/25
Shipped:
Received: 2015/11/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4285749	N/A	2015/11/26	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4287113	2015/11/26	2015/11/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4288178	2015/11/26	2015/11/26	Viviana Canzonieri
Moisture	BAL	4287764	N/A	2015/11/26	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4287757	2015/11/26	2015/11/26	Lingyun Feng

Maxxam ID: BKL586
Sample ID: TP15-201 FILL
Matrix: Soil

Collected: 2015/11/25
Shipped:
Received: 2015/11/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4285749	N/A	2015/11/26	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4287113	2015/11/26	2015/11/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4288178	2015/11/26	2015/11/26	Viviana Canzonieri
Moisture	BAL	4287764	N/A	2015/11/26	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4287757	2015/11/26	2015/11/26	Lingyun Feng

Maxxam ID: BKL587
Sample ID: TP15-201 NATIVE
Matrix: Soil

Collected: 2015/11/25
Shipped:
Received: 2015/11/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4285749	N/A	2015/11/26	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4287113	2015/11/26	2015/11/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4288178	2015/11/26	2015/11/26	Viviana Canzonieri
Moisture	BAL	4287764	N/A	2015/11/26	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4287757	2015/11/26	2015/11/26	Lingyun Feng

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Report Date: 2015/11/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

GENERAL COMMENTS

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

Package 1	4.3°C

Sample BKL586-01 : PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B5O2409
Report Date: 2015/11/26

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4287757	D10-Anthracene	2015/11/26	71	50 - 130	92	50 - 130	99	%				
4287757	D14-Terphenyl (FS)	2015/11/26	64	50 - 130	83	50 - 130	96	%				
4287757	D8-Acenaphthylene	2015/11/26	69	50 - 130	81	50 - 130	80	%				
4287113	Chromium (VI)	2015/11/26	66 (1)	75 - 125	99	80 - 120	<0.2	ug/g	NC	35	90	80 - 120
4287757	1-Methylnaphthalene	2015/11/26	89	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40		
4287757	2-Methylnaphthalene	2015/11/26	95	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40		
4287757	Acenaphthene	2015/11/26	78	50 - 130	91	50 - 130	<0.0050	ug/g	62 (2)	40		
4287757	Acenaphthylene	2015/11/26	61	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		
4287757	Anthracene	2015/11/26	77	50 - 130	85	50 - 130	<0.0050	ug/g	111 (3)	40		
4287757	Benzo(a)anthracene	2015/11/26	NC	50 - 130	85	50 - 130	<0.0050	ug/g	118 (3)	40		
4287757	Benzo(a)pyrene	2015/11/26	NC	50 - 130	92	50 - 130	<0.0050	ug/g	119 (3)	40		
4287757	Benzo(b/j)fluoranthene	2015/11/26	NC	50 - 130	96	50 - 130	<0.0050	ug/g	121 (3)	40		
4287757	Benzo(g,h,i)perylene	2015/11/26	NC	50 - 130	88	50 - 130	<0.0050	ug/g	123 (3)	40		
4287757	Benzo(k)fluoranthene	2015/11/26	55	50 - 130	97	50 - 130	<0.0050	ug/g	106 (3)	40		
4287757	Chrysene	2015/11/26	NC	50 - 130	90	50 - 130	<0.0050	ug/g	116 (3)	40		
4287757	Dibenz(a,h)anthracene	2015/11/26	NC	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40		
4287757	Fluoranthene	2015/11/26	NC	50 - 130	96	50 - 130	<0.0050	ug/g	114 (3)	40		
4287757	Fluorene	2015/11/26	111	50 - 130	98	50 - 130	<0.0050	ug/g	91 (3)	40		
4287757	Indeno(1,2,3-cd)pyrene	2015/11/26	NC	50 - 130	94	50 - 130	<0.0050	ug/g	120 (3)	40		
4287757	Naphthalene	2015/11/26	108	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		
4287757	Phenanthrene	2015/11/26	NC	50 - 130	90	50 - 130	<0.0050	ug/g	110 (3)	40		
4287757	Pyrene	2015/11/26	NC	50 - 130	97	50 - 130	<0.0050	ug/g	118 (3)	40		
4287764	Moisture	2015/11/26							3.1	20		
4288178	Acid Extractable Antimony (Sb)	2015/11/26	103	75 - 125	100	80 - 120	<0.20	ug/g	NC	30		
4288178	Acid Extractable Arsenic (As)	2015/11/26	104	75 - 125	97	80 - 120	<1.0	ug/g	NC	30		
4288178	Acid Extractable Barium (Ba)	2015/11/26	NC	75 - 125	98	80 - 120	<0.50	ug/g	5.0	30		
4288178	Acid Extractable Beryllium (Be)	2015/11/26	103	75 - 125	97	80 - 120	<0.20	ug/g	NC	30		
4288178	Acid Extractable Boron (B)	2015/11/26	105	75 - 125	94	80 - 120	<5.0	ug/g	NC	30		
4288178	Acid Extractable Cadmium (Cd)	2015/11/26	107	75 - 125	99	80 - 120	<0.10	ug/g	NC	30		
4288178	Acid Extractable Chromium (Cr)	2015/11/26	107	75 - 125	97	80 - 120	<1.0	ug/g	3.5	30		
4288178	Acid Extractable Cobalt (Co)	2015/11/26	100	75 - 125	98	80 - 120	<0.10	ug/g	2.9	30		

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Report Date: 2015/11/26

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4288178	Acid Extractable Copper (Cu)	2015/11/26	101	75 - 125	98	80 - 120	<0.50	ug/g	0.24	30		
4288178	Acid Extractable Lead (Pb)	2015/11/26	102	75 - 125	99	80 - 120	<1.0	ug/g	NC	30		
4288178	Acid Extractable Mercury (Hg)	2015/11/26	111	75 - 125	109	80 - 120	<0.050	ug/g	NC	30		
4288178	Acid Extractable Molybdenum (Mo)	2015/11/26	106	75 - 125	100	80 - 120	<0.50	ug/g	NC	30		
4288178	Acid Extractable Nickel (Ni)	2015/11/26	103	75 - 125	98	80 - 120	<0.50	ug/g	0.69	30		
4288178	Acid Extractable Selenium (Se)	2015/11/26	103	75 - 125	97	80 - 120	<0.50	ug/g	NC	30		
4288178	Acid Extractable Silver (Ag)	2015/11/26	101	75 - 125	98	80 - 120	<0.20	ug/g	NC	30		
4288178	Acid Extractable Thallium (Tl)	2015/11/26	104	75 - 125	101	80 - 120	<0.050	ug/g	NC	30		
4288178	Acid Extractable Uranium (U)	2015/11/26	99	75 - 125	96	80 - 120	<0.050	ug/g	1.3	30		
4288178	Acid Extractable Vanadium (V)	2015/11/26	NC	75 - 125	97	80 - 120	<5.0	ug/g	NC	30		
4288178	Acid Extractable Zinc (Zn)	2015/11/26	NC	75 - 125	101	80 - 120	<5.0	ug/g	5.7	30		

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

(2) Duplicate results exceeded RPD acceptance criteria due to heterogeneity. The variability in the results for flagged analytes may be more pronounced.

(3) 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 #: B5O2409
Report Date: 2015/11/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:
Company Name: #14090 Golder Associates Ltd
Attention: Central Accounting
Address: 1931 Robertson Rd
Ottawa ON K2H 5B7
Tel: (613) 592-9600 Fax: (613) 592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Paul Hurst / Tony
Address:
Tel: Fax: Tony
Email: phurst@golder.com

PROJECT INFORMATION:
Quotation #: B57625
P.O. #:
Project: 1525113
Project Name:
Site #:
Sampled By: Tony Lyon

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 537168
COC #: C#537168-07-01
Project Manager: Ema Gitej

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Tumaround 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: Tomorrow Time Required: EOD ☑
Rush Confirmation Number: *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	Lafleche Landfill (TCLP METALS, REG. 153 PHCs)	# of Bottles	Comments
1		VS006	Nov 25 '15	12:30	Soil		✓	✓		1	
2		VS007	↓	12:40	↓		✓	✓		1	
3		TP15-201 Fill	↓	13:00	↓		✓	✓		1	
4		TP15-201 Nat'l	↓	13:10	↓		✓	✓		1	
5											
6											
7											
8											
9											
10											

25-Nov-15 15:35
Ema Gitej
B5O2409
FHB OTT-002

RECEIVED IN OTTAWA

RECEIVED IN OTTAWA

ON ICE PACK.

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tony Lyon	15/11/25	14:00	HA	15/11/25	15:35	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	5, 4, 4	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B5O2409
Report Date: 2015/11/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS006	BKL584-01	Benzo(a)anthracene	0.5	0.76	0.0050	ug/g
VS006	BKL584-01	Benzo(a)pyrene	0.3	0.59	0.0050	ug/g
VS006	BKL584-01	Fluoranthene	0.69	2.0	0.0050	ug/g
VS006	BKL584-01	Indeno(1,2,3-cd)pyrene	0.38	0.40	0.0050	ug/g
TP15-201 FILL	BKL586-01	Acenaphthylene	0.15	1.1	0.050	ug/g
TP15-201 FILL	BKL586-01	Anthracene	0.67	6.7	0.050	ug/g
TP15-201 FILL	BKL586-01	Benzo(a)anthracene	0.5	14	0.050	ug/g
TP15-201 FILL	BKL586-01	Benzo(a)pyrene	0.3	9.9	0.050	ug/g
TP15-201 FILL	BKL586-01	Benzo(b/j)fluoranthene	0.78	13	0.050	ug/g
TP15-201 FILL	BKL586-01	Benzo(k)fluoranthene	0.78	4.4	0.050	ug/g
TP15-201 FILL	BKL586-01	Chrysene	7	9.7	0.050	ug/g
TP15-201 FILL	BKL586-01	Dibenz(a,h)anthracene	0.1	1.2	0.050	ug/g
TP15-201 FILL	BKL586-01	Fluoranthene	0.69	30	0.050	ug/g
TP15-201 FILL	BKL586-01	Indeno(1,2,3-cd)pyrene	0.38	5.9	0.050	ug/g
TP15-201 FILL	BKL586-01	Acid Extractable Lead (Pb)	120	160	1.0	ug/g
TP15-201 FILL	BKL586-01	Methylnaphthalene, 2-(1-)	0.99	1.6	0.071	ug/g
TP15-201 FILL	BKL586-01	Naphthalene	0.6	1.7	0.050	ug/g
TP15-201 FILL	BKL586-01	Phenanthrene	6.2	23	0.050	ug/g

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 557328-24-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/06/01
Report #: R4012263
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6A5806
Received: 2016/05/25, 15:40

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Petroleum Hydro. CCME F1 & BTEX in Soil (1, 2)	4	N/A	2016/05/31	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 3)	4	2016/05/31	2016/05/31	CAM SOP-00316	CCME CWS m
Moisture (1)	4	N/A	2016/05/30	CAM SOP-00445	Carter 2nd ed 51.2 m
Polychlorinated Biphenyl in Soil (1)	4	2016/05/30	2016/05/30	CAM SOP-00309	EPA 8082A m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga
(2) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
(3) All CCME PHC results met required criteria unless otherwise stated in the report. 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 “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager Assistant
Email: MBingley@maxxam.ca
Phone# (613)274-0573
==========
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.maxxam.ca

Maxxam Job #: B6A5806
Report Date: 2016/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PCBS (SOIL)

Maxxam ID			CKN359	CKN360	CKN361	CKN362		
Sampling Date			2016/05/25 11:00	2016/05/25 11:10	2016/05/25 11:20	2016/05/25 11:40		
COC Number			557328-24-01	557328-24-01	557328-24-01	557328-24-01		
	UNITS	**Criteria**	**TP16-401**	**TP16-402**	**TP16-403**	**TP16-404**	**RDL**	**QC Batch**
PCBs								
Aroclor 1242	ug/g	-	<0.010	<0.010	<0.010	<0.010	0.010	4516959
Aroclor 1248	ug/g	-	<0.010	<0.010	<0.010	<0.010	0.010	4516959
Aroclor 1254	ug/g	-	<0.010	<0.010	<0.010	<0.010	0.010	4516959
Aroclor 1260	ug/g	-	<0.010	<0.010	<0.010	<0.010	0.010	4516959
Total PCB	ug/g	**0.35**	<0.010	<0.010	<0.010	<0.010	0.010	4516959
Surrogate Recovery (%)								
Decachlorobiphenyl	%	**-**	89	95	93	89		4516959

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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.maxxam.ca

Maxxam Job #: B6A5806
Report Date: 2016/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID			CKN359	CKN359	CKN360	CKN361	CKN362		
Sampling Date			2016/05/25 11:00	2016/05/25 11:00	2016/05/25 11:10	2016/05/25 11:20	2016/05/25 11:40		
COC Number			557328-24-01	557328-24-01	557328-24-01	557328-24-01	557328-24-01		
	UNITS	**Criteria**	**TP16-401**	**TP16-401 Lab-Dup**	**TP16-402**	**TP16-403**	**TP16-404**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	11		12	12	11	1.0	4517512
BTEX & F1 Hydrocarbons									
Benzene	ug/g	**0.21**	<0.020		<0.020	<0.020	<0.020	0.020	4518339
Toluene	ug/g	**2.3**	<0.020		<0.020	<0.020	<0.020	0.020	4518339
Ethylbenzene	ug/g	**2**	<0.020		<0.020	<0.020	<0.020	0.020	4518339
o-Xylene	ug/g	**-**	<0.020		<0.020	<0.020	<0.020	0.020	4518339
p+m-Xylene	ug/g	**-**	<0.040		<0.040	<0.040	<0.040	0.040	4518339
Total Xylenes	ug/g	**3.1**	<0.040		<0.040	<0.040	<0.040	0.040	4518339
F1 (C6-C10)	ug/g	**55**	<10		<10	<10	<10	10	4518339
F1 (C6-C10) - BTEX	ug/g	**55**	<10		<10	<10	<10	10	4518339
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	**98**	<10	<10	<10	<10	<10	10	4518235
F3 (C16-C34 Hydrocarbons)	ug/g	**300**	<50	<50	<50	<50	100	50	4518235
F4 (C34-C50 Hydrocarbons)	ug/g	**2800**	<50	<50	<50	<50	64	50	4518235
Reached Baseline at C50	ug/g	**-**	Yes	Yes	Yes	Yes	Yes		4518235
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	**-**	101		101	102	102		4518339
4-Bromofluorobenzene	%	**-**	107		108	107	104		4518339
D10-Ethylbenzene	%	**-**	96		97	98	97		4518339
D4-1,2-Dichloroethane	%	**-**	94		93	93	93		4518339
o-Terphenyl	%	**-**	100	102	102	102	102		4518235

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6A5806
Report Date: 2016/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CKN359
Sample ID: TP16-401
Matrix: Soil

Collected: 2016/05/25
Shipped:
Received: 2016/05/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4518339	N/A	2016/05/31	Abdi Mohamud
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4518235	2016/05/31	2016/05/31	Ksenia Trofimova
Moisture	BAL	4517512	N/A	2016/05/30	Min Yang
Polychlorinated Biphenyl in Soil	GC/ECD	4516959	2016/05/30	2016/05/30	Li Peng

Maxxam ID: CKN359 Dup
Sample ID: TP16-401
Matrix: Soil

Collected: 2016/05/25
Shipped:
Received: 2016/05/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4518235	2016/05/31	2016/05/31	Ksenia Trofimova

Maxxam ID: CKN360
Sample ID: TP16-402
Matrix: Soil

Collected: 2016/05/25
Shipped:
Received: 2016/05/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4518339	N/A	2016/05/31	Abdi Mohamud
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4518235	2016/05/31	2016/05/31	Ksenia Trofimova
Moisture	BAL	4517512	N/A	2016/05/30	Min Yang
Polychlorinated Biphenyl in Soil	GC/ECD	4516959	2016/05/30	2016/05/30	Li Peng

Maxxam ID: CKN361
Sample ID: TP16-403
Matrix: Soil

Collected: 2016/05/25
Shipped:
Received: 2016/05/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4518339	N/A	2016/05/31	Abdi Mohamud
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4518235	2016/05/31	2016/05/31	Ksenia Trofimova
Moisture	BAL	4517512	N/A	2016/05/30	Min Yang
Polychlorinated Biphenyl in Soil	GC/ECD	4516959	2016/05/30	2016/05/30	Li Peng

Maxxam ID: CKN362
Sample ID: TP16-404
Matrix: Soil

Collected: 2016/05/25
Shipped:
Received: 2016/05/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4518339	N/A	2016/05/31	Abdi Mohamud
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4518235	2016/05/31	2016/05/31	Ksenia Trofimova
Moisture	BAL	4517512	N/A	2016/05/30	Min Yang
Polychlorinated Biphenyl in Soil	GC/ECD	4516959	2016/05/30	2016/05/30	Li Peng

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Maxxam Job #: B6A5806
Report Date: 2016/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

GENERAL COMMENTS

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

Package 1	26.7°C

Results relate only to the items tested.

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Maxxam Job #: B6A5806
Report Date: 2016/06/01

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4516959	Decachlorobiphenyl	2016/05/30	129	60 - 130	97	60 - 130	95	%		
4518235	o-Terphenyl	2016/05/31	97	60 - 130	99	60 - 130	105	%		
4518339	1,4-Difluorobenzene	2016/05/31	103	60 - 140	101	60 - 140	102	%		
4518339	4-Bromofluorobenzene	2016/05/31	108	60 - 140	106	60 - 140	106	%		
4518339	D10-Ethylbenzene	2016/05/31	100	60 - 140	94	60 - 140	101	%		
4518339	D4-1,2-Dichloroethane	2016/05/31	94	60 - 140	92	60 - 140	91	%		
4516959	Aroclor 1242	2016/05/30					<0.010	ug/g	NC	50
4516959	Aroclor 1248	2016/05/30					<0.010	ug/g	NC	50
4516959	Aroclor 1254	2016/05/30					<0.010	ug/g	NC	50
4516959	Aroclor 1260	2016/05/30	76	60 - 130	113	60 - 130	<0.010	ug/g	NC	50
4516959	Total PCB	2016/05/30	76	60 - 130	113	60 - 130	<0.010	ug/g	NC	50
4517512	Moisture	2016/05/30							1.3	20
4518235	F2 (C10-C16 Hydrocarbons)	2016/05/31	94	50 - 130	94	80 - 120	<10	ug/g	NC	30
4518235	F3 (C16-C34 Hydrocarbons)	2016/05/31	96	50 - 130	97	80 - 120	<50	ug/g	NC	30
4518235	F4 (C34-C50 Hydrocarbons)	2016/05/31	100	50 - 130	101	80 - 120	<50	ug/g	NC	30
4518339	Benzene	2016/05/31	88	60 - 140	93	60 - 140	<0.020	ug/g	NC	50
4518339	Ethylbenzene	2016/05/31	101	60 - 140	108	60 - 140	<0.020	ug/g	NC	50
4518339	F1 (C6-C10) - BTEX	2016/05/31					<10	ug/g	NC	30
4518339	F1 (C6-C10)	2016/05/31	82	60 - 140	87	80 - 120	<10	ug/g	NC	30
4518339	o-Xylene	2016/05/31	101	60 - 140	106	60 - 140	<0.020	ug/g	NC	50
4518339	p+m-Xylene	2016/05/31	96	60 - 140	101	60 - 140	<0.040	ug/g	NC	50
4518339	Toluene	2016/05/31	94	60 - 140	99	60 - 140	<0.020	ug/g	NC	50
4518339	Total Xylenes	2016/05/31					<0.040	ug/g	NC	50

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B6A5806
Report Date: 2016/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

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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A Bureau Veritas Group Company

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) 817-5777 www.maxxam.ca

IMMEDIATE TEST

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:	
Address:	1931 Robertson Rd	Address:		Project:	1525113
	Ottawa ON K2H 5B7			Project Name:	
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:	
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	Aaron Bradshaw

Laboratory Use Only:

Maxxam Job #:	Bottle Order #:
	557328
COC #:	**Project Manager:**
C#557328-24-01	Parnian Baber

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

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 #)*

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	PHC F1-F4 + BTEX	PCBs	# of Bottles	Comments
1		TP16-401	16/05/25	1100	Soil				X	X	3	
2		TP16-402	↓	1110	↓				X	X	3	
3		TP16-403	↓	1120	↓				X	X	3	25-May-16 15:40 Parnian Baber B6A5806
4		TP16-404	↓	1140	↓		~~X~~		X	X	3	AKP ENV-928
5												
6												
7												
8												RECEIVED IN OTTAWA
9												
10												ON ICE PACK

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
A. Bradshaw / Aaron Bradshaw	16/05/25	1430	[signature]	2016/05/25	15:40	0
			Ashlie Sullivan	2016/05/26	09:53	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	26, 27, 27	Present	✓	
		Intact	✓	

White: Maxxam Yellow: Client

* 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.

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

ASH 1814 Sullivan

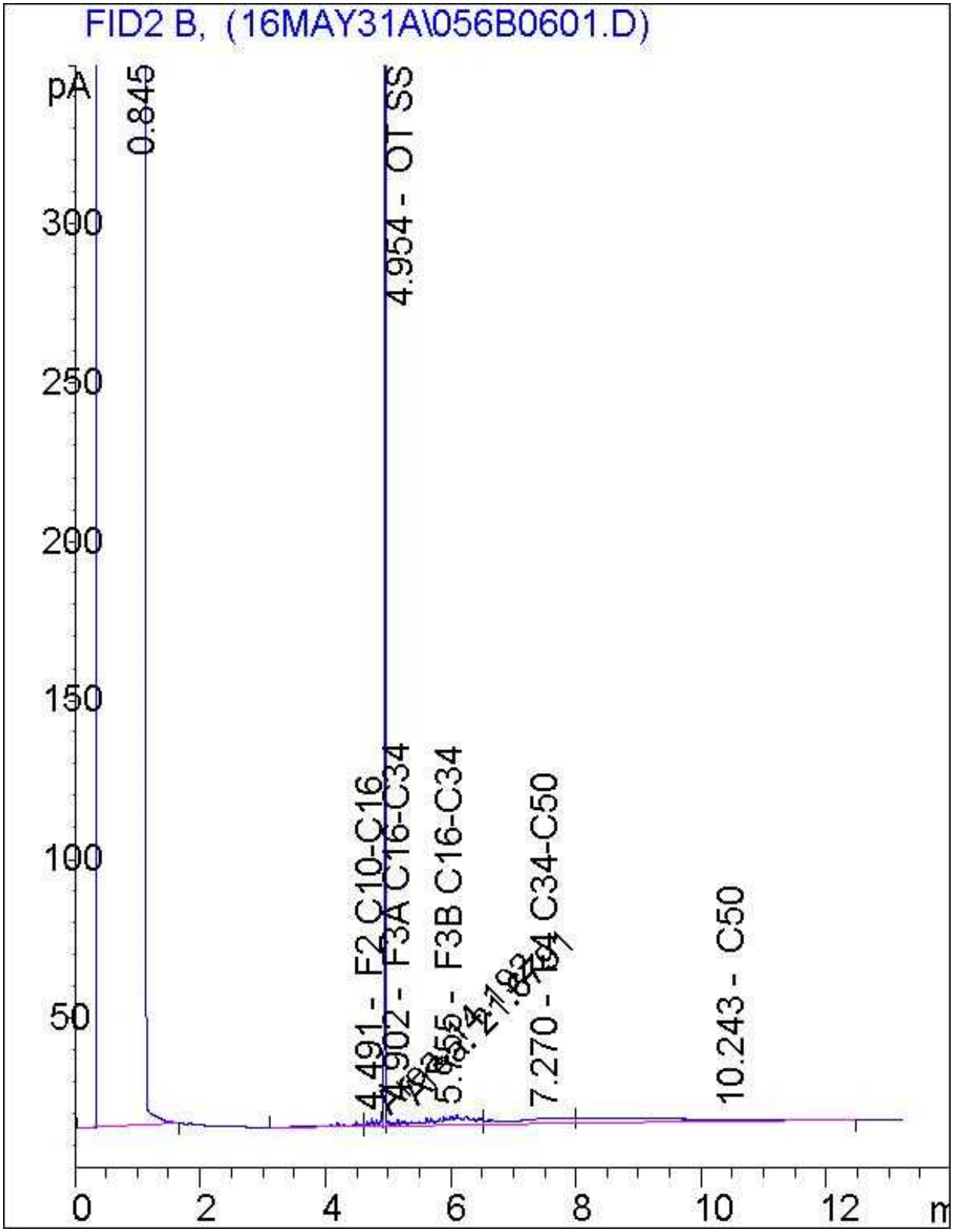
5/5/1

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B6A5806
Report Date: 2016/06/01
Maxxam Sample: CKN359

Golder Associates Ltd
Client Project #: 1525113
Client ID: TP16-401

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

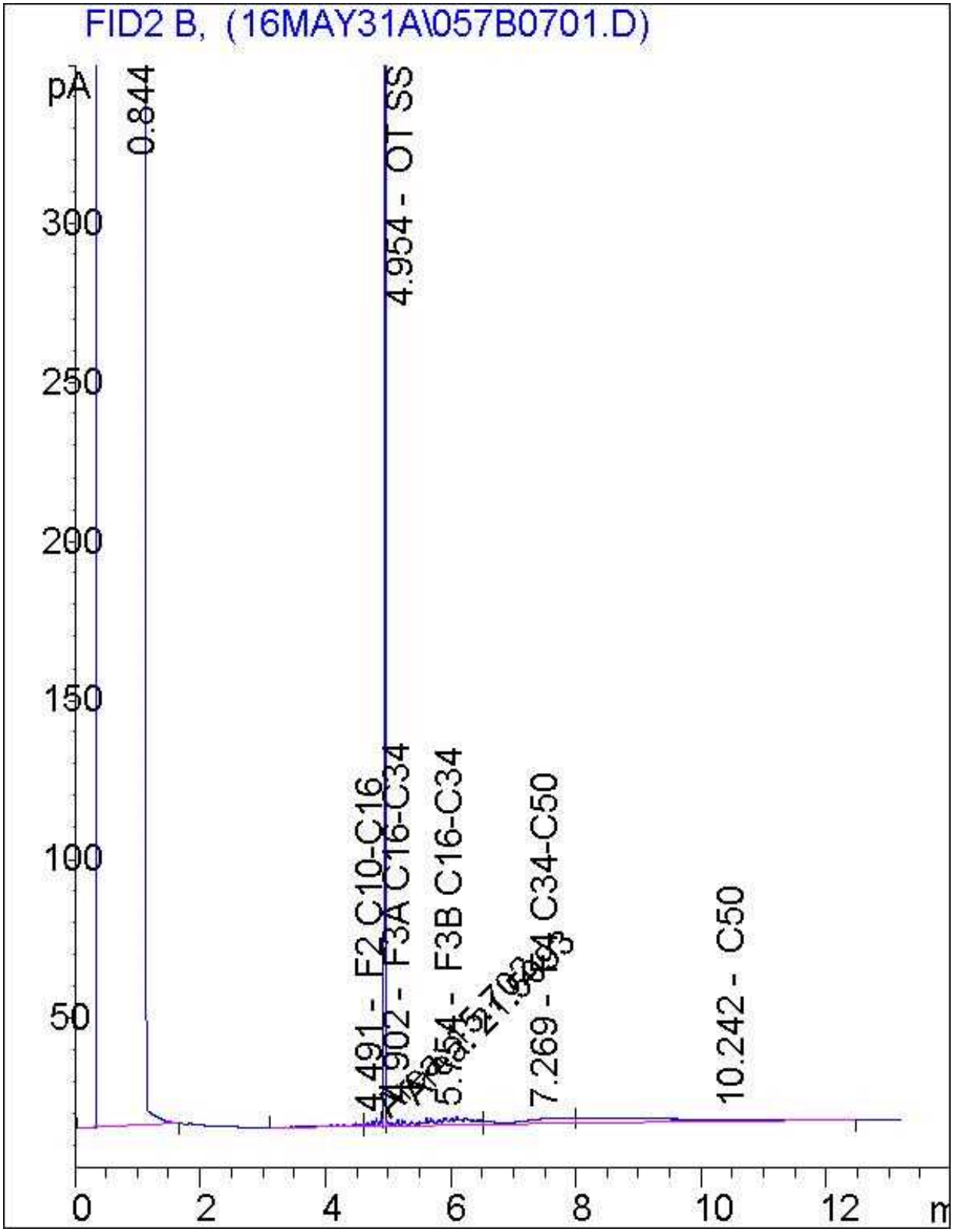


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B6A5806
Report Date: 2016/06/01
Maxxam Sample: CKN359 Lab-Dup

Golder Associates Ltd
Client Project #: 1525113
Client ID: TP16-401

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

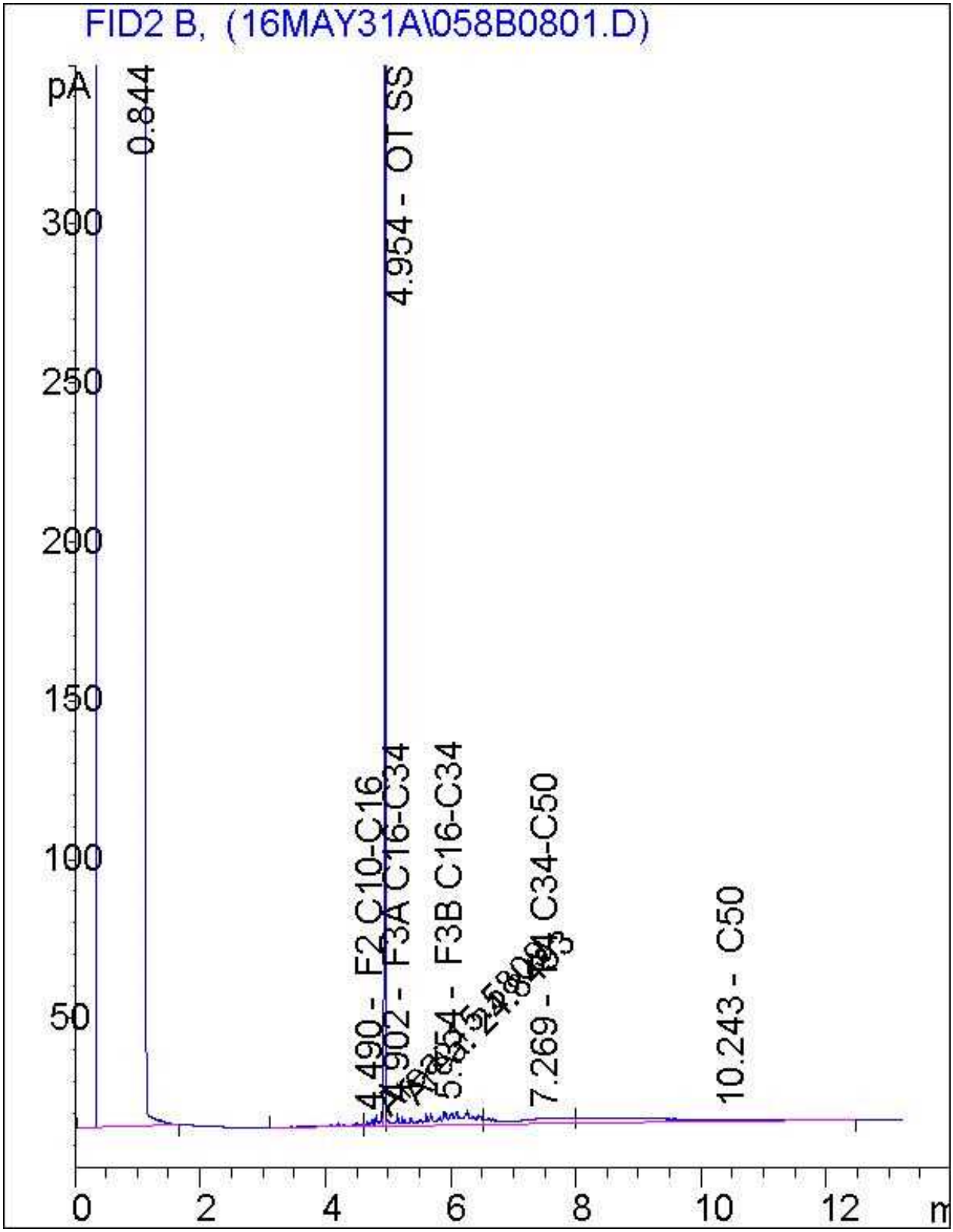


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B6A5806
Report Date: 2016/06/01
Maxxam Sample: CKN360

Golder Associates Ltd
Client Project #: 1525113
Client ID: TP16-402

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

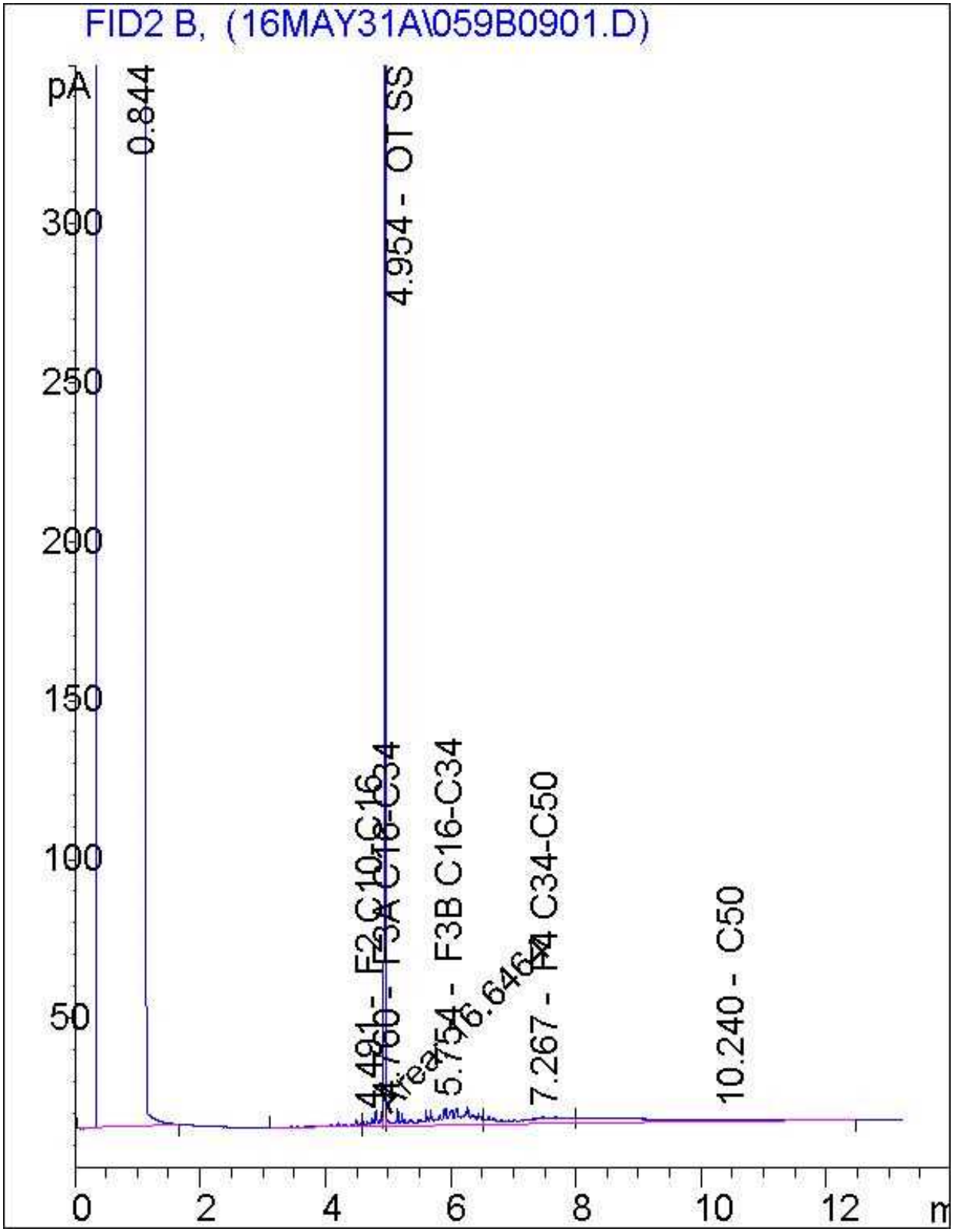


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B6A5806
Report Date: 2016/06/01
Maxxam Sample: CKN361

Golder Associates Ltd
Client Project #: 1525113
Client ID: TP16-403

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

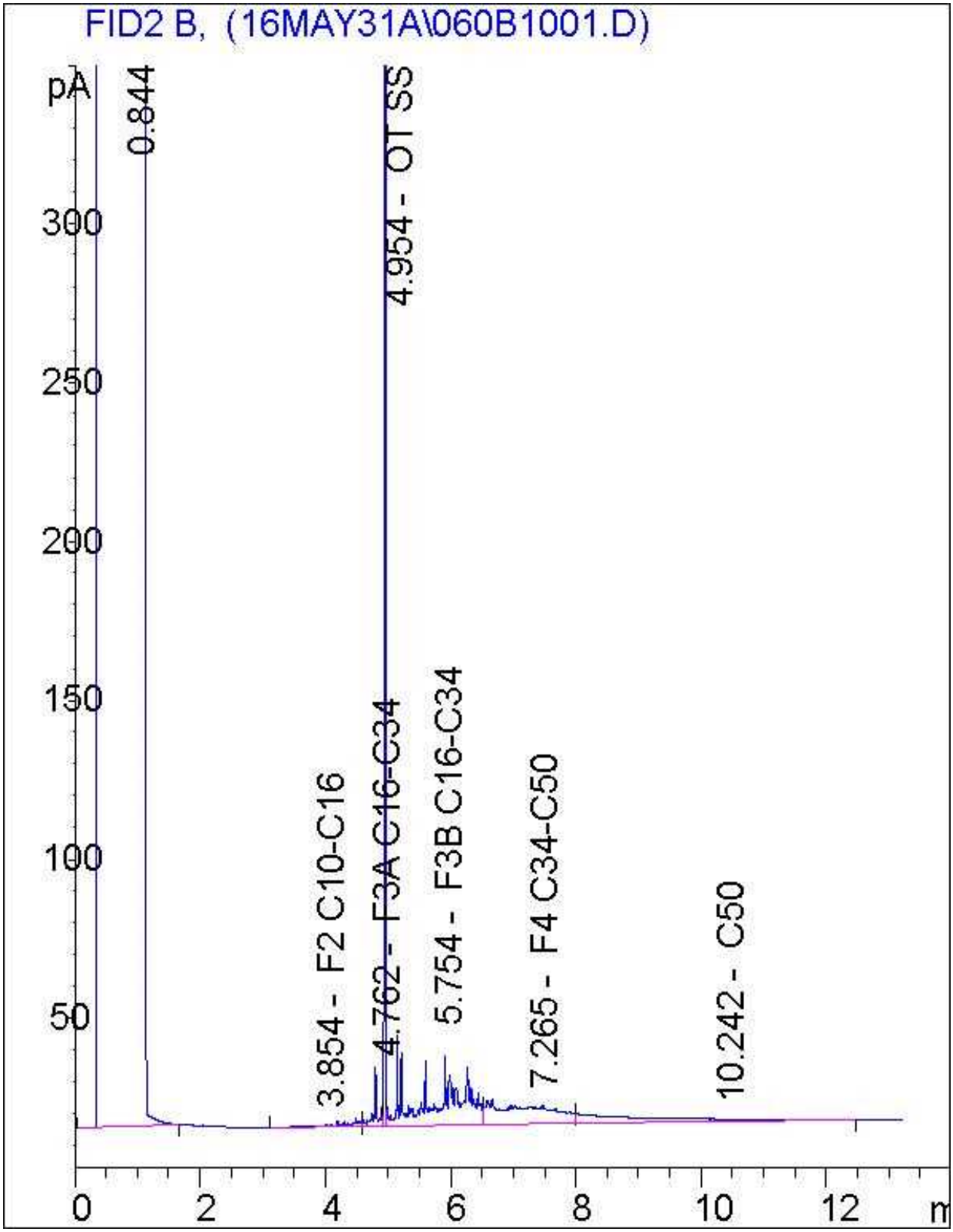


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B6A5806
Report Date: 2016/06/01
Maxxam Sample: CKN362

Golder Associates Ltd
Client Project #: 1525113
Client ID: TP16-404

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.

Maxxam Job #: B6A5806
Report Date: 2016/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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.maxxam.ca

Maxxam

Success Through Science®

Your Project #: 14-1122-0005
Site#: 7000
Your C.O.C. #: 46382402, 463824-02-01

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

Report Date: 2014/04/08
Report #: R2989634
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B451605
Received: 2014/04/01, 16:25

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Methylnaphthalene Sum (1)	7	N/A	2014/04/04	CAM SOP-00301	EPA 8270
Hot Water Extractable Boron (1)	8	2014/04/07	2014/04/08	CAM SOP-00408	R153 Ana. Prot. 2011
Hexavalent Chromium in Soil by IC (1,2)	8	2014/04/04	2014/04/05	CAM SOP-00436	EPA SW846-3060/7199
Petroleum Hydro. CCME F1 & BTEX in Soil	6	2014/04/04	2014/04/05	OTT SOP-00002	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil	2	2014/04/04	2014/04/08	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (1)	8	2014/04/04	2014/04/07	CAM SOP-00316	CCME CWS
F4G (CCME Hydrocarbons Gravimetric) (1)	1	2014/04/08	2014/04/08	CAM SOP-00316	CCME CWS
Acid Extr. Metals (aqua regia) by ICPMS (1)	8	2014/04/07	2014/04/08	CAM SOP-00447	EPA 6020
Moisture (1)	1	N/A	2014/04/02	CAM SOP-00445	R.Carter,1993
Moisture (1)	8	N/A	2014/04/03	CAM SOP-00445	R.Carter,1993
PAH Compounds in Soil by GC/MS (SIM) (1)	7	2014/04/03	2014/04/04	CAM SOP - 00318	EPA 8270
pH CaCl2 EXTRACT (1)	2	2014/04/03	2014/04/03	CAM SOP-00413	SM 4500H+ B

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. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

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 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.

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 #: B451605
Report Date: 2014/04/08

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: MS

Encryption Key

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

Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========
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 #: B451605
Report Date: 2014/04/08

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: MS

O.REG 153 METALS PACKAGE (SOIL)

Maxxam ID		VJ9589	VJ9589	VJ9590	VJ9591	VJ9593		
Sampling Date		2014/03/31	2014/03/31	2014/03/31	2014/03/31	2014/03/27		
	Units	**TP14-15 SA5**	**TP14-15 SA5 Lab-Dup**	**TP14-15 SA6**	**TP14-12 SA4**	**TP14-4 SA1**	**RDL**	**QC Batch**
Inorganics								
Chromium (VI)	ug/g	<0.2		<0.2	<0.2	<0.2	0.2	3563001
Metals								
Hot Water Ext. Boron (B)	ug/g	0.67		0.099	0.71	0.25	0.050	3565171
Acid Extractable Antimony (Sb)	ug/g	1.4	1.7	<0.20	0.26	3.5	0.20	3565108
Acid Extractable Arsenic (As)	ug/g	4.9	4.7	1.6	1.8	5.1	1.0	3565108
Acid Extractable Barium (Ba)	ug/g	99	94	60	110	210	0.50	3565108
Acid Extractable Beryllium (Be)	ug/g	0.27	0.28	0.32	0.35	0.31	0.20	3565108
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	3565108
Acid Extractable Cadmium (Cd)	ug/g	0.20	0.18	<0.10	0.12	0.30	0.10	3565108
Acid Extractable Chromium (Cr)	ug/g	16	16	29	40	17	1.0	3565108
Acid Extractable Cobalt (Co)	ug/g	4.3	4.6	6.3	8.4	4.7	0.10	3565108
Acid Extractable Copper (Cu)	ug/g	34	37	12	25	23	0.50	3565108
Acid Extractable Lead (Pb)	ug/g	120	120	4.0	28	430	1.0	3565108
Acid Extractable Molybdenum (Mo)	ug/g	0.78	0.75	<0.50	<0.50	0.54	0.50	3565108
Acid Extractable Nickel (Ni)	ug/g	13	13	15	22	11	0.50	3565108
Acid Extractable Selenium (Se)	ug/g	0.72	0.66	<0.50	<0.50	<0.50	0.50	3565108
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	0.34	0.20	3565108
Acid Extractable Thallium (Tl)	ug/g	0.14	0.14	0.11	0.14	0.12	0.050	3565108
Acid Extractable Uranium (U)	ug/g	0.36	0.42	0.79	0.58	0.48	0.050	3565108
Acid Extractable Vanadium (V)	ug/g	22	23	37	39	22	5.0	3565108
Acid Extractable Zinc (Zn)	ug/g	85	87	36	60	160	5.0	3565108
Acid Extractable Mercury (Hg)	ug/g	0.27	0.40(1)	<0.050	0.097	0.38	0.050	3565108

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 #: B451605
Report Date: 2014/04/08

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: MS

O.REG 153 METALS PACKAGE (SOIL)

Maxxam ID		VJ9594	VJ9595	VJ9596	VJ9596	VJ9597		
Sampling Date		2014/03/27	2014/03/27	2014/03/31	2014/03/31	2014/03/31		
	Units	**TP14-9 SA2**	**TP14-5 SA2**	**TP14-10 SA2**	**TP14-10 SA2 Lab-Dup**	**TP14-10 SA2A**	**RDL**	**QC Batch**
Inorganics								
Chromium (VI)	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	3563001
Metals								
Hot Water Ext. Boron (B)	ug/g	0.23	0.24	0.11		0.13	0.050	3565171
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	18		18	0.20	3565108
Acid Extractable Arsenic (As)	ug/g	2.1	3.4	2.5		2.5	1.0	3565108
Acid Extractable Barium (Ba)	ug/g	230	130	94		79	0.50	3565108
Acid Extractable Beryllium (Be)	ug/g	0.50	0.66	0.24		0.24	0.20	3565108
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	<5.0		<5.0	5.0	3565108
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.14	0.50		0.31	0.10	3565108
Acid Extractable Chromium (Cr)	ug/g	57	51	11		13	1.0	3565108
Acid Extractable Cobalt (Co)	ug/g	14	13	3.2		3.9	0.10	3565108
Acid Extractable Copper (Cu)	ug/g	32	30	13		14	0.50	3565108
Acid Extractable Lead (Pb)	ug/g	5.0	20	370		340	1.0	3565108
Acid Extractable Molybdenum (Mo)	ug/g	0.76	0.83	<0.50		<0.50	0.50	3565108
Acid Extractable Nickel (Ni)	ug/g	34	30	7.3		7.8	0.50	3565108
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50		<0.50	0.50	3565108
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20		<0.20	0.20	3565108
Acid Extractable Thallium (Tl)	ug/g	0.31	0.17	0.075		0.078	0.050	3565108
Acid Extractable Uranium (U)	ug/g	0.98	1.0	0.78		0.61	0.050	3565108
Acid Extractable Vanadium (V)	ug/g	68	58	14		15	5.0	3565108
Acid Extractable Zinc (Zn)	ug/g	84	74	200		180	5.0	3565108
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	<0.050		<0.050	0.050	3565108

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B451605
Report Date: 2014/04/08

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: MS

O.REG 153 PAHS (SOIL)

Maxxam ID		VJ9589	VJ9591		VJ9593	VJ9594	VJ9595	VJ9596	VJ9597		
Sampling Date		2014/03/31	2014/03/31		2014/03/27	2014/03/27	2014/03/27	2014/03/31	2014/03/31		
	Units	**TP14-15 SA5**	**TP14-12 SA4**	**RDL**	**TP14-4 SA1**	**TP14-9 SA2**	**TP14-5 SA2**	**TP14-10 SA2**	**TP14-10 SA2A**	**RDL**	**QC Batch**
Calculated Parameters											
Methylnaphthalene, 2-(1-)	ug/g	1.7	0.055	0.014	0.037	<0.0071	0.011	<0.0071	<0.0071	0.0071	3558499
Polyaromatic Hydrocarbons											
Acenaphthene	ug/g	4.0	0.10	0.010	0.061	0.012	0.017	<0.0050	<0.0050	0.0050	3562048
Acenaphthylene	ug/g	1.0	0.12	0.010	0.036	0.013	0.022	0.012	0.033	0.0050	3562048
Anthracene	ug/g	9.0	0.39	0.010	0.13	0.0078	0.039	0.017	0.027	0.0050	3562048
Benzo(a)anthracene	ug/g	15	1.0	0.010	0.44	0.025	0.10	0.070	0.13	0.0050	3562048
Benzo(a)pyrene	ug/g	12	0.91	0.010	0.40	0.036	0.095	0.065	0.13	0.0050	3562048
Benzo(b/j)fluoranthene	ug/g	12	1.0	0.010	0.46	0.045	0.13	0.092	0.17	0.0050	3562048
Benzo(g,h,i)perylene	ug/g	6.0	0.53	0.010	0.24	0.024	0.065	0.047	0.092	0.0050	3562048
Benzo(k)fluoranthene	ug/g	4.6	0.38	0.010	0.17	0.015	0.048	0.033	0.063	0.0050	3562048
Chrysene	ug/g	12	0.75	0.010	0.36	0.020	0.096	0.062	0.11	0.0050	3562048
Dibenz(a,h)anthracene	ug/g	1.5	0.14	0.010	0.060	0.0052	0.014	0.011	0.021	0.0050	3562048
Fluoranthene	ug/g	32	2.0	0.010	0.85	0.061	0.25	0.14	0.22	0.0050	3562048
Fluorene	ug/g	3.8	0.12	0.010	0.053	0.017	0.017	0.0052	0.0068	0.0050	3562048
Indeno(1,2,3-cd)pyrene	ug/g	7.3	0.64	0.010	0.26	0.027	0.069	0.050	0.099	0.0050	3562048
1-Methylnaphthalene	ug/g	0.87	0.023	0.010	0.018	<0.0050	0.0051	<0.0050	<0.0050	0.0050	3562048
2-Methylnaphthalene	ug/g	0.87	0.033	0.010	0.019	<0.0050	0.0057	<0.0050	<0.0050	0.0050	3562048
Naphthalene	ug/g	0.82	0.056	0.010	0.037	<0.0050	0.0083	<0.0050	<0.0050	0.0050	3562048
Phenanthrene	ug/g	30	1.2	0.010	0.59	0.0091	0.16	0.076	0.088	0.0050	3562048
Pyrene	ug/g	26	1.6	0.010	0.72	0.055	0.20	0.12	0.19	0.0050	3562048
Surrogate Recovery (%)											
D10-Anthracene	%	85	92		87	90	89	92	86		3562048
D14-Terphenyl (FS)	%	100	97		92	96	96	98	91		3562048
D8-Acenaphthylene	%	83	92		88	94	90	90	86		3562048

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B451605
Report Date: 2014/04/08

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: MS

RESULTS OF ANALYSES OF SOIL

Maxxam ID		VJ9589	VJ9590	VJ9591		VJ9592	VJ9592		VJ9593		
Sampling Date		2014/03/31	2014/03/31	2014/03/31		2014/03/26	2014/03/26		2014/03/27		
	Units	**TP14-15 SA5**	**TP14-15 SA6**	**TP14-12 SA4**	**QC Batch**	**BH14-101C SA5**	**BH14-101C SA5 Lab-Dup**	**QC Batch**	**TP14-4 SA1**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	16	15	23	3561362	27	26	3559910	15	1.0	3561650
Available (CaCl2) pH	pH	7.38			3561379				7.63		3561379

Maxxam ID		VJ9594		VJ9595	VJ9596		VJ9597		
Sampling Date		2014/03/27		2014/03/27	2014/03/31		2014/03/31		
	Units	**TP14-9 SA2**	**QC Batch**	**TP14-5 SA2**	**TP14-10 SA2**	**QC Batch**	**TP14-10 SA2A**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	30	3561362	25	14	3561650	15	1.0	3561362

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B451605
Report Date: 2014/04/08

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: MS

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		VJ9589	VJ9591	VJ9592	VJ9593	VJ9593		
Sampling Date		2014/03/31	2014/03/31	2014/03/26	2014/03/27	2014/03/27		
	Units	**TP14-15 SA5**	**TP14-12 SA4**	**BH14-101C SA5**	**TP14-4 SA1**	**TP14-4 SA1 Lab-Dup**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons								
Benzene	ug/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	3563271
Toluene	ug/g	<0.02	<0.02	<0.02	<0.02	0.03	0.02	3563271
Ethylbenzene	ug/g	<0.02	<0.02	<0.02	<0.02	0.02	0.02	3563271
o-Xylene	ug/g	<0.02	<0.02	<0.02	<0.02	0.06	0.02	3563271
p+m-Xylene	ug/g	<0.04	<0.04	<0.04	<0.04	0.08	0.04	3563271
Total Xylenes	ug/g	<0.04	<0.04	<0.04	<0.04	0.14	0.04	3563271
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	10	3563271
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	10	3563271
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	20	15	<10	<10		10	3563305
F3 (C16-C34 Hydrocarbons)	ug/g	920	64	<50	<50		50	3563305
F4 (C34-C50 Hydrocarbons)	ug/g	510	<50	<50	<50		50	3563305
Reached Baseline at C50	ug/g	YES	YES	YES	YES			3563305
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	97	102	88	98	98		3563271
4-Bromofluorobenzene	%	97	89	111	98	106		3563271
D10-Ethylbenzene	%	84	108	101	100	96		3563271
D4-1,2-Dichloroethane	%	90	96	88	96	98		3563271
o-Terphenyl	%	88	89	96	90			3563305

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B451605
Report Date: 2014/04/08

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: MS

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		VJ9594	VJ9595	VJ9596	VJ9597	VJ9597		
Sampling Date		2014/03/27	2014/03/27	2014/03/31	2014/03/31	2014/03/31		
	Units	**TP14-9 SA2**	**TP14-5 SA2**	**TP14-10 SA2**	**TP14-10 SA2A**	**TP14-10 SA2A Lab-Dup**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons								
Benzene	ug/g	<0.02	<0.02	<0.02	<0.02		0.02	3563271
Toluene	ug/g	<0.02	<0.02	<0.02	<0.02		0.02	3563271
Ethylbenzene	ug/g	<0.02	<0.02	<0.02	<0.02		0.02	3563271
o-Xylene	ug/g	<0.02	<0.02	<0.02	<0.02		0.02	3563271
p+m-Xylene	ug/g	<0.04	<0.04	<0.04	<0.04		0.04	3563271
Total Xylenes	ug/g	<0.04	<0.04	<0.04	<0.04		0.04	3563271
F1 (C6-C10)	ug/g	<10	<10	<10	<10		10	3563271
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10		10	3563271
F2-F4 Hydrocarbons								
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g			2100			100	3565888
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	10	3563305
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	200	120	<50	50	3563305
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	270	<50	<50	50	3563305
Reached Baseline at C50	ug/g	YES	YES	NO	YES	YES		3563305
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	97	100	101	92			3563271
4-Bromofluorobenzene	%	106	102	90	129			3563271
D10-Ethylbenzene	%	94	103	103	99			3563271
D4-1,2-Dichloroethane	%	92	94	96	95			3563271
o-Terphenyl	%	92	90	87	90	89		3563305

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2014/04/08

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: MS

Test Summary

Maxxam ID VJ9589
Sample ID TP14-15 SA5
Matrix Soil

Collected test 2 2014/03/31
Shipped
Received 2014/04/01

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3558499	N/A	2014/04/04	Automated Statchk
Hot Water Extractable Boron	ICP	3565171	2014/04/07	2014/04/08	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	3563001	2014/04/04	2014/04/05	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3563271	2014/04/04	2014/04/05	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3563305	2014/04/04	2014/04/07	Zhiyue (Frank) Zhu
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3565108	2014/04/07	2014/04/08	Viviana Canzonieri
Moisture	BAL	3561362	N/A	2014/04/03	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3562048	2014/04/03	2014/04/04	Darryl Tiller
pH CaCl2 EXTRACT		3561379	2014/04/03	2014/04/03	Neil Dassanayake

Maxxam ID VJ9589 Dup
Sample ID TP14-15 SA5
Matrix Soil

Collected test 2 2014/03/31
Shipped
Received 2014/04/01

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3565108	2014/04/07	2014/04/08	Viviana Canzonieri

Maxxam ID VJ9590
Sample ID TP14-15 SA6
Matrix Soil

Collected test 2 2014/03/31
Shipped
Received 2014/04/01

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hot Water Extractable Boron	ICP	3565171	2014/04/07	2014/04/08	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	3563001	2014/04/04	2014/04/05	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3565108	2014/04/07	2014/04/08	Viviana Canzonieri
Moisture	BAL	3561362	N/A	2014/04/03	Valentina Kaftani

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Maxxam Job #: B451605
Report Date: 2014/04/08

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: MS

Test Summary

Maxxam ID VJ9591
Sample ID TP14-12 SA4
Matrix Soil

Collected test 2 2014/03/31
Shipped
Received 2014/04/01

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3558499	N/A	2014/04/04	Automated Statchk
Hot Water Extractable Boron	ICP	3565171	2014/04/07	2014/04/08	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	3563001	2014/04/04	2014/04/05	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3563271	2014/04/04	2014/04/05	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3563305	2014/04/04	2014/04/07	Zhiyue (Frank) Zhu
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3565108	2014/04/07	2014/04/08	Viviana Canzonieri
Moisture	BAL	3561362	N/A	2014/04/03	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3562048	2014/04/03	2014/04/04	Darryl Tiller

Maxxam ID VJ9592
Sample ID BH14-101C SA5
Matrix Soil

Collected test 2 2014/03/26
Shipped
Received 2014/04/01

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3563271	2014/04/04	2014/04/05	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3563305	2014/04/04	2014/04/07	Zhiyue (Frank) Zhu
Moisture	BAL	3559910	N/A	2014/04/02	Chun Yan

Maxxam ID VJ9592 Dup
Sample ID BH14-101C SA5
Matrix Soil

Collected test 2 2014/03/26
Shipped
Received 2014/04/01

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3559910	N/A	2014/04/02	Chun Yan

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Maxxam Job #: B451605
Report Date: 2014/04/08

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: MS

Test Summary

Maxxam ID VJ9593
Sample ID TP14-4 SA1
Matrix Soil

Collected test 2 2014/03/27
Shipped
Received 2014/04/01

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3558499	N/A	2014/04/04	Automated Statchk
Hot Water Extractable Boron	ICP	3565171	2014/04/07	2014/04/08	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	3563001	2014/04/04	2014/04/05	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3563271	2014/04/04	2014/04/08	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3563305	2014/04/04	2014/04/07	Zhiyue (Frank) Zhu
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3565108	2014/04/07	2014/04/08	Viviana Canzonieri
Moisture	BAL	3561650	N/A	2014/04/03	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3562048	2014/04/03	2014/04/04	Darryl Tiller
pH CaCl2 EXTRACT		3561379	2014/04/03	2014/04/03	Neil Dassanayake

Maxxam ID VJ9593 Dup
Sample ID TP14-4 SA1
Matrix Soil

Collected test 2 2014/03/27
Shipped
Received 2014/04/01

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3563271	2014/04/08	2014/04/08	Lyndsey Hart

Maxxam ID VJ9594
Sample ID TP14-9 SA2
Matrix Soil

Collected test 2 2014/03/27
Shipped
Received 2014/04/01

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3558499	N/A	2014/04/04	Automated Statchk
Hot Water Extractable Boron	ICP	3565171	2014/04/07	2014/04/08	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	3563001	2014/04/04	2014/04/05	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3563271	2014/04/04	2014/04/05	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3563305	2014/04/04	2014/04/07	Zhiyue (Frank) Zhu
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3565108	2014/04/07	2014/04/08	Viviana Canzonieri
Moisture	BAL	3561362	N/A	2014/04/03	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3562048	2014/04/03	2014/04/04	Darryl Tiller

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Maxxam Job #: B451605
Report Date: 2014/04/08

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: MS

Test Summary

Maxxam ID VJ9595
Sample ID TP14-5 SA2
Matrix Soil

Collected test 2 2014/03/27
Shipped
Received 2014/04/01

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3558499	N/A	2014/04/04	Automated Statchk
Hot Water Extractable Boron	ICP	3565171	2014/04/07	2014/04/08	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	3563001	2014/04/04	2014/04/05	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3563271	2014/04/04	2014/04/05	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3563305	2014/04/04	2014/04/07	Zhiyue (Frank) Zhu
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3565108	2014/04/07	2014/04/08	Viviana Canzonieri
Moisture	BAL	3561650	N/A	2014/04/03	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3562048	2014/04/03	2014/04/04	Darryl Tiller

Maxxam ID VJ9596
Sample ID TP14-10 SA2
Matrix Soil

Collected test 2 2014/03/31
Shipped
Received 2014/04/01

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3558499	N/A	2014/04/04	Automated Statchk
Hot Water Extractable Boron	ICP	3565171	2014/04/07	2014/04/08	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	3563001	2014/04/04	2014/04/05	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3563271	2014/04/04	2014/04/08	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3563305	2014/04/04	2014/04/07	Zhiyue (Frank) Zhu
F4G (CCME Hydrocarbons Gravimetric)	BAL	3565888	2014/04/08	2014/04/08	Raheela Usmani
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3565108	2014/04/07	2014/04/08	Viviana Canzonieri
Moisture	BAL	3561650	N/A	2014/04/03	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3562048	2014/04/03	2014/04/04	Darryl Tiller

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Maxxam Job #: B451605
Report Date: 2014/04/08

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Client Project #: 14-1122-0005

Sampler Initials: MS

Test Summary

Maxxam ID VJ9596 Dup
Sample ID TP14-10 SA2
Matrix Soil

Collected test 2 2014/03/31
Shipped
Received 2014/04/01

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	3563001	2014/04/04	2014/04/05	Manoj Gera

Maxxam ID VJ9597
Sample ID TP14-10 SA2A
Matrix Soil

Collected test 2 2014/03/31
Shipped
Received 2014/04/01

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3558499	N/A	2014/04/04	Automated Statchk
Hot Water Extractable Boron	ICP	3565171	2014/04/07	2014/04/08	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	3563001	2014/04/04	2014/04/05	Manoj Gera
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	3563271	2014/04/04	2014/04/05	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3563305	2014/04/04	2014/04/07	Zhiyue (Frank) Zhu
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3565108	2014/04/07	2014/04/08	Viviana Canzonieri
Moisture	BAL	3561362	N/A	2014/04/03	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3562048	2014/04/03	2014/04/04	Darryl Tiller

Maxxam ID VJ9597 Dup
Sample ID TP14-10 SA2A
Matrix Soil

Collected test 2 2014/03/31
Shipped
Received 2014/04/01

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	3563305	2014/04/04	2014/04/07	Zhiyue (Frank) Zhu

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Maxxam Job #: B451605
Report Date: 2014/04/08

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: MS

Package 1	1.3°C

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

GENERAL COMMENTS

Custody seals were present and intact.

Sample VJ9589-01: PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample VJ9591-01: PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample VJ9593-01: BTEX/F1: Both vials used for analysis, results were reported as found.

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Maxxam Job #: B451605
Report Date: 2014/04/08

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: MS

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
3559910	Moisture	2014/04/02							2.3	20		
3561362	Moisture	2014/04/03							1.2	20		
3561650	Moisture	2014/04/03							0.5	20		
3562048	D10-Anthracene	2014/04/03	84	50 - 130	88	50 - 130	86	%				
3562048	D14-Terphenyl (FS)	2014/04/03	91	50 - 130	95	50 - 130	92	%				
3562048	D8-Acenaphthylene	2014/04/03	85	50 - 130	88	50 - 130	87	%				
3562048	Acenaphthene	2014/04/04	96	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40		
3562048	Acenaphthylene	2014/04/04	98	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40		
3562048	Anthracene	2014/04/04	90	50 - 130	93	50 - 130	<0.0050	ug/g	57.4(1, 2)	40		
3562048	Benzo(a)anthracene	2014/04/04	104	50 - 130	92	50 - 130	<0.0050	ug/g	47.9(1)	40		
3562048	Benzo(a)pyrene	2014/04/04	101	50 - 130	91	50 - 130	<0.0050	ug/g	38.8	40		
3562048	Benzo(b/j)fluoranthene	2014/04/04	96	50 - 130	96	50 - 130	<0.0050	ug/g	37.3	40		
3562048	Benzo(g,h,i)perylene	2014/04/04	96	50 - 130	102	50 - 130	<0.0050	ug/g	28.3	40		
3562048	Benzo(k)fluoranthene	2014/04/04	95	50 - 130	102	50 - 130	<0.0050	ug/g	39.3	40		
3562048	Chrysene	2014/04/04	105	50 - 130	97	50 - 130	<0.0050	ug/g	46.0(1)	40		
3562048	Dibenz(a,h)anthracene	2014/04/04	94	50 - 130	100	50 - 130	<0.0050	ug/g	34.7	40		
3562048	Fluoranthene	2014/04/04	104	50 - 130	94	50 - 130	<0.0050	ug/g	51.4(1)	40		
3562048	Fluorene	2014/04/04	98	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40		
3562048	Indeno(1,2,3-cd)pyrene	2014/04/04	97	50 - 130	98	50 - 130	<0.0050	ug/g	32.6	40		
3562048	1-Methylnaphthalene	2014/04/04	89	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40		
3562048	2-Methylnaphthalene	2014/04/04	88	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40		
3562048	Naphthalene	2014/04/04	89	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40		
3562048	Phenanthrene	2014/04/04	97	50 - 130	97	50 - 130	<0.0050	ug/g	65.2(1)	40		
3562048	Pyrene	2014/04/04	104	50 - 130	95	50 - 130	<0.0050	ug/g	49.1(1)	40		
3563001	Chromium (VI)	2014/04/05	74(1, 3)	80 - 120	104	80 - 120	<0.2	ug/g	NC	35	113	80 - 120
3563271	1,4-Difluorobenzene	2014/04/05	97	60 - 140	101	60 - 140	84	%				
3563271	4-Bromofluorobenzene	2014/04/05	88	60 - 140	105	60 - 140	90	%				
3563271	D10-Ethylbenzene	2014/04/05	90	30 - 130	113	30 - 130	118	%				
3563271	D4-1,2-Dichloroethane	2014/04/05	90	60 - 140	96	60 - 140	82	%				
3563271	Benzene	2014/04/08	88	60 - 140	87	60 - 140	<0.02	ug/g	NC	50		
3563271	Toluene	2014/04/08	62	60 - 140	77	60 - 140	<0.02	ug/g	NC	50		
3563271	Ethylbenzene	2014/04/08	62	60 - 140	79	60 - 140	<0.02	ug/g	NC	50		
3563271	o-Xylene	2014/04/08	68	60 - 140	83	60 - 140	<0.02	ug/g	NC	50		
3563271	p+m-Xylene	2014/04/08	71	60 - 140	79	60 - 140	<0.04	ug/g	NC	50		
3563271	F1 (C6-C10)	2014/04/08	114	60 - 140	93	80 - 120	<10	ug/g	NC	50		
3563271	Total Xylenes	2014/04/08					<0.04	ug/g	NC	50		
3563271	F1 (C6-C10) - BTEX	2014/04/08					<10	ug/g	NC	50		
3563305	o-Terphenyl	2014/04/07	92	50 - 130	94	50 - 130	92	%				
3563305	F2 (C10-C16 Hydrocarbons)	2014/04/07	96	50 - 130	95	80 - 120	<10	ug/g	NC	30		
3563305	F3 (C16-C34 Hydrocarbons)	2014/04/07	114	50 - 130	102	80 - 120	<50	ug/g	NC	30		

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Maxxam Job #: B451605
Report Date: 2014/04/08

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: MS

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
3563305	F4 (C34-C50 Hydrocarbons)	2014/04/07	113	50 - 130	109	80 - 120	<50	ug/g	NC	30		
3565108	Acid Extractable Antimony (Sb)	2014/04/08	98	75 - 125	103	80 - 120	<0.20	ug/g	17.9	30		
3565108	Acid Extractable Arsenic (As)	2014/04/08	98	75 - 125	97	80 - 120	<1.0	ug/g	NC	30		
3565108	Acid Extractable Barium (Ba)	2014/04/08	NC	75 - 125	100	80 - 120	<0.50	ug/g	5.1	30		
3565108	Acid Extractable Beryllium (Be)	2014/04/08	106	75 - 125	102	80 - 120	<0.20	ug/g	NC	30		
3565108	Acid Extractable Boron (B)	2014/04/08	102	75 - 125	100	80 - 120	<5.0	ug/g	NC	30		
3565108	Acid Extractable Cadmium (Cd)	2014/04/08	101	75 - 125	101	80 - 120	<0.10	ug/g	NC	30		
3565108	Acid Extractable Chromium (Cr)	2014/04/08	101	75 - 125	102	80 - 120	<1.0	ug/g	0.6	30		
3565108	Acid Extractable Cobalt (Co)	2014/04/08	100	75 - 125	102	80 - 120	<0.10	ug/g	5.7	30		
3565108	Acid Extractable Copper (Cu)	2014/04/08	NC	75 - 125	101	80 - 120	<0.50	ug/g	8.4	30		
3565108	Acid Extractable Lead (Pb)	2014/04/08	NC	75 - 125	102	80 - 120	<1.0	ug/g	5.2	30		
3565108	Acid Extractable Molybdenum (Mo)	2014/04/08	99	75 - 125	100	80 - 120	<0.50	ug/g	NC	30		
3565108	Acid Extractable Nickel (Ni)	2014/04/08	100	75 - 125	101	80 - 120	<0.50	ug/g	5.6	30		
3565108	Acid Extractable Selenium (Se)	2014/04/08	99	75 - 125	101	80 - 120	<0.50	ug/g	NC	30		
3565108	Acid Extractable Silver (Ag)	2014/04/08	99	75 - 125	101	80 - 120	<0.20	ug/g	NC	30		
3565108	Acid Extractable Thallium (Tl)	2014/04/08	86	75 - 125	95	80 - 120	<0.050	ug/g	NC	30		
3565108	Acid Extractable Uranium (U)	2014/04/08	93	75 - 125	93	80 - 120	<0.050	ug/g	15.2	30		
3565108	Acid Extractable Vanadium (V)	2014/04/08	101	75 - 125	98	80 - 120	<5.0	ug/g	NC	30		
3565108	Acid Extractable Zinc (Zn)	2014/04/08	NC	75 - 125	99	80 - 120	<5.0	ug/g	2.5	30		
3565108	Acid Extractable Mercury (Hg)	2014/04/08	NC	75 - 125	101	80 - 120	<0.050	ug/g	39.1 (1)	30		
3565171	Hot Water Ext. Boron (B)	2014/04/08	100	75 - 125	100	75 - 125	<0.050	ug/g	NC	35		
3565888	F4G-sg (Grav. Heavy Hydrocarbons)	2014/04/08	100	65 - 135	99	65 - 135	<100	ug/g	NC	50		

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
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 due to heterogene. The variability in the results for flagged analytes may be more pronounced.
(3) -
The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample.

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Validation Signature Page

Maxxam Job #: B451605

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

Cristina Carriere, Scientific Services

Medhat Riskallah, Manager, Hydrocarbon Department

Paul Rubinato, Analyst, Maxxam Analytics

==========

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

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-653-6266 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 #:	B40279	MAXXAM JOB #:	BOTTLE ORDER #: 463824
Contact Name:	Central Accounting	Contact Name:	Maria Staneva	P.O. #:			
Address:	32 Steacie Dr Kanata ON K2K 2A9	Address:		Project #:	14-1122-0005		
				Project Name:		CHAIN OF CUSTODY #:	PROJECT MANAGER:
Phone:	(613)592-9600 Fax: (613)592-9601	Phone:	Fax:	Site #:	7000	C#463824-02-01	Parnian Baber
Email:	AccountsPayable_Maxxam@golder.com, OttawaAc	Email:	Maria_Staneva@golder.com	Sampled By:			

Regulation 153 (2011): ☐ Table 1 ☑ Res/Park ☑ Medium/Fine; ☐ Table 2 ☐ Ind/Comm ☐ Coarse; ☐ Table 3 ☐ Agri/Other; ☑ Table 9; ☐ For RSC

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

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

ANALYSIS REQUESTED (Please be specific):

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 (Soil) + VOC	O'Reg 153 PAHs (Soil)	O'Reg 153 Metals Package (Soil)	pH CaCl2 EXTRACT						# of Bottles	Comments
1		TP14-15 SA5	March 31, 2014		SOIL			✓	✓	✓	✓						4	
2		TP14-15 SA6	"	"	SOIL					✓							4	
3		TP14-12 SA4	"	"	SOIL			✓	✓	✓							4	
4		BH14-101C SA5	March 26, 2014		SOIL			✓									4	
5		TP14-4 SA1	March 27		SOIL			✓	✓	✓							4	
6		TP14-9 SA2	"	"	SOIL			✓	✓	✓							4	
7		TP14-5 SA2	"	"	SOIL			✓	✓	✓							4	
8		TP14-10 SA2	March 31		SOIL			✓	✓	✓							4	REC'D IN OTTAWA
9		TP14-10 SA2A	"	"	SOIL			✓	✓	✓							4	
10					SOIL													on ice packs

1-Apr-14 16:25
Parnian Baber
B451605
CB2 OTT-002

*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
	April 1, 2014		C. Bergeron	20141001	16:25			3/011	Present	X	
									Intact	X	

* 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

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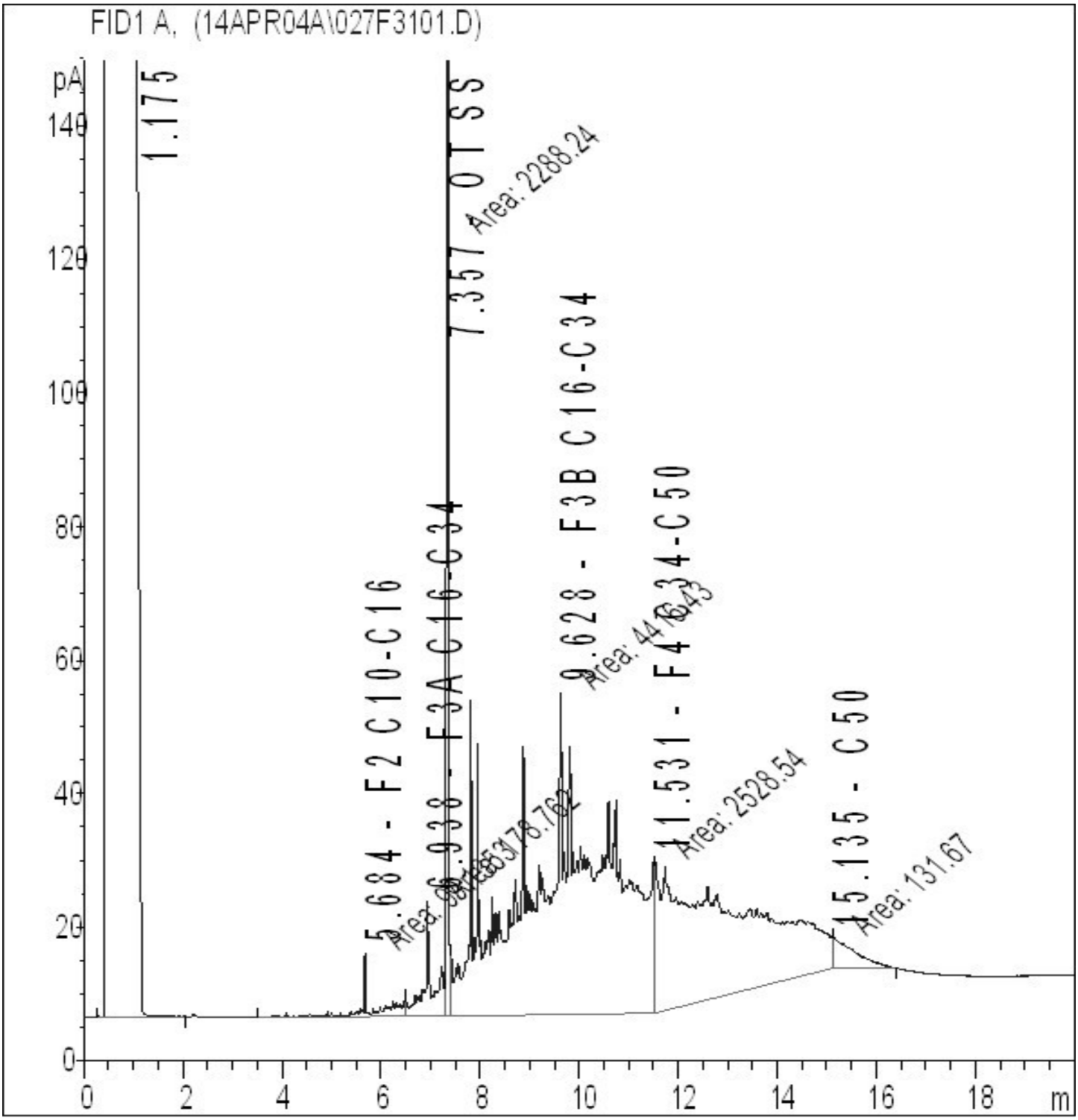
Report Date: 2014/04/08
Maxxam Job #: B451605
Maxxam Sample: VJ9589

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: TP14-15 SA5

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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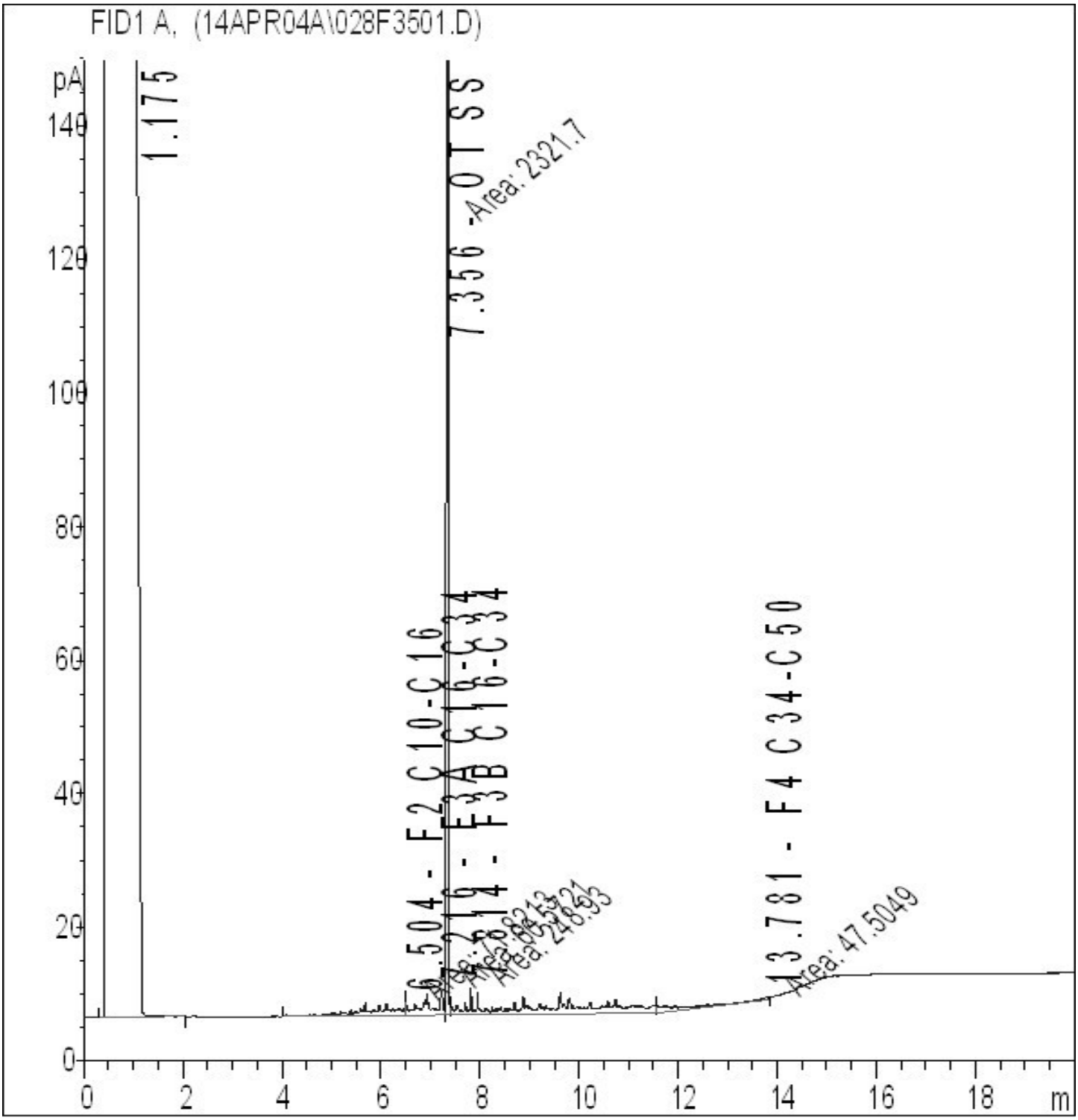
Report Date: 2014/04/08
Maxxam Job #: B451605
Maxxam Sample: VJ9591

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: TP14-12 SA4

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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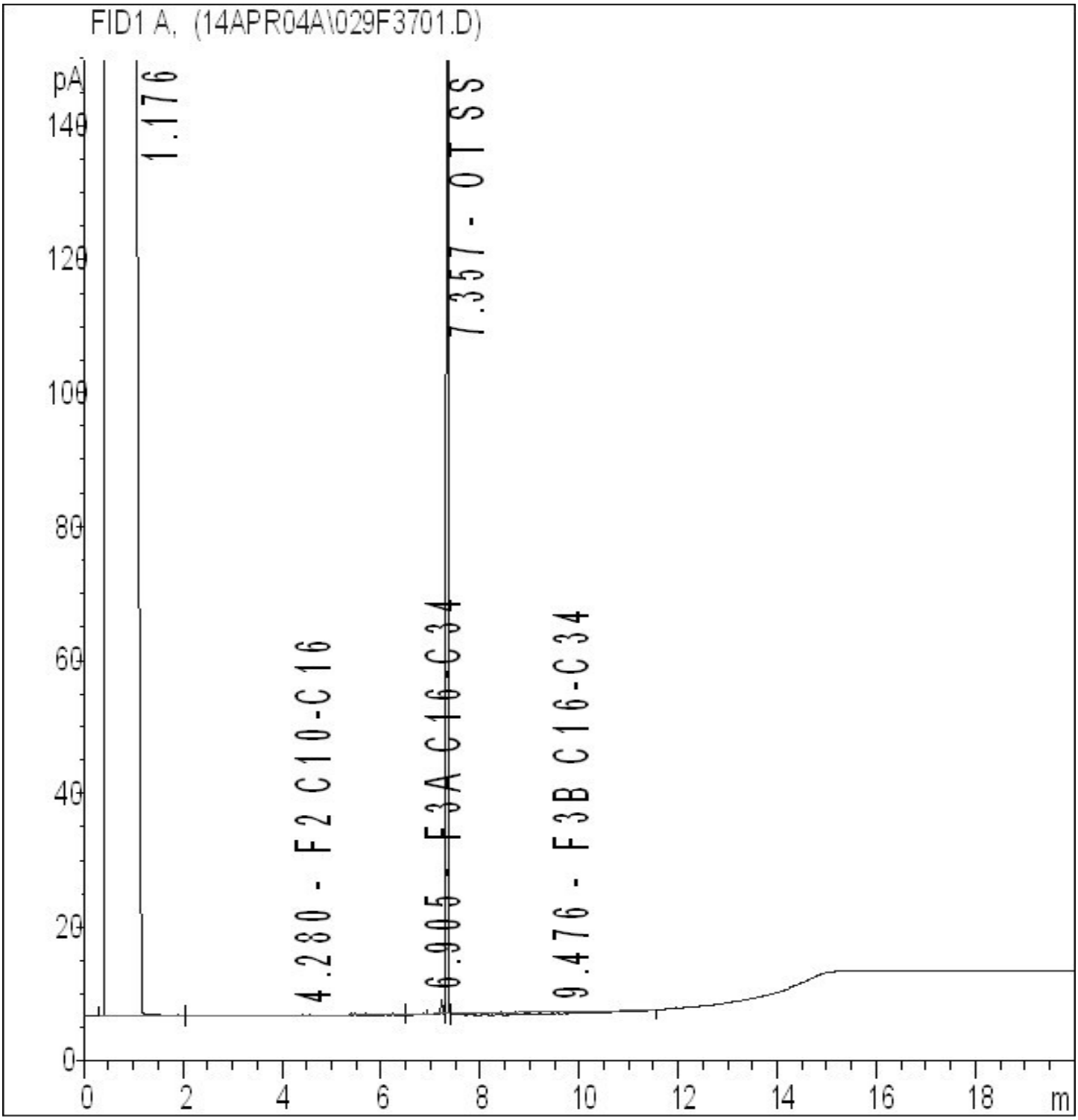
Report Date: 2014/04/08
Maxxam Job #: B451605
Maxxam Sample: VJ9592

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: BH14-101C SA5

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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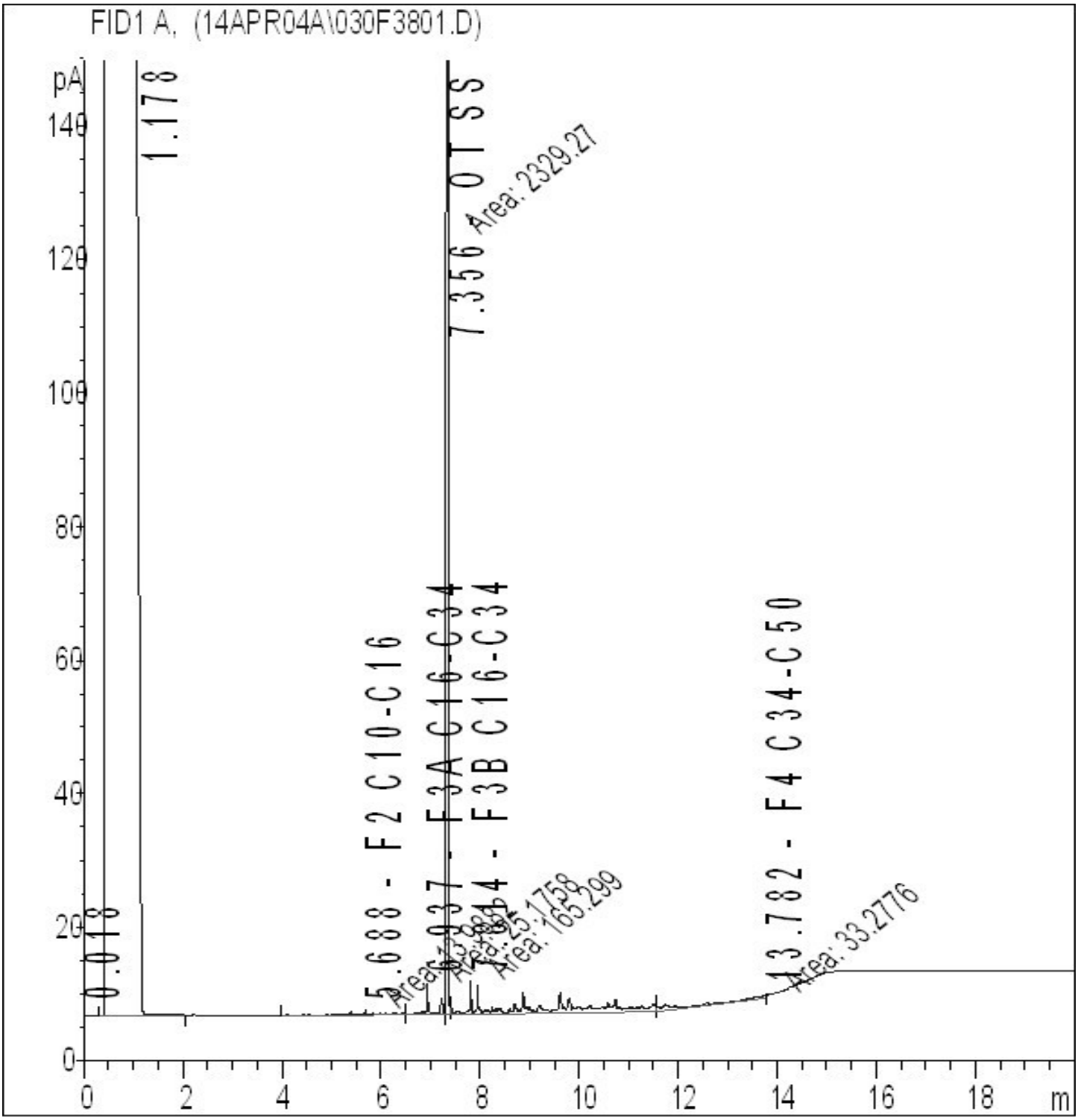
Report Date: 2014/04/08
Maxxam Job #: B451605
Maxxam Sample: VJ9593

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: TP14-4 SA1

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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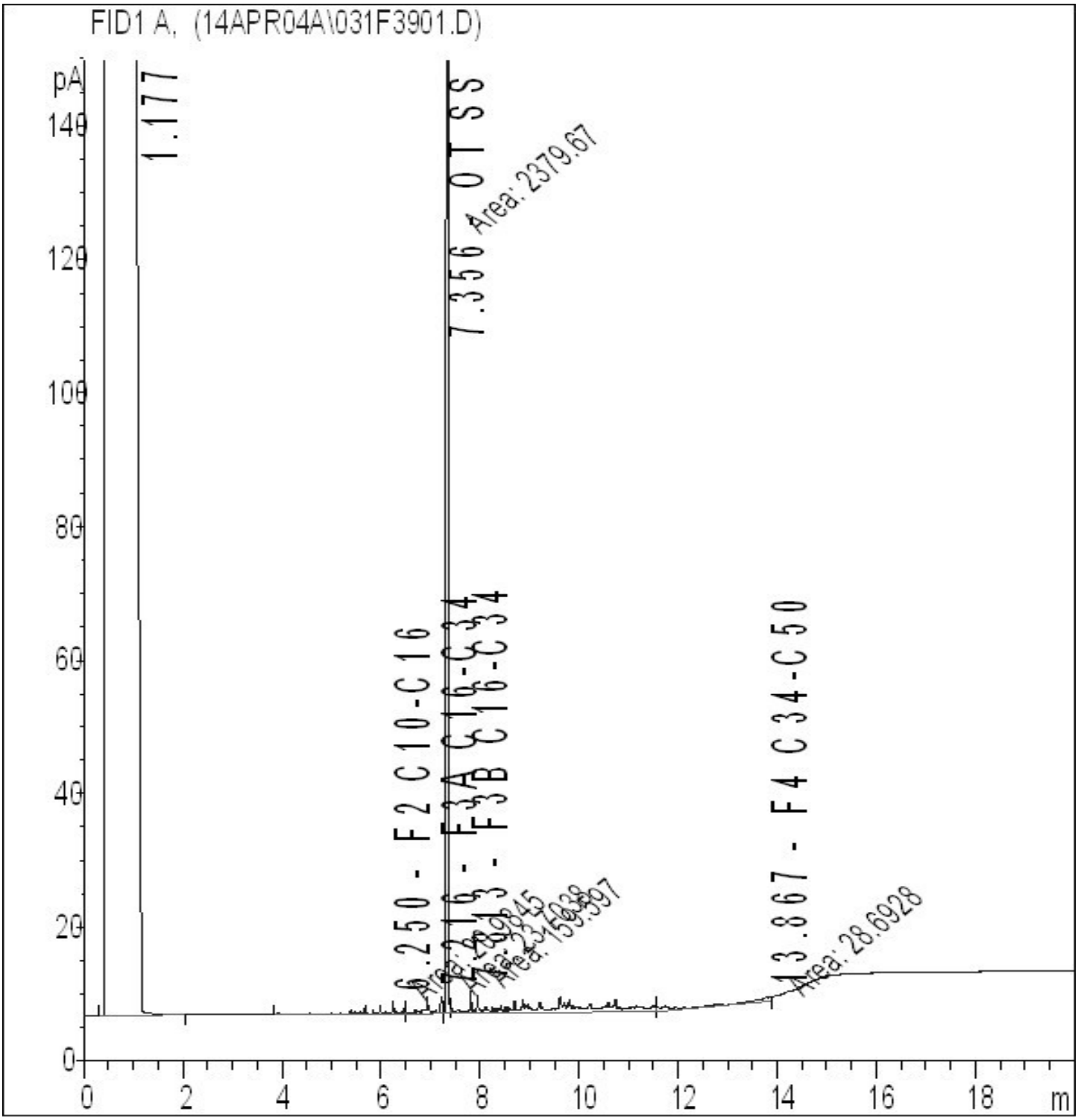
Report Date: 2014/04/08
Maxxam Job #: B451605
Maxxam Sample: VJ9594

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: TP14-9 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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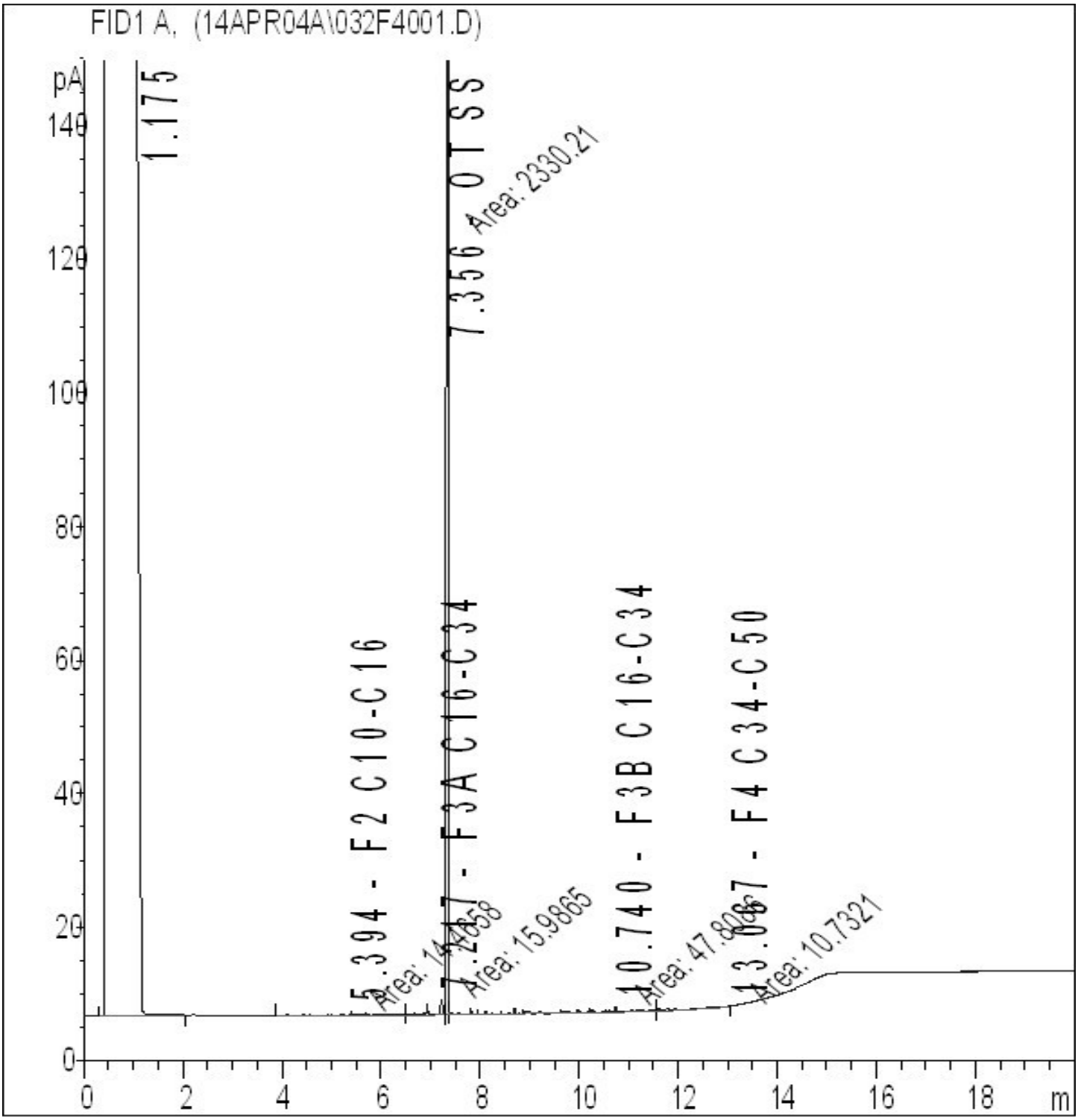
Report Date: 2014/04/08
Maxxam Job #: B451605
Maxxam Sample: VJ9595

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: TP14-5 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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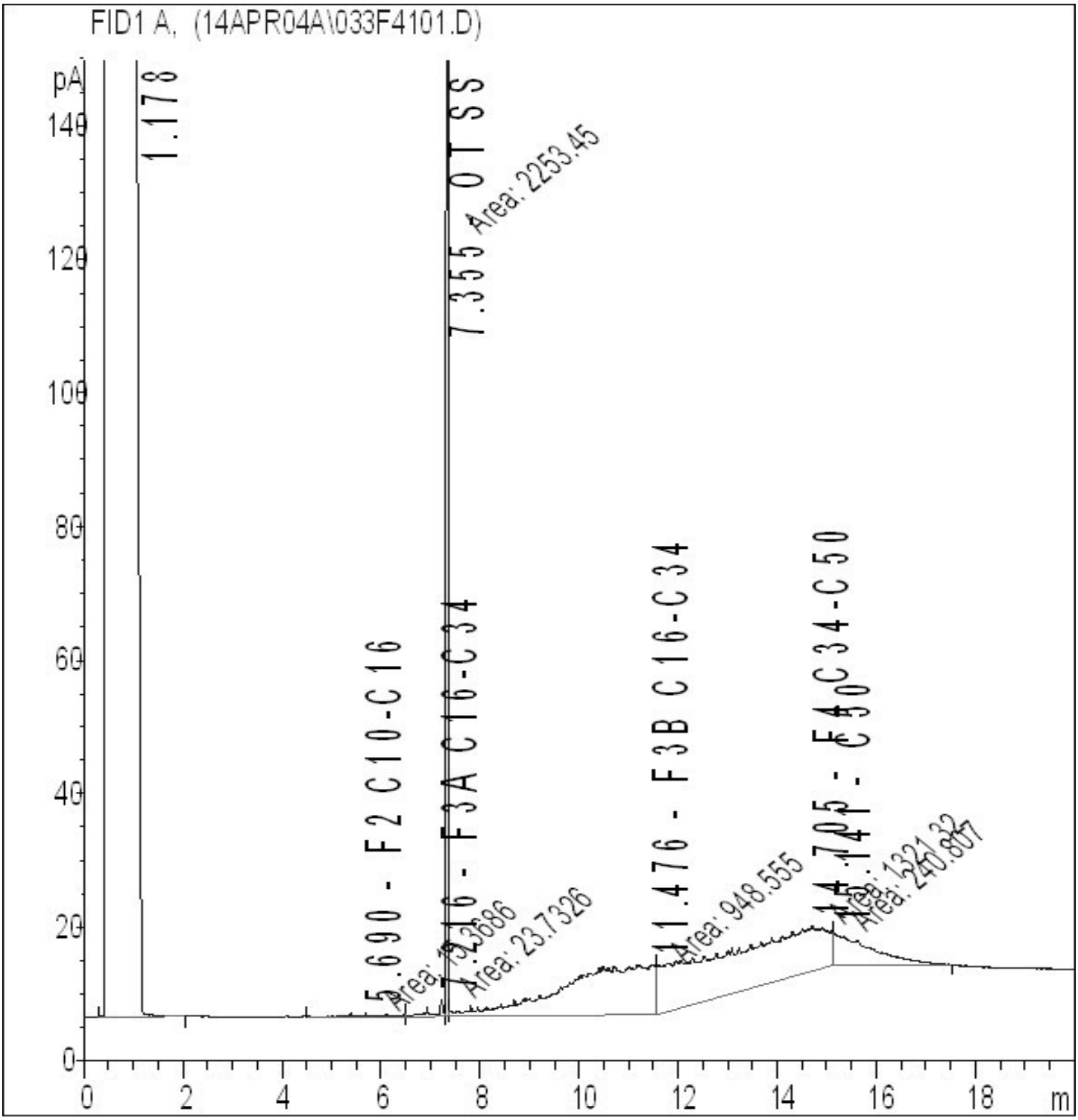
Report Date: 2014/04/08
Maxxam Job #: B451605
Maxxam Sample: VJ9596

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: TP14-10 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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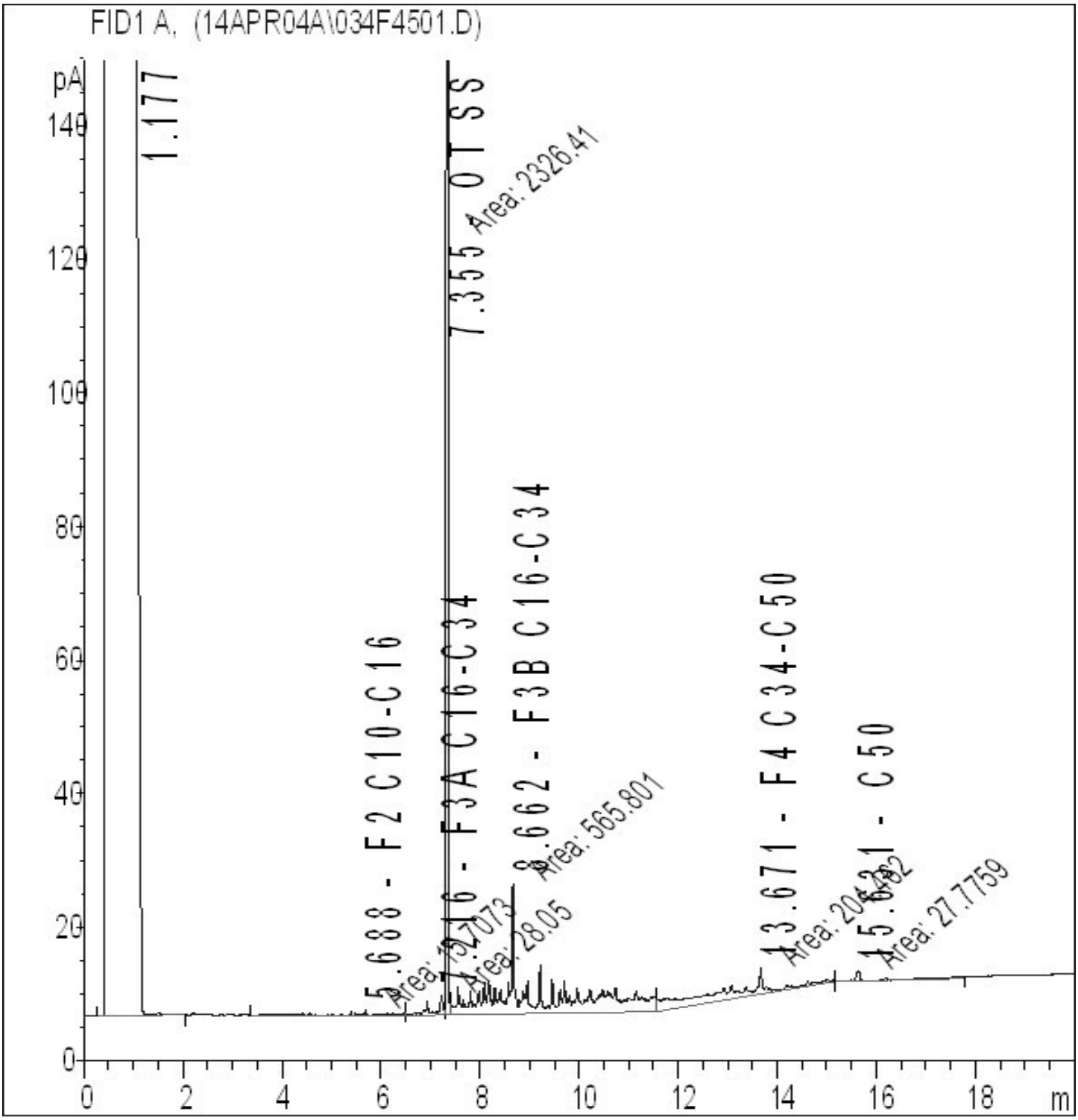
Report Date: 2014/04/08
Maxxam Job #: B451605
Maxxam Sample: VJ9597

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: TP14-10 SA2A

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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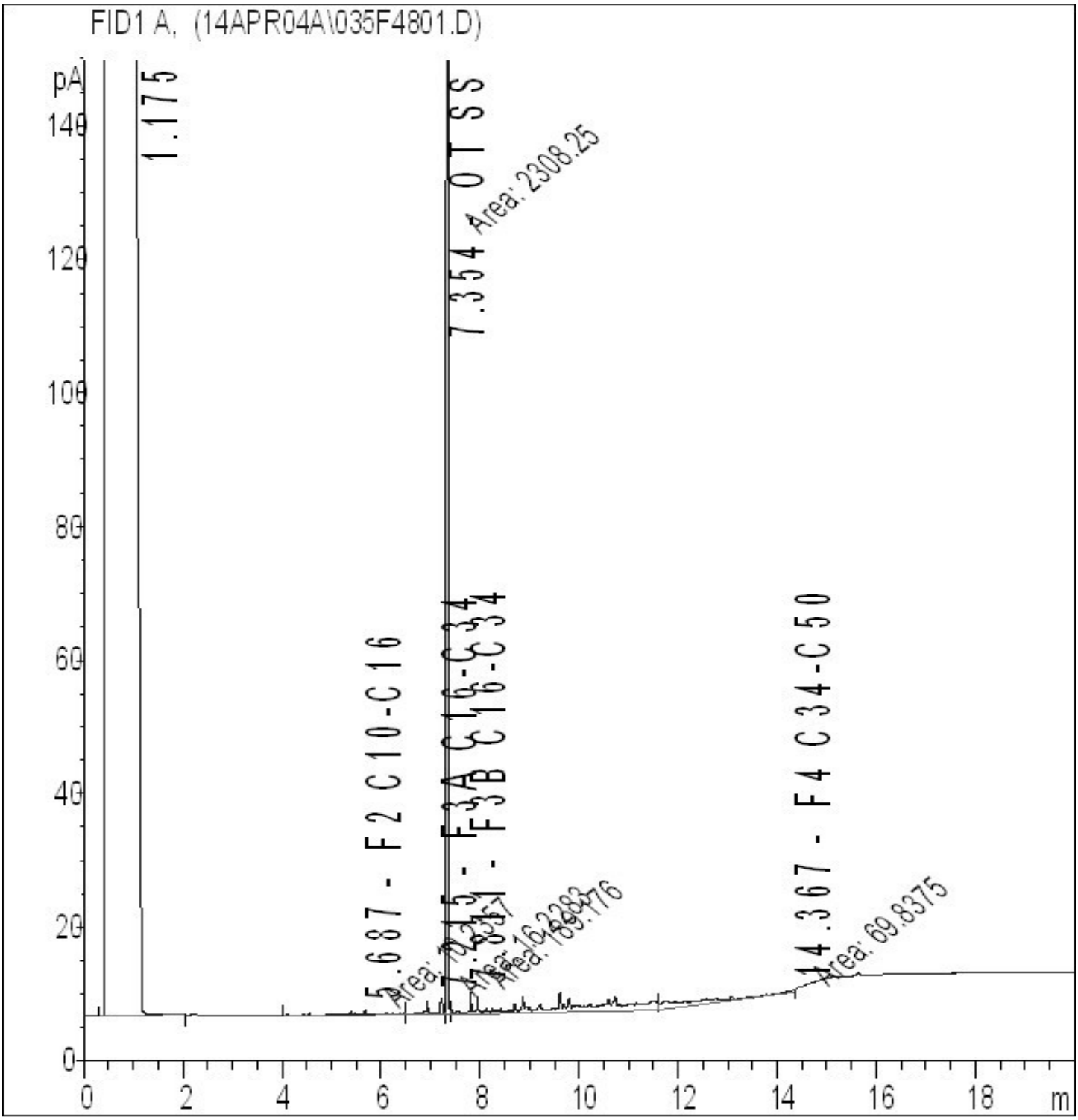
Report Date: 2014/04/08
Maxxam Job #: B451605
Maxxam Sample: VJ9597 Lab-Dup

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: TP14-10 SA2A

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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Maxxam
A Bureau Veritas Group Company

Success Through Science®

Your Project #: 1525113

Attention:Maria Staneva

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Your C.O.C. #: 505210-01-01, 505797-01-01, 505797-02-01

Report Date: 2015/03/26
Report #: R3373376
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B549828
Received: 2015/03/20, 14:59

Sample Matrix: Soil
Samples Received: 22

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	20	N/A	2015/03/25	CAM SOP-00301	EPA 8270D m
Methylnaphthalene Sum (1)	2	N/A	2015/03/26	CAM SOP-00301	EPA 8270D m
Strong Acid Leachable Metals by ICPMS (1)	2	2015/03/24	2015/03/24	CAM SOP-00447	EPA 6020A m
Strong Acid Leachable Metals by ICPMS (1)	20	2015/03/25	2015/03/25	CAM SOP-00447	EPA 6020A m
Moisture (1)	2	N/A	2015/03/23	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture (1)	20	N/A	2015/03/24	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	15	2015/03/23	2015/03/23	CAM SOP-00318	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM) (1)	7	2015/03/23	2015/03/24	CAM SOP-00318	EPA 8270D m

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 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.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga

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.maxxam.ca

Your Project #: 1525113

Attention:Maria Staneva

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Your C.O.C. #: 505210-01-01, 505797-01-01, 505797-02-01

Report Date: 2015/03/26
Report #: R3373376
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B549828
Received: 2015/03/20, 14:59

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573
==========
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Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		ZY5708	ZY5709	ZY5710	ZY5711	ZY5712		
Sampling Date		2015/03/16	2015/03/16	2015/03/17	2015/03/17	2015/03/16		
COC Number		505210-01-01	505210-01-01	505210-01-01	505210-01-01	505210-01-01		
	Units	**BH15-100 SA1**	**BH15-100 SA2**	**BH15-101 SA5**	**BH15-101 SA9**	**BH15-102 SA3**	**RDL**	**QC Batch**
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	1.3	<0.20	0.26	0.20	3959405
Acid Extractable Arsenic (As)	ug/g	<1.0	1.3	3.1	1.8	1.4	1.0	3959405
Acid Extractable Barium (Ba)	ug/g	23	140	170	210	220	0.50	3959405
Acid Extractable Beryllium (Be)	ug/g	0.21	0.43	0.41	0.64	0.59	0.20	3959405
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	<5.0	7.2	5.4	5.0	3959405
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	<0.10	<0.10	0.17	0.10	3959405
Acid Extractable Chromium (Cr)	ug/g	11	31	46	52	78	1.0	3959405
Acid Extractable Cobalt (Co)	ug/g	3.6	8.2	11	13	15	0.10	3959405
Acid Extractable Copper (Cu)	ug/g	5.4	19	31	28	38	0.50	3959405
Acid Extractable Lead (Pb)	ug/g	1.9	4.3	230	7.1	40	1.0	3959405
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	0.88	<0.50	<0.50	0.50	3959405
Acid Extractable Nickel (Ni)	ug/g	6.5	18	26	28	43	0.50	3959405
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3959405
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3959405
Acid Extractable Thallium (Tl)	ug/g	<0.050	0.17	0.21	0.29	0.31	0.050	3959405
Acid Extractable Uranium (U)	ug/g	0.87	0.57	0.66	0.66	0.59	0.050	3959405
Acid Extractable Vanadium (V)	ug/g	22	47	48	63	72	5.0	3959405
Acid Extractable Zinc (Zn)	ug/g	12	50	81	86	100	5.0	3959405

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		ZY5714	ZY5716	ZY5717	ZY5718	ZY5719		
Sampling Date		2015/03/16	2015/03/18	2015/03/18	2015/03/17	2015/03/17		
COC Number		505210-01-01	505210-01-01	505210-01-01	505797-01-01	505797-01-01		
	Units	**BH15-102 SA8**	**BH15-103 SA1**	**BH15-103 SA2**	**BH15-104 SA1**	**BH15-104 SA2**	**RDL**	**QC Batch**
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.53	<0.20	<0.20	<0.20	0.20	3959405
Acid Extractable Arsenic (As)	ug/g	2.9	5.7	1.5	<1.0	2.5	1.0	3959405
Acid Extractable Barium (Ba)	ug/g	190	96	250	15	190	0.50	3959405
Acid Extractable Beryllium (Be)	ug/g	0.63	0.50	0.63	<0.20	0.66	0.20	3959405
Acid Extractable Boron (B)	ug/g	6.1	5.0	<5.0	<5.0	5.3	5.0	3959405
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.14	<0.10	<0.10	<0.10	0.10	3959405
Acid Extractable Chromium (Cr)	ug/g	45	36	57	11	43	1.0	3959405
Acid Extractable Cobalt (Co)	ug/g	13	9.0	17	3.5	14	0.10	3959405
Acid Extractable Copper (Cu)	ug/g	28	19	31	3.1	26	0.50	3959405
Acid Extractable Lead (Pb)	ug/g	6.4	60	5.8	1.5	6.0	1.0	3959405
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	0.80	<0.50	<0.50	<0.50	0.50	3959405
Acid Extractable Nickel (Ni)	ug/g	28	20	34	7.0	27	0.50	3959405
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3959405
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3959405
Acid Extractable Thallium (Tl)	ug/g	0.23	0.20	0.30	<0.050	0.24	0.050	3959405
Acid Extractable Uranium (U)	ug/g	0.79	1.1	1.1	0.36	0.81	0.050	3959405
Acid Extractable Vanadium (V)	ug/g	63	40	71	14	65	5.0	3959405
Acid Extractable Zinc (Zn)	ug/g	75	77	84	14	73	5.0	3959405

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		ZY5720		ZY5721	ZY5721	ZY5722	ZY5723		
Sampling Date		2015/03/18		2015/03/18	2015/03/18	2015/03/17	2015/03/17		
COC Number		505797-01-01		505797-01-01	505797-01-01	505797-01-01	505797-01-01		
	Units	**BH15-105 SA3**	**QC Batch**	**BH15-105 SA4**	**BH15-105 SA4 Lab-Dup**	**BH15-106 SA2**	**BH15-106 SA3**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	0.73	3958488	<0.20	<0.20	0.44	<0.20	0.20	3959405
Acid Extractable Arsenic (As)	ug/g	2.0	3958488	1.8	1.7	2.7	3.0	1.0	3959405
Acid Extractable Barium (Ba)	ug/g	51	3958488	110	100	130	240	0.50	3959405
Acid Extractable Beryllium (Be)	ug/g	<0.20	3958488	0.33	0.34	0.55	0.77	0.20	3959405
Acid Extractable Boron (B)	ug/g	<5.0	3958488	<5.0	<5.0	6.1	6.6	5.0	3959405
Acid Extractable Cadmium (Cd)	ug/g	<0.10	3958488	<0.10	<0.10	0.23	<0.10	0.10	3959405
Acid Extractable Chromium (Cr)	ug/g	9.6	3958488	22	22	33	51	1.0	3959405
Acid Extractable Cobalt (Co)	ug/g	1.9	3958488	7.3	6.8	9.5	17	0.10	3959405
Acid Extractable Copper (Cu)	ug/g	6.5	3958488	14	14	17	32	0.50	3959405
Acid Extractable Lead (Pb)	ug/g	370	3958488	3.7	3.6	37	7.6	1.0	3959405
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	3958488	<0.50	<0.50	0.61	<0.50	0.50	3959405
Acid Extractable Nickel (Ni)	ug/g	5.8	3958488	13	14	17	34	0.50	3959405
Acid Extractable Selenium (Se)	ug/g	<0.50	3958488	<0.50	<0.50	0.59	<0.50	0.50	3959405
Acid Extractable Silver (Ag)	ug/g	<0.20	3958488	<0.20	<0.20	<0.20	<0.20	0.20	3959405
Acid Extractable Thallium (Tl)	ug/g	0.059	3958488	0.12	0.13	0.20	0.28	0.050	3959405
Acid Extractable Uranium (U)	ug/g	0.36	3958488	0.55	0.51	1.1	0.64	0.050	3959405
Acid Extractable Vanadium (V)	ug/g	13	3958488	40	38	44	74	5.0	3959405
Acid Extractable Zinc (Zn)	ug/g	54	3958488	39	36	87	86	5.0	3959405

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Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
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Sampler Initials: BM

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		ZY5724	ZY5725	ZY5726	ZY5727		ZY5728		
Sampling Date		2015/03/18	2015/03/18	2015/03/19	2015/03/19		2015/03/19		
COC Number		505797-01-01	505797-01-01	505797-01-01	505797-01-01		505797-02-01		
	Units	BH15-107 SA2	BH15-107 SA6	BH15-108 SA1	BH15-108 SA3	QC Batch	BH15-109 SA1	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	<0.20	3959405	<0.20	0.20	3958488
Acid Extractable Arsenic (As)	ug/g	1.2	<1.0	<1.0	1.8	3959405	<1.0	1.0	3958488
Acid Extractable Barium (Ba)	ug/g	35	150	46	160	3959405	30	0.50	3958488
Acid Extractable Beryllium (Be)	ug/g	0.23	0.39	0.25	0.41	3959405	0.20	0.20	3958488
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	<5.0	5.2	3959405	<5.0	5.0	3958488
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	<0.10	<0.10	3959405	<0.10	0.10	3958488
Acid Extractable Chromium (Cr)	ug/g	20	30	34	29	3959405	17	1.0	3958488
Acid Extractable Cobalt (Co)	ug/g	4.8	8.2	5.8	8.9	3959405	2.9	0.10	3958488
Acid Extractable Copper (Cu)	ug/g	7.5	18	20	19	3959405	5.7	0.50	3958488
Acid Extractable Lead (Pb)	ug/g	4.3	4.3	2.8	4.4	3959405	3.9	1.0	3958488
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	<0.50	0.96	3959405	<0.50	0.50	3958488
Acid Extractable Nickel (Ni)	ug/g	9.7	16	17	18	3959405	7.7	0.50	3958488
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	3959405	<0.50	0.50	3958488
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	3959405	<0.20	0.20	3958488
Acid Extractable Thallium (Tl)	ug/g	0.058	0.16	0.13	0.17	3959405	<0.050	0.050	3958488
Acid Extractable Uranium (U)	ug/g	0.72	0.63	0.58	0.97	3959405	0.87	0.050	3958488
Acid Extractable Vanadium (V)	ug/g	24	45	27	45	3959405	23	5.0	3958488
Acid Extractable Zinc (Zn)	ug/g	23	50	27	51	3959405	19	5.0	3958488

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Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
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O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		ZY5729	ZY5730	ZY5731		
Sampling Date		2015/03/19	2015/03/16	2015/03/17		
COC Number		505797-02-01	505797-02-01	505797-02-01		
	Units	BH15-109 SA2	DUP-2	DUP-4	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	0.20	3959405
Acid Extractable Arsenic (As)	ug/g	2.3	1.1	3.0	1.0	3959405
Acid Extractable Barium (Ba)	ug/g	160	380	250	0.50	3959405
Acid Extractable Beryllium (Be)	ug/g	0.46	0.82	0.77	0.20	3959405
Acid Extractable Boron (B)	ug/g	<5.0	5.0	6.9	5.0	3959405
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.11	<0.10	0.10	3959405
Acid Extractable Chromium (Cr)	ug/g	31	95	55	1.0	3959405
Acid Extractable Cobalt (Co)	ug/g	9.4	22	14	0.10	3959405
Acid Extractable Copper (Cu)	ug/g	22	52	30	0.50	3959405
Acid Extractable Lead (Pb)	ug/g	4.7	6.8	7.2	1.0	3959405
Acid Extractable Molybdenum (Mo)	ug/g	0.62	<0.50	<0.50	0.50	3959405
Acid Extractable Nickel (Ni)	ug/g	20	52	32	0.50	3959405
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	0.50	3959405
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	0.20	3959405
Acid Extractable Thallium (Tl)	ug/g	0.18	0.48	0.32	0.050	3959405
Acid Extractable Uranium (U)	ug/g	0.58	0.86	0.65	0.050	3959405
Acid Extractable Vanadium (V)	ug/g	51	97	75	5.0	3959405
Acid Extractable Zinc (Zn)	ug/g	51	130	90	5.0	3959405

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Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
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Sampler Initials: BM

O.REG 153 PAHS (SOIL)

Maxxam ID		ZY5708	ZY5708	ZY5709	ZY5710	ZY5711	ZY5712		
Sampling Date		2015/03/16	2015/03/16	2015/03/16	2015/03/17	2015/03/17	2015/03/16		
COC Number		505210-01-01	505210-01-01	505210-01-01	505210-01-01	505210-01-01	505210-01-01		
	Units	BH15-100 SA1	BH15-100 SA1 Lab-Dup	BH15-100 SA2	BH15-101 SA5	BH15-101 SA9	BH15-102 SA3	RDL	QC Batch
Inorganics									
Moisture	%	8.6		23	22	24	26	1.0	3958425
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	<0.0071		<0.0071	0.071	<0.0071	0.035	0.0071	3956472
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	0.089	<0.0050	0.066	0.0050	3957424
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	0.059	<0.0050	0.090	0.0050	3957424
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.24	<0.0050	0.15	0.0050	3957424
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.58	<0.0050	0.61	0.0050	3957424
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.48	<0.0050	0.65	0.0050	3957424
Benzo(b/j)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.60	<0.0050	0.76	0.0050	3957424
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	<0.0050	0.28	<0.0050	0.38	0.0050	3957424
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.21	<0.0050	0.26	0.0050	3957424
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	0.51	<0.0050	0.47	0.0050	3957424
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.068	<0.0050	0.092	0.0050	3957424
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	1.3	<0.0050	1.2	0.0050	3957424
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	0.093	<0.0050	0.067	0.0050	3957424
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.32	<0.0050	0.45	0.0050	3957424
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.034	<0.0050	0.017	0.0050	3957424
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.037	<0.0050	0.018	0.0050	3957424
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.032	<0.0050	0.032	0.0050	3957424
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	0.77	<0.0050	0.47	0.0050	3957424
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	1.0	<0.0050	0.97	0.0050	3957424
Surrogate Recovery (%)									
D10-Anthracene	%	101	104	107	94	103	101		3957424
D14-Terphenyl (FS)	%	74	75	79	77	76	81		3957424
D8-Acenaphthylene	%	85	87	86	87	88	89		3957424

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Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
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Sampler Initials: BM

O.REG 153 PAHS (SOIL)

Maxxam ID		ZY5714	ZY5716		ZY5717	ZY5718		
Sampling Date		2015/03/16	2015/03/18		2015/03/18	2015/03/17		
COC Number		505210-01-01	505210-01-01		505210-01-01	505797-01-01		
	Units	**BH15-102 SA8**	**BH15-103 SA1**	**QC Batch**	**BH15-103 SA2**	**BH15-104 SA1**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	20	17	3958425	23	9.9	1.0	3958241
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	<0.0071	3956472	<0.0071	<0.0071	0.0071	3956472
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	<0.0050	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Acenaphthylene	ug/g	<0.0050	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Anthracene	ug/g	<0.0050	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Benzo(a)anthracene	ug/g	<0.0050	0.020	3957424	<0.0050	<0.0050	0.0050	3957424
Benzo(a)pyrene	ug/g	<0.0050	0.020	3957424	<0.0050	<0.0050	0.0050	3957424
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.026	3957424	<0.0050	<0.0050	0.0050	3957424
Benzo(g,h,i)perylene	ug/g	<0.0050	0.014	3957424	<0.0050	<0.0050	0.0050	3957424
Benzo(k)fluoranthene	ug/g	<0.0050	0.0090	3957424	<0.0050	<0.0050	0.0050	3957424
Chrysene	ug/g	<0.0050	0.016	3957424	<0.0050	<0.0050	0.0050	3957424
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Fluoranthene	ug/g	<0.0050	0.041	3957424	<0.0050	<0.0050	0.0050	3957424
Fluorene	ug/g	<0.0050	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.015	3957424	<0.0050	<0.0050	0.0050	3957424
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Naphthalene	ug/g	<0.0050	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Phenanthrene	ug/g	<0.0050	0.017	3957424	<0.0050	<0.0050	0.0050	3957424
Pyrene	ug/g	<0.0050	0.033	3957424	<0.0050	<0.0050	0.0050	3957424
Surrogate Recovery (%)								
D10-Anthracene	%	101	103	3957424	100	102		3957424
D14-Terphenyl (FS)	%	76	77	3957424	76	77		3957424
D8-Acenaphthylene	%	87	89	3957424	87	89		3957424

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Maxxam Job #: B549828
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O.REG 153 PAHS (SOIL)

Maxxam ID		ZY5719		ZY5720		ZY5721	ZY5722		
Sampling Date		2015/03/17		2015/03/18		2015/03/18	2015/03/17		
COC Number		505797-01-01		505797-01-01		505797-01-01	505797-01-01		
	Units	**BH15-104 SA2**	**QC Batch**	**BH15-105 SA3**	**QC Batch**	**BH15-105 SA4**	**BH15-106 SA2**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	22	3958241	23	3957448	21	22	1.0	3958241
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	3956472	0.047	3956472	<0.0071	0.011	0.0071	3956472
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	<0.0050	3957767	0.027	3957424	<0.0050	0.0066	0.0050	3957424
Acenaphthylene	ug/g	<0.0050	3957767	0.028	3957424	<0.0050	0.018	0.0050	3957424
Anthracene	ug/g	<0.0050	3957767	0.064	3957424	<0.0050	0.024	0.0050	3957424
Benzo(a)anthracene	ug/g	<0.0050	3957767	0.22	3957424	<0.0050	0.11	0.0050	3957424
Benzo(a)pyrene	ug/g	<0.0050	3957767	0.19	3957424	<0.0050	0.11	0.0050	3957424
Benzo(b/j)fluoranthene	ug/g	<0.0050	3957767	0.23	3957424	<0.0050	0.16	0.0050	3957424
Benzo(g,h,i)perylene	ug/g	<0.0050	3957767	0.13	3957424	<0.0050	0.076	0.0050	3957424
Benzo(k)fluoranthene	ug/g	<0.0050	3957767	0.085	3957424	<0.0050	0.055	0.0050	3957424
Chrysene	ug/g	<0.0050	3957767	0.18	3957424	<0.0050	0.12	0.0050	3957424
Dibenz(a,h)anthracene	ug/g	<0.0050	3957767	0.028	3957424	<0.0050	0.017	0.0050	3957424
Fluoranthene	ug/g	<0.0050	3957767	0.40	3957424	<0.0050	0.28	0.0050	3957424
Fluorene	ug/g	<0.0050	3957767	0.030	3957424	<0.0050	0.011	0.0050	3957424
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	3957767	0.14	3957424	<0.0050	0.089	0.0050	3957424
1-Methylnaphthalene	ug/g	<0.0050	3957767	0.018	3957424	<0.0050	0.0060	0.0050	3957424
2-Methylnaphthalene	ug/g	<0.0050	3957767	0.028	3957424	<0.0050	0.0054	0.0050	3957424
Naphthalene	ug/g	<0.0050	3957767	0.061	3957424	<0.0050	0.0060	0.0050	3957424
Phenanthrene	ug/g	<0.0050	3957767	0.25	3957424	<0.0050	0.16	0.0050	3957424
Pyrene	ug/g	<0.0050	3957767	0.33	3957424	<0.0050	0.22	0.0050	3957424
Surrogate Recovery (%)									
D10-Anthracene	%	87	3957767	95	3957424	102	97		3957424
D14-Terphenyl (FS)	%	76	3957767	75	3957424	75	75		3957424
D8-Acenaphthylene	%	78	3957767	87	3957424	85	87		3957424

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O.REG 153 PAHS (SOIL)

Maxxam ID		ZY5723	ZY5724	ZY5725		ZY5726	ZY5726		
Sampling Date		2015/03/17	2015/03/18	2015/03/18		2015/03/19	2015/03/19		
COC Number		505797-01-01	505797-01-01	505797-01-01		505797-01-01	505797-01-01		
	Units	BH15-106 SA3	BH15-107 SA2	BH15-107 SA6	QC Batch	BH15-108 SA1	BH15-108 SA1 Lab-Dup	RDL	QC Batch
Inorganics									
Moisture	%	22	17	22	3958241	20	20	1.0	3958425
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	<0.0071	<0.0071	3956472	<0.0071		0.0071	3956472
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	3957424	<0.0050		0.0050	3957767
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	3957424	<0.0050		0.0050	3957767
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	3957424	<0.0050		0.0050	3957767
Benzo(a)anthracene	ug/g	<0.0050	0.0070	<0.0050	3957424	0.012		0.0050	3957767
Benzo(a)pyrene	ug/g	<0.0050	0.0080	<0.0050	3957424	0.011		0.0050	3957767
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.011	<0.0050	3957424	0.016		0.0050	3957767
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0059	<0.0050	3957424	0.0076		0.0050	3957767
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	3957424	0.0052		0.0050	3957767
Chrysene	ug/g	<0.0050	0.0064	<0.0050	3957424	0.0093		0.0050	3957767
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	3957424	<0.0050		0.0050	3957767
Fluoranthene	ug/g	<0.0050	0.013	<0.0050	3957424	0.024		0.0050	3957767
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	3957424	<0.0050		0.0050	3957767
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0064	<0.0050	3957424	0.0070		0.0050	3957767
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	3957424	<0.0050		0.0050	3957767
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	3957424	<0.0050		0.0050	3957767
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	3957424	<0.0050		0.0050	3957767
Phenanthrene	ug/g	<0.0050	0.0064	<0.0050	3957424	0.015		0.0050	3957767
Pyrene	ug/g	<0.0050	0.011	<0.0050	3957424	0.023		0.0050	3957767
Surrogate Recovery (%)									
D10-Anthracene	%	108	102	102	3957424	87			3957767
D14-Terphenyl (FS)	%	80	76	77	3957424	76			3957767
D8-Acenaphthylene	%	90	87	85	3957424	82			3957767

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

O.REG 153 PAHS (SOIL)

Maxxam ID		ZY5727		ZY5728		ZY5729	ZY5730		
Sampling Date		2015/03/19		2015/03/19		2015/03/19	2015/03/16		
COC Number		505797-01-01		505797-02-01		505797-02-01	505797-02-01		
	Units	BH15-108 SA3	QC Batch	BH15-109 SA1	QC Batch	BH15-109 SA2	DUP-2	RDL	QC Batch
Inorganics									
Moisture	%	25	3958241	19	3957448	23	26	1.0	3958241
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	3956472	<0.0071	3956472	<0.0071	<0.0071	0.0071	3956472
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Acenaphthylene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Anthracene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Benzo(a)anthracene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Benzo(a)pyrene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Benzo(b/j)fluoranthene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Benzo(g,h,i)perylene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Benzo(k)fluoranthene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Chrysene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Dibenz(a,h)anthracene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Fluoranthene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Fluorene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
1-Methylnaphthalene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
2-Methylnaphthalene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Naphthalene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Phenanthrene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Pyrene	ug/g	<0.0050	3957424	<0.0050	3957424	<0.0050	<0.0050	0.0050	3957424
Surrogate Recovery (%)									
D10-Anthracene	%	101	3957424	97	3957424	105	103		3957424
D14-Terphenyl (FS)	%	78	3957424	76	3957424	76	76		3957424
D8-Acenaphthylene	%	87	3957424	89	3957424	90	84		3957424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

O.REG 153 PAHS (SOIL)

Maxxam ID		ZY5731		
Sampling Date		2015/03/17		
COC Number		505797-02-01		
	Units	DUP-4	RDL	QC Batch
Inorganics				
Moisture	%	21	1.0	3958241
Calculated Parameters				
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.0071	3956472
Polyaromatic Hydrocarbons				
Acenaphthene	ug/g	<0.0050	0.0050	3957424
Acenaphthylene	ug/g	<0.0050	0.0050	3957424
Anthracene	ug/g	<0.0050	0.0050	3957424
Benzo(a)anthracene	ug/g	<0.0050	0.0050	3957424
Benzo(a)pyrene	ug/g	<0.0050	0.0050	3957424
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.0050	3957424
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	3957424
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	3957424
Chrysene	ug/g	<0.0050	0.0050	3957424
Dibenz(a,h)anthracene	ug/g	<0.0050	0.0050	3957424
Fluoranthene	ug/g	<0.0050	0.0050	3957424
Fluorene	ug/g	<0.0050	0.0050	3957424
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	3957424
1-Methylnaphthalene	ug/g	<0.0050	0.0050	3957424
2-Methylnaphthalene	ug/g	<0.0050	0.0050	3957424
Naphthalene	ug/g	<0.0050	0.0050	3957424
Phenanthrene	ug/g	<0.0050	0.0050	3957424
Pyrene	ug/g	<0.0050	0.0050	3957424
Surrogate Recovery (%)				
D10-Anthracene	%	102		3957424
D14-Terphenyl (FS)	%	77		3957424
D8-Acenaphthylene	%	88		3957424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

TEST SUMMARY

Maxxam ID: ZY5708
Sample ID: BH15-100 SA1
Matrix: Soil

Collected: 2015/03/16
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958425	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/23	Darryl Tiller

Maxxam ID: ZY5708 Dup
Sample ID: BH15-100 SA1
Matrix: Soil

Collected: 2015/03/16
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/23	Darryl Tiller

Maxxam ID: ZY5709
Sample ID: BH15-100 SA2
Matrix: Soil

Collected: 2015/03/16
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958425	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/23	Darryl Tiller

Maxxam ID: ZY5710
Sample ID: BH15-101 SA5
Matrix: Soil

Collected: 2015/03/17
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958425	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/23	Darryl Tiller

Maxxam ID: ZY5711
Sample ID: BH15-101 SA9
Matrix: Soil

Collected: 2015/03/17
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958425	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/23	Darryl Tiller

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Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

TEST SUMMARY

Maxxam ID: ZY5712
Sample ID: BH15-102 SA3
Matrix: Soil

Collected: 2015/03/16
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958425	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/23	Darryl Tiller

Maxxam ID: ZY5714
Sample ID: BH15-102 SA8
Matrix: Soil

Collected: 2015/03/16
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958425	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/23	Darryl Tiller

Maxxam ID: ZY5716
Sample ID: BH15-103 SA1
Matrix: Soil

Collected: 2015/03/18
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958425	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/23	Darryl Tiller

Maxxam ID: ZY5717
Sample ID: BH15-103 SA2
Matrix: Soil

Collected: 2015/03/18
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958241	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/23	Darryl Tiller

Maxxam ID: ZY5718
Sample ID: BH15-104 SA1
Matrix: Soil

Collected: 2015/03/17
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958241	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/23	Darryl Tiller

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Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

TEST SUMMARY

Maxxam ID: ZY5719
Sample ID: BH15-104 SA2
Matrix: Soil

Collected: 2015/03/17
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/26	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958241	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957767	2015/03/23	2015/03/24	Darryl Tiller

Maxxam ID: ZY5720
Sample ID: BH15-105 SA3
Matrix: Soil

Collected: 2015/03/18
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3958488	2015/03/24	2015/03/24	Grace Bu
Moisture	BAL	3957448	N/A	2015/03/23	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/23	Darryl Tiller

Maxxam ID: ZY5721
Sample ID: BH15-105 SA4
Matrix: Soil

Collected: 2015/03/18
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958241	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/23	Darryl Tiller

Maxxam ID: ZY5721 Dup
Sample ID: BH15-105 SA4
Matrix: Soil

Collected: 2015/03/18
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri

Maxxam ID: ZY5722
Sample ID: BH15-106 SA2
Matrix: Soil

Collected: 2015/03/17
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958241	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/23	Darryl Tiller

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Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

TEST SUMMARY

Maxxam ID: ZY5723
Sample ID: BH15-106 SA3
Matrix: Soil

Collected: 2015/03/17
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958241	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/23	Darryl Tiller

Maxxam ID: ZY5724
Sample ID: BH15-107 SA2
Matrix: Soil

Collected: 2015/03/18
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958241	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/23	Darryl Tiller

Maxxam ID: ZY5725
Sample ID: BH15-107 SA6
Matrix: Soil

Collected: 2015/03/18
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958241	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/23	Darryl Tiller

Maxxam ID: ZY5726
Sample ID: BH15-108 SA1
Matrix: Soil

Collected: 2015/03/19
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/26	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958425	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957767	2015/03/23	2015/03/24	Darryl Tiller

Maxxam ID: ZY5726 Dup
Sample ID: BH15-108 SA1
Matrix: Soil

Collected: 2015/03/19
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	3958425	N/A	2015/03/24	Shivani Desai

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Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

TEST SUMMARY

Maxxam ID: ZY5727
Sample ID: BH15-108 SA3
Matrix: Soil

Collected: 2015/03/19
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958241	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/24	Darryl Tiller

Maxxam ID: ZY5728
Sample ID: BH15-109 SA1
Matrix: Soil

Collected: 2015/03/19
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3958488	2015/03/24	2015/03/24	Grace Bu
Moisture	BAL	3957448	N/A	2015/03/23	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/24	Darryl Tiller

Maxxam ID: ZY5729
Sample ID: BH15-109 SA2
Matrix: Soil

Collected: 2015/03/19
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958241	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/24	Darryl Tiller

Maxxam ID: ZY5730
Sample ID: DUP-2
Matrix: Soil

Collected: 2015/03/16
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958241	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/24	Darryl Tiller

Maxxam ID: ZY5731
Sample ID: DUP-4
Matrix: Soil

Collected: 2015/03/17
Shipped:
Received: 2015/03/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3956472	N/A	2015/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	3959405	2015/03/25	2015/03/25	Viviana Canzonieri
Moisture	BAL	3958241	N/A	2015/03/24	Shivani Desai
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3957424	2015/03/23	2015/03/24	Darryl Tiller

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Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

GENERAL COMMENTS

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

Package 1	7.7°C

Results relate only to the items tested.

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Maxxam Job #: B549828
Report Date: 2015/03/26

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3957424	D10-Anthracene	2015/03/23	103	50 - 130	102	50 - 130	109	%		
3957424	D14-Terphenyl (FS)	2015/03/23	79	50 - 130	77	50 - 130	81	%		
3957424	D8-Acenaphthylene	2015/03/23	90	50 - 130	89	50 - 130	94	%		
3957767	D10-Anthracene	2015/03/23	89	50 - 130	89	50 - 130	87	%		
3957767	D14-Terphenyl (FS)	2015/03/23	79	50 - 130	77	50 - 130	74	%		
3957767	D8-Acenaphthylene	2015/03/23	84	50 - 130	84	50 - 130	81	%		
3957424	1-Methylnaphthalene	2015/03/23	103	50 - 130	103	50 - 130	<0.0050	ug/g	NC	40
3957424	2-Methylnaphthalene	2015/03/23	100	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
3957424	Acenaphthene	2015/03/23	92	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
3957424	Acenaphthylene	2015/03/23	93	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
3957424	Anthracene	2015/03/23	97	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
3957424	Benzo(a)anthracene	2015/03/23	97	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
3957424	Benzo(a)pyrene	2015/03/23	91	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
3957424	Benzo(b/j)fluoranthene	2015/03/23	88	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
3957424	Benzo(g,h,i)perylene	2015/03/23	87	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
3957424	Benzo(k)fluoranthene	2015/03/23	85	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
3957424	Chrysene	2015/03/23	99	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
3957424	Dibenz(a,h)anthracene	2015/03/23	71	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
3957424	Fluoranthene	2015/03/23	94	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
3957424	Fluorene	2015/03/23	90	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
3957424	Indeno(1,2,3-cd)pyrene	2015/03/23	100	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
3957424	Naphthalene	2015/03/23	85	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
3957424	Phenanthrene	2015/03/23	90	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
3957424	Pyrene	2015/03/23	95	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
3957448	Moisture	2015/03/23							1.5	20
3957767	1-Methylnaphthalene	2015/03/24	88	50 - 130	92	50 - 130	<0.0050	ug/g	NC (1)	40
3957767	2-Methylnaphthalene	2015/03/24	90	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
3957767	Acenaphthene	2015/03/24	85	50 - 130	88	50 - 130	<0.0050	ug/g	26	40
3957767	Acenaphthylene	2015/03/24	82	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
3957767	Anthracene	2015/03/24	82	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
3957767	Benzo(a)anthracene	2015/03/24	93	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
3957767	Benzo(a)pyrene	2015/03/24	88	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40

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Maxxam Job #: B549828
Report Date: 2015/03/26

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3957767	Benzo(b/j)fluoranthene	2015/03/24	91	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
3957767	Benzo(g,h,i)perylene	2015/03/24	73	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
3957767	Benzo(k)fluoranthene	2015/03/24	86	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
3957767	Chrysene	2015/03/24	92	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
3957767	Dibenz(a,h)anthracene	2015/03/24	69	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40
3957767	Fluoranthene	2015/03/24	91	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
3957767	Fluorene	2015/03/24	82	50 - 130	84	50 - 130	<0.0050	ug/g	22	40
3957767	Indeno(1,2,3-cd)pyrene	2015/03/24	86	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
3957767	Naphthalene	2015/03/24	81	50 - 130	84	50 - 130	<0.0050	ug/g	NC (1)	40
3957767	Phenanthrene	2015/03/24	84	50 - 130	86	50 - 130	<0.0050	ug/g	34	40
3957767	Pyrene	2015/03/24	95	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
3958241	Moisture	2015/03/24							0.69	20
3958425	Moisture	2015/03/24							0.50	20
3958488	Acid Extractable Antimony (Sb)	2015/03/24	92	75 - 125	105	80 - 120	<0.20	ug/g	NC	30
3958488	Acid Extractable Arsenic (As)	2015/03/24	99	75 - 125	105	80 - 120	<1.0	ug/g	NC	30
3958488	Acid Extractable Barium (Ba)	2015/03/24	NC	75 - 125	100	80 - 120	<0.50	ug/g	1.8	30
3958488	Acid Extractable Beryllium (Be)	2015/03/24	95	75 - 125	96	80 - 120	<0.20	ug/g	NC	30
3958488	Acid Extractable Boron (B)	2015/03/24	86	75 - 125	97	80 - 120	<5.0	ug/g	NC	30
3958488	Acid Extractable Cadmium (Cd)	2015/03/24	104	75 - 125	104	80 - 120	<0.10	ug/g	NC	30
3958488	Acid Extractable Chromium (Cr)	2015/03/24	NC	75 - 125	97	80 - 120	<1.0	ug/g	0.18	30
3958488	Acid Extractable Cobalt (Co)	2015/03/24	97	75 - 125	98	80 - 120	<0.10	ug/g	0.31	30
3958488	Acid Extractable Copper (Cu)	2015/03/24	NC	75 - 125	101	80 - 120	<0.50	ug/g	1.2	30
3958488	Acid Extractable Lead (Pb)	2015/03/24	NC	75 - 125	103	80 - 120	<1.0	ug/g	1.4	30
3958488	Acid Extractable Molybdenum (Mo)	2015/03/24	103	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
3958488	Acid Extractable Nickel (Ni)	2015/03/24	NC	75 - 125	98	80 - 120	<0.50	ug/g	0.71	30
3958488	Acid Extractable Selenium (Se)	2015/03/24	99	75 - 125	105	80 - 120	<0.50	ug/g	NC	30
3958488	Acid Extractable Silver (Ag)	2015/03/24	102	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
3958488	Acid Extractable Thallium (Tl)	2015/03/24	100	75 - 125	102	80 - 120	<0.050	ug/g	NC	30
3958488	Acid Extractable Uranium (U)	2015/03/24	98	75 - 125	97	80 - 120	<0.050	ug/g	4.1	30
3958488	Acid Extractable Vanadium (V)	2015/03/24	NC	75 - 125	99	80 - 120	<5.0	ug/g	1.4	30
3958488	Acid Extractable Zinc (Zn)	2015/03/24	NC	75 - 125	98	80 - 120	<5.0	ug/g	0.32	30
3959405	Acid Extractable Antimony (Sb)	2015/03/25	101	75 - 125	109	80 - 120	<0.20	ug/g	NC	30

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Maxxam Job #: B549828
Report Date: 2015/03/26

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3959405	Acid Extractable Arsenic (As)	2015/03/25	98	75 - 125	105	80 - 120	<1.0	ug/g	NC	30
3959405	Acid Extractable Barium (Ba)	2015/03/25	NC	75 - 125	104	80 - 120	<0.50	ug/g	6.2	30
3959405	Acid Extractable Beryllium (Be)	2015/03/25	98	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
3959405	Acid Extractable Boron (B)	2015/03/25	96	75 - 125	107	80 - 120	<5.0	ug/g	NC	30
3959405	Acid Extractable Cadmium (Cd)	2015/03/25	106	75 - 125	107	80 - 120	<0.10	ug/g	NC	30
3959405	Acid Extractable Chromium (Cr)	2015/03/25	NC	75 - 125	103	80 - 120	<1.0	ug/g	1.3	30
3959405	Acid Extractable Cobalt (Co)	2015/03/25	97	75 - 125	101	80 - 120	<0.10	ug/g	7.6	30
3959405	Acid Extractable Copper (Cu)	2015/03/25	NC	75 - 125	103	80 - 120	<0.50	ug/g	2.9	30
3959405	Acid Extractable Lead (Pb)	2015/03/25	99	75 - 125	104	80 - 120	<1.0	ug/g	NC	30
3959405	Acid Extractable Molybdenum (Mo)	2015/03/25	104	75 - 125	105	80 - 120	<0.50	ug/g	NC	30
3959405	Acid Extractable Nickel (Ni)	2015/03/25	NC	75 - 125	99	80 - 120	<0.50	ug/g	3.7	30
3959405	Acid Extractable Selenium (Se)	2015/03/25	102	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
3959405	Acid Extractable Silver (Ag)	2015/03/25	103	75 - 125	104	80 - 120	<0.20	ug/g	NC	30
3959405	Acid Extractable Thallium (Tl)	2015/03/25	99	75 - 125	101	80 - 120	<0.050	ug/g	NC	30
3959405	Acid Extractable Uranium (U)	2015/03/25	99	75 - 125	101	80 - 120	<0.050	ug/g	8.5	30
3959405	Acid Extractable Vanadium (V)	2015/03/25	NC	75 - 125	104	80 - 120	<5.0	ug/g	5.5	30
3959405	Acid Extractable Zinc (Zn)	2015/03/25	NC	75 - 125	100	80 - 120	<5.0	ug/g	7.1	30

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) DL was raised due to matrix interference.

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Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

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 IMMEDIATE TEST

Maxxam Analytics International Corporation o/a Maxxam Analytics
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20-Mar-15 14:59
Parnian Baber
B549828
HG1 ENV-602

Page 1 of 3

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B40279
Attention:	Central Accounting	Attention:	Maria Staneva	P.O. #:	
Address:	1931 Robertson Rd	Address:		Project:	1525113
	Ottawa ON K2H 5B7			Project Name:	
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:	
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Maria_Staneva@golder.com	Sampled By:	B. McParlan.

Only:
Bottle Order #: 505210
Project Manager: Parnian Baber
C#505210-01-01

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): [X] Table 1 [X] Res/Park [X] Medium/Fine [ ] Table 2 [ ] Ind/Comm [ ] Coarse [ ] Table 3 [ ] Agri/Other [X] For RSC [ ] Table ___

Other Regulations: [ ] CCME [ ] Sanitary Sewer Bylaw [ ] Reg 558. [ ] Storm Sewer Bylaw [ ] MISA Municipality ___ [ ] PWQO [ ] Other ___

Special Instructions:

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

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(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 #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals (Soil)	HOLD							# of Bottles	Comments
1		BH15-100 SA1	03/16/15		SOIL	N	X	X								2	
2		BH15-100 SA2	03/16/15		SOIL		X	X								2	
3		BH15-101 SA5	03/17/15		SOIL		X	X								2	
4		BH15-101 SA9	03/17/15		SOIL		X	X								2	
5		BH15-102 SA3	03/16/15		SOIL		X	X								2	
6		BH15-102 SA4	03/16/15		SOIL				X							2	
7		BH15-102 SA8	03/16/15		SOIL		X	X								2	
8		BH15-102 SA10	03/16/15		SOIL				X							2	
9		BH15-103 SA1	03/18/15		SOIL		X	X								2	RECEIVED IN OTTAWA
10		BH15-103 SA2	03/18/15		SOIL		X	X								2	Gnice

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
B. McParlan / B. McParlan	15/03/20	14:30	Kelsey Pilon Kelsey Pilon	15/03/20	14:59	
			G. MAGDALENA CCP	2015/03/21	09:55	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	8,7,8	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.

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

White: Maxxam Yellow: Client

2/2/3

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CHAIN OF CUSTODY RECORD

Page 2 of 3

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B40279	Maxxam Job #:	Bottle Order #: 505797
Attention:	Central Accounting	Attention:	Maria Staneva	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#505797-01-01	Parnian Baber
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	mstaneva@golder.com	Sampled By:	B. McParlan		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): [X] Table 1 [X] Res/Park [X] Medium/Fine; [ ] Table 2 [ ] Ind/Comm [ ] Coarse; [ ] Table 3 [ ] Agri/Other [X] For RSC; [ ] Table ___

Other Regulations: [ ] CCME [ ] Sanitary Sewer Bylaw; [ ] Reg 558. [ ] Storm Sewer Bylaw; [ ] MISA Municipality ___; [ ] PWQO; [ ] Other ___

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(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	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 Petroleum Hydrocarbons (Water)	Total Metals Analysis by ICPMS	O.Reg 153 PAHs (~~Water~~)	O.Reg 153 Petroleum Hydrocarbons (Soil)						# of Bottles	Comments
1		BH15-104 SA1	03/17/15		Soil	N		X	X							2	
2		BH15-104 SA2	03/17/15					X	X							2	
3		BH15-105 SA3	03/18/15					X	X							1	Limited sample recovery.
4		BH15-105 SA4	03/18/15					X	X							2	
5		BH15-106 SA2	03/17/15					X	X							2	
6		BH15-106 SA3	03/17/15					X	X							2	
7		BH15-107 SA2	03/18/15					X	X							2	
8		BH15-107 SA6	03/18/15					X	X							2	
9		BH15-108 SA1	03/19/15					X	X							2	
10		BH15-108 SA3	03/19/15					X	X							2	Onice

RECEIVED 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
[signature] / B. McParlan	15/03/20	14:30	Kelsey Pilon Kelsey Pilon	15/03/20	14:59			8, 7, 8	Present	✓	
			Gp MAGDALENA COP	2015/03/21	09:55				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.

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

White: Maxxam Yellow: Client

2/2/3

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CHAIN OF CUSTODY RECORD

Page 3 of 3

INVOICE TO:
Company Name: #14090 Golder Associates Ltd
Attention: Central Accounting
Address: 1931 Robertson Rd
Ottawa ON K2H 5B7
Tel: (613) 592-9600 Fax: (613) 592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Maria Staneva
Address:
Tel: Fax:
Email: mstaneva@golder.com

PROJECT INFORMATION:
Quotation #: B40279
P.O. #:
Project: 1525113
Project Name:
Site #:
Sampled By: B.McParlan

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 505797
COC #: C#505797-02-01
Project Manager: Parnian Baber

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)
- [x] Table 1 [x] Res/Park [x] Medium/Fine
- [ ] Table 2 [ ] Ind/Comm [ ] Coarse
- [ ] Table 3 [ ] Agri/Other [x] For RSC
- [ ] Table ___

Other Regulations
- [ ] CCME [ ] Sanitary Sewer Bylaw
- [ ] Reg 558. [ ] Storm Sewer Bylaw
- [ ] MISA Municipality ___
- [ ] PWQO
- [ ] Other ___

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: [x]
(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	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 Petroleum Hydrocarbons (Water)	Total Metals Analysis by ICPMS	O.Reg 153 PAHs (~~Metals~~)	O.Reg 153 Petroleum Hydrocarbons (Soil)							# of Bottles	Comments
1		BH15-109 SA 1	03/19/15		SOIL	N		X	X								1	Limited sample recovery
2		BH15-109 SA 2	03/19/15		SOIL			X	X								2	
3		DUP-2	03/16/15		SOIL			X	X								2	
4		DUP-4	03/17/15		SOIL	✓		X	X								2	
5																		
6																		
7																		
8																		
9																		
10																		

RECEIVED IN OTTAWA

09:16

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
B McParlan / B McParlan	15/03/20	14:30	Kelsey Pilon Kelsey Pilon	15/03/20	14:59	
			MAGDALENA	2015/03/21	09:55	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	8,7,8	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.

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

White: Maxxam Yellow: Client

2/2/3

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
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Success Through Science®

Your Project #: 14-1122-0005/13000
Site#: 6147
Site Location: OBLATES

Attention:Maria Staneva

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Your C.O.C. #: 505928-07-01, 505928-06-01, 505928-05-01

Report Date: 2015/05/26
Report #: R3441868
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B591679
Received: 2015/05/14, 15:50

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
1,3-Dichloropropene Sum	1	N/A	2015/05/21	CAM SOP-00226	EPA 8260C m
Petroleum Hydro. CCME F1 & BTEX in Soil	1	N/A	2015/05/21	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil	1	2015/05/20	2015/05/21	CAM SOP-00316	CCME CWS m
Moisture	1	N/A	2015/05/20	CAM SOP-00445	Carter 2nd ed 51.2 m
Volatile Organic Compounds in Soil	1	2015/05/20	2015/05/21	CAM SOP000226	EPA 8260C m

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 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.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Your Project #: 14-1122-0005/13000
Site#: 6147
Site Location: OBLATES

Attention:Maria Staneva

Golder Associates Ltd
1931 Robertson Rd
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Your C.O.C. #: 505928-07-01, 505928-06-01, 505928-05-01

Report Date: 2015/05/26
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CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B591679
Received: 2015/05/14, 15:50

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: ABrasil@maxxam.ca
Phone# (905)817-5817
==========
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 Job #: B591679
Report Date: 2015/05/26

Golder Associates Ltd
Client Project #: 14-1122-0005/13000
Site Location: OBLATES
Sampler Initials: AB

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		AHC406	AHC406		
Sampling Date		2015/05/13	2015/05/13		
COC Number		505928-07-01	505928-07-01		
	Units	**BH15-107A**	**BH15-107A Lab-Dup**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	32	33	1.0	4029968
BTEX & F1 Hydrocarbons					
F1 (C6-C10)	ug/g	<10		10	4030334
F1 (C6-C10) - BTEX	ug/g	<10		10	4030334
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	10	4030431
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	50	4030431
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	50	4030431
Reached Baseline at C50	ug/g	Yes	Yes		4030431
Surrogate Recovery (%)					
1,4-Difluorobenzene	%	99			4030334
4-Bromofluorobenzene	%	98			4030334
D10-Ethylbenzene	%	102			4030334
D4-1,2-Dichloroethane	%	96			4030334
o-Terphenyl	%	87	87		4030431

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B591679
Report Date: 2015/05/26

Golder Associates Ltd
Client Project #: 14-1122-0005/13000
Site Location: OBLATES
Sampler Initials: AB

O.REG 153 VOLATILE ORGANICS (SOIL)

Maxxam ID		AHC406		
Sampling Date		2015/05/13		
COC Number		505928-07-01		
	Units	**BH15-107A**	**RDL**	**QC Batch**
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	4027485
Volatile Organics				
Acetone (2-Propanone)	ug/g	<0.50	0.50	4028307
Benzene	ug/g	<0.020	0.020	4028307
Bromodichloromethane	ug/g	<0.050	0.050	4028307
Bromoform	ug/g	<0.050	0.050	4028307
Bromomethane	ug/g	<0.050	0.050	4028307
Carbon Tetrachloride	ug/g	<0.050	0.050	4028307
Chlorobenzene	ug/g	<0.050	0.050	4028307
Chloroform	ug/g	<0.050	0.050	4028307
Dibromochloromethane	ug/g	<0.050	0.050	4028307
1,2-Dichlorobenzene	ug/g	<0.050	0.050	4028307
1,3-Dichlorobenzene	ug/g	<0.050	0.050	4028307
1,4-Dichlorobenzene	ug/g	<0.050	0.050	4028307
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	0.050	4028307
1,1-Dichloroethane	ug/g	<0.050	0.050	4028307
1,2-Dichloroethane	ug/g	<0.050	0.050	4028307
1,1-Dichloroethylene	ug/g	<0.050	0.050	4028307
cis-1,2-Dichloroethylene	ug/g	<0.050	0.050	4028307
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	4028307
1,2-Dichloropropane	ug/g	<0.050	0.050	4028307
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	4028307
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	4028307
Ethylbenzene	ug/g	<0.020	0.020	4028307
Ethylene Dibromide	ug/g	<0.050	0.050	4028307
Hexane	ug/g	<0.050	0.050	4028307
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	4028307
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	4028307
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	0.50	4028307
Methyl t-butyl ether (MTBE)	ug/g	<0.050	0.050	4028307
Styrene	ug/g	<0.050	0.050	4028307
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	4028307
1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	4028307
Tetrachloroethylene	ug/g	<0.050	0.050	4028307

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B591679
Report Date: 2015/05/26

Golder Associates Ltd
Client Project #: 14-1122-0005/13000
Site Location: OBLATES
Sampler Initials: AB

O.REG 153 VOLATILE ORGANICS (SOIL)

Maxxam ID		AHC406		
Sampling Date		2015/05/13		
COC Number		505928-07-01		
	Units	**BH15-107A**	**RDL**	**QC Batch**
Toluene	ug/g	<0.020	0.020	4028307
1,1,1-Trichloroethane	ug/g	<0.050	0.050	4028307
1,1,2-Trichloroethane	ug/g	<0.050	0.050	4028307
Trichloroethylene	ug/g	<0.050	0.050	4028307
Vinyl Chloride	ug/g	<0.020	0.020	4028307
p+m-Xylene	ug/g	<0.020	0.020	4028307
o-Xylene	ug/g	<0.020	0.020	4028307
Total Xylenes	ug/g	<0.020	0.020	4028307
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	0.050	4028307
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	91		4028307
D10-o-Xylene	%	95		4028307
D4-1,2-Dichloroethane	%	91		4028307
D8-Toluene	%	97		4028307

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B591679
Report Date: 2015/05/26

Golder Associates Ltd
Client Project #: 14-1122-0005/13000
Site Location: OBLATES
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: AHC406
Sample ID: BH15-107A
Matrix: Soil

Collected: 2015/05/13
Shipped:
Received: 2015/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4027485	N/A	2015/05/21	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4030334	N/A	2015/05/21	Sung Ho Kim
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4030431	2015/05/20	2015/05/21	Zhiyue (Frank) Zhu
Moisture	BAL	4029968	N/A	2015/05/20	Valentina Kaftani
Volatile Organic Compounds in Soil	GC/MS	4028307	2015/05/20	2015/05/21	Sarah Lam

Maxxam ID: AHC406 Dup
Sample ID: BH15-107A
Matrix: Soil

Collected: 2015/05/13
Shipped:
Received: 2015/05/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4030431	2015/05/20	2015/05/21	Zhiyue (Frank) Zhu
Moisture	BAL	4029968	N/A	2015/05/20	Valentina Kaftani

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Maxxam Job #: B591679
Report Date: 2015/05/26

Golder Associates Ltd
Client Project #: 14-1122-0005/13000
Site Location: OBLATES
Sampler Initials: AB

GENERAL COMMENTS

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

Package 1	9.7°C

Sample BH15-111 SA4-A was is same sample for BH15-111 SA4.

Revised Report (2015/05/26): Split report as per client request.

Results relate only to the items tested.

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Maxxam Job #: B591679
Report Date: 2015/05/26

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 14-1122-0005/13000
Site Location: OBLATES
Sampler Initials: AB

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
4028307	4-Bromofluorobenzene	2015/05/21	94	60 - 140	95	60 - 140	91	%		
4028307	D10-o-Xylene	2015/05/21	88	60 - 130	95	60 - 130	88	%		
4028307	D4-1,2-Dichloroethane	2015/05/21	90	60 - 140	95	60 - 140	98	%		
4028307	D8-Toluene	2015/05/21	103	60 - 140	102	60 - 140	95	%		
4030334	1,4-Difluorobenzene	2015/05/21	101	60 - 140	100	60 - 140	100	%		
4030334	4-Bromofluorobenzene	2015/05/21	100	60 - 140	99	60 - 140	98	%		
4030334	D10-Ethylbenzene	2015/05/21	98	60 - 140	94	60 - 140	100	%		
4030334	D4-1,2-Dichloroethane	2015/05/21	97	60 - 140	97	60 - 140	103	%		
4030431	o-Terphenyl	2015/05/21	84	60 - 130	87	60 - 130	86	%		
4028307	1,1,1,2-Tetrachloroethane	2015/05/21	100	60 - 140	111	60 - 130	<0.050	ug/g	NC	50
4028307	1,1,1-Trichloroethane	2015/05/21	91	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
4028307	1,1,2,2-Tetrachloroethane	2015/05/21	85	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4028307	1,1,2-Trichloroethane	2015/05/21	85	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
4028307	1,1-Dichloroethane	2015/05/21	94	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4028307	1,1-Dichloroethylene	2015/05/21	101	60 - 140	105	60 - 130	<0.050	ug/g	NC	50
4028307	1,2-Dichlorobenzene	2015/05/21	94	60 - 140	105	60 - 130	<0.050	ug/g	NC	50
4028307	1,2-Dichloroethane	2015/05/21	84	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4028307	1,2-Dichloropropane	2015/05/21	89	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
4028307	1,3-Dichlorobenzene	2015/05/21	95	60 - 140	103	60 - 130	<0.050	ug/g	NC	50
4028307	1,4-Dichlorobenzene	2015/05/21	93	60 - 140	103	60 - 130	<0.050	ug/g	NC	50
4028307	Acetone (2-Propanone)	2015/05/21	80	60 - 140	101	60 - 140	<0.50	ug/g	NC	50
4028307	Benzene	2015/05/21	92	60 - 140	100	60 - 130	<0.020	ug/g	NC	50
4028307	Bromodichloromethane	2015/05/21	86	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
4028307	Bromoform	2015/05/21	98	60 - 140	117	60 - 130	<0.050	ug/g	NC	50
4028307	Bromomethane	2015/05/21	93	60 - 140	90	60 - 140	<0.050	ug/g	NC	50
4028307	Carbon Tetrachloride	2015/05/21	103	60 - 140	110	60 - 130	<0.050	ug/g	NC	50
4028307	Chlorobenzene	2015/05/21	92	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4028307	Chloroform	2015/05/21	90	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
4028307	cis-1,2-Dichloroethylene	2015/05/21	88	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
4028307	cis-1,3-Dichloropropene	2015/05/21	83	60 - 140	73	60 - 130	<0.030	ug/g	NC	50
4028307	Dibromochloromethane	2015/05/21	96	60 - 140	111	60 - 130	<0.050	ug/g	NC	50
4028307	Dichlorodifluoromethane (FREON 12)	2015/05/21	98	60 - 140	79	60 - 140	<0.050	ug/g	NC	50
4028307	Ethylbenzene	2015/05/21	89	60 - 140	96	60 - 130	<0.020	ug/g	NC	50

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Maxxam
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Maxxam Job #: B591679
Report Date: 2015/05/26

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 14-1122-0005/13000
Site Location: OBLATES
Sampler Initials: AB

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
4028307	Ethylene Dibromide	2015/05/21	83	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
4028307	Hexane	2015/05/21	101	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
4028307	Methyl Ethyl Ketone (2-Butanone)	2015/05/21	79	60 - 140	100	60 - 140	<0.50	ug/g	NC	50
4028307	Methyl Isobutyl Ketone	2015/05/21	77	60 - 140	93	60 - 130	<0.50	ug/g	NC	50
4028307	Methyl t-butyl ether (MTBE)	2015/05/21	82	60 - 140	90	60 - 130	<0.050	ug/g	NC	50
4028307	Methylene Chloride(Dichloromethane)	2015/05/21	86	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4028307	o-Xylene	2015/05/21	86	60 - 140	93	60 - 130	<0.020	ug/g	NC	50
4028307	p+m-Xylene	2015/05/21	89	60 - 140	95	60 - 130	<0.020	ug/g	NC	50
4028307	Styrene	2015/05/21	91	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4028307	Tetrachloroethylene	2015/05/21	105	60 - 140	112	60 - 130	<0.050	ug/g	NC	50
4028307	Toluene	2015/05/21	91	60 - 140	98	60 - 130	<0.020	ug/g	NC	50
4028307	Total Xylenes	2015/05/21					<0.020	ug/g	NC	50
4028307	trans-1,2-Dichloroethylene	2015/05/21	95	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4028307	trans-1,3-Dichloropropene	2015/05/21	89	60 - 140	77	60 - 130	<0.040	ug/g	NC	50
4028307	Trichloroethylene	2015/05/21	94	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4028307	Trichlorofluoromethane (FREON 11)	2015/05/21	92	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
4028307	Vinyl Chloride	2015/05/21	99	60 - 140	98	60 - 130	<0.020	ug/g	NC	50
4029968	Moisture	2015/05/20							3.7	20
4030334	F1 (C6-C10) - BTEX	2015/05/21					<10	ug/g	NC	30
4030334	F1 (C6-C10)	2015/05/21	81	60 - 140	101	80 - 120	<10	ug/g	NC	30
4030431	F2 (C10-C16 Hydrocarbons)	2015/05/21	87	50 - 130	86	80 - 120	<10	ug/g	NC	30
4030431	F3 (C16-C34 Hydrocarbons)	2015/05/21	91	50 - 130	92	80 - 120	<50	ug/g	NC	30
4030431	F4 (C34-C50 Hydrocarbons)	2015/05/21	92	50 - 130	93	80 - 120	<50	ug/g	NC	30

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B591679
Report Date: 2015/05/26

Golder Associates Ltd
Client Project #: 14-1122-0005/13000
Site Location: OBLATES
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

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 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

IMMEDIATE TEST

Maxxam

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE TO:
Company Name: #14090 Golder Associates Ltd
Attention: Central Accounting
Address: 1931 Robertson Rd
Ottawa ON K2H 5B7
Tel: (613) 592-9600 Fax: (613) 592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Maria Staneva
Address:
Tel: Fax:
Email: Maria_Staneva@golder.com

PROJECT INFORMATION:
Quotation #: B40279
P.O. #:
Project: ~~1825113~~ 14-1122-0005/13000
Project Name:
Site #: Oblates
Sampled By: Aaron Bradshaw

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 505928
COC #: C#505928-07-01
Project Manager: Parnian Baber

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☑ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☑ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☑ Table 9

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

Special Instructions:

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

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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	Field Filtered (Metals / Hg / Cr VI)	O.Reg 153 PAHs (Soil)	O.Reg 153 Metals Package (Soil)	pH CaCl2 EXTRACT	O.Reg 153 Petroleum Hydrocarbons (~~Water~~) Soil	O.Reg 153 Volatile Organics (~~Water~~) Soil	O.Reg 153 PAHs (Water)	O.Reg 153 Metals Package (Water) (ICPMS Metals, Hg CRVI)				# of Bottles	Comments
1		BH15-110 SA1	14.05.15		S	NA	✓	✓									2	
2		BH15-111 SA1	14.05.15		S	NA	✓	✓									2	
3		BH15-111 SA4	14.05.15		S	NA	✓	✓	✓								2	
4		BH15-111 SA5	14.05.15		S	NA	✓	✓									2	
5		DUP A	14.05.15		S	NA	✓	✓									2	
6		BH15-112 SA1	14.05.15		S	NA	✓	✓									1	Not enough soil to fill 250mL jar
7		BH15-112 SA4	14.05.15		S	NA	✓	✓	✓								2	
8		BH15-112 SA6	14.05.15		S	NA	✓	✓									2	
9		DUP B	14.05.15		S	NA	✓	✓									2	
10		BH15-107A	13.05.15		S	NA				✓	✓						5	

14-May-15 15:50
Parnian Baber
B591679
FW ENV-706

RECEIVED IN OTTAWA
ON ICE

* 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	14.05.2015		Fateneh H.A	15/05/14	15:50	
			Fanwa Wang	2015/05/15	10:00	

Laboratory Use Only: Time Sensitive; Temperature (°C) on Receipt: 9.5.12; Custody Seal: 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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

7/8/8, 5/6/7

Maxxam

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CHAIN OF CUSTODY RECORD

Page 2 of 2

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B40279	Maxxam Job #:	Bottle Order #:
Attention:	Central Accounting	Attention:	Maria Staneva	P.O. #:			505928
Address:	1931 Robertson Rd	Address:		Project:	~~1526113~~ 14-1122-0005 / 13/08	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#505928-06-01	Parnian Baber
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:	Oblates		
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Maria_Staneva@golder.com	Sampled By:	Aaron Broadshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☑ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☑ Table 9

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

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 Metals Package (Soil)	pH CaCl2 EXTRACT	O.Reg 153 Petroleum Hydrocarbons (Water)	O.Reg 153 Volatile Organics (Water)	O.Reg 153 PAHs (Water)	O.Reg 153 Metals Package (Water) (ICPMS Metals, Hg CRVI)				# of Bottles	Comments
1		TP15-1 SA1	12/05/2015		S	NA	✓	✓									2	
2		TP15-1 SA3			S	NA	✓	✓									2	
3		TP15-1 SA5			S	NA	✓	✓									2	
4		TP15-2 SA1			S	NA	✓	✓									2	
5		TP15-2 SA2			S	NA	✓	✓									2	
6		TP15-2 SA4			S	NA	✓	✓									2	
7		TP15-3 SA1			S	NA	✓	✓									2	
8		TP15-3 SA3			S	NA	✓	✓									2	
9		TP15-4 SA1			S	NA	✓	✓									2	
10		TP15-4 SA3	✓		S	NA	✓	✓									2	RECEIVED IN OTTAWA ON ICE

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 #)*

* 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
[signature]	14/05/2015		SHA Fatemeh H-A	15/05/14	15:50			9, 8, 12	Present	✓	
			~~2R~~ FANG WANG	2015/05/15	10:00				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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

7/8/8, 5/6/7

Maxxam

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CHAIN OF CUSTODY RECORD

Page 3 of 3

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B40279	Maxxam Job #:	Bottle Order #:
Attention:	Central Accounting	Attention:	Maria Staneva	P.O. #:		113000	505928
Address:	1931 Robertson Rd	Address:		Project:	~~1525413~~ 14-1122-0005	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:	Oblates	C#505928-05-01	Parnian Baber
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Maria_Staneva@golder.com	Sampled By:	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine; ☐ Table 2 ☐ Ind/Comm ☑ Coarse; ☐ Table 3 ☐ Agri/Other ☐ For RSC; ☑ Table 9

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

Special Instructions

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

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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	Field Filtered / Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 Metals Package (Soil)	pH CaCl2 EXTRACT	O.Reg 153 Petroleum Hydrocarbons (Water)	O.Reg 153 Volatile Organics (Water)	O.Reg 153 PAHs (Water)	O.Reg 153 Metals Package (Water) (ICPMS Metals, Hg CRVI)				# of Bottles	Comments
1		TP15-5SA1	12.05.2015		S	NA	✓	✓									2	
2		TP15-5SA3	↓		S	NA	✓	✓									2	
3		TP15-5SA4	↓		S	NA	✓	✓									2	
4		TP15-6SA1	↓		S	NA	✓	✓									2	
5		TP15-6SA3	↓		S	NA	✓	✓									2	
6																		
7																		
8																		RECEIVED IN OTTAWA
9																		RECEIVED IN OTTAWA ON ICE
10																		

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	14/05/2015		SHA Fatemeh A-A	15/05/14	15:50	
			FANG WANG	2015/05/15	10:00	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	9, 8, 12	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.

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

White: Maxxam Yellow: Client

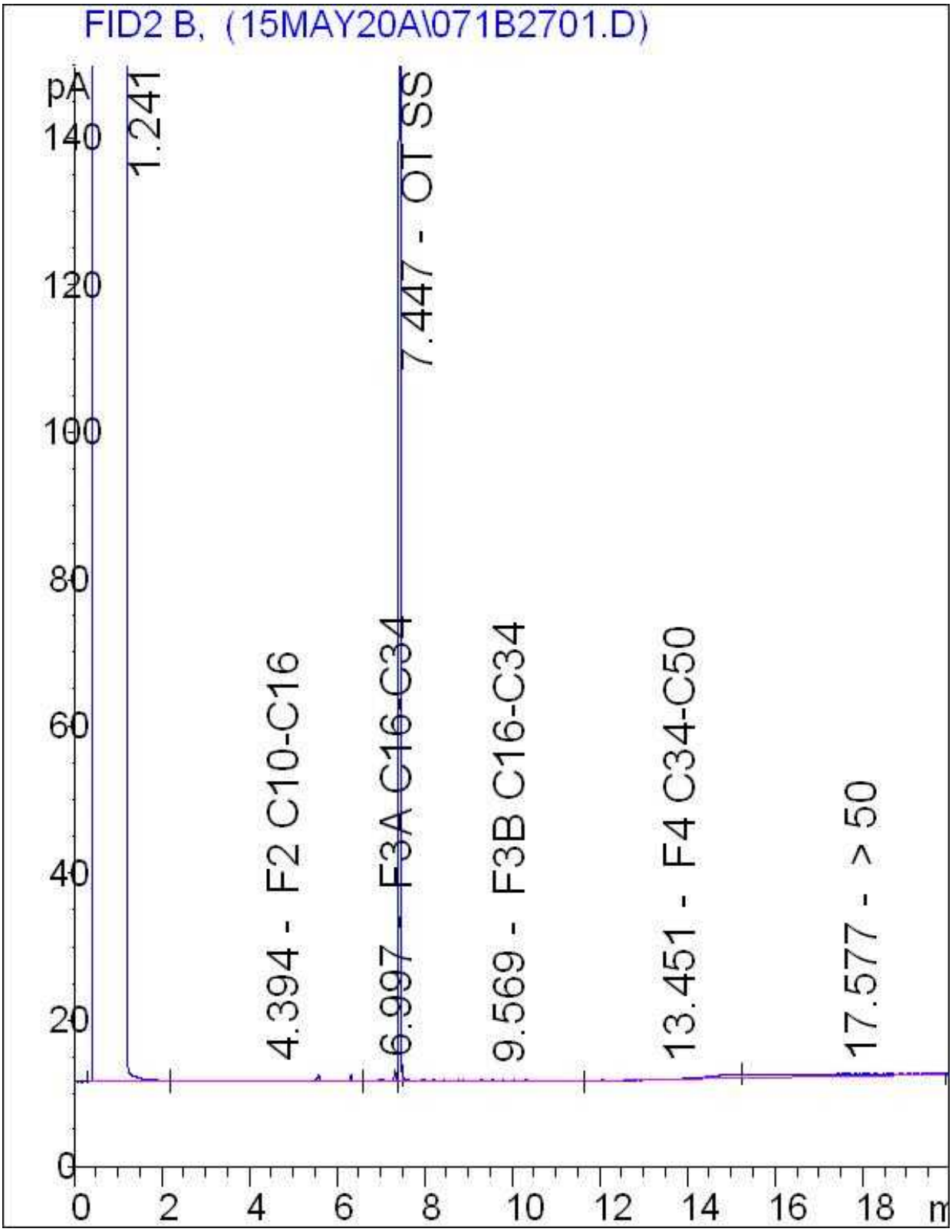
Maxxam Analytics International Corporation o/a Maxxam Analytics

7/8/8, 5/6/7

Maxxam Job #: B591679
Report Date: 2015/05/26
Maxxam Sample: AHC406

Golder Associates Ltd
Client Project #: 14-1122-0005/13000
Project name: OBLATES
Client ID: BH15-107A

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

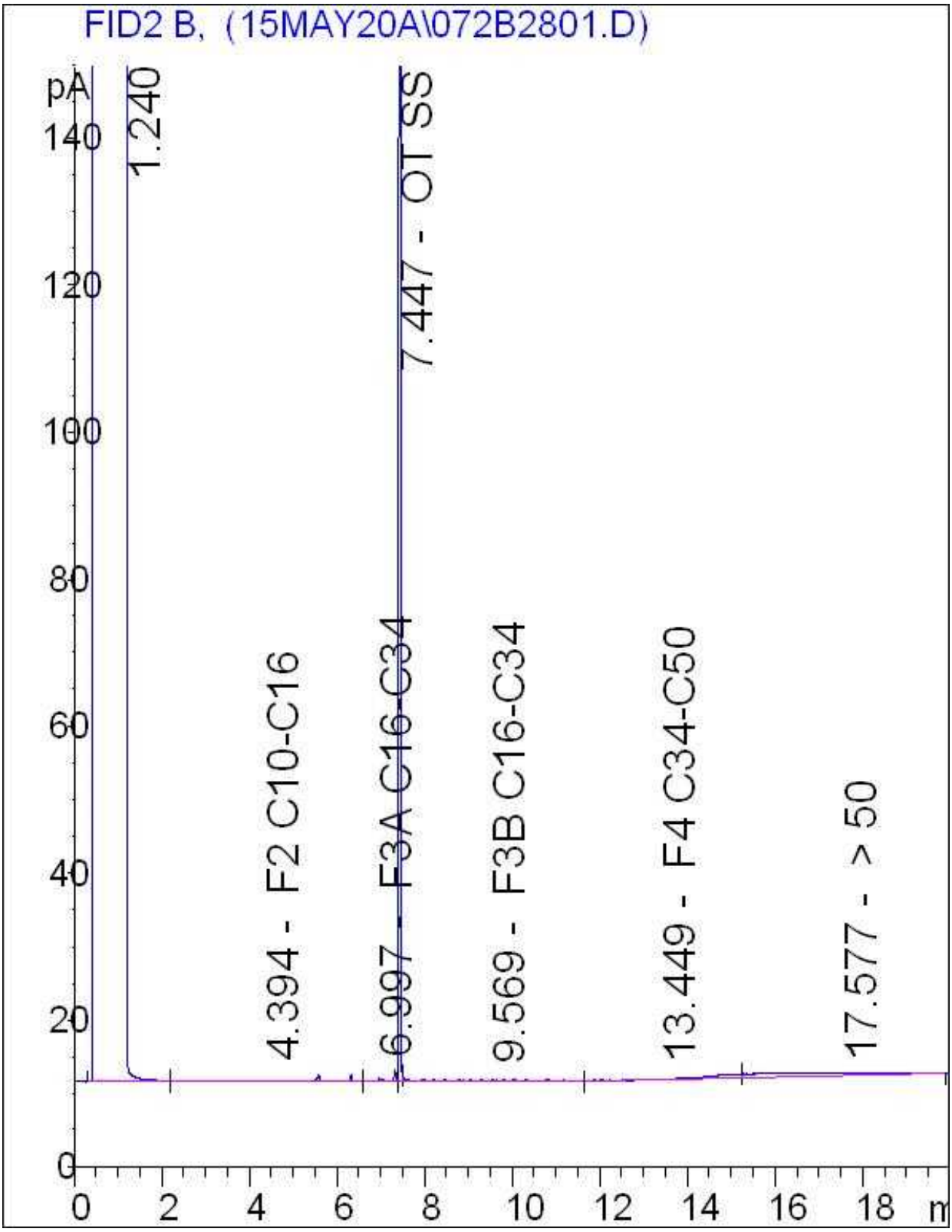


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B591679
Report Date: 2015/05/26
Maxxam Sample: AHC406 Lab-Dup

Golder Associates Ltd
Client Project #: 14-1122-0005/13000
Project name: OBLATES
Client ID: BH15-107A

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.

Water

Maxxam

Success Through Science®

Your Project #: 14-1122-0005
Site#: 7000
Your C.O.C. #: 46385001, 463850-01-01

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

Report Date: 2014/04/09
Report #: R2990243
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B453269
Received: 2014/04/03, 15:00

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Methylnaphthalene Sum (1)	2	N/A	2014/04/08	CAM SOP-00301	EPA 8270
Chromium (VI) in Water (1)	2	N/A	2014/04/07	CAM SOP-00436	EPA 7199
Petroleum Hydro. CCME F1 & BTEX in Water	4	N/A	2014/04/08	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Water (1)	4	2014/04/08	2014/04/08	CAM SOP-00316	CCME Hydrocarbons
Mercury (1)	2	2014/04/07	2014/04/07	CAM SOP-00453	SW-846 7470A
Dissolved Metals by ICPMS	2	N/A	2014/04/04	OTT SOP-00003	EPA 6020
PAH Compounds in Water by GC/MS (SIM) (1)	2	2014/04/04	2014/04/04	CAM SOP-00318	EPA 8270

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. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

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 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

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 #: B453269
Report Date: 2014/04/09

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

Encryption Key

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

Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========
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 #: B453269
Report Date: 2014/04/09

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		VK7351	VK7351	VK7352		
Sampling Date		2014/04/03 13:30	2014/04/03 13:30	2014/04/03 12:15		
	Units	**BH14-1**	**BH14-1 Lab-Dup**	**BH14-3**	**RDL**	**QC Batch**
Metals						
Dissolved Antimony (Sb)	ug/L	0.6	0.6	<0.5	0.5	3562833
Dissolved Arsenic (As)	ug/L	<1	<1	<1	1	3562833
Dissolved Barium (Ba)	ug/L	44	44	65	2	3562833
Dissolved Beryllium (Be)	ug/L	<0.5	<0.5	<0.5	0.5	3562833
Dissolved Boron (B)	ug/L	120	120	38	10	3562833
Dissolved Cadmium (Cd)	ug/L	<0.1	<0.1	<0.1	0.1	3562833
Dissolved Chromium (Cr)	ug/L	<5	<5	<5	5	3562833
Dissolved Cobalt (Co)	ug/L	0.9	0.9	7.2	0.5	3562833
Dissolved Copper (Cu)	ug/L	1	1	2	1	3562833
Dissolved Lead (Pb)	ug/L	<0.5	<0.5	<0.5	0.5	3562833
Dissolved Molybdenum (Mo)	ug/L	7.5	7.4	4.4	0.5	3562833
Dissolved Nickel (Ni)	ug/L	3	3	13	1	3562833
Dissolved Selenium (Se)	ug/L	<2	<2	<2	2	3562833
Dissolved Silver (Ag)	ug/L	<0.1	<0.1	<0.1	0.1	3562833
Dissolved Sodium (Na)	ug/L	63000	62000	34000	100	3562833
Dissolved Thallium (Tl)	ug/L	0.19	0.18	0.12	0.05	3562833
Dissolved Uranium (U)	ug/L	1.1	1.2	1.2	0.1	3562833
Dissolved Vanadium (V)	ug/L	<0.5	<0.5	<0.5	0.5	3562833
Dissolved Zinc (Zn)	ug/L	<5	<5	13	5	3562833

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 #: B453269
Report Date: 2014/04/09

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		VK7349	VK7350	VK7351	VK7352		
Sampling Date		2014/04/03 10:30	2014/04/03 11:00	2014/04/03 13:30	2014/04/03 12:15		
	Units	**BH14-101C**	**BH14-102**	**BH14-1**	**BH14-3**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons							
Benzene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	3563341
Toluene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	3563341
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	3563341
o-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	3563341
p+m-Xylene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	3563341
Total Xylenes	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	3563341
F1 (C6-C10)	ug/L	<25	<25	<25	<25	25	3563341
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	<25	25	3563341
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	<100	100	3565847
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	<200	200	3565847
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	<200	200	3565847
Reached Baseline at C50	ug/L	YES	YES	YES	YES		3565847
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	97	97	96	96		3563341
4-Bromofluorobenzene	%	103	102	100	108		3563341
D10-Ethylbenzene	%	108	108	115	95		3563341
D4-1,2-Dichloroethane	%	93	93	92	93		3563341
o-Terphenyl	%	90	94	94	95		3565847

O.REG 153 METALS PACKAGE (WATER)

Maxxam ID		VK7351	VK7351	VK7352		
Sampling Date		2014/04/03 13:30	2014/04/03 13:30	2014/04/03 12:15		
	Units	**BH14-1**	**BH14-1 Lab-Dup**	**BH14-3**	**RDL**	**QC Batch**
Metals						
Chromium (VI)	ug/L	<0.50	<0.50	<0.50	0.50	3562937
Mercury (Hg)	ug/L	<0.1		<0.1	0.1	3564563

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B453269
Report Date: 2014/04/09

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

O.REG 153 PAHS (WATER)

Maxxam ID		VK7351	VK7352		
Sampling Date		2014/04/03 13:30	2014/04/03 12:15		
	Units	**BH14-1**	**BH14-3**	**RDL**	**QC Batch**
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	0.071	3561819
Polyaromatic Hydrocarbons					
Acenaphthene	ug/L	<0.050	<0.050	0.050	3563382
Acenaphthylene	ug/L	<0.050	<0.050	0.050	3563382
Anthracene	ug/L	<0.050	<0.050	0.050	3563382
Benzo(a)anthracene	ug/L	<0.050	<0.050	0.050	3563382
Benzo(a)pyrene	ug/L	<0.010	<0.010	0.010	3563382
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	0.050	3563382
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	0.050	3563382
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	3563382
Chrysene	ug/L	<0.050	<0.050	0.050	3563382
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	0.050	3563382
Fluoranthene	ug/L	<0.050	<0.050	0.050	3563382
Fluorene	ug/L	<0.050	<0.050	0.050	3563382
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	3563382
1-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	3563382
2-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	3563382
Naphthalene	ug/L	0.13	<0.050	0.050	3563382
Phenanthrene	ug/L	<0.030	<0.030	0.030	3563382
Pyrene	ug/L	<0.050	<0.050	0.050	3563382
Surrogate Recovery (%)					
D10-Anthracene	%	110	104		3563382
D14-Terphenyl (FS)	%	97	83		3563382
D8-Acenaphthylene	%	101	100		3563382

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B453269
Report Date: 2014/04/09

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

Test Summary

Maxxam ID VK7349 **Collected** test 2 2014/04/03
Sample ID BH14-101C **Shipped**
Matrix Water **Received** 2014/04/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Wat	HSGC/MSFD	3563341	N/A	2014/04/08	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3565847	2014/04/08	2014/04/08	Jeevaraj Jeevaratrnam

Maxxam ID VK7350 **Collected** test 2 2014/04/03
Sample ID BH14-102 **Shipped**
Matrix Water **Received** 2014/04/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Wat	HSGC/MSFD	3563341	N/A	2014/04/08	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3565847	2014/04/08	2014/04/08	Jeevaraj Jeevaratrnam

Maxxam ID VK7351 **Collected** test 2 2014/04/03
Sample ID BH14-1 **Shipped**
Matrix Water **Received** 2014/04/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3561819	N/A	2014/04/08	Automated Statchk
Chromium (VI) in Water	IC	3562937	N/A	2014/04/07	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Wat	HSGC/MSFD	3563341	N/A	2014/04/08	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3565847	2014/04/08	2014/04/08	Jeevaraj Jeevaratrnam
Mercury	CVAA	3564563	2014/04/07	2014/04/07	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3562833	N/A	2014/04/04	Raigamage Perera
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3563382	2014/04/04	2014/04/04	Darryl Tiller

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Maxxam Job #: B453269
Report Date: 2014/04/09

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

Test Summary

Maxxam ID VK7351 Dup
Sample ID BH14-1
Matrix Water

Collected test 2 2014/04/03
Shipped
Received 2014/04/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Chromium (VI) in Water	IC	3562937	N/A	2014/04/07	Sally Coughlin
Dissolved Metals by ICPMS	ICP/MS	3562833	N/A	2014/04/04	Raigamage Perera

Maxxam ID VK7352
Sample ID BH14-3
Matrix Water

Collected test 2 2014/04/03
Shipped
Received 2014/04/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3561819	N/A	2014/04/08	Automated Statchk
Chromium (VI) in Water	IC	3562937	N/A	2014/04/07	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Wat	HSGC/MSFD	3563341	N/A	2014/04/08	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3565847	2014/04/08	2014/04/08	Jeevaraj Jeevaratrnam
Mercury	CVAA	3564563	2014/04/07	2014/04/07	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3562833	N/A	2014/04/04	Raigamage Perera
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3563382	2014/04/04	2014/04/04	Darryl Tiller

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Report Date: 2014/04/09

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

Package 1	5.0°C

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

GENERAL COMMENTS

Custody seals were not present on the cooler.

For the following samples, every sample bottle contained visible sediment, which was included in the extraction:

BH14-101C, and BH14-102

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Report Date: 2014/04/09

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

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
3562833	Dissolved Antimony (Sb)	2014/04/04	105	80 - 120	107	80 - 120	<0.5	ug/L	NC	25
3562833	Dissolved Arsenic (As)	2014/04/04	98	80 - 120	98	80 - 120	<1	ug/L	NC	25
3562833	Dissolved Barium (Ba)	2014/04/04	97	80 - 120	100	80 - 120	<2	ug/L	1.5	25
3562833	Dissolved Beryllium (Be)	2014/04/04	100	80 - 120	102	80 - 120	<0.5	ug/L	NC	25
3562833	Dissolved Boron (B)	2014/04/04	93	80 - 120	98	80 - 120	<10	ug/L	1.6	25
3562833	Dissolved Cadmium (Cd)	2014/04/04	102	80 - 120	105	80 - 120	<0.1	ug/L	NC	25
3562833	Dissolved Chromium (Cr)	2014/04/04	100	80 - 120	101	80 - 120	<5	ug/L	NC	25
3562833	Dissolved Cobalt (Co)	2014/04/04	101	80 - 120	104	80 - 120	<0.5	ug/L	NC	25
3562833	Dissolved Copper (Cu)	2014/04/04	97	80 - 120	100	80 - 120	<1	ug/L	NC	25
3562833	Dissolved Lead (Pb)	2014/04/04	101	80 - 120	103	80 - 120	<0.5	ug/L	NC	25
3562833	Dissolved Molybdenum (Mo)	2014/04/04	102	80 - 120	106	80 - 120	<0.5	ug/L	1.7	25
3562833	Dissolved Nickel (Ni)	2014/04/04	96	80 - 120	103	80 - 120	<1	ug/L	NC	25
3562833	Dissolved Selenium (Se)	2014/04/04	102	80 - 120	104	80 - 120	<2	ug/L	NC	25
3562833	Dissolved Silver (Ag)	2014/04/04	92	80 - 120	97	80 - 120	<0.1	ug/L	NC	25
3562833	Dissolved Sodium (Na)	2014/04/04	NC	80 - 120	96	80 - 120	<100	ug/L	1.3	25
3562833	Dissolved Thallium (Tl)	2014/04/04	98	80 - 120	102	80 - 120	<0.05	ug/L	NC	25
3562833	Dissolved Uranium (U)	2014/04/04	103	80 - 120	104	80 - 120	<0.1	ug/L	3.2	25
3562833	Dissolved Vanadium (V)	2014/04/04	100	80 - 120	103	80 - 120	<0.5	ug/L	NC	25
3562833	Dissolved Zinc (Zn)	2014/04/04	100	80 - 120	102	80 - 120	<5	ug/L	NC	25
3562937	Chromium (VI)	2014/04/07	107	80 - 120	103	80 - 120	<0.50	ug/L	NC	20
3563341	1,4-Difluorobenzene	2014/04/08	101	70 - 130	96	70 - 130	97	%		
3563341	4-Bromofluorobenzene	2014/04/08	111	70 - 130	103	70 - 130	102	%		
3563341	D10-Ethylbenzene	2014/04/08	102	70 - 130	107	70 - 130	99	%		
3563341	D4-1,2-Dichloroethane	2014/04/08	97	70 - 130	94	70 - 130	93	%		
3563341	Benzene	2014/04/08	91	70 - 130	97	70 - 130	<0.20	ug/L	NC	40
3563341	Toluene	2014/04/08	82	70 - 130	86	70 - 130	<0.20	ug/L	NC	40
3563341	Ethylbenzene	2014/04/08	79	70 - 130	87	70 - 130	<0.20	ug/L	NC	40
3563341	o-Xylene	2014/04/08	81	70 - 130	90	70 - 130	<0.20	ug/L	NC	40
3563341	p+m-Xylene	2014/04/08	82	70 - 130	87	70 - 130	<0.40	ug/L	NC	40
3563341	F1 (C6-C10)	2014/04/08	88	70 - 130	97	70 - 130	<25	ug/L	NC	40
3563341	Total Xylenes	2014/04/08					<0.40	ug/L	NC	40
3563341	F1 (C6-C10) - BTEX	2014/04/08					<25	ug/L	NC	40
3563382	D10-Anthracene	2014/04/04	102	50 - 130	99	50 - 130	104	%		
3563382	D14-Terphenyl (FS)	2014/04/04	86	50 - 130	86	50 - 130	89	%		
3563382	D8-Acenaphthylene	2014/04/04	97	50 - 130	95	50 - 130	99	%		
3563382	Acenaphthene	2014/04/04	107	50 - 130	109	50 - 130	<0.050	ug/L	NC	30
3563382	Acenaphthylene	2014/04/04	104	50 - 130	106	50 - 130	<0.050	ug/L	NC	30
3563382	Anthracene	2014/04/04	109	50 - 130	108	50 - 130	<0.050	ug/L	NC	30
3563382	Benzo(a)anthracene	2014/04/04	114	50 - 130	114	50 - 130	<0.050	ug/L	NC	30
3563382	Benzo(a)pyrene	2014/04/04	110	50 - 130	110	50 - 130	<0.010	ug/L	NC	30

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Report Date: 2014/04/09

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

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
3563382	Benzo(b/j)fluoranthene	2014/04/04	110	50 - 130	108	50 - 130	<0.050	ug/L	NC	30
3563382	Benzo(g,h,i)perylene	2014/04/04	106	50 - 130	108	50 - 130	<0.050	ug/L	NC	30
3563382	Benzo(k)fluoranthene	2014/04/04	113	50 - 130	121	50 - 130	<0.050	ug/L	NC	30
3563382	Chrysene	2014/04/04	107	50 - 130	108	50 - 130	<0.050	ug/L	NC	30
3563382	Dibenz(a,h)anthracene	2014/04/04	98	50 - 130	101	50 - 130	<0.050	ug/L	NC	30
3563382	Fluoranthene	2014/04/04	114	50 - 130	107	50 - 130	<0.050	ug/L	NC	30
3563382	Fluorene	2014/04/04	108	50 - 130	110	50 - 130	<0.050	ug/L	NC	30
3563382	Indeno(1,2,3-cd)pyrene	2014/04/04	110	50 - 130	112	50 - 130	<0.050	ug/L	NC	30
3563382	1-Methylnaphthalene	2014/04/04	94	50 - 130	96	50 - 130	<0.050	ug/L	NC	30
3563382	2-Methylnaphthalene	2014/04/04	93	50 - 130	96	50 - 130	<0.050	ug/L	NC	30
3563382	Naphthalene	2014/04/04	96	50 - 130	99	50 - 130	<0.050	ug/L	NC	30
3563382	Phenanthrene	2014/04/04	109	50 - 130	109	50 - 130	<0.030	ug/L	NC	30
3563382	Pyrene	2014/04/04	112	50 - 130	113	50 - 130	<0.050	ug/L	NC	30
3564563	Mercury (Hg)	2014/04/07	108	75 - 125	95	80 - 120	<0.1	ug/L	NC	20
3565847	o-Terphenyl	2014/04/08	93	60 - 130	93	60 - 130	93	%		
3565847	F2 (C10-C16 Hydrocarbons)	2014/04/08	92	50 - 130	94	60 - 130	<100	ug/L	NC	30
3565847	F3 (C16-C34 Hydrocarbons)	2014/04/08	93	50 - 130	95	60 - 130	<200	ug/L	NC	30
3565847	F4 (C34-C50 Hydrocarbons)	2014/04/08	92	50 - 130	95	60 - 130	<200	ug/L	NC	30

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
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.

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Validation Signature Page

Maxxam Job #: B453269

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

Brad Newman, Scientific Specialist

Paul Rubinato, Analyst, Maxxam Analytics

Suzana Popovic, Supervisor, Hydrocarbons

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

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-653-6266 Fax:(905) 817-5779 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B40279	MAXXAM JOB #:	BOTTLE ORDER #: 463850
Contact Name:	Central Accounting	Contact Name:	Maria Staneva	P.O. #:			
Address:	32 Steacie Dr Kanata ON K2K 2A9	Address:		Project #:	14-1122-0005		
				Project Name:		CHAIN OF CUSTODY #:	PROJECT MANAGER:
Phone:	(613)592-9600 Fax: (613)592-9601	Phone:	Fax:	Site #:	7000	C#463850-01-01	Parnian Baber
Email:	AccountsPayable_Maxxam@golder.com, OttawaAc	Email:	Maria_Staneva@golder.com	Sampled By:			

Regulation 153 (2011): ☐ Table 1 ☐ Table 2 ☐ Table 3 ☐ Table ___ ☐ 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 #)*

ANALYSIS REQUESTED (Please be specific):

	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 (Water)	O'Reg 153 PAHs (Water)	O'Reg 153 Metals Package (Water)	Mercury	Chromium VI						# of Bottles	Comments
1		BH 14-101C	03 APRIL	10:30	GW	N		✓										5	
2		BH 14-102	"	11:00	GW	N		✓										5	
3		BH 14-1	"	12:30	GW	N	Y	✓	✓	✓	✓	✓						10	
4		BH 14-3	03 APRIL	12:15	GW	N	Y	✓	✓	✓	✓	✓						10	
5					GW														
6					GW														
7					GW														
8																			
9																			
10																			

3-Apr-14 15:00
Parnian Baber
B453269
CB2 OTT-001

REC'D IN OTTAWA

on ice packs

*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
DARYL MILLER	2014/04/03	15:00	C. Bergeron	2014/04/03	15:03			6/5/4	Present		X
									Intact		X

* 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

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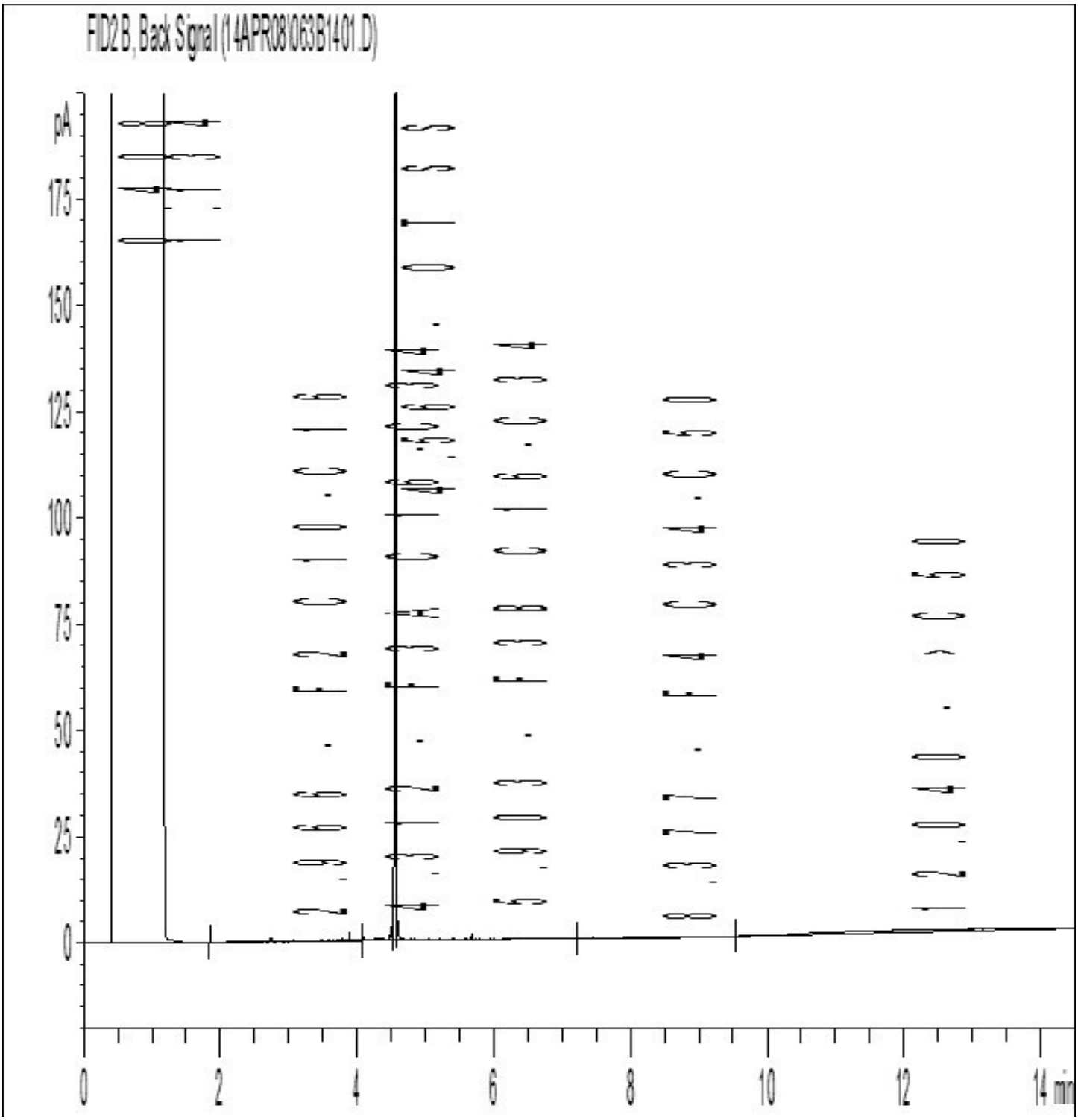
Report Date: 2014/04/09
Maxxam Job #: B453269
Maxxam Sample: VK7349

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: BH14-101C

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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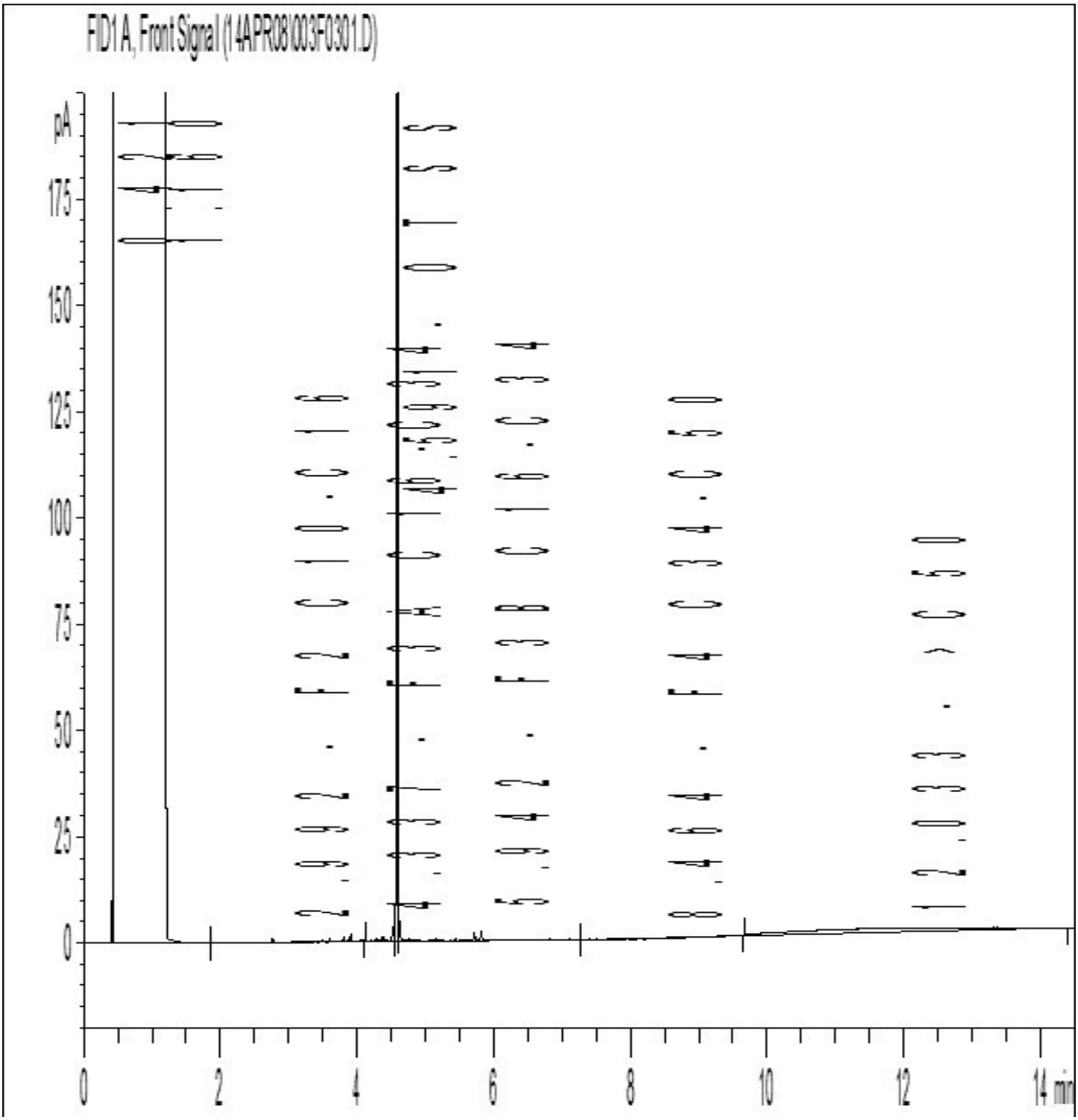
Report Date: 2014/04/09
Maxxam Job #: B453269
Maxxam Sample: VK7350

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: BH14-102

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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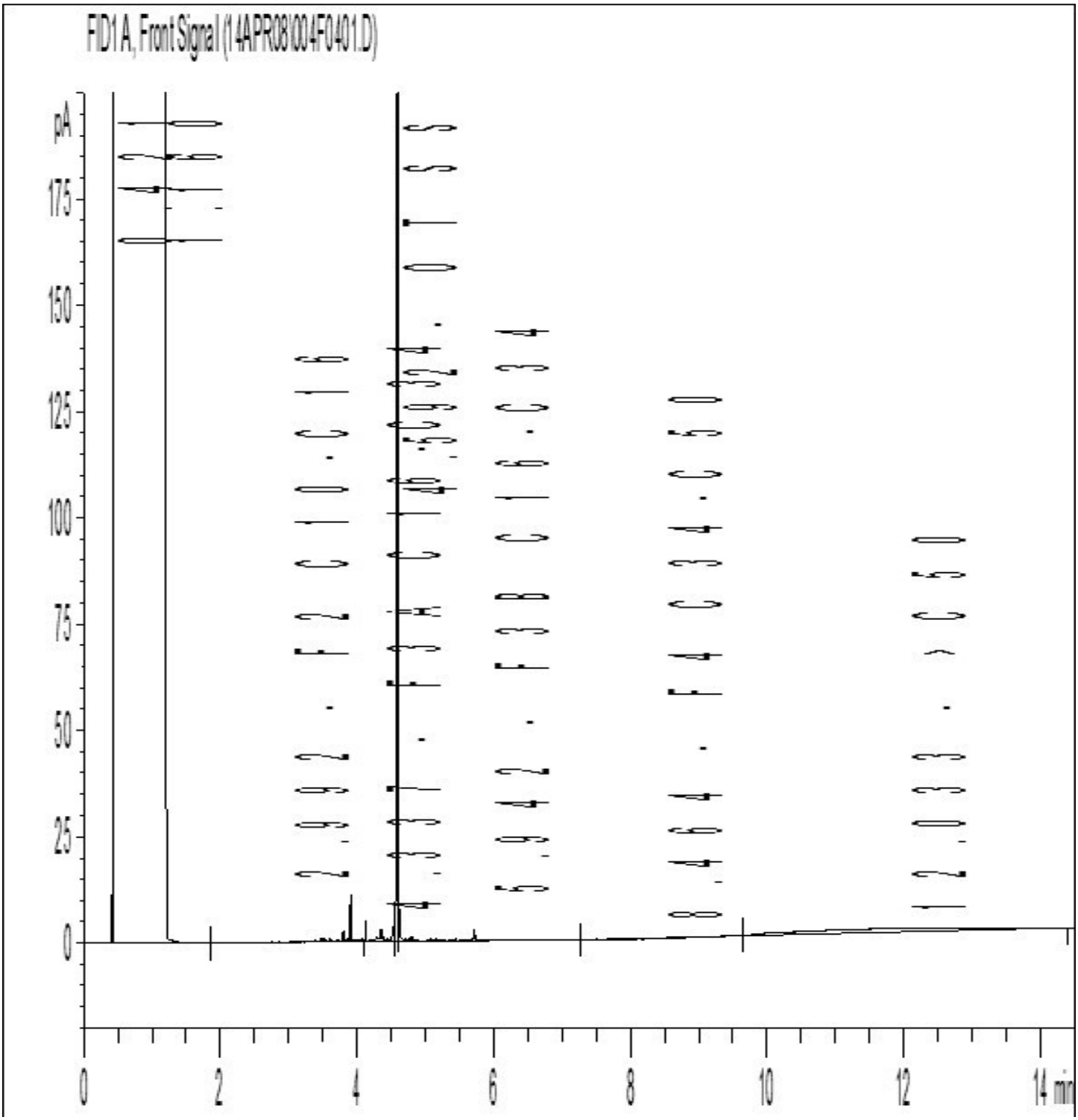
Report Date: 2014/04/09
Maxxam Job #: B453269
Maxxam Sample: VK7351

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: BH14-1

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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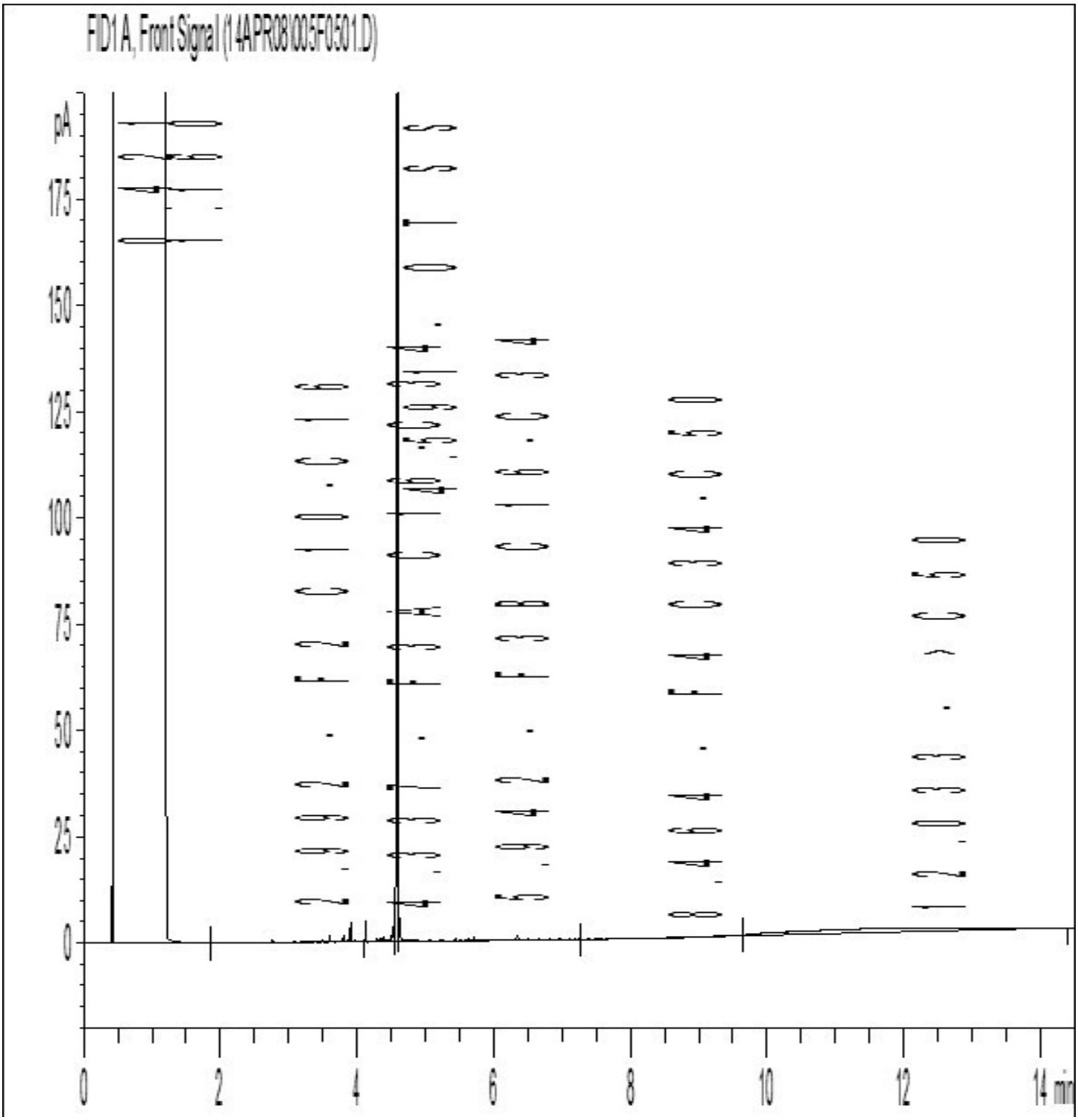
Report Date: 2014/04/09
Maxxam Job #: B453269
Maxxam Sample: VK7352

Golder Associates Ltd
Client Project #: 14-1122-0005

Client ID: BH14-3

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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Success Through Science®

Your Project #: 1525113
Site#: Oblates
Your C.O.C. #: 505928-01-01

Attention:Maria Staneva

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2015/03/31
Report #: R3377846
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B553092
Received: 2015/03/25, 15:47

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	3	N/A	2015/03/30	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	4	N/A	2015/03/31	CAM SOP-00226	EPA 8260
Chromium (VI) in Water (1)	3	N/A	2015/03/30	CAM SOP-00436	EPA 7199 m
Petroleum Hydro. CCME F1 & BTEX in Water (1)	3	N/A	2015/03/30	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1)	3	2015/03/28	2015/03/30	CAM SOP-00316	CCME PHC-CWS m
Mercury (1)	3	2015/03/30	2015/03/31	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS (1)	3	N/A	2015/03/31	CAM SOP-00447	EPA 6020 m
PAH Compounds in Water by GC/MS (SIM) (1)	3	2015/03/28	2015/03/30	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds in Water (1)	4	N/A	2015/03/30	CAM SOP 00228	EPA 8260 m

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 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.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga

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Your Project #: 1525113
Site#: Oblates
Your C.O.C. #: 505928-01-01

Attention:Maria Staneva

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2015/03/31
Report #: R3377846
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B553092
Received: 2015/03/25, 15:47

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573
==========
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 Job #: B553092
Report Date: 2015/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

O.REG 153 METALS PACKAGE (WATER)

Maxxam ID		AAB979	AAB979	AAB980	AAB981		
Sampling Date		2015/03/24	2015/03/24	2015/03/24	2015/03/24		
COC Number		505928-01-01	505928-01-01	505928-01-01	505928-01-01		
	Units	**MW15-107**	**MW15-107 Lab-Dup**	**MW15-105**	**MW15-103**	**RDL**	**QC Batch**
Metals							
Chromium (VI)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	3964164
Mercury (Hg)	ug/L	<0.1		<0.1	<0.1	0.1	3964895
Dissolved Antimony (Sb)	ug/L	<0.50		<0.50	<0.50	0.50	3966342
Dissolved Arsenic (As)	ug/L	<1.0		<1.0	<1.0	1.0	3966342
Dissolved Barium (Ba)	ug/L	190		92	83	2.0	3966342
Dissolved Beryllium (Be)	ug/L	<0.50		<0.50	<0.50	0.50	3966342
Dissolved Boron (B)	ug/L	25		60	44	10	3966342
Dissolved Cadmium (Cd)	ug/L	<0.10		<0.10	<0.10	0.10	3966342
Dissolved Chromium (Cr)	ug/L	<5.0		<5.0	<5.0	5.0	3966342
Dissolved Cobalt (Co)	ug/L	0.80		1.2	1.7	0.50	3966342
Dissolved Copper (Cu)	ug/L	1.2		1.1	1.4	1.0	3966342
Dissolved Lead (Pb)	ug/L	<0.50		<0.50	<0.50	0.50	3966342
Dissolved Molybdenum (Mo)	ug/L	3.6		3.9	3.3	0.50	3966342
Dissolved Nickel (Ni)	ug/L	2.9		2.7	4.0	1.0	3966342
Dissolved Selenium (Se)	ug/L	<2.0		2.7	2.2	2.0	3966342
Dissolved Silver (Ag)	ug/L	<0.10		<0.10	<0.10	0.10	3966342
Dissolved Sodium (Na)	ug/L	32000		49000	31000	100	3966342
Dissolved Thallium (Tl)	ug/L	<0.050		0.077	<0.050	0.050	3966342
Dissolved Uranium (U)	ug/L	0.74		1.8	1.4	0.10	3966342
Dissolved Vanadium (V)	ug/L	1.7		<0.50	<0.50	0.50	3966342
Dissolved Zinc (Zn)	ug/L	<5.0		<5.0	<5.0	5.0	3966342

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B553092
Report Date: 2015/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

O.REG 153 PAHS (WATER)

Maxxam ID		AAB979	AAB980	AAB981		
Sampling Date		2015/03/24	2015/03/24	2015/03/24		
COC Number		505928-01-01	505928-01-01	505928-01-01		
	Units	MW15-107	MW15-105	MW15-103	RDL	QC Batch
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	<0.071	0.071	3961388
Polyaromatic Hydrocarbons						
Acenaphthene	ug/L	<0.050	<0.050	<0.050	0.050	3964206
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	0.050	3964206
Anthracene	ug/L	<0.050	<0.050	<0.050	0.050	3964206
Benzo(a)anthracene	ug/L	<0.050	<0.050	<0.050	0.050	3964206
Benzo(a)pyrene	ug/L	<0.010	<0.010	<0.010	0.010	3964206
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	3964206
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	0.050	3964206
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	3964206
Chrysene	ug/L	<0.050	<0.050	<0.050	0.050	3964206
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	0.050	3964206
Fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	3964206
Fluorene	ug/L	<0.050	<0.050	<0.050	0.050	3964206
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	0.050	3964206
1-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	0.050	3964206
2-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	0.050	3964206
Naphthalene	ug/L	<0.050	0.050	<0.050	0.050	3964206
Phenanthrene	ug/L	<0.030	0.12	0.060	0.030	3964206
Pyrene	ug/L	<0.050	<0.050	<0.050	0.050	3964206
Surrogate Recovery (%)						
D10-Anthracene	%	109	108	109		3964206
D14-Terphenyl (FS)	%	88	86	84		3964206
D8-Acenaphthylene	%	99	100	101		3964206

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B553092
Report Date: 2015/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

O.REG 153 PETROLEUM HYDROCARBONS (WATER)

Maxxam ID		AAB979	AAB980	AAB981		
Sampling Date		2015/03/24	2015/03/24	2015/03/24		
COC Number		505928-01-01	505928-01-01	505928-01-01		
	Units	**MW15-107**	**MW15-105**	**MW15-103**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons						
F1 (C6-C10)	ug/L	<25	<25	<25	25	3965253
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	25	3965253
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	100	3964167
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	200	3964167
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	200	3964167
Reached Baseline at C50	ug/L	Yes	Yes	Yes		3964167
Surrogate Recovery (%)						
1,4-Difluorobenzene	%	105	105	105		3965253
4-Bromofluorobenzene	%	96	93	95		3965253
D10-Ethylbenzene	%	97	95	96		3965253
D4-1,2-Dichloroethane	%	92	93	93		3965253
o-Terphenyl	%	99	100	100		3964167

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B553092
Report Date: 2015/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

O.REG 153 VOLATILE ORGANICS (WATER)

Maxxam ID		AAB979	AAB979	AAB980	AAB981	AAB982		
Sampling Date		2015/03/24	2015/03/24	2015/03/24	2015/03/24	2015/03/11		
COC Number		505928-01-01	505928-01-01	505928-01-01	505928-01-01	505928-01-01		
	Units	MW15-107	MW15-107 Lab-Dup	MW15-105	MW15-103	TRIP BLANK	RDL	QC Batch
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/L	<0.50		<0.50	<0.50	<0.50	0.50	3961229
Volatile Organics								
Acetone (2-Propanone)	ug/L	11	12	<10	22	<10	10	3963248
Benzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3963248
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3963248
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3963248
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3963248
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3963248
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3963248
Chloroform	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3963248
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3963248
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3963248
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3963248
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3963248
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3963248
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3963248
1,2-Dichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3963248
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3963248
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3963248
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3963248
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3963248
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	3963248
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	3963248
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3963248
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3963248
Hexane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3963248
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	3963248
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	3963248
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	<10	<10	10	3963248
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3963248
Styrene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3963248
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3963248
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3963248
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3963248
Toluene	ug/L	0.25	0.26	0.28	0.24	<0.20	0.20	3963248

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B553092
Report Date: 2015/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

O.REG 153 VOLATILE ORGANICS (WATER)

Maxxam ID		AAB979	AAB979	AAB980	AAB981	AAB982		
Sampling Date		2015/03/24	2015/03/24	2015/03/24	2015/03/24	2015/03/11		
COC Number		505928-01-01	505928-01-01	505928-01-01	505928-01-01	505928-01-01		
	Units	**MW15-107**	**MW15-107 Lab-Dup**	**MW15-105**	**MW15-103**	**TRIP BLANK**	**RDL**	**QC Batch**
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3963248
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3963248
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3963248
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3963248
p+m-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3963248
o-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3963248
Total Xylenes	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	3963248
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	3963248
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	91	90	89	89	90		3963248
D4-1,2-Dichloroethane	%	117	119	120	120	120		3963248
D8-Toluene	%	93	93	94	94	94		3963248

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B553092
Report Date: 2015/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

TEST SUMMARY

Maxxam ID: AAB979
Sample ID: MW15-107
Matrix: Water

Collected: 2015/03/24
Shipped:
Received: 2015/03/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3961388	N/A	2015/03/30	Automated Statchk
1,3-Dichloropropene Sum	CALC	3961229	N/A	2015/03/31	Automated Statchk
Chromium (VI) in Water	IC	3964164	N/A	2015/03/30	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	3965253	N/A	2015/03/30	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3964167	2015/03/28	2015/03/30	Jolanta Kawzowicz
Mercury	CV/AA	3964895	2015/03/30	2015/03/31	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3966342	N/A	2015/03/31	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3964206	2015/03/28	2015/03/30	Lingyun Feng
Volatile Organic Compounds in Water	GC/MS	3963248	N/A	2015/03/30	Karen Hughes

Maxxam ID: AAB979 Dup
Sample ID: MW15-107
Matrix: Water

Collected: 2015/03/24
Shipped:
Received: 2015/03/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chromium (VI) in Water	IC	3964164	N/A	2015/03/30	Sally Coughlin
Volatile Organic Compounds in Water	GC/MS	3963248	N/A	2015/03/30	Karen Hughes

Maxxam ID: AAB980
Sample ID: MW15-105
Matrix: Water

Collected: 2015/03/24
Shipped:
Received: 2015/03/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3961388	N/A	2015/03/30	Automated Statchk
1,3-Dichloropropene Sum	CALC	3961229	N/A	2015/03/31	Automated Statchk
Chromium (VI) in Water	IC	3964164	N/A	2015/03/30	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	3965253	N/A	2015/03/30	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3964167	2015/03/28	2015/03/30	Jolanta Kawzowicz
Mercury	CV/AA	3964895	2015/03/30	2015/03/31	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3966342	N/A	2015/03/31	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3964206	2015/03/28	2015/03/30	Lingyun Feng
Volatile Organic Compounds in Water	GC/MS	3963248	N/A	2015/03/30	Karen Hughes

Maxxam ID: AAB981
Sample ID: MW15-103
Matrix: Water

Collected: 2015/03/24
Shipped:
Received: 2015/03/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3961388	N/A	2015/03/30	Automated Statchk
1,3-Dichloropropene Sum	CALC	3961229	N/A	2015/03/31	Automated Statchk
Chromium (VI) in Water	IC	3964164	N/A	2015/03/30	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	3965253	N/A	2015/03/30	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3964167	2015/03/28	2015/03/30	Jolanta Kawzowicz
Mercury	CV/AA	3964895	2015/03/30	2015/03/31	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3966342	N/A	2015/03/31	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3964206	2015/03/28	2015/03/30	Lingyun Feng

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Maxxam Job #: B553092
Report Date: 2015/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

TEST SUMMARY

Maxxam ID: AAB981
Sample ID: MW15-103
Matrix: Water

Collected: 2015/03/24
Shipped:
Received: 2015/03/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds in Water	GC/MS	3963248	N/A	2015/03/30	Karen Hughes

Maxxam ID: AAB982
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2015/03/11
Shipped:
Received: 2015/03/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	3961229	N/A	2015/03/31	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	3963248	N/A	2015/03/30	Karen Hughes

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Maxxam Job #: B553092
Report Date: 2015/03/31

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GENERAL COMMENTS

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

Package 1	8.0°C

Results relate only to the items tested.

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Maxxam Job #: B553092
Report Date: 2015/03/31

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3963248	4-Bromofluorobenzene	2015/03/30	102	70 - 130	100	70 - 130	92	%		
3963248	D4-1,2-Dichloroethane	2015/03/30	109	70 - 130	113	70 - 130	126	%		
3963248	D8-Toluene	2015/03/30	90	70 - 130	93	70 - 130	78	%		
3964167	o-Terphenyl	2015/03/30	105	60 - 130	104	60 - 130	100	%		
3964206	D10-Anthracene	2015/03/29	101	50 - 130	101	50 - 130	107	%		
3964206	D14-Terphenyl (FS)	2015/03/29	74	50 - 130	77	50 - 130	81	%		
3964206	D8-Acenaphthylene	2015/03/29	100	50 - 130	95	50 - 130	99	%		
3965253	1,4-Difluorobenzene	2015/03/31	104	70 - 130	103	70 - 130	103	%		
3965253	4-Bromofluorobenzene	2015/03/31	100	70 - 130	102	70 - 130	95	%		
3965253	D10-Ethylbenzene	2015/03/31	107	70 - 130	103	70 - 130	91	%		
3965253	D4-1,2-Dichloroethane	2015/03/31	95	70 - 130	101	70 - 130	103	%		
3963248	1,1,1,2-Tetrachloroethane	2015/03/30	97	70 - 130	105	70 - 130	<0.50	ug/L	NC	30
3963248	1,1,1-Trichloroethane	2015/03/30	98	70 - 130	104	70 - 130	<0.20	ug/L	NC	30
3963248	1,1,2,2-Tetrachloroethane	2015/03/30	107	70 - 130	117	70 - 130	<0.50	ug/L	NC	30
3963248	1,1,2-Trichloroethane	2015/03/30	102	70 - 130	114	70 - 130	<0.50	ug/L	NC	30
3963248	1,1-Dichloroethane	2015/03/30	104	70 - 130	112	70 - 130	<0.20	ug/L	NC	30
3963248	1,1-Dichloroethylene	2015/03/30	104	70 - 130	113	70 - 130	<0.20	ug/L	NC	30
3963248	1,2-Dichlorobenzene	2015/03/30	105	70 - 130	113	70 - 130	<0.50	ug/L	NC	30
3963248	1,2-Dichloroethane	2015/03/30	107	70 - 130	115	70 - 130	<0.50	ug/L	NC	30
3963248	1,2-Dichloropropane	2015/03/30	101	70 - 130	108	70 - 130	<0.20	ug/L	NC	30
3963248	1,3-Dichlorobenzene	2015/03/30	100	70 - 130	107	70 - 130	<0.50	ug/L	NC	30
3963248	1,4-Dichlorobenzene	2015/03/30	101	70 - 130	108	70 - 130	<0.50	ug/L	NC	30
3963248	Acetone (2-Propanone)	2015/03/30	118	60 - 140	127	60 - 140	<10	ug/L	NC	30
3963248	Benzene	2015/03/30	98	70 - 130	104	70 - 130	<0.20	ug/L	NC	30
3963248	Bromodichloromethane	2015/03/30	99	70 - 130	106	70 - 130	<0.50	ug/L	NC	30
3963248	Bromoform	2015/03/30	98	70 - 130	107	70 - 130	<1.0	ug/L	NC	30
3963248	Bromomethane	2015/03/30	97	60 - 140	103	60 - 140	<0.50	ug/L	NC	30
3963248	Carbon Tetrachloride	2015/03/30	97	70 - 130	117	70 - 130	<0.20	ug/L	NC	30
3963248	Chlorobenzene	2015/03/30	95	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
3963248	Chloroform	2015/03/30	102	70 - 130	109	70 - 130	<0.20	ug/L	NC	30
3963248	cis-1,2-Dichloroethylene	2015/03/30	101	70 - 130	108	70 - 130	<0.50	ug/L	NC	30
3963248	cis-1,3-Dichloropropene	2015/03/30	94	70 - 130	81	70 - 130	<0.30	ug/L	NC	30

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Maxxam Job #: B553092
Report Date: 2015/03/31

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3963248	Dibromochloromethane	2015/03/30	101	70 - 130	110	70 - 130	<0.50	ug/L	NC	30
3963248	Dichlorodifluoromethane (FREON 12)	2015/03/30	68	60 - 140	103	60 - 140	<1.0	ug/L	NC	30
3963248	Ethylbenzene	2015/03/30	89	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
3963248	Ethylene Dibromide	2015/03/30	102	70 - 130	111	70 - 130	<0.20	ug/L	NC	30
3963248	Hexane	2015/03/30	103	70 - 130	114	70 - 130	<1.0	ug/L	NC	30
3963248	Methyl Ethyl Ketone (2-Butanone)	2015/03/30	124	60 - 140	134	60 - 140	<10	ug/L	NC	30
3963248	Methyl Isobutyl Ketone	2015/03/30	116	70 - 130	125	70 - 130	<5.0	ug/L	NC	30
3963248	Methyl t-butyl ether (MTBE)	2015/03/30	93	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
3963248	Methylene Chloride(Dichloromethane)	2015/03/30	114	70 - 130	124	70 - 130	<2.0	ug/L	NC	30
3963248	o-Xylene	2015/03/30	86	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
3963248	p+m-Xylene	2015/03/30	90	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
3963248	Styrene	2015/03/30	98	70 - 130	109	70 - 130	<0.50	ug/L	NC	30
3963248	Tetrachloroethylene	2015/03/30	99	70 - 130	106	70 - 130	<0.20	ug/L	NC	30
3963248	Toluene	2015/03/30	95	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
3963248	Total Xylenes	2015/03/30					<0.20	ug/L	NC	30
3963248	trans-1,2-Dichloroethylene	2015/03/30	99	70 - 130	107	70 - 130	<0.50	ug/L	NC	30
3963248	trans-1,3-Dichloropropene	2015/03/30	98	70 - 130	85	70 - 130	<0.40	ug/L	NC	30
3963248	Trichloroethylene	2015/03/30	97	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
3963248	Trichlorofluoromethane (FREON 11)	2015/03/30	94	70 - 130	106	70 - 130	<0.50	ug/L	NC	30
3963248	Vinyl Chloride	2015/03/30	87	70 - 130	108	70 - 130	<0.20	ug/L	NC	30
3964164	Chromium (VI)	2015/03/30	96	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
3964167	F2 (C10-C16 Hydrocarbons)	2015/03/30	107	50 - 130	106	60 - 130	<100	ug/L	NC	30
3964167	F3 (C16-C34 Hydrocarbons)	2015/03/30	108	50 - 130	111	60 - 130	<200	ug/L	NC	30
3964167	F4 (C34-C50 Hydrocarbons)	2015/03/30	111	50 - 130	106	60 - 130	<200	ug/L	NC	30
3964206	1-Methylnaphthalene	2015/03/29	89	50 - 130	86	50 - 130	<0.050	ug/L	NC	30
3964206	2-Methylnaphthalene	2015/03/29	87	50 - 130	86	50 - 130	<0.050	ug/L	NC	30
3964206	Acenaphthene	2015/03/29	97	50 - 130	94	50 - 130	<0.050	ug/L	NC	30
3964206	Acenaphthylene	2015/03/29	101	50 - 130	95	50 - 130	<0.050	ug/L	NC	30
3964206	Anthracene	2015/03/29	91	50 - 130	95	50 - 130	<0.050	ug/L	NC	30
3964206	Benzo(a)anthracene	2015/03/29	66	50 - 130	88	50 - 130	<0.050	ug/L	NC	30
3964206	Benzo(a)pyrene	2015/03/29	57	50 - 130	74	50 - 130	<0.010	ug/L	NC	30
3964206	Benzo(b/j)fluoranthene	2015/03/29	59	50 - 130	80	50 - 130	<0.050	ug/L	NC	30

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Maxxam Job #: B553092
Report Date: 2015/03/31

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3964206	Benzo(g,h,i)perylene	2015/03/29	59	50 - 130	71	50 - 130	<0.050	ug/L	NC	30
3964206	Benzo(k)fluoranthene	2015/03/29	58	50 - 130	76	50 - 130	<0.050	ug/L	NC	30
3964206	Chrysene	2015/03/29	65	50 - 130	80	50 - 130	<0.050	ug/L	NC	30
3964206	Dibenz(a,h)anthracene	2015/03/29	58	50 - 130	69	50 - 130	<0.050	ug/L	NC	30
3964206	Fluoranthene	2015/03/29	84	50 - 130	96	50 - 130	<0.050	ug/L	NC	30
3964206	Fluorene	2015/03/29	111	50 - 130	110	50 - 130	<0.050	ug/L	NC	30
3964206	Indeno(1,2,3-cd)pyrene	2015/03/29	62	50 - 130	76	50 - 130	<0.050	ug/L	NC	30
3964206	Naphthalene	2015/03/29	89	50 - 130	88	50 - 130	<0.050	ug/L	NC	30
3964206	Phenanthrene	2015/03/29	94	50 - 130	95	50 - 130	<0.030	ug/L	NC	30
3964206	Pyrene	2015/03/29	80	50 - 130	95	50 - 130	<0.050	ug/L	NC	30
3964895	Mercury (Hg)	2015/03/31	101	75 - 125	97	80 - 120	<0.1	ug/L	NC	20
3965253	F1 (C6-C10) - BTEX	2015/03/31					<25	ug/L	NC	30
3965253	F1 (C6-C10)	2015/03/31	70	70 - 130	99	70 - 130	<25	ug/L	NC	30
3966342	Dissolved Antimony (Sb)	2015/03/31	105	80 - 120	102	80 - 120	<0.50	ug/L	NC	20
3966342	Dissolved Arsenic (As)	2015/03/31	100	80 - 120	100	80 - 120	<1.0	ug/L	NC	20
3966342	Dissolved Barium (Ba)	2015/03/31	98	80 - 120	97	80 - 120	<2.0	ug/L	2.5	20
3966342	Dissolved Beryllium (Be)	2015/03/31	106	80 - 120	103	80 - 120	<0.50	ug/L	NC	20
3966342	Dissolved Boron (B)	2015/03/31	103	80 - 120	101	80 - 120	<10	ug/L	NC	20
3966342	Dissolved Cadmium (Cd)	2015/03/31	103	80 - 120	101	80 - 120	<0.10	ug/L	NC	20
3966342	Dissolved Chromium (Cr)	2015/03/31	100	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
3966342	Dissolved Cobalt (Co)	2015/03/31	98	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
3966342	Dissolved Copper (Cu)	2015/03/31	102	80 - 120	100	80 - 120	<1.0	ug/L	NC	20
3966342	Dissolved Lead (Pb)	2015/03/31	99	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
3966342	Dissolved Molybdenum (Mo)	2015/03/31	106	80 - 120	101	80 - 120	<0.50	ug/L	NC	20
3966342	Dissolved Nickel (Ni)	2015/03/31	96	80 - 120	96	80 - 120	<1.0	ug/L	NC	20
3966342	Dissolved Selenium (Se)	2015/03/31	103	80 - 120	100	80 - 120	<2.0	ug/L	NC	20
3966342	Dissolved Silver (Ag)	2015/03/31	99	80 - 120	100	80 - 120	<0.10	ug/L	NC	20
3966342	Dissolved Sodium (Na)	2015/03/31	NC	80 - 120	101	80 - 120	<100	ug/L	2.8	20
3966342	Dissolved Thallium (Tl)	2015/03/31	99	80 - 120	97	80 - 120	<0.050	ug/L	NC	20
3966342	Dissolved Uranium (U)	2015/03/31	97	80 - 120	95	80 - 120	<0.10	ug/L	5.6	20
3966342	Dissolved Vanadium (V)	2015/03/31	101	80 - 120	98	80 - 120	<0.50	ug/L	NC	20

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Maxxam Job #: B553092
Report Date: 2015/03/31

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3966342	Dissolved Zinc (Zn)	2015/03/31	100	80 - 120	98	80 - 120	<5.0	ug/L	NC	20

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B553092
Report Date: 2015/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

VALIDATION SIGNATURE PAGE

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

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) 817-5777 www.maxxam.ca

25-Mar-15 15:47
Parnian Baber
B553092
FW ENV-857

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B40279
Attention:	Central Accounting	Attention:	Maria Staneva	P.O. #:	
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Project Name:	
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Maria_Staneva@golder.com	Site #:	Oblates
				Sampled By:	B. McParlan

Use Only:
Bottle Order #: 505928
Project Manager: Parnian Baber
C#505928-01-01

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): [X] Table 1 [X] Res/Park [X] Medium/Fine; [ ] Table 2 [ ] Ind/Comm [ ] Coarse; [ ] Table 3 [ ] Agri/Other [X] For RSC; [ ] Table ___

Other Regulations: [ ] CCME [ ] Sanitary Sewer Bylaw; [ ] Reg 558 [ ] Storm Sewer Bylaw; [ ] MISA Municipality ___; [ ] PWQO; [ ] Other ___

Special Instructions:

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(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	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 Metals Package (Soil)	pH CaCl2 EXTRACT	O.Reg 153 Petroleum Hydrocarbons (Water)	O.Reg 153 Volatile Organics (Water)	O.Reg 153 PAHs (Water)	O.Reg 153 Metals Package (Water) (ICPMS Metals, Hg CRVI)				# of Bottles	Comments
1		MW15-107	2015/03/24		GW	Yes				X	X	X	X				13	
2		MW15-105	"		GW	Yes				X	X	X	X				13	
3		MW15-103	"		GW	Yes				X	X	X	X				13	
4		TRIP BLANK	2015/03/11		GW	~~Yes~~					X						3	
5																		
6																		
7																		
8																		RECEIVED IN OTTAWA
9																		
10																		omce

* 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
B. McParlan / B. McParlan	15/03/25	14:30	Kelsey Pilon / Kelsey Pilon	15/03/25	15:47			7,9,8	Present	✓	
			[illegible]	2015/03/26	09:30				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

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

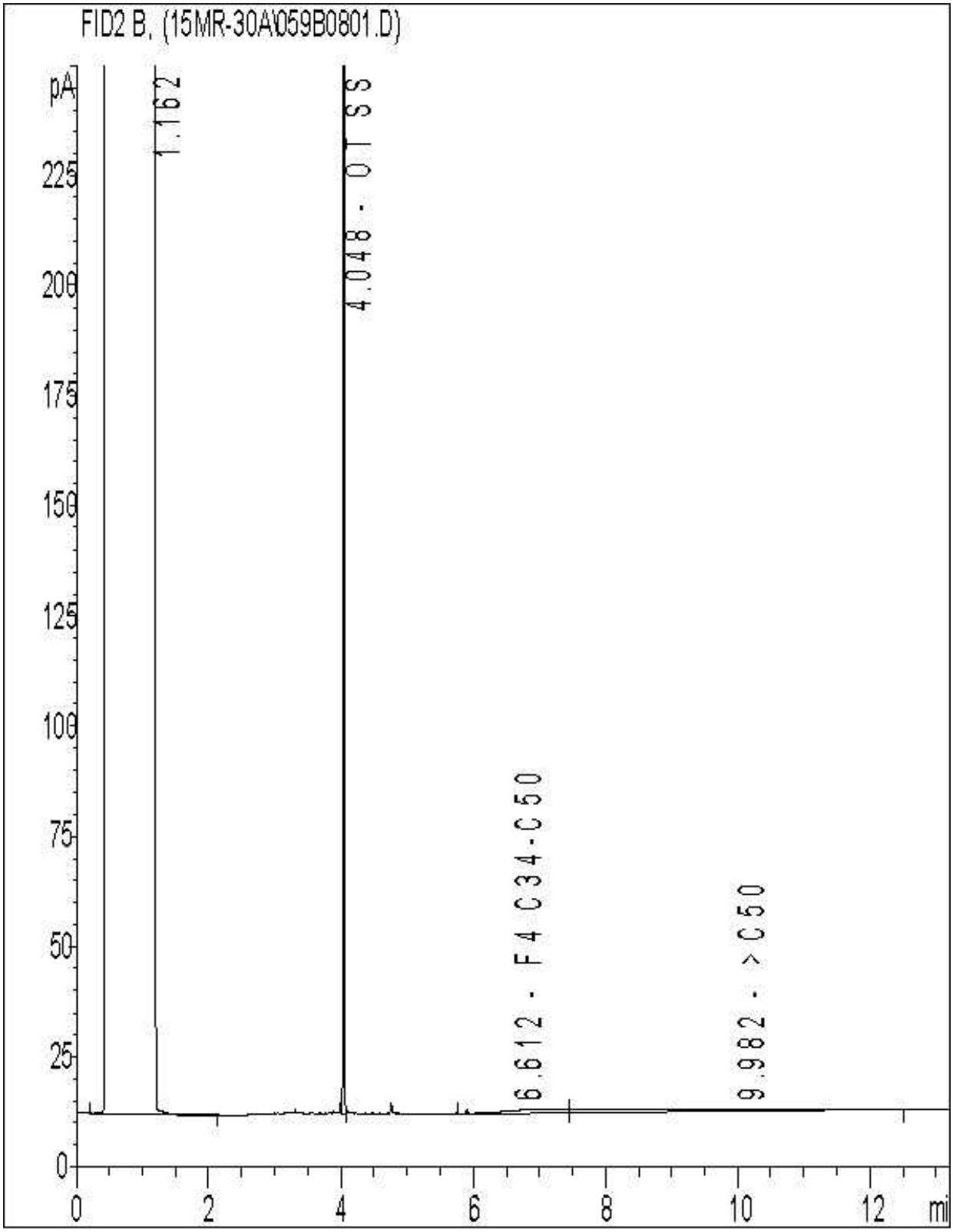
White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics 6/6/7°C

Maxxam Job #: B553092
Report Date: 2015/03/31
Maxxam Sample: AAB979

Golder Associates Ltd
Client Project #: 1525113
Client ID: MW15-107

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

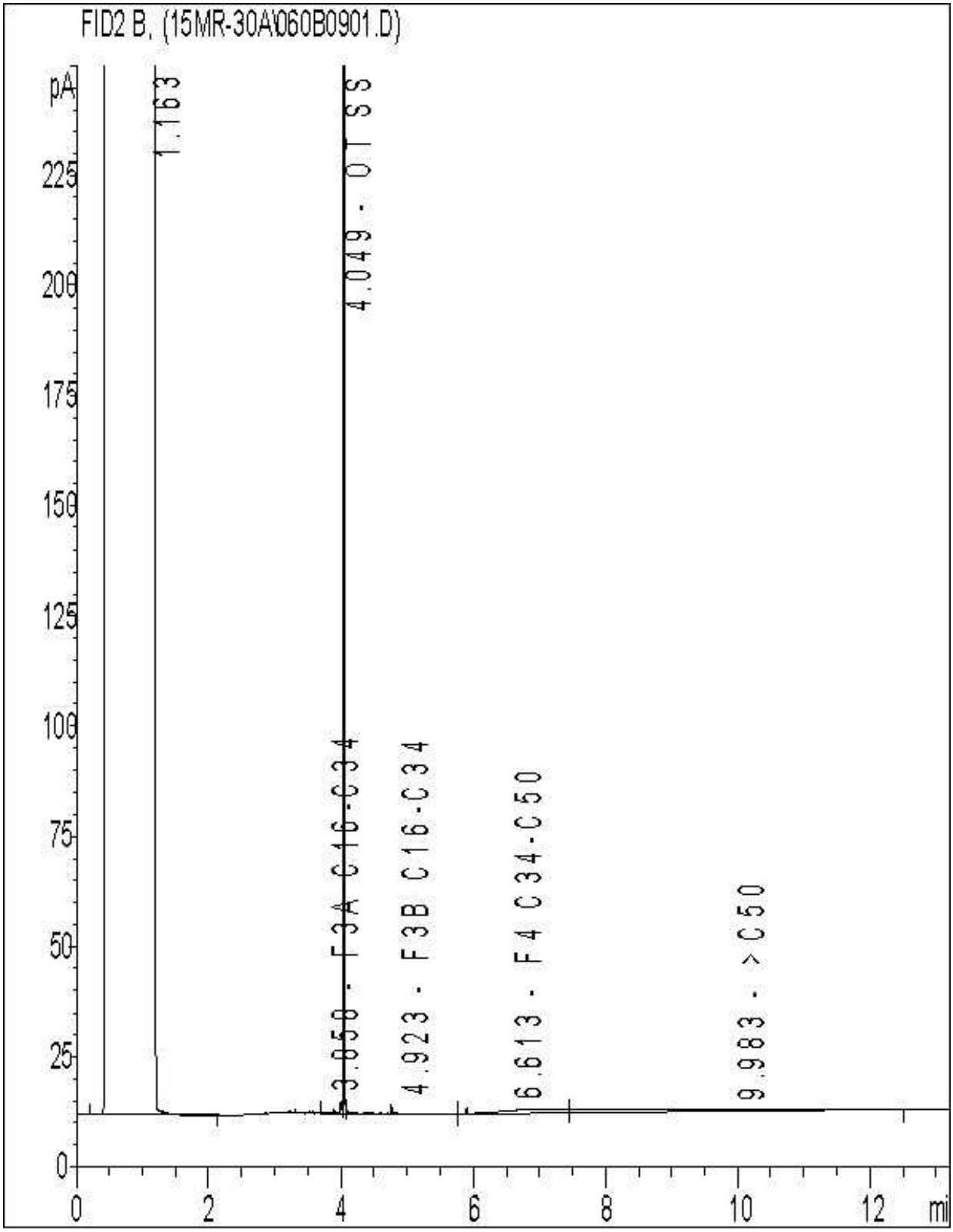


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B553092
Report Date: 2015/03/31
Maxxam Sample: AAB980

Golder Associates Ltd
Client Project #: 1525113
Client ID: MW15-105

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

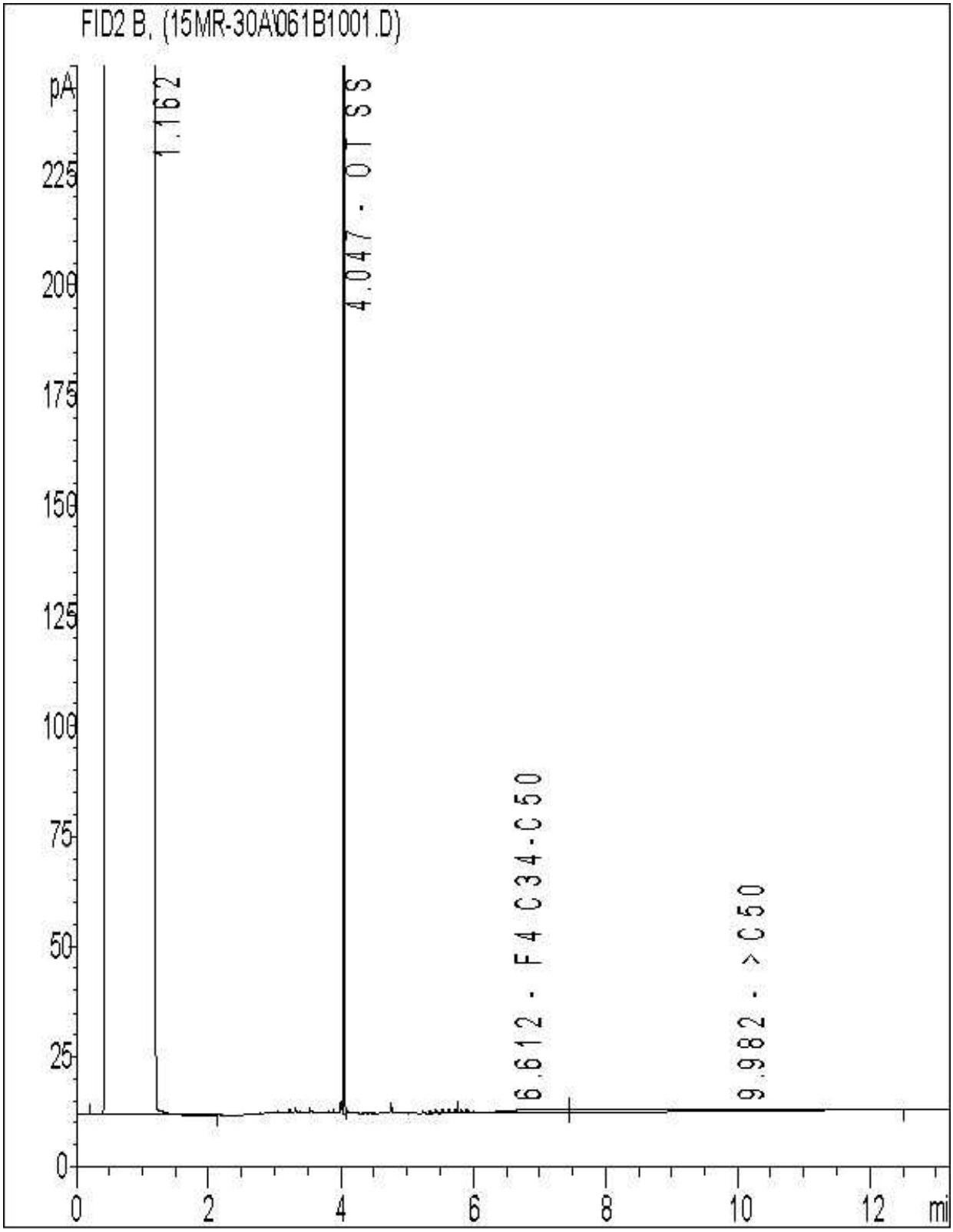


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B553092
Report Date: 2015/03/31
Maxxam Sample: AAB981

Golder Associates Ltd
Client Project #: 1525113
Client ID: MW15-103

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.

Your Project #: 1525113
Site#: Oblates
Your C.O.C. #: 505928-02-01

Attention: Maria Staneva
Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2015/04/01
Report #: R3378941
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B553170
Received: 2015/03/25, 15:47

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Methylnaphthalene Sum	2	N/A	2015/03/30	CAM SOP-00301	EPA 8270D m
Methylnaphthalene Sum	1	N/A	2015/03/31	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum	3	N/A	2015/03/31	CAM SOP-00226	EPA 8260
Chromium (VI) in Water	2	N/A	2015/03/30	CAM SOP-00436	EPA 7199 m
Chromium (VI) in Water	1	N/A	2015/03/31	CAM SOP-00436	EPA 7199 m
Petroleum Hydro. CCME F1 & BTEX in Water	3	N/A	2015/03/30	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water	3	2015/03/28	2015/03/30	CAM SOP-00316	CCME PHC-CWS m
Mercury	3	2015/03/28	2015/03/30	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	3	N/A	2015/04/01	CAM SOP-00447	EPA 6020 m
PAH Compounds in Water by GC/MS (SIM)	2	2015/03/28	2015/03/30	CAM SOP-00318	EPA 8270D m
PAH Compounds in Water by GC/MS (SIM)	1	2015/03/30	2015/03/31	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds in Water	3	N/A	2015/03/30	CAM SOP 00228	EPA 8260 m

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 International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Your Project #: 1525113
Site#: Oblates
Your C.O.C. #: 505928-02-01

Attention: Maria Staneva
Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2015/04/01
Report #: R3378941
Version: 1

CERTIFICATE OF ANALYSIS

Maxxam Analytics is accredited 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.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

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

Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (905) 817-5700

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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

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Maxxam Job #: B553170
Report Date: 2015/04/01

Golder Associates Ltd
Client Project #: 1525113

Sampler Initials: BM

O.REG 153 METALS PACKAGE (WATER)

Maxxam ID		AAC220		AAC221	AAC221		AAC222		
Sampling Date		2015/03/25		2015/03/24	2015/03/24		2015/03/25		
COC Number		505928-02-01		505928-02-01	505928-02-01		505928-02-01		
	Units	**MW15-101**	**QC Batch**	**MW15-102**	**MW15-102 Lab-Dup**	**QC Batch**	**MW15-106**	**RDL**	**QC Batch**
Metals									
Chromium (VI)	ug/L	<0.50	3964163	<0.50	<0.50	3965869	<0.50	0.50	3964163
Mercury (Hg)	ug/L	<0.1	3964438	<0.1		3964438	<0.1	0.1	3964438
Dissolved Antimony (Sb)	ug/L	<0.50	3966358	<0.50		3966358	<0.50	0.50	3966358
Dissolved Arsenic (As)	ug/L	<1.0	3966358	<1.0		3966358	<1.0	1.0	3966358
Dissolved Barium (Ba)	ug/L	100	3966358	90		3966358	49	2.0	3966358
Dissolved Beryllium (Be)	ug/L	<0.50	3966358	<0.50		3966358	<0.50	0.50	3966358
Dissolved Boron (B)	ug/L	210	3966358	62		3966358	92	10	3966358
Dissolved Cadmium (Cd)	ug/L	<0.10	3966358	<0.10		3966358	<0.10	0.10	3966358
Dissolved Chromium (Cr)	ug/L	<5.0	3966358	<5.0		3966358	<5.0	5.0	3966358
Dissolved Cobalt (Co)	ug/L	5.6	3966358	1.8		3966358	1.2	0.50	3966358
Dissolved Copper (Cu)	ug/L	1.8	3966358	<1.0		3966358	<1.0	1.0	3966358
Dissolved Lead (Pb)	ug/L	<0.50	3966358	<0.50		3966358	<0.50	0.50	3966358
Dissolved Molybdenum (Mo)	ug/L	3.4	3966358	4.1		3966358	1.4	0.50	3966358
Dissolved Nickel (Ni)	ug/L	10	3966358	4.8		3966358	3.7	1.0	3966358
Dissolved Selenium (Se)	ug/L	<2.0	3966358	<2.0		3966358	2.4	2.0	3966358
Dissolved Silver (Ag)	ug/L	<0.10	3966358	<0.10		3966358	<0.10	0.10	3966358
Dissolved Sodium (Na)	ug/L	37000	3966358	27000		3966358	16000	100	3966358
Dissolved Thallium (Tl)	ug/L	<0.050	3966358	<0.050		3966358	<0.050	0.050	3966358
Dissolved Uranium (U)	ug/L	4.0	3966358	1.8		3966358	1.7	0.10	3966358
Dissolved Vanadium (V)	ug/L	2.1	3966358	<0.50		3966358	1.7	0.50	3966358
Dissolved Zinc (Zn)	ug/L	6.4	3966358	<5.0		3966358	<5.0	5.0	3966358

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B553170
Report Date: 2015/04/01

Golder Associates Ltd
Client Project #: 1525113

Sampler Initials: BM

O.REG 153 PAHS (WATER)

Maxxam ID		AAC220		AAC221	AAC221		AAC222		
Sampling Date		2015/03/25		2015/03/24	2015/03/24		2015/03/25		
COC Number		505928-02-01		505928-02-01	505928-02-01		505928-02-01		
	Units	**MW15-101**	**QC Batch**	**MW15-102**	**MW15-102 Lab-Dup**	**QC Batch**	**MW15-106**	**RDL**	**QC Batch**
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/L	<0.071	3961388	<0.071		3961388	<0.071	0.071	3961388
Polyaromatic Hydrocarbons									
Acenaphthene	ug/L	<0.050	3964206	<0.050	<0.050	3965895	<0.050	0.050	3964206
Acenaphthylene	ug/L	<0.050	3964206	<0.050	<0.050	3965895	<0.050	0.050	3964206
Anthracene	ug/L	<0.050	3964206	<0.050	<0.050	3965895	<0.050	0.050	3964206
Benzo(a)anthracene	ug/L	<0.050	3964206	<0.050	<0.050	3965895	<0.050	0.050	3964206
Benzo(a)pyrene	ug/L	<0.010	3964206	0.029	0.030	3965895	<0.010	0.010	3964206
Benzo(b/j)fluoranthene	ug/L	<0.050	3964206	<0.050	<0.050	3965895	<0.050	0.050	3964206
Benzo(g,h,i)perylene	ug/L	<0.050	3964206	<0.050	<0.050	3965895	<0.050	0.050	3964206
Benzo(k)fluoranthene	ug/L	<0.050	3964206	<0.050	<0.050	3965895	<0.050	0.050	3964206
Chrysene	ug/L	<0.050	3964206	<0.050	<0.050	3965895	<0.050	0.050	3964206
Dibenz(a,h)anthracene	ug/L	<0.050	3964206	<0.050	<0.050	3965895	<0.050	0.050	3964206
Fluoranthene	ug/L	<0.050	3964206	0.11	0.13	3965895	<0.050	0.050	3964206
Fluorene	ug/L	<0.050	3964206	<0.050	<0.050	3965895	<0.050	0.050	3964206
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	3964206	<0.050	<0.050	3965895	<0.050	0.050	3964206
1-Methylnaphthalene	ug/L	<0.050	3964206	<0.050	<0.050	3965895	<0.050	0.050	3964206
2-Methylnaphthalene	ug/L	<0.050	3964206	<0.050	<0.050	3965895	<0.050	0.050	3964206
Naphthalene	ug/L	0.065	3964206	<0.050	<0.050	3965895	<0.050	0.050	3964206
Phenanthrene	ug/L	0.065	3964206	0.12	0.14	3965895	<0.030	0.030	3964206
Pyrene	ug/L	<0.050	3964206	0.11	0.13	3965895	<0.050	0.050	3964206
Surrogate Recovery (%)									
D10-Anthracene	%	109	3964206	100	101	3965895	111		3964206
D14-Terphenyl (FS)	%	82	3964206	86	86	3965895	88		3964206
D8-Acenaphthylene	%	102	3964206	93	92	3965895	103		3964206

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B553170
Report Date: 2015/04/01

Golder Associates Ltd
Client Project #: 1525113

Sampler Initials: BM

O.REG 153 PETROLEUM HYDROCARBONS (WATER)

Maxxam ID		AAC220	AAC221	AAC222		
Sampling Date		2015/03/25	2015/03/24	2015/03/25		
COC Number		505928-02-01	505928-02-01	505928-02-01		
	Units	**MW15-101**	**MW15-102**	**MW15-106**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons						
F1 (C6-C10)	ug/L	<25	<25	<25	25	3965253
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	25	3965253
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	100	3964167
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	200	3964167
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	200	3964167
Reached Baseline at C50	ug/L	Yes	Yes	Yes		3964167
Surrogate Recovery (%)						
1,4-Difluorobenzene	%	104	107	105		3965253
4-Bromofluorobenzene	%	90	93	92		3965253
D10-Ethylbenzene	%	94	98	95		3965253
D4-1,2-Dichloroethane	%	95	93	93		3965253
o-Terphenyl	%	101	102	100		3964167

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B553170
Report Date: 2015/04/01

Golder Associates Ltd
Client Project #: 1525113

Sampler Initials: BM

O.REG 153 VOLATILE ORGANICS (WATER)

Maxxam ID		AAC220	AAC221	AAC222		
Sampling Date		2015/03/25	2015/03/24	2015/03/25		
COC Number		505928-02-01	505928-02-01	505928-02-01		
	Units	**MW15-101**	**MW15-102**	**MW15-106**	**RDL**	**QC Batch**
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	<0.50	0.50	3961229
Volatile Organics						
Acetone (2-Propanone)	ug/L	<10	<10	<10	10	3963248
Benzene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	0.50	3963248
Bromoform	ug/L	<1.0	<1.0	<1.0	1.0	3963248
Bromomethane	ug/L	<0.50	<0.50	<0.50	0.50	3963248
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Chloroform	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	0.50	3963248
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	3963248
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	3963248
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	3963248
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	1.0	3963248
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	0.20	3963248
1,2-Dichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	3963248
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	0.50	3963248
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	0.50	3963248
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	0.20	3963248
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	0.30	3963248
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	0.40	3963248
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Hexane	ug/L	<1.0	<1.0	<1.0	1.0	3963248
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	2.0	3963248
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	5.0	3963248
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	10	3963248
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	<0.50	0.50	3963248
Styrene	ug/L	<0.50	<0.50	<0.50	0.50	3963248
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	3963248

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B553170
Report Date: 2015/04/01

Golder Associates Ltd
Client Project #: 1525113

Sampler Initials: BM

O.REG 153 VOLATILE ORGANICS (WATER)

Maxxam ID		AAC220	AAC221	AAC222		
Sampling Date		2015/03/25	2015/03/24	2015/03/25		
COC Number		505928-02-01	505928-02-01	505928-02-01		
	Units	**MW15-101**	**MW15-102**	**MW15-106**	**RDL**	**QC Batch**
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	3963248
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Toluene	ug/L	0.20	<0.20	<0.20	0.20	3963248
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	0.20	3963248
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	3963248
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	0.20	3963248
p+m-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
o-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Total Xylenes	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	0.50	3963248
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	90	90	89		3963248
D4-1,2-Dichloroethane	%	122	122	123		3963248
D8-Toluene	%	94	79	78		3963248

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B553170
Report Date: 2015/04/01

Golder Associates Ltd
Client Project #: 1525113

Sampler Initials: BM

Test Summary

Maxxam ID AAC220 **Collected** 2015/03/25
Sample ID MW15-101 **Shipped**
Matrix Water **Received** 2015/03/25

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3961388	N/A	2015/03/30	Automated Statchk
1,3-Dichloropropene Sum	CALC	3961229	N/A	2015/03/31	Automated Statchk
Chromium (VI) in Water	IC	3964163	N/A	2015/03/30	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Wat	HSGC/MSFD	3965253	N/A	2015/03/30	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3964167	2015/03/28	2015/03/30	Jolanta Kawzowicz
Mercury	CV/AA	3964438	2015/03/28	2015/03/30	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3966358	N/A	2015/04/01	Cristina Petran
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3964206	2015/03/28	2015/03/30	Lingyun Feng
Volatile Organic Compounds in Water	GC/MS	3963248	N/A	2015/03/30	Karen Hughes

Maxxam ID AAC221 **Collected** 2015/03/24
Sample ID MW15-102 **Shipped**
Matrix Water **Received** 2015/03/25

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3961388	N/A	2015/03/31	Automated Statchk
1,3-Dichloropropene Sum	CALC	3961229	N/A	2015/03/31	Automated Statchk
Chromium (VI) in Water	IC	3965869	N/A	2015/03/31	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Wat	HSGC/MSFD	3965253	N/A	2015/03/30	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3964167	2015/03/28	2015/03/30	Jolanta Kawzowicz
Mercury	CV/AA	3964438	2015/03/28	2015/03/30	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3966358	N/A	2015/04/01	Cristina Petran
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3965895	2015/03/30	2015/03/31	Darryl Tiller
Volatile Organic Compounds in Water	GC/MS	3963248	N/A	2015/03/30	Karen Hughes

Maxxam ID AAC221 Dup **Collected** 2015/03/24
Sample ID MW15-102 **Shipped**
Matrix Water **Received** 2015/03/25

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Chromium (VI) in Water	IC	3965869	N/A	2015/03/31	Sally Coughlin
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3965895	2015/03/30	2015/03/31	Darryl Tiller

Maxxam ID AAC222 **Collected** 2015/03/25
Sample ID MW15-106 **Shipped**
Matrix Water **Received** 2015/03/25

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3961388	N/A	2015/03/30	Automated Statchk
1,3-Dichloropropene Sum	CALC	3961229	N/A	2015/03/31	Automated Statchk
Chromium (VI) in Water	IC	3964163	N/A	2015/03/30	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Wat	HSGC/MSFD	3965253	N/A	2015/03/30	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3964167	2015/03/28	2015/03/30	Jolanta Kawzowicz
Mercury	CV/AA	3964438	2015/03/28	2015/03/30	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3966358	N/A	2015/04/01	Cristina Petran
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3964206	2015/03/28	2015/03/30	Lingyun Feng
Volatile Organic Compounds in Water	GC/MS	3963248	N/A	2015/03/30	Karen Hughes

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Maxxam Job #: B553170
Report Date: 2015/04/01

Golder Associates Ltd
Client Project #: 1525113

Sampler Initials: BM

Package 1	7.7°C

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

GENERAL COMMENTS

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Golder Associates Ltd
Attention: Maria Staneva
Client Project #: 1525113
P.O. #:
Site Location:

Quality Assurance Report

Maxxam Job Number: TB553170

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3963248 KH2	Matrix Spike	4-Bromofluorobenzene	2015/03/30		102	%	70 - 130
		D4-1,2-Dichloroethane	2015/03/30		109	%	70 - 130
		D8-Toluene	2015/03/30		90	%	70 - 130
		Acetone (2-Propanone)	2015/03/30		118	%	60 - 140
		Benzene	2015/03/30		98	%	70 - 130
		Bromodichloromethane	2015/03/30		99	%	70 - 130
		Bromoform	2015/03/30		98	%	70 - 130
		Bromomethane	2015/03/30		97	%	60 - 140
		Carbon Tetrachloride	2015/03/30		97	%	70 - 130
		Chlorobenzene	2015/03/30		95	%	70 - 130
		Chloroform	2015/03/30		102	%	70 - 130
		Dibromochloromethane	2015/03/30		101	%	70 - 130
		1,2-Dichlorobenzene	2015/03/30		105	%	70 - 130
		1,3-Dichlorobenzene	2015/03/30		100	%	70 - 130
		1,4-Dichlorobenzene	2015/03/30		101	%	70 - 130
		Dichlorodifluoromethane (FREON 12)	2015/03/30		68	%	60 - 140
		1,1-Dichloroethane	2015/03/30		104	%	70 - 130
		1,2-Dichloroethane	2015/03/30		107	%	70 - 130
		1,1-Dichloroethylene	2015/03/30		104	%	70 - 130
		cis-1,2-Dichloroethylene	2015/03/30		101	%	70 - 130
		trans-1,2-Dichloroethylene	2015/03/30		99	%	70 - 130
		1,2-Dichloropropane	2015/03/30		101	%	70 - 130
		cis-1,3-Dichloropropene	2015/03/30		94	%	70 - 130
		trans-1,3-Dichloropropene	2015/03/30		98	%	70 - 130
		Ethylbenzene	2015/03/30		89	%	70 - 130
		Ethylene Dibromide	2015/03/30		102	%	70 - 130
		Hexane	2015/03/30		103	%	70 - 130
		Methylene Chloride(Dichloromethane)	2015/03/30		114	%	70 - 130
		Methyl Isobutyl Ketone	2015/03/30		116	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2015/03/30		124	%	60 - 140
		Methyl t-butyl ether (MTBE)	2015/03/30		93	%	70 - 130
		Styrene	2015/03/30		98	%	70 - 130
		1,1,1,2-Tetrachloroethane	2015/03/30		97	%	70 - 130
		1,1,2,2-Tetrachloroethane	2015/03/30		107	%	70 - 130
		Tetrachloroethylene	2015/03/30		99	%	70 - 130
		Toluene	2015/03/30		95	%	70 - 130
		1,1,1-Trichloroethane	2015/03/30		98	%	70 - 130
		1,1,2-Trichloroethane	2015/03/30		102	%	70 - 130
		Trichloroethylene	2015/03/30		97	%	70 - 130
		Vinyl Chloride	2015/03/30		87	%	70 - 130
		p+m-Xylene	2015/03/30		90	%	70 - 130
		o-Xylene	2015/03/30		86	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2015/03/30		94	%	70 - 130
	Spiked Blank	4-Bromofluorobenzene	2015/03/30		100	%	70 - 130
		D4-1,2-Dichloroethane	2015/03/30		113	%	70 - 130
		D8-Toluene	2015/03/30		93	%	70 - 130
		Acetone (2-Propanone)	2015/03/30		127	%	60 - 140
		Benzene	2015/03/30		104	%	70 - 130
		Bromodichloromethane	2015/03/30		106	%	70 - 130
		Bromoform	2015/03/30		107	%	70 - 130
		Bromomethane	2015/03/30		103	%	60 - 140
		Carbon Tetrachloride	2015/03/30		117	%	70 - 130
		Chlorobenzene	2015/03/30		100	%	70 - 130
		Chloroform	2015/03/30		109	%	70 - 130
		Dibromochloromethane	2015/03/30		110	%	70 - 130

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Quality Assurance Report (Continued)

Maxxam Job Number: TB553170

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3963248 KH2	Spiked Blank	1,2-Dichlorobenzene	2015/03/30		113	%	70 - 130
		1,3-Dichlorobenzene	2015/03/30		107	%	70 - 130
		1,4-Dichlorobenzene	2015/03/30		108	%	70 - 130
		Dichlorodifluoromethane (FREON 12)	2015/03/30		103	%	60 - 140
		1,1-Dichloroethane	2015/03/30		112	%	70 - 130
		1,2-Dichloroethane	2015/03/30		115	%	70 - 130
		1,1-Dichloroethylene	2015/03/30		113	%	70 - 130
		cis-1,2-Dichloroethylene	2015/03/30		108	%	70 - 130
		trans-1,2-Dichloroethylene	2015/03/30		107	%	70 - 130
		1,2-Dichloropropane	2015/03/30		108	%	70 - 130
		cis-1,3-Dichloropropene	2015/03/30		81	%	70 - 130
		trans-1,3-Dichloropropene	2015/03/30		85	%	70 - 130
		Ethylbenzene	2015/03/30		94	%	70 - 130
		Ethylene Dibromide	2015/03/30		111	%	70 - 130
		Hexane	2015/03/30		114	%	70 - 130
		Methylene Chloride(Dichloromethane)	2015/03/30		124	%	70 - 130
		Methyl Isobutyl Ketone	2015/03/30		125	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2015/03/30		134	%	60 - 140
		Methyl t-butyl ether (MTBE)	2015/03/30		99	%	70 - 130
		Styrene	2015/03/30		109	%	70 - 130
		1,1,1,2-Tetrachloroethane	2015/03/30		105	%	70 - 130
		1,1,2,2-Tetrachloroethane	2015/03/30		117	%	70 - 130
		Tetrachloroethylene	2015/03/30		106	%	70 - 130
		Toluene	2015/03/30		102	%	70 - 130
		1,1,1-Trichloroethane	2015/03/30		104	%	70 - 130
		1,1,2-Trichloroethane	2015/03/30		114	%	70 - 130
		Trichloroethylene	2015/03/30		100	%	70 - 130
		Vinyl Chloride	2015/03/30		108	%	70 - 130
		p+m-Xylene	2015/03/30		95	%	70 - 130
		o-Xylene	2015/03/30		96	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2015/03/30		106	%	70 - 130
	Method Blank	4-Bromofluorobenzene	2015/03/30		92	%	70 - 130
		D4-1,2-Dichloroethane	2015/03/30		126	%	70 - 130
		D8-Toluene	2015/03/30		78	%	70 - 130
		Acetone (2-Propanone)	2015/03/30	<10		ug/L	
		Benzene	2015/03/30	<0.20		ug/L	
		Bromodichloromethane	2015/03/30	<0.50		ug/L	
		Bromoform	2015/03/30	<1.0		ug/L	
		Bromomethane	2015/03/30	<0.50		ug/L	
		Carbon Tetrachloride	2015/03/30	<0.20		ug/L	
		Chlorobenzene	2015/03/30	<0.20		ug/L	
		Chloroform	2015/03/30	<0.20		ug/L	
		Dibromochloromethane	2015/03/30	<0.50		ug/L	
		1,2-Dichlorobenzene	2015/03/30	<0.50		ug/L	
		1,3-Dichlorobenzene	2015/03/30	<0.50		ug/L	
		1,4-Dichlorobenzene	2015/03/30	<0.50		ug/L	
		Dichlorodifluoromethane (FREON 12)	2015/03/30	<1.0		ug/L	
		1,1-Dichloroethane	2015/03/30	<0.20		ug/L	
		1,2-Dichloroethane	2015/03/30	<0.50		ug/L	
		1,1-Dichloroethylene	2015/03/30	<0.20		ug/L	
		cis-1,2-Dichloroethylene	2015/03/30	<0.50		ug/L	
		trans-1,2-Dichloroethylene	2015/03/30	<0.50		ug/L	
		1,2-Dichloropropane	2015/03/30	<0.20		ug/L	
		cis-1,3-Dichloropropene	2015/03/30	<0.30		ug/L	
		trans-1,3-Dichloropropene	2015/03/30	<0.40		ug/L	

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Quality Assurance Report (Continued)

Maxxam Job Number: TB553170

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3963248 KH2	Method Blank	Ethylbenzene	2015/03/30	<0.20		ug/L	
		Ethylene Dibromide	2015/03/30	<0.20		ug/L	
		Hexane	2015/03/30	<1.0		ug/L	
		Methylene Chloride(Dichloromethane)	2015/03/30	<2.0		ug/L	
		Methyl Isobutyl Ketone	2015/03/30	<5.0		ug/L	
		Methyl Ethyl Ketone (2-Butanone)	2015/03/30	<10		ug/L	
		Methyl t-butyl ether (MTBE)	2015/03/30	<0.50		ug/L	
		Styrene	2015/03/30	<0.50		ug/L	
		1,1,1,2-Tetrachloroethane	2015/03/30	<0.50		ug/L	
		1,1,2,2-Tetrachloroethane	2015/03/30	<0.50		ug/L	
		Tetrachloroethylene	2015/03/30	<0.20		ug/L	
		Toluene	2015/03/30	<0.20		ug/L	
		1,1,1-Trichloroethane	2015/03/30	<0.20		ug/L	
		1,1,2-Trichloroethane	2015/03/30	<0.50		ug/L	
		Trichloroethylene	2015/03/30	<0.20		ug/L	
		Vinyl Chloride	2015/03/30	<0.20		ug/L	
		p+m-Xylene	2015/03/30	<0.20		ug/L	
		o-Xylene	2015/03/30	<0.20		ug/L	
		Total Xylenes	2015/03/30	<0.20		ug/L	
		Trichlorofluoromethane (FREON 11)	2015/03/30	<0.50		ug/L	
	RPD	Acetone (2-Propanone)	2015/03/30	NC		%	30
		Benzene	2015/03/30	NC		%	30
		Bromodichloromethane	2015/03/30	NC		%	30
		Bromoform	2015/03/30	NC		%	30
		Bromomethane	2015/03/30	NC		%	30
		Carbon Tetrachloride	2015/03/30	NC		%	30
		Chlorobenzene	2015/03/30	NC		%	30
		Chloroform	2015/03/30	NC		%	30
		Dibromochloromethane	2015/03/30	NC		%	30
		1,2-Dichlorobenzene	2015/03/30	NC		%	30
		1,3-Dichlorobenzene	2015/03/30	NC		%	30
		1,4-Dichlorobenzene	2015/03/30	NC		%	30
		Dichlorodifluoromethane (FREON 12)	2015/03/30	NC		%	30
		1,1-Dichloroethane	2015/03/30	NC		%	30
		1,2-Dichloroethane	2015/03/30	NC		%	30
		1,1-Dichloroethylene	2015/03/30	NC		%	30
		cis-1,2-Dichloroethylene	2015/03/30	NC		%	30
		trans-1,2-Dichloroethylene	2015/03/30	NC		%	30
		1,2-Dichloropropane	2015/03/30	NC		%	30
		cis-1,3-Dichloropropene	2015/03/30	NC		%	30
		trans-1,3-Dichloropropene	2015/03/30	NC		%	30
		Ethylbenzene	2015/03/30	NC		%	30
		Ethylene Dibromide	2015/03/30	NC		%	30
		Hexane	2015/03/30	NC		%	30
		Methylene Chloride(Dichloromethane)	2015/03/30	NC		%	30
		Methyl Isobutyl Ketone	2015/03/30	NC		%	30
		Methyl Ethyl Ketone (2-Butanone)	2015/03/30	NC		%	30
		Methyl t-butyl ether (MTBE)	2015/03/30	NC		%	30
		Styrene	2015/03/30	NC		%	30
		1,1,1,2-Tetrachloroethane	2015/03/30	NC		%	30
		1,1,2,2-Tetrachloroethane	2015/03/30	NC		%	30
		Tetrachloroethylene	2015/03/30	NC		%	30
		Toluene	2015/03/30	NC		%	30
		1,1,1-Trichloroethane	2015/03/30	NC		%	30
		1,1,2-Trichloroethane	2015/03/30	NC		%	30

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Quality Assurance Report (Continued)

Maxxam Job Number: TB553170

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3963248 KH2	RPD	Trichloroethylene	2015/03/30	NC		%	30
		Vinyl Chloride	2015/03/30	NC		%	30
		p+m-Xylene	2015/03/30	NC		%	30
		o-Xylene	2015/03/30	NC		%	30
		Total Xylenes	2015/03/30	NC		%	30
		Trichlorofluoromethane (FREON 11)	2015/03/30	NC		%	30
3964163 SAC	Matrix Spike	Chromium (VI)	2015/03/30		NC	%	80 - 120
	Spiked Blank	Chromium (VI)	2015/03/30		99	%	80 - 120
	Method Blank	Chromium (VI)	2015/03/30	<0.50		ug/L	
	RPD	Chromium (VI)	2015/03/30	3.9		%	20
3964167 JKA	Matrix Spike	o-Terphenyl	2015/03/30		105	%	60 - 130
		F2 (C10-C16 Hydrocarbons)	2015/03/30		107	%	50 - 130
		F3 (C16-C34 Hydrocarbons)	2015/03/30		108	%	50 - 130
		F4 (C34-C50 Hydrocarbons)	2015/03/30		111	%	50 - 130
	Spiked Blank	o-Terphenyl	2015/03/30		104	%	60 - 130
		F2 (C10-C16 Hydrocarbons)	2015/03/30		106	%	60 - 130
		F3 (C16-C34 Hydrocarbons)	2015/03/30		111	%	60 - 130
		F4 (C34-C50 Hydrocarbons)	2015/03/30		106	%	60 - 130
	Method Blank	o-Terphenyl	2015/03/30		100	%	60 - 130
		F2 (C10-C16 Hydrocarbons)	2015/03/30	<100		ug/L	
		F3 (C16-C34 Hydrocarbons)	2015/03/30	<200		ug/L	
		F4 (C34-C50 Hydrocarbons)	2015/03/30	<200		ug/L	
	RPD	F2 (C10-C16 Hydrocarbons)	2015/03/30	NC		%	30
		F3 (C16-C34 Hydrocarbons)	2015/03/30	NC		%	30
		F4 (C34-C50 Hydrocarbons)	2015/03/30	NC		%	30
3964206 LFE	Matrix Spike	D10-Anthracene	2015/03/29		101	%	50 - 130
		D14-Terphenyl (FS)	2015/03/29		74	%	50 - 130
		D8-Acenaphthylene	2015/03/29		100	%	50 - 130
		Acenaphthene	2015/03/29		97	%	50 - 130
		Acenaphthylene	2015/03/29		101	%	50 - 130
		Anthracene	2015/03/29		91	%	50 - 130
		Benzo(a)anthracene	2015/03/29		66	%	50 - 130
		Benzo(a)pyrene	2015/03/29		57	%	50 - 130
		Benzo(b/j)fluoranthene	2015/03/29		59	%	50 - 130
		Benzo(g,h,i)perylene	2015/03/29		59	%	50 - 130
		Benzo(k)fluoranthene	2015/03/29		58	%	50 - 130
		Chrysene	2015/03/29		65	%	50 - 130
		Dibenz(a,h)anthracene	2015/03/29		58	%	50 - 130
		Fluoranthene	2015/03/29		84	%	50 - 130
		Fluorene	2015/03/29		111	%	50 - 130
		Indeno(1,2,3-cd)pyrene	2015/03/29		62	%	50 - 130
		1-Methylnaphthalene	2015/03/29		89	%	50 - 130
		2-Methylnaphthalene	2015/03/29		87	%	50 - 130
		Naphthalene	2015/03/29		89	%	50 - 130
		Phenanthrene	2015/03/29		94	%	50 - 130
		Pyrene	2015/03/29		80	%	50 - 130
	Spiked Blank	D10-Anthracene	2015/03/29		101	%	50 - 130
		D14-Terphenyl (FS)	2015/03/29		77	%	50 - 130
		D8-Acenaphthylene	2015/03/29		95	%	50 - 130
		Acenaphthene	2015/03/29		94	%	50 - 130
		Acenaphthylene	2015/03/29		95	%	50 - 130
		Anthracene	2015/03/29		95	%	50 - 130
		Benzo(a)anthracene	2015/03/29		88	%	50 - 130
		Benzo(a)pyrene	2015/03/29		74	%	50 - 130
		Benzo(b/j)fluoranthene	2015/03/29		80	%	50 - 130

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Quality Assurance Report (Continued)

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QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3964206 LFE	Spiked Blank	Benzo(g,h,i)perylene	2015/03/29		71	%	50 - 130
		Benzo(k)fluoranthene	2015/03/29		76	%	50 - 130
		Chrysene	2015/03/29		80	%	50 - 130
		Dibenz(a,h)anthracene	2015/03/29		69	%	50 - 130
		Fluoranthene	2015/03/29		96	%	50 - 130
		Fluorene	2015/03/29		110	%	50 - 130
		Indeno(1,2,3-cd)pyrene	2015/03/29		76	%	50 - 130
		1-Methylnaphthalene	2015/03/29		86	%	50 - 130
		2-Methylnaphthalene	2015/03/29		86	%	50 - 130
		Naphthalene	2015/03/29		88	%	50 - 130
		Phenanthrene	2015/03/29		95	%	50 - 130
		Pyrene	2015/03/29		95	%	50 - 130
	Method Blank	D10-Anthracene	2015/03/29		107	%	50 - 130
		D14-Terphenyl (FS)	2015/03/29		81	%	50 - 130
		D8-Acenaphthylene	2015/03/29		99	%	50 - 130
		Acenaphthene	2015/03/29	<0.050		ug/L	
		Acenaphthylene	2015/03/29	<0.050		ug/L	
		Anthracene	2015/03/29	<0.050		ug/L	
		Benzo(a)anthracene	2015/03/29	<0.050		ug/L	
		Benzo(a)pyrene	2015/03/29	<0.010		ug/L	
		Benzo(b/j)fluoranthene	2015/03/29	<0.050		ug/L	
		Benzo(g,h,i)perylene	2015/03/29	<0.050		ug/L	
		Benzo(k)fluoranthene	2015/03/29	<0.050		ug/L	
		Chrysene	2015/03/29	<0.050		ug/L	
		Dibenz(a,h)anthracene	2015/03/29	<0.050		ug/L	
		Fluoranthene	2015/03/29	<0.050		ug/L	
		Fluorene	2015/03/29	<0.050		ug/L	
		Indeno(1,2,3-cd)pyrene	2015/03/29	<0.050		ug/L	
		1-Methylnaphthalene	2015/03/29	<0.050		ug/L	
		2-Methylnaphthalene	2015/03/29	<0.050		ug/L	
		Naphthalene	2015/03/29	<0.050		ug/L	
		Phenanthrene	2015/03/29	<0.030		ug/L	
		Pyrene	2015/03/29	<0.050		ug/L	
	RPD	Acenaphthene	2015/03/29	NC		%	30
		Acenaphthylene	2015/03/29	NC		%	30
		Anthracene	2015/03/29	NC		%	30
		Benzo(a)anthracene	2015/03/29	NC		%	30
		Benzo(a)pyrene	2015/03/29	NC		%	30
		Benzo(b/j)fluoranthene	2015/03/29	NC		%	30
		Benzo(g,h,i)perylene	2015/03/29	NC		%	30
		Benzo(k)fluoranthene	2015/03/29	NC		%	30
		Chrysene	2015/03/29	NC		%	30
		Dibenz(a,h)anthracene	2015/03/29	NC		%	30
		Fluoranthene	2015/03/29	NC		%	30
		Fluorene	2015/03/29	NC		%	30
		Indeno(1,2,3-cd)pyrene	2015/03/29	NC		%	30
		1-Methylnaphthalene	2015/03/29	NC		%	30
		2-Methylnaphthalene	2015/03/29	NC		%	30
		Naphthalene	2015/03/29	NC		%	30
		Phenanthrene	2015/03/29	NC		%	30
		Pyrene	2015/03/29	NC		%	30
3964438 MC	Matrix Spike	Mercury (Hg)	2015/03/30		97	%	75 - 125
	Spiked Blank	Mercury (Hg)	2015/03/30		99	%	80 - 120
	Method Blank	Mercury (Hg)	2015/03/30	<0.1		ug/L	
	RPD	Mercury (Hg)	2015/03/30	NC		%	20

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Golder Associates Ltd
Attention: Maria Staneva
Client Project #: 1525113
P.O. #:
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: TB553170

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3965253 GRU	Matrix Spike	1,4-Difluorobenzene	2015/03/31		104	%	70 - 130
		4-Bromofluorobenzene	2015/03/31		100	%	70 - 130
		D10-Ethylbenzene	2015/03/31		107	%	70 - 130
		D4-1,2-Dichloroethane	2015/03/31		95	%	70 - 130
		F1 (C6-C10)	2015/03/31		70	%	70 - 130
	Spiked Blank	1,4-Difluorobenzene	2015/03/31		103	%	70 - 130
		4-Bromofluorobenzene	2015/03/31		102	%	70 - 130
		D10-Ethylbenzene	2015/03/31		103	%	70 - 130
		D4-1,2-Dichloroethane	2015/03/31		101	%	70 - 130
		F1 (C6-C10)	2015/03/31		99	%	70 - 130
	Method Blank	1,4-Difluorobenzene	2015/03/31		103	%	70 - 130
		4-Bromofluorobenzene	2015/03/31		95	%	70 - 130
		D10-Ethylbenzene	2015/03/31		91	%	70 - 130
		D4-1,2-Dichloroethane	2015/03/31		103	%	70 - 130
		F1 (C6-C10)	2015/03/31	<25		ug/L	
		F1 (C6-C10) - BTEX	2015/03/31	<25		ug/L	
	RPD	F1 (C6-C10)	2015/03/31	NC		%	30
		F1 (C6-C10) - BTEX	2015/03/31	NC		%	30
3965869 SAC	Matrix Spike						
	[AAC221-04]	Chromium (VI)	2015/03/31		98	%	80 - 120
	Spiked Blank	Chromium (VI)	2015/03/31		100	%	80 - 120
	Method Blank	Chromium (VI)	2015/03/31	<0.50		ug/L	
	RPD [AAC221-04]	Chromium (VI)	2015/03/31	NC		%	20
3965895 DTI	Matrix Spike	D10-Anthracene	2015/03/31		102	%	50 - 130
		D14-Terphenyl (FS)	2015/03/31		85	%	50 - 130
		D8-Acenaphthylene	2015/03/31		94	%	50 - 130
		Acenaphthene	2015/03/31		98	%	50 - 130
		Acenaphthylene	2015/03/31		94	%	50 - 130
		Anthracene	2015/03/31		97	%	50 - 130
		Benzo(a)anthracene	2015/03/31		93	%	50 - 130
		Benzo(a)pyrene	2015/03/31		81	%	50 - 130
		Benzo(b/j)fluoranthene	2015/03/31		88	%	50 - 130
		Benzo(g,h,i)perylene	2015/03/31		63	%	50 - 130
		Benzo(k)fluoranthene	2015/03/31		79	%	50 - 130
		Chrysene	2015/03/31		91	%	50 - 130
		Dibenz(a,h)anthracene	2015/03/31		57	%	50 - 130
		Fluoranthene	2015/03/31		101	%	50 - 130
		Fluorene	2015/03/31		95	%	50 - 130
		Indeno(1,2,3-cd)pyrene	2015/03/31		74	%	50 - 130
		1-Methylnaphthalene	2015/03/31		100	%	50 - 130
		2-Methylnaphthalene	2015/03/31		95	%	50 - 130
		Naphthalene	2015/03/31		91	%	50 - 130
		Phenanthrene	2015/03/31		97	%	50 - 130
		Pyrene	2015/03/31		105	%	50 - 130
	Spiked Blank	D10-Anthracene	2015/03/31		101	%	50 - 130
		D14-Terphenyl (FS)	2015/03/31		85	%	50 - 130
		D8-Acenaphthylene	2015/03/31		115	%	50 - 130
		Acenaphthene	2015/03/31		95	%	50 - 130
		Acenaphthylene	2015/03/31		91	%	50 - 130
		Anthracene	2015/03/31		94	%	50 - 130
		Benzo(a)anthracene	2015/03/31		87	%	50 - 130
		Benzo(a)pyrene	2015/03/31		74	%	50 - 130
		Benzo(b/j)fluoranthene	2015/03/31		79	%	50 - 130
		Benzo(g,h,i)perylene	2015/03/31		63	%	50 - 130
		Benzo(k)fluoranthene	2015/03/31		72	%	50 - 130

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Golder Associates Ltd
Attention: Maria Staneva
Client Project #: 1525113
P.O. #:
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: TB553170

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3965895 DTI	Spiked Blank	Chrysene	2015/03/31		82	%	50 - 130
		Dibenz(a,h)anthracene	2015/03/31		60	%	50 - 130
		Fluoranthene	2015/03/31		98	%	50 - 130
		Fluorene	2015/03/31		91	%	50 - 130
		Indeno(1,2,3-cd)pyrene	2015/03/31		74	%	50 - 130
		1-Methylnaphthalene	2015/03/31		97	%	50 - 130
		2-Methylnaphthalene	2015/03/31		93	%	50 - 130
		Naphthalene	2015/03/31		89	%	50 - 130
		Phenanthrene	2015/03/31		94	%	50 - 130
		Pyrene	2015/03/31		100	%	50 - 130
	Method Blank	D10-Anthracene	2015/03/31		101	%	50 - 130
		D14-Terphenyl (FS)	2015/03/31		84	%	50 - 130
		D8-Acenaphthylene	2015/03/31		94	%	50 - 130
		Acenaphthene	2015/03/31	<0.050		ug/L	
		Acenaphthylene	2015/03/31	<0.050		ug/L	
		Anthracene	2015/03/31	<0.050		ug/L	
		Benzo(a)anthracene	2015/03/31	<0.050		ug/L	
		Benzo(a)pyrene	2015/03/31	<0.010		ug/L	
		Benzo(b/j)fluoranthene	2015/03/31	<0.050		ug/L	
		Benzo(g,h,i)perylene	2015/03/31	<0.050		ug/L	
		Benzo(k)fluoranthene	2015/03/31	<0.050		ug/L	
		Chrysene	2015/03/31	<0.050		ug/L	
		Dibenz(a,h)anthracene	2015/03/31	<0.050		ug/L	
		Fluoranthene	2015/03/31	<0.050		ug/L	
		Fluorene	2015/03/31	<0.050		ug/L	
		Indeno(1,2,3-cd)pyrene	2015/03/31	<0.050		ug/L	
		1-Methylnaphthalene	2015/03/31	<0.050		ug/L	
		2-Methylnaphthalene	2015/03/31	<0.050		ug/L	
		Naphthalene	2015/03/31	<0.050		ug/L	
		Phenanthrene	2015/03/31	<0.030		ug/L	
		Pyrene	2015/03/31	<0.050		ug/L	
	RPD [AAC221-01]	Acenaphthene	2015/03/31	NC		%	30
		Acenaphthylene	2015/03/31	NC		%	30
		Anthracene	2015/03/31	NC		%	30
		Benzo(a)anthracene	2015/03/31	NC		%	30
		Benzo(a)pyrene	2015/03/31	NC		%	30
		Benzo(b/j)fluoranthene	2015/03/31	NC		%	30
		Benzo(g,h,i)perylene	2015/03/31	NC		%	30
		Benzo(k)fluoranthene	2015/03/31	NC		%	30
		Chrysene	2015/03/31	NC		%	30
		Dibenz(a,h)anthracene	2015/03/31	NC		%	30
		Fluoranthene	2015/03/31	NC		%	30
		Fluorene	2015/03/31	NC		%	30
		Indeno(1,2,3-cd)pyrene	2015/03/31	NC		%	30
		1-Methylnaphthalene	2015/03/31	NC		%	30
		2-Methylnaphthalene	2015/03/31	NC		%	30
		Naphthalene	2015/03/31	NC		%	30
		Phenanthrene	2015/03/31	NC		%	30
		Pyrene	2015/03/31	NC		%	30
3966358 CPE	Matrix Spike	Dissolved Antimony (Sb)	2015/04/01		108	%	80 - 120
		Dissolved Arsenic (As)	2015/04/01		107	%	80 - 120
		Dissolved Barium (Ba)	2015/04/01		102	%	80 - 120
		Dissolved Beryllium (Be)	2015/04/01		106	%	80 - 120
		Dissolved Boron (B)	2015/04/01		NC	%	80 - 120
		Dissolved Cadmium (Cd)	2015/04/01		104	%	80 - 120

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Golder Associates Ltd
Attention: Maria Staneva
Client Project #: 1525113
P.O. #:
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: TB553170

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3966358 CPE	Matrix Spike	Dissolved Chromium (Cr)	2015/04/01		103	%	80 - 120
		Dissolved Cobalt (Co)	2015/04/01		106	%	80 - 120
		Dissolved Copper (Cu)	2015/04/01		103	%	80 - 120
		Dissolved Lead (Pb)	2015/04/01		98	%	80 - 120
		Dissolved Molybdenum (Mo)	2015/04/01		109	%	80 - 120
		Dissolved Nickel (Ni)	2015/04/01		103	%	80 - 120
		Dissolved Selenium (Se)	2015/04/01		106	%	80 - 120
		Dissolved Silver (Ag)	2015/04/01		79 (1)	%	80 - 120
		Dissolved Sodium (Na)	2015/04/01		NC	%	80 - 120
		Dissolved Thallium (Tl)	2015/04/01		99	%	80 - 120
		Dissolved Uranium (U)	2015/04/01		103	%	80 - 120
		Dissolved Vanadium (V)	2015/04/01		106	%	80 - 120
		Dissolved Zinc (Zn)	2015/04/01		98	%	80 - 120
	Spiked Blank	Dissolved Antimony (Sb)	2015/04/01		102	%	80 - 120
		Dissolved Arsenic (As)	2015/04/01		101	%	80 - 120
		Dissolved Barium (Ba)	2015/04/01		101	%	80 - 120
		Dissolved Beryllium (Be)	2015/04/01		107	%	80 - 120
		Dissolved Boron (B)	2015/04/01		110	%	80 - 120
		Dissolved Cadmium (Cd)	2015/04/01		101	%	80 - 120
		Dissolved Chromium (Cr)	2015/04/01		100	%	80 - 120
		Dissolved Cobalt (Co)	2015/04/01		102	%	80 - 120
		Dissolved Copper (Cu)	2015/04/01		102	%	80 - 120
		Dissolved Lead (Pb)	2015/04/01		98	%	80 - 120
		Dissolved Molybdenum (Mo)	2015/04/01		101	%	80 - 120
		Dissolved Nickel (Ni)	2015/04/01		101	%	80 - 120
		Dissolved Selenium (Se)	2015/04/01		102	%	80 - 120
		Dissolved Silver (Ag)	2015/04/01		99	%	80 - 120
		Dissolved Sodium (Na)	2015/04/01		104	%	80 - 120
		Dissolved Thallium (Tl)	2015/04/01		98	%	80 - 120
		Dissolved Uranium (U)	2015/04/01		100	%	80 - 120
		Dissolved Vanadium (V)	2015/04/01		100	%	80 - 120
		Dissolved Zinc (Zn)	2015/04/01		100	%	80 - 120
	Method Blank	Dissolved Antimony (Sb)	2015/04/01	<0.50		ug/L	
		Dissolved Arsenic (As)	2015/04/01	<1.0		ug/L	
		Dissolved Barium (Ba)	2015/04/01	<2.0		ug/L	
		Dissolved Beryllium (Be)	2015/04/01	<0.50		ug/L	
		Dissolved Boron (B)	2015/04/01	<10		ug/L	
		Dissolved Cadmium (Cd)	2015/04/01	<0.10		ug/L	
		Dissolved Chromium (Cr)	2015/04/01	<5.0		ug/L	
		Dissolved Cobalt (Co)	2015/04/01	<0.50		ug/L	
		Dissolved Copper (Cu)	2015/04/01	<1.0		ug/L	
		Dissolved Lead (Pb)	2015/04/01	<0.50		ug/L	
		Dissolved Molybdenum (Mo)	2015/04/01	<0.50		ug/L	
		Dissolved Nickel (Ni)	2015/04/01	<1.0		ug/L	
		Dissolved Selenium (Se)	2015/04/01	<2.0		ug/L	
		Dissolved Silver (Ag)	2015/04/01	<0.10		ug/L	
		Dissolved Sodium (Na)	2015/04/01	<100		ug/L	
		Dissolved Thallium (Tl)	2015/04/01	<0.050		ug/L	
		Dissolved Uranium (U)	2015/04/01	<0.10		ug/L	
		Dissolved Vanadium (V)	2015/04/01	<0.50		ug/L	
		Dissolved Zinc (Zn)	2015/04/01	<5.0		ug/L	
	RPD	Dissolved Barium (Ba)	2015/04/01	NC		%	20
		Dissolved Cadmium (Cd)	2015/04/01	NC		%	20
		Dissolved Chromium (Cr)	2015/04/01	NC		%	20
		Dissolved Copper (Cu)	2015/04/01	NC		%	20

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Golder Associates Ltd
Attention: Maria Staneva
Client Project #: 1525113
P.O. #:
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: TB553170

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3966358 CPE	RPD	Dissolved Lead (Pb)	2015/04/01	NC		%	20
		Dissolved Nickel (Ni)	2015/04/01	NC		%	20
		Dissolved Sodium (Na)	2015/04/01	0.5		%	20
		Dissolved Zinc (Zn)	2015/04/01	NC		%	20

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).
(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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Validation Signature Page

Maxxam Job #: B553170

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

==========

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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IMMEDIATE TEST

25-Mar-15 15:47
Parnian Baber
B553170
FW ENV-884

Page 1 of 1

Use Only:
Bottle Order #: 505928
Project Manager: Parnian Baber
C#505928-02-01

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B40279
Attention:	Central Accounting	Attention:	Maria Staneva	P.O. #:	
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113
				Project Name:	
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:	Oblates
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Maria_Staneva@golder.com	Sampled By:	B.McParlan

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
[X] Table 1 [X] Res/Park [X] Medium/Fine	[ ] CCME [ ] Sanitary Sewer Bylaw	
[ ] Table 2 [ ] Ind/Comm [ ] Coarse	[ ] Reg 558. [ ] Storm Sewer Bylaw	
[ ] Table 3 [ ] Agri/Other [X] For RSC	[ ] MISA Municipality _____	
[ ] Table ___	[ ] PWQO	
	[ ] Other _____	

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

Tumaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(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 #)*

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 Metals Package (Soil)	pH CaCl2 EXTRACT	O.Reg 153 Petroleum Hydrocarbons (Water)	O.Reg 153 Volatile Organics (Water)	O.Reg 153 PAHs (Water)	O.Reg 153 Metals Package (Water) (ICPMS Metals, Hg CRVI)				# of Bottles	Comments
1		MW15-101	2015/03/25		GW	Yes				X	X	X	X				13	
2		MW15-102	2015/03/24		GW	Yes				X	X	X	X				13	
3		MW15-106	2015/03/25		GW	Yes				X	X	X	X				13	
4																		
5																		
6																		
7																		
8																		
9																		
10																		

RECEIVED IN OTTAWA

on ice

* 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
B.McParlan	15/03/25	14:30	Kelsey Pilon	15/03/25	15:47			9,8,6	Present	✓	
			Kelsey Pilon	2015/03/26	08:30				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.

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

White: Maxxam Yellow: Client

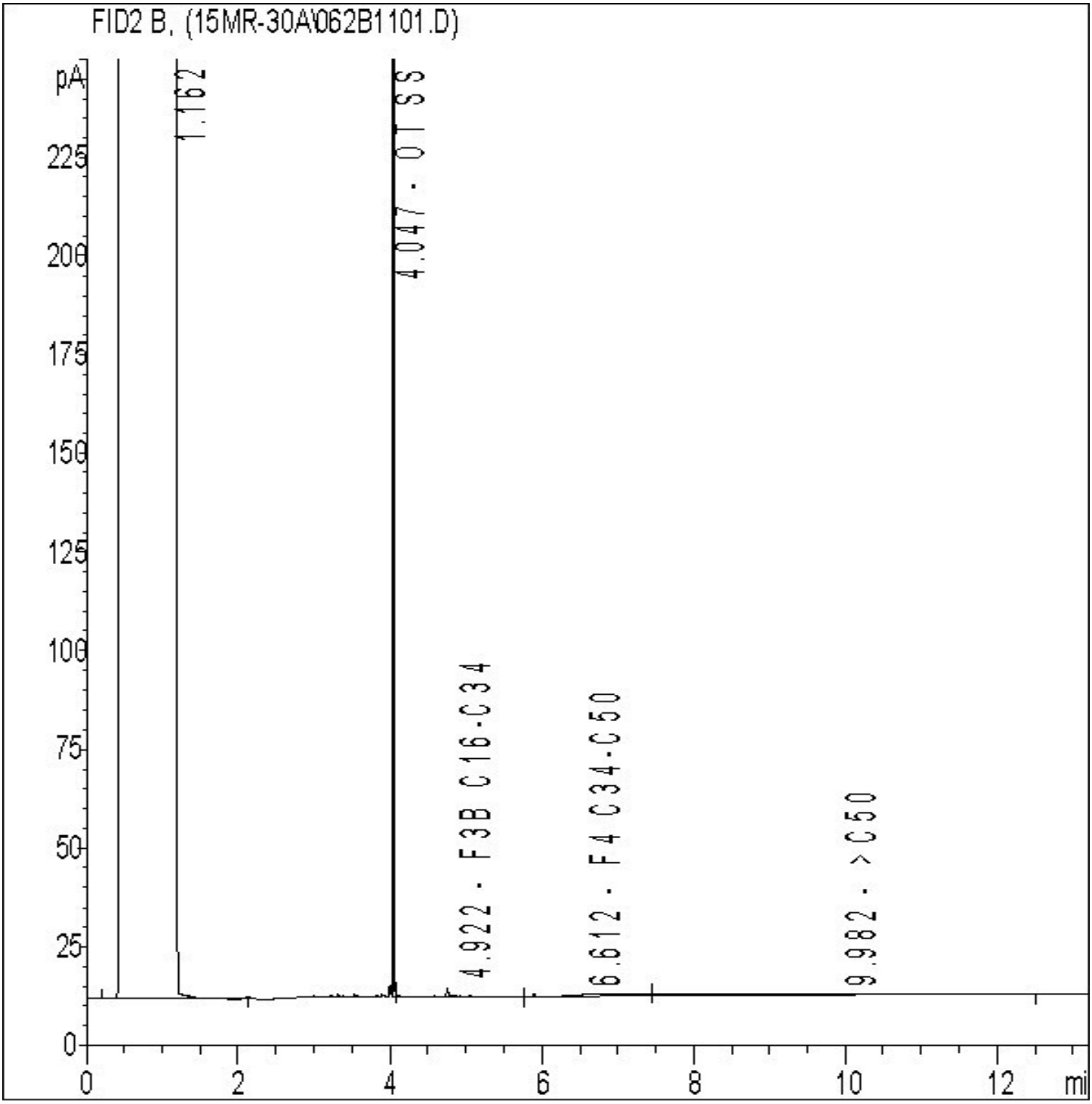
6/6/6°C

Report Date: 2015/04/01
Maxxam Job #: B553170
Maxxam Sample: AAC220

Golder Associates Ltd
Client Project #: 1525113

Client ID: MW15-101

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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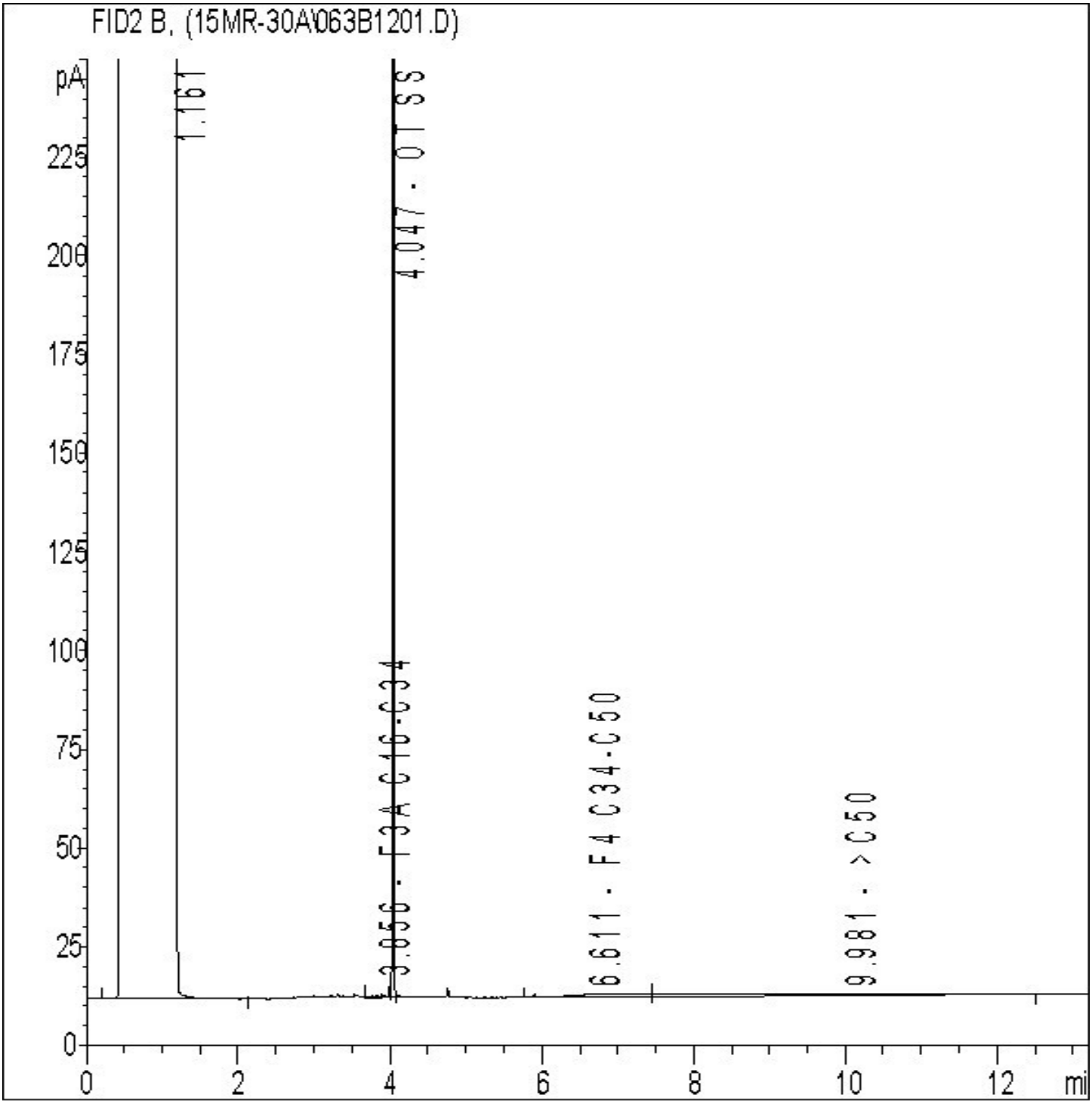
Report Date: 2015/04/01
Maxxam Job #: B553170
Maxxam Sample: AAC221

Golder Associates Ltd
Client Project #: 1525113

Client ID: MW15-102

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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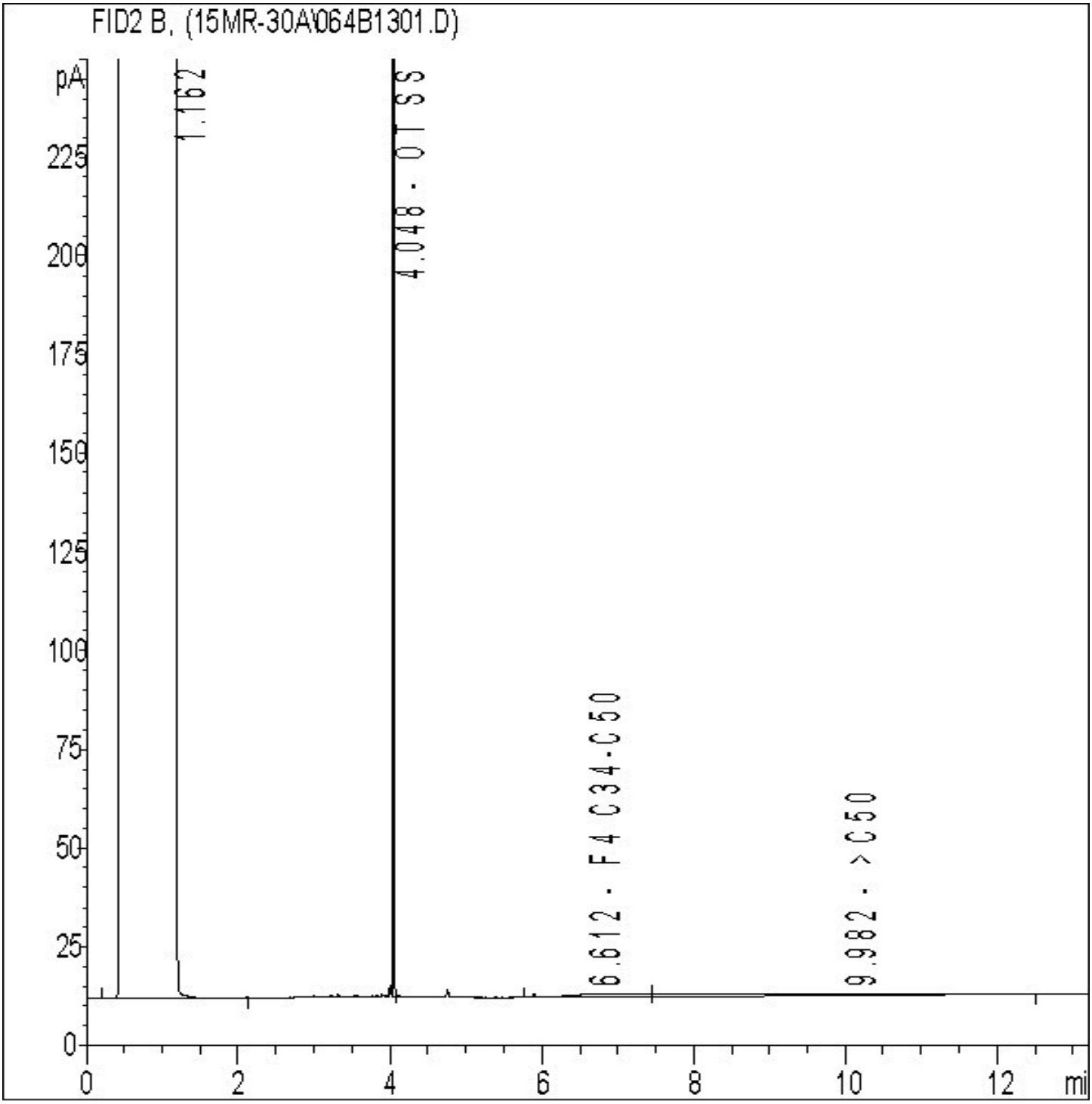
Report Date: 2015/04/01
Maxxam Job #: B553170
Maxxam Sample: AAC222

Golder Associates Ltd
Client Project #: 1525113

Client ID: MW15-106

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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Success Through Science®

Your Project #: 1525113
Site#: Oblates
Your C.O.C. #: 505928-03-01

Attention:Maria Staneva

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2015/04/01
Report #: R3378916
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B553219
Received: 2015/03/25, 15:47

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	2	N/A	2015/03/30	CAM SOP-00301	EPA 8270D m
Methylnaphthalene Sum (1)	1	N/A	2015/04/01	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	3	N/A	2015/03/31	CAM SOP-00226	EPA 8260
Chromium (VI) in Water (1)	3	N/A	2015/03/30	CAM SOP-00436	EPA 7199 m
Petroleum Hydro. CCME F1 & BTEX in Water (1)	3	N/A	2015/03/31	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1)	3	2015/03/31	2015/04/01	CAM SOP-00316	CCME PHC-CWS m
Mercury (1)	3	2015/03/30	2015/03/31	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS (1)	3	N/A	2015/03/31	CAM SOP-00447	EPA 6020 m
PAH Compounds in Water by GC/MS (SIM) (1)	2	2015/03/28	2015/03/30	CAM SOP-00318	EPA 8270D m
PAH Compounds in Water by GC/MS (SIM) (1)	1	2015/03/30	2015/03/31	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds in Water (1)	3	N/A	2015/03/30	CAM SOP 00228	EPA 8260 m

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 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.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga

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.maxxam.ca

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CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B553219
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Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573
==========
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 Job #: B553219
Report Date: 2015/04/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

O.REG 153 METALS PACKAGE (WATER)

Maxxam ID		AAC434	AAC434	AAC435	AAC436		
Sampling Date		2015/03/25	2015/03/25	2015/03/24	2015/03/25		
COC Number		505928-03-01	505928-03-01	505928-03-01	505928-03-01		
	Units	**MW15-100**	**MW15-100 Lab-Dup**	**MW15-104**	**DUP-1**	**RDL**	**QC Batch**
Metals							
Chromium (VI)	ug/L	0.58		<0.50	<0.50	0.50	3964164
Mercury (Hg)	ug/L	<0.1	<0.1	<0.1	<0.1	0.1	3964895
Dissolved Antimony (Sb)	ug/L	<0.50		<0.50	<0.50	0.50	3966342
Dissolved Arsenic (As)	ug/L	<1.0		2.2	<1.0	1.0	3966342
Dissolved Barium (Ba)	ug/L	130		58	46	2.0	3966342
Dissolved Beryllium (Be)	ug/L	<0.50		<0.50	<0.50	0.50	3966342
Dissolved Boron (B)	ug/L	72		52	84	10	3966342
Dissolved Cadmium (Cd)	ug/L	<0.10		<0.10	<0.10	0.10	3966342
Dissolved Chromium (Cr)	ug/L	<5.0		<5.0	<5.0	5.0	3966342
Dissolved Cobalt (Co)	ug/L	<0.50		0.78	1.2	0.50	3966342
Dissolved Copper (Cu)	ug/L	<1.0		1.1	<1.0	1.0	3966342
Dissolved Lead (Pb)	ug/L	<0.50		<0.50	<0.50	0.50	3966342
Dissolved Molybdenum (Mo)	ug/L	6.1		3.0	1.6	0.50	3966342
Dissolved Nickel (Ni)	ug/L	1.3		1.8	3.3	1.0	3966342
Dissolved Selenium (Se)	ug/L	<2.0		<2.0	2.3	2.0	3966342
Dissolved Silver (Ag)	ug/L	<0.10		<0.10	<0.10	0.10	3966342
Dissolved Sodium (Na)	ug/L	8300		22000	15000	100	3966342
Dissolved Thallium (Tl)	ug/L	<0.050		0.065	<0.050	0.050	3966342
Dissolved Uranium (U)	ug/L	1.3		1.2	1.7	0.10	3966342
Dissolved Vanadium (V)	ug/L	0.72		<0.50	1.6	0.50	3966342
Dissolved Zinc (Zn)	ug/L	<5.0		<5.0	<5.0	5.0	3966342

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B553219
Report Date: 2015/04/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

O.REG 153 PAHS (WATER)

Maxxam ID		AAC434		AAC435	AAC436		
Sampling Date		2015/03/25		2015/03/24	2015/03/25		
COC Number		505928-03-01		505928-03-01	505928-03-01		
	Units	MW15-100	QC Batch	MW15-104	DUP-1	RDL	QC Batch
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/L	<0.071	3961388	<0.071	<0.071	0.071	3961388
Polyaromatic Hydrocarbons							
Acenaphthene	ug/L	<0.050	3965895	<0.050	<0.050	0.050	3964206
Acenaphthylene	ug/L	<0.050	3965895	<0.050	<0.050	0.050	3964206
Anthracene	ug/L	<0.050	3965895	<0.050	<0.050	0.050	3964206
Benzo(a)anthracene	ug/L	<0.050	3965895	<0.050	<0.050	0.050	3964206
Benzo(a)pyrene	ug/L	<0.010	3965895	<0.010	<0.010	0.010	3964206
Benzo(b/j)fluoranthene	ug/L	<0.050	3965895	<0.050	<0.050	0.050	3964206
Benzo(g,h,i)perylene	ug/L	<0.050	3965895	<0.050	<0.050	0.050	3964206
Benzo(k)fluoranthene	ug/L	<0.050	3965895	<0.050	<0.050	0.050	3964206
Chrysene	ug/L	<0.050	3965895	<0.050	<0.050	0.050	3964206
Dibenz(a,h)anthracene	ug/L	<0.050	3965895	<0.050	<0.050	0.050	3964206
Fluoranthene	ug/L	<0.050	3965895	<0.050	<0.050	0.050	3964206
Fluorene	ug/L	<0.050	3965895	<0.050	<0.050	0.050	3964206
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	3965895	<0.050	<0.050	0.050	3964206
1-Methylnaphthalene	ug/L	<0.050	3965895	<0.050	<0.050	0.050	3964206
2-Methylnaphthalene	ug/L	<0.050	3965895	<0.050	<0.050	0.050	3964206
Naphthalene	ug/L	<0.050	3965895	<0.050	<0.050	0.050	3964206
Phenanthrene	ug/L	<0.030	3965895	<0.030	<0.030	0.030	3964206
Pyrene	ug/L	<0.050	3965895	<0.050	<0.050	0.050	3964206
Surrogate Recovery (%)							
D10-Anthracene	%	102	3965895	110	115		3964206
D14-Terphenyl (FS)	%	87	3965895	88	90		3964206
D8-Acenaphthylene	%	93	3965895	101	105		3964206

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2015/04/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

O.REG 153 PETROLEUM HYDROCARBONS (WATER)

Maxxam ID		AAC434	AAC435	AAC436		
Sampling Date		2015/03/25	2015/03/24	2015/03/25		
COC Number		505928-03-01	505928-03-01	505928-03-01		
	Units	**MW15-100**	**MW15-104**	**DUP-1**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons						
F1 (C6-C10)	ug/L	<25	<25	<25	25	3966256
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	25	3966256
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	100	3967300
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	200	3967300
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	200	3967300
Reached Baseline at C50	ug/L	Yes	Yes	Yes		3967300
Surrogate Recovery (%)						
1,4-Difluorobenzene	%	102	105	103		3966256
4-Bromofluorobenzene	%	100	95	87		3966256
D10-Ethylbenzene	%	105	104	101		3966256
D4-1,2-Dichloroethane	%	87	88	88		3966256
o-Terphenyl	%	90	90	93		3967300

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B553219
Report Date: 2015/04/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

O.REG 153 VOLATILE ORGANICS (WATER)

Maxxam ID		AAC434	AAC435	AAC436		
Sampling Date		2015/03/25	2015/03/24	2015/03/25		
COC Number		505928-03-01	505928-03-01	505928-03-01		
	Units	MW15-100	MW15-104	DUP-1	RDL	QC Batch
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	<0.50	0.50	3961229
Volatile Organics						
Acetone (2-Propanone)	ug/L	<10	<10	<10	10	3963248
Benzene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	0.50	3963248
Bromoform	ug/L	<1.0	<1.0	<1.0	1.0	3963248
Bromomethane	ug/L	<0.50	<0.50	<0.50	0.50	3963248
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Chloroform	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	0.50	3963248
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	3963248
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	3963248
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	3963248
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	1.0	3963248
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	0.20	3963248
1,2-Dichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	3963248
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	0.50	3963248
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	0.50	3963248
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	0.20	3963248
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	0.30	3963248
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	0.40	3963248
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Hexane	ug/L	<1.0	<1.0	<1.0	1.0	3963248
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	2.0	3963248
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	5.0	3963248
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	10	3963248
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	<0.50	0.50	3963248
Styrene	ug/L	<0.50	<0.50	<0.50	0.50	3963248
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	3963248
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	3963248
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Toluene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	0.20	3963248

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2015/04/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

O.REG 153 VOLATILE ORGANICS (WATER)

Maxxam ID		AAC434	AAC435	AAC436		
Sampling Date		2015/03/25	2015/03/24	2015/03/25		
COC Number		505928-03-01	505928-03-01	505928-03-01		
	Units	**MW15-100**	**MW15-104**	**DUP-1**	**RDL**	**QC Batch**
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	3963248
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	0.20	3963248
p+m-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
o-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Total Xylenes	ug/L	<0.20	<0.20	<0.20	0.20	3963248
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	0.50	3963248
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	89	89	89		3963248
D4-1,2-Dichloroethane	%	125	123	119		3963248
D8-Toluene	%	93	77	94		3963248

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B553219
Report Date: 2015/04/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

TEST SUMMARY

Maxxam ID: AAC434
Sample ID: MW15-100
Matrix: Water

Collected: 2015/03/25
Shipped:
Received: 2015/03/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3961388	N/A	2015/04/01	Automated Statchk
1,3-Dichloropropene Sum	CALC	3961229	N/A	2015/03/31	Automated Statchk
Chromium (VI) in Water	IC	3964164	N/A	2015/03/30	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	3966256	N/A	2015/03/31	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3967300	2015/03/31	2015/04/01	Barbara Wowk
Mercury	CV/AA	3964895	2015/03/30	2015/03/31	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3966342	N/A	2015/03/31	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3965895	2015/03/30	2015/03/31	Darryl Tiller
Volatile Organic Compounds in Water	GC/MS	3963248	N/A	2015/03/30	Karen Hughes

Maxxam ID: AAC434 Dup
Sample ID: MW15-100
Matrix: Water

Collected: 2015/03/25
Shipped:
Received: 2015/03/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury	CV/AA	3964895	2015/03/30	2015/03/31	Magdalena Carlos

Maxxam ID: AAC435
Sample ID: MW15-104
Matrix: Water

Collected: 2015/03/24
Shipped:
Received: 2015/03/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3961388	N/A	2015/03/30	Automated Statchk
1,3-Dichloropropene Sum	CALC	3961229	N/A	2015/03/31	Automated Statchk
Chromium (VI) in Water	IC	3964164	N/A	2015/03/30	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	3966256	N/A	2015/03/31	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3967300	2015/03/31	2015/04/01	Barbara Wowk
Mercury	CV/AA	3964895	2015/03/30	2015/03/31	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3966342	N/A	2015/03/31	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3964206	2015/03/28	2015/03/30	Lingyun Feng
Volatile Organic Compounds in Water	GC/MS	3963248	N/A	2015/03/30	Karen Hughes

Maxxam ID: AAC436
Sample ID: DUP-1
Matrix: Water

Collected: 2015/03/25
Shipped:
Received: 2015/03/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	3961388	N/A	2015/03/30	Automated Statchk
1,3-Dichloropropene Sum	CALC	3961229	N/A	2015/03/31	Automated Statchk
Chromium (VI) in Water	IC	3964164	N/A	2015/03/30	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	3966256	N/A	2015/03/31	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	3967300	2015/03/31	2015/04/01	Barbara Wowk
Mercury	CV/AA	3964895	2015/03/30	2015/03/31	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	3966342	N/A	2015/03/31	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	3964206	2015/03/28	2015/03/30	Lingyun Feng
Volatile Organic Compounds in Water	GC/MS	3963248	N/A	2015/03/30	Karen Hughes

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Maxxam Job #: B553219
Report Date: 2015/04/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

GENERAL COMMENTS

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

Package 1	7.3°C

Sample AAC434-01 : Total/Dissolved Chromium < Hexavalent Chromium: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Results relate only to the items tested.

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Success Through Science®

Maxxam Job #: B553219
Report Date: 2015/04/01

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3963248	4-Bromofluorobenzene	2015/03/30	102	70 - 130	100	70 - 130	92	%		
3963248	D4-1,2-Dichloroethane	2015/03/30	109	70 - 130	113	70 - 130	126	%		
3963248	D8-Toluene	2015/03/30	90	70 - 130	93	70 - 130	78	%		
3964206	D10-Anthracene	2015/03/29	101	50 - 130	101	50 - 130	107	%		
3964206	D14-Terphenyl (FS)	2015/03/29	74	50 - 130	77	50 - 130	81	%		
3964206	D8-Acenaphthylene	2015/03/29	100	50 - 130	95	50 - 130	99	%		
3965895	D10-Anthracene	2015/03/31	102	50 - 130	101	50 - 130	101	%		
3965895	D14-Terphenyl (FS)	2015/03/31	85	50 - 130	85	50 - 130	84	%		
3965895	D8-Acenaphthylene	2015/03/31	94	50 - 130	115	50 - 130	94	%		
3966256	1,4-Difluorobenzene	2015/03/31	102	70 - 130	102	70 - 130	99	%		
3966256	4-Bromofluorobenzene	2015/03/31	114	70 - 130	119	70 - 130	94	%		
3966256	D10-Ethylbenzene	2015/03/31	98	70 - 130	90	70 - 130	96	%		
3966256	D4-1,2-Dichloroethane	2015/03/31	87	70 - 130	93	70 - 130	90	%		
3967300	o-Terphenyl	2015/04/01	96	60 - 130	118	60 - 130	94	%		
3963248	1,1,1,2-Tetrachloroethane	2015/03/30	97	70 - 130	105	70 - 130	<0.50	ug/L	NC	30
3963248	1,1,1-Trichloroethane	2015/03/30	98	70 - 130	104	70 - 130	<0.20	ug/L	NC	30
3963248	1,1,2,2-Tetrachloroethane	2015/03/30	107	70 - 130	117	70 - 130	<0.50	ug/L	NC	30
3963248	1,1,2-Trichloroethane	2015/03/30	102	70 - 130	114	70 - 130	<0.50	ug/L	NC	30
3963248	1,1-Dichloroethane	2015/03/30	104	70 - 130	112	70 - 130	<0.20	ug/L	NC	30
3963248	1,1-Dichloroethylene	2015/03/30	104	70 - 130	113	70 - 130	<0.20	ug/L	NC	30
3963248	1,2-Dichlorobenzene	2015/03/30	105	70 - 130	113	70 - 130	<0.50	ug/L	NC	30
3963248	1,2-Dichloroethane	2015/03/30	107	70 - 130	115	70 - 130	<0.50	ug/L	NC	30
3963248	1,2-Dichloropropane	2015/03/30	101	70 - 130	108	70 - 130	<0.20	ug/L	NC	30
3963248	1,3-Dichlorobenzene	2015/03/30	100	70 - 130	107	70 - 130	<0.50	ug/L	NC	30
3963248	1,4-Dichlorobenzene	2015/03/30	101	70 - 130	108	70 - 130	<0.50	ug/L	NC	30
3963248	Acetone (2-Propanone)	2015/03/30	118	60 - 140	127	60 - 140	<10	ug/L	NC	30
3963248	Benzene	2015/03/30	98	70 - 130	104	70 - 130	<0.20	ug/L	NC	30
3963248	Bromodichloromethane	2015/03/30	99	70 - 130	106	70 - 130	<0.50	ug/L	NC	30
3963248	Bromoform	2015/03/30	98	70 - 130	107	70 - 130	<1.0	ug/L	NC	30
3963248	Bromomethane	2015/03/30	97	60 - 140	103	60 - 140	<0.50	ug/L	NC	30
3963248	Carbon Tetrachloride	2015/03/30	97	70 - 130	117	70 - 130	<0.20	ug/L	NC	30
3963248	Chlorobenzene	2015/03/30	95	70 - 130	100	70 - 130	<0.20	ug/L	NC	30

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Success Through Science®

Maxxam Job #: B553219
Report Date: 2015/04/01

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3963248	Chloroform	2015/03/30	102	70 - 130	109	70 - 130	<0.20	ug/L	NC	30
3963248	cis-1,2-Dichloroethylene	2015/03/30	101	70 - 130	108	70 - 130	<0.50	ug/L	NC	30
3963248	cis-1,3-Dichloropropene	2015/03/30	94	70 - 130	81	70 - 130	<0.30	ug/L	NC	30
3963248	Dibromochloromethane	2015/03/30	101	70 - 130	110	70 - 130	<0.50	ug/L	NC	30
3963248	Dichlorodifluoromethane (FREON 12)	2015/03/30	68	60 - 140	103	60 - 140	<1.0	ug/L	NC	30
3963248	Ethylbenzene	2015/03/30	89	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
3963248	Ethylene Dibromide	2015/03/30	102	70 - 130	111	70 - 130	<0.20	ug/L	NC	30
3963248	Hexane	2015/03/30	103	70 - 130	114	70 - 130	<1.0	ug/L	NC	30
3963248	Methyl Ethyl Ketone (2-Butanone)	2015/03/30	124	60 - 140	134	60 - 140	<10	ug/L	NC	30
3963248	Methyl Isobutyl Ketone	2015/03/30	116	70 - 130	125	70 - 130	<5.0	ug/L	NC	30
3963248	Methyl t-butyl ether (MTBE)	2015/03/30	93	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
3963248	Methylene Chloride(Dichloromethane)	2015/03/30	114	70 - 130	124	70 - 130	<2.0	ug/L	NC	30
3963248	o-Xylene	2015/03/30	86	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
3963248	p+m-Xylene	2015/03/30	90	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
3963248	Styrene	2015/03/30	98	70 - 130	109	70 - 130	<0.50	ug/L	NC	30
3963248	Tetrachloroethylene	2015/03/30	99	70 - 130	106	70 - 130	<0.20	ug/L	NC	30
3963248	Toluene	2015/03/30	95	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
3963248	Total Xylenes	2015/03/30					<0.20	ug/L	NC	30
3963248	trans-1,2-Dichloroethylene	2015/03/30	99	70 - 130	107	70 - 130	<0.50	ug/L	NC	30
3963248	trans-1,3-Dichloropropene	2015/03/30	98	70 - 130	85	70 - 130	<0.40	ug/L	NC	30
3963248	Trichloroethylene	2015/03/30	97	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
3963248	Trichlorofluoromethane (FREON 11)	2015/03/30	94	70 - 130	106	70 - 130	<0.50	ug/L	NC	30
3963248	Vinyl Chloride	2015/03/30	87	70 - 130	108	70 - 130	<0.20	ug/L	NC	30
3964164	Chromium (VI)	2015/03/30	96	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
3964206	1-Methylnaphthalene	2015/03/29	89	50 - 130	86	50 - 130	<0.050	ug/L	NC	30
3964206	2-Methylnaphthalene	2015/03/29	87	50 - 130	86	50 - 130	<0.050	ug/L	NC	30
3964206	Acenaphthene	2015/03/29	97	50 - 130	94	50 - 130	<0.050	ug/L	NC	30
3964206	Acenaphthylene	2015/03/29	101	50 - 130	95	50 - 130	<0.050	ug/L	NC	30
3964206	Anthracene	2015/03/29	91	50 - 130	95	50 - 130	<0.050	ug/L	NC	30
3964206	Benzo(a)anthracene	2015/03/29	66	50 - 130	88	50 - 130	<0.050	ug/L	NC	30
3964206	Benzo(a)pyrene	2015/03/29	57	50 - 130	74	50 - 130	<0.010	ug/L	NC	30
3964206	Benzo(b/j)fluoranthene	2015/03/29	59	50 - 130	80	50 - 130	<0.050	ug/L	NC	30

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Maxxam Job #: B553219
Report Date: 2015/04/01

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3964206	Benzo(g,h,i)perylene	2015/03/29	59	50 - 130	71	50 - 130	<0.050	ug/L	NC	30
3964206	Benzo(k)fluoranthene	2015/03/29	58	50 - 130	76	50 - 130	<0.050	ug/L	NC	30
3964206	Chrysene	2015/03/29	65	50 - 130	80	50 - 130	<0.050	ug/L	NC	30
3964206	Dibenz(a,h)anthracene	2015/03/29	58	50 - 130	69	50 - 130	<0.050	ug/L	NC	30
3964206	Fluoranthene	2015/03/29	84	50 - 130	96	50 - 130	<0.050	ug/L	NC	30
3964206	Fluorene	2015/03/29	111	50 - 130	110	50 - 130	<0.050	ug/L	NC	30
3964206	Indeno(1,2,3-cd)pyrene	2015/03/29	62	50 - 130	76	50 - 130	<0.050	ug/L	NC	30
3964206	Naphthalene	2015/03/29	89	50 - 130	88	50 - 130	<0.050	ug/L	NC	30
3964206	Phenanthrene	2015/03/29	94	50 - 130	95	50 - 130	<0.030	ug/L	NC	30
3964206	Pyrene	2015/03/29	80	50 - 130	95	50 - 130	<0.050	ug/L	NC	30
3964895	Mercury (Hg)	2015/03/31	101	75 - 125	97	80 - 120	<0.1	ug/L	NC	20
3965895	1-Methylnaphthalene	2015/03/31	100	50 - 130	97	50 - 130	<0.050	ug/L	NC	30
3965895	2-Methylnaphthalene	2015/03/31	95	50 - 130	93	50 - 130	<0.050	ug/L	NC	30
3965895	Acenaphthene	2015/03/31	98	50 - 130	95	50 - 130	<0.050	ug/L	NC	30
3965895	Acenaphthylene	2015/03/31	94	50 - 130	91	50 - 130	<0.050	ug/L	NC	30
3965895	Anthracene	2015/03/31	97	50 - 130	94	50 - 130	<0.050	ug/L	NC	30
3965895	Benzo(a)anthracene	2015/03/31	93	50 - 130	87	50 - 130	<0.050	ug/L	NC	30
3965895	Benzo(a)pyrene	2015/03/31	81	50 - 130	74	50 - 130	<0.010	ug/L	NC	30
3965895	Benzo(b/j)fluoranthene	2015/03/31	88	50 - 130	79	50 - 130	<0.050	ug/L	NC	30
3965895	Benzo(g,h,i)perylene	2015/03/31	63	50 - 130	63	50 - 130	<0.050	ug/L	NC	30
3965895	Benzo(k)fluoranthene	2015/03/31	79	50 - 130	72	50 - 130	<0.050	ug/L	NC	30
3965895	Chrysene	2015/03/31	91	50 - 130	82	50 - 130	<0.050	ug/L	NC	30
3965895	Dibenz(a,h)anthracene	2015/03/31	57	50 - 130	60	50 - 130	<0.050	ug/L	NC	30
3965895	Fluoranthene	2015/03/31	101	50 - 130	98	50 - 130	<0.050	ug/L	NC	30
3965895	Fluorene	2015/03/31	95	50 - 130	91	50 - 130	<0.050	ug/L	NC	30
3965895	Indeno(1,2,3-cd)pyrene	2015/03/31	74	50 - 130	74	50 - 130	<0.050	ug/L	NC	30
3965895	Naphthalene	2015/03/31	91	50 - 130	89	50 - 130	<0.050	ug/L	NC	30
3965895	Phenanthrene	2015/03/31	97	50 - 130	94	50 - 130	<0.030	ug/L	NC	30
3965895	Pyrene	2015/03/31	105	50 - 130	100	50 - 130	<0.050	ug/L	NC	30
3966256	F1 (C6-C10) - BTEX	2015/03/31					<25	ug/L	NC	30
3966256	F1 (C6-C10)	2015/03/31	83	70 - 130	93	70 - 130	<25	ug/L	NC	30
3966342	Dissolved Antimony (Sb)	2015/03/31	105	80 - 120	102	80 - 120	<0.50	ug/L	NC	20

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Maxxam Job #: B553219
Report Date: 2015/04/01

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
3966342	Dissolved Arsenic (As)	2015/03/31	100	80 - 120	100	80 - 120	<1.0	ug/L	NC	20
3966342	Dissolved Barium (Ba)	2015/03/31	98	80 - 120	97	80 - 120	<2.0	ug/L	2.5	20
3966342	Dissolved Beryllium (Be)	2015/03/31	106	80 - 120	103	80 - 120	<0.50	ug/L	NC	20
3966342	Dissolved Boron (B)	2015/03/31	103	80 - 120	101	80 - 120	<10	ug/L	NC	20
3966342	Dissolved Cadmium (Cd)	2015/03/31	103	80 - 120	101	80 - 120	<0.10	ug/L	NC	20
3966342	Dissolved Chromium (Cr)	2015/03/31	100	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
3966342	Dissolved Cobalt (Co)	2015/03/31	98	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
3966342	Dissolved Copper (Cu)	2015/03/31	102	80 - 120	100	80 - 120	<1.0	ug/L	NC	20
3966342	Dissolved Lead (Pb)	2015/03/31	99	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
3966342	Dissolved Molybdenum (Mo)	2015/03/31	106	80 - 120	101	80 - 120	<0.50	ug/L	NC	20
3966342	Dissolved Nickel (Ni)	2015/03/31	96	80 - 120	96	80 - 120	<1.0	ug/L	NC	20
3966342	Dissolved Selenium (Se)	2015/03/31	103	80 - 120	100	80 - 120	<2.0	ug/L	NC	20
3966342	Dissolved Silver (Ag)	2015/03/31	99	80 - 120	100	80 - 120	<0.10	ug/L	NC	20
3966342	Dissolved Sodium (Na)	2015/03/31	NC	80 - 120	101	80 - 120	<100	ug/L	2.8	20
3966342	Dissolved Thallium (Tl)	2015/03/31	99	80 - 120	97	80 - 120	<0.050	ug/L	NC	20
3966342	Dissolved Uranium (U)	2015/03/31	97	80 - 120	95	80 - 120	<0.10	ug/L	5.6	20
3966342	Dissolved Vanadium (V)	2015/03/31	101	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
3966342	Dissolved Zinc (Zn)	2015/03/31	100	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
3967300	F2 (C10-C16 Hydrocarbons)	2015/04/01	93	50 - 130	103	60 - 130	<100	ug/L	NC	30
3967300	F3 (C16-C34 Hydrocarbons)	2015/04/01	100	50 - 130	115	60 - 130	<200	ug/L	NC	30
3967300	F4 (C34-C50 Hydrocarbons)	2015/04/01	97	50 - 130	117	60 - 130	<200	ug/L	NC	30

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B553219
Report Date: 2015/04/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

VALIDATION SIGNATURE PAGE

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

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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6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free 800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

IMMEDIATE TEST

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B40279
Attention:	Central Accounting	Attention:	Maria Staneva	P.O. #:	
Address:	1931 Robertson Rd	Address:		Project:	1525113
	Ottawa ON K2H 5B7			Project Name:	
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:	Oblates
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Maria_Staneva@golder.com	Sampled By:	B. McParlan

Laboratory Use Only:

Maxxam Job #:	Bottle Order #:
	505928
COC #:	**Project Manager:**
C#505928-03-01	Parnian Baber

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): [X] Table 1 [X] Res/Park [X] Medium/Fine [ ] Table 2 [ ] Ind/Comm [ ] Coarse [ ] Table 3 [ ] Agri/Other [X] For RSC [ ] Table ___

Other Regulations: [ ] CCME [ ] Sanitary Sewer Bylaw [ ] Reg 558. [ ] Storm Sewer Bylaw [ ] MISA Municipality ___ [ ] PWQO [ ] Other ___

Special Instructions

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

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(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 #)*

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 Metals Package (Soil)	pH CaCl2 EXTRACT	O.Reg 153 Petroleum Hydrocarbons (Water)	O.Reg 153 Volatile Organics (Water)	O.Reg 153 PAHs (Water)	O.Reg 153 Metals Package (Water) (ICPMS Metals, Hg CRVI)				# of Bottles	Comments
1		MW15-100	2015/03/25		GW	Yes				X	X	X	X				13	
2		MW15-104	2015/03/24		GW	Yes				X	X	X	X				13	
3		DUP-1	2015/03/25		GW	Yes				X	X	X	X				13	
4																		
5																		
6																		
7																		
8																		
9																		
10																		

25-Mar-15 15:47
Parnian Baber
B553219
JT3 ENV-884

RECEIVED IN OTTAWA

on ice

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
B. McParlan / B. McParlan	2015/03/25	14:30	Kelsey Pilon Kelsey Pilon	15/03/25	15:47	
			[signature]	2015/03/26	09:30	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	9,7,6	Present	✓	
		Intact	✓	

White: Maxxam Yellow: Client

* 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.

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

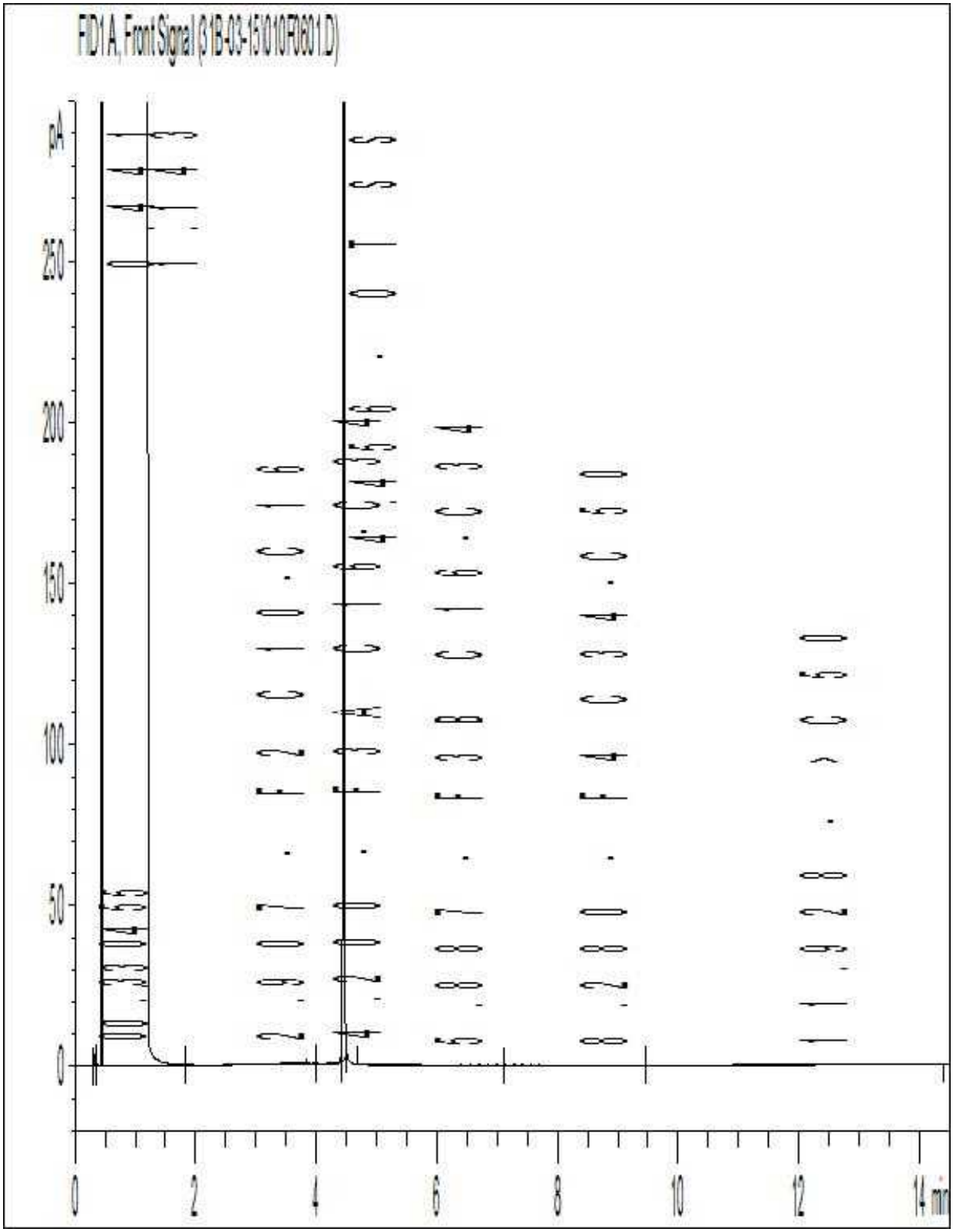
4/4/4°C

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B553219
Report Date: 2015/04/01
Maxxam Sample: AAC434

Golder Associates Ltd
Client Project #: 1525113
Client ID: MW15-100

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

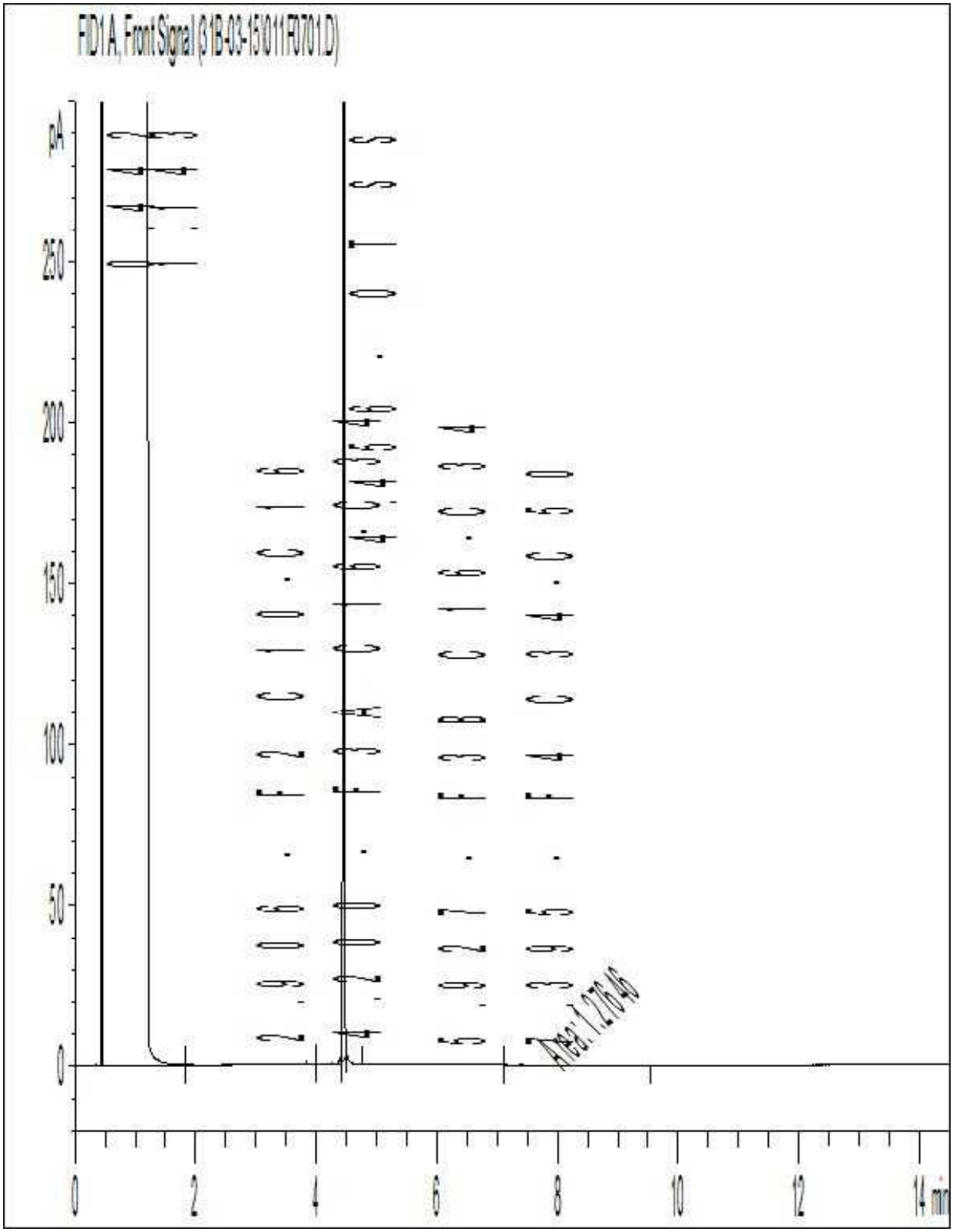


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B553219
Report Date: 2015/04/01
Maxxam Sample: AAC435

Golder Associates Ltd
Client Project #: 1525113
Client ID: MW15-104

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

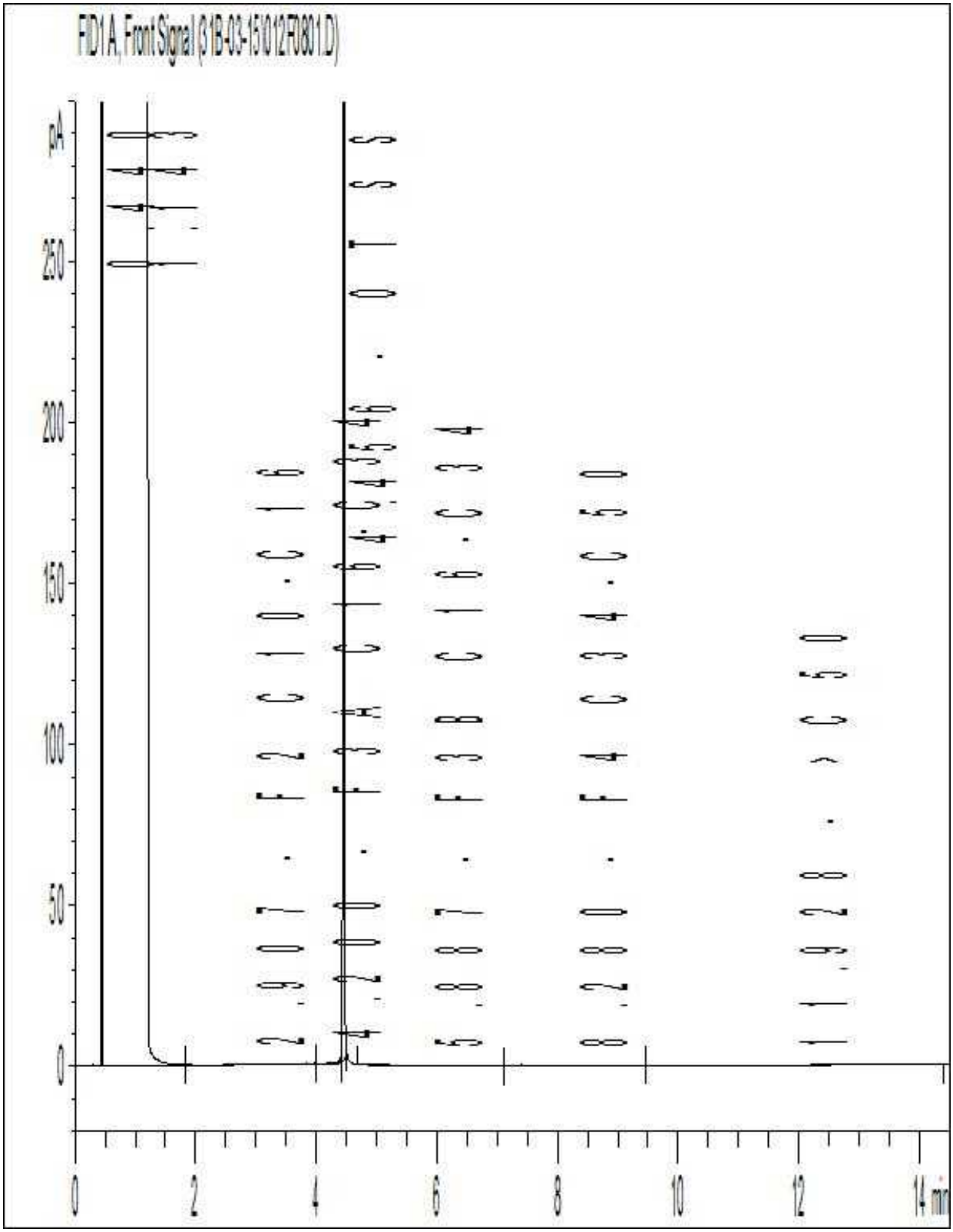


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B553219
Report Date: 2015/04/01
Maxxam Sample: AAC436

Golder Associates Ltd
Client Project #: 1525113
Client ID: DUP-1

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.

Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 549956-01-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/02/29
Report #: R3911604
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B638507
Received: 2016/02/24, 13:15

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	5	N/A	2016/02/26	CAM SOP-00301	EPA 8270D m
Chromium (VI) in Water (1)	5	N/A	2016/02/26	CAM SOP-00436	EPA 7199 m
Mercury (1)	5	2016/02/26	2016/02/26	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	5	N/A	2016/02/26	OTT SOP-00003	EPA 6020
PAH Compounds in Water by GC/MS (SIM)	5	2016/02/25	2016/02/25	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573
==========
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.maxxam.ca

Maxxam Job #: B638507
Report Date: 2016/02/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 METALS PACKAGE (WATER)

Maxxam ID			BXN050	BXN050		BXN051		BXN052		
Sampling Date			2016/02/23 12:00	2016/02/23 12:00		2016/02/23 13:00		2016/02/23 14:00		
COC Number			549956-01-01	549956-01-01		549956-01-01		549956-01-01		
	UNITS	**Criteria**	**BH16-01**	**BH16-01 Lab-Dup**	**RDL**	**BH14-210B**	**RDL**	**BH15-4**	**RDL**	**QC Batch**
Metals										
Chromium (VI)	ug/L	**140**	<0.50		0.50	<0.50	0.50	<0.50	0.50	4395353
Mercury (Hg)	ug/L	**0.29**	<0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	4395889
Dissolved Antimony (Sb)	ug/L	**20000**	<0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	4396126
Dissolved Arsenic (As)	ug/L	**1900**	<1	<1	1	<1	1	<1	1	4396126
Dissolved Barium (Ba)	ug/L	**29000**	230	220	2	100	2	150	2	4396126
Dissolved Beryllium (Be)	ug/L	**67**	<0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	4396126
Dissolved Boron (B)	ug/L	**45000**	23	22	10	12	10	50	10	4396126
Dissolved Cadmium (Cd)	ug/L	**2.7**	<0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	4396126
Dissolved Chromium (Cr)	ug/L	**810**	<5	<5	5	<5	5	<5	5	4396126
Dissolved Cobalt (Co)	ug/L	**66**	0.7	0.6	0.5	<0.5	0.5	<0.5	0.5	4396126
Dissolved Copper (Cu)	ug/L	**87**	1	2	1	3	1	<1	1	4396126
Dissolved Lead (Pb)	ug/L	**25**	<0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	4396126
Dissolved Molybdenum (Mo)	ug/L	**9200**	4.3	4.2	0.5	1.3	0.5	<0.5	0.5	4396126
Dissolved Nickel (Ni)	ug/L	**490**	1	1	1	<5	5	<1	1	4396126
Dissolved Selenium (Se)	ug/L	**63**	<2	<2	2	<2	2	<2	2	4396126
Dissolved Silver (Ag)	ug/L	**1.5**	<0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	4396126
Dissolved Sodium (Na)	ug/L	**2300000**	40000	39000	100	310000	100	10000	100	4396126
Dissolved Thallium (Tl)	ug/L	**510**	<0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	4396126
Dissolved Uranium (U)	ug/L	**420**	2.8	2.8	0.1	4.6	0.1	0.1	0.1	4396126
Dissolved Vanadium (V)	ug/L	**250**	<0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	4396126
Dissolved Zinc (Zn)	ug/L	**1100**	8	17	5	12	5	9	5	4396126

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Non- Potable Ground Water - All Types of Property Uses - Coarse Texture Soil

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.maxxam.ca

Maxxam Job #: B638507
Report Date: 2016/02/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 METALS PACKAGE (WATER)

Maxxam ID			BXN053		BXN054		
Sampling Date			2016/02/23 15:00		2016/02/23 12:00		
COC Number			549956-01-01		549956-01-01		
	UNITS	**Criteria**	**BH16-02**	**RDL**	**DUP A**	**RDL**	**QC Batch**
Metals							
Chromium (VI)	ug/L	**140**	<0.50	0.50	<0.50	0.50	4395353
Mercury (Hg)	ug/L	**0.29**	<0.1	0.1	<0.1	0.1	4395889
Dissolved Antimony (Sb)	ug/L	**20000**	<0.5	0.5	<0.5	0.5	4396126
Dissolved Arsenic (As)	ug/L	**1900**	<1	1	<1	1	4396126
Dissolved Barium (Ba)	ug/L	**29000**	92	2	230	2	4396126
Dissolved Beryllium (Be)	ug/L	**67**	<0.5	0.5	<0.5	0.5	4396126
Dissolved Boron (B)	ug/L	**45000**	200	10	23	10	4396126
Dissolved Cadmium (Cd)	ug/L	**2.7**	<0.1	0.1	<0.1	0.1	4396126
Dissolved Chromium (Cr)	ug/L	**810**	<5	5	<5	5	4396126
Dissolved Cobalt (Co)	ug/L	**66**	1.5	0.5	0.7	0.5	4396126
Dissolved Copper (Cu)	ug/L	**87**	3	1	1	1	4396126
Dissolved Lead (Pb)	ug/L	**25**	<0.5	0.5	<0.5	0.5	4396126
Dissolved Molybdenum (Mo)	ug/L	**9200**	2.9	0.5	4.8	0.5	4396126
Dissolved Nickel (Ni)	ug/L	**490**	<5	5	2	1	4396126
Dissolved Selenium (Se)	ug/L	**63**	<2	2	<2	2	4396126
Dissolved Silver (Ag)	ug/L	**1.5**	<0.1	0.1	<0.1	0.1	4396126
Dissolved Sodium (Na)	ug/L	**2300000**	38000	100	42000	100	4396126
Dissolved Thallium (Tl)	ug/L	**510**	<0.05	0.05	<0.05	0.05	4396126
Dissolved Uranium (U)	ug/L	**420**	4.9	0.1	3.1	0.1	4396126
Dissolved Vanadium (V)	ug/L	**250**	5.5	0.5	<0.5	0.5	4396126
Dissolved Zinc (Zn)	ug/L	**1100**	12	5	<5	5	4396126

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Non- Potable Ground Water - All Types of Property Uses - Coarse Texture Soil

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Maxxam Job #: B638507
Report Date: 2016/02/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (WATER)

Maxxam ID			BXN050	BXN051	BXN051	BXN052	BXN053		
Sampling Date			2016/02/23 12:00	2016/02/23 13:00	2016/02/23 13:00	2016/02/23 14:00	2016/02/23 15:00		
COC Number			549956-01-01	549956-01-01	549956-01-01	549956-01-01	549956-01-01		
	UNITS	**Criteria**	**BH16-01**	**BH14-210B**	**BH14-210B Lab-Dup**	**BH15-4**	**BH16-02**	**RDL**	**QC Batch**
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/L	**1800**	0.075	<0.071		<0.071	<0.071	0.071	4394560
Polyaromatic Hydrocarbons									
Biphenyl	ug/L	**1000**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4395034
Acenaphthene	ug/L	**600**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4395034
Acenaphthylene	ug/L	**1.8**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4395034
Anthracene	ug/L	**2.4**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4395034
Benzo(a)anthracene	ug/L	**4.7**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4395034
Benzo(a)pyrene	ug/L	**0.81**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4395034
Benzo(b/j)fluoranthene	ug/L	**0.75**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4395034
Benzo(g,h,i)perylene	ug/L	**0.2**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4395034
Benzo(k)fluoranthene	ug/L	**0.4**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4395034
Chrysene	ug/L	**1**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4395034
Dibenz(a,h)anthracene	ug/L	**0.52**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4395034
Fluoranthene	ug/L	**130**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4395034
Fluorene	ug/L	**400**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4395034
Indeno(1,2,3-cd)pyrene	ug/L	**0.2**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4395034
1-Methylnaphthalene	ug/L	**1800**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4395034
2-Methylnaphthalene	ug/L	**1800**	0.075	<0.050	<0.050	<0.050	<0.050	0.050	4395034
Naphthalene	ug/L	**1400**	0.075	<0.050	<0.050	<0.050	<0.050	0.050	4395034
Phenanthrene	ug/L	**580**	0.070	<0.030	<0.030	<0.030	<0.030	0.030	4395034
Pyrene	ug/L	**68**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4395034
Surrogate Recovery (%)									
D10-Anthracene	%	**-**	99	102	102	102	102		4395034
D14-Terphenyl (FS)	%	**-**	107	108	107	109	109		4395034
D8-Acenaphthylene	%	**-**	97	96	97	98	101		4395034

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Non- Potable Ground Water - All Types of Property Uses - Coarse Texture Soil

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.maxxam.ca

Maxxam Job #: B638507
Report Date: 2016/02/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (WATER)

Maxxam ID			BXN054		
Sampling Date			2016/02/23 12:00		
COC Number			549956-01-01		
	UNITS	**Criteria**	**DUP A**	**RDL**	**QC Batch**
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/L	**1800**	<0.071	0.071	4394560
Polyaromatic Hydrocarbons					
Biphenyl	ug/L	**1000**	<0.050	0.050	4395034
Acenaphthene	ug/L	**600**	<0.050	0.050	4395034
Acenaphthylene	ug/L	**1.8**	<0.050	0.050	4395034
Anthracene	ug/L	**2.4**	<0.050	0.050	4395034
Benzo(a)anthracene	ug/L	**4.7**	<0.050	0.050	4395034
Benzo(a)pyrene	ug/L	**0.81**	<0.010	0.010	4395034
Benzo(b/j)fluoranthene	ug/L	**0.75**	<0.050	0.050	4395034
Benzo(g,h,i)perylene	ug/L	**0.2**	<0.050	0.050	4395034
Benzo(k)fluoranthene	ug/L	**0.4**	<0.050	0.050	4395034
Chrysene	ug/L	**1**	<0.050	0.050	4395034
Dibenz(a,h)anthracene	ug/L	**0.52**	<0.050	0.050	4395034
Fluoranthene	ug/L	**130**	<0.050	0.050	4395034
Fluorene	ug/L	**400**	<0.050	0.050	4395034
Indeno(1,2,3-cd)pyrene	ug/L	**0.2**	<0.050	0.050	4395034
1-Methylnaphthalene	ug/L	**1800**	<0.050	0.050	4395034
2-Methylnaphthalene	ug/L	**1800**	0.060	0.050	4395034
Naphthalene	ug/L	**1400**	0.075	0.050	4395034
Phenanthrene	ug/L	**580**	0.065	0.030	4395034
Pyrene	ug/L	**68**	<0.050	0.050	4395034
Surrogate Recovery (%)					
D10-Anthracene	%	**-**	98		4395034
D14-Terphenyl (FS)	%	**-**	102		4395034
D8-Acenaphthylene	%	**-**	96		4395034

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water
Condition
Non- Potable Ground Water - All Types of Property Uses - Coarse Texture Soil

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.maxxam.ca

Maxxam Job #: B638507
Report Date: 2016/02/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: BXN050
Sample ID: BH16-01
Matrix: Water

Collected: 2016/02/23
Shipped:
Received: 2016/02/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4394560	N/A	2016/02/26	Paul Rubinato
Chromium (VI) in Water	IC	4395353	N/A	2016/02/26	Manoj Gera
Mercury	CV/AA	4395889	2016/02/26	2016/02/26	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	4396126	N/A	2016/02/26	Raigamage Perera
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4395034	2016/02/25	2016/02/25	Arezoo Habibagahi

Maxxam ID: BXN050 Dup
Sample ID: BH16-01
Matrix: Water

Collected: 2016/02/23
Shipped:
Received: 2016/02/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury	CV/AA	4395889	2016/02/26	2016/02/26	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	4396126	N/A	2016/02/26	Raigamage Perera

Maxxam ID: BXN051
Sample ID: BH14-210B
Matrix: Water

Collected: 2016/02/23
Shipped:
Received: 2016/02/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4394560	N/A	2016/02/26	Paul Rubinato
Chromium (VI) in Water	IC	4395353	N/A	2016/02/26	Manoj Gera
Mercury	CV/AA	4395889	2016/02/26	2016/02/26	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	4396126	N/A	2016/02/26	Raigamage Perera
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4395034	2016/02/25	2016/02/25	Arezoo Habibagahi

Maxxam ID: BXN051 Dup
Sample ID: BH14-210B
Matrix: Water

Collected: 2016/02/23
Shipped:
Received: 2016/02/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4395034	2016/02/25	2016/02/25	Arezoo Habibagahi

Maxxam ID: BXN052
Sample ID: BH15-4
Matrix: Water

Collected: 2016/02/23
Shipped:
Received: 2016/02/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4394560	N/A	2016/02/26	Paul Rubinato
Chromium (VI) in Water	IC	4395353	N/A	2016/02/26	Manoj Gera
Mercury	CV/AA	4395889	2016/02/26	2016/02/26	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	4396126	N/A	2016/02/26	Raigamage Perera
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4395034	2016/02/25	2016/02/25	Arezoo Habibagahi

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.maxxam.ca

Maxxam Job #: B638507
Report Date: 2016/02/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: BXN053
Sample ID: BH16-02
Matrix: Water

Collected: 2016/02/23
Shipped:
Received: 2016/02/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4394560	N/A	2016/02/26	Paul Rubinato
Chromium (VI) in Water	IC	4395353	N/A	2016/02/26	Manoj Gera
Mercury	CV/AA	4395889	2016/02/26	2016/02/26	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	4396126	N/A	2016/02/26	Raigamage Perera
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4395034	2016/02/25	2016/02/25	Arezoo Habibagahi

Maxxam ID: BXN054
Sample ID: DUP A
Matrix: Water

Collected: 2016/02/23
Shipped:
Received: 2016/02/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4394560	N/A	2016/02/26	Paul Rubinato
Chromium (VI) in Water	IC	4395353	N/A	2016/02/26	Manoj Gera
Mercury	CV/AA	4395889	2016/02/26	2016/02/26	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	4396126	N/A	2016/02/26	Raigamage Perera
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4395034	2016/02/25	2016/02/25	Arezoo Habibagahi

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.maxxam.ca

Maxxam Job #: B638507
Report Date: 2016/02/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

GENERAL COMMENTS

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

Package 1	2.7°C

Custody seal was present and intact on the cooler.

Revised Report (2016-02-29): Criteria added on report.

Sample BXN051-01 : Metal Analysis:
RDL of Nickel was adjusted due to high concentration of Calcium.

Sample BXN053-01 : Metal Analysis:
RDL of Nickel was adjusted due to high concentration of Calcium.

Results relate only to the items tested.

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.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B638507
Report Date: 2016/02/29

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4395034	D10-Anthracene	2016/02/25	91	50 - 130	102	50 - 130	99	%		
4395034	D14-Terphenyl (FS)	2016/02/25	105	50 - 130	110	50 - 130	107	%		
4395034	D8-Acenaphthylene	2016/02/25	86	50 - 130	98	50 - 130	95	%		
4395034	1-Methylnaphthalene	2016/02/25	83	50 - 130	82	50 - 130	<0.050	ug/L	NC	30
4395034	2-Methylnaphthalene	2016/02/25	83	50 - 130	84	50 - 130	<0.050	ug/L	NC	30
4395034	Acenaphthene	2016/02/25	76	50 - 130	77	50 - 130	<0.050	ug/L	NC	30
4395034	Acenaphthylene	2016/02/25	80	50 - 130	80	50 - 130	<0.050	ug/L	NC	30
4395034	Anthracene	2016/02/25	85	50 - 130	83	50 - 130	<0.050	ug/L	NC	30
4395034	Benzo(a)anthracene	2016/02/25	91	50 - 130	81	50 - 130	<0.050	ug/L	NC	30
4395034	Benzo(a)pyrene	2016/02/25	100	50 - 130	89	50 - 130	<0.010	ug/L	NC	30
4395034	Benzo(b/j)fluoranthene	2016/02/25	109	50 - 130	97	50 - 130	<0.050	ug/L	NC	30
4395034	Benzo(g,h,i)perylene	2016/02/25	89	50 - 130	80	50 - 130	<0.050	ug/L	NC	30
4395034	Benzo(k)fluoranthene	2016/02/25	110	50 - 130	100	50 - 130	<0.050	ug/L	NC	30
4395034	Biphenyl	2016/02/25					<0.050	ug/L	NC	30
4395034	Chrysene	2016/02/25	94	50 - 130	84	50 - 130	<0.050	ug/L	NC	30
4395034	Dibenz(a,h)anthracene	2016/02/25	90	50 - 130	80	50 - 130	<0.050	ug/L	NC	30
4395034	Fluoranthene	2016/02/25	91	50 - 130	87	50 - 130	<0.050	ug/L	NC	30
4395034	Fluorene	2016/02/25	82	50 - 130	81	50 - 130	<0.050	ug/L	NC	30
4395034	Indeno(1,2,3-cd)pyrene	2016/02/25	94	50 - 130	84	50 - 130	<0.050	ug/L	NC	30
4395034	Naphthalene	2016/02/25	78	50 - 130	79	50 - 130	<0.050	ug/L	NC	30
4395034	Phenanthrene	2016/02/25	82	50 - 130	81	50 - 130	<0.030	ug/L	NC	30
4395034	Pyrene	2016/02/25	86	50 - 130	82	50 - 130	<0.050	ug/L	NC	30
4395353	Chromium (VI)	2016/02/26	102	80 - 120	104	80 - 120	<0.50	ug/L	NC	20
4395889	Mercury (Hg)	2016/02/26	102	75 - 125	104	80 - 120	<0.1	ug/L	NC	20
4396126	Dissolved Antimony (Sb)	2016/02/26	107	80 - 120	102	80 - 120	<0.5	ug/L	NC	25
4396126	Dissolved Arsenic (As)	2016/02/26	106	80 - 120	99	80 - 120	<1	ug/L	NC	25
4396126	Dissolved Barium (Ba)	2016/02/26	100	80 - 120	99	80 - 120	<2	ug/L	0.78	25
4396126	Dissolved Beryllium (Be)	2016/02/26	98	80 - 120	96	80 - 120	<0.5	ug/L	NC	25
4396126	Dissolved Boron (B)	2016/02/26	93	80 - 120	92	80 - 120	<10	ug/L	NC	25
4396126	Dissolved Cadmium (Cd)	2016/02/26	104	80 - 120	100	80 - 120	<0.1	ug/L	NC	25
4396126	Dissolved Chromium (Cr)	2016/02/26	101	80 - 120	99	80 - 120	<5	ug/L	NC	25

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Maxxam Job #: B638507
Report Date: 2016/02/29

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4396126	Dissolved Cobalt (Co)	2016/02/26	100	80 - 120	97	80 - 120	<0.5	ug/L	NC	25
4396126	Dissolved Copper (Cu)	2016/02/26	99	80 - 120	98	80 - 120	<1	ug/L	NC	25
4396126	Dissolved Lead (Pb)	2016/02/26	99	80 - 120	100	80 - 120	<0.5	ug/L	NC	25
4396126	Dissolved Molybdenum (Mo)	2016/02/26	106	80 - 120	101	80 - 120	<0.5	ug/L	0.88	25
4396126	Dissolved Nickel (Ni)	2016/02/26	99	80 - 120	99	80 - 120	<1	ug/L	NC	25
4396126	Dissolved Selenium (Se)	2016/02/26	107	80 - 120	100	80 - 120	<2	ug/L	NC	25
4396126	Dissolved Silver (Ag)	2016/02/26	80	80 - 120	82	80 - 120	<0.1	ug/L	NC	25
4396126	Dissolved Sodium (Na)	2016/02/26	NC	80 - 120	103	80 - 120	<100	ug/L	2.2	25
4396126	Dissolved Thallium (Tl)	2016/02/26	99	80 - 120	98	80 - 120	<0.05	ug/L	NC	25
4396126	Dissolved Uranium (U)	2016/02/26	106	80 - 120	98	80 - 120	<0.1	ug/L	0.14	25
4396126	Dissolved Vanadium (V)	2016/02/26	104	80 - 120	99	80 - 120	<0.5	ug/L	NC	25
4396126	Dissolved Zinc (Zn)	2016/02/26	102	80 - 120	99	80 - 120	<5	ug/L	NC	25

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B638507
Report Date: 2016/02/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere, Scientific Services

Paul Rubinato, Analyst, Maxxam Analytics

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 549956
Attention:	Central Accounting	Attention:	Paul Hurst	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113		
	Ottawa ON K2H 5B7			Project Name:		COC #:	Project Manager:
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:		C#549956-01-01	Parnian Baber
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	phurst@golder.com; abradshaw@golder.com; tony_lyo	Sampled By:	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

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: Two-day Time Required: ___ ☒
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	~~O.Reg 153 Petroleum Hydrocarbons (Water)~~	O.Reg 153 PAHs (Water)	O.Reg 153 Dissolved ICPMS Metals	Hg	Cr VI	~~[illegible]~~	F1/BTEX	F2-F4			# of Bottles	Comments
1		BH16-01	16/02/23	1200	GW	Yes		X	X	X	X		X	X			9	
2		BH14-210B	↓	1300	↓	↓		X	X	X	X		X	X			9	
3		BH15-4		1400				X	X	X	X		X	X			9	
4		BH16-02		1500				X	X	X	X		X	X			9	
5		DUP A		1200				X	X	X	X		X	X			9	
6		Trip Blank	—	—	other	NA							X				2	
7		Trip Spike	—	—	other	NA							X				2	
8																		
9																		
10																		

24-Feb-16 13:15
Parnian Baber
B638507
FHB OTT-001

RECEIVED IN OTTAWA

ON ICE

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
Aaron Bradshaw	16/02/24		Fatemeh	2016/02/24	13:15			2.5.1	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B638507
Report Date: 2016/02/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-GW-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Site#: 1525113
Your C.O.C. #: 550578-01-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/03/01
Report #: R3913713
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B639774
Received: 2016/02/26, 14:50

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	1	N/A	2016/03/01	CAM SOP-00301	EPA 8270D m
Chromium (VI) in Water (1)	1	N/A	2016/02/29	CAM SOP-00436	EPA 7199 m
Mercury (1)	1	2016/02/29	2016/02/29	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	1	N/A	2016/02/26	OTT SOP-00003	EPA 6020
PAH Compounds in Water by GC/MS (SIM)	1	2016/02/29	2016/02/29	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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 Job #: B639774
Report Date: 2016/03/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 METALS PACKAGE (WATER)

Maxxam ID			BXT199	BXT199		
Sampling Date			2016/02/26 09:00	2016/02/26 09:00		
COC Number			550578-01-01	550578-01-01		
	UNITS	**Criteria**	**BH14-2 2016/02/26**	**BH14-2 2016/02/26 Lab-Dup**	**RDL**	**QC Batch**
Metals						
Chromium (VI)	ug/L	**140**	<0.50		0.50	4398212
Mercury (Hg)	ug/L	**0.29**	<0.1		0.1	4398020
Dissolved Antimony (Sb)	ug/L	**20000**	<0.5	<0.5	0.5	4396774
Dissolved Arsenic (As)	ug/L	**1900**	3	3	1	4396774
Dissolved Barium (Ba)	ug/L	**29000**	62	59	2	4396774
Dissolved Beryllium (Be)	ug/L	**67**	<0.5	<0.5	0.5	4396774
Dissolved Boron (B)	ug/L	**45000**	43	41	10	4396774
Dissolved Cadmium (Cd)	ug/L	**2.7**	<0.1	<0.1	0.1	4396774
Dissolved Chromium (Cr)	ug/L	**810**	<5	<5	5	4396774
Dissolved Cobalt (Co)	ug/L	**66**	<0.5	<0.5	0.5	4396774
Dissolved Copper (Cu)	ug/L	**87**	1	1	1	4396774
Dissolved Lead (Pb)	ug/L	**25**	<0.5	<0.5	0.5	4396774
Dissolved Molybdenum (Mo)	ug/L	**9200**	31	31	0.5	4396774
Dissolved Nickel (Ni)	ug/L	**490**	1	<1	1	4396774
Dissolved Selenium (Se)	ug/L	**63**	<2	<2	2	4396774
Dissolved Silver (Ag)	ug/L	**1.5**	<0.1	<0.1	0.1	4396774
Dissolved Sodium (Na)	ug/L	**2300000**	35000	34000	100	4396774
Dissolved Thallium (Tl)	ug/L	**510**	<0.05	<0.05	0.05	4396774
Dissolved Uranium (U)	ug/L	**420**	5.1	4.9	0.1	4396774
Dissolved Vanadium (V)	ug/L	**250**	1.6	1.7	0.5	4396774
Dissolved Zinc (Zn)	ug/L	**1100**	<5	<5	5	4396774

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Non- Potable Ground Water - All Types of Property Uses - Coarse Texture Soil

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Maxxam Job #: B639774
Report Date: 2016/03/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (WATER)

Maxxam ID			BXT198		
Sampling Date			2016/02/25 09:30		
COC Number			550578-01-01		
	UNITS	**Criteria**	**BH14-2 2016/02/25**	**RDL**	**QC Batch**
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/L	**1800**	<0.071	0.071	4396737
Polyaromatic Hydrocarbons					
Biphenyl	ug/L	**1000**	<0.050	0.050	4398348
Acenaphthene	ug/L	**600**	<0.050	0.050	4398348
Acenaphthylene	ug/L	**1.8**	<0.050	0.050	4398348
Anthracene	ug/L	**2.4**	<0.050	0.050	4398348
Benzo(a)anthracene	ug/L	**4.7**	<0.050	0.050	4398348
Benzo(a)pyrene	ug/L	**0.81**	<0.010	0.010	4398348
Benzo(b/j)fluoranthene	ug/L	**0.75**	<0.050	0.050	4398348
Benzo(g,h,i)perylene	ug/L	**0.2**	<0.050	0.050	4398348
Benzo(k)fluoranthene	ug/L	**0.4**	<0.050	0.050	4398348
Chrysene	ug/L	**1**	<0.050	0.050	4398348
Dibenz(a,h)anthracene	ug/L	**0.52**	<0.050	0.050	4398348
Fluoranthene	ug/L	**130**	<0.050	0.050	4398348
Fluorene	ug/L	**400**	<0.050	0.050	4398348
Indeno(1,2,3-cd)pyrene	ug/L	**0.2**	<0.050	0.050	4398348
1-Methylnaphthalene	ug/L	**1800**	<0.050	0.050	4398348
2-Methylnaphthalene	ug/L	**1800**	<0.050	0.050	4398348
Naphthalene	ug/L	**1400**	<0.050	0.050	4398348
Phenanthrene	ug/L	**580**	<0.030	0.030	4398348
Pyrene	ug/L	**68**	<0.050	0.050	4398348
Surrogate Recovery (%)					
D10-Anthracene	%	**-**	101		4398348
D14-Terphenyl (FS)	%	**-**	107		4398348
D8-Acenaphthylene	%	**-**	96		4398348

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Non- Potable Ground Water - All Types of Property Uses - Coarse Texture Soil

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Maxxam Job #: B639774
Report Date: 2016/03/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: BXT198
Sample ID: BH14-2 2016/02/25
Matrix: Water

Collected: 2016/02/25
Shipped:
Received: 2016/02/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4396737	N/A	2016/03/01	Paul Rubinato
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4398348	2016/02/29	2016/02/29	Liliana Gaburici

Maxxam ID: BXT199
Sample ID: BH14-2 2016/02/26
Matrix: Water

Collected: 2016/02/26
Shipped:
Received: 2016/02/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chromium (VI) in Water	IC	4398212	N/A	2016/02/29	Sally Coughlin
Mercury	CV/AA	4398020	2016/02/29	2016/02/29	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4396774	N/A	2016/02/26	Raigamage Perera

Maxxam ID: BXT199 Dup
Sample ID: BH14-2 2016/02/26
Matrix: Water

Collected: 2016/02/26
Shipped:
Received: 2016/02/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	4396774	N/A	2016/02/26	Raigamage Perera

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Maxxam Job #: B639774
Report Date: 2016/03/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

GENERAL COMMENTS

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

Package 1	0.3°C

Results relate only to the items tested.

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Maxxam Job #: B639774
Report Date: 2016/03/01

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4398348	D10-Anthracene	2016/02/29	102	50 - 130	100	50 - 130	99	%		
4398348	D14-Terphenyl (FS)	2016/02/29	107	50 - 130	106	50 - 130	103	%		
4398348	D8-Acenaphthylene	2016/02/29	97	50 - 130	94	50 - 130	93	%		
4396774	Dissolved Antimony (Sb)	2016/02/26	101	80 - 120	99	80 - 120	<0.5	ug/L	NC	25
4396774	Dissolved Arsenic (As)	2016/02/26	100	80 - 120	97	80 - 120	<1	ug/L	NC	25
4396774	Dissolved Barium (Ba)	2016/02/26	100	80 - 120	100	80 - 120	<2	ug/L	5.6	25
4396774	Dissolved Beryllium (Be)	2016/02/26	102	80 - 120	100	80 - 120	<0.5	ug/L	NC	25
4396774	Dissolved Boron (B)	2016/02/26	101	80 - 120	101	80 - 120	<10	ug/L	NC	25
4396774	Dissolved Cadmium (Cd)	2016/02/26	101	80 - 120	101	80 - 120	<0.1	ug/L	NC	25
4396774	Dissolved Chromium (Cr)	2016/02/26	97	80 - 120	97	80 - 120	<5	ug/L	NC	25
4396774	Dissolved Cobalt (Co)	2016/02/26	97	80 - 120	98	80 - 120	<0.5	ug/L	NC	25
4396774	Dissolved Copper (Cu)	2016/02/26	96	80 - 120	97	80 - 120	<1	ug/L	NC	25
4396774	Dissolved Lead (Pb)	2016/02/26	98	80 - 120	99	80 - 120	<0.5	ug/L	NC	25
4396774	Dissolved Molybdenum (Mo)	2016/02/26	101	80 - 120	100	80 - 120	<0.5	ug/L	0.23	25
4396774	Dissolved Nickel (Ni)	2016/02/26	97	80 - 120	98	80 - 120	<1	ug/L	NC	25
4396774	Dissolved Selenium (Se)	2016/02/26	104	80 - 120	99	80 - 120	<2	ug/L	NC	25
4396774	Dissolved Silver (Ag)	2016/02/26	78 (1)	80 - 120	82	80 - 120	<0.1	ug/L	NC	25
4396774	Dissolved Sodium (Na)	2016/02/26	NC	80 - 120	96	80 - 120	<100	ug/L	3.0	25
4396774	Dissolved Thallium (Tl)	2016/02/26	98	80 - 120	97	80 - 120	<0.05	ug/L	NC	25
4396774	Dissolved Uranium (U)	2016/02/26	96	80 - 120	95	80 - 120	<0.1	ug/L	3.7	25
4396774	Dissolved Vanadium (V)	2016/02/26	98	80 - 120	98	80 - 120	<0.5	ug/L	NC	25
4396774	Dissolved Zinc (Zn)	2016/02/26	98	80 - 120	97	80 - 120	<5	ug/L	NC	25
4398020	Mercury (Hg)	2016/02/29	99	75 - 125	93	80 - 120	<0.1	ug/L	NC	20
4398212	Chromium (VI)	2016/02/29	97	80 - 120	96	80 - 120	<0.50	ug/L	NC	20
4398348	1-Methylnaphthalene	2016/02/29	89	50 - 130	89	50 - 130	<0.050	ug/L	2.6	30
4398348	2-Methylnaphthalene	2016/02/29	91	50 - 130	88	50 - 130	<0.050	ug/L	3.8	30
4398348	Acenaphthene	2016/02/29	84	50 - 130	85	50 - 130	<0.050	ug/L	0.95	30
4398348	Acenaphthylene	2016/02/29	87	50 - 130	86	50 - 130	<0.050	ug/L	2.2	30
4398348	Anthracene	2016/02/29	93	50 - 130	92	50 - 130	<0.050	ug/L	1.2	30
4398348	Benzo(a)anthracene	2016/02/29	88	50 - 130	88	50 - 130	<0.050	ug/L	0.68	30
4398348	Benzo(a)pyrene	2016/02/29	99	50 - 130	95	50 - 130	<0.010	ug/L	2.5	30

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Maxxam Job #: B639774
Report Date: 2016/03/01

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4398348	Benzo(b/j)fluoranthene	2016/02/29	107	50 - 130	102	50 - 130	<0.050	ug/L	2.1	30
4398348	Benzo(g,h,i)perylene	2016/02/29	86	50 - 130	79	50 - 130	<0.050	ug/L	9.4	30
4398348	Benzo(k)fluoranthene	2016/02/29	111	50 - 130	109	50 - 130	<0.050	ug/L	4.5	30
4398348	Biphenyl	2016/02/29					<0.050	ug/L		
4398348	Chrysene	2016/02/29	92	50 - 130	90	50 - 130	<0.050	ug/L	1.1	30
4398348	Dibenz(a,h)anthracene	2016/02/29	83	50 - 130	81	50 - 130	<0.050	ug/L	6.0	30
4398348	Fluoranthene	2016/02/29	96	50 - 130	95	50 - 130	<0.050	ug/L	2.1	30
4398348	Fluorene	2016/02/29	90	50 - 130	90	50 - 130	<0.050	ug/L	1.0	30
4398348	Indeno(1,2,3-cd)pyrene	2016/02/29	90	50 - 130	85	50 - 130	<0.050	ug/L	6.4	30
4398348	Naphthalene	2016/02/29	86	50 - 130	83	50 - 130	<0.050	ug/L	5.4	30
4398348	Phenanthrene	2016/02/29	92	50 - 130	90	50 - 130	<0.030	ug/L	2.3	30
4398348	Pyrene	2016/02/29	90	50 - 130	89	50 - 130	<0.050	ug/L	1.6	30

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(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 #: B639774
Report Date: 2016/03/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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, Ottawa Lab Manager

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 A Bureau Veritas Group Company

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 550578
Attention:	Central Accounting	Attention:	Paul Hurst	P.O. #:			
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113		
				Project Name:		COC #:	Project Manager:
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:		C#550578-01-01	Parnian Baber
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	phurst@golder.com; abradshaw@golder.com; tony_lyo	Sampled By:	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

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: Two day Time Required: ☒
Rush Confirmation Number: _____ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 Petroleum Hydrocarbons (Water)	O.Reg 153 PAHs (Water)	O.Reg 153 Metals Pkg. (Inc. Cr6 & Hg)	# of Bottles	Comments
1		BH14-2	16/02/25	9:30	GW	NA		X		2	
2		BH14-2	16/02/26	9:00	GW	Yes			X	3	
3											
4											
5											
6											
7											
8											
9											
10											onice pack

26-Feb-16 14:50
Parnian Baber
B639774
KP2 OTT 001

RECEIVED 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
A. Bradshaw Aaron Bradshaw	16/02/26		Kelsey Pilon Kelsey Pilon	2016/02/26	14:50			1,0,0	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B639774
Report Date: 2016/03/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-GW-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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APPENDIX D

Residue Management

VEOLIA
ENVIRONMENTAL SERVICES

CAR.# : A860427
REC.# : A710141

CARRIER
VEOLIA ES CANADA IS
4140 BELGREEN DRIVE
OTTAWA, ON
K1G 3N2

BILLING ADDRESS
GOLDER & ASSOCIATES
32 STEACIE DRIVE
KANATA ON

613-592-9600 CUSTOMER NO. 40010253
DATE: 04/09/2014 P.O.#

SITE ADDRESS
175 MAIN STREET

TEL.:

TB

CONTACT: MARIA 613.592.9600 X 4237

TIME/START	TIME/END	TOTAL TIME	CODE	UNIT	ADDITIONAL INFORMATION
12 h 00	12 h 30		T		Drum location: South End of Parking lot. Barrel is on Edge of Pavement with Piles of Small Dog Droppings bags on top of it
12 h 30	13 h 00		LH		
13 h 00	13 h 30		L		
h	h				
h	h	TOTAL			
h	h				

CODE LIST
T: Travel to Customer
LH: Labour hours
L: Long distance travel
M: Meal
UT: Unloading time
WT: Waiting time
EF: Equipment failure
WL: Waiting time loading
WU: Waiting time unloading

WORK
DESCRIPTION PICK UP VARIOUS WASTE
OTHER INFORMATION

DESCRIPTION & COST		
GROUND WATER MIXED WITH ANIMAL FECES	0.00 DRUM	0.00/DRUM
& OTHER FORMS OF GENERAL GARBAGE	1.00 DRUM	90.00/DRUM
OVER PACKING	1.00 UN	100.00/UN
OPERATOR (1) INCLUDING TRUCK 2 HRS	1.00 TFIXE	175.00/TFIX
BRING HAND CART	0.00 UN	0.00/UN
FUEL, ENERGY AND INSURANCE SURCHARGE	365.00 $	0.10/$
AGREEMENT ON FILE	0.00 UN	0.00/UN

TRANSPORTATION ☐ DECONTAMINATION ☐ RENTAL ☐ DISPOSAL ☐ ROOM AND BOARD ☐ YES ☐ NO ☐ OTHER :

UNIT: 25-0020
OPERATOR/DRIVER: 00-0000 SERVICE TRUCK
HELPER: 000 OPERATOR
DRIVER'S SIGNATURE / DATE: 4/9/14

Sub total
HST
TOTAL

D.M.	Phys. State	Prov. Code	Shipping Name	Class / Subclass	PIN#	Packing Risk Group	Quantity Shipped	L or Kg Unit		Packaging No	Packaging Type	
	L	000	GOUND WATER	NA	NA	NR				01	01	STE

24 hour assistance: 1-800-461-3267

HST NO.: 824216014RT0001

(*) THE CLIENT WILL BE HELD RESPONSIBLE FOR ANY DAMAGE TO RENTAL EQUIPMENT (*) SEE REVERSE FOR SERVICE AGREEMENT

1: The undersigned Customer agrees to pay the services rendered by Veolia ES Canada Industrial Services Inc., within 30 days of the billing date or when the credit limit is reached, whichever of these eventualities occurs first. In addition, the Customer agrees to pay interest at the yearly rate of 24% on any balance due over 30 days.
2: Veolia ES Canada Industrial Services Inc. consents to the signing of this, to open an account with a credit line of $ 1000. For work in excess this amount, a credit application form must be completed and sign to increase the credit limit.
3: The customer agrees to pay an amount equal to 25% of any balance due to compensate the increase in administration fees in insurance where Veolia ES Canada Industrial Services Inc. retains the services of a lawyer or a collection agency to collect the balance due.
4: The present sales conditions apply to all types of services rendered by Veolia ES Canada Industrial Services Inc. for the customer, as from the date hereof, without it being necessary to reiterate its contents.

CONSIGNEE :
VEOLIA ES CANADA INDUS
4140 BELGREEN DRIVE
OTTAWA ON K1G 3N2

K1G 3N2

ENTRY CODE : 221
RECEIVED QUANTITY (IF DIFFERENT): 1 Drm
DATE/ HOUR Sept 4/14

FINAL INSPECTION : INST.
SIGNATURE :

CUSTOMER'S SIGNATURE (THE CUSTOMER HEREBY RECOGNIZES HAVING READ, UNDERSTOOD AND ACCEPTED ALL THE CREDIT CONDITIONS LISTED ON THE BACK)

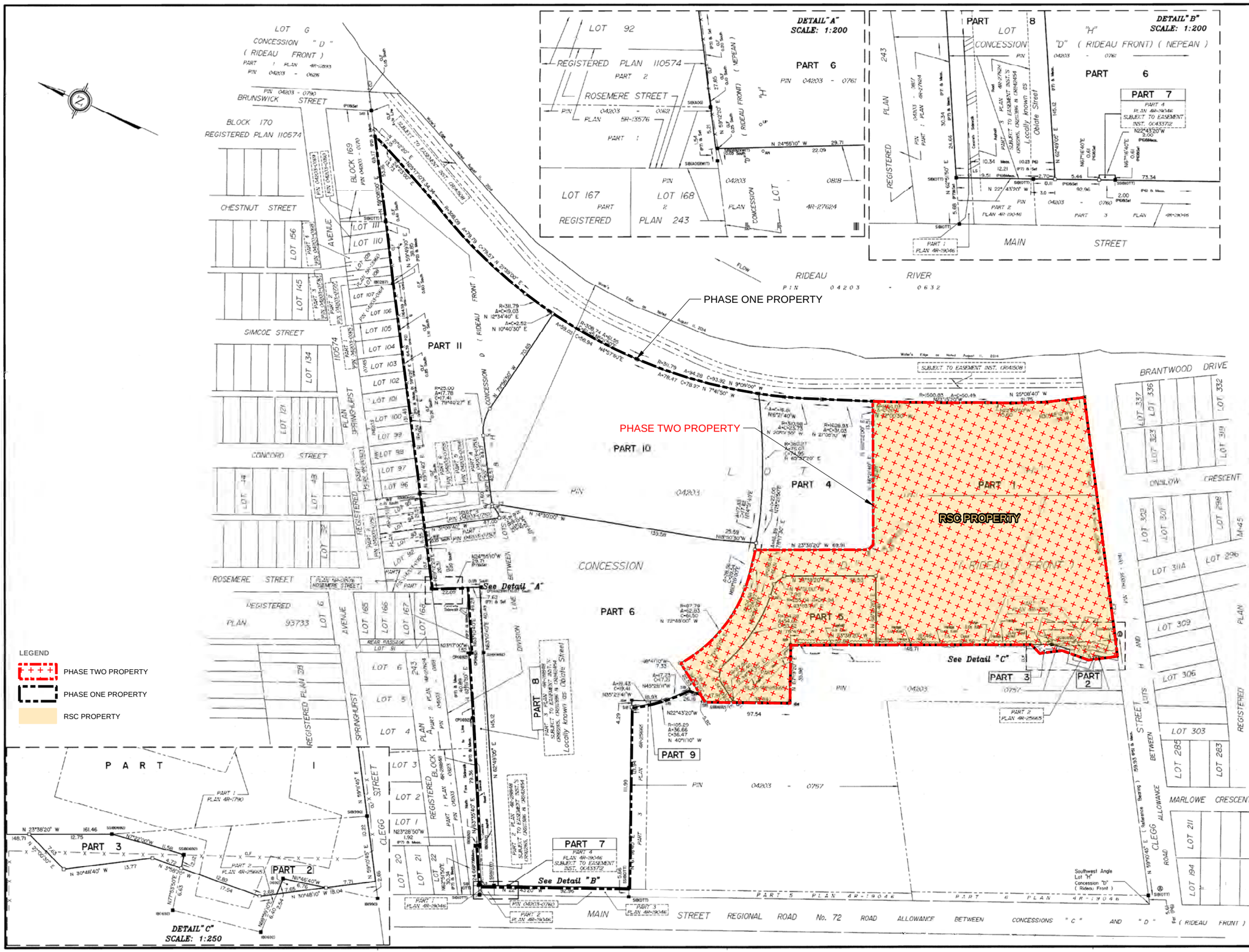
PRINT NAME

No 16 133294

WHITE: ADMINISTRATION • BLUE: OFFICE • PINK: CUSTOMER • YELLOW: DISPATCH

APPENDIX E

Survey of Site



I REQUIRE THIS PLAN TO BE DEPOSITED UNDER THE LAND TITLES ACT.
DATE: Nov 18/2015

ANDRE ROY
ONTARIO LAND SURVEYOR

PLAN 4R-29138
RECEIVED AND DEPOSITED
DATE: Nov 19/15

REPRESENTATIVE FOR LAND REGISTRAR FOR THE LAND TITLES DIVISION OF OTTAWA-CARLETON NO. 4.

SCHEDULE

PART	LOT	CONCESSION	PIN
1	PART OF "H"	"D" (RIDEAU FRONT)	PART OF 04203-0761
2			PART OF 04203-0757
3			
4			
5			PART OF 04203-0761
6			
7			
8			
9			PART OF 04203-0757
10			PART OF 04203-0761
11			

Part 7 is subject to Easement Instrument OC433712
Part 8 is subject to Easement Instrument CR92265, CR211386 & CR242454
Parts 1, 4, 5, 6, 7, 8, 10 and 11 comprise part of PIN 04203-0761
Parts 2, 3 and 9 comprise part of PIN 04203-0757

PLAN OF SURVEY OF

PART OF LOT "H" CONCESSION "D" (RIDEAU FRONT)

Geographic Township of Nepean
CITY OF OTTAWA
Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 1000

Metric
DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

Surveyor's Certificate

I CERTIFY THAT:
1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the Land Titles Act and the regulations made under them.
2. The survey was completed on the 13th day of November, 2015.

Nov 18/2015 — Date
André Roy — Ontario Land Surveyor

Notes & Legend

	Denotes	Survey Monument Planted
	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
IRO	"	Round Iron Bar
CP	"	Concrete Pin
(WIT)	"	Witness
(AOG)	"	Annis, O'Sullivan, Vollebekk Ltd.
Meas	"	Measured
CLF	"	Chain Link Fence
WIF	"	Wrought Iron Fence
(R1)	"	Registered Plan 110574
(R2)	"	Plan 4R-11893
(R3)	"	(1692) Plan, January 17, 2006
(R4)	"	Plan 5R-13576
(R5)	"	Plan 4R-25665
(R6)	"	Plan 4R-19046
(R7)	"	Plan 4R-27624
(D1)	"	Inst. CR376341
(D2)	"	

All set monuments are SSIB unless otherwise noted.

Distances shown on this plan are ground distances and can be converted to grid distances by multiplying by the combined scale factor of 0.999941.

Bearings are grid bearings, derived from the northerly limit of Clegg Street, shown to be N 59°10'45" E on Plan 4R-25665 and are referred to the Central Meridian of MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

Coordinates are derived from Can-Net 3.0 Real Time Network GPS observations referenced to Specified Control Points 01919680005 and 01919680105, MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

Coordinate values are to urban accuracy in accordance with O. Reg. 216/10.

. 01919680005	Northing	5027191.26	Easting	361496.76
. 01919680105	Northing	5024915.16	Easting	373971.65
. Point A	Northing	5029941.70	Easting	369281.56
. Point B	Northing	5030029.57	Easting	369418.90

Caution: Coordinates cannot, in themselves, be used to re-establish corners or boundaries shown on this plan.

Southwest Angle
Lot "H"
Concession "D"
(Rideau Front)

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com
Ontario Land Surveyors
Job No. 15746-15 Regional Pl. L1 H C D BF NP B DS
AS

Path: N:\Active\Spatial_IM\The_Regional_Group\Regional\GroupObiotesProp\Ottawa\GIS\MXDs\15253113\Ph1000_AddPhIIESAs\Rep153_04_PhIIESAPhase1b1525113-1000-1-HS-00A1.mxd

APPENDIX F

City of Ottawa Response to Use of Non Potable Groundwater Standards

15 June 2016

Mr. Anthony Lyon, B.A., B.Eng., EIT
Environmental Consultant
Golder Associates Ltd.
1931 Robertson Road
Ottawa, Ontario
K2H 5B7

Dear Mr. Lyon,

Re: Record of Site Condition – 175 Main Street

As per your email of May 3, 2016 requesting to use non-potable standards, this is to advise that the City of Ottawa does not object to the use of non-potable groundwater standards for the property identified as 175 Main Street, Ottawa, ON, as part of the filing of a Record of Site Condition.

Best Regards,

Michel Kearney, P.Geo.
Senior Hydrogeologist
Policy Development and Urban Design Branch
Hydrogéologue Sénior
Direction de l'élaboration de politiques et de l'esthétique urbaine
City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 22872
ottawa.ca/planning / ottawa.ca/urbanisme

APPENDIX G

Phase I A Remediation Report

REMEDIATION REPORT

This report outlines the remediation of Phase 1A of the Greystone Residential Development at 175 Main Street, Ottawa, Ontario (Site).

1.0 REMEDIAL ACTIONS

The remedial actions described below occurred between November 2015 and May 2016.

1.1 Description of Soil Excavation Activities

1.1.1 Rationale and Methodology for Soil Removal and Treatment

The Site was remediated by excavating and removing the impacted debris fill from the Site. This was done by excavating down to either non-impacted sand fill or non-impacted native clay, whichever was encountered first. No separation of soil or reuse of soil on the Site was carried out. The excavations were conducted using hydraulic shovels equipped with toothed buckets, followed by smooth buckets for preparation of the final surface prior to backfilling.

Prior to remediation, all non-impacted topsoil was stripped from the Site and stockpiled off-Site for possible future re-use. Any topsoil identified as impacted as shown in Figures 6a and 6b of the Phase II Environmental Site Assessment (ESA) was excavated and disposed of off-Site.

After the topsoil was stripped, the debris remediation commenced. Contaminants of Concern (COCs) in the debris fill are polycyclic aromatic hydrocarbons (PAHs) and metals, neither of which are volatile enough to allow the use of headspace field screening meters. As such, debris fill was removed until no visual signs of debris or contamination were present, at which point soil verification samples were collected. At all sampling locations, the inferred worst case soil sample was submitted for analysis. The Phase II ESA identified one isolated pocket of Petroleum Hydrocarbons Fraction 3 (PHC F3) at TP 14-15 SA5. At this location, a combustible gas meter was also used to aid in screening of soil sampling for analysis and selecting the inferred worst case soil sample for analysis (additional details are provided in Section 3.3.3 below).

Remediation at the northern and eastern border of the Site was completed by excavating at a 1 H:1 V temporary slope with the toe of the slope being at or beyond the Site limit. No special excavation methods were required on the western or southern side of the remedial excavation.

Excavated overburden was hauled to the Eastern Ontario Waste Handling Facility (Lafleche) Landfill for disposal.

1.1.2 Soil Treatment

No treatment of the soil was completed.

1.1.3 Location of Remedial Action

The overburden was excavated and removed across the entire Site down to either non-impacted sand fill or non-impacted native clay, whichever was encountered first. The Site is defined on the Survey Plan provided in Appendix E of the Phase II ESA.

1.2 Quantities of Soil Removed from the Property

140,353.38 metric tonnes of contaminated soil were removed from the Site.

1.3 Groundwater Removal and Treatment

As discussed in the Phase II ESA, no groundwater contamination was present at the Site.

1.3.1 Rationale and Methodology for Groundwater Removal and Treatment

A limited amount of groundwater was removed for temporary construction dewatering purposes to validate the removal of overburden in the eastern section of the Site where the depth of the excavation was deeper than the water table or where precipitation required removal.

1.3.2 Groundwater Treatment

Groundwater treatment was conducted according to Ontario Provincial Standard Specification (OPSS) 518 and 805. Treatment included pumping groundwater to a temporary holding pond to allow the suspended solids to settle and then through sediment filters prior to discharge.

1.3.3 Location of Remedial Action

The temporary sedimentation holding pond was located in the eastern boundary area of the Site, and moved as needed during the remediation.

1.3.4 Quantities of Groundwater Removed from the Property

Approximately 7,528 m^3 of groundwater was pumped from the Site into the temporary sedimentation pond for removal of suspended material and testing prior to being discharged to the ground surface.

1.4 Sediment Removal and Treatment

1.4.1 Rationale and Methodology for Sediment Removal and Treatment

No sediment existed on the Site, and as such no treatment or remediation of sediment was required.

1.4.2 Sediment Treatment

No treatment of sediment was completed.

1.4.3 Location of Remedial Action

No remedial actions for sediment were completed.

1.4.4 Quantities of Sediment Removed from the Property

No sediment was removed from the property.

1.5 Permits

Groundwater taking was permitted under a Permit to Take Water (PTTW) from the Ministry of the Environment and Climate Change, also included in Attachment A. The PTTW, reference 6820-9YTKK4, was issued to 175 Main Street Regional Inc. on September 3, 2015.

No other permits were issued for the remediation.

1.6 Contaminants Introduced to the Property

No significant spills, leaks or releases were noted during the remediation process. No other contaminants were introduced to the Site.

To mitigate the accidental introduction of contaminants to the Site during the remediation process, the following control measures were implemented:

- Best practices were used for storage or handling of fuels and oils;
- Refueling procedures for machinery involved fuelling in non-remediated areas to more easily allow for cleanup of any potential spills;
- Validation of remediation completed in sections that did not require further vehicle traffic; and,
- Visual inspection of many areas of the Site, specifically the high traffic areas, for any potential signs of contamination.

1.7 Baseline Conditions and Monitoring for Increases in Contaminants

The analytical baseline condition for the Site used to monitor any increase to contaminants were the 2014 and 2015 groundwater sampling results obtained during the Phase II ESA. Additional groundwater sampling was conducted partway through the remediation (described as 'Third Stage' in the Phase II ESA, Section 4.2.4), which showed that no measurable increase to contaminant concentrations was observed in the groundwater samples.

In addition, a Golder technician was on Site full time during the remediation and monitored and documented any unexpected conditions throughout the remediation.

1.8 Groundwater Monitoring Well Selection

The monitoring wells installed on Site were completed for the Phase II ESA. As described in the Phase II ESA, the groundwater at the Site did not exceed the applicable criteria and as such no remediation of the groundwater was required. The rationale for the monitoring locations is described in the Phase II ESA report.

2.0 FREE FLOWING PRODUCT

2.1 Observations during Remediation

No free flowing product was noted during the remediation process.

2.2 Volume of Product Present and Removed

No flowing product was observed or removed during the remediation process.

2.3 Product Recovery and Remediation

No flowing product was recovered from the Site during the remediation process.

3.0 RESULTS OF CONFIRMATORY SAMPLING AND ANALYSIS

Upon completion of the remedial excavation, all soil on the Site met the applicable Ontario Ministry of the Environment and Climate Change (MOECC) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, coarse-textured soil, dated April 15, 2011 (MOECC Table 3 Standards). A limited number of confirmation samples had concentrations of one or more of barium, cobalt, or vanadium above the MOECC Table 3 Standards, which were interpreted to be natural background metals. Section 3.1 below provides additional information.

3.1 Rationale for Naturally Occurring Background Metals

Naturally occurring metals (barium, cobalt and vanadium) at concentrations greater than the MOECC Table 3 Standards have been identified in a limited number of the soil verification samples taken from the native silty clay underlying the debris fill. At the Site these exceedences (where found) occur in the brown weathered silty clay that occurs at a higher geodetic elevation along the western portion of the remedial excavation as shown on Figure G1, which is included in Attachment D of this appendix.

Detailed rationale supporting this conclusion is summarized in a letter entitled: *Rationale for Naturally Occurring Barium, Cobalt and Vanadium in Ottawa Marine Clay Above Generic Standards to Support a Record of Site Condition (RSC) at 175 Main Street, Ottawa, ON, letter dated July 7th, 2016,* project reference 1525113 / 1000. This letter is provided in Attachment B.

Based on the data provided in the rationale letter, it is Golder's interpretation and professional opinion that the presence of barium, cobalt and vanadium in native silty clay at concentrations above the MOECC Table 3 Standards at the Site are naturally occurring background metals and therefore not the result of a Potentially Contaminating Activity. As such, Golder interprets that these metals are naturally occurring and not COCs for the Site. The laboratory analytical results for barium, cobalt and vanadium are presented in the supporting data tables; however, they are not interpreted as exceedances.

3.2 Description of Confirmatory Sampling

A total of 294 soil confirmatory samples were collected during the remediation. Soil samples were collected by hand directly from the base of the excavation at all locations using a cleaned stainless steel hand trowel. Disposable nitrile gloves were worn by Golder personnel during soil sampling and gloves were changed between samples.

Soil samples were placed in glass jars supplied by the analytical laboratory, for chemical analysis of metals, PAHs, and in some cases petroleum hydrocarbons fractions 1-4 (PHC F1-F4) including benzene, toluene, ethylbenzene and xylenes (BTEX). Samples to be submitted for PHC F1 or BTEX analysis were placed in 40 ml glass vials containing methanol preservative using pre-measured syringes to obtain 6 grams of soil sample. Soil samples were kept on ice and were picked up daily by the analytical laboratory, Maxxam Analytics (Maxxam). At each area of the excavation, soil samples were selected for analysis based on visual evidence.

The final bottom elevation of the remediation excavation and final lateral extent of the remedial excavation as shown on Figure G2 was 17,283 m^2. Details regarding the soil samples submitted for laboratory analysis, including quality assurance/quality control (QA/QC) samples, are provided in Attachment C, Table G1 (Soil Verification Sample Summary).

3.3 Rationale and Methodology for Confirmatory Sampling

3.3.1 Contaminants of Concern (COCs)

Confirmatory sampling was conducted to ensure that all contaminated topsoil and debris fill was removed from the Site. As documented in the Phase II ESA, the COCs for the Site are metals and PAHs. One isolated PHC F3 soil exceedence was noted the debris sample TP14-15 SA5. As such, in the immediate vicinity of this sample, COCs include PHC F1-F4 and BTEX (in addition to metals and PAHs).

3.3.2 Sampling Frequency, Number of Verification Samples

Guidance for sampling frequency is provided in O. Reg 153/04, as amended, Schedule E, Table 3 (Minimum Confirmation Sampling Requirements for Excavation); however, the largest excavation size on the table is listed as 750 to 1,000 m^2. As such, this table was extrapolated and used as guide for the remedial sampling frequency. For a 1,000 m^2 excavation, 5 floor and 8 sidewall samples are required, which equates to one floor sample every 200 m^2 (i.e., 1,000 divided by 5), or one sample every 77 m^2 if the sidewall samples are considered (i.e., 1,000 divided by 13). Golder considered the minimum floor sampling frequency to be one sample per 200 m^2. However, due to the nature of the Site, there was either no sidewall (i.e., along the east and south Site boundaries where excavation extended to the Site limits), or there was no distinct sidewall (i.e., along the western portion of the Site where the excavation terminated as a long "ramp" rather than a sidewall). Given this, Golder used a minimum sampling frequency of one sample per 77 m^2 to account for this. The number of samples collected and submitted for laboratory analysis is detailed in Attachment C, Table G1, and summarized as follows:

- 264 normal and 31 field duplicate (11% duplicate ratio) soil verification samples were collected and submitted for analysis of metals and PAHs. Of the 264 samples, 31 samples were duplicates and 23 samples had concentrations greater than the MOECC Table 3 Standards and were subsequently excavated, resulting in a total of 241 final soil verification samples (264 minus duplicates and failures);

The number of analyses is broken down as follows:

Parameters	Total Number of Samples (including failures and field duplicates)	Number of Failures (which were subsequently excavated and removed)	Number of Duplicates	Number of Final Soil Verification Samples Passing MOECC Table 3
Metals, PAHs	288	23	30	235
Metals, PAHs, PHC F1-F4, BTEX	2	0	0	2
PHC F1-F4, BTEX	5	0	1	4
Totals	295	23	31	241

Based on the remedial extent of 17,283 m^2, the soil verification sampling frequency was one sample per 71.7 m^2, which meets the minimum soil sampling frequency target for the remediation;

3.3.3 Sampling Locations and Depths

Prior to the initiation of remediation, all topsoil was stripped and removed from the Site. Soil verification samples used to confirm no residual impacts are from two sources: a) the original Phase II ESA, which shows that no metal or PAH impacts were present beneath the topsoil in the soil fill layer (Figures 8a and 8b in the Phase II ESA) and b) excavation verification samples submitted for analysis of metals and PAHs as shown on Figure G2.

Debris fill was removed until no signs of contamination were present, at which point final soil verification samples were collected. The original extent of the debris fill layer (Figure 7a, 7b from the Phase II ESA) and the locations of final soil verification samples submitted for analysis of metals and PAHs are shown on Figure G3.

In the area of TP 14-15, debris fill was removed until no signs of contamination (visual, olfactory and field screening) were present. During the excavation, no evidence of petroleum hydrocarbon impact was noted; however, based on the nature of COCs at TP 14-15, an RKI Eagle II combustible gas meter calibrated to 400 ppm Hexane was used to conduct headspace screening. Headspace screening was conducted by defining a square 64 m^2 area centred on TP 14-15, which was subdivided into a 2x2 metre grid. Bag samples were collected from the inferred worst case sample from each 2x2 metre box and the headspace was measured. Inferred worst case samples based on field observations and headspace results were submitted for laboratory analysis of PHC F1-F4+BTEX (in addition to metals and PAHs). The headspace sampling grid and final soil verification sample locations submitted for analysis of metals, PAHs and PHCs to address the isolated PHC exceedence at TP 14-15 SA5 are shown on Figure G4. Headspace readings are summarized in the following table (refer to Figure G4 for locations):

Grid Location	Headspace (ppm)	Soil Verification Sample Submitted for Analysis
A1	0.0	VS085 and field duplicate (ID: VS0185)
A2	0.0	VS086
A3	0.0	
BA	0.0	
B2	0.0	
B3	0.0	
B4	0.0	VS087
C1	0.0	VS088
C2	0.0	
C3	0.0	
C4	0.0	
D1	0.0	
D2	0.0	VS089
D3	0.0	
D4	0.0	VS090

A summary of all verification samples, sample depths and analytical results compared to the MOECC Table 3 Standards is provided Table G2 (metals and PAH) and Table G3 (PHC F1-F4 + BTEX). Copies of the Laboratory Certificates of Analysis are provided in Attachment E.

3.4 Excavation Dimensions and Number of Confirmatory Samples

The final extent of the remedial excavation was 17,283 m^2. The original interpreted extent of debris fill is shown on Figures 7a/b/c in the Phase II ESA. Figures G2, G3, and G4 summarize the final remediation excavation extent and verification samples collected. The total fill thickness. i.e., the original interpreted debris fill thickness shown on Figure 7a/b/c and soil fill thickness shown on Figure 8/a/b/c/d combined was found to vary slightly during the remediation. The final elevation of excavation bottom is shown on Figure G2.

Cross Sections B-B' and D-D' from the Phase II ESA were updated to reflect post-remediation conditions and show typical cross sections of the remedial excavation. Figures G5 and G6 show the updated cross sections.

3.5 Quarterly Groundwater Sampling

As discussed in the Phase II ESA, groundwater at the Site was not found to have any exceedences of the applicable MOECC Table 3 Standards at the time of sampling. Therefore, no confirmation or quarterly sampling was completed. Prior to the completion of the remediation program there were three groundwater sampling events completed since 2014.

3.5.1 Groundwater Levels and Well Construction Details

Groundwater sampling was not required to validate the remediation. Well construction details and groundwater levels are outlined in Table 1 and Table 2 of the Phase II ESA.

3.6 Quality Assurance and Quality Control Results

The data collected as part of the remediation field program was evaluated according to the following criteria to evaluate its validity: precision, accuracy, completeness, representativeness and comparability. A discussion of each criterion as it relates to the QA/QC program is provided below.

3.6.1 Precision

Precision is a measurement of the repeatability of the methods employed, i.e., sampling methods. Precision is evaluated through the testing of blind field duplicate samples. As such, Golder implemented the following laboratory analytical quality control measures:

- Collection of 30 duplicate soil samples from samples and submission for analyses of one or more of PHC F1 to F4, BTEX, PAHs, and/or metals, detailed as follows:

Field duplicate ID	Original soil sample ID	Parameters analyzed
VS0177	VS177	Metals, PAH
VS0185	VS085	PHC F1-F4, Metals, PAH
VS0205	VS205	Metals, PAH
VS0212	VS212	Metals, PAH
VS1037	VS037	Metals, PAH
VS1040	VS040	Metals, PAH
VS1047	VS047	Metals, PAH
VS1054	VS054	Metals, PAH
VS1073	VS073	Metals, PAH
VS1095	VS095	Metals, PAH
VS1098	VS098	Metals, PAH
VS1101	VS101	Metals, PAH
VS1109	VS109	Metals, PAH
VS1115	VS115	Metals, PAH
VS1116	VS116	Metals, PAH
VS1120	VS120	Metals, PAH
VS1125	VS125	Metals, PAH

Field duplicate ID	Original soil sample ID	Parameters analyzed
VS1135	VS135	Metals, PAH
VS1141	VS141	Metals, PAH
VS1143	VS143	Metals, PAH
VS1156	VS156	Metals, PAH
VS1163	VS163	Metals, PAH
VS1184	VS184	Metals, PAH
VS1196	VS196	Metals, PAH
VS1220	VS220	Metals, PAH
VS1223	VS223	Metals, PAH
VS1232	VS232	Metals, PAH
VS1237	VS237	Metals, PAH
VS1241	VS241	Metals, PAH
VS1246	VS246	Metals, PAH

To determine the precision of the duplicate and original soil sample results, the relative percent difference (RPD) was calculated according to the following equation:

$$RPD = \frac{|x_2 - x_1|}{\left(\frac{x_1 + x_2}{2}\right)} \times 100$$

Where, x_1 and x_2 are the original and duplicate concentrations. RPDs are calculated only if the concentrations of a parameter are greater than the analytical reportable detection limit (RDL) in both the duplicate and original samples. In addition, lower precision in the RPD calculation is expected when concentrations of the analytes are less than ten (10) times the RDL. Therefore, RPDs were calculated for the original and duplicate soil samples only in cases where the measured concentrations of analytes in both samples were ten (10) times greater than the RDL.

The commonly accepted industry standard data quality objective (DQO) for the RPD in soil between a sample and its duplicate is 40% for PHCs and PAHs, and 30% for metals.

Soil RPD

The calculated RPDs for the original and duplicate soil samples for metals were in general within the acceptable RPD percentages (30%) or the concentrations of the analytes were less than ten (10) times the RDL, with the following exceptions:

- VS047 and its duplicate for barium (34%), chromium (30%), cobalt (42%), copper (38%) and nickel (127%);
- VS212 and its duplicate for uranium (45%); and,
- VS220 and its duplicate for barium (32%), copper (34), and uranium (32%).

The elevated RPDs for metals are interpreted to be due to the natural variability of metals in the native clay.

The RPDs for PAHs for the original and duplicate soil samples were in general within the acceptable RPD percentages (40%) or the concentrations of the analytes were less than ten (10) times the RDL.

The RPDs for PHC F1-F4 for the original and duplicate soil samples were in general within the acceptable RPD percentages (40%) or the concentrations of the analytes were less than ten (10) times the RDL.

3.6.2 Accuracy

Accuracy is a measure of how close a measured value is to the true value. The accuracy of the laboratory data is generally evaluated by the laboratory through the use of matrix spikes or surrogate recoveries.

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

In addition, the laboratory QA/QC program included lab duplicates, spiked blanks and method blanks. The analytical results for the laboratory quality assurance samples, which are provided in Attachment E, indicate that the results of the internal quality control program were within the laboratory's specified control limits with a few exceptions for which it was indicated that the overall quality meets acceptability criteria.

Based on the above, the laboratory data presented herein are considered to be accurate.

3.6.3 Completeness

Completeness is evaluated by comparing the planned sampling program with the sampling program that was actually completed and evaluating discrepancies. Golder completed all planned sampling and analytical work for this remedial program (i.e., met the minimal sampling verification frequency and parameter analysis list), so the information is considered to be complete.

3.6.4 Representativeness

Representativeness is the degree to which the samples collected during the remediation represent the soil conditions from which they were collected. As part of the remediation, Golder implemented the following measures to ensure that representative data was obtained:

- An appropriate and representative number of samples were analyzed;
- Use of dedicated or cleaned sampling equipment between samples;
- Use of calibrated field monitoring equipment (RKI Eagle II) during the isolated PHC F3 excavation at TP14-15;
- Use of appropriate laboratory supplied sampling jars and bottles;
- Analysis within an acceptable holding time as specified in the MOECC document "*Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act",* March 9, 2004 (amended as of July 1, 2011);
- Delivery of samples under a Chain of Custody; and,
- Laboratory analysis by SCC accredited laboratory (Maxxam).

Based on the above, it is considered that the data collected at the Property during the remediation is representative of the Property environmental conditions at the time the work was completed.

3.6.5 Comparability

Comparability describes how well collected data can be compared to other sample results. Consistent field procedures and analytical methods were used between the Phase Two ESA and the remediation to allow for comparison of the data obtained. Field procedures and analytical methods followed industry-approved standards to allow for comparison of data with the applicable MOECC standards.

Based on the above information, data collected as part of the remediation field program are considered to be comparable.

Accordingly, the analytical data generated during the investigation are valid and representative and may be used in this remediation report without further qualification.

4.0 CONCLUSIONS

The remediation of the Site included the removal of the all impacted topsoil and debris fill from the Site. This was completed by mechanical means using hydraulic excavators. Following the excavation, soil verification samples were collected and submitted to Maxxam Analytics for Contaminants of Concern. Based on the verification samples collected that met the MOECC Table 3 Standards and the fact that the groundwater was found to meet the Site standards during the Phase II ESA, it is concluded that all media on the Site satisfied the MOECC Table 3 Standards following remediation.

Attachments: Attachment A – Permits: Permit to Take Water

Attachment B – Rationale for Naturally Occurring Barium, Cobalt and Vanadium in Ottawa Marine Clay Above Generic Standards to Support a Record of Site Condition (RSC) at 175 Main Street, Ottawa, ON, letter dated July 7th, 2016, project reference 1525113 / 1000

Attachment C – Supporting Tables

- Table G1 - Soil Verification Sample Summary
- Table G2 – Summary of Soil Verification Analytical Results (Metals and PAHs)
- Table G3 – Summary of Soil Verification Analytical Results (PHC F1-F4, BTEX)
- Table G4 - Sample Date Versus Laboratory Analysis Date

Attachment D – Supporting Figures

- Figure G1 - Brown Clay Silty Clay Samples Versus Native Clay Elevation
- Figure G2 – Final Bottom Elevation of Remedial Excavation and Remedial Extents
- Figure G3 - Topsoil and Debris Fill Remedial Verification Samples (Metals and PAH) Compared to Original Debris Fill Layer Extents
- Figure G4 – Extent of PHC Remediation at TP 14-15 (PHC F1-F4+BTEX)
- Figure G5 – Cross Section B-B' (RSC #1 Remediation)
- Figure G6 – Cross Section D-D'(RSC #1 Remediation)

Attachment E – Laboratory Certificates of Analysis (electronic format)

ATTACHMENT A – Permits: Permit to Take Water

Ministry of the Environment and Climate Change
Eastern Region
Technical Support Section
1259 Gardiners Rd, PO Box 22032
Kingston, ON
K7P 3J6
Tel: (613) 549-4000

Ministère de l'Environnement et de l'Action en matière de changement climatique
Direction régionale de l'Est
Secteur du Soutien Technique
Ressource en eau
1259 Chemin Gardiners, CP 22032
Kingston, ON
K7P 3J6
Tél:(613) 549-4000

Ontario

September 3, 2015

Mr. Steve Gordon
175 Main Street Regional Inc.
1737 Woodard Drive, Floor 2
Ottawa, Ontario
K2C 0P9

Dear Mr. Gordon:

RE: Permit To Take Water 6820-9YTKK4
Oblates Development Phases 2, 3 and part of Phase IV
175 Main Street
Lot: H, Concession: Broken Front D
Geographic Township of Nepean, Ottawa
Reference Number 3415-9XRKV4

Please find attached Permit to Take Water 6820-9YTKK4 which authorizes the withdrawal of water in accordance with the application for this Permit to Take Water, dated June 5, 2015 and signed by Steve Gordon.

Please note this Permit expires July 31, 2025.

Ontario Regulation 387/04 (Water Taking and Transfer) requires all water takers to report daily water taking amounts to the Water Taking Reporting System (WTRS) electronic database (https://www.lrcsde.lrc.gov.on.ca/wtrs/). Daily water taking must be reported on a calendar year basis. If no water is taken, then a "no taking" report must be entered. Please consult the Regulation and Section 4 of this Permit for monitoring requirements.

If you have questions about reporting requirements, please call the WTRS Help Desk at 416-235-6322 (toll free: 1-877-344-2011) or by email, WTRSHelpdesk@ontario.ca. It is preferred that you submit your data directly and electronically to the WTRS. Where this is impracticable, please contact the WTRS Help Desk to arrange for written submission of your data.

Please note that the contact information for the Environmental Review Tribunal has recently changed. The Environmental Review Tribunal's new contact information is as follows:

New public inquiry telephone number: (416) 212-6349; toll free: 1 (866) 448-2248
New fax number: (416) 326-5370; toll free: 1 (844) 213-3474

Take notice that in issuing this Permit, terms and conditions pertaining to the taking of water and to the results of the taking have been imposed. The terms and conditions have been designed to allow for the development of water resources, while providing reasonable protection to existing water uses and users.

Yours truly,

Peter Taylor
Director, Section 34.1, Ontario Water Resources Act, R.S.O. 1990
Eastern Region

File Storage Number: SI OT 6820 220 (TS)

c: Dale Holtze, Golder Associates Ltd., dholtze@golder.com

Ottawa District Office

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

PERMIT TO TAKE WATER
Surface and Ground Water
NUMBER 6820-9YTKK4

Pursuant to Section 34.1 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

175 Main Street Regional Inc.
1737 Woodard Drive, Floor 2
Ottawa, Ontario K2C 0P9
Canada

For the water taking from: Source 1 Site Remediation
Source 2 Building 1
Source 3 Building 2
Source 4 Building 3
Source 5 Service Trench
Source 6 Miscellaneous Ponded Areas

Located at: Lot H, Concession Broken Front D, Geographic Township of Nepean
Ottawa

For the purposes of this Permit, and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

(a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34.1, OWRA.

(b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.

(c) "Ministry" means Ontario Ministry of the Environment and Climate Change.

(d) "District Office" means the Ottawa District Office.

(e) "Permit" means this Permit to Take Water No. 6820-9YTKK4 including its Schedules, if any, issued in accordance with Section 34.1 of the OWRA.

(f) "Permit Holder" means 175 Main Street Regional Inc..

(g) "OWRA " means the *Ontario Water Resources Act*, R.S.O. 1990, c. O. 40, as amended.

You are hereby notified that this Permit is issued subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. Compliance with Permit

1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated June 5, 2015 and signed by Steve Gordon, and all Schedules included in this Permit.

1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.

1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.

1.4 This Permit is not transferable to another person.

1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.

1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.

1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

2.1 Inspections
The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act* , R.S.O. 1990, the *Pesticides Act* , R.S.O. 1990, or the *Safe Drinking Water Act*, S. O. 2002.

2.2 Other Approvals

The issuance of, and compliance with this Permit, does not:

(a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act* , and the *Environmental Protection Act* , and any regulations made thereunder; or

(b) limit in any way any authority of the Ministry, a Director, or a Provincial Officer, including the authority to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take any action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information, shall not be construed as:

(a) an approval, waiver or justification by the Ministry of any act or omission of any person that contravenes this Permit or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

The requirements of this Permit are severable. If any requirements of this Permit, or the application of any requirements of this Permit to any circumstance, is held invalid or unenforceable, the application of such requirements to other circumstances and the remainder of this Permit shall not be affected thereby.

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, and the conditions of this Permit, the conditions in this Permit shall take precedence.

3. Water Takings Authorized by This Permit

3.1 Expiry

This Permit expires on **July 31, 2025**. No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	Source 1 Site Remediation	Pond Dugout	Construction	Dewatering Construction	5,600	24	372,000	365	18 447255 5028510
2	Source 2 Building 1	Pond Dugout	Construction	Dewatering Construction	20,000	24	1,340,000	365	18 447225 5028490
3	Source 3 Building 2	Pond Dugout	Construction	Dewatering Construction	20,000	24	1,340,000	365	18 447200 5028551
4	Source 4 Building 3	Pond Dugout	Construction	Dewatering Construction	20,000	24	1,340,000	365	18 447128 5028623
5	Source 5 Service Trench	Pond Dugout	Construction	Dewatering Construction	14,000	24	1,042,000	365	18 447270 5028560
6	Source 6 Miscellaneous Ponded Areas	Pond Dugout	Construction	Dewatering Construction	14,000	24	86,000	365	18 447270 5028560
						Total Taking:	5,520,000		

4. Monitoring

4.1 The Permit Holder shall maintain a record of all water takings. This record shall include the dates and times of water takings, the rates of taking and an estimated calculation of the total amounts of water taken per day for each day that water is taken under the authorization of this Permit. A separate record shall be maintained for each source. The Permit Holder shall keep all required records up to date and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request.

5. Impacts of the Water Taking

5.1 Notification

The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at 1-800-268-6060.

5.2 For Surface-Water Takings

The taking of water (including the taking of water into storage and the subsequent or simultaneous withdrawal from storage) shall be carried out in such a manner that streamflow is not stopped and is not reduced to a rate that will cause interference with downstream uses of water or with the natural functions of the stream.

For Groundwater Takings

If the taking of water is observed to cause any negative impact to other water supplies obtained from any adequate sources that were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected, a supply of water equivalent in quantity and quality to their normal takings, or shall compensate such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of doing so.

If permanent interference is caused by the water taking, the Permit Holder shall restore the water supplies of those permanently affected.

5.3 Prevention of Adverse Effects:

The Permit Holder shall ensure the taking of water under authority of this Permit does not result in an adverse effect on area waters.

5.4 The taking of water shall be carried out in such a manner as to prevent the disruption or removal of any fish, invertebrates or sediment from the watercourses.

5.5 Prevention of Structural Adverse Effects:

The Permit Holder shall take all measures necessary to prevent damage to buildings, bridges, structures, roads and/or railway lines that may be impacted either directly or indirectly by this taking.

5.6 Discharge Control Measures:
Any discharge of water to the land surface shall use a multi-barrier approach to control erosion and run-off prior to the discharge water re-entering the watercourse. Siltation control measures shall be installed at the discharge site(s) and shall be sufficient to control the volumes. Continuous care shall be taken to properly maintain the siltation control devices.

5.7 The discharge of water shall be controlled in such a way as to avoid erosion and sedimentation in the receiving stream.

5.8 The Permit Holder shall ensure that any water discharged to the natural environment does not result in scouring, erosion or physical alteration of stream channels or banks and that there is no flooding in the receiving area or water body, downstream water bodies, ditches or properties caused or worsened by this discharge.

5.9 The Permit Holder shall ensure that for any surface water taking and return, water that is pumped from upstream of the work-site and discharged downstream of the work-site shall be substantially the same as the water quality upstream.

5.10 The Permit Holder shall not discharge turbid water to any watercourse. Turbid water shall be defined as any discharge water from the excavation or diverted water with a maximum increase of 8 NTUs above the receiving stream's background levels.

5.11 Discharged Water to the Sanitary or Storm Sewer System:
The Permit Holder shall ensure that any water that is taken for dewatering purposes and discharged to the City of Ottawa sewer system is in accordance with a City of Ottawa Sewer Use Agreement.

6. Director May Amend Permit

The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Environmental Review Tribunal under the *Ontario Water Resources Act* , Section 100 (4).

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.

2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.

3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, you may by written notice served upon me, the Environmental Review Tribunal and the Environmental Commissioner, ***Environmental Bill of Rights****, R.S.O. 1993, Chapter 28, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 101 of the Ontario Water Resources Act, as amended provides that the Notice requiring a hearing shall state:*

1. The portions of the Permit or each term or condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

In addition to these legal requirements, the Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Permit to Take Water number;
6. The date of the Permit to Take Water;
7. The name of the Director;
8. The municipality within which the works are located;

This notice must be served upon:

The Secretary *Environmental Review Tribunal* *655 Bay Street, 15th Floor* *Toronto ON* *M5G 1E5* *Fax: (416) 314-4506* *Email:* *ERTTribunalsecretary@ontario.ca*	*AND*	*The Environmental Commissioner* *1075 Bay Street* *6th Floor, Suite 605* *Toronto, Ontario M5S 2W5*	*AND*	*The Director, Section 34.1,* *Ministry of the Environment and Climate Change* *1259 Gardiners Rd, PO Box 22032* *Kingston, ON* *K7P 3J6*

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal:

by telephone at (416) 314-4600 ***by fax at (416) 314-4506*** ***by e-mail at www.ert.gov.on.ca***

This instrument is subject to Section 38 of the ***Environmental Bill of Rights*** *that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek to appeal for 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry, you can determine when the leave to appeal period ends.*

Dated at Kingston this 3 rd day of September, 2015.

Peter Taylor

Peter Taylor
Director, Section 34.1
Ontario Water Resources Act , R.S.O. 1990

Schedule A

This Schedule “A” forms part of Permit To Take Water 6820-9YTKK4, dated September 3, 2015.

ATTACHMENT B – Rationale for Naturally Occurring Barium, Cobalt and Vanadium in Ottawa Marine Clay Above Generic Standards to Support a Record of Site Condition (RSC) at 175 Main Street, Ottawa, ON

July 6, 2016 Project No. 1525113 / 1000

Ms. Rosemary Ash, Team Lead/Brownfields Filing & Review
Ontario Ministry of the Environment and Climate Change
1st Floor
135 St Clair Ave West
Toronto, ON
M4V1P5

RATIONALE FOR NATURALLY OCCURRING BARIUM, COBALT AND VANADIUM IN OTTAWA MARINE CLAY ABOVE GENERIC STANDARDS TO SUPPORT A RECORD OF SITE CONDITION (RSC) AT 175 MAIN STREET, OTTAWA, ON

Dear Ms. Ash:

Golder Associates Ltd. (Golder) is currently preparing to submit for filing a Record of Site Condition (RSC) for an area identified as Phase 1A of the residential development of the former Oblates property, now proposed for residential development and referred to as Greystone Village, located at 175 Main Street in Ottawa, Ontario, (the "Site"). The location of the Site is shown on Figure 1. Prior to submitting the RSC paperwork, remediation is being conducted to remove debris fill. The debris fill is primarily impacted with polycyclic aromatic hydrocarbons (PAH), although there are some sporadic and limited metal impacts as well (primarily lead). Although this rationale is being submitted to MOECC in advance of filing an RSC for Phase 1A, there will be RSC's filed for Phases 1B, 2 and 3 as the Site is redeveloped in phases over time.

Based on the remediation conducted to date, naturally occurring metals (barium, cobalt and vanadium) at concentrations greater than the Ontario Ministry of the Environment and Climate Change (MOECC) *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, fine-textured soil, dated April 15, 2011 (MOECC Table 3 Standards) have been identified in a number of the soil verification samples taken from the native silty clay underlying the debris fill. It is noted that for these metals, the coarse and fine soil texture standards are equivalent.

In our experience, the presence of these metals above the MOECC Table 3 Standards is common in eastern Ontario and western Quebec where the clay is of marine origin (and different, for example, from clay having a glacial origin. Golder has observed these naturally occurring metals in Ottawa area clay samples over the years. We reached out to our local MOECC district engineer, Mr. Charles Goulet, on June 9th, 2016 and learned that other Ottawa area consultants have also observed this.

To support Golder's professional opinion and conclusion that the presence of barium, cobalt and vanadium in silty clay soil at concentrations above the MOECC Table 3 Standards at the Site are naturally occurring and therefore not the result of a Potentially Contaminating Activity, available metals data in silty clay samples from locations

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across the Ottawa region were compiled and analysed to evaluate the concentrations and variability of these metals. The purpose of this letter is to document our analysis and provide supporting rationale for applying a natural background argument for barium, cobalt and vanadium in soil from the RSC for 175 Main Street, Ottawa, Ontario.

1.0 BRIEF CONCEPTUAL SITE MODEL AND PHASE II ESA CONCLUSIONS

The following provides a brief description of the Conceptual Site Model (CSM) and a summary of the Phase II ESA completed at the Site:

- The subsurface conditions encountered at the Site consist of topsoil, underlain by a layer of fill followed by native soils (silty clay). The topsoil is present mainly in the western portion of the Site and typically is about 0.1 to 0.3 metres thick. Fill at the Site can be further categorized into soil fill and debris fill, and the total fill thickness (soil fill and debris fill) ranges from approximately 0.9 to 8 metres. The total thickness of the fill increases from the west to the east, with the thickest fill encountered in the southeast portion of the Site (up to 8 metres).
- The groundwater table at the site is located in the upper silty clay layer at the Site. The groundwater flow direction is interpreted to be towards the east (which is towards the Rideau River east of the Site).
- The soil fill layer is present across most of the Site but is not continuous, whereas the debris fill layer underlies only the eastern and south portions of the Site and is generally continuous. Where the soil fill layer is present, it generally exists beneath the debris fill layer. In the western part of the property, the soil fill layer generally consists of silty sand and is typically about 1 to 1.5 metres thick. In the eastern and south portions of the Site, the debris fill layer ranges in thickness from approximately 0.4 to 7.2 metres (being thickest at the southeast portion of the Site), and is comprised of mixture of silty sand and debris/refuse consisting of ash, wood, plastic, wire, paper, brick fragments, asphalt pieces, concrete, metal fragments and/or glass. The soil fill layer beneath the debris fill ranges in thickness from 0 metres (i.e., not present) to up to approximately 2.4 metres, although is typically less than 1.5 metres in thickness. In some localized areas in the east part of the Site, a layer of soil fill overlies the debris fill.
- The soil sampling completed at the Site indicated that the concentrations of one or more metals in twelve (12) including a duplicate soil sample of the sixty-eight (68) soil samples analyzed for metals and the concentrations of PAHs in 22 (including a duplicate soil sample) of 68 soil samples analysed for PAHs exceeded the MOECC Table 3 Standards. One soil sample of the 19 soil samples analyzed for PHC F1 to F4 and BTEX exceeded MOECC Table 3 Standards for PHC F3. In general, the metal, PHC F3 and PAH exceedances were identified in the soil samples collected from the debris fill layer in the east and south parts of the Site, with a few exceptions where metal and PAHs exceedances were found in the samples collected from the topsoil and the soil fill layer. No soil exceedances were identified in the analyzed samples collected from the native silty clay soil. The results indicate that the metal and PAHs impacts and the isolated PHC F3 exceedance identified in soil are generally associated with the debris fill, and are concentrated in the east and south parts of the Site where the debris fill was placed.
- Multiple rounds of groundwater sampling completed at the Site indicated that the concentrations of the PHCs F1 to F4, BTEX, PAHs and metals in the eight groundwater samples (including duplicate samples) were below the applicable MOECC Table 3 Standards. The results indicated that the groundwater has not been impacted by the debris fill.

2.0 DISCUSSION ON BARIUM, COBALT AND VANADIUM CONCENTRATIONS AT THE SITE

The silty clay soils that underlie eastern Ontario and western Quebec, including the Ottawa area, were deposited about 10,000 years ago in a marine (salt water) environment within what is known as the Champlain Sea, after the retreat of the last glacier advance. Because of the marine environment, Champlain Sea clay has a particular mineralogical composition, structure and physical properties and physio-chemical characteristics, which are very different than (for example) the glacial silty clay till that was deposited in a fresh water environment and underlies much of southern and southwestern Ontario. After the Champlain Sea receded and the land re-emerged, the upper portion of the clay deposit was leached by fresh water that reduced its salinity (salt content), which altered the properties of this portion of the deposit. Over geologic time, in most areas where the silty clay soil forms the upper part of the soil profile and the water table has been at some depth below ground surface, the upper two to four metres has been weathered to form a stiff brown crust, which again altered the clay's physical and mineralogical characteristics. Below this weathered zone, the clay is grey in colour and it has essentially not been altered by the weathering process. It is also the marine depositional environment and subsequent processes that the silty clay soil has experienced that defines the types and concentrations of metals that are naturally occurring in these soils.

The area of the Site is underlain by this Champlain Sea clay. Along the eastern boundary of the Site is the Rideau River, the channel for which formed by erosion down through the clay deposit. The area adjacent to the river, comprising the eastern portion of the Greystone Village site, was originally low lying and then gradually sloped upwards to the west forming the original river slope and defining the flood plain for the river. This low lying area was subsequently raised by placement of up to about 6 to 8 metres (in the southern and central Phase 1A and 1B areas of the development) of debris fill that is being removed during development to remediate the Site. The original river bank slope has an upper brown weathered clay zone that is underlain by the grey silty clay; beneath the debris fill area, the grey silty clay is present.

At the Site, this original river bank slope with an upper brown weathered clay zone has been shown to have concentrations of barium, cobalt and vanadium above the MOECC Table 3 Standards. Based on available data (31 samples to date), 22 of the samples have one or more of these metals greater than the MOECC Table 3 Standards. In contrast, of the 134 grey silty clay samples soil verification samples collected to date closer to the river, only four of the samples have one or more of these metals greater than the MOECC Table 3 Standards.

The barium cobalt and vanadium concentrations in the debris fill, the upper brown weathered clay and the grey silty clay soil are summarized in Table 1 below.

Table 1: Summary of Barium, Cobalt and Vanadium at 175 Main Street

Metal	MOECC Table 3 Standard (µg/g)	Average Concentration (µg/g)	Concentration Range (µg/g)	Standard Deviation (µg/g)	Metal Concentration Ratios
Debris Fill Layer (30 data points)					
Barium	390	145	22 – 400	88	Ba : Co = 14.4 Ba : Vn = 3.2
Cobalt	22	10	3 – 29	6	
Vanadium	86	46	14 – 120	25	

Metal	MOECC Table 3 Standard (µg/g)	Average Concentration (µg/g)	Concentration Range (µg/g)	Standard Deviation (µg/g)	Metal Concentration Ratios
Upper Weathered Brown Silty Clay Layer (31 data points)					
Barium	390	340	110 – 560	130	Ba : Co = 14.2 Ba : Vn = 3.2
Cobalt	22	24	8 – 37	10	
Vanadium	86	105	43 – 150	35	
Grey Silty Clay Layer (134 data points)					
Barium	390	178	36 –430	55	Ba : Co = 14.5 Ba : Vn = 3.0
Cobalt	22	12	5 – 29	3	
Vanadium	86	59	26 – 120	12	
175 Main Street Silty Clay (Upper Weathered Brown Silty Clay and Grey Silty Clay Combined) (165 data points)					
Barium	390	209	36 – 560	98	Ba : Co = 14.4 Ba : Vn = 3.1
Cobalt	22	14	5 – 37	7	
Vanadium	86	68	26 – 150	26	

Notes: Debris Fill Layer - metals data from the Phase II ESA for the Site
Silty Clay Layers - metals data from the soil verification sampling conducted during the remediation of Phase 1A

As shown on Table 1 the average concentration of barium, cobalt and vanadium in the debris fill is less than the average concentrations of the metals in both the upper weathered brown silty clay and the grey silty clay at the Site. Within the debris fill dataset (30 samples), two samples (TP BE SA3 and TP BJ SA3) had concentrations of one or more of barium/cobalt/vanadium exceeding the MOECC Table 3 Standards. However, the Phase II ESA for the Site describes TP BE SA3 as silty clay, trace sand, grey brown (which is interpreted as a layer of reworked clay within the debris fill layer) and TP BJ SA3 as silty clay and brown sand, grey, some brick and trace wood. As both samples were predominantly silty clay, the presence of these metals is attributed to the presence of the silty clay in the sample. Given that a) the concentration of metals in the debris fill is less than these same metals in the silty clay at the Site and b) the Phase I ESA and subsequent Site work conducted has not identified any potential source for metals in the silty clay, it is interpreted that these metals are naturally occurring background metals.

Another indicator that the concentrations of barium, cobalt and vanadium in the silty clay samples at the Site are naturally occurring is the ratio of the metal concentrations to each other. If the ratio of the three metals between sites or datasets is similar, it suggests that the presence of the metals is natural (i.e., the same natural deposition process resulted in similar distribution of metals at each site). However, if the ratio of the metals between sites varies significantly, it suggests the impacts may be due to a contaminant source (i.e., the elevated concentration of a metal has likely affected the ratio). As shown on Table 1, the ratios of these metals between datasets show minimal variation and are essentially equivalent between datasets, and therefore provides further evidence that the metals are naturally occurring background metals.

3.0 COMPARISON OF SITE DATA TO OTTAWA REGIONAL DATA

To evaluate the variability in barium, cobalt and vanadium concentrations in the Ottawa marine clay and compare the concentrations of these metals around Ottawa to the upper weathered brown silty clay and grey silty clay at the Site, Golder compiled four datasets from four distinct sites at the locations shown on Figure 1. The following sections discuss Golder's analysis.

3.1 Analysis of Ratio of Barium to Cobalt and Barium to Vanadium

For each of the datasets, it was confirmed that a) the Phase I ESA (when available) did not indicate metals as Contaminants of Concern (COC) and/or b) that a Phase II ESA for the site confirmed that metals were not a COC. Furthermore, for all datasets presented, the concentration of all COCs for the site met either the MOECC Table 1 background generic standards or in some limited cases where marginal exceedences of the MOECC Table 1 Standards were present, the samples met the MOECC Table 3 Standards. Therefore, all soil data used in the following analysis is interpreted to be from non-impacted samples.

The barium, cobalt and vanadium concentrations in soil from the datasets are summarized in Table 2 below.

Table 2: Summary of Barium, Cobalt and Vanadium Concentrations in Soil across the Ottawa Region

Metal	MOECC Table 3 Standard (µg/g)	Average Concentration (µg/g)	Concentration Range (µg/g)	Standard Deviation (µg/g)	Metal Concentration Ratios
Dataset #1 (25 data points)					
Barium	390	271	120 – 468	101	**Ba : Co = 15.1** **Ba : Vn = 3.2**
Cobalt	22	18	10 – 29	5	
Vanadium	86	85	41 – 136	28	
Dataset #2 (4 data points)					
Barium	390	464	443 – 512	28	**Ba : Co = 18.8** **Ba : Vn = 4.3**
Cobalt	22	25	23 – 26	1	
Vanadium	86	108	104 – 112	3	
Dataset #3 (8 data points)					
Barium	390	350	250 - 430	48	**Ba : Co = 13.7** **Ba : Vn = 3.1**
Cobalt	22	26	19 – 30	3	
Vanadium	86	114	85 - 140	16	
Dataset #4 (5 data points)					
Barium	390	462	392 – 544	48	**Ba : Co = 17.6** **Ba : Vn = 4.2**
Cobalt	22	26	24 – 30	2	
Vanadium	86	111	103 - 121	6	
Ottawa Regional Data - Datasets #1, #2, #3 and #4 Combined (42 data points)					
Barium	390	327	120 – 544	113	**Ba : Co = 15.6** **Ba : Vn = 3.4**
Cobalt	22	21	10 – 30	6	
Vanadium	86	96	41 - 140	27	

Note: Averages for the Ottawa Regional data set (42 data points) are taken from original data and are not weighted averages of data presented on Table 2.

As shown in Table 2, the ratios of barium to cobalt and barium and vanadium are similar between each dataset. Given the spatial variably of the datasets across the Ottawa region, this similarity in ratios further indicates that the presence of barium, cobalt and vanadium in clay across Ottawa are naturally occurring. A further analysis can be made by comparing the average ratio of these metals (Datasets #1, #2, #3 and #4 combined) to the ratio of these metals in the Site's upper weathered brown silty clay layer and the Site's grey silty clay layer. The ratios of these metals are summarized as follows in Table 3.

Table 3: Comparison of Metal Concentration Ratios between 175 Main Street Silty Clay and Other Silty Clay Soil in the Ottawa Region

Site / Dataset	Ratio of Barium to Cobalt	Ratio of Barium to Vanadium
175 Main Street upper weathered brown silty clay layer	14.2	3.2
175 Main Street grey silty clay layer	14.5	3.0
Ottawa Region (Datasets #1, #2, #3 and #4 combined)	15.6	3.4

The similarity of the ratios as shown in Table 3 provides another line of evidence that the presence of these metals in silty clay across the Ottawa region, including 175 Main Street, are naturally occurring background metals.

3.2 Box and Whisker Plots

To assess the variability in the metal concentrations of both the Ottawa regional data and the data from 175 Main Street, Box and Whiskers Charts (Box Plots) were created. Box Plots are commonly used in the display of statistical analyses and are a standardized way of displaying the distribution of data based on a five number summary: minimum, first quartile, median, third quartile, and maximum. In a Box Plot, the centre line of the box is the median, the upper line is the 75% percentile and the lower line is the 25% percentile. The smaller lines at the top and box are the minimum and maximum. For all Box Plots shown below, the dataset used in the Ottawa Regional Dataset does not include any data from the Site.

The following three figures are presented:

- Figure A – Ottawa Regional Data versus 175 Main Street Debris Fill
- Figure B – Ottawa Regional Data versus 175 Main Street Silty Clay (Upper Weathered Brown Silty Clay and Grey Silty Clay Combined)
- Figure C – Ottawa Regional Data versus 175 Main Street Upper Weathered Brown Silty Clay

For each figure, the overall Ottawa Regional Dataset average (yellow circle on each plot) is shown as well as the average of each individual dataset. The orange circle shown on each plot represents the average metal concentration of the dataset being evaluated. For example, in Figure 1, the orange circle is the average metal concentration in the debris fill dataset presented in Table 1.

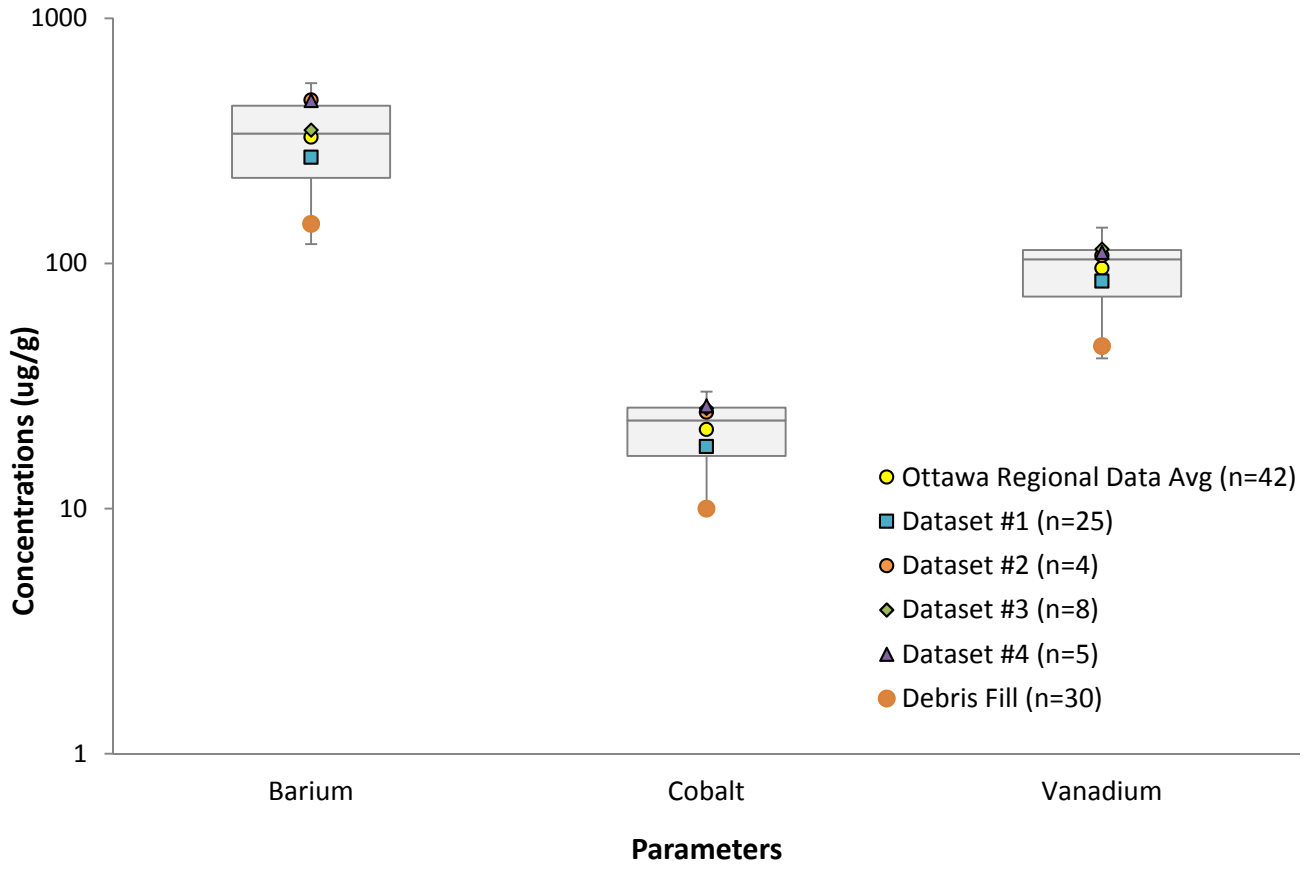


Figure A: Ottawa Regional Data versus 175 Main Street Debris Fill

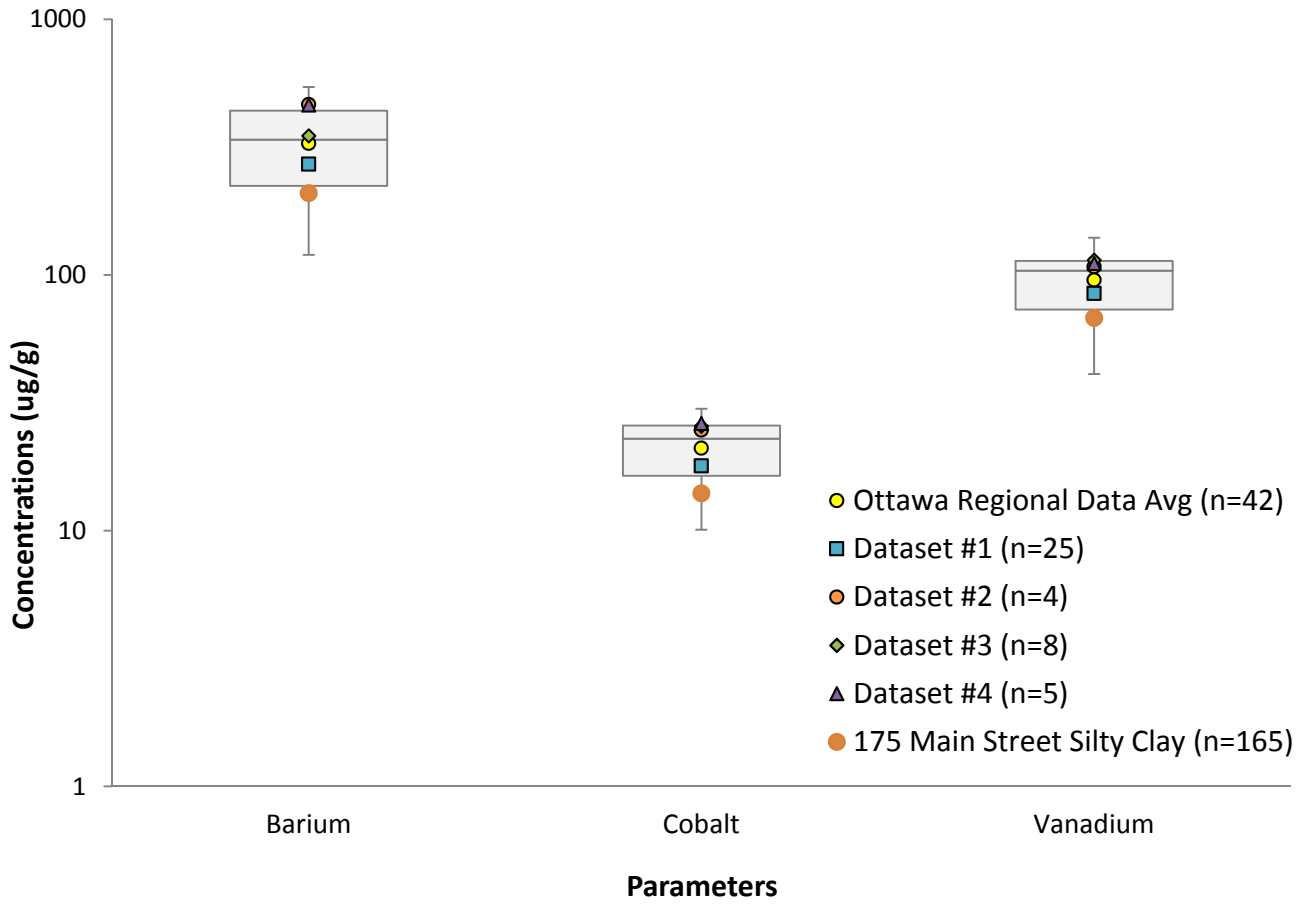


Figure B: Ottawa Regional Data versus 175 Main Street Silty Clay (Upper Weathered Brown Silty Clay and Grey Silty Clay Combined)

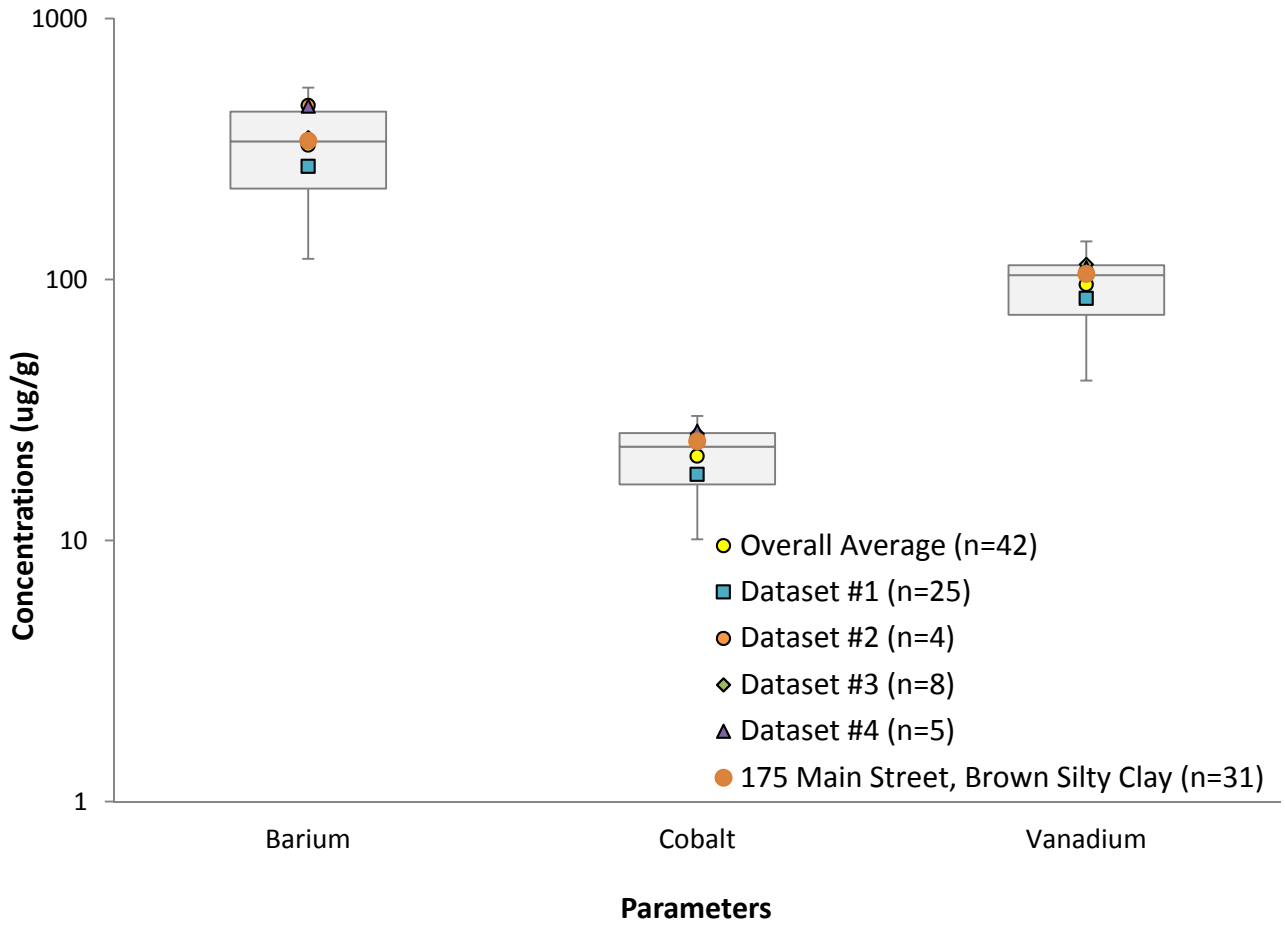


Figure C: Ottawa Regional Data versus 175 Main Street Upper Weathered Brown Silty Clay

As shown on Figure A, the average metal concentrations in the debris fill are significantly lower than the observed range for Ottawa Regional Data. This further indicates that that elevated presence of these metals in the upper brown weathered silty clay (which is the layer of silty clay at the Site with MOECC Table 3 exceedences) at the Site are not caused by the overlying debris fill. Similarly, as shown on Figure B, the average metal concentrations in the combined silty clay dataset from the Site are also lower than the observed ranges for Ottawa Regional Data. Finally, as shown on Figure C, the average metal concentrations in the upper weathered brown silty clay at the Site fall within the observed chemical ranges for other clay samples at other sites from the Ottawa region.

The data indicates that the metal concentrations in the upper weathered brown silty clay at the Site are not elevated above what is normal for silty clay in the Ottawa area.

4.0 ANALYSIS OF METAL CONCENTRATIONS COMPARED TO TYPICAL CRUSTAL ABUNDANCES

Clay is typically formed by the weathering of rocks and soil. The weathering process involves physical disaggregation and chemical decomposition that change original minerals to clay minerals (USGS, http://pubs.usgs.gov/info/clays/). Given this, comparing typical metal concentrations in bedrock to the Ottawa Regional Data (and Site data) can provide additional context on the source of barium, cobalt and vanadium. In

Canada (as well as outside of Canada), standard mining industry practice is to evaluate metal enrichment of mine waste rock and overburden by comparing results to typical elemental abundances in continental crust (Turekian and Wedepohl (1961)). Using a similar approach, the observed metal concentrations in Ottawa Region clay are compared to typical elemental abundances in continental crust in Table 4 below.

Table 4: Comparison of Barium, Cobalt and Vanadium Concentrations in Clay to Crustal Abundance

Data	Average Barium Concentration (µg/g)	Average Cobalt Concentration (µg/g)	Average Vanadium Concentration (µg/g)
Typical Crustal Abundance of Continental Crust	425	25	120
Typical Crustal Abundance in Deep-Sea Clay	2,300	74	120
Ottawa Regional Data - Datasets #1, #2, #3 and #4 Combined (42 data points)	327	21	96
175 Main Street Silty Clay (Upper Weathered Brown Silty Clay and Grey Silty Clay Combined) (165 data points)	209	14	68

As shown in Table 4, the deep-sea clay crustal abundance and the typical continental crustal abundance average metal concentrations are higher in comparison to both the Ottawa Regional Data and the 175 Main Street clay dataset. Given that clay is a natural breakdown product from bedrock, the elevated (compared to MOECC Table 3 Standards) presence of these metals in the Ottawa area clay is reasonably similar in concentration to these naturally occurring metals in continental bedrock.

5.0 CONCLUSIONS

Barium, cobalt and vanadium concentrations in Ottawa area soil were compiled for a number of datasets including:

- The debris fill layer at the Site;
- The upper weathered brown silty clay layer at the Site;
- The grey silty clay layer at the Site; and,
- Four (4) datasets from silty clay sites across Ottawa (locations shown on Figure 1).

The Phase I ESA and subsequent Site work conducted did not identify any potential barium, cobalt or vanadium source(s) at the Site. Furthermore, based on the average concentrations of barium, cobalt and vanadium in the debris fill at the Site being less than the upper weathered brown silty clay at the Site, the grey silty clay at the Site and the compiled Ottawa Regional dataset, it is further concluded that the debris fill at the Site is not a source of these metals.

The ratios of barium to cobalt and barium to vanadium were examined for each dataset and found to be similar for all datasets. As the ratio of the three metals between datasets is similar, it suggests that the metals are naturally occurring background metals (i.e., the same natural deposition process (in a marine environment for Ottawa area clays) resulted in similar distribution of metals).

The variability of each dataset was examined by plotting Box and Whisker figures. For each figure, the dataset used was the Ottawa Regional Dataset and did not include any data from the Site. As shown on Figures A through C, the average metal concentrations of the debris fill and the combined silty clay dataset from the Site are lower than the observed ranges for the Ottawa Regional Dataset. Furthermore, the average metal concentrations in the upper weathered brown silty clay at the Site (where the majority of the MOECC Table 3 exceedences are) fall within the observed chemical ranges from the Ottawa Regional Dataset. The analysis indicates that the metal concentrations in the upper weathered brown silty clay are not elevated above what is normal for silty clay in the Ottawa area.

Based on above, it is Golder's interpretation and professional opinion that the presence of barium, cobalt and vanadium at concentrations above the MOECC Table 3 Standards at the Site are naturally occurring background metals and therefore not the result of a Potentially Contaminating Activity. As such, Golder intends to apply a natural background argument for barium, cobalt and vanadium in soil at the Site and exclude barium, cobalt and vanadium as Contaminants of Concern from the RSC for 175 Main Street, Ottawa, Ontario.

We kindly request that the MOECC review this letter and our evidence in advance of our planned RSC submission sometime on or around June 30, 2016. The raw electronic data used to prepare the datasets is available upon request and we welcome any questions, comments or discussion. Please do not hesitate to contact the undersigned.

GOLDER ASSOCIATES LTD.

Paul Hurst, QP(ESA), P.Eng.
Environmental Engineer

Paul Smolkin, QP(ESA), P.Eng.
Principal

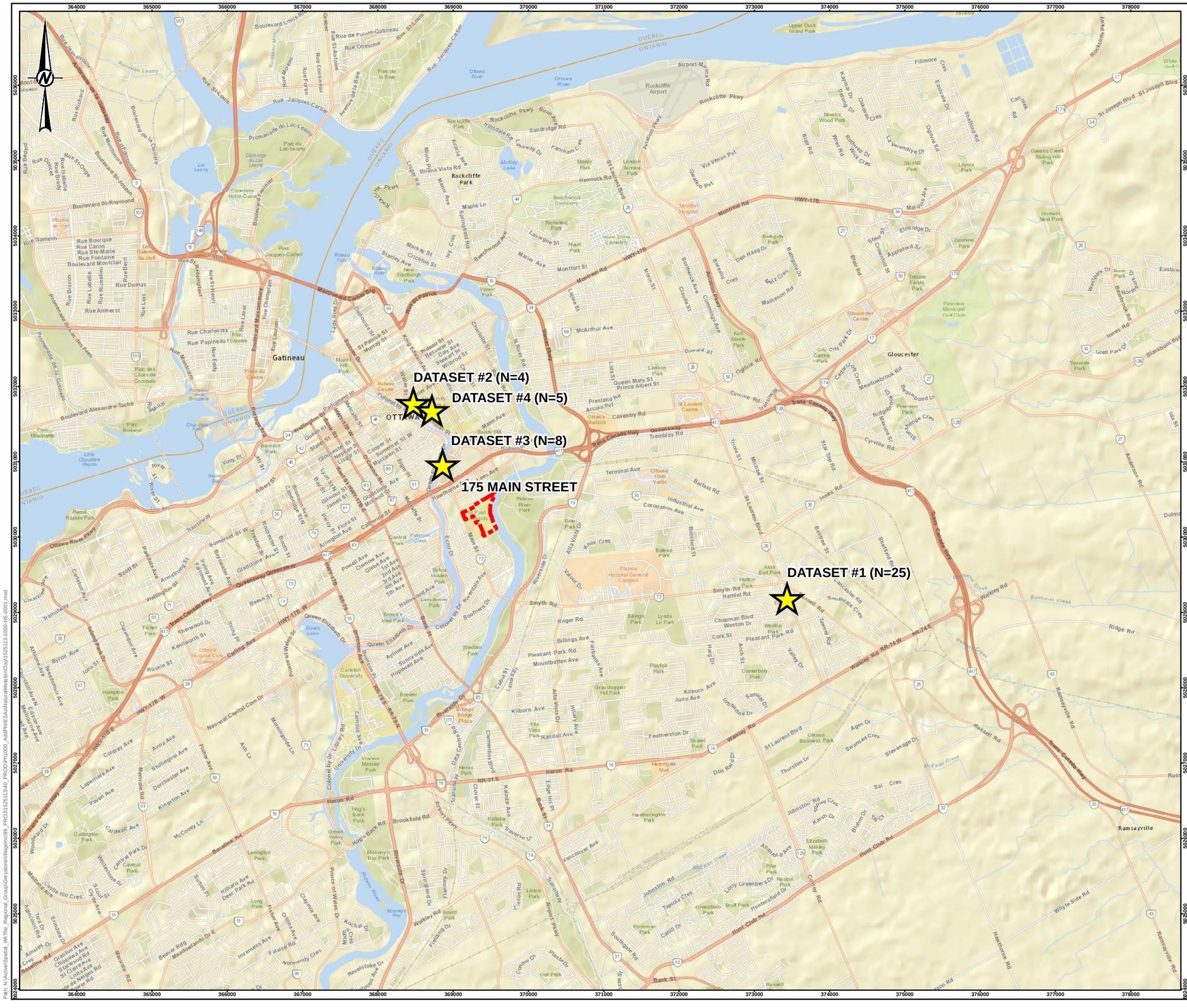
PH/PAS/hw
\\golder.gds\gal\ottawa\active\2015\3 proj\1525113 regional oblates brownfields 175 main st\04_reporting\03 - june 2016 natural metal in clay letter\ltr re natural metals in clay_2016july4.docx

CC: Mr. Charles Goulet, MOECC Ottawa District Office
Mr. David Kardish, Greystone Village Inc.
Mr. John Riddell, Novatech Engineering Consultants

Attachment: Figure 1 – Location of Data Sets

REFERENCES

Turekian and Wedepohl (1961) Distribution of the Elements in some major units of the Earth's crust. *Geological Society of America, Bulletin 72: 175-192)*



LEGEND

LOCATION OF DATASET

0 500 1,000 2,000

1:50,000 METRES

NOTE(S)

1. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113/1000.

REFERENCE(S)

1. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, DELORME, USGS, INTERMAP, INCREMENT P CORP., NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI (THAILAND), MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
2. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: MTM ZONE 9 VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE

PROJECT
EVALUATION OF NATURALLY OCCURING BARIUM, COBALT AND VANADIUM IN OTTAWA MARINE CLAYS

TITLE
LOCATION OF DATASETS

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-06-16
DESIGNED	PH
PREPARED	BR
REVIEWED	PAS
APPROVED	PAS

PROJECT NO.	PHASE	REV.	FIGURE
1525113	1000	0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

Path: N:\Active\Spatial_IM\The_Regional_Group\GreystoneVillage\n\99_PROJ\1525113\40_PROD\Ph1000_Add\PhilESA\NaturalMetalsInClay\1525113-1000-H5-0001.mxd

ATTACHMENT C – Supporting Tables

Sample Name	Sample Type	Sample Collection Date	Analysis	Sample Description	Sample Elevation (masl)	Excavated?
VS001	Floor	11/23/15	Metals, PAH	Grey silty clay (native)	NS	Excavated
VS002	Floor	11/23/15	Metals, PAH	Grey silty clay (native)	NS	Excavated
VS003	Floor	11/24/15	Metals, PAH	Grey silty clay (native)	NS	Excavated
VS004	Floor	11/24/15	Metals, PAH	Grey silty clay (native)	NS	Excavated
VS005	Floor	11/24/15	Metals, PAH	Grey silty clay (native)	NS	Excavated
VS PEAT	Floor	11/24/15	Metals, PAH	Peat layer	56.82	Excavated
VS006	Floor	11/25/15	Metals, PAH	Grey silty clay (native)	NS	Excavated
VS007	Floor	11/25/15	Metals, PAH	Grey silty clay (native)	56.80	Final Sample
VS008	Floor	11/26/15	Metals, PAH	Grey silty clay (native)	56.58	Final Sample
VS009	Sidewall / Floor	12/07/15	Metals, PAH	Brown sand fill	64.95	Final Sample
VS010	Floor	12/07/15	Metals, PAH	Brown sand fill	64.50	Final Sample
VS011	Floor	12/07/15	Metals, PAH	Brown sand fill	63.00	Final Sample
VS012	Floor	12/07/15	Metals, PAH	Brown sand fill	64.62	Final Sample
VS013	Sidewall / Floor	12/07/15	Metals, PAH	Brown sand fill	64.99	Final Sample
VS014	Floor	12/07/15	Metals, PAH	Brown sand fill	NS	Excavated
VS014 B	Sidewall / Floor	12/09/15	Metals, PAH	Brown sand fill	65.00	Final Sample
VS015	Floor	12/07/15	Metals, PAH	Brown sand fill	65.03	Final Sample
VS016	Floor	12/07/15	Metals, PAH	Brown sand fill	65.16	Final Sample
VS017	Floor	12/09/15	Metals, PAH	Grey silty clay (native)	60.84	Final Sample
VS018	Floor	12/09/15	Metals, PAH	Grey silty clay (native)	59.27	Final Sample
VS019	Sidewall / Floor	12/14/15	Metals, PAH	Brown sand fill	65.01	Final Sample
VS020	Floor	12/14/15	Metals, PAH	Brown sand fill	58.80	Final Sample
VS021	Floor	12/16/15	Metals, PAH	Grey silty clay (native)	63.00	Final Sample
VS022	Floor	12/16/15	Metals, PAH	Grey silty clay (native)	62.21	Excavated
VS022B	Floor	12/18/15	Metals, PAH	Grey silty clay (native)	62.21	Excavated
VS022C	Floor	06/20/16	Metals, PAH	Grey silty clay (native)	62.43	Final Sample
VS023	Floor	12/16/15	Metals, PAH	Grey silty clay (native)	63.30	Final Sample
VS024	Floor	12/16/15	Metals, PAH	Grey silty clay (native)	63.00	Excavated
VS024B	Floor	12/18/15	Metals, PAH	Grey silty clay (native)	63.00	Final Sample
VS025	Floor	12/18/15	Metals, PAH	Brown sand fill	64.00	Final Sample
VS026	Floor	12/18/15	Metals, PAH	Brown sand fill	63.54	Final Sample
VS027	Floor	12/18/15	Metals, PAH	Brown sand fill	63.93	Final Sample
VS028	Floor	12/18/15	Metals, PAH	Brown sand fill	63.60	Final Sample
VS029	Floor	12/18/15	Metals, PAH	Brown sand fill	63.39	Final Sample
VS030	Floor	12/22/15	Metals, PAH	Grey silty clay (native)	58.47	Final Sample
VS031	Sidewall / Floor	01/11/16	Metals, PAH	Brown sand fill	64.77	Final Sample
VS032	Sidewall / Floor	01/11/16	Metals, PAH	Brown sand fill	64.81	Final Sample
VS033	Sidewall / Floor	01/11/16	Metals, PAH	Brown sand fill	64.93	Final Sample
VS034	Sidewall / Floor	01/11/16	Metals, PAH	Brown sand fill	65.00	Final Sample
VS035	Sidewall / Floor	01/11/16	Metals, PAH	Brown sand fill	64.61	Final Sample
VS036	Sidewall / Floor	01/11/16	Metals, PAH	Brown sand fill	64.51	Final Sample
VS037	Floor	01/20/16	Metals, PAH	Brown sand fill	NS	Excavated
VS1037 (Field Dup. of VS037)	Floor	01/20/16	Metals, PAH	Brown sand fill	NS	Excavated
VS037B	Floor	06/15/16	Metals, PAH	Brown sand fill	64.95	Final Sample
VS038	Sidewall / Floor	01/20/16	Metals, PAH	Brown sand fill	64.99	Final Sample
VS039	Sidewall / Floor	01/20/16	Metals, PAH	Brown sand fill	65.00	Final Sample
VS040	Floor	01/20/16	Metals, PAH	Brown sand fill	65.11	Final Sample
VS1040 (Field Dup. of VS040)	Floor	01/20/16	Metals, PAH	Brown sand fill	65.11	Final Sample
VS041	Floor	01/20/16	Metals, PAH	Brown sand fill	64.78	Final Sample
VS042	Sidewall / Floor	01/20/16	Metals, PAH	Brown sand fill	65.28	Final Sample
VS043	Sidewall / Floor	01/20/16	Metals, PAH	Brown sand fill	65.09	Final Sample
VS044	Sidewall / Floor	01/20/16	Metals, PAH	Brown sand fill	64.67	Final Sample
VS046	Floor	02/26/16	Metals, PAH	Brown sand fill	63.13	Final Sample
VS047	Floor	03/04/16	Metals, PAH	Grey silty clay (native)	60.45	Final Sample
VS1047 (Field Dup. of VS047)	Floor	03/04/16	Metals, PAH	Grey silty clay (native)	60.45	Final Sample
VS048	Floor	03/04/16	Metals, PAH	Grey silty clay (native)	NS	Excavated
VS048B	Floor	03/08/16	Metals, PAH	Mottled grey brown silty clay (native)	59.43	Final Sample
VS049	Floor	03/04/16	Metals, PAH	Brown silty clay (native)	57.94	Final Sample
VS050	Floor	03/04/16	Metals, PAH	Brown silty clay (native)	57.69	Final Sample
VS051	Floor	03/04/16	Metals, PAH	Grey silty clay (native)	59.46	Final Sample
VS052	Floor	03/04/16	Metals, PAH	Grey silty clay (native)	57.87	Final Sample
VS053	Floor	03/04/16	Metals, PAH	Grey brown silty clay (native)	57.69	Final Sample
VS054	Floor	03/04/16	Metals, PAH	Grey silty clay (native)	60.40	Final Sample
VS1054 (Field Dup. of VS054)	Floor	03/04/16	Metals, PAH	Grey silty clay (native)	60.40	Final Sample
VS055	Floor	03/04/16	Metals, PAH	Grey silty clay (native)	58.91	Final Sample
VS056	Floor	03/04/16	Metals, PAH	Grey silty clay (native)	58.06	Final Sample
VS057	Floor	03/04/16	Metals, PAH	Grey brown silty clay (native)	57.76	Final Sample
VS058	Sidewall / Floor	03/08/16	Metals, PAH	Grey brown silty clay (native)	63.16	Final Sample

Sample Name	Sample Type	Sample Collection Date	Analysis	Sample Description	Sample Elevation (masl)	Excavated?
VS059	Floor	03/08/16	Metals, PAH	Grey brown silty clay (native)	62.47	Final Sample
VS060	Floor	04/14/16	Metals, PAH	Brown clayey sand fill	62.19	Final Sample
VS061	Floor	04/14/16	Metals, PAH	Brown clayey sand fill	62.57	Final Sample
VS062	Floor	04/14/16	Metals, PAH	Grey sandy silty clay (native)	61.17	Final Sample
VS063	Floor	04/14/16	Metals, PAH	Grey sandy silty clay (native)	59.72	Final Sample
VS064	Floor	04/14/16	Metals, PAH	Brown clayey sand fill	63.47	Final Sample
VS065	Floor	04/14/16	Metals, PAH	Brown sand fill	63.98	Final Sample
VS066	Floor	04/14/16	Metals, PAH	Brown clayey sand fill	63.60	Final Sample
VS067	Floor	04/14/16	Metals, PAH	Grey sandy clay (native)	61.66	Final Sample
VS068	Floor	04/14/16	Metals, PAH	Grey sandy clay (native)	62.11	Final Sample
VS069	Floor	04/14/16	Metals, PAH	Brown sand fill	63.54	Final Sample
VS070	Floor	04/14/16	Metals, PAH	Brown sand fill	64.05	Final Sample
VS071	Floor	04/14/16	Metals, PAH	Brown sand fill	64.06	Final Sample
VS072	Floor	04/14/16	Metals, PAH	Grey silty clay (native)	62.09	Excavated
VS072B	Floor	06/15/16	Metals, PAH	Grey brown silty clay (native)	62.21	Final Sample
VS073	Floor	04/14/16	Metals, PAH	Grey brown silty clay (native)	63.51	Final Sample
VS1073 (Field Dup. of VS073)	Floor	04/14/16	Metals, PAH	Grey brown silty clay (native)	63.51	Final Sample
VS074	Sidewall / Floor	04/14/16	Metals, PAH	Brown sand fill	63.70	Final Sample
VS075	Sidewall / Floor	04/14/16	Metals, PAH	Brown sand fill	63.89	Final Sample
VS076	Sidewall / Floor	04/14/16	Metals, PAH	Brown sand fill	63.79	Final Sample
VS077	Floor	04/14/16	Metals, PAH	Brown sand fill	63.15	Final Sample
VS078	Sidewall / Floor	04/14/16	Metals, PAH	Brown sand fill	62.96	Final Sample
VS079	Sidewall / Floor	04/14/16	Metals, PAH	Brown sand fill	63.34	Final Sample
VS080	Floor	04/14/16	Metals, PAH	Grey silty clay (native)	NS	Excavated
VS080B	Floor	06/15/16	Metals, PAH	Grey brown silty clay (native)	62.05	Final Sample
VS081	Floor	04/14/16	Metals, PAH	Grey silty clay (native)	NS	Excavated
VS081B	Sidewall / Floor	06/15/16	Metals, PAH	Grey silty clay (native)	62.39	Final Sample
VS082	Floor	04/16/16	Metals, PAH	Grey sandy clay (native)	59.04	Final Sample
VS083	Floor	04/16/16	Metals, PAH	Grey sandy clay (native)	57.47	Final Sample
VS084	Floor	04/16/16	Metals, PAH	Blue-grey silty clay (native)	60.64	Final Sample
VS085	Floor	04/18/16	PHC F1-F4, BTEX	Blue-grey silty clay (native)	58.80	Final Sample
VS0185 Field Dup. of VS085)	Floor	04/18/16	PHC F1-F4, BTEX	Blue-grey silty clay (native)	58.80	Final Sample
VS086	Floor	04/18/16	PHC F1-F4, BTEX	Grey sandy clay (native)	59.72	Final Sample
VS087	Floor	04/18/16	Metals, PAH, PHC F1-F4, BTEX	Grey sandy clay (native)	59.50	Final Sample
VS088	Floor	04/18/16	Metals, PAH, PHC F1-F4, BTEX	Grey sandy clay (native)	59.23	Final Sample
VS089	Floor	04/18/16	PHC F1-F4, BTEX	Grey silty clay (native)	58.68	Final Sample
VS090	Floor	04/18/16	PHC F1-F4, BTEX	Grey silty clay (native)	58.50	Final Sample
VS091	Floor	04/18/16	Metals, PAH	Grey silty clay with sand (native)	61.55	Final Sample
VS092	Floor	04/18/16	Metals, PAH	Grey silty clay (native)	57.85	Final Sample
VS093	Floor	04/18/16	Metals, PAH	Grey silty clay (native)	58.72	Final Sample
VS094	Floor	04/19/16	Metals, PAH	Grey silty clay (native)	60.18	Final Sample
VS095	Floor	04/19/16	Metals, PAH	Grey-brown sandy clay (native)	56.78	Final Sample
VS1095 (Field Dup. of VS095)	Floor	04/19/16	Metals, PAH	Grey-brown sandy clay (native)	56.78	Final Sample
VS096	Floor	04/20/16	Metals, PAH	Grey-brown sandy clay (native)	55.44	Final Sample
VS097	Floor	04/20/16	Metals, PAH	Grey-brown sandy clay (native)	55.72	Final Sample
VS098	Floor	04/20/16	Metals, PAH	Grey clay (native)	58.13	Final Sample
VS1098 (Field Dup. of VS098)	Floor	04/20/16	Metals, PAH	Grey clay (native)	58.13	Final Sample
VS099	Floor	04/20/16	Metals, PAH	Grey brown silty clay (native)	57.88	Final Sample
VS100	Floor	04/21/16	Metals, PAH	Grey-brown clay	55.49	Final Sample
VS101	Floor	04/21/16	Metals, PAH	Grey clay (native)	56.81	Final Sample
VS1101 (Field Dup. of VS101)	Floor	04/21/16	Metals, PAH	Grey clay (native)	56.81	Final Sample
VS102	Floor	04/21/16	Metals, PAH	Grey silty clay (native)	56.87	Final Sample
VS103	Floor	04/21/16	Metals, PAH	Grey silty clay (native)	57.23	Final Sample
VS104	Floor	04/21/16	Metals, PAH	Grey silty clay (native)	57.27	Final Sample
VS105	Floor	04/21/16	Metals, PAH	Grey silty clay (native)	57.42	Final Sample
VS106	Floor	04/21/16	Metals, PAH	Grey silty clay (native)	57.62	Final Sample
VS107	Floor	04/22/16	Metals, PAH	Grey silty clay (native)	60.00	Final Sample
VS108	Floor	04/22/16	Metals, PAH	Grey-brown sandy clay (native)	NS	Excavated
VS108B	Floor	06/15/16	Metals, PAH	Grey brown silty clay (native)	61.80	Final Sample
VS109	Floor	04/25/16	Metals, PAH	Grey clay (native)	59.00	Final Sample
VS1109 (Field Dup. of VS109)	Floor	04/25/16	Metals, PAH	Grey clay (native)	59.00	Final Sample
VS110	Floor	04/25/16	Metals, PAH	Grey silty clay (native)	58.30	Final Sample
VS111	Floor	04/25/16	Metals, PAH	Grey silty clay (native)	58.30	Final Sample
VS112	Floor	04/25/16	Metals, PAH	Grey silty clay (native)	58.00	Final Sample

Sample Name	Sample Type	Sample Collection Date	Analysis	Sample Description	Sample Elevation (masl)	Excavated?
VS113	Floor	04/25/16	Metals, PAH	Grey silty clay (native)	58.00	Final Sample
VS114	Floor	04/25/16	Metals, PAH	Grey brown silty clay (native)	57.66	Final Sample
VS115	Floor	04/25/16	Metals, PAH	Grey-brown clay	57.58	Final Sample
VS1115 (Field Dup. of VS115)	Floor	04/25/16	Metals, PAH	Grey-brown clay	57.58	Final Sample
VS116	Floor	04/26/16	Metals, PAH	Grey-brown clay	57.30	Final Sample
VS1116 (Field Dup. of VS116)	Floor	04/26/16	Metals, PAH	Grey-brown clay	57.30	Final Sample
VS117	Floor	04/26/16	Metals, PAH	Grey brown silty clay (native)	57.09	Final Sample
VS118	Floor	04/26/16	Metals, PAH	Grey brown silty clay (native)	57.04	Final Sample
VS119	Floor	04/26/16	Metals, PAH	Grey brown silty clay (native)	56.66	Final Sample
VS120	Floor	04/26/16	Metals, PAH	Grey-brown clay	56.47	Final Sample
VS1120 (Field Dup. of VS120)	Floor	04/26/16	Metals, PAH	Grey-brown clay	56.47	Final Sample
VS121	Floor	04/26/16	Metals, PAH	Grey brown silty clay (native)	56.39	Final Sample
VS122	Floor	04/27/16	Metals, PAH	Grey brown silty clay (native)	56.16	Final Sample
VS123	Floor	04/27/16	Metals, PAH	Grey brown silty clay (native)	56.14	Final Sample
VS124	Floor	04/27/16	Metals, PAH	Grey brown silty clay (native)	56.05	Final Sample
VS125	Floor	04/28/16	Metals, PAH	Grey-brown clay	56.23	Final Sample
VS1125 (Field Dup. of VS125)	Floor	04/28/16	Metals, PAH	Grey-brown clay	56.23	Final Sample
VS126	Floor	04/29/16	Metals, PAH	Grey brown silty clay (native)	56.09	Final Sample
VS127	Floor	04/29/16	Metals, PAH	Grey brown silty clay (native)	56.21	Final Sample
VS128	Floor	05/02/16	Metals, PAH	Grey brown silty clay (native)	56.46	Final Sample
VS129	Floor	05/02/16	Metals, PAH	Grey brown silty clay (native)	56.67	Final Sample
VS130	Floor	05/02/16	Metals, PAH	Grey brown silty clay (native)	56.49	Final Sample
VS1130 (Field Dup. of VS130)	Floor	05/02/16	Metals, PAH	Grey brown silty clay (native)	56.49	Final Sample
VS131	Floor	05/02/16	Metals, PAH	Grey brown silty clay (native)	56.41	Final Sample
VS132	Floor	05/02/16	Metals, PAH	Grey brown silty clay (native)	56.44	Final Sample
VS133	Floor	05/04/16	Metals, PAH	Grey brown silty clay (native)	56.55	Final Sample
VS134	Floor	05/04/16	Metals, PAH	Grey brown silty clay (native)	57.02	Final Sample
VS135	Floor	05/04/16	Metals, PAH	Grey brown silty clay (native)	56.70	Final Sample
VS1135 (Field Dup. of VS135)	Floor	05/04/16	Metals, PAH	Grey brown silty clay (native)	56.70	Final Sample
VS136	Floor	05/04/16	Metals, PAH	Grey brown silty clay (native)	56.85	Final Sample
VS137	Floor	05/04/16	Metals, PAH	Grey brown silty clay (native)	57.04	Final Sample
VS138	Floor	05/05/16	Metals, PAH	Grey brown silty clay (native)	56.78	Final Sample
VS139	Floor	05/05/16	Metals, PAH	Grey silty clay (native)	57.06	Final Sample
VS140	Floor	05/05/16	Metals, PAH	Grey brown silty clay (native)	56.73	Final Sample
VS141	Floor	05/09/16	Metals, PAH	Grey brown silty clay (native)	56.84	Final Sample
VS1141 (Field Dup. of VS141)	Floor	05/09/16	Metals, PAH	Grey brown silty clay (native)	56.84	Final Sample
VS142	Floor	05/09/16	Metals, PAH	Grey brown silty clay (native)	56.76	Final Sample
VS143	Floor	05/10/16	Metals, PAH	Grey brown silty clay (native)	57.14	Final Sample
VS1143 (Field Dup. of VS143)	Floor	05/10/16	Metals, PAH	Grey brown silty clay (native)	57.14	Final Sample
VS144	Floor	05/10/16	Metals, PAH	Grey silty clay (native)	57.12	Final Sample
VS145	Floor	05/10/16	Metals, PAH	Grey silty clay (native)	57.54	Final Sample
VS146	Floor	05/10/16	Metals, PAH	Grey silty clay (native)	57.52	Final Sample
VS147	Floor	05/10/16	Metals, PAH	Grey silty clay (native)	57.12	Final Sample
VS148	Floor	05/11/16	Metals, PAH	Grey silty clay (native)	57.15	Final Sample
VS149	Floor	05/11/16	Metals, PAH	Grey silty clay (native)	57.03	Final Sample
VS150	Floor	05/11/16	Metals, PAH	Grey silty clay (native)	56.92	Final Sample
VS151	Floor	05/12/16	Metals, PAH	Grey brown silty clay (native)	57.13	Final Sample
VS152	Floor	05/12/16	Metals, PAH	Grey brown silty clay (native)	57.02	Final Sample
VS153	Floor	05/16/16	Metals, PAH	Grey brown silty clay (native)	59.73	Final Sample
VS154	Floor	05/16/16	Metals, PAH	Grey brown silty clay (native)	58.47	Final Sample
VS155	Floor	05/16/16	Metals, PAH	Grey brown silty clay (native)	60.31	Final Sample
VS156	Floor	05/16/16	Metals, PAH	Grey brown silty clay (native)	58.63	Final Sample
VS1156 (Field Dup. of VS156)	Floor	05/16/16	Metals, PAH	Grey brown silty clay (native)	58.63	Final Sample
VS157	Floor	05/16/16	Metals, PAH	Grey silty clay (native)	57.99	Final Sample
VS158	Floor	05/16/16	Metals, PAH	Grey brown silty clay (native)	57.96	Final Sample
VS159	Floor	05/16/16	Metals, PAH	Grey brown silty clay (native)	57.86	Final Sample
VS160	Floor	05/16/16	Metals, PAH	Grey brown silty clay (native)	57.99	Final Sample
VS161	Floor	05/16/16	Metals, PAH	Grey brown silty clay (native)	57.61	Final Sample
VS162	Floor	05/17/16	Metals, PAH	Grey brown silty clay (native)	57.49	Final Sample
VS163	Floor	05/17/16	Metals, PAH	Grey brown silty clay (native)	57.10	Final Sample
VS1163 (Field Dup. of VS163)	Floor	05/17/16	Metals, PAH	Grey brown silty clay (native)	57.10	Final Sample
VS164	Floor	05/17/16	Metals, PAH	Grey brown silty clay (native)	57.35	Final Sample

Sample Name	Sample Type	Sample Collection Date	Analysis	Sample Description	Sample Elevation (masl)	Excavated?
VS165	Floor	05/17/16	Metals, PAH	Grey brown silty clay (native)	58.01	Final Sample
VS166	Floor	05/17/16	Metals, PAH	Grey brown silty clay (native)	58.58	Final Sample
VS167	Floor	05/18/16	Metals, PAH	Grey brown silty clay (native)	59.01	Final Sample
VS168	Floor	05/18/16	Metals, PAH	Grey brown silty clay (native)	59.08	Final Sample
VS169	Floor	05/20/16	Metals, PAH	Grey brown silty clay (native)	59.34	Final Sample
VS170	Floor	05/20/16	Metals, PAH	Grey brown silty clay (native)	56.26	Final Sample
VS171	Floor	05/20/16	Metals, PAH	Grey brown silty clay (native)	56.87	Final Sample
VS172	Floor	05/25/16	Metals, PAH	Grey brown silty clay (native)	62.41	Final Sample
VS173	Sidewall / Floor	05/25/16	Metals, PAH	Grey brown silty clay (native)	63.21	Final Sample
VS174	Floor	05/25/16	Metals, PAH	Grey brown silty clay (native)	61.71	Final Sample
VS175	Floor	05/25/16	Metals, PAH	Grey brown silty clay (native)	61.69	Final Sample
VS176	Floor	05/25/16	Metals, PAH	Grey brown silty clay (native)	62.90	Final Sample
VS177	Floor	05/25/16	Metals, PAH	Grey brown silty clay (native)	63.05	Final Sample
VS0177 (Field Dup. of VS177)	Sidewall / Floor	05/25/16	Metals, PAH	Grey brown silty clay (native)	63.05	Final Sample
VS178	Sidewall / Floor	05/25/16	Metals, PAH	Grey brown silty clay (native)	63.10	Final Sample
VS179	Floor	05/25/16	Metals, PAH	Grey brown silty clay (native)	62.98	Final Sample
VS180	Floor	05/26/16	Metals, PAH	Grey brown silty clay with sand (native)	60.51	Final Sample
VS181	Floor	05/26/16	Metals, PAH	Grey brown silty clay with sand (native)	60.51	Final Sample
VS181 2ft	Floor	06/09/16	Metals, PAH	Grey brown silty clay (native)	60.51	Final Sample
VS181 4ft	Floor	06/09/16	Metals, PAH	Grey brown silty clay (native)	60.51	Final Sample
VS181B	Floor	06/02/16	Metals, PAH	Grey silty clay (native)	62.91	Final Sample
VS182	Floor	05/26/16	Metals, PAH	Grey brown silty clay with sand (native)	62.26	Final Sample
VS183	Floor	05/26/16	Metals, PAH	Grey brown silty clay with sand (native)	62.98	Excavated
VS183B	Floor	05/31/16	Metals, PAH	Grey brown silty clay with sand (native)	62.99	Excavated
VS183C	Floor	06/02/16	Metals, PAH	Grey brown silty clay (native)	62.98	Final Sample
VS184	Floor	05/26/16	Metals, PAH	Grey brown silty clay with sand (native)	NS	Excavated
VS1184 (Field Dup. of VS184)	Floor	05/26/16	Metals, PAH	Grey brown silty clay with sand (native)	NS	Excavated
VS184B	Floor	05/31/16	Metals, PAH	Grey brown silty clay with sand (native)	NS	Excavated
VS184C	Floor	06/02/16	Metals, PAH	Grey brown silty clay (native)	63.06	Final Sample
VS185	Floor	05/26/16	Metals, PAH	Grey brown silty clay (native)	63.18	Final Sample
VS186	Floor	05/26/16	Metals, PAH	Grey brown silty clay (native)	63.30	Final Sample
VS187	Floor	05/26/16	Metals, PAH	Grey brown silty clay (native)	62.47	Final Sample
VS188	Floor	05/26/16	Metals, PAH	Grey brown silty clay (native)	63.32	Final Sample
VS189	Floor	05/26/16	Metals, PAH	Brown sand fill	63.47	Final Sample
VS190	Floor	05/26/16	Metals, PAH	Brown sand fill	63.57	Final Sample
VS191	Sidewall / Floor	05/26/16	Metals, PAH	Brown sand fill	64.00	Final Sample
VS192	Sidewall / Floor	05/26/16	Metals, PAH	Brown sand fill	64.50	Final Sample
VS193	Floor	05/26/16	Metals, PAH	Brown sand fill	64.80	Final Sample
VS194	Floor	05/26/16	Metals, PAH	Brown sand fill	64.74	Final Sample
VS195	Floor	05/26/16	Metals, PAH	Brown sand fill	64.76	Final Sample
VS196	Floor	05/26/16	Metals, PAH	Brown sand fill	63.93	Final Sample
VS1196 (Field Dup. of VS196)	Floor	05/26/16	Metals, PAH	Brown sand fill	63.93	Final Sample
VS197	Floor	05/26/16	Metals, PAH	Brown sand fill	62.00	Final Sample
VS198	Floor	05/26/16	Metals, PAH	Brown sand fill	62.00	Final Sample
VS199	Floor	05/31/16	Metals, PAH	Grey brown silty clay (native)	56.68	Final Sample
VS200	Floor	05/31/16	Metals, PAH	Grey brown silty clay (native)	57.57	Final Sample
VS201	Floor	05/31/16	Metals, PAH	Grey brown silty clay (native)	57.49	Final Sample
VS202	Floor	06/09/16	Metals, PAH	Brown sand fill	63.37	Final Sample
VS203	Floor	06/09/16	Metals, PAH	Brown sand fill	62.91	Final Sample
VS204	Floor	06/10/16	Metals, PAH	Brown sand fill	62.92	Final Sample
VS205	Floor	06/10/16	Metals, PAH	Brown sand fill	63.46	Final Sample
VS0205 (Field Dup. of VS205)	Floor	06/10/16	Metals, PAH	Brown sand fill	63.46	Final Sample
VS206	Floor	06/10/16	Metals, PAH	Brown sand fill	64.17	Final Sample
VS207	Floor	06/10/16	Metals, PAH	Brown sand fill	64.19	Final Sample
VS208	Sidewall / Floor	06/10/16	Metals, PAH	Brown sand fill	64.29	Final Sample
VS209	Sidewall / Floor	06/10/16	Metals, PAH	Brown sand fill	64.46	Final Sample
VS210	Floor	06/10/16	Metals, PAH	Brown sand fill	64.05	Final Sample
VS211	Floor	06/10/16	Metals, PAH	Brown sand fill	63.46	Final Sample
VS212	Floor	06/10/16	Metals, PAH	Brown sand fill	63.91	Final Sample
VS0212 (Field Dup. of VS212)	Sidewall / Floor	06/10/16	Metals, PAH	Brown sand fill	63.91	Final Sample
VS213	Sidewall / Floor	06/10/16	Metals, PAH	Brown sand fill	64.01	Final Sample
VS214	Floor	06/10/16	Metals, PAH	Brown sand fill	63.31	Final Sample
VS215	Floor	06/10/16	Metals, PAH	Brown sand fill	65.21	Final Sample
VS216	Sidewall / Floor	06/10/16	Metals, PAH	Brown sand fill	65.36	Final Sample
VS217	Sidewall / Floor	06/10/16	Metals, PAH	Brown sand fill	64.18	Final Sample
VS218	Floor	06/15/16	Metals, PAH	Grey silty clay (native)	64.50	Final Sample
VS219	Floor	06/15/16	Metals, PAH	Grey silty clay (native)	64.86	Final Sample

Sample Name	Sample Type	Sample Collection Date	Analysis	Sample Description	Sample Elevation (masl)	Excavated?
VS220	Floor	06/17/16	Metals, PAH	Brown sand fill	64.05	Final Sample
VS1220 (Field Dup. of VS220)	Sidewall / Floor	06/17/16	Metals, PAH	Brown sand fill	64.05	Final Sample
VS221	Floor	06/17/16	Metals, PAH	Brown sand fill	62.87	Final Sample
VS222	Sidewall / Floor	06/17/16	Metals, PAH	Brown sand fill	65.16	Final Sample
VS223	Floor	06/17/16	Metals, PAH	Grey silty clay (native)	65.17	Final Sample
VS1223 (Field Dup. of VS223)	Floor	06/17/16	Metals, PAH	Grey silty clay (native)	65.17	Final Sample
VS224	Sidewall / Floor	06/17/16	Metals, PAH	Brown sand fill	65.25	Final Sample
VS225	Sidewall / Floor	06/17/16	Metals, PAH	Brown sand fill	64.61	Final Sample
VS226	Floor	06/17/16	Metals, PAH	Brown sand fill	64.47	Final Sample
VS227	Floor	06/17/16	Metals, PAH	Brown sand fill	64.63	Final Sample
VS228	Floor	06/17/16	Metals, PAH	Brown sand fill	64.52	Final Sample
VS229	Sidewall / Floor	06/17/16	Metals, PAH	Brown sand fill	62.86	Final Sample
VS230	Sidewall / Floor	06/17/16	Metals, PAH	Brown sand fill	63.41	Final Sample
VS231	Sidewall / Floor	06/17/16	Metals, PAH	Brown sand fill	63.46	Final Sample
VS232	Floor	06/17/16	Metals, PAH	Brown sand fill	64.00	Final Sample
VS1232 (Field Dup. of VS232)	Sidewall / Floor	06/17/16	Metals, PAH	Brown sand fill	64.00	Final Sample
VS233	Sidewall / Floor	06/17/16	Metals, PAH	Brown sand fill	63.98	Final Sample
VS234	Floor	06/17/16	Metals, PAH	Brown sand fill	63.77	Final Sample
VS235	Sidewall / Floor	06/17/16	Metals, PAH	Brown sand fill	63.99	Final Sample
VS236	Floor	06/17/16	Metals, PAH	Brown sand fill	63.89	Final Sample
VS237	Floor	06/17/16	Metals, PAH	Brown sand fill	64.03	Final Sample
VS1237 (Field Dup. of VS237)	Floor	06/17/16	Metals, PAH	Brown sand fill	64.03	Final Sample
VS238	Sidewall / Floor	06/17/16	Metals, PAH	Brown sand fill	64.17	Final Sample
VS239	Sidewall / Floor	06/17/16	Metals, PAH	Brown sand fill	64.02	Final Sample
VS240	Floor	06/17/16	Metals, PAH	Brown sand fill	63.89	Final Sample
VS241	Floor	06/20/16	Metals, PAH	Brown sand fill	63.86	Final Sample
VS1241 (Field Dup. of VS241)	Floor	06/20/16	Metals, PAH	Brown sand fill	63.86	Final Sample
VS242	Sidewall / Floor	06/20/16	Metals, PAH	Brown sand fill	64.45	Final Sample
VS243	Sidewall / Floor	06/20/16	Metals, PAH	Brown sand fill	63.93	Final Sample
VS244	Sidewall / Floor	06/20/16	Metals, PAH	Brown sand fill	63.88	Final Sample
VS245	Floor	06/20/16	Metals, PAH	Brown sand fill	63.96	Final Sample
VS246	Sidewall / Floor	06/20/16	Metals, PAH	Grey silty clay (native)	63.18	Final Sample
VS1246 (Field Dup. of VS246)	Floor	06/20/16	Metals, PAH	Grey silty clay (native)	63.18	Final Sample
VS247	Sidewall / Floor	06/27/16	Metals, PAH	Brown sand fill	64.91	Final Sample

Parameter	Unit		VS001	VS002	VS003	VS004	VS005	VS006	VS007	VS008	VS009	VS010
			23-Nov-2015	23-Nov-2015	24-Nov-2015	24-Nov-2015	24-Nov-2015	25-Nov-2015	25-Nov-2015	26-Nov-2015	07-Dec-2015	07-Dec-2015
			VS001	VS002	VS003	VS004	VS005	VS006	VS007	VS008	VS009	VS010
Sample Status		REG153 (11) T3-R/P/I	Excavated	Excavated	Excavated	Excavated	Excavated	Excavated	Final	Final	Final	Final
Sample Depth	m	SOIL COARSE (1) (2)	NS	NS	NS	NS	NS	NS	6.65 - 6.75	6.97 - 7.07	0 - 0.1	0.52 - 0.62
Metals												
Antimony	ug/g	7.5	0.25	<0.20	2.3	0.38	3.5	1.1	<0.20	<0.20	<0.2	<0.2
Arsenic	ug/g	18	1.2	<1.0	2.8	2.0	6.0	3.9	1.4	2.5	3	3
Barium (5)	ug/g	390	59	55	290	320	190	330	88	150	86	42
Beryllium	ug/g	4	0.27	<0.20	0.66	0.75	0.36	0.74	0.39	0.56	0.5	0.4
Boron	ug/g	120	<5.0	<5.0	5.6	<5.0	<5.0	6.2	<5.0	<5.0	<5	<5
Cadmium	ug/g	1.2	<0.10	<0.10	0.26	0.14	0.40	0.20	<0.10	<0.10	<0.1	0.1
Chromium	ug/g	160	21	19	87	100	37	86	24	40	60	30
Cobalt (5)	ug/g	22	5.4	4.5	18	20	8.2	18	9.7	10	9.3	7.6
Copper	ug/g	140	13	9.0	54	58	28	66	8.2	17	13	8.2
Hexavalent Chromiur	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lead	ug/g	120	26	9.9	120	68	**240**	120	5.5	4.9	15	19
Mercury	ug/g	0.27	0.060	<0.050	0.17	0.087	**0.40**	0.14	<0.050	<0.050	<0.05	0.08
Molybdenum	ug/g	6.9	0.53	<0.50	1.2	<0.50	0.66	1.3	<0.50	0.53	0.5	<0.5
Nickel	ug/g	100	13	10	49	57	21	49	12	21	26	13
Selenium	ug/g	2.4	<0.50	<0.50	<0.50	0.53	0.94	0.58	<0.50	<0.50	<0.5	<0.5
Silver	ug/g	20	<0.20	<0.20	<0.20	<0.20	0.23	0.28	<0.20	<0.20	<0.2	<0.2
Thallium	ug/g	1	0.11	0.075	0.34	0.42	0.24	0.36	0.13	0.19	0.17	0.14
Uranium	ug/g	23	0.43	0.33	1.2	0.70	0.51	0.80	0.92	1.3	1.4	0.93
Vanadium (5)	ug/g	86	23	19	86	100	41	82	36	53	50	30
Zinc	ug/g	340	35	23	160	150	240	140	36	61	80	61
Semi-VOCs												
1- & 2-Methylnaphtha	ug/g	--	<0.071	<0.071	0.063	0.011	0.49	0.082	<0.0071	<0.0071	<0.0071	<0.0071
1-Methylnaphthalene	ug/g	0.99 (4)	<0.050	<0.050	0.027	0.0052	0.23	0.038	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	0.99 (4)	0.058	<0.050	0.035	0.0053	0.26	0.043	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	7.9	0.12	0.055	0.16	0.027	1.2	0.085	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	0.15	**0.59**	**0.40**	0.030	0.012	**0.16**	0.091	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	0.67	0.30	0.29	0.29	0.059	**2.0**	0.32	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	--	1.1	0.95	0.80	0.19	5.2	0.76	0.0066	<0.0050	0.017	0.017
Benzo[a]anthracene	ug/g	0.5	**0.57**	**0.60**	**0.60**	0.14	**3.8**	**0.76**	<0.0050	<0.0050	0.011	0.010
Benzo[a]pyrene	ug/g	0.3	**0.92**	**0.81**	**0.54**	0.12	**3.4**	**0.59**	<0.0050	<0.0050	0.012	0.012
Benzo[b]fluoranthene	ug/g	0.78	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	6.6	0.82	0.65	0.34	0.074	2.0	0.33	<0.0050	<0.0050	0.0077	0.0082
Benzo[j]fluoranthene	mg/kg		--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	0.78	0.33	0.29	0.24	0.060	**1.7**	0.24	<0.0050	<0.0050	0.0052	0.0050
Chrysene	ug/g	7	0.45	0.48	0.55	0.13	3.5	0.55	<0.0050	<0.0050	0.011	0.011
Dibenzo[a,h]anthrace	ug/g	0.1	**0.14**	**0.12**	0.084	0.019	**0.52**	0.080	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	0.69	**0.76**	**0.93**	**1.6**	0.33	**11**	**2.0**	0.012	<0.0050	0.024	0.021
Fluorene	ug/g	62	0.19	0.13	0.16	0.023	1.3	0.12	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	0.38	**0.92**	**0.74**	**0.38**	0.085	**2.3**	**0.40**	<0.0050	<0.0050	0.0088	0.0086
Naphthalene	ug/g	0.6	0.14	0.10	0.040	0.0093	0.56	0.073	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg		--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	6.2	0.26	0.51	1.5	0.23	**9.3**	1.3	0.0071	<0.0050	0.013	0.0075
Pyrene	ug/g	78	0.69	0.79	1.2	0.26	7.3	1.7	0.0087	<0.0050	0.020	0.018

Parameter	Unit	VS011	VS012	VS013	VS014	VS014B	VS015	VS016	VS017	VS018	VS019	VS020	VS021
		07-Dec-2015	07-Dec-2015	07-Dec-2015	07-Dec-2015	09-Dec-2015	07-Dec-2015	07-Dec-2015	09-Dec-2015	09-Dec-2015	14-Dec-2015	14-Dec-2015	16-Dec-2015
		VS011	VS012	VS013	VS014	VS014 B	VS015	VS016	VS017	VS018	VS019	VS020	VS021
Sample Status		Final	Final	Final	Excavated	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	1.25 - 1.35	0.37 - 0.47	0 - 0.1	NS	0 - 0.1	0 - 0.1	0 - 0.1	3.37 - 3.47	4.9 - 5	0.16 - 0.26	5.33 - 5.43	1.48 - 1.58
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2
Arsenic	ug/g	1	1	<1	3	<1.0	2	1	1.6	<1.0	4	<1	2
Barium (5)	ug/g	53	23	38	150	33	34	23	140	120	39	110	220
Beryllium	ug/g	0.3	0.3	0.3	0.5	0.21	0.3	0.2	0.50	0.47	0.3	0.5	0.7
Boron	ug/g	<5	<5	<5	<5	<5.0	<5	<5	<5.0	<5.0	<5	<5	7
Cadmium	ug/g	0.1	<0.1	<0.1	0.2	<0.10	<0.1	<0.1	<0.10	0.17	0.1	<0.1	<0.1
Chromium	ug/g	30	20	24	43	18	20	15	36	42	22	40	45
Cobalt (5)	ug/g	5.4	4.4	5.8	42	5.2	3.9	4.4	8.9	13	6.9	11	14
Copper	ug/g	7.0	6.1	8.9	7.0	9.1	6.0	4.7	24	12	7.2	11	24
Hexavalent Chromiur	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lead	ug/g	21	4	3	20	2.2	11	7	4.9	4.5	29	5	6
Mercury	ug/g	<0.05	<0.05	<0.05	0.11	<0.050	0.08	<0.05	<0.050	<0.050	0.08	<0.05	<0.05
Molybdenum	ug/g	<0.5	<0.5	<0.5	1.4	<0.50	<0.5	<0.5	<0.50	<0.50	0.5	<0.5	1.0
Nickel	ug/g	13	10	13	17	9.4	10	8.4	22	20	9.9	19	27
Selenium	ug/g	<0.5	<0.5	<0.5	<0.5	<0.50	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5	<0.5
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2
Thallium	ug/g	0.10	0.06	0.07	0.36	0.051	0.08	<0.05	0.18	0.21	0.09	0.18	0.25
Uranium	ug/g	0.73	0.57	0.76	1.2	0.85	0.78	0.55	0.69	2.9	0.75	1.8	1.2
Vanadium (5)	ug/g	32	27	28	47	21	19	20	51	51	36	48	66
Zinc	ug/g	37	16	25	83	21	31	16	55	60	47	51	73
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.0071	0.017	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071
1-Methylnaphthalene	ug/g	<0.0050	0.0070	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	0.024	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.018	0.0066	<0.0050
Anthracene	ug/g	0.0080	0.054	<0.0050	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.018	0.0052	<0.0050
Benzo [b,j] fluoranthe	ug/g	0.037	0.10	<0.0050	0.033	<0.0050	0.028	0.015	<0.0050	<0.0050	0.19	0.023	<0.0050
Benzo[a]anthracene	ug/g	0.024	0.098	<0.0050	0.019	<0.0050	0.015	0.0086	<0.0050	<0.0050	0.11	0.012	<0.0050
Benzo[a]pyrene	ug/g	0.025	0.079	<0.0050	0.021	<0.0050	0.019	0.010	<0.0050	<0.0050	0.13	0.017	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	0.017	0.042	<0.0050	0.016	<0.0050	0.013	0.0066	<0.0050	<0.0050	0.078	0.012	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	0.011	0.041	<0.0050	0.0097	<0.0050	0.0088	<0.0050	<0.0050	<0.0050	0.064	0.0077	<0.0050
Chrysene	ug/g	0.024	0.084	<0.0050	0.019	<0.0050	0.017	0.0091	<0.0050	<0.0050	0.095	0.010	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	0.012	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.019	<0.0050	<0.0050
Fluoranthene	ug/g	0.059	0.23	<0.0050	0.040	<0.0050	0.031	0.018	0.0050	0.0051	0.22	0.023	<0.0050
Fluorene	ug/g	<0.0050	0.026	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0055	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	0.019	0.049	<0.0050	0.017	<0.0050	0.014	0.0078	<0.0050	<0.0050	0.091	0.013	<0.0050
Naphthalene	ug/g	<0.0050	0.031	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0098	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	0.031	0.21	<0.0050	0.021	<0.0050	0.012	0.0069	<0.0050	<0.0050	0.065	0.011	<0.0050
Pyrene	ug/g	0.045	0.17	<0.0050	0.031	<0.0050	0.028	0.015	<0.0050	<0.0050	0.20	0.020	<0.0050

Parameter	Unit	VS022	VS022B	VS022C	VS023	VS024	VS024B	VS025	VS026	VS027	VS028	VS029	VS030
		16-Dec-2015	18-Dec-2015	20-Jun-2016	16-Dec-2015	16-Dec-2015	18-Dec-2015	18-Dec-2015	18-Dec-2015	18-Dec-2015	18-Dec-2015	18-Dec-2015	22-Dec-2015 (3)
		VS022	VS022B	VS022C	VS023	VS024	VS024B	VS025	VS026	VS027	VS028	VS029	VS030
Sample Status		Excavated	Excavated	Final	Final	Excavated	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	NS	NS	1.98 - 2.08	0.97 - 1.07	NS	1.18 - 1.28	0.68 - 0.78	0.67 - 0.77	0.48 - 0.58	0.48 - 0.58	0.7 - 0.8	5.6 - 5.7
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	1	1	<1	2	3	1	<1	<1	2	1	1	2
Barium (5)	ug/g	490	430	120	140	380	230	18	12	32	29	13	280
Beryllium	ug/g	1.1	0.9	0.4	0.5	1.4	0.5	<0.2	<0.2	0.3	0.2	<0.2	1.1
Boron	ug/g	<5	<5	<5	<5	5	<5	<5	<5	<5	<5	<5	8
Cadmium	ug/g	0.1	0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Chromium	ug/g	120	110	25	30	120	56	12	11	22	17	12	95
Cobalt (5)	ug/g	37	25	7.6	8.5	24	14	2.4	2.9	4.2	4.4	2.8	14
Copper	ug/g	55	52	15	16	46	27	4.7	3.8	7.2	5.6	4.0	26
Hexavalent Chromiur	ug/g	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lead	ug/g	9	7	4	4	35	5	2	1	11	5	3	8
Mercury	ug/g	<0.05	<0.05	<0.05	<0.05	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	0.6	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	ug/g	65	62	15	16	60	31	7.8	6.8	10	9.5	6.7	37
Selenium	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	0.50	0.48	0.14	0.16	0.52	0.32	0.08	<0.05	0.08	<0.05	<0.05	0.35
Uranium	ug/g	2.2	1.7	0.74	0.72	2.7	0.95	0.46	0.44	0.67	0.58	0.43	5.7
Vanadium (5)	ug/g	120	120	40	50	110	70	11	14	24	22	14	84
Zinc	ug/g	140	130	38	45	210	77	23	11	41	26	17	120
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.0071	<0.0071	<0.014	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.024	<0.0050	0.012	<0.0050	0.016	0.012	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.010	<0.0050	0.0062	<0.0050	0.0079	0.0059	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.013	<0.0050	0.0071	<0.0050	0.0097	0.0061	<0.0050	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0090	<0.0050	0.0057	<0.0050	0.0075	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	0.0078	<0.0050	0.0079	<0.0050	<0.0050	<0.0050	0.0055	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.012	<0.0050	0.0066	<0.0050	0.0095	0.0068	<0.0050	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.023	<0.0050	0.014	<0.0050	0.018	0.014	<0.0050	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0098	<0.0050	0.0053	<0.0050	0.0070	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0098	<0.0050	0.0059	<0.0050	0.0086	0.0082	<0.0050	<0.0050
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.021	<0.0050	0.013	<0.0050	0.016	0.012	<0.0050	<0.0050

Parameter	Unit	VS031	VS032	VS033	VS034	VS035	VS036	VS037	VS037	VS037B	VS038	VS039	VS040
		11-Jan-2016	11-Jan-2016	11-Jan-2016	11-Jan-2016	11-Jan-2016	11-Jan-2016	20-Jan-2016	20-Jan-2016	15-Jun-2016	20-Jan-2016	20-Jan-2016	20-Jan-2016
		VS031	VS032	VS033	VS034	VS035	VS036	VS037	VS1037 (Field Duplicate)	VS037B	VS038	VS039	VS040
Sample Status		Final	Final	Final	Final	Final	Final	Excavated	Excavated	Final	Final	Final	Final
Sample Depth	m	0.51 - 0.61	0.45 - 0.55	0.35 - 0.45	0.2 - 0.3	0.56 - 0.66	0.51 - 0.61	NS	NS	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	2	3	3	2	2	1	3	3	<1	2	2	2
Barium (5)	ug/g	36	25	41	14	15	14	51	46	40	33	27	32
Beryllium	ug/g	0.3	0.2	0.4	0.2	0.2	<0.2	0.3	0.3	0.3	0.3	0.3	0.3
Boron	ug/g	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	ug/g	18	18	21	14	11	9	22	23	19	22	17	21
Cobalt (5)	ug/g	4.4	4.8	5.8	2.9	2.2	1.8	5.2	5.8	3.8	6.1	5.6	8.6
Copper	ug/g	7.3	7.6	7.0	3.5	2.7	2.6	8.4	8.1	7.5	5.1	5.4	6.2
Hexavalent Chromiur	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lead	ug/g	9	13	15	4	3	5	20	19	3	7	11	13
Mercury	ug/g	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	**0.51**	**0.50**	<0.05	<0.05	<0.05	0.07
Molybdenum	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	ug/g	10	9.0	11	6.9	6.3	4.3	11	11	11	10	8.6	8.4
Selenium	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	0.05	0.06	0.07	<0.05	<0.05	<0.05	0.09	0.09	0.06	0.08	0.08	0.08
Uranium	ug/g	0.63	0.57	0.73	0.53	0.49	0.40	0.75	0.74	0.97	0.88	0.78	0.72
Vanadium (5)	ug/g	23	26	29	23	16	9	27	29	21	25	20	31
Zinc	ug/g	23	23	33	15	20	18	39	40	24	36	32	32
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	0.0055	<0.0050	<0.0050	<0.0050	<0.0050	0.0060	0.0071	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	0.0055	<0.0050	<0.0050	<0.0050	<0.0050	0.0060	0.0071	<0.0050	<0.0050	<0.0050	0.0052
Benzo [b,j] fluoranthe	ug/g	0.022	0.044	0.018	<0.0050	<0.0050	<0.0050	0.054	0.063	<0.0050	0.018	<0.010	0.031
Benzo[a]anthracene	ug/g	0.011	0.027	0.012	<0.0050	<0.0050	<0.0050	0.030	0.035	<0.0050	0.013	0.0054	0.010
Benzo[a]pyrene	ug/g	0.017	0.033	0.018	<0.0050	<0.0050	<0.0050	0.036	0.049	<0.0050	0.013	0.0054	0.016
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	0.011	0.016	0.012	<0.0050	<0.0050	<0.0050	0.018	0.028	<0.0050	0.0065	0.0054	0.0052
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	0.0056	0.011	0.0060	<0.0050	<0.0050	<0.0050	0.018	0.021	<0.0050	0.0065	<0.0050	0.010
Chrysene	ug/g	0.011	0.022	0.012	<0.0050	<0.0050	<0.0050	0.024	0.035	<0.0050	0.013	0.0054	0.016
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0060	0.0071	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	0.028	0.055	0.024	<0.0050	<0.0050	0.0054	0.060	0.078	<0.0050	0.026	0.011	0.031
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	0.011	0.016	0.0060	<0.0050	<0.0050	<0.0050	0.018	0.028	<0.0050	0.0065	0.0054	0.0052
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	0.017	0.016	0.012	<0.0050	<0.0050	<0.0050	0.024	0.035	<0.0050	0.0065	0.0054	0.010
Pyrene	ug/g	0.022	0.044	0.018	<0.0050	<0.0050	0.0054	0.048	0.064	<0.0050	0.019	0.011	0.021

Parameter	Unit	VS040	VS041	VS042	VS043	VS044	VS046	VS047	VS047	VS048	VS048B	VS049	VS050
		20-Jan-2016	20-Jan-2016	20-Jan-2016	20-Jan-2016	20-Jan-2016	26-Feb-2016	04-Mar-2016	04-Mar-2016	04-Mar-2016	08-Mar-2016	04-Mar-2016	04-Mar-2016
		VS1040 (Field Duplicate)	VS041	VS042	VS043	VS044	VS046	VS047	VS1047 (Field Duplicate)	VS048	VS048B	VS049	VS050
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Excavated	Final	Final	Final
Sample Depth	m	0 - 0.1	0.47 - 0.57	0.02 - 0.12	0.18 - 0.28	0.55 - 0.65	2.21 - 2.31	3.85 - 3.95	3.85 - 3.95	NS	4.77 - 4.87	6.21 - 6.31	6.35 - 6.45
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	2	2	2	2	1	<1	<1	1	3	2	2	2
Barium (5)	ug/g	31	29	38	37	29	40	85	120	270	160	170	170
Beryllium	ug/g	0.2	<0.2	0.3	0.3	0.3	0.4	0.4	0.6	2.0	0.7	0.7	0.8
Boron	ug/g	<5	<5	<5	<5	<5	<5	<5	<5	8	<5	<5	<5
Cadmium	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1
Chromium	ug/g	21	16	19	19	23	22	31	42	130	42	42	41
Cobalt (5)	ug/g	7.5	4.3	4.4	4.7	5.5	5.3	7.2	11	16	11	12	12
Copper	ug/g	6.1	6.3	7.2	7.7	6.8	9.8	13	19	45	24	18	23
Hexavalent Chromiur	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lead	ug/g	13	19	13	17	8	3	4	4	12	5	6	6
Mercury	ug/g	0.06	0.08	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05
Molybdenum	ug/g	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5
Nickel	ug/g	9.0	8.2	9.6	8.9	12	9.6	14	63	55	24	24	26
Selenium	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**2.6**	0.6	0.8	0.9
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	<0.2
Thallium	ug/g	0.07	0.07	0.08	0.08	0.08	<0.05	0.13	0.18	0.38	0.22	0.23	0.24
Uranium	ug/g	0.79	0.56	0.68	0.74	0.72	1.4	1.5	1.8	22	1.3	1.1	0.92
Vanadium (5)	ug/g	29	20	25	25	26	28	51	60	110	58	58	61
Zinc	ug/g	31	28	24	28	30	19	35	62	140	63	59	61
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	0.0057	<0.0050	0.0058	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	0.0057	<0.0050	0.0058	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	0.019	0.046	0.023	0.035	0.012	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	0.012	0.023	0.011	0.017	0.0062	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	0.012	0.029	0.017	0.023	0.0062	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	0.0062	0.017	0.011	0.012	0.0062	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	0.0062	0.011	0.0057	0.012	0.0062	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	0.012	0.023	0.011	0.023	0.0062	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	0.0057	<0.0050	0.0058	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	0.019	0.051	0.029	0.046	0.012	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	0.0062	0.017	0.011	0.012	0.0062	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	0.0062	0.017	0.011	0.017	0.0062	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	0.019	0.040	0.023	0.035	0.012	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	Unit	VS051	VS052	VS053	VS054	VS054	VS055	VS056	VS057	VS058	VS059	VS060	VS061
		04-Mar-2016	04-Mar-2016	04-Mar-2016	04-Mar-2016	04-Mar-2016	04-Mar-2016	04-Mar-2016	04-Mar-2016	08-Mar-2016	08-Mar-2016	14-Apr-2016	14-Apr-2016
		VS051	VS052	VS053	VS1054 (Field Duplicate)	VS054	VS055	VS056	VS057	VS058	VS059	VS060	VS061
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	4.71 - 4.81	6.23 - 6.33	6.34 - 6.44	6.34 - 6.44	3.91 - 4.01	5.22 - 5.32	6.07 - 6.17	6.24 - 6.34	1.16 - 1.26	1.92 - 2.02	1.35 - 1.45	0.87 - 0.97
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.28	0.25
Arsenic	ug/g	<1	<1	3	1	<1	2	2	2	2	1	3.3	1.8
Barium (5)	ug/g	62	190	190	68	62	99	170	160	160	51	110	87
Beryllium	ug/g	0.5	0.6	0.8	0.4	0.4	0.6	0.7	0.6	0.8	0.4	0.40	0.46
Boron	ug/g	<5	<5	5	<5	<5	<5	<5	<5	<5	<5	<5.0	<5.0
Cadmium	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.22	0.12
Chromium	ug/g	31	44	47	27	29	53	44	42	62	33	35	39
Cobalt (5)	ug/g	8.3	14	13	8.5	7.1	12	13	12	13	6.9	7.7	8.4
Copper	ug/g	8.9	18	24	12	11	22	17	18	22	11	18	15
Hexavalent Chromiur	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lead	ug/g	4	6	6	4	4	6	6	6	10	5	46	9.7
Mercury	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.10	<0.050
Molybdenum	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.50	<0.50
Nickel	ug/g	13	25	29	13	13	29	26	23	31	16	19	19
Selenium	ug/g	0.6	0.6	0.5	0.7	0.6	0.6	0.8	0.6	<0.5	<0.5	<0.50	<0.50
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
Thallium	ug/g	0.13	0.24	0.25	0.14	0.13	0.17	0.24	0.21	0.25	0.12	0.16	0.14
Uranium	ug/g	2.0	0.94	0.85	1.6	1.5	2.3	1.2	1.0	1.6	0.75	0.90	0.91
Vanadium (5)	ug/g	64	65	67	49	44	56	60	60	67	40	40	41
Zinc	ug/g	34	68	69	32	33	58	59	63	71	37	130	54
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.011	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	0.0086	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.023	0.038	0.011
Benzo[a]anthracene	ug/g	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0070	0.014	0.029	0.0079
Benzo[a]pyrene	ug/g	0.0057	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0084	0.015	0.027	0.0095
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	0.0057	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0070	0.0099	0.016	0.011
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0099	0.016	0.0063
Chrysene	ug/g	0.0064	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0091	0.017	0.027	0.0079
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0079
Fluoranthene	ug/g	0.0064	<0.0050	<0.0050	<0.0050	<0.0050	0.0064	<0.0050	<0.0050	0.0098	0.025	0.070	0.0079
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0094	0.016	0.012
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0056	0.014	0.027	<0.0050
Pyrene	ug/g	0.0072	<0.0050	<0.0050	<0.0050	<0.0050	0.0064	<0.0050	<0.0050	0.0098	0.022	0.059	0.0079

Parameter	Unit	VS062	VS063	VS064	VS065	VS066	VS067	VS068	VS069	VS070	VS071	VS072	VS072B
		14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	15-Jun-2016
		VS062	VS063	VS064	VS065	VS066	VS067	VS068	VS069	VS070	VS071	VS072	VS072B
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Excavated	Final
Sample Depth	m	1.43 - 1.53	2.39 - 2.49	0.53 - 0.63	0.57 - 0.67	0.54 - 0.64	1.75 - 1.85	1.67 - 1.77	0.75 - 0.85	0.54 - 0.64	0.52 - 0.62	2 - 2.1	1.88 - 1.98
Metals													
Antimony	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2
Arsenic	ug/g	1.3	<1.0	1.9	<1.0	1.8	<1.0	1.1	<1.0	<1.0	<1.0	1.5	1
Barium (5)	ug/g	120	140	68	19	76	110	150	15	18	18	420	410
Beryllium	ug/g	0.45	0.50	0.43	<0.20	0.48	0.38	0.51	<0.20	0.22	<0.20	1.1	1.0
Boron	ug/g	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5
Cadmium	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1
Chromium	ug/g	30	46	41	12	42	34	47	6.0	13	11	120	100
Cobalt (5)	ug/g	7.7	11	7.5	2.8	8.8	9.3	12	1.9	3.9	3.7	28	26
Copper	ug/g	20	17	16	4.3	17	14	23	3.1	6.1	5.5	62	49
Hexavalent Chromiur	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.7
Lead	ug/g	3.9	4.3	9.2	2.7	7.5	3.7	4.2	1.3	2.2	2.2	7.7	7
Mercury	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05
Molybdenum	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.51	<0.5
Nickel	ug/g	18	24	18	6.7	20	18	25	3.8	8.7	7.1	65	59
Selenium	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8
Silver	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2
Thallium	ug/g	0.14	0.23	0.13	<0.050	0.12	0.17	0.21	<0.050	0.052	<0.050	0.50	0.50
Uranium	ug/g	0.85	1.3	1.5	0.48	1.6	1.0	1.2	0.43	0.49	0.46	2.3	1.9
Vanadium (5)	ug/g	45	49	40	13	41	41	56	9.3	17	16	120	110
Zinc	ug/g	46	58	38	13	39	43	54	7.3	15	13	130	130
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	0.0060	0.0068	<0.0050	0.017	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	0.0060	0.0068	<0.0050	0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	0.0060	0.0075	<0.0050	0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	0.0070	0.0067	<0.0050	<0.0050	0.0090	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0084	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	<0.0050	<0.0050	0.0067	0.0075	<0.0050	0.014	0.0056	<0.0050	<0.0050	0.0061	<0.0050	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	0.0087	0.0093	0.0056	0.032	<0.0050	<0.0050	<0.0050	0.0073	<0.0050	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	0.0064	0.0073	<0.0050	<0.0050	0.0095	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	<0.0050	<0.0050	0.0073	0.0087	0.0056	0.028	<0.0050	<0.0050	<0.0050	0.0067	<0.0050	<0.0050

Parameter	Unit	VS073	VS073	VS074	VS075	VS076	VS077	VS078	VS079	VS080	VS080B	VS081	VS081B
		14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	15-Jun-2016	14-Apr-2016	15-Jun-2016
		VS073	VS1073 (Field Duplicate)	VS074	VS075	VS076	VS077	VS078	VS079	VS080	VS080B	VS081	VS081B
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Excavated	Final	Excavated	Final
Sample Depth	m	0.72 - 0.82	0.72 - 0.82	0.62 - 0.72	0.6 - 0.7	0.68 - 0.78	0.96 - 1.06	1.24 - 1.34	0.84 - 0.94	NS	2.05 - 2.15	NS	1.73 - 1.83
Metals													
Antimony	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2	<0.20	<0.2
Arsenic	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	1.0	1.0	1.6	<1	1.7	<1
Barium (5)	ug/g	26	24	26	13	21	92	35	59	370	320	270	410
Beryllium	ug/g	<0.20	<0.20	0.21	<0.20	<0.20	0.43	0.23	0.39	1.1	0.7	0.77	0.9
Boron	ug/g	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5	<5.0	<5
Cadmium	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.10	<0.1
Chromium	ug/g	9.0	8.8	12	8.5	10	42	17	26	110	78	91	110
Cobalt (5)	ug/g	2.4	2.4	3.7	2.4	3.4	10	2.8	6.7	29	23	20	27
Copper	ug/g	5.1	4.9	5.1	3.5	5.1	15	9.8	13	56	42	46	59
Hexavalent Chromiur	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.6	<0.2	0.8
Lead	ug/g	1.6	2.0	2.1	1.9	1.6	5.0	2.1	3.8	7.8	6	7.4	7
Mercury	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05	<0.050	<0.05
Molybdenum	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.72	<0.5	<0.50	<0.5
Nickel	ug/g	5.8	5.3	7.1	4.9	7.5	19	9.4	15	61	51	47	67
Selenium	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.7	<0.50	1.3
Silver	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2	<0.20	<0.2
Thallium	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.13	<0.050	0.090	0.44	0.39	0.33	0.47
Uranium	ug/g	0.57	0.58	0.54	0.33	0.32	1.1	0.70	1.4	2.4	1.0	1.7	1.5
Vanadium (5)	ug/g	11	12	14	14	15	67	18	25	100	97	89	120
Zinc	ug/g	10	11	14	11	14	37	18	29	120	110	93	140
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	--	--	--	--	<0.014	--	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--	--	<0.0050	--	<0.0050
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	0.0051	<0.010	<0.0050
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	<0.010	<0.010	<0.010	<0.010	--	<0.010	--
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.015	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	<0.010	<0.010	<0.010	<0.010	--	<0.010	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.0050
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.019	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.018	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.0050
Perylene	mg/kg	--	--	--	--	--	<0.010	<0.010	<0.010	<0.010	--	<0.010	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.0050
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.010	<0.0050

Parameter	Unit	VS082	VS083	VS084	VS087	VS088	VS091	VS092	VS093	VS094	VS095	VS095	VS096
		16-Apr-2016	16-Apr-2016	16-Apr-2016	18-Apr-2016	18-Apr-2016	18-Apr-2016	18-Apr-2016	18-Apr-2016	19-Apr-2016	19-Apr-2016	19-Apr-2016	20-Apr-2016
		VS082	VS083	VS084	VS087	VS088	VS091	VS092	VS093	VS094	VS095	VS1095 (Field Duplicate)	VS096
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	3.6 - 3.7	4.56 - 4.66	3.29 - 3.39	4.69 - 4.79	4.68 - 4.78	2.56 - 2.66	5.48 - 5.58	4.73 - 4.83	3.51 - 3.61	5.19 - 5.29	5.19 - 5.29	5.36 - 5.46
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20
Arsenic	ug/g	2	2	<1	2	<1	1	1	2	<1	2	2	2.1
Barium (5)	ug/g	100	220	110	120	36	230	170	180	77	180	180	160
Beryllium	ug/g	0.5	0.7	0.6	0.4	0.2	0.6	0.5	0.7	0.4	0.6	0.7	0.59
Boron	ug/g	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5.0
Cadmium	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.10
Chromium	ug/g	32	42	42	33	21	57	42	43	33	39	41	35
Cobalt (5)	ug/g	8.8	12	12	8.7	5.2	16	12	12	8.7	13	13	11
Copper	ug/g	14	19	15	15	6.4	29	19	24	7.4	19	20	18
Hexavalent Chromiur	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lead	ug/g	4	6	6	4	3	5	6	6	4	5	6	5.1
Mercury	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050
Molybdenum	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Nickel	ug/g	18	25	21	19	13	34	26	27	16	30	24	21
Selenium	ug/g	0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20
Thallium	ug/g	0.13	0.22	0.17	0.16	0.09	0.29	0.22	0.22	0.13	0.21	0.21	0.18
Uranium	ug/g	0.93	0.75	2.2	0.62	0.63	1.0	1.0	0.99	1.0	0.61	0.65	0.63
Vanadium (5)	ug/g	50	63	67	51	26	70	58	61	45	55	60	51
Zinc	ug/g	42	64	50	45	32	81	67	66	43	60	63	56
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	0.0080	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	0.0073	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	0.0073	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0083
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	<0.0050	<0.0050	0.0073	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	0.014	0.0064	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	<0.0050	<0.0050	0.012	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	Unit	VS097	VS098	VS098	VS099	VS100	VS101	VS101	VS102	VS103	VS104	VS105	VS106
		20-Apr-2016	20-Apr-2016	20-Apr-2016	20-Apr-2016	21-Apr-2016	21-Apr-2016	21-Apr-2016	21-Apr-2016	21-Apr-2016	21-Apr-2016	21-Apr-2016	21-Apr-2016
		VS097	VS098	VS1098 (Field Duplicate)	VS099	VS100	VS101	VS1101 (Field Duplicate)	VS102	VS103	VS104	VS105	VS106
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	5.2 - 5.3	5.7 - 5.8	5.7 - 5.8	5.92 - 6.02	5.14 - 5.24	6.27 - 6.37	6.27 - 6.37	6.56 - 6.66	5.94 - 6.04	6.37 - 6.47	6.25 - 6.35	5.64 - 5.74
Metals													
Antimony	ug/g	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	1.5	<1.0	<1.0	1.5	2	1	2	1	2	1	1	<1
Barium (5)	ug/g	190	180	170	170	200	150	170	190	170	200	190	160
Beryllium	ug/g	0.66	0.65	0.66	0.61	0.7	0.7	0.6	0.7	0.7	0.7	0.6	0.6
Boron	ug/g	<5.0	5.5	5.2	<5.0	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	ug/g	0.14	<0.10	<0.10	<0.10	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	ug/g	43	39	40	37	47	38	41	46	42	47	45	38
Cobalt (5)	ug/g	9.6	11	11	9.9	14	14	14	12	12	14	12	12
Copper	ug/g	21	19	19	19	21	13	16	21	20	23	22	16
Hexavalent Chromiur	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lead	ug/g	5.5	6.0	5.9	5.1	6	6	7	6	6	6	5	5
Mercury	ug/g	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	<0.50	<0.50	<0.50	<0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	ug/g	23	22	21	20	29	21	23	27	25	30	26	22
Selenium	ug/g	<0.50	<0.50	<0.50	<0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
Silver	ug/g	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	0.24	0.22	0.21	0.22	0.25	0.19	0.21	0.25	0.22	0.24	0.22	0.21
Uranium	ug/g	0.59	0.80	0.94	0.79	0.64	0.66	0.75	0.92	0.55	0.77	0.63	0.95
Vanadium (5)	ug/g	50	60	59	52	61	52	53	55	55	59	55	51
Zinc	ug/g	79	67	66	58	78	64	68	75	72	77	71	59
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.018
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0097
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0082
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.011	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0077	0.0085	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0065	0.0067	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	Unit	VS107	VS108	VS108B	VS109	VS109	VS110	VS111	VS112	VS113	VS114	VS115	VS115
		22-Apr-2016	22-Apr-2016	15-Jun-2016	25-Apr-2016	25-Apr-2016	25-Apr-2016	25-Apr-2016	25-Apr-2016	25-Apr-2016	25-Apr-2016	25-Apr-2016	25-Apr-2016
		VS107	VS108	VS108B	VS109	VS109 (Field Duplicate)	VS110	VS111	VS112	VS113	VS114	VS115	VS1115 (Field Duplicate)
Sample Status		Final	Excavated	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	4.34 - 4.44	NS	2.42 - 2.52	5.32 - 5.42	5.32 - 5.42	5.73 - 5.83	5.78 - 5.88	6.06 - 6.16	5.98 - 6.08	6.36 - 6.46	6.37 - 6.47	6.37 - 6.47
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	ug/g	1	<1	<1	1.2	1.2	1.3	2.2	1.6	1.3	1.6	2.4	2.5
Barium (5)	ug/g	150	440	370	140	140	170	170	200	130	170	200	210
Beryllium	ug/g	0.5	1.3	1.0	0.49	0.50	0.61	0.54	0.69	0.50	0.59	0.68	0.72
Boron	ug/g	<5	<5	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	ug/g	<0.1	0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	ug/g	35	120	110	34	35	39	37	44	33	40	46	47
Cobalt (5)	ug/g	9.4	33	23	7.9	8.3	12	11	13	9.2	11	14	13
Copper	ug/g	20	54	50	22	22	24	24	27	15	22	25	27
Hexavalent Chromiur	ug/g	<0.2	<0.2	0.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lead	ug/g	5	9	7	4.3	4.5	5.7	5.0	6.1	4.4	5.2	6.3	6.3
Mercury	ug/g	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	ug/g	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/g	21	67	59	20	20	24	22	28	18	23	29	29
Selenium	ug/g	0.7	<0.5	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	ug/g	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	ug/g	0.18	0.54	0.52	0.16	0.19	0.23	0.21	0.25	0.16	0.24	0.25	0.28
Uranium	ug/g	0.62	2.3	1.6	0.87	0.86	0.79	0.76	0.85	0.88	0.68	0.76	0.72
Vanadium (5)	ug/g	52	120	110	49	52	55	52	62	47	52	60	61
Zinc	ug/g	55	130	130	52	54	67	64	77	51	67	74	78
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.013	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0066	<0.0050	<0.0050	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	Unit	VS116	VS116	VS117	VS118	VS119	VS120	VS120	VS121	VS122	VS123	VS124	VS125
		26-Apr-2016	26-Apr-2016	26-Apr-2016	26-Apr-2016	26-Apr-2016	26-Apr-2016	26-Apr-2016	26-Apr-2016	27-Apr-2016	27-Apr-2016	27-Apr-2016	28-Apr-2016
		VS116	VS1116 (Field Duplicate)	VS117	VS118	VS119	VS120	VS1120 (Field Duplicate)	VS121	VS122	VS123	VS124	VS125
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	6.55 - 6.65	6.55 - 6.65	6.5 - 6.6	6.66 - 6.76	6.82 - 6.92	6.77 - 6.87	6.77 - 6.87	6.08 - 6.18	5.84 - 5.94	6.73 - 6.83	7.09 - 7.19	5.23 - 5.33
Metals													
Antimony	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2	0.2	<0.2	<0.2
Arsenic	ug/g	2.2	2.0	2.0	2.6	1.8	1.7	1.3	1.6	2	2	2	2
Barium (5)	ug/g	170	170	210	190	200	190	170	190	200	190	190	210
Beryllium	ug/g	0.65	0.63	0.68	0.61	0.62	0.57	0.52	0.59	0.7	0.6	0.7	0.6
Boron	ug/g	<5.0	<5.0	<5.0	5.1	5.2	<5.0	<5.0	5.1	6	6	6	<5
Cadmium	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1
Chromium	ug/g	42	41	45	46	46	42	37	43	44	44	45	47
Cobalt (5)	ug/g	14	13	12	12	13	11	10	12	12	13	14	13
Copper	ug/g	22	21	25	28	27	24	22	29	22	25	24	21
Hexavalent Chromiur	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lead	ug/g	6.2	6.1	6.4	6.1	5.7	5.1	4.9	5.4	6	6	6	6
Mercury	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5	<0.5	<0.5	<0.5
Nickel	ug/g	24	23	27	27	28	25	23	26	26	28	28	27
Selenium	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5	<0.5	<0.5	<0.5
Silver	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	0.25	0.24	0.24	0.27	0.24	0.24	0.19	0.24	0.23	0.26	0.25	0.28
Uranium	ug/g	0.95	0.87	0.81	0.67	0.71	0.63	0.58	0.54	0.58	0.59	0.62	0.67
Vanadium (5)	ug/g	59	58	58	63	61	55	51	58	60	59	61	61
Zinc	ug/g	69	67	77	75	78	71	63	74	71	72	76	76
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	Unit	VS125	VS126	VS127	VS128	VS129	VS130	VS130	VS131	VS132	VS133	VS134	VS135
		28-Apr-2016	29-Apr-2016	29-Apr-2016	02-May-2016	02-May-2016	02-May-2016	02-May-2016	02-May-2016	02-May-2016	04-May-2016	04-May-2016	04-May-2016
		VS1125 (Field Duplicate)	VS126	VS127	VS128	VS129	VS130	VS1130 (Field Duplicate)	VS131	VS132	VS133	VS134	VS135
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	5.23 - 5.33	6.32 - 6.42	6.45 - 6.55	6.26 - 6.36	6.68 - 6.78	6.4 - 6.5	6.4 - 6.5	7.03 - 7.13	6.59 - 6.69	6.89 - 6.99	6.34 - 6.44	6.44 - 6.54
Metals													
Antimony	ug/g	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	2	1.9	1.3	2	2	2	2	2	2	2	1	2
Barium (5)	ug/g	210	210	210	230	200	190	200	190	180	200	160	190
Beryllium	ug/g	0.7	0.67	0.68	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.5	0.6
Boron	ug/g	<5	6.0	6.7	6	6	6	7	7	6	6	<5	<5
Cadmium	ug/g	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	ug/g	47	47	47	50	50	47	50	49	43	44	37	43
Cobalt (5)	ug/g	13	13	11	15	14	13	13	13	12	14	11	13
Copper	ug/g	21	27	26	21	27	26	27	27	26	24	16	21
Hexavalent Chromiur	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lead	ug/g	6	6.0	5.6	7	6	6	6	6	6	6	5	6
Mercury	ug/g	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	<0.5	<0.50	<0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	ug/g	27	28	26	28	30	28	30	29	29	28	22	26
Selenium	ug/g	0.8	<0.50	<0.50	<0.5	0.6	0.8	<0.5	0.7	0.7	0.8	0.6	0.7
Silver	ug/g	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	0.25	0.27	0.26	0.27	0.26	0.26	0.27	0.25	0.23	0.26	0.20	0.24
Uranium	ug/g	0.65	0.85	0.65	0.62	0.68	0.56	0.55	0.56	0.52	0.67	0.53	0.67
Vanadium (5)	ug/g	60	60	55	67	66	67	68	67	60	61	49	59
Zinc	ug/g	77	81	77	81	79	75	80	76	69	72	60	70
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	0.0074	<0.0050	0.020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	0.0074	<0.0050	0.011	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	Unit	VS135	VS136	VS137	VS138	VS139	VS140	VS141	VS141	VS142	VS143	VS143	VS144
		04-May-2016	04-May-2016	04-May-2016	05-May-2016	05-May-2016	05-May-2016	09-May-2016	09-May-2016	09-May-2016	10-May-2016	10-May-2016	10-May-2016
		VS1135 (Field Duplicate)	VS136	VS137	VS138	VS139	VS140	VS141	VS1141 (Field Duplicate)	VS142	VS143	VS1143 (Field Duplicate)	VS144
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	6.44 - 6.54	6.57 - 6.67	6.51 - 6.61	6.62 - 6.72	6.6 - 6.7	6.75 - 6.85	6.5 - 6.6	6.5 - 6.6	6.69 - 6.79	6.53 - 6.63	6.53 - 6.63	6.64 - 6.74
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	2	2	2	2	3	3	2	2	2	2	2	2
Barium (5)	ug/g	190	210	220	170	220	190	240	230	190	180	180	210
Beryllium	ug/g	0.7	0.7	0.7	0.6	0.8	0.7	0.8	0.9	0.6	0.7	0.7	0.7
Boron	ug/g	5	6	<5	<5	6	5	7	7	6	5	<5	6
Cadmium	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	ug/g	44	48	47	40	49	45	56	56	46	45	42	51
Cobalt (5)	ug/g	13	13	13	12	14	13	16	16	13	13	13	14
Copper	ug/g	22	26	23	19	26	25	30	31	26	22	21	28
Hexavalent Chromiur	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	0.4	0.6	0.4	0.4	0.3
Lead	ug/g	6	6	6	6	6	6	7	7	6	6	6	7
Mercury	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	ug/g	26	31	28	23	30	29	34	35	29	25	24	32
Selenium	ug/g	0.8	0.6	0.5	<0.5	<0.5	<0.5	0.5	0.8	1.0	0.5	<0.5	0.7
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	0.24	0.27	0.25	0.22	0.26	0.25	0.31	0.29	0.25	0.23	0.23	0.27
Uranium	ug/g	0.67	0.88	0.74	0.81	0.60	0.55	1.0	0.90	0.58	0.92	0.94	0.70
Vanadium (5)	ug/g	61	66	64	55	66	59	72	72	65	57	55	66
Zinc	ug/g	71	79	78	70	81	75	88	87	73	68	65	77
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.011	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	Unit	VS145	VS146	VS147	VS148	VS149	VS150	VS151	VS152	VS153	VS154	VS155	VS156
		10-May-2016	10-May-2016	10-May-2016	11-May-2016	11-May-2016	11-May-2016	12-May-2016	12-May-2016	16-May-2016	16-May-2016	16-May-2016	16-May-2016
		VS145	VS146	VS147	VS148	VS149	VS150	VS151	VS152	VS153	VS154	VS155	VS156
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	6.38 - 6.48	6.41 - 6.51	6.59 - 6.69	6.7 - 6.8	6.76 - 6.86	6.82 - 6.92	6.57 - 6.67	6.69 - 6.79	4.39 - 4.49	5.58 - 5.68	3.9 - 4	5.46 - 5.56
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	2	2	1	2	3	3	2	2	2	2	2	2
Barium (5)	ug/g	180	210	200	180	200	190	190	210	150	180	150	190
Beryllium	ug/g	0.7	0.7	0.8	0.6	0.8	0.7	0.7	0.7	0.6	0.6	0.5	0.6
Boron	ug/g	5	6	7	6	6	6	<5	<5	<5	<5	<5	5
Cadmium	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	ug/g	45	48	48	40	43	43	41	44	35	41	34	42
Cobalt (5)	ug/g	13	15	11	11	13	11	10	13	11	13	10	12
Copper	ug/g	21	21	23	23	25	23	15	21	21	29	23	26
Hexavalent Chromiur	ug/g	0.3	0.4	<0.2	0.3	0.3	<0.2	0.3	<0.2	0.3	0.3	0.6	0.2
Lead	ug/g	6	7	6	5	7	6	6	6	5	6	5	6
Mercury	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	ug/g	26	28	28	25	28	26	21	29	20	25	21	28
Selenium	ug/g	0.8	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	0.8	0.6	1.0
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	0.24	0.28	0.26	0.22	0.27	0.24	0.23	0.27	0.19	0.24	0.18	0.22
Uranium	ug/g	0.94	0.96	1.2	0.59	0.56	0.60	0.98	0.68	0.83	0.64	0.77	0.83
Vanadium (5)	ug/g	62	63	61	52	60	57	53	61	51	59	50	61
Zinc	ug/g	66	77	73	64	72	70	75	76	55	71	55	68
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0081	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0057
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.011	0.026	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0079	0.021	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	Unit	VS156	VS157	VS158	VS159	VS160	VS161	VS162	VS163	VS163	VS164	VS165	VS166
		16-May-2016	16-May-2016	16-May-2016	16-May-2016	16-May-2016	16-May-2016	17-May-2016	17-May-2016	17-May-2016	17-May-2016	17-May-2016	17-May-2016
		VS1156 (Field Duplicate)	VS157	VS158	VS159	VS160	VS161	VS162	VS163	VS1163 (Field Duplicate)	VS164	VS165	VS166
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	5.46 - 5.56	6.03 - 6.13	6.07 - 6.17	6.13 - 6.23	6.01 - 6.11	6.32 - 6.42	6.44 - 6.54	6.86 - 6.96	6.86 - 6.96	6.55 - 6.65	5.96 - 6.06	5.44 - 5.54
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	3	1	3	2	3	3	2	2	2	2	2	1
Barium (5)	ug/g	190	170	200	180	190	200	210	210	200	210	200	170
Beryllium	ug/g	0.7	0.6	0.7	0.7	0.6	0.7	0.7	0.7	0.8	0.7	0.6	0.6
Boron	ug/g	5	5	6	<5	5	6	6	6	6	5	5	5
Cadmium	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	ug/g	43	38	47	40	43	44	46	51	50	46	44	39
Cobalt (5)	ug/g	13	11	14	12	13	13	14	14	13	15	14	12
Copper	ug/g	25	20	26	20	24	23	26	27	27	25	24	20
Hexavalent Chromiur	ug/g	0.4	0.2	<0.2	0.4	0.3	0.4	0.4	0.2	0.4	0.3	0.2	<0.2
Lead	ug/g	6	6	7	6	6	7	7	6	6	6	6	6
Mercury	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	ug/g	28	22	28	23	26	26	29	31	31	29	27	24
Selenium	ug/g	0.8	0.7	1.0	<0.5	0.5	0.6	1.0	0.7	<0.5	0.7	1.2	<0.5
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	0.23	0.19	0.26	0.21	0.25	0.25	0.27	0.28	0.28	0.25	0.25	0.21
Uranium	ug/g	0.80	0.87	0.68	0.74	0.57	0.62	0.66	0.80	0.79	0.92	0.63	0.80
Vanadium (5)	ug/g	61	51	63	58	60	63	65	67	67	65	64	58
Zinc	ug/g	69	64	77	63	70	71	76	81	79	74	74	65
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	Unit	VS167	VS168	VS169	VS170	VS171	VS172	VS173	VS174	VS175	VS176	VS177	VS177
		18-May-2016	18-May-2016	20-May-2016	20-May-2016	20-May-2016	25-May-2016	25-May-2016	25-May-2016	25-May-2016	25-May-2016	25-May-2016	25-May-2016
		VS167	VS168	VS169	VS170	VS171	VS172	VS173	VS174	VS175	VS176	VS177	VS0177 (Field Duplicate)
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	5.15 - 5.25	5 - 5.1	4.84 - 4.94	7.23 - 7.33	7.03 - 7.13	3.02 - 3.12	1.07 - 1.17	2.57 - 2.67	2.56 - 2.66	1.46 - 1.56	1.37 - 1.47	1.37 - 1.47
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	2	2	1	2	2	2	1	1	1	1	1	1
Barium (5)	ug/g	160	140	140	170	170	210	460	290	140	430	430	430
Beryllium	ug/g	0.6	0.6	0.5	0.7	0.6	0.7	1.3	0.9	0.6	1.3	1.2	1.1
Boron	ug/g	<5	<5	<5	6	<5	7	<5	<5	<5	<5	<5	<5
Cadmium	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1
Chromium	ug/g	34	39	31	43	44	45	140	79	36	150	150	150
Cobalt (5)	ug/g	9.5	9.4	8.9	12	11	13	35	19	11	33	37	36
Copper	ug/g	23	18	19	24	23	25	62	40	20	70	64	69
Hexavalent Chromiur	ug/g	<0.2	0.3	0.2	<0.2	0.5	<0.2	0.7	0.6	0.3	0.8	0.7	0.4
Lead	ug/g	5	5	4	5	5	6	9	7	5	9	8	8
Mercury	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	1.0	0.6	<0.5	<0.5	0.6	0.9	0.8
Nickel	ug/g	23	22	20	25	26	26	72	44	22	79	80	83
Selenium	ug/g	<0.5	0.5	<0.5	1.0	<0.5	1.9	1.6	1.1	1.1	1.8	1.4	1.1
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	0.20	0.20	0.17	0.24	0.23	0.24	0.57	0.42	0.19	0.52	0.53	0.53
Uranium	ug/g	0.68	0.81	0.56	0.60	0.79	0.95	2.2	1.4	0.71	2.6	2.0	2.2
Vanadium (5)	ug/g	51	48	52	62	62	67	130	100	59	140	140	150
Zinc	ug/g	61	62	52	71	76	75	140	110	56	150	150	150
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	Unit	VS178	VS179	VS180	VS181	VS181 2ft	VS181 4ft	VS181B	VS182	VS183	VS183B	VS183C	VS184
		25-May-2016	25-May-2016	26-May-2016	26-May-2016	09-Jun-2016	09-Jun-2016	02-Jun-2016	26-May-2016	26-May-2016	31-May-2016	02-Jun-2016	26-May-2016
		VS178	VS179	VS180	VS181	VS181 2ft	VS181 4ft	VS181B	VS182	VS183	VS183B	VS183C	VS184
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Excavated	Excavated	Final	Excavated
Sample Depth	m	1.39 - 1.49	1.41 - 1.51	3.65 - 3.75	3.65 - 3.75	4.26 - 4.36	4.87 - 4.97	6.39 - 6.49	1.92 - 2.02	1.15 - 1.25	1.1 - 1.2	1.16 - 1.26	NS
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	1	1	1	1	1	1	2	1	1	1	1	1
Barium (5)	ug/g	430	350	110	370	390	130	160	410	430	400	140	430
Beryllium	ug/g	1.3	1.1	0.5	1.1	1.0	0.4	0.4	1.6	1.5	1.1	0.4	1.5
Boron	ug/g	5	<5	<5	6	<5	<5	6	<5	6	<5	<5	<5
Cadmium	ug/g	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	<0.1	0.1
Chromium	ug/g	140	120	31	130	110	30	31	130	150	110	30	140
Cobalt (5)	ug/g	30	27	8.1	26	24	8.4	10	34	33	29	10	30
Copper	ug/g	53	53	19	62	55	17	18	65	70	61	19	54
Hexavalent Chromiur	ug/g	0.4	0.8	0.3	0.5	0.9	0.3	<0.2	0.3	0.4	1.1	0.2	0.4
Lead	ug/g	9	7	4	7	8	5	5	10	9	8	5	9
Mercury	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	0.7	<0.5	0.5	<0.5	0.6
Nickel	ug/g	69	63	19	68	63	18	20	75	76	64	20	74
Selenium	ug/g	1.2	1.4	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	0.7	0.8	<0.5
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	0.54	0.43	0.14	0.47	0.50	0.15	0.17	0.51	0.54	0.49	0.18	0.50
Uranium	ug/g	1.5	1.7	0.91	1.8	1.6	0.61	0.82	2.7	2.4	1.9	0.65	2.2
Vanadium (5)	ug/g	130	120	48	120	120	47	49	140	140	120	51	130
Zinc	ug/g	140	120	45	130	130	47	51	130	150	140	50	130
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0086	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0072	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0057
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0065	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0086	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	Unit	VS184	VS184B	VS184C	VS185	VS186	VS187	VS188	VS189	VS190	VS191	VS192	VS193
		26-May-2016	31-May-2016	02-Jun-2016	26-May-2016	26-May-2016	26-May-2016	26-May-2016	26-May-2016	26-May-2016	26-May-2016	26-May-2016	26-May-2016
		VS1184 (Field Duplicate)	VS184B	VS184C	VS185	VS186	VS187	VS188	VS189	VS190	VS191	VS192	VS193
Sample Status		Excavated	Excavated	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	NS	NS	1.29 - 1.39	1.43 - 1.53	1.34 - 1.44	1.72 - 1.82	0.73 - 0.83	0.89 - 0.99	1.12 - 1.22	0.55 - 0.65	0.29 - 0.39	0 - 0.1
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	1	1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Barium (5)	ug/g	440	470	240	560	370	410	430	46	35	14	12	13
Beryllium	ug/g	1.6	1.3	0.5	1.6	1.1	1.5	1.5	0.3	0.3	<0.2	<0.2	<0.2
Boron	ug/g	<5	<5	<5	<5	<5	<5	5	<5	<5	<5	<5	<5
Cadmium	ug/g	0.1	0.1	<0.1	0.2	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	ug/g	140	120	52	160	110	120	120	25	18	11	10	15
Cobalt (5)	ug/g	32	27	15	34	22	29	30	5.3	4.2	2.6	3.0	3.0
Copper	ug/g	55	55	26	66	45	55	57	11	5.3	3.1	3.5	4.9
Hexavalent Chromiur	ug/g	0.7	1.2	0.4	0.5	0.3	0.6	0.6	0.2	0.5	<0.2	<0.2	<0.2
Lead	ug/g	9	9	5	10	8	8	9	3	2	2	2	3
Mercury	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	0.6	0.6	<0.5	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	ug/g	76	68	32	85	57	70	65	13	10	6.9	6.9	7.4
Selenium	ug/g	<0.5	1.2	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	0.50	0.56	0.29	0.53	0.43	0.53	0.54	0.07	<0.05	<0.05	<0.05	<0.05
Uranium	ug/g	2.1	1.8	0.67	2.0	1.4	1.7	1.9	0.93	0.65	0.44	0.46	0.61
Vanadium (5)	ug/g	130	120	71	140	100	130	130	27	30	15	13	21
Zinc	ug/g	140	140	77	150	110	150	150	24	15	18	24	23
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	Unit	VS194	VS195	VS196	VS196	VS197	VS198	VS199	VS200	VS201	VS202	VS203	VS204
		26-May-2016	26-May-2016	26-May-2016	26-May-2016	26-May-2016	26-May-2016	31-May-2016	31-May-2016	31-May-2016	09-Jun-2016	09-Jun-2016	10-Jun-2016
		VS194	VS195	VS196	VS1196 (Field Duplicate)	VS197	VS198	VS199	VS200	VS201	VS202	VS203	VS204
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	0 - 0.1	0 - 0.1	0.65 - 0.75	0.65 - 0.75	2.69 - 2.79	2.76 - 2.86	7.05 - 7.15	6.4 - 6.5	6.64 - 6.74	1.03 - 1.13	1.23 - 1.33	1.35 - 1.45
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	<1	<1	<1	<1	<1	<1	3	2	2	1	<1	<1
Barium (5)	ug/g	23	18	22	23	61	19	200	190	190	69	47	50
Beryllium	ug/g	0.2	<0.2	0.2	0.2	0.4	0.2	0.8	0.7	0.7	0.5	0.3	0.3
Boron	ug/g	<5	<5	<5	<5	<5	<5	7	6	6	<5	<5	<5
Cadmium	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	ug/g	17	12	16	18	23	15	51	46	43	34	24	24
Cobalt (5)	ug/g	3.5	2.5	3.0	3.1	7.4	2.7	15	13	13	9.0	5.1	5.9
Copper	ug/g	6.0	4.4	6.7	6.7	11	4.1	27	25	26	14	8.8	10
Hexavalent Chromiur	ug/g	<0.2	0.3	<0.2	0.3	<0.2	0.3	0.9	0.9	0.6	0.3	0.6	0.5
Lead	ug/g	3	3	2	3	4	4	7	7	6	8	8	3
Mercury	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	ug/g	8.0	6.5	8.0	8.0	17	7.3	32	28	29	18	11	13
Selenium	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	1.0	1.1	<0.5	<0.5	<0.5
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	0.06	0.05	<0.05	0.06	0.09	<0.05	0.27	0.26	0.25	0.13	0.09	0.08
Uranium	ug/g	0.63	0.67	0.61	0.70	1.1	0.62	0.75	0.85	0.59	1.3	1.1	0.74
Vanadium (5)	ug/g	20	14	22	28	32	22	68	64	62	40	28	30
Zinc	ug/g	27	17	17	17	49	17	81	76	73	38	26	23
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0068	<0.0050
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0061	<0.0050
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0095	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0081	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.010	0.0072
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0066	<0.0050	<0.0050	<0.0050	<0.0050	0.0051	0.0095	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	0.0051	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0088	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0061	<0.0050
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0066	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0088	<0.0050

Parameter	Unit	VS205	VS205	VS206	VS207	VS208	VS209	VS210	VS211	VS212	VS212	VS213	VS214
		10-Jun-2016	10-Jun-2016	10-Jun-2016	10-Jun-2016	10-Jun-2016	10-Jun-2016	10-Jun-2016	10-Jun-2016	10-Jun-2016	10-Jun-2016	10-Jun-2016	10-Jun-2016
		VS205	VS0205 (Field Duplicate)	VS206	VS207	VS208	VS209	VS210	VS211	VS212	VS0212 (Field Duplicate)	VS213	VS214
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	1.26 - 1.36	1.26 - 1.36	0.62 - 0.72	0.66 - 0.76	0.76 - 0.86	0.48 - 0.58	0.83 - 0.93	1.04 - 1.14	1.06 - 1.16	1.06 - 1.16	0.99 - 1.09	1.51 - 1.61
Metals													
Antimony	ug/g	0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
Barium (5)	ug/g	42	43	20	20	39	33	23	45	23	23	34	57
Beryllium	ug/g	0.3	0.3	<0.2	<0.2	0.3	0.2	0.2	0.3	0.2	0.3	0.3	0.4
Boron	ug/g	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	ug/g	21	22	14	13	21	18	17	16	15	19	23	21
Cobalt (5)	ug/g	4.5	5.1	4.0	3.7	5.3	4.7	4.2	5.4	4.0	4.6	5.7	4.8
Copper	ug/g	8.6	8.8	5.0	5.9	8.8	7.3	6.0	7.3	5.4	5.9	8.0	13
Hexavalent Chromiur	ug/g	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.3	<0.2
Lead	ug/g	10	12	2	10	7	4	3	4	6	6	3	3
Mercury	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	ug/g	10	11	7.8	7.1	11	9.2	8.8	11	7.8	9.4	13	13
Selenium	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	0.07	0.07	<0.05	<0.05	0.07	0.06	<0.05	0.08	<0.05	0.05	0.07	0.08
Uranium	ug/g	0.89	0.96	0.51	0.46	0.73	0.67	0.49	0.68	0.55	0.87	0.58	0.99
Vanadium (5)	ug/g	26	28	19	20	27	23	27	22	20	24	28	25
Zinc	ug/g	23	21	12	22	22	16	15	19	18	23	20	21
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	0.013	0.027	<0.0050	0.011	0.012	<0.0050	<0.0050	<0.0050	<0.0050	0.0079	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	0.0072	0.012	<0.0050	0.0055	0.0090	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	0.0082	0.015	<0.0050	0.0060	0.0060	<0.0050	<0.0050	<0.0050	<0.0050	0.0068	<0.0050	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	0.0066	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	0.0076	<0.0050	0.0050	0.010	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	<0.0050	<0.0050
Chrysene	ug/g	0.0067	0.019	<0.0050	0.0073	0.010	<0.0050	<0.0050	<0.0050	0.0052	0.0068	<0.0050	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	0.011	0.019	<0.0050	0.0087	0.014	<0.0050	<0.0050	<0.0050	0.0073	0.0084	<0.0050	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	0.0062	0.0098	<0.0050	0.0060	0.0060	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	0.010	0.019	<0.0050	0.0092	0.012	<0.0050	<0.0050	<0.0050	0.0057	<0.0050	<0.0050	<0.0050

Parameter	Unit	VS215	VS216	VS217	VS218	VS219	VS220	VS220	VS221	VS222	VS223	VS223	VS224
		10-Jun-2016	10-Jun-2016	10-Jun-2016	15-Jun-2016	15-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016
		VS215	VS216	VS217	VS218	VS219	VS220	VS1220 (Field Duplicate)	VS221	VS222	VS223	VS1223 (Field Duplicate)	VS224
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	0 - 0.1	0 - 0.1	1.22 - 1.32	0.5 - 0.6	0 - 0.1	1.12 - 1.22	1.12 - 1.22	2.28 - 2.38	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	<1	<1	<1	1	2	<1	<1	<1	<1	2	2	<1
Barium (5)	ug/g	44	39	49	130	200	46	33	28	77	170	160	26
Beryllium	ug/g	0.2	0.3	0.3	0.4	0.6	0.4	0.2	0.3	0.4	0.5	0.5	<0.2
Boron	ug/g	<5	<5	<5	<5	8	<5	<5	<5	<5	6	6	<5
Cadmium	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	ug/g	16	18	21	26	45	27	22	23	31	33	33	15
Cobalt (5)	ug/g	4.1	3.5	4.9	8.2	13	5.2	4.5	4.7	7.4	9.8	9.9	4.1
Copper	ug/g	9.8	8.5	12	15	24	11	7.8	8.0	13	18	19	5.8
Hexavalent Chromiur	ug/g	<0.2	0.2	0.3	0.2	<0.2	0.7	0.6	0.3	0.3	<0.2	<0.2	<0.2
Lead	ug/g	4	2	3	4	6	9	4	5	5	4	5	2
Mercury	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	<0.5	<0.5	0.8	0.7	<0.5
Nickel	ug/g	11	11	13	16	28	12	9.9	11	16	19	21	9.1
Selenium	ug/g	<0.5	<0.5	<0.5	1.7	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	0.07	0.05	0.08	0.15	0.22	0.07	<0.05	0.05	0.06	0.18	0.19	0.05
Uranium	ug/g	0.72	1.6	1.1	0.51	1.0	1.1	0.80	0.82	0.72	0.79	0.74	0.47
Vanadium (5)	ug/g	17	18	23	42	65	33	28	25	31	50	50	22
Zinc	ug/g	17	33	25	43	81	25	20	28	29	55	54	19
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	--	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.019	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0085	<0.0050	0.0062	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.015	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0067	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0085	<0.0050	0.0062	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.011	<0.0050	0.0068	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0067	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0091	<0.0050	0.0062	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	Unit	VS225	VS226	VS227	VS228	VS229	VS230	VS231	VS232	VS232	VS233	VS234	VS235
		17-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016
		VS225	VS226	VS227	VS228	VS229	VS230	VS231	VS232	VS1232 (Field Duplicate)	VS233	VS234	VS235
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	0.67 - 0.77	0.75 - 0.85	0.63 - 0.73	0.83 - 0.93	2.57 - 2.67	1.87 - 1.97	1.7 - 1.8	0.95 - 1.05	0.95 - 1.05	0.97 - 1.07	1.24 - 1.34	1.07 - 1.17
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Barium (5)	ug/g	70	52	39	40	69	46	33	38	39	43	39	27
Beryllium	ug/g	0.5	0.5	0.3	0.2	0.4	0.3	0.4	0.3	0.3	0.2	0.3	<0.2
Boron	ug/g	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	ug/g	39	30	22	23	34	20	27	20	21	23	24	19
Cobalt (5)	ug/g	7.8	6.0	6.2	5.2	6.0	4.0	5.7	4.6	5.1	4.4	3.7	3.5
Copper	ug/g	14	8.1	11	12	15	12	13	8.2	8.8	9.8	11	6.1
Hexavalent Chromiur	ug/g	0.5	0.5	0.2	0.3	0.9	<0.2	0.4	0.3	0.5	0.3	0.4	0.2
Lead	ug/g	6	11	2	3	5	2	5	3	3	2	2	3
Mercury	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	ug/g	15	15	13	14	17	13	12	11	11	11	12	9.0
Selenium	ug/g	<0.5	0.6	0.7	<0.5	<0.5	<0.5	0.5	<0.5	0.6	<0.5	<0.5	<0.5
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	0.08	0.11	0.06	0.08	0.09	0.09	0.06	<0.05	0.06	0.07	0.07	<0.05
Uranium	ug/g	1.9	1.4	0.44	0.50	1.7	0.69	1.3	0.63	0.71	0.94	0.82	1.4
Vanadium (5)	ug/g	41	35	27	29	34	21	37	27	28	32	26	42
Zinc	ug/g	40	43	23	24	31	24	24	21	21	23	24	18
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	<0.0050	<0.0050	<0.0050	<0.0050	0.013
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.011
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.012
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0087	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0092
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0054	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.017
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0074	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.013

Parameter	Unit	VS236	VS237	VS237	VS238	VS239	VS240	VS241	VS241	VS242	VS243	VS244	VS245
		17-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016	17-Jun-2016	20-Jun-2016	20-Jun-2016	20-Jun-2016	20-Jun-2016	20-Jun-2016	20-Jun-2016
		VS236	VS237	VS1237 (Field Duplicate)	VS238	VS239	VS240	VS241	VS1241 (Field Duplicate)	VS242	VS243	VS244	VS245
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth	m	1.15 - 1.25	1.01 - 1.11	1.01 - 1.11	0.88 - 0.98	0.93 - 1.03	1.14 - 1.24	0.89 - 0.99	0.89 - 0.99	0.32 - 0.42	0.95 - 1.05	1.07 - 1.17	1 - 1.1
Metals													
Antimony	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	1	<1
Barium (5)	ug/g	38	39	39	44	29	22	36	34	29	52	79	45
Beryllium	ug/g	0.3	0.3	0.3	0.4	0.2	<0.2	0.3	0.2	0.2	0.5	0.5	0.3
Boron	ug/g	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	ug/g	20	24	21	26	18	14	21	18	16	26	38	25
Cobalt (5)	ug/g	5.7	4.4	3.7	5.7	4.9	2.9	4.2	3.6	3.7	9.3	7.9	6.1
Copper	ug/g	11	9.3	7.9	10	7.9	4.6	7.5	7.0	6.3	13	17	8.7
Hexavalent Chromiur	ug/g	<0.2	0.3	0.3	0.5	0.2	0.2	0.3	0.4	0.3	0.4	0.4	0.7
Lead	ug/g	3	3	6	3	3	2	8	6	4	7	9	4
Mercury	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	ug/g	12	11	10	12	9.4	6.9	10	9.3	8.8	14	19	12
Selenium	ug/g	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	0.08	0.07	0.06	0.07	0.06	<0.05	0.07	0.07	<0.05	0.16	0.13	0.07
Uranium	ug/g	1.3	1.4	1.2	1.9	1.0	1.0	2.1	1.6	0.83	1.7	2.7	1.6
Vanadium (5)	ug/g	24	36	23	32	24	20	29	23	21	39	41	35
Zinc	ug/g	24	20	21	22	16	12	23	21	17	33	39	23
Semi-VOCs													
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	0.018	0.0054	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	<0.0050	<0.0050	0.027
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0098
Benzo[a]pyrene	ug/g	<0.0050	0.0095	0.012	0.0074	<0.0050	<0.0050	<0.0050	0.0071	<0.0050	<0.0050	<0.0050	0.016
Benzo[b]fluoranthene	ug/g	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	<0.0050	0.012	<0.0050	<0.0050	0.0059	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[j]fluoranthene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	ug/g	<0.0050	<0.0050	0.0060	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	<0.0050	<0.0050	0.0098
Chrysene	ug/g	<0.0050	<0.0050	0.0085	<0.0050	<0.0050	<0.0050	<0.0050	0.0062	<0.0050	<0.0050	<0.0050	0.018
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	<0.0050	<0.0050	0.016	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.023
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0064
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Perylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/g	<0.0050	<0.0050	0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0087
Pyrene	ug/g	<0.0050	<0.0050	0.014	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.017

Parameter	Unit	VS246	VS246	VS247	VSPEAT					
		20-Jun-2016	20-Jun-2016	27-Jun-2016	24-Nov-2015					
		VS246	VS1246 (Field Duplicate)	VS247	VS PEAT					
Sample Status		Final	Final	Final	Excavated					
Sample Depth	m	2.17 - 2.27	2.17 - 2.27	0 - 0.1	6.63 - 6.73					
Metals										
Antimony	ug/g	<0.2	<0.2	<0.2	1.6					
Arsenic	ug/g	2	2	<1	11					
Barium (5)	ug/g	190	190	28	200					
Beryllium	ug/g	0.5	0.5	<0.2	0.49					
Boron	ug/g	6	6	<5	6.9					
Cadmium	ug/g	<0.1	<0.1	<0.1	0.54					
Chromium	ug/g	37	37	16	31					
Cobalt (5)	ug/g	12	12	3.9	7.4					
Copper	ug/g	22	22	7.1	39					
Hexavalent Chromiur	ug/g	<0.2	<0.2	0.7	<0.2					
Lead	ug/g	5	5	2	**280**					
Mercury	ug/g	<0.05	<0.05	<0.05	0.25					
Molybdenum	ug/g	0.8	0.8	<0.5	1.2					
Nickel	ug/g	22	23	8.5	21					
Selenium	ug/g	0.5	<0.5	1.0	1.1					
Silver	ug/g	<0.2	<0.2	<0.2	0.27					
Thallium	ug/g	0.21	0.20	0.05	0.30					
Uranium	ug/g	0.87	0.84	0.69	0.78					
Vanadium (5)	ug/g	58	58	20	35					
Zinc	ug/g	60	60	21	190					
Semi-VOCs										
1- & 2-Methylnaphtha	ug/g	<0.014	<0.014	<0.014	2.5					
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	**1.1**					
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	**1.4**					
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	**9.4**					
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	**0.23**					
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	**18**					
Benzo [b,j] fluoranthe	ug/g	<0.0050	<0.0050	0.0086	26					
Benzo[a]anthracene	ug/g	<0.0050	<0.0050	<0.0050	**25**					
Benzo[a]pyrene	ug/g	<0.0050	<0.0050	<0.0050	**21**					
Benzo[b]fluoranthene	ug/g	--	--	--	--					
Benzo[g,h,i]perylene	ug/g	<0.0050	<0.0050	0.0066	**11**					
Benzo[j]fluoranthene	mg/kg	--	--	--	--					
Benzo[k]fluoranthene	ug/g	<0.0050	0.010	<0.0050	**8.6**					
Chrysene	ug/g	0.0097	<0.0050	<0.0050	**20**					
Dibenzo[a,h]anthrace	ug/g	<0.0050	<0.0050	<0.0050	**3.2**					
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	**64**					
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	11					
Indeno[1,2,3-cd]pyrer	ug/g	<0.0050	<0.0050	<0.0050	**13**					
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	**1.6**					
Perylene	mg/kg	--	--	--	--					
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	**66**					
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	43					

Footnotes:
Tables should be read in conjunction with the accompanying document.
< value = Indicates parameter not detected above laboratory method detection limit.
> value = Indicates parameter detected above equipment analytical range.
-- Chemical not analyzed or criteria not defined.
Grey background indicates exceedances.
(1) O.Reg 153 (2011) Table 3 Standards for residential/parkland/institutional property use for coarse textured soil in full depth generic site condition in a non-potable groundwater condition
(2) Bold Font = Parameter concentration greater than REG153 (11) T3-R/P/I SOIL COARSE

(3) PAH Analysis: Sample is visually heterogeneous but was well homogenized prior to extraction.
(4) The methyl naphthalene standards are applicable to both 1-methyl naphthalene and 2-methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.

(5) Barium, cobalt and vanadium intrepreted to be naturally occurring metals and not flagged as an exceedence. See Appendix G, Section 3.1

NS - Not Surveyed

Samples depths are depths below top soil (after stripping)

Parameter	Unit	REG153 (11) T3-R/P/I SOIL COARSE (1) (2)	VS085	VS085	VS086	VS087	VS088	VS089	VS090
			18-Apr-2016	18-Apr-2016	18-Apr-2016	18-Apr-2016	18-Apr-2016	18-Apr-2016	18-Apr-2016
			VS085	VS0185 (Field Duplicate)	VS086	VS087	VS088	VS089	VS090
Sample Status			Final	Final	Final	Final	Final	Final	Final
Sample Depth	m		5.26 - 5.36	5.26 - 5.36	4.24 - 4.34	4.69 - 4.79	4.68 - 4.78	5.24 - 5.34	5.63 - 5.73
Petroleum Hydrocarbons									
Petroleum Hydrocarbons - F1 (C6-C10)	ug/g	55 (3)	<10	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	ug/g	55 (3)	<10	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F2 (C10-C16)	ug/g	98	<10	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F3 (C16-C34)	ug/g	300	<50	<50	<50	<50	<50	<50	<50
Petroleum Hydrocarbons - F4 (C34-C50)	ug/g	2800	<50	<50	<50	<50	<50	<50	<50
Benzene	ug/g	0.21	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	ug/g	2.3	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	ug/g	2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
m,p-Xylenes	ug/g	--	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
o-Xylene	ug/g	--	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Xylenes, Total	ug/g	3.1	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04

Footnotes:
Tables should be read in conjunction with the accompanying document.
< value = Indicates parameter not detected above laboratory method detection limit.
> value = Indicates parameter detected above equipment analytical range.
-- Chemical not analyzed or criteria not defined.
Grey background indicates exceedances.
(1) O.Reg 153 (2011) Table 3 Standards for residential/parkland/institutional property use for coarse textured soil in full depth generic site condition in a non-potable groundwater condition
(2) Bold Font = Parameter concentration greater than REG153 (11) T3-R/P/I SOIL COARSE
(3) F1 fraction does not include BTEX; however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.
NS - Not Surveyed
Samples depths are depths below top soil (after stripping)

Sample Name	Sample Collection Date	Laboratory Analysis Date
VS001	11/23/15	Metals (11/24/15), Chromium (VI) (11/24/15), PAH (11/24/15), PAH (11/24/15)
VS002	11/23/15	Metals (11/24/15), Chromium (VI) (11/24/15), PAH (11/24/15), PAH (11/24/15)
VS003	11/24/15	Metals (11/25/15), Chromium (VI) (11/25/15), PAH (11/25/15), PAH (11/25/15)
VS004	11/24/15	Metals (11/25/15), Chromium (VI) (11/25/15), PAH (11/25/15), PAH (11/25/15)
VS005	11/24/15	Metals (11/25/15), Chromium (VI) (11/25/15), PAH (11/25/15), PAH (11/25/15)
VS PEAT	11/24/15	Metals (11/25/15), Chromium (VI) (11/25/15), PAH (11/25/15), PAH (11/25/15)
VS006	11/25/15	Metals (11/26/15), Chromium (VI) (11/26/15), PAH (11/26/15), PAH (11/26/15)
VS007	11/25/15	Metals (11/26/15), Chromium (VI) (11/26/15), PAH (11/26/15), PAH (11/26/15)
VS008	11/26/15	Metals (11/27/15), Chromium (VI) (11/27/15), PAH (11/27/15), PAH (11/27/15)
VS009	12/07/15	Metals (12/08/15), Chromium (VI) (12/08/15), PAH (12/08/15), PAH (12/08/15)
VS010	12/07/15	Metals (12/08/15), Chromium (VI) (12/08/15), PAH (12/08/15), PAH (12/08/15)
VS011	12/07/15	Metals (12/08/15), Chromium (VI) (12/08/15), PAH (12/08/15), PAH (12/08/15)
VS012	12/07/15	Metals (12/08/15), Chromium (VI) (12/08/15), PAH (12/08/15), PAH (12/08/15)
VS013	12/07/15	Metals (12/08/15), Chromium (VI) (12/08/15), PAH (12/08/15), PAH (12/08/15)
VS014	12/07/15	Metals (12/08/15), Chromium (VI) (12/08/15), PAH (12/08/15), PAH (12/08/15)
VS015	12/07/15	Metals (12/08/15), Chromium (VI) (12/08/15), PAH (12/08/15), PAH (12/08/15)
VS016	12/07/15	Metals (12/08/15), Chromium (VI) (12/08/15), PAH (12/08/15), PAH (12/08/15)
VS014 B	12/09/15	Metals (12/10/15), Chromium (VI) (12/10/15), PAH (12/10/15), PAH (12/10/15)
VS017	12/09/15	Metals (12/10/15), Chromium (VI) (12/10/15), PAH (12/10/15), PAH (12/10/15)
VS018	12/09/15	Metals (12/10/15), Chromium (VI) (12/10/15), PAH (12/10/15), PAH (12/10/15)
VS019	12/14/15	Metals (12/15/15), Chromium (VI) (12/15/15), PAH (12/15/15), PAH (12/15/15)
VS020	12/14/15	Metals (12/15/15), Chromium (VI) (12/15/15), PAH (12/15/15), PAH (12/15/15)
VS021	12/16/15	Metals (12/17/15), Chromium (VI) (12/17/15), PAH (12/17/15), PAH (12/17/15)
VS022	12/16/15	Metals (12/17/15), Chromium (VI) (12/17/15), PAH (12/17/15), PAH (12/17/15)
VS022C	06/20/16	Metals (06/21/16), Chromium (VI) (06/21/16), PAH (06/21/16), PAH (06/20/16)
VS023	12/16/15	Metals (12/17/15), Chromium (VI) (12/17/15), PAH (12/17/15), PAH (12/17/15)
VS024	12/16/15	Metals (12/17/15), Chromium (VI) (12/17/15), PAH (12/17/15), PAH (12/17/15)
VS022B	12/18/15	Metals (12/21/15), Chromium (VI) (12/21/15), PAH (12/19/15), PAH (12/21/15)
VS024B	12/18/15	Metals (12/21/15), Chromium (VI) (12/21/15), PAH (12/19/15), PAH (12/21/15)
VS025	12/18/15	Metals (12/21/15), Chromium (VI) (12/21/15), PAH (12/19/15), PAH (12/21/15)
VS026	12/18/15	Metals (12/21/15), Chromium (VI) (12/21/15), PAH (12/19/15), PAH (12/21/15)
VS027	12/18/15	Metals (12/21/15), Chromium (VI) (12/21/15), PAH (12/19/15), PAH (12/21/15)
VS028	12/18/15	Metals (12/21/15), Chromium (VI) (12/21/15), PAH (12/19/15), PAH (12/21/15)
VS029	12/18/15	Metals (12/21/15), Chromium (VI) (12/21/15), PAH (12/19/15), PAH (12/21/15)
VS030	12/22/15	Metals (12/23/15), Chromium (VI) (12/23/15), PAH (12/23/15), PAH (12/24/15)
VS031	01/11/16	Metals (01/12/16), Chromium (VI) (01/12/16), PAH (01/12/16), PAH (01/11/16)
VS032	01/11/16	Metals (01/12/16), Chromium (VI) (01/12/16), PAH (01/12/16), PAH (01/11/16)
VS033	01/11/16	Metals (01/12/16), Chromium (VI) (01/12/16), PAH (01/12/16), PAH (01/11/16)
VS034	01/11/16	Metals (01/12/16), Chromium (VI) (01/12/16), PAH (01/12/16), PAH (01/11/16)
VS035	01/11/16	Metals (01/12/16), Chromium (VI) (01/12/16), PAH (01/12/16), PAH (01/11/16)
VS036	01/11/16	Metals (01/12/16), Chromium (VI) (01/12/16), PAH (01/12/16), PAH (01/11/16)
VS037	01/20/16	Metals (01/21/16), Chromium (VI) (01/21/16), PAH (01/21/16), PAH (01/21/16)
VS1037 (Field Dup. of VS037)	01/20/16	Metals (01/21/16), Chromium (VI) (01/21/16), PAH (01/21/16), PAH (01/21/16)
VS038	01/20/16	Metals (01/21/16), Chromium (VI) (01/21/16), PAH (01/21/16), PAH (01/21/16)
VS039	01/20/16	Metals (01/21/16), Chromium (VI) (01/21/16), PAH (01/21/16), PAH (01/21/16)
VS040	01/20/16	Metals (01/21/16), Chromium (VI) (01/21/16), PAH (01/21/16), PAH (01/21/16)
VS1040 (Field Dup. of VS040)	01/20/16	Metals (01/21/16), Chromium (VI) (01/21/16), PAH (01/21/16), PAH (01/21/16)
VS041	01/20/16	Metals (01/21/16), Chromium (VI) (01/21/16), PAH (01/21/16), PAH (01/21/16)
VS042	01/20/16	Metals (01/21/16), Chromium (VI) (01/21/16), PAH (01/21/16), PAH (01/21/16)
VS043	01/20/16	Metals (01/21/16), Chromium (VI) (01/21/16), PAH (01/21/16), PAH (01/21/16)
VS044	01/20/16	Metals (01/21/16), Chromium (VI) (01/21/16), PAH (01/21/16), PAH (01/21/16)
VS046	02/26/16	Metals (02/29/16), Chromium (VI) (02/29/16), PAH (02/29/16), PAH (02/29/16)
VS047	03/04/16	Metals (03/07/16), Chromium (VI) (03/07/16), PAH (03/07/16), PAH (03/07/16)
VS1047 (Field Dup. of VS047)	03/04/16	Metals (03/07/16), Chromium (VI) (03/07/16), PAH (03/07/16), PAH (03/07/16)
VS048	03/04/16	Metals (03/07/16), Chromium (VI) (03/07/16), PAH (03/07/16), PAH (03/07/16)
VS049	03/04/16	Metals (03/07/16), Chromium (VI) (03/07/16), PAH (03/07/16), PAH (03/07/16)
VS050	03/04/16	Metals (03/07/16), Chromium (VI) (03/07/16), PAH (03/07/16), PAH (03/07/16)
VS051	03/04/16	Metals (03/07/16), Chromium (VI) (03/07/16), PAH (03/07/16), PAH (03/07/16)
VS052	03/04/16	Metals (03/07/16), Chromium (VI) (03/07/16), PAH (03/07/16), PAH (03/07/16)
VS053	03/04/16	Metals (03/07/16), Chromium (VI) (03/07/16), PAH (03/07/16), PAH (03/07/16)
VS054	03/04/16	Metals (03/07/16), Chromium (VI) (03/07/16), PAH (03/07/16), PAH (03/07/16)
VS1054 (Field Dup. of VS054)	03/04/16	Metals (03/07/16), Chromium (VI) (03/07/16), PAH (03/07/16), PAH (03/07/16)
VS055	03/04/16	Metals (03/07/16), Chromium (VI) (03/07/16), PAH (03/07/16), PAH (03/07/16)
VS056	03/04/16	Metals (03/07/16), Chromium (VI) (03/07/16), PAH (03/07/16), PAH (03/07/16)
VS057	03/04/16	Metals (03/07/16), Chromium (VI) (03/07/16), PAH (03/07/16), PAH (03/07/16)
VS048B	03/08/16	Metals (03/09/16), Chromium (VI) (03/09/16), PAH (03/09/16), PAH (03/09/16)
VS058	03/08/16	Metals (03/10/16), Chromium (VI) (03/10/16), PAH (03/10/16), PAH (03/10/16)
VS059	03/08/16	Metals (03/10/16), Chromium (VI) (03/10/16), PAH (03/10/16), PAH (03/10/16)
VS060	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS061	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS062	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS063	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS064	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)

Sample Name	Sample Collection Date	Laboratory Analysis Date
VS065	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS066	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS067	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS068	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS069	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS070	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS071	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS072	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS073	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS1073 (Field Dup. of VS073)	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS074	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS075	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS076	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/18/16), PAH (04/18/16)
VS077	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/15/16)
VS078	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/15/16)
VS079	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/15/16)
VS080	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/15/16)
VS081	04/14/16	Metals (04/15/16), Chromium (VI) (04/15/16), PAH (04/15/16)
VS082	04/16/16	Metals (04/19/16), Chromium (VI) (04/19/16), PAH (04/19/16), PAH (04/18/16)
VS083	04/16/16	Metals (04/19/16), Chromium (VI) (04/19/16), PAH (04/19/16), PAH (04/18/16)
VS084	04/16/16	Metals (04/19/16), Chromium (VI) (04/19/16), PAH (04/19/16), PAH (04/18/16)
VS085	04/18/16	PHC F1 (04/18/16), PHC F2-F4 (04/19/16)
VS0185 Field Dup. of VS085)	04/18/16	PHC F1 (04/18/16), PHC F2-F4 (04/19/16)
VS086	04/18/16	PHC F1 (04/19/16), PHC F2-F4 (04/19/16)
VS087	04/18/16	PHC F1 (04/19/16), PHC F2-F4 (04/19/16), Metals (04/19/16), Chromium (VI) (04/19/16), PAH (04/19/16), PAH (04/18/16)
VS088	04/18/16	PHC F1 (04/19/16), PHC F2-F4 (04/19/16), Metals (04/19/16), Chromium (VI) (04/19/16), PAH (04/19/16), PAH (04/18/16)
VS089	04/18/16	PHC F1 (04/19/16), PHC F2-F4 (04/19/16)
VS090	04/18/16	PHC F1 (04/19/16), PHC F2-F4 (04/19/16)
VS091	04/18/16	Metals (04/19/16), Chromium (VI) (04/19/16), PAH (04/19/16), PAH (04/18/16)
VS092	04/18/16	Metals (04/19/16), Chromium (VI) (04/19/16), PAH (04/19/16), PAH (04/18/16)
VS093	04/18/16	Metals (04/19/16), Chromium (VI) (04/19/16), PAH (04/19/16), PAH (04/18/16)
VS094	04/19/16	Metals (04/20/16), Chromium (VI) (04/20/16), PAH (04/20/16), PAH (04/19/16)
VS095	04/19/16	Metals (04/20/16), Chromium (VI) (04/20/16), PAH (04/20/16), PAH (04/19/16)
VS1095 (Field Dup. of VS095)	04/19/16	Metals (04/20/16), Chromium (VI) (04/20/16), PAH (04/20/16), PAH (04/19/16)
VS096	04/20/16	Metals (04/21/16), Chromium (VI) (04/21/16), PAH (04/21/16), PAH (04/21/16)
VS097	04/20/16	Metals (04/21/16), Chromium (VI) (04/21/16), PAH (04/21/16), PAH (04/21/16)
VS098	04/20/16	Metals (04/21/16), Chromium (VI) (04/21/16), PAH (04/21/16), PAH (04/21/16)
VS1098 (Field Dup. of VS098)	04/20/16	Metals (04/21/16), Chromium (VI) (04/21/16), PAH (04/21/16), PAH (04/21/16)
VS099	04/20/16	Metals (04/21/16), Chromium (VI) (04/21/16), PAH (04/21/16), PAH (04/21/16)
VS100	04/21/16	Metals (04/22/16), Chromium (VI) (04/22/16), PAH (04/22/16), PAH (04/21/16)
VS101	04/21/16	Metals (04/22/16), Chromium (VI) (04/22/16), PAH (04/22/16), PAH (04/21/16)
VS1101 (Field Dup. of VS101)	04/21/16	Metals (04/22/16), Chromium (VI) (04/22/16), PAH (04/22/16), PAH (04/21/16)
VS102	04/21/16	Metals (04/22/16), Chromium (VI) (04/22/16), PAH (04/22/16), PAH (04/21/16)
VS103	04/21/16	Metals (04/22/16), Chromium (VI) (04/22/16), PAH (04/22/16), PAH (04/21/16)
VS104	04/21/16	Metals (04/22/16), Chromium (VI) (04/22/16), PAH (04/22/16), PAH (04/21/16)
VS105	04/21/16	Metals (04/22/16), Chromium (VI) (04/22/16), PAH (04/22/16), PAH (04/21/16)
VS106	04/21/16	Metals (04/22/16), Chromium (VI) (04/22/16), PAH (04/22/16), PAH (04/21/16)
VS107	04/22/16	Metals (04/25/16), Chromium (VI) (04/25/16), PAH (04/25/16), PAH (04/22/16)
VS108	04/22/16	Metals (04/25/16), Chromium (VI) (04/25/16), PAH (04/25/16), PAH (04/22/16)
VS109	04/25/16	Metals (04/26/16), Chromium (VI) (04/26/16), PAH (04/26/16), PAH (04/26/16)
VS1109 (Field Dup. of VS109)	04/25/16	Metals (04/26/16), Chromium (VI) (04/26/16), PAH (04/26/16), PAH (04/26/16)
VS110	04/25/16	Metals (04/26/16), Chromium (VI) (04/26/16), PAH (04/26/16), PAH (04/26/16)
VS111	04/25/16	Metals (04/26/16), Chromium (VI) (04/26/16), PAH (04/26/16), PAH (04/26/16)
VS112	04/25/16	Metals (04/26/16), Chromium (VI) (04/26/16), PAH (04/26/16), PAH (04/26/16)
VS113	04/25/16	Metals (04/26/16), Chromium (VI) (04/26/16), PAH (04/26/16), PAH (04/26/16)
VS114	04/25/16	Metals (04/26/16), Chromium (VI) (04/26/16), PAH (04/26/16), PAH (04/26/16)
VS115	04/25/16	Metals (04/26/16), Chromium (VI) (04/26/16), PAH (04/26/16), PAH (04/26/16)
VS1115 (Field Dup. of VS115)	04/25/16	Metals (04/26/16), Chromium (VI) (04/26/16), PAH (04/26/16), PAH (04/26/16)
VS116	04/26/16	Metals (04/27/16), Chromium (VI) (04/27/16), PAH (04/27/16), PAH (04/26/16)
VS1116 (Field Dup. of VS116)	04/26/16	Metals (04/27/16), Chromium (VI) (04/27/16), PAH (04/27/16), PAH (04/26/16)
VS117	04/26/16	Metals (04/27/16), Chromium (VI) (04/27/16), PAH (04/27/16), PAH (04/26/16)
VS118	04/26/16	Metals (04/27/16), Chromium (VI) (04/27/16), PAH (04/27/16), PAH (04/26/16)
VS119	04/26/16	Metals (04/27/16), Chromium (VI) (04/27/16), PAH (04/27/16), PAH (04/26/16)
VS120	04/26/16	Metals (04/27/16), Chromium (VI) (04/27/16), PAH (04/27/16), PAH (04/26/16)
VS1120 (Field Dup. of VS120)	04/26/16	Metals (04/27/16), Chromium (VI) (04/27/16), PAH (04/27/16), PAH (04/26/16)
VS121	04/26/16	Metals (04/27/16), Chromium (VI) (04/27/16), PAH (04/27/16), PAH (04/26/16)
VS122	04/27/16	Metals (04/28/16), Chromium (VI) (04/28/16), PAH (04/28/16), PAH (04/28/16)
VS123	04/27/16	Metals (04/28/16), Chromium (VI) (04/28/16), PAH (04/28/16), PAH (04/28/16)

Sample Name	Sample Collection Date	Laboratory Analysis Date
VS124	04/27/16	Metals (04/28/16), Chromium (VI) (04/28/16), PAH (04/28/16), PAH (04/28/16)
VS125	04/28/16	Metals (04/29/16), Chromium (VI) (04/29/16), PAH (04/29/16), PAH (04/29/16)
VS1125 (Field Dup. of VS125)	04/28/16	Metals (04/29/16), Chromium (VI) (04/29/16), PAH (04/29/16), PAH (04/29/16)
VS126	04/29/16	Metals (05/02/16), Chromium (VI) (05/02/16), PAH (05/02/16), PAH (04/29/16)
VS127	04/29/16	Metals (05/02/16), Chromium (VI) (05/02/16), PAH (05/02/16), PAH (04/29/16)
VS128	05/02/16	Metals (05/03/16), Chromium (VI) (05/03/16), PAH (05/03/16), PAH (05/03/16)
VS129	05/02/16	Metals (05/03/16), Chromium (VI) (05/03/16), PAH (05/03/16), PAH (05/03/16)
VS130	05/02/16	Metals (05/03/16), Chromium (VI) (05/03/16), PAH (05/03/16), PAH (05/03/16)
VS1130 (Field Dup. of VS130)	05/02/16	Metals (05/03/16), Chromium (VI) (05/03/16), PAH (05/03/16), PAH (05/03/16)
VS131	05/02/16	Metals (05/03/16), Chromium (VI) (05/03/16), PAH (05/03/16), PAH (05/03/16)
VS132	05/02/16	Metals (05/03/16), Chromium (VI) (05/03/16), PAH (05/03/16), PAH (05/03/16)
VS133	05/04/16	Metals (05/05/16), Chromium (VI) (05/05/16), PAH (05/05/16), PAH (05/04/16)
VS134	05/04/16	Metals (05/05/16), Chromium (VI) (05/05/16), PAH (05/05/16), PAH (05/04/16)
VS135	05/04/16	Metals (05/05/16), Chromium (VI) (05/05/16), PAH (05/05/16), PAH (05/04/16)
VS1135 (Field Dup. of VS135)	05/04/16	Metals (05/05/16), Chromium (VI) (05/05/16), PAH (05/05/16), PAH (05/04/16)
VS136	05/04/16	Metals (05/05/16), Chromium (VI) (05/05/16), PAH (05/05/16), PAH (05/04/16)
VS137	05/04/16	Metals (05/05/16), Chromium (VI) (05/05/16), PAH (05/05/16), PAH (05/04/16)
VS138	05/05/16	Metals (05/06/16), Chromium (VI) (05/06/16), PAH (05/06/16), PAH (05/05/16)
VS139	05/05/16	Metals (05/06/16), Chromium (VI) (05/06/16), PAH (05/06/16), PAH (05/05/16)
VS140	05/05/16	Metals (05/06/16), Chromium (VI) (05/06/16), PAH (05/06/16), PAH (05/05/16)
VS141	05/09/16	Metals (05/11/16), Chromium (VI) (05/11/16), PAH (05/10/16), PAH (05/10/16)
VS1141 (Field Dup. of VS141)	05/09/16	Metals (05/11/16), Chromium (VI) (05/11/16), PAH (05/10/16), PAH (05/10/16)
VS142	05/09/16	Metals (05/11/16), Chromium (VI) (05/11/16), PAH (05/10/16), PAH (05/10/16)
VS143	05/10/16	Metals (05/12/16), Chromium (VI) (05/11/16), PAH (05/11/16), PAH (05/11/16)
VS1143 (Field Dup. of VS143)	05/10/16	Metals (05/12/16), Chromium (VI) (05/11/16), PAH (05/11/16), PAH (05/11/16)
VS144	05/10/16	Metals (05/12/16), Chromium (VI) (05/11/16), PAH (05/11/16), PAH (05/11/16)
VS145	05/10/16	Metals (05/12/16), Chromium (VI) (05/11/16), PAH (05/11/16), PAH (05/11/16)
VS146	05/10/16	Metals (05/12/16), Chromium (VI) (05/11/16), PAH (05/11/16), PAH (05/11/16)
VS147	05/10/16	Metals (05/12/16), Chromium (VI) (05/11/16), PAH (05/11/16), PAH (05/11/16)
VS148	05/11/16	Metals (05/12/16), Chromium (VI) (05/12/16), PAH (05/12/16), PAH (05/12/16)
VS149	05/11/16	Metals (05/12/16), Chromium (VI) (05/12/16), PAH (05/12/16), PAH (05/12/16)
VS150	05/11/16	Metals (05/12/16), Chromium (VI) (05/12/16), PAH (05/12/16), PAH (05/12/16)
VS151	05/12/16	Metals (05/13/16), Chromium (VI) (05/13/16), PAH (05/13/16), PAH (05/12/16)
VS152	05/12/16	Metals (05/13/16), Chromium (VI) (05/13/16), PAH (05/13/16), PAH (05/12/16)
VS153	05/16/16	Metals (05/17/16), Chromium (VI) (05/17/16), PAH (05/17/16), PAH (05/17/16)
VS154	05/16/16	Metals (05/17/16), Chromium (VI) (05/17/16), PAH (05/17/16), PAH (05/17/16)
VS155	05/16/16	Metals (05/17/16), Chromium (VI) (05/17/16), PAH (05/17/16), PAH (05/17/16)
VS156	05/16/16	Metals (05/17/16), Chromium (VI) (05/17/16), PAH (05/17/16), PAH (05/17/16)
VS1156 (Field Dup. of VS156)	05/16/16	Metals (05/17/16), Chromium (VI) (05/17/16), PAH (05/17/16), PAH (05/17/16)
VS157	05/16/16	Metals (05/17/16), Chromium (VI) (05/17/16), PAH (05/17/16), PAH (05/17/16)
VS158	05/16/16	Metals (05/17/16), Chromium (VI) (05/17/16), PAH (05/17/16), PAH (05/17/16)
VS159	05/16/16	Metals (05/17/16), Chromium (VI) (05/17/16), PAH (05/17/16), PAH (05/17/16)
VS160	05/16/16	Metals (05/17/16), Chromium (VI) (05/17/16), PAH (05/17/16), PAH (05/17/16)
VS161	05/16/16	Metals (05/17/16), Chromium (VI) (05/17/16), PAH (05/17/16), PAH (05/17/16)
VS162	05/17/16	Metals (05/18/16), Chromium (VI) (05/18/16), PAH (05/18/16), PAH (05/18/16)
VS163	05/17/16	Metals (05/18/16), Chromium (VI) (05/18/16), PAH (05/18/16), PAH (05/18/16)
VS1163 (Field Dup. of VS163)	05/17/16	Metals (05/18/16), Chromium (VI) (05/18/16), PAH (05/18/16), PAH (05/18/16)
VS164	05/17/16	Metals (05/18/16), Chromium (VI) (05/18/16), PAH (05/18/16), PAH (05/18/16)
VS165	05/17/16	Metals (05/18/16), Chromium (VI) (05/18/16), PAH (05/18/16), PAH (05/18/16)
VS166	05/17/16	Metals (05/18/16), Chromium (VI) (05/18/16), PAH (05/18/16), PAH (05/18/16)
VS167	05/18/16	Metals (05/19/16), Chromium (VI) (05/19/16), PAH (05/19/16), PAH (05/18/16)
VS168	05/18/16	Metals (05/19/16), Chromium (VI) (05/19/16), PAH (05/19/16), PAH (05/18/16)
VS169	05/20/16	Metals (05/24/16), Chromium (VI) (05/21/16), PAH (05/24/16), PAH (05/20/16)
VS170	05/20/16	Metals (05/24/16), Chromium (VI) (05/21/16), PAH (05/24/16), PAH (05/20/16)
VS171	05/20/16	Metals (05/24/16), Chromium (VI) (05/21/16), PAH (05/24/16), PAH (05/20/16)
VS172	05/25/16	Metals (05/26/16), Chromium (VI) (05/26/16), PAH (05/26/16), PAH (05/26/16)
VS173	05/25/16	Metals (05/26/16), Chromium (VI) (05/26/16), PAH (05/26/16), PAH (05/26/16)
VS174	05/25/16	Metals (05/26/16), Chromium (VI) (05/26/16), PAH (05/26/16), PAH (05/26/16)
VS175	05/25/16	Metals (05/26/16), Chromium (VI) (05/26/16), PAH (05/26/16), PAH (05/26/16)
VS176	05/25/16	Metals (05/26/16), Chromium (VI) (05/26/16), PAH (05/26/16), PAH (05/26/16)
VS177	05/25/16	Metals (05/26/16), Chromium (VI) (05/26/16), PAH (05/26/16), PAH (05/26/16)
VS0177 (Field Dup. of VS177)	05/25/16	Metals (05/26/16), Chromium (VI) (05/26/16), PAH (05/26/16), PAH (05/26/16)
VS178	05/25/16	Metals (05/26/16), Chromium (VI) (05/26/16), PAH (05/26/16), PAH (05/26/16)
VS179	05/25/16	Metals (05/26/16), Chromium (VI) (05/26/16), PAH (05/26/16), PAH (05/26/16)
VS180	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/26/16)
VS181	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/26/16)
VS182	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/26/16)
VS183	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/26/16)
VS184	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/26/16)

Sample Name	Sample Collection Date	Laboratory Analysis Date
VS1184 (Field Dup. of VS184)	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/26/16)
VS185	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/26/16)
VS186	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/26/16)
VS187	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/26/16)
VS188	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/26/16)
VS189	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/26/16)
VS190	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/26/16)
VS191	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/26/16)
VS192	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/26/16)
VS193	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/27/16)
VS194	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/27/16)
VS195	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/27/16)
VS196	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/27/16)
VS1196 (Field Dup. of VS196)	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/27/16)
VS197	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/27/16)
VS198	05/26/16	Metals (05/27/16), Chromium (VI) (05/27/16), PAH (05/27/16), PAH (05/26/16)
VS199	05/31/16	Metals (06/02/16), Chromium (VI) (06/01/16), PAH (06/01/16), PAH (05/31/16)
VS200	05/31/16	Metals (06/02/16), Chromium (VI) (06/01/16), PAH (06/01/16), PAH (05/31/16)
VS201	05/31/16	Metals (06/02/16), Chromium (VI) (06/01/16), PAH (06/01/16), PAH (05/31/16)
VS183B	05/31/16	Metals (06/02/16), Chromium (VI) (06/01/16), PAH (06/01/16), PAH (05/31/16)
VS184B	05/31/16	Metals (06/02/16), Chromium (VI) (06/01/16), PAH (06/01/16), PAH (05/31/16)
VS183C	06/02/16	Metals (06/03/16), Chromium (VI) (06/03/16), PAH (06/03/16), PAH (06/03/16)
VS184C	06/02/16	Metals (06/03/16), Chromium (VI) (06/03/16), PAH (06/03/16), PAH (06/03/16)
VS181B	06/02/16	Metals (06/03/16), Chromium (VI) (06/03/16), PAH (06/03/16), PAH (06/03/16)
VS181 2ft	06/09/16	Metals (06/10/16), Chromium (VI) (06/10/16), PAH (06/10/16), PAH (06/10/16)
VS181 4ft	06/09/16	Metals (06/10/16), Chromium (VI) (06/10/16), PAH (06/10/16), PAH (06/10/16)
VS202	06/09/16	Metals (06/10/16), Chromium (VI) (06/10/16), PAH (06/10/16), PAH (06/10/16)
VS203	06/09/16	Metals (06/10/16), Chromium (VI) (06/10/16), PAH (06/10/16), PAH (06/10/16)
VS204	06/10/16	Metals (06/13/16), Chromium (VI) (06/13/16), PAH (06/13/16), PAH (06/12/16)
VS205	06/10/16	Metals (06/13/16), Chromium (VI) (06/13/16), PAH (06/13/16), PAH (06/12/16)
VS0205 (Field Dup. of VS205)	06/10/16	Metals (06/13/16), Chromium (VI) (06/13/16), PAH (06/13/16), PAH (06/12/16)
VS206	06/10/16	Metals (06/13/16), Chromium (VI) (06/13/16), PAH (06/13/16), PAH (06/12/16)
VS207	06/10/16	Metals (06/13/16), Chromium (VI) (06/13/16), PAH (06/13/16), PAH (06/12/16)
VS208	06/10/16	Metals (06/13/16), Chromium (VI) (06/13/16), PAH (06/13/16), PAH (06/12/16)
VS209	06/10/16	Metals (06/13/16), Chromium (VI) (06/13/16), PAH (06/13/16), PAH (06/12/16)
VS210	06/10/16	Metals (06/13/16), Chromium (VI) (06/13/16), PAH (06/13/16), PAH (06/12/16)
VS211	06/10/16	Metals (06/13/16), Chromium (VI) (06/13/16), PAH (06/13/16), PAH (06/12/16)
VS212	06/10/16	Metals (06/13/16), Chromium (VI) (06/13/16), PAH (06/13/16), PAH (06/12/16)
VS0212 (Field Dup. of VS212)	06/10/16	Metals (06/13/16), Chromium (VI) (06/13/16), PAH (06/13/16), PAH (06/12/16)
VS213	06/10/16	Metals (06/13/16), Chromium (VI) (06/13/16), PAH (06/13/16), PAH (06/12/16)
VS214	06/10/16	Metals (06/13/16), Chromium (VI) (06/13/16), PAH (06/13/16), PAH (06/12/16)
VS215	06/10/16	Metals (06/13/16), Chromium (VI) (06/13/16), PAH (06/13/16), PAH (06/12/16)
VS216	06/10/16	Metals (06/13/16), Chromium (VI) (06/13/16), PAH (06/13/16), PAH (06/12/16)
VS217	06/10/16	Metals (06/13/16), Chromium (VI) (06/13/16), PAH (06/13/16), PAH (06/12/16)
VS072B	06/15/16	Metals (06/16/16), Chromium (VI) (06/16/16), PAH (06/16/16), PAH (06/15/16)
VS080B	06/15/16	Metals (06/16/16), Chromium (VI) (06/16/16), PAH (06/16/16), PAH (06/15/16)
VS081B	06/15/16	Metals (06/16/16), Chromium (VI) (06/16/16), PAH (06/16/16), PAH (06/15/16)
VS108B	06/15/16	Metals (06/16/16), Chromium (VI) (06/16/16), PAH (06/16/16), PAH (06/15/16)
VS037B	06/15/16	Metals (06/16/16), Chromium (VI) (06/16/16), PAH (06/16/16), PAH (06/15/16)
VS218	06/15/16	Metals (06/16/16), Chromium (VI) (06/16/16), PAH (06/16/16), PAH (06/15/16)
VS219	06/15/16	Metals (06/16/16), Chromium (VI) (06/16/16), PAH (06/16/16), PAH (06/15/16)
VS220	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/17/16)
VS1220 (Field Dup. of VS220)	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/17/16)
VS221	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/17/16)
VS222	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/17/16)
VS223	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/17/16)
VS1223 (Field Dup. of VS223)	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/17/16)
VS224	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS225	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS226	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS227	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS228	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS229	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS230	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS231	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS232	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS1232 (Field Dup. of VS232)	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS233	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS234	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS235	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)

Sample Name	Sample Collection Date	Laboratory Analysis Date
VS236	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS237	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS1237 (Field Dup. of VS237)	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS238	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS239	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS240	06/17/16	Metals (06/18/16), Chromium (VI) (06/20/16), PAH (06/20/16), PAH (06/18/16)
VS241	06/20/16	Metals (06/21/16), Chromium (VI) (06/21/16), PAH (06/21/16), PAH (06/20/16)
VS1241 (Field Dup. of VS241)	06/20/16	Metals (06/21/16), Chromium (VI) (06/21/16), PAH (06/21/16), PAH (06/20/16)
VS242	06/20/16	Metals (06/21/16), Chromium (VI) (06/21/16), PAH (06/21/16), PAH (06/20/16)
VS243	06/20/16	Metals (06/21/16), Chromium (VI) (06/21/16), PAH (06/21/16), PAH (06/20/16)
VS244	06/20/16	Metals (06/21/16), Chromium (VI) (06/21/16), PAH (06/21/16), PAH (06/20/16)
VS245	06/20/16	Metals (06/21/16), Chromium (VI) (06/21/16), PAH (06/21/16), PAH (06/20/16)
VS246	06/20/16	Metals (06/21/16), Chromium (VI) (06/21/16), PAH (06/21/16), PAH (06/20/16)
VS1246 (Field Dup. of VS246)	06/20/16	Metals (06/21/16), Chromium (VI) (06/21/16), PAH (06/21/16), PAH (06/20/16)
VS247	06/27/16	Metals (06/28/16), Chromium (VI) (06/28/16), PAH (06/28/16), PAH (06/28/16)

ATTACHMENT D – Supporting Figures

LEGEND

- APPROXIMATE SITE BOUNDARY (PHASE TWO LANDS, RSC #1)
- APPROXIMATE PROPERTY BOUNDARY
- BROWN SILTY CLAY VERIFICATION SAMPLE
- 59.50 CONTOURS OF RE-INTERPRETED SILTY CLAY SURFACE ELEVATION, mASL (DECEMBER 2015)

0 10 20 40
SCALE 1:1,000 METRES

NOTES

BASEMAP IMPORTED OUT FROM EQUIS AS AN IMAGE.
THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

REFERENCE

PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: MTM ZONE 9
VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
BROWN SILTY CLAY SAMPLES VERSUS INTERPRETED NATIVE CLAY SURFACE ELEVATION

CONSULTANT

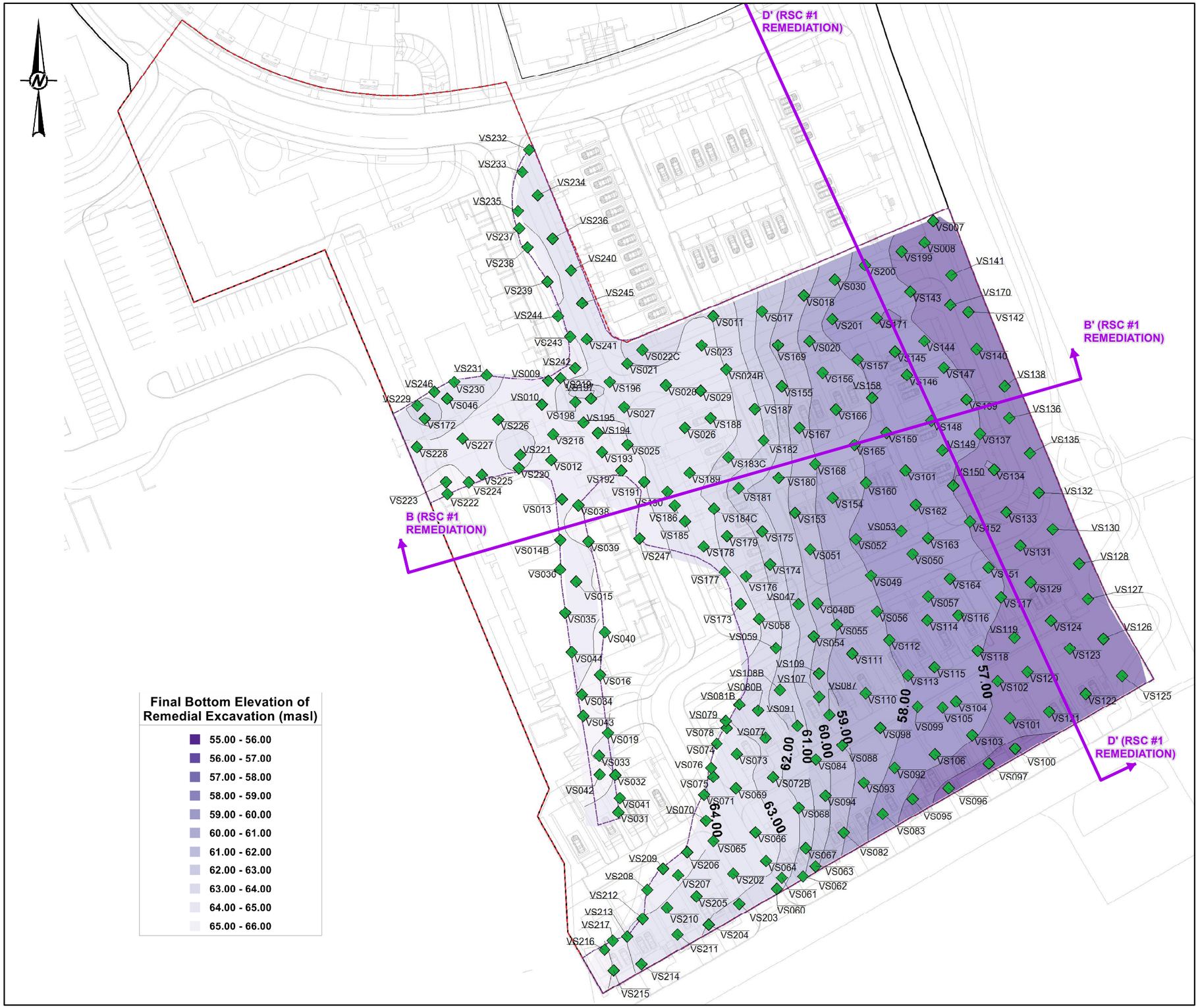
Golder Associates

YYYY-MM-DD	2016-07-05
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/1	0	G1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

Path: N:\Active\Spatial_IM\The_Regional_Group\RegionalGroupOblatesPropOttawa\GIS\MXDs\1525113\Ph1000_AddPhIIESAs\RSC_RemediationReport\1525113-1000-1-HS-00\G1.mxd



LEGEND

- APPROXIMATE SITE BOUNDARY (PHASE TWO LANDS, RSC #1)
- APPROXIMATE PROPERTY BOUNDARY
- CROSS-SECTION LOCATION
- EXCAVATION VERIFICATION SAMPLE

0 10 20 40

SCALE 1:1,000 METRES

NOTES

BASEMAP IMPORTED OUT FROM EQUIS AS AN IMAGE.
THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

REFERENCE

PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: MTM ZONE 9
VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
FINAL BOTTOM ELEVATION AND EXTENT OF REMEDIAL EXCAVATION

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-07-05
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/1	0	G2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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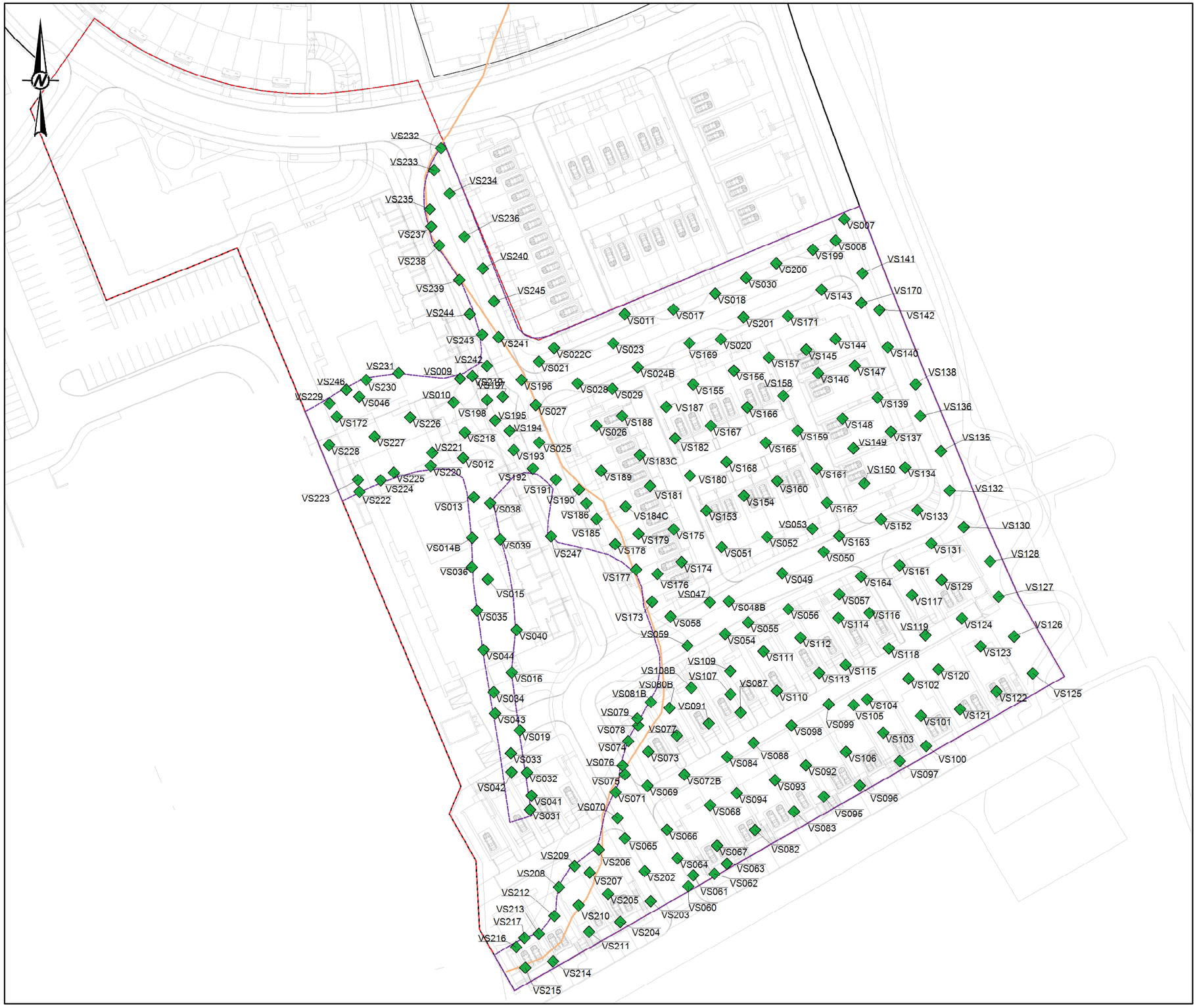

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE SITE BOUNDARY (PHASE TWO LANDS, RSC #1)
- EXCAVATION VERIFICATION SAMPLE
- INTERPRETED ORIGINAL EXTENT OF DEBRIS FILL
- EXTENT OF DEBRIS FILL REMEDIATION

0 12.5 25 50

SCALE 1:1,000 METRES

NOTES

BASEMAP IMPORTED OUT FROM EQUIS AS AN IMAGE.
THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

REFERENCE

DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18 VERTICAL DATUM: CGVD28

CLIENT

GREYSTONE VILLAGE INC.

PROJECT

REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE

COMPARISON OF ORGINALLY INTERPRETED AND ACTUAL EXTENT OF REMEDIATION

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-07-05
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/1	0	G3

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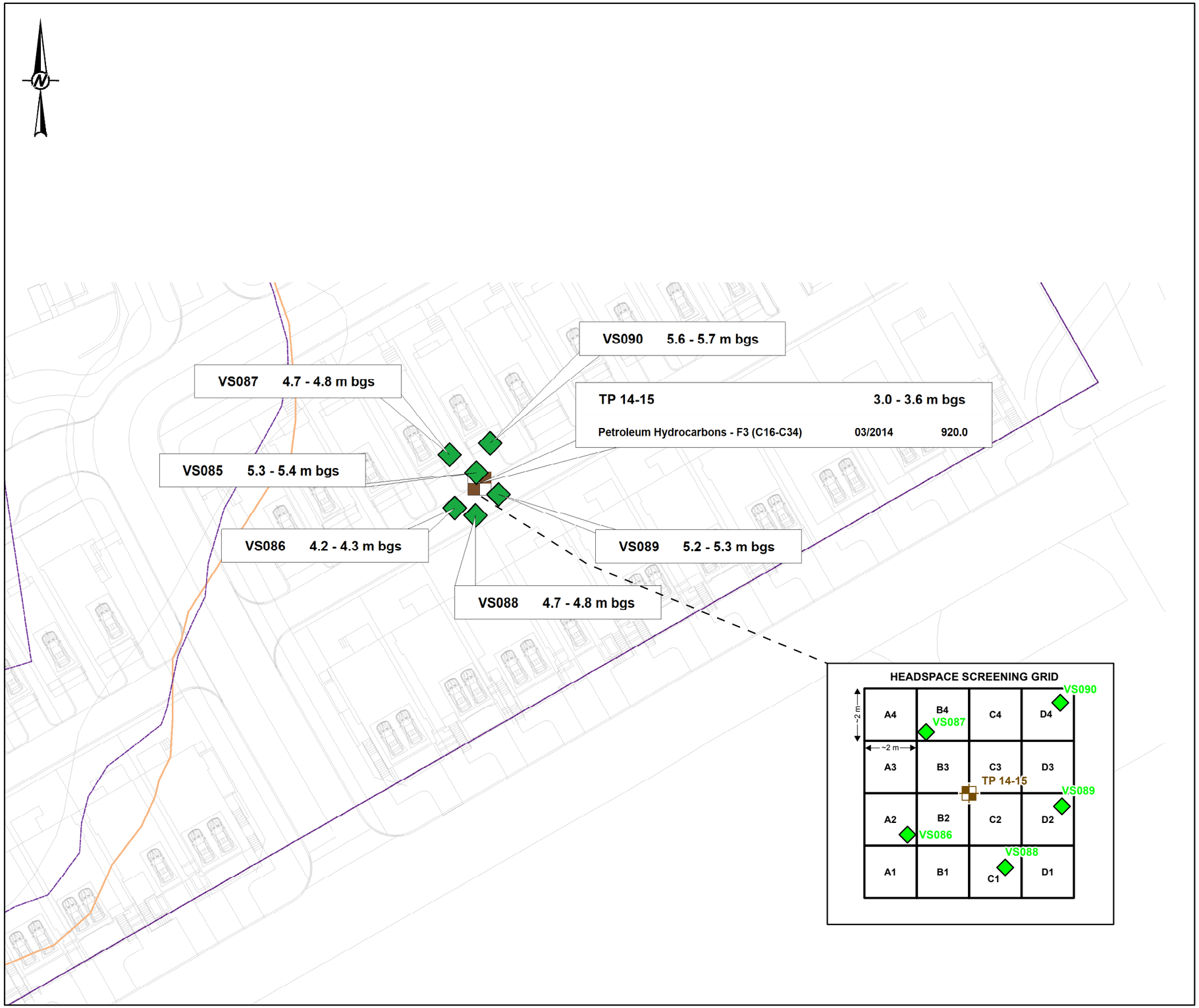
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE SITE BOUNDARY (PHASE TWO LANDS, RSC #1)
- EXCAVATION VERIFICATION SAMPLE
- TEST PIT LOCATION

0 5 10 20

SCALE 1:500 METRES

NOTES

BASEMAP IMPORTED OUT FROM EQUIS AS AN IMAGE.
THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

REFERENCE

DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18 VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
EXTENT OF PHC REMEDIATION AT TP 14-15 (PHC F1-F4+BTEX)

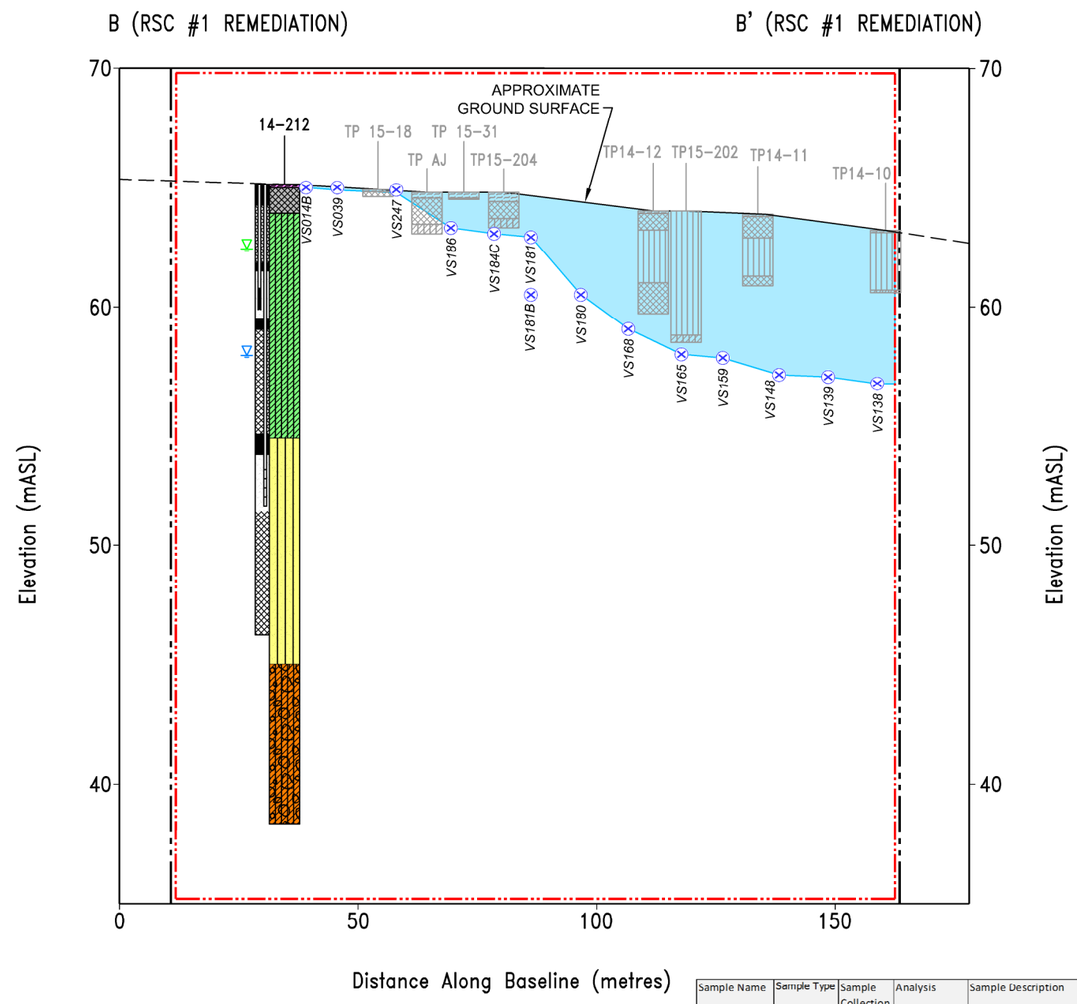
CONSULTANT

Golder Associates

YYYY-MM-DD	2016-07-05
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/1	0	G4

Path: N:\Active\Spatial_IM\The_Regional_Group\RegionalGroupOblatesPropOttawa\GIS\MXD\d\1525113\Ph1000_AddPhIIESAs\RSC_Remediation\Report\1525113-1000-1-HS-00G4.mxd
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm



Sample Name	Sample Type	Sample Collection Date	Analysis	Sample Description	Sample Elevation (masl)	Excavated?
VS200	Floor	5/31/2016	Metals, PAH	Grey brown silty clay (native)	57.57	Final Sample
VS171	Floor	5/20/2016	Metals, PAII	Grey brown silty clay (native)	56.87	Final Sample
VS145	Floor	5/10/2016	Metals, PAH	Grey silty clay (native)	57.54	Final Sample
VS146	Floor	5/10/2016	Metals, PAH	Grey silty clay (native)	57.52	Final Sample
VS148	Floor	5/11/2016	Metals, PAH	Grey silty clay (native)	57.15	Final Sample
VS149	Floor	5/11/2016	Metals, PAH	Grey silty clay (native)	57.03	Final Sample
VS150	Floor	5/11/2016	Metals, PAH	Grey silty clay (native)	56.92	Final Sample
VS152	Floor	5/12/2016	Metals, PAH	Grey brown silty clay (native)	57.02	Final Sample
VS151	Floor	5/12/2016	Metals, PAH	Grey brown silty clay (native)	57.13	Final Sample
VS117	Floor	4/26/2016	Metals, PAH	Grey brown silty clay (native)	57.09	Final Sample
VS119	Floor	4/26/2016	Metals, PAH	Grey brown silty clay (native)	56.66	Final Sample
VS120	Floor	4/26/2016	Metals, PAH	Grey brown silty clay (native)	56.47	Final Sample
VS1120 (Field Dup. of VS120)	Floor	4/26/2016	Metals, PAH	Grey brown silty clay (native)	56.47	Final Sample
VS121	Floor	4/26/2016	Metals, PAH	Grey brown silty clay (native)	56.39	Final Sample

LEGEND

BOREHOLE/MONITORING WELL/TEST PIT IDENTIFIER — 14-01

SHALLOW WELL SCREEN
SHALLOW WELL STANDPIPE
GROUNDWATER LEVEL
STRATIGRAPHY
DEEP STANDPIPE

SHALLOW GROUNDWATER LEVEL, mbgs
DEEP GROUNDWATER LEVEL, mbgs

APPROXIMATE SITE BOUNDARY (PHASE 2 LANDS. RSC #1)

APPROXIMATE PROPERTY BOUNDARY

APPROXIMATE AREA OF DEBRIS FILL WITH CONCENTRATIONS EXCEEDING MOECC TABLE 3 RESIDENTIAL CRITERIA FOR METALS AND PAH'S

TOPSOIL: SILTY SAND WITH SOME GRAVEL, ROOTS AND ORGANIC MATTER

SOIL FILL : SANDY SILT OR SILTY TO FINE SAND WITH SOME CLAY AND GRAVEL, WITH LITTLE TO NO DEBRIS/REFUSE

DEBRIS FILL: MIXTURE OF SILTY SAND OR CLAYEY SILT WITH SOME GRAVEL AND TRACES OF FINES AND DEBRIS/REFUSE (ASH, WOOD, PLASTIC, WIRE, PAPER, BRICK FRAGMENTS, ASPHALT PIECES, CONCRETE, METAL FRAGMENTS AND/OR GLASS)

NATIVE SOIL: SILTY CLAY/CLAYEY SILT

NATIVE SOIL: SILTY SAND TO SILT

NATIVE SOIL: GLACIAL TILL

FINAL REMEDIAL EXCAVATION EXTENT FOR RSC #1

EXCAVATED LOCATION

EXCAVATION VERIFICATION SAMPLE

NOTES

WHERE NEARBY BOREHOLES AND/OR TEST PITS ARE NOT OF SUFFICIENT DEPTH, THE DEBRIS FILL HAS BEEN ASSUMED TO EXTEND TO THE ESTIMATED ELEVATION OF THE SILTY CLAY OUTLINED ON FIGURE 10.

FOR DETAILED SOIL STRATIGRAPHY AND OR GROUNDWATER CONDITIONS, REFER TO RECORD OF BOREHOLE AND TEST PIT SHEETS

SEE FIGURE G2 FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113/1000/1.

VERTICAL SCALE
0 5 10
1:250 METRES

HORIZONTAL SCALE
0 25 50
1:1,250 METRES

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1 OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

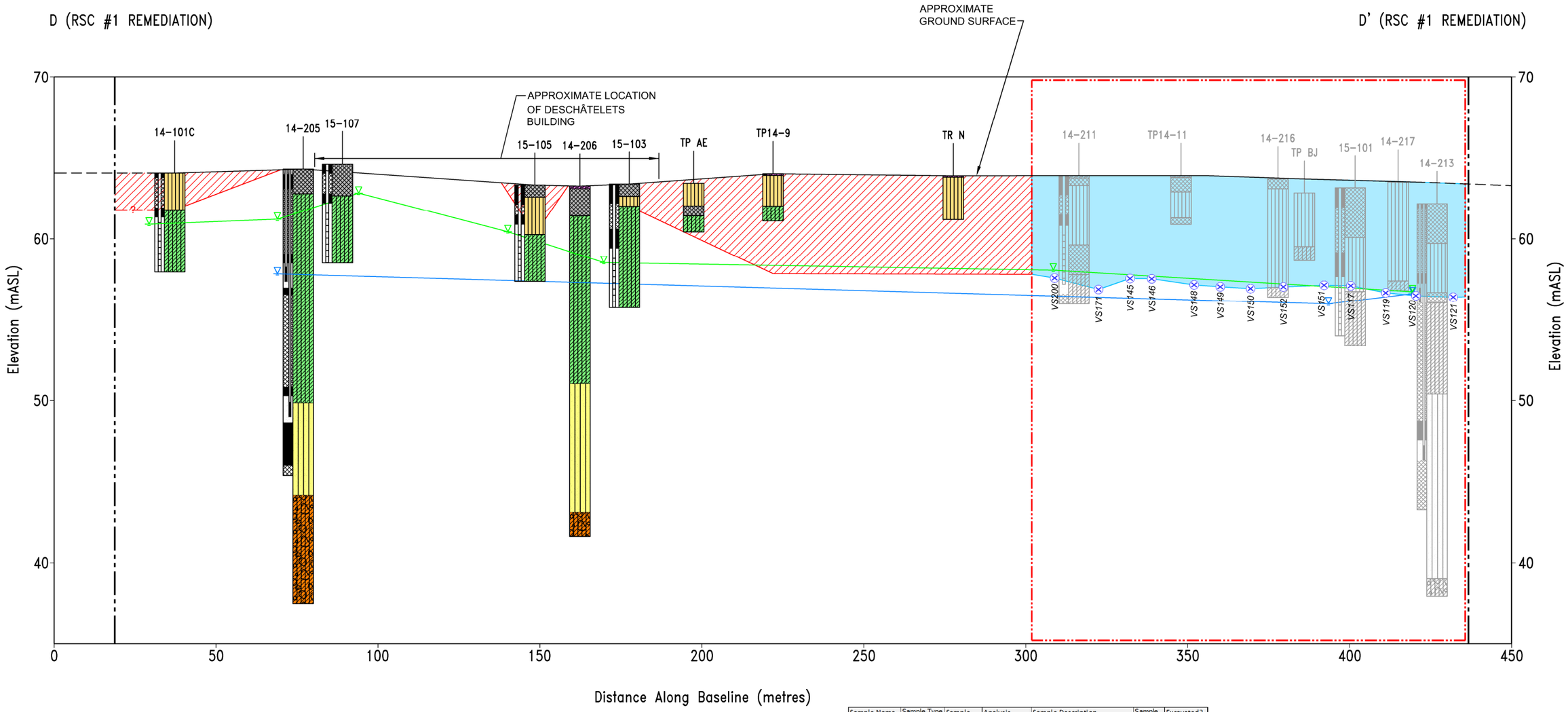
CONSULTANT
Golder Associates

YYYY-MM-DD	2016-07-05
PREPARED	JEM
DESIGN	----
REVIEW	MS
APPROVED	PAS

TITLE
CROSS-SECTION B (RSC #1 REMEDIATION)-B' (RSC #1 REMEDATION)

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/1	0	G5

Path: \\golder.gds\gal\ottawa\Active\Spatial_MT\Re_Regional_Group\Regional\Group\Oblates\Prop\Ottawa\CAD\1525113\PRODUCTION\Phase1000\ | File Name: 1525113-1000-1-HS-00G5.dwg
25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



Sample Name	Sample Type	Sample Collection Date	Analysis	Sample Description	Sample Elevation (masl)	Excavated?
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VS150	Floor	5/11/2016	Metals, PAH	Grey silty clay (native)	56.92	Final Sample
VS152	Floor	5/12/2016	Metals, PAH	Grey brown silty clay (native)	57.02	Final Sample
VS151	Floor	5/12/2016	Metals, PAH	Grey brown silty clay (native)	57.13	Final Sample
VS117	Floor	4/26/2016	Metals, PAH	Grey brown silty clay (native)	57.09	Final Sample
VS119	Floor	4/26/2016	Metals, PAH	Grey brown silty clay (native)	56.66	Final Sample
VS120	Floor	4/26/2016	Metals, PAH	Grey-brown clay	56.47	Final Sample
VS1120 (Field Dup. of VS120)	Floor	4/26/2016	Metals, PAH	Grey-brown clay	56.47	Final Sample
VS121	Floor	4/26/2016	Metals, PAH	Grey brown silty clay (native)	56.39	Final Sample

LEGEND

BOREHOLE/MONITORING WELL/TEST PIT IDENTIFIER — 14-01

SHALLOW WELL SCREEN

SHALLOW WELL STANDPIPE

GROUNDWATER LEVEL

STRATIGRAPHY

DEEP STANDPIPE

SHALLOW GROUNDWATER LEVEL, mbgs

DEEP GROUNDWATER LEVEL, mbgs

APPROXIMATE SITE BOUNDARY (PHASE 2 LANDS, RSC #1)

APPROXIMATE PROPERTY BOUNDARY

APPROXIMATE AREA OF DEBRIS FILL WITH CONCENTRATIONS EXCEEDING MOECC TABLE 3 RESIDENTIAL CRITERIA FOR METALS AND PAH'S

TOPSOIL: SILTY SAND WITH SOME GRAVEL, ROOTS AND ORGANIC MATTER

SOIL FILL : SANDY SILT OR SILTY TO FINE SAND WITH SOME CLAY AND GRAVEL, WITH LITTLE TO NO DEBRIS/REFUSE

DEBRIS FILL: MIXTURE OF SILTY SAND OR CLAYEY SILT WITH SOME GRAVEL AND TRACES OF FINES AND DEBRIS/REFUSE (ASH, WOOD, PLASTIC, WIRE, PAPER, BRICK FRAGMENTS, ASPHALT PIECES, CONCRETE, METAL FRAGMENTS AND/OR GLASS)

NATIVE SOIL: SILTY CLAY/CLAYEY SILT

NATIVE SOIL: SILTY SAND TO SILT

NATIVE SOIL: GLACIAL TILL

FINAL REMEDIAL EXCAVATION EXTENT FOR RSC #1

EXCAVATED LOCATION

EXCAVATION VERIFICATION SAMPLE

NOTES

WHERE NEARBY BOREHOLES AND/OR TEST PITS ARE NOT OF SUFFICIENT DEPTH, THE DEBRIS FILL HAS BEEN ASSUMED TO EXTEND TO THE ESTIMATED ELEVATION OF THE SILTY CLAY OUTLINED ON FIGURE 10.

FOR DETAILED SOIL STRATIGRAPHY AND OR GROUNDWATER CONDITIONS, REFER TO RECORD OF BOREHOLE AND TEST PIT SHEETS

SEE FIGURE G2 FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113/1000/1.

VERTICAL SCALE

0 5 10

1:250 METRES

HORIZONTAL SCALE

0 25 50

1:1,250 METRES

CLIENT

GREYSTONE VILLAGE INC.

PROJECT

REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1 OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-07-05
PREPARED	JEM
DESIGN	----
REVIEW	MS
APPROVED	PAS

TITLE

CROSS-SECTION D (RSC #1 REMEDATION)-D' (RSC #1 REMEDATION)

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/1	0	G6

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25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

ATTACHMENT E – Laboratory Certificates of Analysis (RSC #1)

Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Site#: 1525113
Site Location: OBLATE
Your C.O.C. #: 537168-05-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2015/11/24
Report #: R3780287
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5O0325
Received: 2015/11/23, 16:00

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	2	N/A	2015/11/24	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	2	2015/11/24	2015/11/24	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	2	2015/11/24	2015/11/24	CAM SOP-00447	EPA 6020A m
Moisture (1)	2	N/A	2015/11/24	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	2	2015/11/24	2015/11/24	CAM SOP-00318	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Ema Gitej
24 Nov 2015 17:38:26 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: EGitej@maxxam.ca
Phone# (905)817-5829

==========

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.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B5O0325
Report Date: 2015/11/24

Golder Associates Ltd
Client Project #: 1525113
Site Location: OBLATE
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BKB476	BKB476	BKB477		
Sampling Date			2015/11/23 13:30	2015/11/23 13:30	2015/11/23 14:00		
COC Number			537168-05-01	537168-05-01	537168-05-01		
	UNITS	Criteria	VS001	VS001 Lab-Dup	VS002	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	**7.5**	0.25	0.28	<0.20	0.20	4284509
Acid Extractable Arsenic (As)	ug/g	**18**	1.2	1.2	<1.0	1.0	4284509
Acid Extractable Barium (Ba)	ug/g	**390**	59	59	55	0.50	4284509
Acid Extractable Beryllium (Be)	ug/g	**4**	0.27	0.27	<0.20	0.20	4284509
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	5.0	4284509
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.10	4284509
Acid Extractable Chromium (Cr)	ug/g	**160**	21	22	19	1.0	4284509
Acid Extractable Cobalt (Co)	ug/g	**22**	5.4	5.2	4.5	0.10	4284509
Acid Extractable Copper (Cu)	ug/g	**140**	13	13	9.0	0.50	4284509
Acid Extractable Lead (Pb)	ug/g	**120**	26	26	9.9	1.0	4284509
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.53	0.54	<0.50	0.50	4284509
Acid Extractable Nickel (Ni)	ug/g	**100**	13	14	10	0.50	4284509
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	0.50	4284509
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	0.20	4284509
Acid Extractable Thallium (Tl)	ug/g	**1**	0.11	0.087	0.075	0.050	4284509
Acid Extractable Uranium (U)	ug/g	**23**	0.43	0.44	0.33	0.050	4284509
Acid Extractable Vanadium (V)	ug/g	**86**	23	25	19	5.0	4284509
Acid Extractable Zinc (Zn)	ug/g	**340**	35	37	23	5.0	4284509
Acid Extractable Mercury (Hg)	ug/g	**0.27**	0.060	0.061	<0.050	0.050	4284509

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B5O0325
Report Date: 2015/11/24

Golder Associates Ltd
Client Project #: 1525113
Site Location: OBLATE
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BKB476	BKB476	BKB477	BKB477		
Sampling Date			2015/11/23 13:30	2015/11/23 13:30	2015/11/23 14:00	2015/11/23 14:00		
COC Number			537168-05-01	537168-05-01	537168-05-01	537168-05-01		
	UNITS	Criteria	VS001	VS001 Lab-Dup	VS002	VS002 Lab-Dup	RDL	QC Batch
Inorganics								
Moisture	%	-	12		12	12	1.0	4284099
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.071		<0.071		0.071	4282513
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**7.9**	0.12	0.15	0.055		0.050	4284154
Acenaphthylene	ug/g	**0.15**	**0.59**	**0.52**	**0.40**		0.050	4284154
Anthracene	ug/g	**0.67**	0.30	0.32	0.29		0.050	4284154
Benzo(a)anthracene	ug/g	**0.5**	**0.57**	**0.75**	**0.60**		0.050	4284154
Benzo(a)pyrene	ug/g	**0.3**	**0.92**	**0.99**	**0.81**		0.050	4284154
Benzo(b/j)fluoranthene	ug/g	**0.78**	**1.1**	**1.2**	**0.95**		0.050	4284154
Benzo(g,h,i)perylene	ug/g	**6.6**	0.82	0.76	0.65		0.050	4284154
Benzo(k)fluoranthene	ug/g	**0.78**	0.33	0.37	0.29		0.050	4284154
Chrysene	ug/g	**7**	0.45	0.61	0.48		0.050	4284154
Dibenz(a,h)anthracene	ug/g	**0.1**	**0.14**	**0.15**	**0.12**		0.050	4284154
Fluoranthene	ug/g	**0.69**	**0.76**	**1.1**	**0.93**		0.050	4284154
Fluorene	ug/g	**62**	0.19	0.21	0.13		0.050	4284154
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	**0.92**	**0.91**	**0.74**		0.050	4284154
1-Methylnaphthalene	ug/g	**0.99**	<0.050	<0.050	<0.050		0.050	4284154
2-Methylnaphthalene	ug/g	**0.99**	0.058	0.058	<0.050		0.050	4284154
Naphthalene	ug/g	**0.6**	0.14	0.12	0.10		0.050	4284154
Phenanthrene	ug/g	**6.2**	0.26	0.37	0.51		0.050	4284154
Pyrene	ug/g	**78**	0.69	0.95	0.79		0.050	4284154
Surrogate Recovery (%)								
D10-Anthracene	%	-	94	84	86			4284154
D14-Terphenyl (FS)	%	-	76	72	69			4284154
D8-Acenaphthylene	%	-	101	94	90			4284154

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
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Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B5O0325
Report Date: 2015/11/24

Golder Associates Ltd
Client Project #: 1525113
Site Location: OBLATE
Sampler Initials: TL

RESULTS OF ANALYSES OF SOIL

Maxxam ID			BKB476	BKB477		
Sampling Date			2015/11/23 13:30	2015/11/23 14:00		
COC Number			537168-05-01	537168-05-01		
	UNITS	Criteria	VS001	VS002	RDL	QC Batch
Inorganics						
Chromium (VI)	ug/g	8	<0.2	<0.2	0.2	4283635

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
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Maxxam Job #: B5O0325
Report Date: 2015/11/24

Golder Associates Ltd
Client Project #: 1525113
Site Location: OBLATE
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BKB476
Sample ID: VS001
Matrix: Soil

Collected: 2015/11/23
Shipped:
Received: 2015/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4282513	N/A	2015/11/24	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4283635	2015/11/24	2015/11/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4284509	2015/11/24	2015/11/24	Viviana Canzonieri
Moisture	BAL	4284099	N/A	2015/11/24	Jessy Mathew Vinod
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4284154	2015/11/24	2015/11/24	Lingyun Feng

Maxxam ID: BKB476 Dup
Sample ID: VS001
Matrix: Soil

Collected: 2015/11/23
Shipped:
Received: 2015/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4284509	2015/11/24	2015/11/24	Viviana Canzonieri
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4284154	2015/11/24	2015/11/24	Lingyun Feng

Maxxam ID: BKB477
Sample ID: VS002
Matrix: Soil

Collected: 2015/11/23
Shipped:
Received: 2015/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4282513	N/A	2015/11/24	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4283635	2015/11/24	2015/11/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4284509	2015/11/24	2015/11/24	Viviana Canzonieri
Moisture	BAL	4284099	N/A	2015/11/24	Jessy Mathew Vinod
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4284154	2015/11/24	2015/11/24	Lingyun Feng

Maxxam ID: BKB477 Dup
Sample ID: VS002
Matrix: Soil

Collected: 2015/11/23
Shipped:
Received: 2015/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4284099	N/A	2015/11/24	Jessy Mathew Vinod

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Maxxam Job #: B5O0325
Report Date: 2015/11/24

Golder Associates Ltd
Client Project #: 1525113
Site Location: OBLATE
Sampler Initials: TL

GENERAL COMMENTS

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

Package 1	2.7°C

The cooler custody seal was present and intact.
PAH analysis: Due to the sample matrix, samples required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Site Location: OBLATE
Sampler Initials: TL

			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
4284154	D10-Anthracene	2015/11/24	92	50 - 130	87	50 - 130	97	%				
4284154	D14-Terphenyl (FS)	2015/11/24	73	50 - 130	74	50 - 130	81	%				
4284154	D8-Acenaphthylene	2015/11/24	98	50 - 130	99	50 - 130	108	%				
4283635	Chromium (VI)	2015/11/24	46 (1)	75 - 125	99	80 - 120	<0.2	ug/g	NC	35	91	80 - 120
4284099	Moisture	2015/11/24							0	20		
4284154	1-Methylnaphthalene	2015/11/24	72	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40		
4284154	2-Methylnaphthalene	2015/11/24	72	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40		
4284154	Acenaphthene	2015/11/24	76	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40		
4284154	Acenaphthylene	2015/11/24	69	50 - 130	92	50 - 130	<0.0050	ug/g	12	40		
4284154	Anthracene	2015/11/24	101	50 - 130	80	50 - 130	<0.0050	ug/g	8.9	40		
4284154	Benzo(a)anthracene	2015/11/24	NC	50 - 130	94	50 - 130	<0.0050	ug/g	27	40		
4284154	Benzo(a)pyrene	2015/11/24	NC	50 - 130	91	50 - 130	<0.0050	ug/g	7.5	40		
4284154	Benzo(b/j)fluoranthene	2015/11/24	122	50 - 130	82	50 - 130	<0.0050	ug/g	12	40		
4284154	Benzo(g,h,i)perylene	2015/11/24	93	50 - 130	80	50 - 130	<0.0050	ug/g	7.9	40		
4284154	Benzo(k)fluoranthene	2015/11/24	NC	50 - 130	77	50 - 130	<0.0050	ug/g	12	40		
4284154	Chrysene	2015/11/24	NC	50 - 130	88	50 - 130	<0.0050	ug/g	30	40		
4284154	Dibenz(a,h)anthracene	2015/11/24	112	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40		
4284154	Fluoranthene	2015/11/24	NC	50 - 130	81	50 - 130	<0.0050	ug/g	34	40		
4284154	Fluorene	2015/11/24	79	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40		
4284154	Indeno(1,2,3-cd)pyrene	2015/11/24	NC	50 - 130	99	50 - 130	<0.0050	ug/g	1.7	40		
4284154	Naphthalene	2015/11/24	63	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		
4284154	Phenanthrene	2015/11/24	NC	50 - 130	78	50 - 130	<0.0050	ug/g	36	40		
4284154	Pyrene	2015/11/24	NC	50 - 130	80	50 - 130	<0.0050	ug/g	31	40		
4284509	Acid Extractable Antimony (Sb)	2015/11/24	97	75 - 125	98	80 - 120	<0.20	ug/g	NC	30		
4284509	Acid Extractable Arsenic (As)	2015/11/24	96	75 - 125	99	80 - 120	<1.0	ug/g	NC	30		
4284509	Acid Extractable Barium (Ba)	2015/11/24	NC	75 - 125	105	80 - 120	<0.50	ug/g	0.83	30		
4284509	Acid Extractable Beryllium (Be)	2015/11/24	97	75 - 125	97	80 - 120	<0.20	ug/g	NC	30		
4284509	Acid Extractable Boron (B)	2015/11/24	91	75 - 125	92	80 - 120	<5.0	ug/g	NC	30		
4284509	Acid Extractable Cadmium (Cd)	2015/11/24	100	75 - 125	101	80 - 120	<0.10	ug/g	NC	30		
4284509	Acid Extractable Chromium (Cr)	2015/11/24	NC	75 - 125	99	80 - 120	<1.0	ug/g	5.9	30		
4284509	Acid Extractable Cobalt (Co)	2015/11/24	96	75 - 125	98	80 - 120	<0.10	ug/g	3.1	30		

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Maxxam Job #: B5O0325
Report Date: 2015/11/24

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Site Location: OBLATE
Sampler Initials: TL

			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
4284509	Acid Extractable Copper (Cu)	2015/11/24	NC	75 - 125	99	80 - 120	<0.50	ug/g	1.8	30		
4284509	Acid Extractable Lead (Pb)	2015/11/24	NC	75 - 125	100	80 - 120	<1.0	ug/g	1.1	30		
4284509	Acid Extractable Mercury (Hg)	2015/11/24	105	75 - 125	107	80 - 120	<0.050	ug/g	NC	30		
4284509	Acid Extractable Molybdenum (Mo)	2015/11/24	100	75 - 125	100	80 - 120	<0.50	ug/g	NC	30		
4284509	Acid Extractable Nickel (Ni)	2015/11/24	NC	75 - 125	99	80 - 120	<0.50	ug/g	8.0	30		
4284509	Acid Extractable Selenium (Se)	2015/11/24	99	75 - 125	105	80 - 120	<0.50	ug/g	NC	30		
4284509	Acid Extractable Silver (Ag)	2015/11/24	99	75 - 125	97	80 - 120	<0.20	ug/g	NC	30		
4284509	Acid Extractable Thallium (Tl)	2015/11/24	96	75 - 125	99	80 - 120	<0.050	ug/g	NC	30		
4284509	Acid Extractable Uranium (U)	2015/11/24	87	75 - 125	90	80 - 120	<0.050	ug/g	2.4	30		
4284509	Acid Extractable Vanadium (V)	2015/11/24	NC	75 - 125	101	80 - 120	<5.0	ug/g	NC	30		
4284509	Acid Extractable Zinc (Zn)	2015/11/24	NC	75 - 125	96	80 - 120	<5.0	ug/g	5.4	30		

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B5O0325
Report Date: 2015/11/24

Golder Associates Ltd
Client Project #: 1525113
Site Location: OBLATE
Sampler Initials: TL

VALIDATION SIGNATURE PAGE

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

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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 537168
Attention:	Central Accounting	Attention:	Paul Hurst / Tony Lyon	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:	Oblate	C#537168-05-01	Ema Gitej
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	phurst@golder.com / tlyon@golder.com	Sampled By:	Tony Lyon		

DE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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: Nov 29, '15 Time Required: EOD ☑
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	Laflecha Landfill (TCLP METALS, REG 153 PHCs)	# of Bottles	Comments
1		VS001	Nov 23, '15	13:30	Soil	N	✓	✓		1	
2		VS002	Nov 23, '15	14:00	Soil	N	✓	✓		1	
3											
4											
5											
6											
7											
8											
9											ON ICE PACK.
10											

23-Nov-15 16:00
Ema Gitej
B5O0325
FHB OTT-002

RECEIVED 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
Tony Lyon	15/11/23	15:30	[signature]	15/11/23	16:00			3, 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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B500325
Report Date: 2015/11/24

Golder Associates Ltd
Client Project #: 1525113
Site Location: OBLATE
Sampler Initials: TL

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS001	BKB476-01-Lab Dup	Acenaphthylene	0.15	0.52	0.050	ug/g
VS001	BKB476-01	Acenaphthylene	0.15	0.59	0.050	ug/g
VS001	BKB476-01	Benzo(a)anthracene	0.5	0.57	0.050	ug/g
VS001	BKB476-01-Lab Dup	Benzo(a)anthracene	0.5	0.75	0.050	ug/g
VS001	BKB476-01	Benzo(a)pyrene	0.3	0.92	0.050	ug/g
VS001	BKB476-01-Lab Dup	Benzo(a)pyrene	0.3	0.99	0.050	ug/g
VS001	BKB476-01	Benzo(b/j)fluoranthene	0.78	1.1	0.050	ug/g
VS001	BKB476-01-Lab Dup	Benzo(b/j)fluoranthene	0.78	1.2	0.050	ug/g
VS001	BKB476-01	Dibenz(a,h)anthracene	0.1	0.14	0.050	ug/g
VS001	BKB476-01-Lab Dup	Dibenz(a,h)anthracene	0.1	0.15	0.050	ug/g
VS001	BKB476-01	Fluoranthene	0.69	0.76	0.050	ug/g
VS001	BKB476-01-Lab Dup	Fluoranthene	0.69	1.1	0.050	ug/g
VS001	BKB476-01-Lab Dup	Indeno(1,2,3-cd)pyrene	0.38	0.91	0.050	ug/g
VS001	BKB476-01	Indeno(1,2,3-cd)pyrene	0.38	0.92	0.050	ug/g
VS002	BKB477-01	Acenaphthylene	0.15	0.40	0.050	ug/g
VS002	BKB477-01	Benzo(a)anthracene	0.5	0.60	0.050	ug/g
VS002	BKB477-01	Benzo(a)pyrene	0.3	0.81	0.050	ug/g
VS002	BKB477-01	Benzo(b/j)fluoranthene	0.78	0.95	0.050	ug/g
VS002	BKB477-01	Dibenz(a,h)anthracene	0.1	0.12	0.050	ug/g
VS002	BKB477-01	Fluoranthene	0.69	0.93	0.050	ug/g
VS002	BKB477-01	Indeno(1,2,3-cd)pyrene	0.38	0.74	0.050	ug/g

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 537168-06-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2015/11/25
Report #: R3781998
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5O1366
Received: 2015/11/24, 15:40

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	3	N/A	2015/11/25	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	3	2015/11/25	2015/11/25	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	3	2015/11/25	2015/11/25	CAM SOP-00447	EPA 6020A m
Moisture (1)	3	N/A	2015/11/25	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	3	2015/11/25	2015/11/25	CAM SOP-00318	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key

Ema Gitej
25 Nov 2015 21:21:25 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: EGitej@maxxam.ca
Phone# (905)817-5829

==========

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Maxxam
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Maxxam Job #: B5O1366
Report Date: 2015/11/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BKG619	BKG620	BKG620	BKG621		
Sampling Date			2015/11/24 14:00	2015/11/24 14:05	2015/11/24 14:05	2015/11/24 14:10		
COC Number			537168-06-01	537168-06-01	537168-06-01	537168-06-01		
	UNITS	Criteria	VS003	VS004	VS004 Lab-Dup	VS005	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	2.3	0.38	0.24	3.5	0.20	4286599
Acid Extractable Arsenic (As)	ug/g	**18**	2.8	2.0	1.9	6.0	1.0	4286599
Acid Extractable Barium (Ba)	ug/g	**390**	290	320	320	190	0.50	4286599
Acid Extractable Beryllium (Be)	ug/g	**4**	0.66	0.75	0.74	0.36	0.20	4286599
Acid Extractable Boron (B)	ug/g	**120**	5.6	<5.0	<5.0	<5.0	5.0	4286599
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.26	0.14	0.18	0.40	0.10	4286599
Acid Extractable Chromium (Cr)	ug/g	**160**	87	100	100	37	1.0	4286599
Acid Extractable Cobalt (Co)	ug/g	**22**	18	20	21	8.2	0.10	4286599
Acid Extractable Copper (Cu)	ug/g	**140**	54	58	59	28	0.50	4286599
Acid Extractable Lead (Pb)	ug/g	**120**	120	68	49 (1)	**240**	1.0	4286599
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	1.2	<0.50	<0.50	0.66	0.50	4286599
Acid Extractable Nickel (Ni)	ug/g	**100**	49	57	59	21	0.50	4286599
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	0.53	<0.50	0.94	0.50	4286599
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	0.23	0.20	4286599
Acid Extractable Thallium (Tl)	ug/g	**1**	0.34	0.42	0.40	0.24	0.050	4286599
Acid Extractable Uranium (U)	ug/g	**23**	1.2	0.70	0.71	0.51	0.050	4286599
Acid Extractable Vanadium (V)	ug/g	**86**	86	**100**	**100**	41	5.0	4286599
Acid Extractable Zinc (Zn)	ug/g	**340**	160	150	150	240	5.0	4286599
Acid Extractable Mercury (Hg)	ug/g	**0.27**	0.17	0.087	0.086	**0.40**	0.050	4286599

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture
(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 #: B5O1366
Report Date: 2015/11/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BKG619	BKG620		BKG621	BKG621		
Sampling Date			2015/11/24 14:00	2015/11/24 14:05		2015/11/24 14:10	2015/11/24 14:10		
COC Number			537168-06-01	537168-06-01		537168-06-01	537168-06-01		
	UNITS	Criteria	VS003	VS004	RDL	VS005	VS005 Lab-Dup	RDL	QC Batch
Inorganics									
Moisture	%	-	26	29	1.0	15	15	1.0	4285860
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	0.063	0.011	0.0071	0.49		0.071	4284180
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	0.16	0.027	0.0050	1.2	0.85	0.050	4285857
Acenaphthylene	ug/g	**0.15**	0.030	0.012	0.0050	**0.16**	**0.34 (1)**	0.050	4285857
Anthracene	ug/g	**0.67**	0.29	0.059	0.0050	**2.0**	**2.1**	0.050	4285857
Benzo(a)anthracene	ug/g	**0.5**	**0.60**	0.14	0.0050	**3.8**	**4.1**	0.050	4285857
Benzo(a)pyrene	ug/g	**0.3**	**0.54**	0.12	0.0050	**3.4**	**3.9**	0.050	4285857
Benzo(b/j)fluoranthene	ug/g	**0.78**	**0.80**	0.19	0.0050	**5.2**	**5.6**	0.050	4285857
Benzo(g,h,i)perylene	ug/g	**6.6**	0.34	0.074	0.0050	2.0	2.3	0.050	4285857
Benzo(k)fluoranthene	ug/g	**0.78**	0.24	0.060	0.0050	**1.7**	**1.9**	0.050	4285857
Chrysene	ug/g	**7**	0.55	0.13	0.0050	3.5	3.8	0.050	4285857
Dibenz(a,h)anthracene	ug/g	**0.1**	0.084	0.019	0.0050	**0.52**	**0.58**	0.050	4285857
Fluoranthene	ug/g	**0.69**	**1.6**	0.33	0.0050	**11**	**11**	0.050	4285857
Fluorene	ug/g	**62**	0.16	0.023	0.0050	1.3	1.1	0.050	4285857
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.38	0.085	0.0050	**2.3**	**2.6**	0.050	4285857
1-Methylnaphthalene	ug/g	**0.99**	0.027	0.0052	0.0050	0.23	0.28	0.050	4285857
2-Methylnaphthalene	ug/g	**0.99**	0.035	0.0053	0.0050	0.26	0.32	0.050	4285857
Naphthalene	ug/g	**0.6**	0.040	0.0093	0.0050	0.56	**0.79**	0.050	4285857
Phenanthrene	ug/g	**6.2**	1.5	0.23	0.0050	**9.3**	**9.2**	0.050	4285857
Pyrene	ug/g	**78**	1.2	0.26	0.0050	7.3	8.0	0.050	4285857
Surrogate Recovery (%)									
D10-Anthracene	%	-	80	85		84	88		4285857
D14-Terphenyl (FS)	%	-	85	86		81	87		4285857
D8-Acenaphthylene	%	-	77	79		66	70		4285857

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture
(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 #: B5O1366
Report Date: 2015/11/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

RESULTS OF ANALYSES OF SOIL

Maxxam ID			BKG619	BKG620	BKG621		
Sampling Date			2015/11/24 14:00	2015/11/24 14:05	2015/11/24 14:10		
COC Number			537168-06-01	537168-06-01	537168-06-01		
	UNITS	Criteria	VS003	VS004	VS005	RDL	QC Batch
Inorganics							
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	0.2	4285223

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5O1366
Report Date: 2015/11/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BKG619
Sample ID: VS003
Matrix: Soil

Collected: 2015/11/24
Shipped:
Received: 2015/11/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4284180	N/A	2015/11/25	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4285223	2015/11/25	2015/11/25	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4286599	2015/11/25	2015/11/25	Grace Bu
Moisture	BAL	4285860	N/A	2015/11/25	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4285857	2015/11/25	2015/11/25	Lingyun Feng

Maxxam ID: BKG620
Sample ID: VS004
Matrix: Soil

Collected: 2015/11/24
Shipped:
Received: 2015/11/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4284180	N/A	2015/11/25	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4285223	2015/11/25	2015/11/25	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4286599	2015/11/25	2015/11/25	Grace Bu
Moisture	BAL	4285860	N/A	2015/11/25	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4285857	2015/11/25	2015/11/25	Lingyun Feng

Maxxam ID: BKG620 Dup
Sample ID: VS004
Matrix: Soil

Collected: 2015/11/24
Shipped:
Received: 2015/11/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4286599	2015/11/25	2015/11/25	Grace Bu

Maxxam ID: BKG621
Sample ID: VS005
Matrix: Soil

Collected: 2015/11/24
Shipped:
Received: 2015/11/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4284180	N/A	2015/11/25	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4285223	2015/11/25	2015/11/25	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4286599	2015/11/25	2015/11/25	Grace Bu
Moisture	BAL	4285860	N/A	2015/11/25	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4285857	2015/11/25	2015/11/25	Lingyun Feng

Maxxam ID: BKG621 Dup
Sample ID: VS005
Matrix: Soil

Collected: 2015/11/24
Shipped:
Received: 2015/11/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4285860	N/A	2015/11/25	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4285857	2015/11/25	2015/11/25	Lingyun Feng

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Maxxam Job #: B5O1366
Report Date: 2015/11/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

GENERAL COMMENTS

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

Package 1	2.3°C

Sample BKG621-01 : PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4285857	D10-Anthracene	2015/11/25	91	50 - 130	85	50 - 130	84	%				
4285857	D14-Terphenyl (FS)	2015/11/25	85	50 - 130	85	50 - 130	82	%				
4285857	D8-Acenaphthylene	2015/11/25	75	50 - 130	77	50 - 130	77	%				
4285223	Chromium (VI)	2015/11/25	0 (1)	75 - 125	101	80 - 120	<0.2	ug/g	NC	35	91	80 - 120
4285857	1-Methylnaphthalene	2015/11/25	62	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		
4285857	2-Methylnaphthalene	2015/11/25	57	50 - 130	83	50 - 130	<0.0050	ug/g	19	40		
4285857	Acenaphthene	2015/11/25	NC	50 - 130	85	50 - 130	<0.0050	ug/g	32	40		
4285857	Acenaphthylene	2015/11/25	96	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40		
4285857	Anthracene	2015/11/25	NC	50 - 130	80	50 - 130	<0.0050	ug/g	4.5	40		
4285857	Benzo(a)anthracene	2015/11/25	NC	50 - 130	80	50 - 130	<0.0050	ug/g	9.3	40		
4285857	Benzo(a)pyrene	2015/11/25	NC	50 - 130	83	50 - 130	<0.0050	ug/g	13	40		
4285857	Benzo(b/j)fluoranthene	2015/11/25	NC	50 - 130	96	50 - 130	<0.0050	ug/g	6.9	40		
4285857	Benzo(g,h,i)perylene	2015/11/25	NC	50 - 130	79	50 - 130	<0.0050	ug/g	16	40		
4285857	Benzo(k)fluoranthene	2015/11/25	NC	50 - 130	94	50 - 130	<0.0050	ug/g	9.7	40		
4285857	Chrysene	2015/11/25	NC	50 - 130	84	50 - 130	<0.0050	ug/g	9.8	40		
4285857	Dibenz(a,h)anthracene	2015/11/25	NC	50 - 130	75	50 - 130	<0.0050	ug/g	11	40		
4285857	Fluoranthene	2015/11/25	NC	50 - 130	82	50 - 130	<0.0050	ug/g	5.6	40		
4285857	Fluorene	2015/11/25	NC	50 - 130	80	50 - 130	<0.0050	ug/g	11	40		
4285857	Indeno(1,2,3-cd)pyrene	2015/11/25	NC	50 - 130	83	50 - 130	<0.0050	ug/g	14	40		
4285857	Naphthalene	2015/11/25	NC	50 - 130	77	50 - 130	<0.0050	ug/g	34	40		
4285857	Phenanthrene	2015/11/25	NC	50 - 130	81	50 - 130	<0.0050	ug/g	2.0	40		
4285857	Pyrene	2015/11/25	NC	50 - 130	81	50 - 130	<0.0050	ug/g	9.1	40		
4285860	Moisture	2015/11/25							0.67	20		
4286599	Acid Extractable Antimony (Sb)	2015/11/25	71	75 - 125	98	80 - 120	<0.20	ug/g	NC	30		
4286599	Acid Extractable Arsenic (As)	2015/11/25	101	75 - 125	101	80 - 120	<1.0	ug/g	NC	30		
4286599	Acid Extractable Barium (Ba)	2015/11/25	119	75 - 125	98	80 - 120	<0.50	ug/g	1.7	30		
4286599	Acid Extractable Beryllium (Be)	2015/11/25	105	75 - 125	101	80 - 120	<0.20	ug/g	NC	30		
4286599	Acid Extractable Boron (B)	2015/11/25	100	75 - 125	101	80 - 120	<5.0	ug/g	NC	30		
4286599	Acid Extractable Cadmium (Cd)	2015/11/25	105	75 - 125	99	80 - 120	<0.10	ug/g	NC	30		
4286599	Acid Extractable Chromium (Cr)	2015/11/25	121	75 - 125	105	80 - 120	<1.0	ug/g	3.5	30		
4286599	Acid Extractable Cobalt (Co)	2015/11/25	106	75 - 125	103	80 - 120	<0.10	ug/g	2.5	30		

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Maxxam Job #: B5O1366
Report Date: 2015/11/25

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4286599	Acid Extractable Copper (Cu)	2015/11/25	106	75 - 125	106	80 - 120	<0.50	ug/g	2.9	30		
4286599	Acid Extractable Lead (Pb)	2015/11/25	NC	75 - 125	102	80 - 120	<1.0	ug/g	33 (2)	30		
4286599	Acid Extractable Mercury (Hg)	2015/11/25	114	75 - 125	114	80 - 120	<0.050	ug/g	NC	30		
4286599	Acid Extractable Molybdenum (Mo)	2015/11/25	105	75 - 125	101	80 - 120	<0.50	ug/g	NC	30		
4286599	Acid Extractable Nickel (Ni)	2015/11/25	106	75 - 125	101	80 - 120	<0.50	ug/g	2.7	30		
4286599	Acid Extractable Selenium (Se)	2015/11/25	102	75 - 125	99	80 - 120	<0.50	ug/g	NC	30		
4286599	Acid Extractable Silver (Ag)	2015/11/25	103	75 - 125	101	80 - 120	<0.20	ug/g	NC	30		
4286599	Acid Extractable Thallium (Tl)	2015/11/25	99	75 - 125	100	80 - 120	<0.050	ug/g	3.5	30		
4286599	Acid Extractable Uranium (U)	2015/11/25	103	75 - 125	101	80 - 120	<0.050	ug/g	1.4	30		
4286599	Acid Extractable Vanadium (V)	2015/11/25	106	75 - 125	103	80 - 120	<5.0	ug/g	1.4	30		
4286599	Acid Extractable Zinc (Zn)	2015/11/25	107	75 - 125	102	80 - 120	<5.0	ug/g	0.16	30		

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

(2) 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 #: B5O1366
Report Date: 2015/11/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

VALIDATION SIGNATURE PAGE

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

Brad Newman, Scientific Specialist

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page # 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 537168
Attention:	Central Accounting	Attention:	Paul Hurst	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#537168-06-01	Ema Gitej
Tel:	(613) 592-9600 Fax (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	phurst@golder.com	Sampled By:			

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☑ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☑ Coarse	☐ Reg 558, ☐ Storm Sewer Bylaw	
☑ Table 3 ☐ Agri/Other ☑ For RSC	☐ MISA Municipality	
☐ Table ___	☐ PWQO	
	☐ Other	

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle) Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICP/MS Metals including Hg and CRVI	Laffache Landfill (TCLP METALS, REG 153 PHCs)	# of Bottles	Comments
1		VS003	Nov 24/15	14:00	Soil	NA	✓	✓		1	
2		VS004	↓	14:05	↓	↓	✓	✓		1	
3		VS005	↓	14:10	↓	↓	✓	✓		1	
4											
5											
6											
7											
8											
9											ON ICE PACK
10											

Turnaround Time (TAT) Required:

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 #)

24-Nov-15 15:40
Ema Gitej
B501366
FHB OTT-002

RECEIVED 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	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
Tony Lyon	15/11/24	15:15	[signature]	15/11/24	15:40			3, 3, 1	Present		✓
									Intact		✓

Laboratory Use Only

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B501366
Report Date: 2015/11/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS003	BKG619-01	Benzo(a)anthracene	0.5	0.60	0.0050	ug/g
VS003	BKG619-01	Benzo(a)pyrene	0.3	0.54	0.0050	ug/g
VS003	BKG619-01	Benzo(b/j)fluoranthene	0.78	0.80	0.0050	ug/g
VS003	BKG619-01	Fluoranthene	0.69	1.6	0.0050	ug/g
VS004	BKG620-01	Acid Extractable Vanadium (V)	86	100	5.0	ug/g
VS004	BKG620-01-Lab Dup	Acid Extractable Vanadium (V)	86	100	5.0	ug/g
VS005	BKG621-01	Acenaphthylene	0.15	0.16	0.050	ug/g
VS005	BKG621-01-Lab Dup	Acenaphthylene	0.15	0.34	0.050	ug/g
VS005	BKG621-01	Anthracene	0.67	2.0	0.050	ug/g
VS005	BKG621-01-Lab Dup	Anthracene	0.67	2.1	0.050	ug/g
VS005	BKG621-01	Benzo(a)anthracene	0.5	3.8	0.050	ug/g
VS005	BKG621-01-Lab Dup	Benzo(a)anthracene	0.5	4.1	0.050	ug/g
VS005	BKG621-01	Benzo(a)pyrene	0.3	3.4	0.050	ug/g
VS005	BKG621-01-Lab Dup	Benzo(a)pyrene	0.3	3.9	0.050	ug/g
VS005	BKG621-01	Benzo(b/j)fluoranthene	0.78	5.2	0.050	ug/g
VS005	BKG621-01-Lab Dup	Benzo(b/j)fluoranthene	0.78	5.6	0.050	ug/g
VS005	BKG621-01	Benzo(k)fluoranthene	0.78	1.7	0.050	ug/g
VS005	BKG621-01-Lab Dup	Benzo(k)fluoranthene	0.78	1.9	0.050	ug/g
VS005	BKG621-01	Dibenz(a,h)anthracene	0.1	0.52	0.050	ug/g
VS005	BKG621-01-Lab Dup	Dibenz(a,h)anthracene	0.1	0.58	0.050	ug/g
VS005	BKG621-01-Lab Dup	Fluoranthene	0.69	11	0.050	ug/g
VS005	BKG621-01	Fluoranthene	0.69	11	0.050	ug/g
VS005	BKG621-01	Indeno(1,2,3-cd)pyrene	0.38	2.3	0.050	ug/g
VS005	BKG621-01-Lab Dup	Indeno(1,2,3-cd)pyrene	0.38	2.6	0.050	ug/g
VS005	BKG621-01	Acid Extractable Lead (Pb)	120	240	1.0	ug/g
VS005	BKG621-01	Acid Extractable Mercury (Hg)	0.27	0.40	0.050	ug/g
VS005	BKG621-01-Lab Dup	Naphthalene	0.6	0.79	0.050	ug/g
VS005	BKG621-01-Lab Dup	Phenanthrene	6.2	9.2	0.050	ug/g
VS005	BKG621-01	Phenanthrene	6.2	9.3	0.050	ug/g

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 537168-04-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2015/11/25
Report #: R3781999
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5O1396
Received: 2015/11/24, 15:40

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	1	N/A	2015/11/25	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	1	2015/11/25	2015/11/25	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	1	2015/11/25	2015/11/25	CAM SOP-00447	EPA 6020A m
Moisture (1)	1	N/A	2015/11/25	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	1	2015/11/25	2015/11/25	CAM SOP-00318	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Ema Gitej
25 Nov 2015 21:22:10 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: EGitej@maxxam.ca
Phone# (905)817-5829

==========

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.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B5O1396
Report Date: 2015/11/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BKG721		
Sampling Date			2015/11/24 14:30		
COC Number			537168-04-01		
	UNITS	Criteria	VS PEAT	RDL	QC Batch
Metals					
Acid Extractable Antimony (Sb)	ug/g	**7.5**	1.6	0.20	4286599
Acid Extractable Arsenic (As)	ug/g	**18**	11	1.0	4286599
Acid Extractable Barium (Ba)	ug/g	**390**	200	0.50	4286599
Acid Extractable Beryllium (Be)	ug/g	**4**	0.49	0.20	4286599
Acid Extractable Boron (B)	ug/g	**120**	6.9	5.0	4286599
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.54	0.10	4286599
Acid Extractable Chromium (Cr)	ug/g	**160**	31	1.0	4286599
Acid Extractable Cobalt (Co)	ug/g	**22**	7.4	0.10	4286599
Acid Extractable Copper (Cu)	ug/g	**140**	39	0.50	4286599
Acid Extractable Lead (Pb)	ug/g	**120**	**280**	1.0	4286599
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	1.2	0.50	4286599
Acid Extractable Nickel (Ni)	ug/g	**100**	21	0.50	4286599
Acid Extractable Selenium (Se)	ug/g	**2.4**	1.1	0.50	4286599
Acid Extractable Silver (Ag)	ug/g	**20**	0.27	0.20	4286599
Acid Extractable Thallium (Tl)	ug/g	**1**	0.30	0.050	4286599
Acid Extractable Uranium (U)	ug/g	**23**	0.78	0.050	4286599
Acid Extractable Vanadium (V)	ug/g	**86**	35	5.0	4286599
Acid Extractable Zinc (Zn)	ug/g	**340**	190	5.0	4286599
Acid Extractable Mercury (Hg)	ug/g	**0.27**	0.25	0.050	4286599

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5O1396
Report Date: 2015/11/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BKG721		
Sampling Date			2015/11/24 14:30		
COC Number			537168-04-01		
	UNITS	Criteria	VS PEAT	RDL	QC Batch
Inorganics					
Moisture	%	-	25	1.0	4285860
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	**2.5**	0.071	4284180
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	**9.4**	0.050	4285857
Acenaphthylene	ug/g	**0.15**	**0.23**	0.050	4285857
Anthracene	ug/g	**0.67**	**18**	0.050	4285857
Benzo(a)anthracene	ug/g	**0.5**	**25**	0.050	4285857
Benzo(a)pyrene	ug/g	**0.3**	**21**	0.050	4285857
Benzo(b/j)fluoranthene	ug/g	**0.78**	**26**	0.050	4285857
Benzo(g,h,i)perylene	ug/g	**6.6**	**11**	0.050	4285857
Benzo(k)fluoranthene	ug/g	**0.78**	**8.6**	0.050	4285857
Chrysene	ug/g	**7**	**20**	0.050	4285857
Dibenz(a,h)anthracene	ug/g	**0.1**	**3.2**	0.050	4285857
Fluoranthene	ug/g	**0.69**	**64**	0.050	4285857
Fluorene	ug/g	**62**	11	0.050	4285857
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	**13**	0.050	4285857
1-Methylnaphthalene	ug/g	**0.99**	**1.1**	0.050	4285857
2-Methylnaphthalene	ug/g	**0.99**	**1.4**	0.050	4285857
Naphthalene	ug/g	**0.6**	**1.6**	0.050	4285857
Phenanthrene	ug/g	**6.2**	**66**	0.050	4285857
Pyrene	ug/g	**78**	43	0.050	4285857
Surrogate Recovery (%)					
D10-Anthracene	%	-	84		4285857
D14-Terphenyl (FS)	%	-	101		4285857
D8-Acenaphthylene	%	-	74		4285857

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water
Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5O1396
Report Date: 2015/11/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

RESULTS OF ANALYSES OF SOIL

Maxxam ID			BKG721		
Sampling Date			2015/11/24 14:30		
COC Number			537168-04-01		
	UNITS	Criteria	VS PEAT	RDL	QC Batch
Inorganics					
Chromium (VI)	ug/g	8	<0.2	0.2	4285223

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water
Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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TEST SUMMARY

Maxxam ID: BKG721
Sample ID: VS PEAT
Matrix: Soil

Collected: 2015/11/24
Shipped:
Received: 2015/11/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4284180	N/A	2015/11/25	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4285223	2015/11/25	2015/11/25	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4286599	2015/11/25	2015/11/25	Grace Bu
Moisture	BAL	4285860	N/A	2015/11/25	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4285857	2015/11/25	2015/11/25	Lingyun Feng

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GENERAL COMMENTS

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

Package 1	2.3°C

Sample BKG721-01 : PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B5O1396
Report Date: 2015/11/25

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4285857	D10-Anthracene	2015/11/25	91	50 - 130	85	50 - 130	84	%				
4285857	D14-Terphenyl (FS)	2015/11/25	85	50 - 130	85	50 - 130	82	%				
4285857	D8-Acenaphthylene	2015/11/25	75	50 - 130	77	50 - 130	77	%				
4285223	Chromium (VI)	2015/11/25	0 (1)	75 - 125	101	80 - 120	<0.2	ug/g	NC	35	91	80 - 120
4285857	1-Methylnaphthalene	2015/11/25	62	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		
4285857	2-Methylnaphthalene	2015/11/25	57	50 - 130	83	50 - 130	<0.0050	ug/g	19	40		
4285857	Acenaphthene	2015/11/25	NC	50 - 130	85	50 - 130	<0.0050	ug/g	32	40		
4285857	Acenaphthylene	2015/11/25	96	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40		
4285857	Anthracene	2015/11/25	NC	50 - 130	80	50 - 130	<0.0050	ug/g	4.5	40		
4285857	Benzo(a)anthracene	2015/11/25	NC	50 - 130	80	50 - 130	<0.0050	ug/g	9.3	40		
4285857	Benzo(a)pyrene	2015/11/25	NC	50 - 130	83	50 - 130	<0.0050	ug/g	13	40		
4285857	Benzo(b/j)fluoranthene	2015/11/25	NC	50 - 130	96	50 - 130	<0.0050	ug/g	6.9	40		
4285857	Benzo(g,h,i)perylene	2015/11/25	NC	50 - 130	79	50 - 130	<0.0050	ug/g	16	40		
4285857	Benzo(k)fluoranthene	2015/11/25	NC	50 - 130	94	50 - 130	<0.0050	ug/g	9.7	40		
4285857	Chrysene	2015/11/25	NC	50 - 130	84	50 - 130	<0.0050	ug/g	9.8	40		
4285857	Dibenz(a,h)anthracene	2015/11/25	NC	50 - 130	75	50 - 130	<0.0050	ug/g	11	40		
4285857	Fluoranthene	2015/11/25	NC	50 - 130	82	50 - 130	<0.0050	ug/g	5.6	40		
4285857	Fluorene	2015/11/25	NC	50 - 130	80	50 - 130	<0.0050	ug/g	11	40		
4285857	Indeno(1,2,3-cd)pyrene	2015/11/25	NC	50 - 130	83	50 - 130	<0.0050	ug/g	14	40		
4285857	Naphthalene	2015/11/25	NC	50 - 130	77	50 - 130	<0.0050	ug/g	34	40		
4285857	Phenanthrene	2015/11/25	NC	50 - 130	81	50 - 130	<0.0050	ug/g	2.0	40		
4285857	Pyrene	2015/11/25	NC	50 - 130	81	50 - 130	<0.0050	ug/g	9.1	40		
4285860	Moisture	2015/11/25							0.67	20		
4286599	Acid Extractable Antimony (Sb)	2015/11/25	71	75 - 125	98	80 - 120	<0.20	ug/g	NC	30		
4286599	Acid Extractable Arsenic (As)	2015/11/25	101	75 - 125	101	80 - 120	<1.0	ug/g	NC	30		
4286599	Acid Extractable Barium (Ba)	2015/11/25	119	75 - 125	98	80 - 120	<0.50	ug/g	1.7	30		
4286599	Acid Extractable Beryllium (Be)	2015/11/25	105	75 - 125	101	80 - 120	<0.20	ug/g	NC	30		
4286599	Acid Extractable Boron (B)	2015/11/25	100	75 - 125	101	80 - 120	<5.0	ug/g	NC	30		
4286599	Acid Extractable Cadmium (Cd)	2015/11/25	105	75 - 125	99	80 - 120	<0.10	ug/g	NC	30		
4286599	Acid Extractable Chromium (Cr)	2015/11/25	121	75 - 125	105	80 - 120	<1.0	ug/g	3.5	30		
4286599	Acid Extractable Cobalt (Co)	2015/11/25	106	75 - 125	103	80 - 120	<0.10	ug/g	2.5	30		

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Maxxam Job #: B5O1396
Report Date: 2015/11/25

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4286599	Acid Extractable Copper (Cu)	2015/11/25	106	75 - 125	106	80 - 120	<0.50	ug/g	2.9	30		
4286599	Acid Extractable Lead (Pb)	2015/11/25	NC	75 - 125	102	80 - 120	<1.0	ug/g	33 (2)	30		
4286599	Acid Extractable Mercury (Hg)	2015/11/25	114	75 - 125	114	80 - 120	<0.050	ug/g	NC	30		
4286599	Acid Extractable Molybdenum (Mo)	2015/11/25	105	75 - 125	101	80 - 120	<0.50	ug/g	NC	30		
4286599	Acid Extractable Nickel (Ni)	2015/11/25	106	75 - 125	101	80 - 120	<0.50	ug/g	2.7	30		
4286599	Acid Extractable Selenium (Se)	2015/11/25	102	75 - 125	99	80 - 120	<0.50	ug/g	NC	30		
4286599	Acid Extractable Silver (Ag)	2015/11/25	103	75 - 125	101	80 - 120	<0.20	ug/g	NC	30		
4286599	Acid Extractable Thallium (Tl)	2015/11/25	99	75 - 125	100	80 - 120	<0.050	ug/g	3.5	30		
4286599	Acid Extractable Uranium (U)	2015/11/25	103	75 - 125	101	80 - 120	<0.050	ug/g	1.4	30		
4286599	Acid Extractable Vanadium (V)	2015/11/25	106	75 - 125	103	80 - 120	<5.0	ug/g	1.4	30		
4286599	Acid Extractable Zinc (Zn)	2015/11/25	107	75 - 125	102	80 - 120	<5.0	ug/g	0.16	30		

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

(2) 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 #: B5O1396
Report Date: 2015/11/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

VALIDATION SIGNATURE PAGE

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

Brad Newman, Scientific Specialist

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 537168
Attention:	Central Accounting	Attention:	Paul Hurst	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	GOC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#537168-04-01	Ema Gitej
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:		Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	phurst@golder.com	Sampled By:			

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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: Nov 25 Time Required: EOD
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals Including Hg and CRVI	Leftfiche Landfill (TCLP METALS, REG. 153 PHCs)	# of Bottles	Comments
1		VS Peat	Nov 24.15	14:30	Soil	Nit	X	X		1	ON HOLD
2											
3											
4											
5											
6											
7											
8											
9											ON ICE PACK.
10											

24-Nov-15 15:40
Ema Gitej
B5O1396
FHB OTT-002

RECEIVED 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
Tony Lyon	15/11/24	15:15		15/11/2	15:40			3, 3, 1	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B5O1396
Report Date: 2015/11/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS PEAT	BKG721-01	1-Methylnaphthalene	0.99	1.1	0.050	ug/g
VS PEAT	BKG721-01	2-Methylnaphthalene	0.99	1.4	0.050	ug/g
VS PEAT	BKG721-01	Acenaphthene	7.9	9.4	0.050	ug/g
VS PEAT	BKG721-01	Acenaphthylene	0.15	0.23	0.050	ug/g
VS PEAT	BKG721-01	Anthracene	0.67	18	0.050	ug/g
VS PEAT	BKG721-01	Benzo(a)anthracene	0.5	25	0.050	ug/g
VS PEAT	BKG721-01	Benzo(a)pyrene	0.3	21	0.050	ug/g
VS PEAT	BKG721-01	Benzo(b/j)fluoranthene	0.78	26	0.050	ug/g
VS PEAT	BKG721-01	Benzo(g,h,i)perylene	6.6	11	0.050	ug/g
VS PEAT	BKG721-01	Benzo(k)fluoranthene	0.78	8.6	0.050	ug/g
VS PEAT	BKG721-01	Chrysene	7	20	0.050	ug/g
VS PEAT	BKG721-01	Dibenz(a,h)anthracene	0.1	3.2	0.050	ug/g
VS PEAT	BKG721-01	Fluoranthene	0.69	64	0.050	ug/g
VS PEAT	BKG721-01	Indeno(1,2,3-cd)pyrene	0.38	13	0.050	ug/g
VS PEAT	BKG721-01	Acid Extractable Lead (Pb)	120	280	1.0	ug/g
VS PEAT	BKG721-01	Methylnaphthalene, 2-(1-)	0.99	2.5	0.071	ug/g
VS PEAT	BKG721-01	Naphthalene	0.6	1.6	0.050	ug/g
VS PEAT	BKG721-01	Phenanthrene	6.2	66	0.050	ug/g

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 537168-07-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2015/11/26
Report #: R3783308
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5O2409
Received: 2015/11/25, 15:35

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	4	N/A	2015/11/26	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	4	2015/11/26	2015/11/26	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	4	2015/11/26	2015/11/26	CAM SOP-00447	EPA 6020A m
Moisture (1)	4	N/A	2015/11/26	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	4	2015/11/26	2015/11/26	CAM SOP-00318	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key

Ema Gitej
26 Nov 2015 18:37:09 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: EGitej@maxxam.ca
Phone# (905)817-5829

==========

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 Job #: B5O2409
Report Date: 2015/11/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BKL584	BKL585	BKL586	BKL587		
Sampling Date			2015/11/25 12:30	2015/11/25 12:40	2015/11/25 13:00	2015/11/25 13:10		
COC Number			537168-07-01	537168-07-01	537168-07-01	537168-07-01		
	UNITS	Criteria	VS006	VS007	TP15-201 FILL	TP15-201 NATIVE	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	1.1	<0.20	0.27	<0.20	0.20	4288178
Acid Extractable Arsenic (As)	ug/g	**18**	3.9	1.4	1.9	2.1	1.0	4288178
Acid Extractable Barium (Ba)	ug/g	**390**	330	88	230	190	0.50	4288178
Acid Extractable Beryllium (Be)	ug/g	**4**	0.74	0.39	0.50	0.59	0.20	4288178
Acid Extractable Boron (B)	ug/g	**120**	6.2	<5.0	<5.0	<5.0	5.0	4288178
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.20	<0.10	0.27	<0.10	0.10	4288178
Acid Extractable Chromium (Cr)	ug/g	**160**	86	24	58	40	1.0	4288178
Acid Extractable Cobalt (Co)	ug/g	**22**	18	9.7	12	13	0.10	4288178
Acid Extractable Copper (Cu)	ug/g	**140**	66	8.2	33	24	0.50	4288178
Acid Extractable Lead (Pb)	ug/g	**120**	120	5.5	**160**	6.1	1.0	4288178
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	1.3	<0.50	<0.50	<0.50	0.50	4288178
Acid Extractable Nickel (Ni)	ug/g	**100**	49	12	33	27	0.50	4288178
Acid Extractable Selenium (Se)	ug/g	**2.4**	0.58	<0.50	<0.50	<0.50	0.50	4288178
Acid Extractable Silver (Ag)	ug/g	**20**	0.28	<0.20	<0.20	<0.20	0.20	4288178
Acid Extractable Thallium (Tl)	ug/g	**1**	0.36	0.13	0.27	0.23	0.050	4288178
Acid Extractable Uranium (U)	ug/g	**23**	0.80	0.92	0.63	0.53	0.050	4288178
Acid Extractable Vanadium (V)	ug/g	**86**	82	36	60	58	5.0	4288178
Acid Extractable Zinc (Zn)	ug/g	**340**	140	36	130	71	5.0	4288178
Acid Extractable Mercury (Hg)	ug/g	**0.27**	0.14	<0.050	0.14	<0.050	0.050	4288178

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5O2409
Report Date: 2015/11/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BKL584	BKL584	BKL585		BKL586		
Sampling Date			2015/11/25 12:30	2015/11/25 12:30	2015/11/25 12:40		2015/11/25 13:00		
COC Number			537168-07-01	537168-07-01	537168-07-01		537168-07-01		
	UNITS	Criteria	VS006	VS006 Lab-Dup	VS007	RDL	TP15-201 FILL	RDL	QC Batch
Inorganics									
Moisture	%	-	26		21	1.0	22	1.0	4287764
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	0.082		<0.0071	0.0071	**1.6**	0.071	4285749
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	0.085	0.045 (1)	<0.0050	0.0050	2.1	0.050	4287757
Acenaphthylene	ug/g	**0.15**	0.091	0.013 (2)	<0.0050	0.0050	**1.1**	0.050	4287757
Anthracene	ug/g	**0.67**	0.32	0.093 (2)	<0.0050	0.0050	**6.7**	0.050	4287757
Benzo(a)anthracene	ug/g	**0.5**	**0.76**	0.20 (2)	<0.0050	0.0050	**14**	0.050	4287757
Benzo(a)pyrene	ug/g	**0.3**	**0.59**	0.15 (2)	<0.0050	0.0050	**9.9**	0.050	4287757
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.76	0.19 (2)	0.0066	0.0050	**13**	0.050	4287757
Benzo(g,h,i)perylene	ug/g	**6.6**	0.33	0.080 (2)	<0.0050	0.0050	4.6	0.050	4287757
Benzo(k)fluoranthene	ug/g	**0.78**	0.24	0.075 (2)	<0.0050	0.0050	**4.4**	0.050	4287757
Chrysene	ug/g	**7**	0.55	0.15 (2)	<0.0050	0.0050	**9.7**	0.050	4287757
Dibenz(a,h)anthracene	ug/g	**0.1**	0.080	0.020 (2)	<0.0050	0.0050	**1.2**	0.050	4287757
Fluoranthene	ug/g	**0.69**	**2.0**	0.54 (2)	0.012	0.0050	**30**	0.050	4287757
Fluorene	ug/g	**62**	0.12	0.045 (2)	<0.0050	0.0050	3.6	0.050	4287757
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	**0.40**	0.099 (2)	<0.0050	0.0050	**5.9**	0.050	4287757
1-Methylnaphthalene	ug/g	**0.99**	0.038	0.012 (2)	<0.0050	0.0050	0.68	0.050	4287757
2-Methylnaphthalene	ug/g	**0.99**	0.043	0.014 (2)	<0.0050	0.0050	0.89	0.050	4287757
Naphthalene	ug/g	**0.6**	0.073	0.021 (2)	<0.0050	0.0050	**1.7**	0.050	4287757
Phenanthrene	ug/g	**6.2**	1.3	0.37 (2)	0.0071	0.0050	**23**	0.050	4287757
Pyrene	ug/g	**78**	1.7	0.43 (2)	0.0087	0.0050	24	0.050	4287757
Surrogate Recovery (%)									
D10-Anthracene	%	-	80	92	87		83		4287757
D14-Terphenyl (FS)	%	-	85	91	76		80		4287757
D8-Acenaphthylene	%	-	76	86	86		74		4287757

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture
(1) Duplicate results exceeded RPD acceptance criteria due to heterogeneity. The variability in the results for flagged analytes may be more pronounced.
(2) 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 #: B5O2409
Report Date: 2015/11/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BKL587		
Sampling Date			2015/11/25 13:10		
COC Number			537168-07-01		
	UNITS	Criteria	TP15-201 NATIVE	RDL	QC Batch
Inorganics					
Moisture	%	-	23	1.0	4287764
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.0071	0.0071	4285749
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	4287757
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	4287757
Anthracene	ug/g	**0.67**	<0.0050	0.0050	4287757
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	4287757
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	4287757
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	4287757
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0050	4287757
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	4287757
Chrysene	ug/g	**7**	<0.0050	0.0050	4287757
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	4287757
Fluoranthene	ug/g	**0.69**	0.0084	0.0050	4287757
Fluorene	ug/g	**62**	<0.0050	0.0050	4287757
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	4287757
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4287757
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4287757
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	4287757
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	4287757
Pyrene	ug/g	**78**	0.0065	0.0050	4287757
Surrogate Recovery (%)					
D10-Anthracene	%	-	85		4287757
D14-Terphenyl (FS)	%	-	77		4287757
D8-Acenaphthylene	%	-	69		4287757

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5O2409
Report Date: 2015/11/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

RESULTS OF ANALYSES OF SOIL

Maxxam ID			BKL584	BKL585	BKL586	BKL587		
Sampling Date			2015/11/25 12:30	2015/11/25 12:40	2015/11/25 13:00	2015/11/25 13:10		
COC Number			537168-07-01	537168-07-01	537168-07-01	537168-07-01		
	UNITS	Criteria	VS006	VS007	TP15-201 FILL	TP15-201 NATIVE	RDL	QC Batch
Inorganics								
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	0.2	4287113

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5O2409
Report Date: 2015/11/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BKL584
Sample ID: VS006
Matrix: Soil

Collected: 2015/11/25
Shipped:
Received: 2015/11/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4285749	N/A	2015/11/26	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4287113	2015/11/26	2015/11/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4288178	2015/11/26	2015/11/26	Viviana Canzonieri
Moisture	BAL	4287764	N/A	2015/11/26	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4287757	2015/11/26	2015/11/26	Lingyun Feng

Maxxam ID: BKL584 Dup
Sample ID: VS006
Matrix: Soil

Collected: 2015/11/25
Shipped:
Received: 2015/11/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4287757	2015/11/26	2015/11/26	Lingyun Feng

Maxxam ID: BKL585
Sample ID: VS007
Matrix: Soil

Collected: 2015/11/25
Shipped:
Received: 2015/11/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4285749	N/A	2015/11/26	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4287113	2015/11/26	2015/11/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4288178	2015/11/26	2015/11/26	Viviana Canzonieri
Moisture	BAL	4287764	N/A	2015/11/26	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4287757	2015/11/26	2015/11/26	Lingyun Feng

Maxxam ID: BKL586
Sample ID: TP15-201 FILL
Matrix: Soil

Collected: 2015/11/25
Shipped:
Received: 2015/11/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4285749	N/A	2015/11/26	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4287113	2015/11/26	2015/11/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4288178	2015/11/26	2015/11/26	Viviana Canzonieri
Moisture	BAL	4287764	N/A	2015/11/26	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4287757	2015/11/26	2015/11/26	Lingyun Feng

Maxxam ID: BKL587
Sample ID: TP15-201 NATIVE
Matrix: Soil

Collected: 2015/11/25
Shipped:
Received: 2015/11/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4285749	N/A	2015/11/26	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4287113	2015/11/26	2015/11/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4288178	2015/11/26	2015/11/26	Viviana Canzonieri
Moisture	BAL	4287764	N/A	2015/11/26	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4287757	2015/11/26	2015/11/26	Lingyun Feng

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GENERAL COMMENTS

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

Package 1	4.3°C

Sample BKL586-01 : PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B5O2409
Report Date: 2015/11/26

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4287757	D10-Anthracene	2015/11/26	71	50 - 130	92	50 - 130	99	%				
4287757	D14-Terphenyl (FS)	2015/11/26	64	50 - 130	83	50 - 130	96	%				
4287757	D8-Acenaphthylene	2015/11/26	69	50 - 130	81	50 - 130	80	%				
4287113	Chromium (VI)	2015/11/26	66 (1)	75 - 125	99	80 - 120	<0.2	ug/g	NC	35	90	80 - 120
4287757	1-Methylnaphthalene	2015/11/26	89	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40		
4287757	2-Methylnaphthalene	2015/11/26	95	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40		
4287757	Acenaphthene	2015/11/26	78	50 - 130	91	50 - 130	<0.0050	ug/g	62 (2)	40		
4287757	Acenaphthylene	2015/11/26	61	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		
4287757	Anthracene	2015/11/26	77	50 - 130	85	50 - 130	<0.0050	ug/g	111 (3)	40		
4287757	Benzo(a)anthracene	2015/11/26	NC	50 - 130	85	50 - 130	<0.0050	ug/g	118 (3)	40		
4287757	Benzo(a)pyrene	2015/11/26	NC	50 - 130	92	50 - 130	<0.0050	ug/g	119 (3)	40		
4287757	Benzo(b/j)fluoranthene	2015/11/26	NC	50 - 130	96	50 - 130	<0.0050	ug/g	121 (3)	40		
4287757	Benzo(g,h,i)perylene	2015/11/26	NC	50 - 130	88	50 - 130	<0.0050	ug/g	123 (3)	40		
4287757	Benzo(k)fluoranthene	2015/11/26	55	50 - 130	97	50 - 130	<0.0050	ug/g	106 (3)	40		
4287757	Chrysene	2015/11/26	NC	50 - 130	90	50 - 130	<0.0050	ug/g	116 (3)	40		
4287757	Dibenz(a,h)anthracene	2015/11/26	NC	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40		
4287757	Fluoranthene	2015/11/26	NC	50 - 130	96	50 - 130	<0.0050	ug/g	114 (3)	40		
4287757	Fluorene	2015/11/26	111	50 - 130	98	50 - 130	<0.0050	ug/g	91 (3)	40		
4287757	Indeno(1,2,3-cd)pyrene	2015/11/26	NC	50 - 130	94	50 - 130	<0.0050	ug/g	120 (3)	40		
4287757	Naphthalene	2015/11/26	108	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		
4287757	Phenanthrene	2015/11/26	NC	50 - 130	90	50 - 130	<0.0050	ug/g	110 (3)	40		
4287757	Pyrene	2015/11/26	NC	50 - 130	97	50 - 130	<0.0050	ug/g	118 (3)	40		
4287764	Moisture	2015/11/26							3.1	20		
4288178	Acid Extractable Antimony (Sb)	2015/11/26	103	75 - 125	100	80 - 120	<0.20	ug/g	NC	30		
4288178	Acid Extractable Arsenic (As)	2015/11/26	104	75 - 125	97	80 - 120	<1.0	ug/g	NC	30		
4288178	Acid Extractable Barium (Ba)	2015/11/26	NC	75 - 125	98	80 - 120	<0.50	ug/g	5.0	30		
4288178	Acid Extractable Beryllium (Be)	2015/11/26	103	75 - 125	97	80 - 120	<0.20	ug/g	NC	30		
4288178	Acid Extractable Boron (B)	2015/11/26	105	75 - 125	94	80 - 120	<5.0	ug/g	NC	30		
4288178	Acid Extractable Cadmium (Cd)	2015/11/26	107	75 - 125	99	80 - 120	<0.10	ug/g	NC	30		
4288178	Acid Extractable Chromium (Cr)	2015/11/26	107	75 - 125	97	80 - 120	<1.0	ug/g	3.5	30		
4288178	Acid Extractable Cobalt (Co)	2015/11/26	100	75 - 125	98	80 - 120	<0.10	ug/g	2.9	30		

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Maxxam Job #: B5O2409
Report Date: 2015/11/26

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4288178	Acid Extractable Copper (Cu)	2015/11/26	101	75 - 125	98	80 - 120	<0.50	ug/g	0.24	30		
4288178	Acid Extractable Lead (Pb)	2015/11/26	102	75 - 125	99	80 - 120	<1.0	ug/g	NC	30		
4288178	Acid Extractable Mercury (Hg)	2015/11/26	111	75 - 125	109	80 - 120	<0.050	ug/g	NC	30		
4288178	Acid Extractable Molybdenum (Mo)	2015/11/26	106	75 - 125	100	80 - 120	<0.50	ug/g	NC	30		
4288178	Acid Extractable Nickel (Ni)	2015/11/26	103	75 - 125	98	80 - 120	<0.50	ug/g	0.69	30		
4288178	Acid Extractable Selenium (Se)	2015/11/26	103	75 - 125	97	80 - 120	<0.50	ug/g	NC	30		
4288178	Acid Extractable Silver (Ag)	2015/11/26	101	75 - 125	98	80 - 120	<0.20	ug/g	NC	30		
4288178	Acid Extractable Thallium (Tl)	2015/11/26	104	75 - 125	101	80 - 120	<0.050	ug/g	NC	30		
4288178	Acid Extractable Uranium (U)	2015/11/26	99	75 - 125	96	80 - 120	<0.050	ug/g	1.3	30		
4288178	Acid Extractable Vanadium (V)	2015/11/26	NC	75 - 125	97	80 - 120	<5.0	ug/g	NC	30		
4288178	Acid Extractable Zinc (Zn)	2015/11/26	NC	75 - 125	101	80 - 120	<5.0	ug/g	5.7	30		

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

(2) Duplicate results exceeded RPD acceptance criteria due to heterogeneity. The variability in the results for flagged analytes may be more pronounced.

(3) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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A Bureau Veritas Group Company

Maxxam Job #: B5O2409
Report Date: 2015/11/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name	#14090 Golder Associates Ltd	Company Name		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 537168
Attention	Central Accounting	Attention	Paul Hurst / Tony	PO #:			
Address	1931 Robertson Rd Ottawa ON K2H 5B7	Address		Project:	1525113	COC #: C#537168-07-01	Project Manager: Ema Gitej
Tel	(613) 592-9600 Fax (613) 592-9601	Tel	Fax	Project Name:			
Email	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email	phurst@golder.com / Tony	Site #:			
				Sampled By:	Tony Lyon		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

Turnaround Time (TAT) Required:

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 Ozone/Furnace are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission) ☑
Date Required: Tomorrow Time Required: EOD
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O Reg 153 PAHs (Soil)	O Reg 153 ICPMS Metals including Hg and CrVI	Leachate Landfill (TCLP METALS, REG 153 PHC-4)							# of Bottles	Comments
1		VS006	Nov 25/15	12:30	Soil		✓	✓								1	
2		VS007	↓	12:40	↓		✓	✓								1	
3		TP15-201 Fill	↓	13:00	↓		✓	✓								1	
4		TP15-201 Native	↓	13:10	↓		✓	✓								1	
5																	
6																	
7																	
8																	
9																	ON ICE PACK.
10																	

25-Nov-15 15:35
Ema Gitej
B5O2409
FHB OTT-002

RECEIVED 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
Tony Lyon	15/11/25	14:00	HA	15/11/25	15:35			5, 4, 4	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
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Maxxam Job #: B5O2409
Report Date: 2015/11/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS006	BKL584-01	Benzo(a)anthracene	0.5	0.76	0.0050	ug/g
VS006	BKL584-01	Benzo(a)pyrene	0.3	0.59	0.0050	ug/g
VS006	BKL584-01	Fluoranthene	0.69	2.0	0.0050	ug/g
VS006	BKL584-01	Indeno(1,2,3-cd)pyrene	0.38	0.40	0.0050	ug/g
TP15-201 FILL	BKL586-01	Acenaphthylene	0.15	1.1	0.050	ug/g
TP15-201 FILL	BKL586-01	Anthracene	0.67	6.7	0.050	ug/g
TP15-201 FILL	BKL586-01	Benzo(a)anthracene	0.5	14	0.050	ug/g
TP15-201 FILL	BKL586-01	Benzo(a)pyrene	0.3	9.9	0.050	ug/g
TP15-201 FILL	BKL586-01	Benzo(b/j)fluoranthene	0.78	13	0.050	ug/g
TP15-201 FILL	BKL586-01	Benzo(k)fluoranthene	0.78	4.4	0.050	ug/g
TP15-201 FILL	BKL586-01	Chrysene	7	9.7	0.050	ug/g
TP15-201 FILL	BKL586-01	Dibenz(a,h)anthracene	0.1	1.2	0.050	ug/g
TP15-201 FILL	BKL586-01	Fluoranthene	0.69	30	0.050	ug/g
TP15-201 FILL	BKL586-01	Indeno(1,2,3-cd)pyrene	0.38	5.9	0.050	ug/g
TP15-201 FILL	BKL586-01	Acid Extractable Lead (Pb)	120	160	1.0	ug/g
TP15-201 FILL	BKL586-01	Methylnaphthalene, 2-(1-)	0.99	1.6	0.071	ug/g
TP15-201 FILL	BKL586-01	Naphthalene	0.6	1.7	0.050	ug/g
TP15-201 FILL	BKL586-01	Phenanthrene	6.2	23	0.050	ug/g

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Site#: 1525113
Your C.O.C. #: 537168-11-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2015/11/27
Report #: R3784636
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5O3483
Received: 2015/11/26, 14:50

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	1	N/A	2015/11/27	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	1	2015/11/27	2015/11/27	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	1	2015/11/27	2015/11/27	CAM SOP-00447	EPA 6020A m
Moisture (1)	1	N/A	2015/11/27	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	1	2015/11/27	2015/11/27	CAM SOP-00318	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Ema Gitej
27 Nov 2015 17:59:44 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: EGitej@maxxam.ca
Phone# (905)817-5829

==========

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 Job #: B5O3483
Report Date: 2015/11/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BKQ721	BKQ721		
Sampling Date			2015/11/26 13:00	2015/11/26 13:00		
COC Number			537168-11-01	537168-11-01		
	UNITS	Criteria	VS008	VS008 Lab-Dup	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	0.20	4289969
Acid Extractable Arsenic (As)	ug/g	**18**	2.5	2.5	1.0	4289969
Acid Extractable Barium (Ba)	ug/g	**390**	150	150	0.50	4289969
Acid Extractable Beryllium (Be)	ug/g	**4**	0.56	0.57	0.20	4289969
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	5.0	4289969
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	0.10	4289969
Acid Extractable Chromium (Cr)	ug/g	**160**	40	39	1.0	4289969
Acid Extractable Cobalt (Co)	ug/g	**22**	10	11	0.10	4289969
Acid Extractable Copper (Cu)	ug/g	**140**	17	17	0.50	4289969
Acid Extractable Lead (Pb)	ug/g	**120**	4.9	5.0	1.0	4289969
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.53	0.51	0.50	4289969
Acid Extractable Nickel (Ni)	ug/g	**100**	21	21	0.50	4289969
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	0.50	4289969
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	0.20	4289969
Acid Extractable Thallium (Tl)	ug/g	**1**	0.19	0.19	0.050	4289969
Acid Extractable Uranium (U)	ug/g	**23**	1.3	1.3	0.050	4289969
Acid Extractable Vanadium (V)	ug/g	**86**	53	52	5.0	4289969
Acid Extractable Zinc (Zn)	ug/g	**340**	61	59	5.0	4289969
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	0.050	4289969

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5O3483
Report Date: 2015/11/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BKQ721	BKQ721		
Sampling Date			2015/11/26 13:00	2015/11/26 13:00		
COC Number			537168-11-01	537168-11-01		
	UNITS	Criteria	VS008	VS008 Lab-Dup	RDL	QC Batch
Inorganics						
Moisture	%	-	22		1.0	4289728
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.0071		0.0071	4288210
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	0.0050	4289727
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	0.0050	4289727
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	0.0050	4289727
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	0.0050	4289727
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0050	4289727
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	4289727
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	0.0050	4289727
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	4289727
Chrysene	ug/g	**7**	<0.0050	<0.0050	0.0050	4289727
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	0.0050	4289727
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	0.0050	4289727
Fluorene	ug/g	**62**	<0.0050	<0.0050	0.0050	4289727
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	0.0050	4289727
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	4289727
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	4289727
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	0.0050	4289727
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	0.0050	4289727
Pyrene	ug/g	**78**	<0.0050	<0.0050	0.0050	4289727
Surrogate Recovery (%)						
D10-Anthracene	%	-	102	104		4289727
D14-Terphenyl (FS)	%	-	99	101		4289727
D8-Acenaphthylene	%	-	86	80		4289727

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Sampler Initials: TL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			BKQ721		
Sampling Date			2015/11/26 13:00		
COC Number			537168-11-01		
	UNITS	Criteria	VS008	RDL	QC Batch
Inorganics					
Chromium (VI)	ug/g	8	<0.2	0.2	4289210

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water
Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5O3483
Report Date: 2015/11/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BKQ721
Sample ID: VS008
Matrix: Soil

Collected: 2015/11/26
Shipped:
Received: 2015/11/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4288210	N/A	2015/11/27	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4289210	2015/11/27	2015/11/27	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4289969	2015/11/27	2015/11/27	Viviana Canzonieri
Moisture	BAL	4289728	N/A	2015/11/27	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4289727	2015/11/27	2015/11/27	Lingyun Feng

Maxxam ID: BKQ721 Dup
Sample ID: VS008
Matrix: Soil

Collected: 2015/11/26
Shipped:
Received: 2015/11/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4289969	2015/11/27	2015/11/27	Viviana Canzonieri
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4289727	2015/11/27	2015/11/27	Lingyun Feng

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Maxxam Job #: B5O3483
Report Date: 2015/11/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

GENERAL COMMENTS

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

Package 1	7.7°C

Results relate only to the items tested.

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Maxxam Job #: B5O3483
Report Date: 2015/11/27

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4289727	D10-Anthracene	2015/11/27	100	50 - 130	104	50 - 130	107	%				
4289727	D14-Terphenyl (FS)	2015/11/27	98	50 - 130	94	50 - 130	95	%				
4289727	D8-Acenaphthylene	2015/11/27	85	50 - 130	87	50 - 130	88	%				
4289210	Chromium (VI)	2015/11/27	102	75 - 125	104	80 - 120	<0.2	ug/g	NC	35	113	80 - 120
4289727	1-Methylnaphthalene	2015/11/27	83	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40		
4289727	2-Methylnaphthalene	2015/11/27	80	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		
4289727	Acenaphthene	2015/11/27	85	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40		
4289727	Acenaphthylene	2015/11/27	86	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40		
4289727	Anthracene	2015/11/27	95	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40		
4289727	Benzo(a)anthracene	2015/11/27	83	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40		
4289727	Benzo(a)pyrene	2015/11/27	75	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40		
4289727	Benzo(b/j)fluoranthene	2015/11/27	81	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40		
4289727	Benzo(g,h,i)perylene	2015/11/27	69	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40		
4289727	Benzo(k)fluoranthene	2015/11/27	82	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40		
4289727	Chrysene	2015/11/27	83	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40		
4289727	Dibenz(a,h)anthracene	2015/11/27	71	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4289727	Fluoranthene	2015/11/27	91	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40		
4289727	Fluorene	2015/11/27	85	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40		
4289727	Indeno(1,2,3-cd)pyrene	2015/11/27	78	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40		
4289727	Naphthalene	2015/11/27	74	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40		
4289727	Phenanthrene	2015/11/27	81	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40		
4289727	Pyrene	2015/11/27	90	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40		
4289728	Moisture	2015/11/27							2.7	20		
4289969	Acid Extractable Antimony (Sb)	2015/11/27	90	75 - 125	101	80 - 120	<0.20	ug/g	NC	30		
4289969	Acid Extractable Arsenic (As)	2015/11/27	97	75 - 125	102	80 - 120	<1.0	ug/g	NC	30		
4289969	Acid Extractable Barium (Ba)	2015/11/27	NC	75 - 125	102	80 - 120	<0.50	ug/g	1.2	30		
4289969	Acid Extractable Beryllium (Be)	2015/11/27	95	75 - 125	96	80 - 120	<0.20	ug/g	NC	30		
4289969	Acid Extractable Boron (B)	2015/11/27	94	75 - 125	90	80 - 120	<5.0	ug/g	NC	30		
4289969	Acid Extractable Cadmium (Cd)	2015/11/27	98	75 - 125	101	80 - 120	<0.10	ug/g	NC	30		
4289969	Acid Extractable Chromium (Cr)	2015/11/27	NC	75 - 125	100	80 - 120	<1.0	ug/g	2.6	30		
4289969	Acid Extractable Cobalt (Co)	2015/11/27	97	75 - 125	101	80 - 120	<0.10	ug/g	2.3	30		

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Maxxam Job #: B5O3483
Report Date: 2015/11/27

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4289969	Acid Extractable Copper (Cu)	2015/11/27	NC	75 - 125	101	80 - 120	<0.50	ug/g	1.5	30		
4289969	Acid Extractable Lead (Pb)	2015/11/27	100	75 - 125	101	80 - 120	<1.0	ug/g	NC	30		
4289969	Acid Extractable Mercury (Hg)	2015/11/27	109	75 - 125	106	80 - 120	<0.050	ug/g	NC	30		
4289969	Acid Extractable Molybdenum (Mo)	2015/11/27	101	75 - 125	100	80 - 120	<0.50	ug/g	NC	30		
4289969	Acid Extractable Nickel (Ni)	2015/11/27	NC	75 - 125	100	80 - 120	<0.50	ug/g	0.52	30		
4289969	Acid Extractable Selenium (Se)	2015/11/27	100	75 - 125	100	80 - 120	<0.50	ug/g	NC	30		
4289969	Acid Extractable Silver (Ag)	2015/11/27	98	75 - 125	100	80 - 120	<0.20	ug/g	NC	30		
4289969	Acid Extractable Thallium (Tl)	2015/11/27	101	75 - 125	100	80 - 120	<0.050	ug/g	NC	30		
4289969	Acid Extractable Uranium (U)	2015/11/27	89	75 - 125	88	80 - 120	<0.050	ug/g	1.1	30		
4289969	Acid Extractable Vanadium (V)	2015/11/27	NC	75 - 125	102	80 - 120	<5.0	ug/g	2.5	30		
4289969	Acid Extractable Zinc (Zn)	2015/11/27	NC	75 - 125	98	80 - 120	<5.0	ug/g	3.3	30		

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B5O3483
Report Date: 2015/11/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:
Company Name: #14090 Golder Associates Ltd
Attention: Central Accounting
Address: 1931 Robertson Rd, Ottawa ON K2H 5B7
Tel: (613) 592-9600 Fax: (613) 592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Paul Hurst / Tony Lyon
Address:
Tel:
Fax:
Email: phurst@golder.com

PROJECT INFORMATION:
Quotation #: B57625
P.O. #:
Project: 1525113
Project Name:
Site #:
Sampled By: Tony Lyon

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 537168
COC #: C#537168-11-01
Project Manager: Ema Gitej

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

Turnaround Time (TAT) Required:
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: Nov 27 Time Required: EOD
Rush Confirmation Number: (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	Leaching Landfill (TCLP METALS, REG 153 PHCs)	# of Bottles	Comments
1		VS008	Nov 26, '15	13:00	Soil	NA	✓	✓		1	
2											
3											
4											
5											
6											
7											
8											
9											ON ICE PACK.
10											

26-Nov-15 14:50
Ema Gitej
B503483
FHB OTT-002

RECEIVED 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
Tony Lyon	15/11/26	14:00		15/11/26	14:50	

Laboratory Use Only: Time Sensitive; Temperature (°C) on Receipt: 8.8.7; Custody Seal: 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

SAMPLES MUST BE PRESERVED / COOLED FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B5O3483
Report Date: 2015/11/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 537168-12-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2015/12/08
Report #: R3799280
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5P1428
Received: 2015/12/07, 15:50

Sample Matrix: Soil
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	10	N/A	2015/12/08	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (2)	10	2015/12/08	2015/12/08	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS (1)	10	2015/12/08	2015/12/08	OTT SOP-00003	EPA 6020
Moisture	10	N/A	2015/12/08	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM)	10	2015/12/08	2015/12/08	CAM SOP-00318	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Ottawa
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Ema Gitej
08 Dec 2015 18:05:49 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: EGitej@maxxam.ca
Phone# (905)817-5829

==========

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 Job #: B5P1428
Report Date: 2015/12/08

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BME281	BME281	BME282	BME283	BME284		
Sampling Date			2015/12/07 12:15	2015/12/07 12:15	2015/12/07 12:25	2015/12/07 12:35	2015/12/07 12:45		
COC Number			537168-12-01	537168-12-01	537168-12-01	537168-12-01	537168-12-01		
	UNITS	Criteria	VS009	VS009 Lab-Dup	VS010	VS011	VS012	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4302554
Acid Extractable Arsenic (As)	ug/g	**18**	3	3	3	1	1	1	4302554
Acid Extractable Barium (Ba)	ug/g	**390**	86	85	42	53	23	0.5	4302554
Acid Extractable Beryllium (Be)	ug/g	**4**	0.5	0.6	0.4	0.3	0.3	0.2	4302554
Acid Extractable Boron (B)	ug/g	**120**	<5	5	<5	<5	<5	5	4302554
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	0.1	0.1	<0.1	0.1	4302554
Acid Extractable Chromium (Cr)	ug/g	**160**	60	60	30	30	20	1	4302554
Acid Extractable Cobalt (Co)	ug/g	**22**	9.3	9.0	7.6	5.4	4.4	0.1	4302554
Acid Extractable Copper (Cu)	ug/g	**140**	13	13	8.2	7.0	6.1	0.5	4302554
Acid Extractable Lead (Pb)	ug/g	**120**	15	15	19	21	4	1	4302554
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	0.08	<0.05	<0.05	0.05	4302554
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.5	<0.5	<0.5	<0.5	<0.5	0.5	4302554
Acid Extractable Nickel (Ni)	ug/g	**100**	26	26	13	13	10	0.5	4302554
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4302554
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4302554
Acid Extractable Thallium (Tl)	ug/g	**1**	0.17	0.19	0.14	0.10	0.06	0.05	4302554
Acid Extractable Uranium (U)	ug/g	**23**	1.4	1.4	0.93	0.73	0.57	0.05	4302554
Acid Extractable Vanadium (V)	ug/g	**86**	50	50	30	32	27	5	4302554
Acid Extractable Zinc (Zn)	ug/g	**340**	80	78	61	37	16	5	4302554

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5P1428
Report Date: 2015/12/08

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BME285	BME286	BME287	BME288		
Sampling Date			2015/12/07 12:55	2015/12/07 13:05	2015/12/07 13:15	2015/12/07 13:25		
COC Number			537168-12-01	537168-12-01	537168-12-01	537168-12-01		
	UNITS	Criteria	VS013	VS014	VS015	VS016	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	0.2	4302554
Acid Extractable Arsenic (As)	ug/g	**18**	<1	3	2	1	1	4302554
Acid Extractable Barium (Ba)	ug/g	**390**	38	150	34	23	0.5	4302554
Acid Extractable Beryllium (Be)	ug/g	**4**	0.3	0.5	0.3	0.2	0.2	4302554
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	<5	5	4302554
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	0.2	<0.1	<0.1	0.1	4302554
Acid Extractable Chromium (Cr)	ug/g	**160**	24	43	20	15	1	4302554
Acid Extractable Cobalt (Co)	ug/g	**22**	5.8	**42**	3.9	4.4	0.1	4302554
Acid Extractable Copper (Cu)	ug/g	**140**	8.9	7.0	6.0	4.7	0.5	4302554
Acid Extractable Lead (Pb)	ug/g	**120**	3	20	11	7	1	4302554
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	0.11	0.08	<0.05	0.05	4302554
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	1.4	<0.5	<0.5	0.5	4302554
Acid Extractable Nickel (Ni)	ug/g	**100**	13	17	10	8.4	0.5	4302554
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	<0.5	0.5	4302554
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	0.2	4302554
Acid Extractable Thallium (Tl)	ug/g	**1**	0.07	0.36	0.08	<0.05	0.05	4302554
Acid Extractable Uranium (U)	ug/g	**23**	0.76	1.2	0.78	0.55	0.05	4302554
Acid Extractable Vanadium (V)	ug/g	**86**	28	47	19	20	5	4302554
Acid Extractable Zinc (Zn)	ug/g	**340**	25	83	31	16	5	4302554

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5P1428
Report Date: 2015/12/08

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BME289	BME290		
Sampling Date			2015/12/07 14:00	2015/12/07 14:30		
COC Number			537168-12-01	537168-12-01		
	UNITS	Criteria	FILL ABOVE DRAIN PIPE	FILL ABOVE SMALL CLAY PIPE	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	0.2	4302554
Acid Extractable Arsenic (As)	ug/g	**18**	4	1	1	4302554
Acid Extractable Barium (Ba)	ug/g	**390**	110	33	0.5	4302554
Acid Extractable Beryllium (Be)	ug/g	**4**	0.5	0.3	0.2	4302554
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	5	4302554
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.2	<0.1	0.1	4302554
Acid Extractable Chromium (Cr)	ug/g	**160**	30	21	1	4302554
Acid Extractable Cobalt (Co)	ug/g	**22**	7.1	4.5	0.1	4302554
Acid Extractable Copper (Cu)	ug/g	**140**	17	6.5	0.5	4302554
Acid Extractable Lead (Pb)	ug/g	**120**	76	13	1	4302554
Acid Extractable Mercury (Hg)	ug/g	**0.27**	**0.42**	<0.05	0.05	4302554
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	0.5	4302554
Acid Extractable Nickel (Ni)	ug/g	**100**	16	10	0.5	4302554
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	0.5	4302554
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	0.2	4302554
Acid Extractable Thallium (Tl)	ug/g	**1**	0.14	0.06	0.05	4302554
Acid Extractable Uranium (U)	ug/g	**23**	0.90	0.86	0.05	4302554
Acid Extractable Vanadium (V)	ug/g	**86**	37	30	5	4302554
Acid Extractable Zinc (Zn)	ug/g	**340**	68	25	5	4302554

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5P1428
Report Date: 2015/12/08

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BME281	BME281	BME282	BME283	BME284		
Sampling Date			2015/12/07 12:15	2015/12/07 12:15	2015/12/07 12:25	2015/12/07 12:35	2015/12/07 12:45		
COC Number			537168-12-01	537168-12-01	537168-12-01	537168-12-01	537168-12-01		
	UNITS	Criteria	VS009	VS009 Lab-Dup	VS010	VS011	VS012	RDL	QC Batch
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.0071		<0.0071	<0.0071	0.017	0.0071	4301771
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	0.024	0.0050	4303341
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4303341
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0080	0.054	0.0050	4303341
Benzo(a)anthracene	ug/g	**0.5**	0.011	0.0089	0.010	0.024	0.098	0.0050	4303341
Benzo(a)pyrene	ug/g	**0.3**	0.012	0.011	0.012	0.025	0.079	0.0050	4303341
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.017	0.014	0.017	0.037	0.10	0.0050	4303341
Benzo(g,h,i)perylene	ug/g	**6.6**	0.0077	0.0074	0.0082	0.017	0.042	0.0050	4303341
Benzo(k)fluoranthene	ug/g	**0.78**	0.0052	<0.0050	0.0050	0.011	0.041	0.0050	4303341
Chrysene	ug/g	**7**	0.011	0.0084	0.011	0.024	0.084	0.0050	4303341
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.012	0.0050	4303341
Fluoranthene	ug/g	**0.69**	0.024	0.019	0.021	0.059	0.23	0.0050	4303341
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.026	0.0050	4303341
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.0088	0.0078	0.0086	0.019	0.049	0.0050	4303341
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0070	0.0050	4303341
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.010	0.0050	4303341
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.031	0.0050	4303341
Phenanthrene	ug/g	**6.2**	0.013	0.0086	0.0075	0.031	0.21	0.0050	4303341
Pyrene	ug/g	**78**	0.020	0.015	0.018	0.045	0.17	0.0050	4303341
Surrogate Recovery (%)									
D10-Anthracene	%	-	88	87	85	83	86		4303341
D14-Terphenyl (FS)	%	-	87	86	83	86	83		4303341
D8-Acenaphthylene	%	-	81	79	78	81	82		4303341

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B5P1428
Report Date: 2015/12/08

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BME285	BME286	BME287	BME288	BME289		
Sampling Date			2015/12/07 12:55	2015/12/07 13:05	2015/12/07 13:15	2015/12/07 13:25	2015/12/07 14:00		
COC Number			537168-12-01	537168-12-01	537168-12-01	537168-12-01	537168-12-01		
	UNITS	Criteria	VS013	VS014	VS015	VS016	FILL ABOVE DRAIN PIPE	RDL	QC Batch
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	0.0071	4301771
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4303341
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.020	0.0050	4303341
Anthracene	ug/g	**0.67**	<0.0050	0.0050	<0.0050	<0.0050	0.016	0.0050	4303341
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.019	0.015	0.0086	0.088	0.0050	4303341
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.021	0.019	0.010	0.11	0.0050	4303341
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.033	0.028	0.015	0.16	0.0050	4303341
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.016	0.013	0.0066	0.071	0.0050	4303341
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0097	0.0088	<0.0050	0.049	0.0050	4303341
Chrysene	ug/g	**7**	<0.0050	0.019	0.017	0.0091	0.099	0.0050	4303341
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.017	0.0050	4303341
Fluoranthene	ug/g	**0.69**	<0.0050	0.040	0.031	0.018	0.19	0.0050	4303341
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4303341
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.017	0.014	0.0078	0.084	0.0050	4303341
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4303341
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4303341
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4303341
Phenanthrene	ug/g	**6.2**	<0.0050	0.021	0.012	0.0069	0.066	0.0050	4303341
Pyrene	ug/g	**78**	<0.0050	0.031	0.028	0.015	0.16	0.0050	4303341
Surrogate Recovery (%)									
D10-Anthracene	%	-	86	83	87	85	86		4303341
D14-Terphenyl (FS)	%	-	84	85	86	83	84		4303341
D8-Acenaphthylene	%	-	83	79	86	83	86		4303341

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5P1428
Report Date: 2015/12/08

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BME290		
Sampling Date			2015/12/07 14:30		
COC Number			537168-12-01		
	UNITS	Criteria	FILL ABOVE SMALL CLAY PIPE	RDL	QC Batch
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	0.99	<0.0071	0.0071	4301771
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	7.9	<0.0050	0.0050	4303341
Acenaphthylene	ug/g	0.15	<0.0050	0.0050	4303341
Anthracene	ug/g	0.67	<0.0050	0.0050	4303341
Benzo(a)anthracene	ug/g	0.5	0.0071	0.0050	4303341
Benzo(a)pyrene	ug/g	0.3	0.0095	0.0050	4303341
Benzo(b/j)fluoranthene	ug/g	0.78	0.011	0.0050	4303341
Benzo(g,h,i)perylene	ug/g	6.6	0.0052	0.0050	4303341
Benzo(k)fluoranthene	ug/g	0.78	<0.0050	0.0050	4303341
Chrysene	ug/g	7	0.0068	0.0050	4303341
Dibenz(a,h)anthracene	ug/g	0.1	<0.0050	0.0050	4303341
Fluoranthene	ug/g	0.69	0.0096	0.0050	4303341
Fluorene	ug/g	62	<0.0050	0.0050	4303341
Indeno(1,2,3-cd)pyrene	ug/g	0.38	0.0057	0.0050	4303341
1-Methylnaphthalene	ug/g	0.99	<0.0050	0.0050	4303341
2-Methylnaphthalene	ug/g	0.99	<0.0050	0.0050	4303341
Naphthalene	ug/g	0.6	<0.0050	0.0050	4303341
Phenanthrene	ug/g	6.2	<0.0050	0.0050	4303341
Pyrene	ug/g	78	0.012	0.0050	4303341
Surrogate Recovery (%)					
D10-Anthracene	%	-	86		4303341
D14-Terphenyl (FS)	%	-	82		4303341
D8-Acenaphthylene	%	-	83		4303341

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water
Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5P1428
Report Date: 2015/12/08

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BME281	BME282	BME283	BME284	BME285	BME286		
Sampling Date		2015/12/07 12:15	2015/12/07 12:25	2015/12/07 12:35	2015/12/07 12:45	2015/12/07 12:55	2015/12/07 13:05		
COC Number		537168-12-01	537168-12-01	537168-12-01	537168-12-01	537168-12-01	537168-12-01		
	UNITS	VS009	VS010	VS011	VS012	VS013	VS014	RDL	QC Batch
Inorganics									
Moisture	%	21	18	21	17	17	24	1.0	4303326

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		BME287	BME288	BME289	BME290		
Sampling Date		2015/12/07 13:15	2015/12/07 13:25	2015/12/07 14:00	2015/12/07 14:30		
COC Number		537168-12-01	537168-12-01	537168-12-01	537168-12-01		
	UNITS	VS015	VS016	FILL ABOVE DRAIN PIPE	FILL ABOVE SMALL CLAY PIPE	RDL	QC Batch
Inorganics							
Moisture	%	15	11	21	22	1.0	4303326

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B5P1428
Report Date: 2015/12/08

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			BME281	BME281	BME282	BME283	BME284		
Sampling Date			2015/12/07 12:15	2015/12/07 12:15	2015/12/07 12:25	2015/12/07 12:35	2015/12/07 12:45		
COC Number			537168-12-01	537168-12-01	537168-12-01	537168-12-01	537168-12-01		
	UNITS	Criteria	VS009	VS009 Lab-Dup	VS010	VS011	VS012	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4303468

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			BME285	BME286	BME287	BME288	BME289		
Sampling Date			2015/12/07 12:55	2015/12/07 13:05	2015/12/07 13:15	2015/12/07 13:25	2015/12/07 14:00		
COC Number			537168-12-01	537168-12-01	537168-12-01	537168-12-01	537168-12-01		
	UNITS	Criteria	VS013	VS014	VS015	VS016	FILL ABOVE DRAIN PIPE	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4303468

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5P1428
Report Date: 2015/12/08

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			BME290		
Sampling Date			2015/12/07 14:30		
COC Number			537168-12-01		
	UNITS	Criteria	FILL ABOVE SMALL CLAY PIPE	RDL	QC Batch
Inorganics					
Chromium (VI)	ug/g	8	<0.2	0.2	4303468

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water
Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5P1428
Report Date: 2015/12/08

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BME281
Sample ID: VS009
Matrix: Soil

Collected: 2015/12/07
Shipped:
Received: 2015/12/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4301771	N/A	2015/12/08	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4303468	2015/12/08	2015/12/08	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4302554	2015/12/08	2015/12/08	Raigamage Perera
Moisture	BAL	4303326	N/A	2015/12/08	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4303341	2015/12/08	2015/12/08	Lingyun Feng

Maxxam ID: BME281 Dup
Sample ID: VS009
Matrix: Soil

Collected: 2015/12/07
Shipped:
Received: 2015/12/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4303468	2015/12/08	2015/12/08	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4302554	2015/12/08	2015/12/08	Raigamage Perera
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4303341	2015/12/08	2015/12/08	Lingyun Feng

Maxxam ID: BME282
Sample ID: VS010
Matrix: Soil

Collected: 2015/12/07
Shipped:
Received: 2015/12/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4301771	N/A	2015/12/08	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4303468	2015/12/08	2015/12/08	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4302554	2015/12/08	2015/12/08	Raigamage Perera
Moisture	BAL	4303326	N/A	2015/12/08	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4303341	2015/12/08	2015/12/08	Lingyun Feng

Maxxam ID: BME283
Sample ID: VS011
Matrix: Soil

Collected: 2015/12/07
Shipped:
Received: 2015/12/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4301771	N/A	2015/12/08	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4303468	2015/12/08	2015/12/08	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4302554	2015/12/08	2015/12/08	Raigamage Perera
Moisture	BAL	4303326	N/A	2015/12/08	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4303341	2015/12/08	2015/12/08	Lingyun Feng

Maxxam ID: BME284
Sample ID: VS012
Matrix: Soil

Collected: 2015/12/07
Shipped:
Received: 2015/12/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4301771	N/A	2015/12/08	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4303468	2015/12/08	2015/12/08	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4302554	2015/12/08	2015/12/08	Raigamage Perera
Moisture	BAL	4303326	N/A	2015/12/08	Chun Yan

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Maxxam Job #: B5P1428
Report Date: 2015/12/08

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BME284
Sample ID: VS012
Matrix: Soil

Collected: 2015/12/07
Shipped:
Received: 2015/12/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4303341	2015/12/08	2015/12/08	Lingyun Feng

Maxxam ID: BME285
Sample ID: VS013
Matrix: Soil

Collected: 2015/12/07
Shipped:
Received: 2015/12/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4301771	N/A	2015/12/08	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4303468	2015/12/08	2015/12/08	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4302554	2015/12/08	2015/12/08	Raigamage Perera
Moisture	BAL	4303326	N/A	2015/12/08	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4303341	2015/12/08	2015/12/08	Lingyun Feng

Maxxam ID: BME286
Sample ID: VS014
Matrix: Soil

Collected: 2015/12/07
Shipped:
Received: 2015/12/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4301771	N/A	2015/12/08	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4303468	2015/12/08	2015/12/08	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4302554	2015/12/08	2015/12/08	Raigamage Perera
Moisture	BAL	4303326	N/A	2015/12/08	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4303341	2015/12/08	2015/12/08	Lingyun Feng

Maxxam ID: BME287
Sample ID: VS015
Matrix: Soil

Collected: 2015/12/07
Shipped:
Received: 2015/12/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4301771	N/A	2015/12/08	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4303468	2015/12/08	2015/12/08	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4302554	2015/12/08	2015/12/08	Raigamage Perera
Moisture	BAL	4303326	N/A	2015/12/08	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4303341	2015/12/08	2015/12/08	Lingyun Feng

Maxxam ID: BME288
Sample ID: VS016
Matrix: Soil

Collected: 2015/12/07
Shipped:
Received: 2015/12/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4301771	N/A	2015/12/08	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4303468	2015/12/08	2015/12/08	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4302554	2015/12/08	2015/12/08	Raigamage Perera
Moisture	BAL	4303326	N/A	2015/12/08	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4303341	2015/12/08	2015/12/08	Lingyun Feng

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Maxxam Job #: B5P1428
Report Date: 2015/12/08

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BME289
Sample ID: FILL ABOVE DRAIN PIPE
Matrix: Soil

Collected: 2015/12/07
Shipped:
Received: 2015/12/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4301771	N/A	2015/12/08	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4303468	2015/12/08	2015/12/08	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4302554	2015/12/08	2015/12/08	Raigamage Perera
Moisture	BAL	4303326	N/A	2015/12/08	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4303341	2015/12/08	2015/12/08	Lingyun Feng

Maxxam ID: BME290
Sample ID: FILL ABOVE SMALL CLAY PIPE
Matrix: Soil

Collected: 2015/12/07
Shipped:
Received: 2015/12/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4301771	N/A	2015/12/08	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4303468	2015/12/08	2015/12/08	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4302554	2015/12/08	2015/12/08	Raigamage Perera
Moisture	BAL	4303326	N/A	2015/12/08	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4303341	2015/12/08	2015/12/08	Lingyun Feng

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Maxxam Job #: B5P1428
Report Date: 2015/12/08

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GENERAL COMMENTS

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

Package 1	6.0°C

Results relate only to the items tested.

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Maxxam Job #: B5P1428
Report Date: 2015/12/08

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4303341	D10-Anthracene	2015/12/08	84	50 - 130	87	50 - 130	84	%				
4303341	D14-Terphenyl (FS)	2015/12/08	83	50 - 130	84	50 - 130	79	%				
4303341	D8-Acenaphthylene	2015/12/08	81	50 - 130	82	50 - 130	78	%				
4302554	Acid Extractable Antimony (Sb)	2015/12/08	83	75 - 125	95	80 - 120	<0.2	ug/g	NC	35		
4302554	Acid Extractable Arsenic (As)	2015/12/08	104	75 - 125	101	80 - 120	<1	ug/g	NC	35		
4302554	Acid Extractable Barium (Ba)	2015/12/08	NC	75 - 125	105	80 - 120	<0.5	ug/g	1.4	35		
4302554	Acid Extractable Beryllium (Be)	2015/12/08	114	75 - 125	113	80 - 120	<0.2	ug/g	NC	35		
4302554	Acid Extractable Boron (B)	2015/12/08	106	75 - 125	109	80 - 120	<5	ug/g	NC	35		
4302554	Acid Extractable Cadmium (Cd)	2015/12/08	101	75 - 125	97	80 - 120	<0.1	ug/g	NC	35		
4302554	Acid Extractable Chromium (Cr)	2015/12/08	NC	75 - 125	105	80 - 120	<1	ug/g	0.25	35		
4302554	Acid Extractable Cobalt (Co)	2015/12/08	105	75 - 125	104	80 - 120	<0.1	ug/g	3.5	35		
4302554	Acid Extractable Copper (Cu)	2015/12/08	NC	75 - 125	104	80 - 120	<0.5	ug/g	5.4	35		
4302554	Acid Extractable Lead (Pb)	2015/12/08	NC	75 - 125	106	80 - 120	<1	ug/g	0.32	35		
4302554	Acid Extractable Mercury (Hg)	2015/12/08	105	75 - 125	108	80 - 120	<0.05	ug/g	NC	35		
4302554	Acid Extractable Molybdenum (Mo)	2015/12/08	100	75 - 125	99	80 - 120	<0.5	ug/g	NC	35		
4302554	Acid Extractable Nickel (Ni)	2015/12/08	NC	75 - 125	105	80 - 120	<0.5	ug/g	0.64	35		
4302554	Acid Extractable Selenium (Se)	2015/12/08	105	75 - 125	101	80 - 120	<0.5	ug/g	NC	35		
4302554	Acid Extractable Silver (Ag)	2015/12/08	99	75 - 125	97	80 - 120	<0.2	ug/g	NC	35		
4302554	Acid Extractable Thallium (Tl)	2015/12/08	106	75 - 125	107	80 - 120	<0.05	ug/g	NC	35		
4302554	Acid Extractable Uranium (U)	2015/12/08	107	75 - 125	109	80 - 120	<0.05	ug/g	2.0	25		
4302554	Acid Extractable Vanadium (V)	2015/12/08	NC	75 - 125	105	80 - 120	<5	ug/g	0.026	35		
4302554	Acid Extractable Zinc (Zn)	2015/12/08	NC	75 - 125	90	80 - 120	<5	ug/g	3.7	35		
4303326	Moisture	2015/12/08							NC	20		
4303341	1-Methylnaphthalene	2015/12/08	81	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40		
4303341	2-Methylnaphthalene	2015/12/08	80	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40		
4303341	Acenaphthene	2015/12/08	81	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40		
4303341	Acenaphthylene	2015/12/08	78	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40		
4303341	Anthracene	2015/12/08	74	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4303341	Benzo(a)anthracene	2015/12/08	80	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40		
4303341	Benzo(a)pyrene	2015/12/08	82	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		
4303341	Benzo(b/j)fluoranthene	2015/12/08	80	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40		

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Maxxam Job #: B5P1428
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QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4303341	Benzo(g,h,i)perylene	2015/12/08	84	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40		
4303341	Benzo(k)fluoranthene	2015/12/08	81	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40		
4303341	Chrysene	2015/12/08	80	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40		
4303341	Dibenz(a,h)anthracene	2015/12/08	89	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40		
4303341	Fluoranthene	2015/12/08	79	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40		
4303341	Fluorene	2015/12/08	79	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40		
4303341	Indeno(1,2,3-cd)pyrene	2015/12/08	92	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40		
4303341	Naphthalene	2015/12/08	74	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40		
4303341	Phenanthrene	2015/12/08	76	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40		
4303341	Pyrene	2015/12/08	77	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40		
4303468	Chromium (VI)	2015/12/08	59 (1)	75 - 125	94	80 - 120	<0.2	ug/g	NC	35	110	N/A

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Report Date: 2015/12/08

Golder Associates Ltd
Client Project #: 1525113
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VALIDATION SIGNATURE PAGE

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

Steve Roberts, Ottawa Lab Manager

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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:
Company Name: #14090 Golder Associates Ltd
Attention: Central Accounting
Address: 1931 Robertson Rd, Ottawa ON K2H 5B7
Tel: (613) 592-9600 Fax: (613) 592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Paul Hurst / Tony
Address:
Tel: Fax:
Email: phurst@golder.com / tlyon@golder.com

PROJECT INFORMATION:
Quotation #: B57626
P.O. #:
Project: 1525113
Project Name:
Site #:
Sampled By: Tony Lyon

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 537168
COC #: C#537168-12-01
Project Manager: Ema Gitej

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): O.Reg 153 PAHs (Soil); O.Reg 153 ICPMS Metals including Hg and CRVI; Laflache Landfill (TCLP METALS, REG. 153 PHCs)

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 Ozone/Furans are > 5 days - contact your Project Manager for details.
Job Specific Rush TAT (if applies to entire submission)
Date Required: Dec 8, 15 Time Required: EOD ☑
Rush Confirmation Number: ____ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	Laflache Landfill (TCLP METALS, REG. 153 PHCs)	# of Bottles	Comments
1		VS009	Dec 7.15	12:15	Soil	NA	✓	✓		1	
2		VS010		12:25			✓	✓		1	
3		VS011		12:35			✓	✓		1	
4		VS012		12:45			✓	✓		1	
5		VS013		12:55			✓	✓		1	
6		VS014		13:05			✓	✓		1	
7		VS015		13:15			✓	✓		1	
8		VS016		13:25			✓	✓		1	
9		Fill above drain pipe		14:00			✓	✓		1	
10		Fill above small clay pipe		14:30			✓	✓		1	

7-Dec-15 15:50
Ema Gitej
B5P1428
FHB OTT-002

RECEIVED IN OTTAWA

ON ICE PACK.

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tony Lyon	15/12/07	15:00	Fatemeh	2015/12/07	15:50	

Laboratory Use Only
Time Sensitive
Temperature (°C) on Receipt: 6, 6, 6

Custody Seal	Yes	No
Present	✓	
Intact	✓	

White: Maxxam Yellow: Client

* 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

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

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B5P1428
Report Date: 2015/12/08

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Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS014	BME286-02	Acid Extractable Cobalt (Co)	22	42	0.1	ug/g
FILL ABOVE DRAIN PIPE	BME289-02	Acid Extractable Mercury (Hg)	0.27	0.42	0.05	ug/g

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 537168-14-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2015/12/10
Report #: R3802069
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5P3619
Received: 2015/12/09, 15:40

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	3	N/A	2015/12/10	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1)	3	2015/12/10	2015/12/10	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS	3	2015/12/10	2015/12/10	CAM SOP-00447	EPA 6020A m
Moisture	3	N/A	2015/12/10	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM)	3	2015/12/10	2015/12/10	CAM SOP-00318	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Ema Gitej
10 Dec 2015 17:58:59 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: EGitej@maxxam.ca
Phone# (905)817-5829

==========

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 Job #: B5P3619
Report Date: 2015/12/10

Golder Associates Ltd
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Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BMO564	BMO564	BMO565	BMO566		
Sampling Date			2015/12/09 12:15	2015/12/09 12:15	2015/12/09 12:45	2015/12/09 13:00		
COC Number			537168-14-01	537168-14-01	537168-14-01	537168-14-01		
	UNITS	Criteria	VS014 B	VS014 B Lab-Dup	VS017	VS018	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	4307733
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	1.6	<1.0	1.0	4307733
Acid Extractable Barium (Ba)	ug/g	**390**	33	34	140	120	0.50	4307733
Acid Extractable Beryllium (Be)	ug/g	**4**	0.21	<0.20	0.50	0.47	0.20	4307733
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.0	4307733
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.17	0.10	4307733
Acid Extractable Chromium (Cr)	ug/g	**160**	18	17	36	42	1.0	4307733
Acid Extractable Cobalt (Co)	ug/g	**22**	5.2	5.0	8.9	13	0.10	4307733
Acid Extractable Copper (Cu)	ug/g	**140**	9.1	8.3	24	12	0.50	4307733
Acid Extractable Lead (Pb)	ug/g	**120**	2.2	2.1	4.9	4.5	1.0	4307733
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	0.50	4307733
Acid Extractable Nickel (Ni)	ug/g	**100**	9.4	9.1	22	20	0.50	4307733
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	4307733
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	4307733
Acid Extractable Thallium (Tl)	ug/g	**1**	0.051	<0.050	0.18	0.21	0.050	4307733
Acid Extractable Uranium (U)	ug/g	**23**	0.85	0.81	0.69	2.9	0.050	4307733
Acid Extractable Vanadium (V)	ug/g	**86**	21	21	51	51	5.0	4307733
Acid Extractable Zinc (Zn)	ug/g	**340**	21	18	55	60	5.0	4307733
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.050	4307733

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Golder Associates Ltd
Client Project #: 1525113
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O.REG 153 PAHS (SOIL)

Maxxam ID			BMO564	BMO564	BMO565	BMO566		
Sampling Date			2015/12/09 12:15	2015/12/09 12:15	2015/12/09 12:45	2015/12/09 13:00		
COC Number			537168-14-01	537168-14-01	537168-14-01	537168-14-01		
	UNITS	Criteria	VS014 B	VS014 B Lab-Dup	VS017	VS018	RDL	QC Batch
Inorganics								
Moisture	%	-	17		20	19	1.0	4307062
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.0071		<0.0071	<0.0071	0.0071	4305818
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	0.0050	0.0051	0.0050	4307225
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4307225
Surrogate Recovery (%)								
D10-Anthracene	%	-	95	94	92	95		4307225
D14-Terphenyl (FS)	%	-	98	99	97	99		4307225
D8-Acenaphthylene	%	-	88	85	89	96		4307225

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Golder Associates Ltd
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Sampler Initials: TL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			BMO564	BMO565	BMO566		
Sampling Date			2015/12/09 12:15	2015/12/09 12:45	2015/12/09 13:00		
COC Number			537168-14-01	537168-14-01	537168-14-01		
	UNITS	Criteria	VS014 B	VS017	VS018	RDL	QC Batch
Inorganics							
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	0.2	4306185

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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A Bureau Veritas Group Company

Success Through Science®

Maxxam Job #: B5P3619
Report Date: 2015/12/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BMO564
Sample ID: VS014 B
Matrix: Soil

Collected: 2015/12/09
Shipped:
Received: 2015/12/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4305818	N/A	2015/12/10	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4306185	2015/12/10	2015/12/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4307733	2015/12/10	2015/12/10	Grace Bu
Moisture	BAL	4307062	N/A	2015/12/10	Jessy Mathew Vinod
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4307225	2015/12/10	2015/12/10	Lingyun Feng

Maxxam ID: BMO564 Dup
Sample ID: VS014 B
Matrix: Soil

Collected: 2015/12/09
Shipped:
Received: 2015/12/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4307733	2015/12/10	2015/12/10	Grace Bu
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4307225	2015/12/10	2015/12/10	Lingyun Feng

Maxxam ID: BMO565
Sample ID: VS017
Matrix: Soil

Collected: 2015/12/09
Shipped:
Received: 2015/12/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4305818	N/A	2015/12/10	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4306185	2015/12/10	2015/12/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4307733	2015/12/10	2015/12/10	Grace Bu
Moisture	BAL	4307062	N/A	2015/12/10	Jessy Mathew Vinod
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4307225	2015/12/10	2015/12/10	Lingyun Feng

Maxxam ID: BMO566
Sample ID: VS018
Matrix: Soil

Collected: 2015/12/09
Shipped:
Received: 2015/12/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4305818	N/A	2015/12/10	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4306185	2015/12/10	2015/12/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4307733	2015/12/10	2015/12/10	Grace Bu
Moisture	BAL	4307062	N/A	2015/12/10	Jessy Mathew Vinod
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4307225	2015/12/10	2015/12/10	Lingyun Feng

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Maxxam Job #: B5P3619
Report Date: 2015/12/10

Golder Associates Ltd
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GENERAL COMMENTS

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

Package 1	5.3°C

Results relate only to the items tested.

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Maxxam Job #: B5P3619
Report Date: 2015/12/10

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4307225	D10-Anthracene	2015/12/10	95	50 - 130	95	50 - 130	93	%				
4307225	D14-Terphenyl (FS)	2015/12/10	97	50 - 130	94	50 - 130	91	%				
4307225	D8-Acenaphthylene	2015/12/10	93	50 - 130	90	50 - 130	86	%				
4306185	Chromium (VI)	2015/12/10	38 (1)	75 - 125	97	80 - 120	<0.2	ug/g	NC	35	111	80 - 120
4307062	Moisture	2015/12/10							1.1	20		
4307225	1-Methylnaphthalene	2015/12/10	91	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40		
4307225	2-Methylnaphthalene	2015/12/10	85	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40		
4307225	Acenaphthene	2015/12/10	92	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		
4307225	Acenaphthylene	2015/12/10	86	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40		
4307225	Anthracene	2015/12/10	79	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40		
4307225	Benzo(a)anthracene	2015/12/10	94	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40		
4307225	Benzo(a)pyrene	2015/12/10	93	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40		
4307225	Benzo(b/j)fluoranthene	2015/12/10	85	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40		
4307225	Benzo(g,h,i)perylene	2015/12/10	91	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		
4307225	Benzo(k)fluoranthene	2015/12/10	92	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40		
4307225	Chrysene	2015/12/10	89	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40		
4307225	Dibenz(a,h)anthracene	2015/12/10	93	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40		
4307225	Fluoranthene	2015/12/10	90	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40		
4307225	Fluorene	2015/12/10	89	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40		
4307225	Indeno(1,2,3-cd)pyrene	2015/12/10	104	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40		
4307225	Naphthalene	2015/12/10	84	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40		
4307225	Phenanthrene	2015/12/10	87	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40		
4307225	Pyrene	2015/12/10	94	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40		
4307733	Acid Extractable Antimony (Sb)	2015/12/10	91	75 - 125	97	80 - 120	<0.20	ug/g	NC	30		
4307733	Acid Extractable Arsenic (As)	2015/12/10	101	75 - 125	98	80 - 120	<1.0	ug/g	NC	30		
4307733	Acid Extractable Barium (Ba)	2015/12/10	NC	75 - 125	97	80 - 120	<0.50	ug/g	1.2	30		
4307733	Acid Extractable Beryllium (Be)	2015/12/10	99	75 - 125	99	80 - 120	<0.20	ug/g	NC	30		
4307733	Acid Extractable Boron (B)	2015/12/10	98	75 - 125	98	80 - 120	<5.0	ug/g	NC	30		
4307733	Acid Extractable Cadmium (Cd)	2015/12/10	96	75 - 125	101	80 - 120	<0.10	ug/g	NC	30		
4307733	Acid Extractable Chromium (Cr)	2015/12/10	NC	75 - 125	99	80 - 120	<1.0	ug/g	5.2	30		
4307733	Acid Extractable Cobalt (Co)	2015/12/10	99	75 - 125	99	80 - 120	<0.10	ug/g	4.6	30		

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Maxxam Job #: B5P3619
Report Date: 2015/12/10

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4307733	Acid Extractable Copper (Cu)	2015/12/10	99	75 - 125	101	80 - 120	<0.50	ug/g	9.0	30		
4307733	Acid Extractable Lead (Pb)	2015/12/10	98	75 - 125	103	80 - 120	<1.0	ug/g	NC	30		
4307733	Acid Extractable Mercury (Hg)	2015/12/10	106	75 - 125	116	80 - 120	<0.050	ug/g	NC	30		
4307733	Acid Extractable Molybdenum (Mo)	2015/12/10	95	75 - 125	101	80 - 120	<0.50	ug/g	NC	30		
4307733	Acid Extractable Nickel (Ni)	2015/12/10	105	75 - 125	96	80 - 120	<0.50	ug/g	4.1	30		
4307733	Acid Extractable Selenium (Se)	2015/12/10	102	75 - 125	103	80 - 120	<0.50	ug/g	NC	30		
4307733	Acid Extractable Silver (Ag)	2015/12/10	100	75 - 125	101	80 - 120	<0.20	ug/g	NC	30		
4307733	Acid Extractable Thallium (Tl)	2015/12/10	97	75 - 125	101	80 - 120	<0.050	ug/g	NC	30		
4307733	Acid Extractable Uranium (U)	2015/12/10	96	75 - 125	100	80 - 120	<0.050	ug/g	4.4	30		
4307733	Acid Extractable Vanadium (V)	2015/12/10	NC	75 - 125	97	80 - 120	<5.0	ug/g	NC	30		
4307733	Acid Extractable Zinc (Zn)	2015/12/10	NC	75 - 125	98	80 - 120	<5.0	ug/g	NC	30		

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B5P3619
Report Date: 2015/12/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

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

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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:
Company Name: #14090 Golder Associates Ltd
Attention: Central Accounting
Address: 1931 Robertson Rd, Ottawa ON K2H 5B7
Tel: (613) 592-9600 Fax: (613) 592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Paul Hurst / Tony Lyon
Address:
Tel: Fax:
Email: phurst@golder.com / tlyon@golder.com

PROJECT INFORMATION:
Quotation #: B57625
P.O. #:
Project: 1525113
Project Name:
Site #:
Sampled By: Tony Lyon

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 537168
COC #: C#537168-14-01
Project Manager: Ema Gitej

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
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: Dec 10, 15 Time Required: 1300
Rush Confirmation Number: ____ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle) Metals / Hg / Cr VI	O Reg 153 PAHs (Soil)	O Reg 153 ICP/MS Metals including Hg and CRVI	Leachate Landfill (TCLP METALS, REG 153 PHCs)								# of Bottles	Comments
1		VS014 B	Dec 9, 15	12:15	Soil	NA	✓	✓									1	
2		VS017	↓	12:45	Soil	↓	✓	✓									1	
3		VS018	↓	13:00	Soil	↓	✓	✓									1	
4																		
5																		
6																		
7																		
8																		
9																		
10																		

9-Dec-15 15:40
Ema Gitej
B5P3619
FHB OTT-002

RECEIVED IN OTTAWA

on ice pack.

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tony Lyon	15/12/09	15:00	Fatemeh	2015/12/09	15:40	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	6, 5, 5	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B5P3619
Report Date: 2015/12/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Maxxam
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Your Project #: 1525113
Site#: 1525113
Your C.O.C. #: 537168-15-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2015/12/16
Report #: R3808761
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5P7068
Received: 2015/12/14, 14:40

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	2	N/A	2015/12/15	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	2	2015/12/15	2015/12/15	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	2	2015/12/14	2015/12/15	OTT SOP-00003	EPA 6020
Moisture (1)	2	N/A	2015/12/15	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	2	2015/12/15	2015/12/15	CAM SOP-00318	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Ema Gitej
16 Dec 2015 12:21:15 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: EGitej@maxxam.ca
Phone# (905)817-5829

==========

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Maxxam Job #: B5P7068
Report Date: 2015/12/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BNG086	BNG086	BNG087		
Sampling Date			2015/12/14 13:00	2015/12/14 13:00	2015/12/14 13:15		
COC Number			537168-15-01	537168-15-01	537168-15-01		
	UNITS	Criteria	VS019	VS019 Lab-Dup	VS020	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	0.2	4312761
Acid Extractable Arsenic (As)	ug/g	**18**	4	3	<1	1	4312761
Acid Extractable Barium (Ba)	ug/g	**390**	39	39	110	0.5	4312761
Acid Extractable Beryllium (Be)	ug/g	**4**	0.3	0.3	0.5	0.2	4312761
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	5	4312761
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.1	0.1	<0.1	0.1	4312761
Acid Extractable Chromium (Cr)	ug/g	**160**	22	21	40	1	4312761
Acid Extractable Cobalt (Co)	ug/g	**22**	6.9	6.2	11	0.1	4312761
Acid Extractable Copper (Cu)	ug/g	**140**	7.2	7.8	11	0.5	4312761
Acid Extractable Lead (Pb)	ug/g	**120**	29	28	5	1	4312761
Acid Extractable Mercury (Hg)	ug/g	**0.27**	0.08	0.08	<0.05	0.05	4312761
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.5	<0.5	<0.5	0.5	4312761
Acid Extractable Nickel (Ni)	ug/g	**100**	9.9	9.0	19	0.5	4312761
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	0.5	4312761
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	0.2	4312761
Acid Extractable Thallium (Tl)	ug/g	**1**	0.09	0.07	0.18	0.05	4312761
Acid Extractable Uranium (U)	ug/g	**23**	0.75	0.75	1.8	0.05	4312761
Acid Extractable Vanadium (V)	ug/g	**86**	36	33	48	5	4312761
Acid Extractable Zinc (Zn)	ug/g	**340**	47	45	51	5	4312761

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5P7068
Report Date: 2015/12/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BNG086	BNG086	BNG087		
Sampling Date			2015/12/14 13:00	2015/12/14 13:00	2015/12/14 13:15		
COC Number			537168-15-01	537168-15-01	537168-15-01		
	UNITS	Criteria	VS019	VS019 Lab-Dup	VS020	RDL	QC Batch
Inorganics							
Moisture	%	-	15	15	19	1.0	4313509
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.0071		<0.0071	0.0071	4311938
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	0.0050	4313531
Acenaphthylene	ug/g	**0.15**	0.018	0.019	0.0066	0.0050	4313531
Anthracene	ug/g	**0.67**	0.018	0.021	0.0052	0.0050	4313531
Benzo(a)anthracene	ug/g	**0.5**	0.11	0.11	0.012	0.0050	4313531
Benzo(a)pyrene	ug/g	**0.3**	0.13	0.12	0.017	0.0050	4313531
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.19	0.17	0.023	0.0050	4313531
Benzo(g,h,i)perylene	ug/g	**6.6**	0.078	0.073	0.012	0.0050	4313531
Benzo(k)fluoranthene	ug/g	**0.78**	0.064	0.059	0.0077	0.0050	4313531
Chrysene	ug/g	**7**	0.095	0.093	0.010	0.0050	4313531
Dibenz(a,h)anthracene	ug/g	**0.1**	0.019	0.018	<0.0050	0.0050	4313531
Fluoranthene	ug/g	**0.69**	0.22	0.22	0.023	0.0050	4313531
Fluorene	ug/g	**62**	<0.0050	<0.0050	0.0055	0.0050	4313531
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.091	0.084	0.013	0.0050	4313531
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	4313531
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	4313531
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	0.0098	0.0050	4313531
Phenanthrene	ug/g	**6.2**	0.065	0.074	0.011	0.0050	4313531
Pyrene	ug/g	**78**	0.20	0.19	0.020	0.0050	4313531
Surrogate Recovery (%)							
D10-Anthracene	%	-	93	96	92		4313531
D14-Terphenyl (FS)	%	-	98	100	98		4313531
D8-Acenaphthylene	%	-	84	86	85		4313531

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5P7068
Report Date: 2015/12/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			BNG086	BNG086	BNG087		
Sampling Date			2015/12/14 13:00	2015/12/14 13:00	2015/12/14 13:15		
COC Number			537168-15-01	537168-15-01	537168-15-01		
	UNITS	Criteria	VS019	VS019 Lab-Dup	VS020	RDL	QC Batch
Inorganics							
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	0.2	4314562

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5P7068
Report Date: 2015/12/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BNG086
Sample ID: VS019
Matrix: Soil

Collected: 2015/12/14
Shipped:
Received: 2015/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4311938	N/A	2015/12/15	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4314562	2015/12/15	2015/12/15	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4312761	2015/12/14	2015/12/15	Raigamage Perera
Moisture	BAL	4313509	N/A	2015/12/15	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4313531	2015/12/15	2015/12/15	Lingyun Feng

Maxxam ID: BNG086 Dup
Sample ID: VS019
Matrix: Soil

Collected: 2015/12/14
Shipped:
Received: 2015/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4314562	2015/12/15	2015/12/15	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4312761	2015/12/14	2015/12/15	Raigamage Perera
Moisture	BAL	4313509	N/A	2015/12/15	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4313531	2015/12/15	2015/12/15	Lingyun Feng

Maxxam ID: BNG087
Sample ID: VS020
Matrix: Soil

Collected: 2015/12/14
Shipped:
Received: 2015/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4311938	N/A	2015/12/15	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4314562	2015/12/15	2015/12/15	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4312761	2015/12/14	2015/12/15	Raigamage Perera
Moisture	BAL	4313509	N/A	2015/12/15	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4313531	2015/12/15	2015/12/15	Lingyun Feng

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Maxxam Job #: B5P7068
Report Date: 2015/12/16

Golder Associates Ltd
Client Project #: 1525113
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GENERAL COMMENTS

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

Package 1	3.7°C

The cooler custody seal was present and intact.

Results relate only to the items tested.

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Maxxam Job #: B5P7068
Report Date: 2015/12/16

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4313531	D10-Anthracene	2015/12/15	95	50 - 130	89	50 - 130	94	%				
4313531	D14-Terphenyl (FS)	2015/12/15	100	50 - 130	95	50 - 130	94	%				
4313531	D8-Acenaphthylene	2015/12/15	90	50 - 130	82	50 - 130	82	%				
4312761	Acid Extractable Antimony (Sb)	2015/12/15	91	75 - 125	106	80 - 120	<0.2	ug/g	NC	35		
4312761	Acid Extractable Arsenic (As)	2015/12/15	96	75 - 125	101	80 - 120	<1	ug/g	NC	35		
4312761	Acid Extractable Barium (Ba)	2015/12/15	NC	75 - 125	104	80 - 120	<0.5	ug/g	0.10	35		
4312761	Acid Extractable Beryllium (Be)	2015/12/15	98	75 - 125	104	80 - 120	<0.2	ug/g	NC	35		
4312761	Acid Extractable Boron (B)	2015/12/15	94	75 - 125	103	80 - 120	<5	ug/g	NC	35		
4312761	Acid Extractable Cadmium (Cd)	2015/12/15	97	75 - 125	105	80 - 120	<0.1	ug/g	NC	35		
4312761	Acid Extractable Chromium (Cr)	2015/12/15	NC	75 - 125	107	80 - 120	<1	ug/g	5.4	35		
4312761	Acid Extractable Cobalt (Co)	2015/12/15	99	75 - 125	106	80 - 120	<0.1	ug/g	10	35		
4312761	Acid Extractable Copper (Cu)	2015/12/15	95	75 - 125	105	80 - 120	<0.5	ug/g	7.8	35		
4312761	Acid Extractable Lead (Pb)	2015/12/15	NC	75 - 125	107	80 - 120	<1	ug/g	3.0	35		
4312761	Acid Extractable Mercury (Hg)	2015/12/15	105	75 - 125	115	80 - 120	<0.05	ug/g	NC	35		
4312761	Acid Extractable Molybdenum (Mo)	2015/12/15	98	75 - 125	107	80 - 120	<0.5	ug/g	NC	35		
4312761	Acid Extractable Nickel (Ni)	2015/12/15	95	75 - 125	105	80 - 120	<0.5	ug/g	9.5	35		
4312761	Acid Extractable Selenium (Se)	2015/12/15	97	75 - 125	103	80 - 120	<0.5	ug/g	NC	35		
4312761	Acid Extractable Silver (Ag)	2015/12/15	94	75 - 125	100	80 - 120	<0.2	ug/g	NC	35		
4312761	Acid Extractable Thallium (Tl)	2015/12/15	100	75 - 125	107	80 - 120	<0.05	ug/g	NC	35		
4312761	Acid Extractable Uranium (U)	2015/12/15	101	75 - 125	107	80 - 120	<0.05	ug/g	0.32	25		
4312761	Acid Extractable Vanadium (V)	2015/12/15	NC	75 - 125	106	80 - 120	<5	ug/g	6.0	35		
4312761	Acid Extractable Zinc (Zn)	2015/12/15	NC	75 - 125	107	80 - 120	<5	ug/g	3.3	35		
4313509	Moisture	2015/12/15							1.3	20		
4313531	1-Methylnaphthalene	2015/12/15	96	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40		
4313531	2-Methylnaphthalene	2015/12/15	93	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40		
4313531	Acenaphthene	2015/12/15	93	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40		
4313531	Acenaphthylene	2015/12/15	88	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40		
4313531	Anthracene	2015/12/15	94	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40		
4313531	Benzo(a)anthracene	2015/12/15	107	50 - 130	85	50 - 130	<0.0050	ug/g	3.1	40		
4313531	Benzo(a)pyrene	2015/12/15	105	50 - 130	94	50 - 130	<0.0050	ug/g	6.8	40		
4313531	Benzo(b/j)fluoranthene	2015/12/15	95	50 - 130	97	50 - 130	<0.0050	ug/g	9.1	40		

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Maxxam Job #: B5P7068
Report Date: 2015/12/16

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4313531	Benzo(g,h,i)perylene	2015/12/15	91	50 - 130	96	50 - 130	<0.0050	ug/g	6.9	40		
4313531	Benzo(k)fluoranthene	2015/12/15	94	50 - 130	104	50 - 130	<0.0050	ug/g	8.4	40		
4313531	Chrysene	2015/12/15	106	50 - 130	91	50 - 130	<0.0050	ug/g	1.5	40		
4313531	Dibenz(a,h)anthracene	2015/12/15	90	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40		
4313531	Fluoranthene	2015/12/15	119	50 - 130	93	50 - 130	<0.0050	ug/g	0.062	40		
4313531	Fluorene	2015/12/15	95	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40		
4313531	Indeno(1,2,3-cd)pyrene	2015/12/15	102	50 - 130	102	50 - 130	<0.0050	ug/g	8.2	40		
4313531	Naphthalene	2015/12/15	85	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40		
4313531	Phenanthrene	2015/12/15	107	50 - 130	88	50 - 130	<0.0050	ug/g	14	40		
4313531	Pyrene	2015/12/15	118	50 - 130	94	50 - 130	<0.0050	ug/g	5.4	40		
4314562	Chromium (VI)	2015/12/15	84	75 - 125	100	80 - 120	<0.2	ug/g	NC	35	80	80 - 120

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B5P7068
Report Date: 2015/12/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Steve Roberts, Ottawa Lab Manager

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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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 537168
Attention:	Central Accounting	Attention:	Paul Hurst / Tony Lyon	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#537168-15-01	Ema Gitej
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:		Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	phurst@golder.com / tlyon@golder.com	Sampled By:	Tony Lyon		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☑ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☑ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☑ Table 3 ☐ Agri/Other ☑ For RSC	☐ MISA Municipality ____	
☐ Table ___	☐ PWQO	
	☐ Other ____	
Include Criteria on Certificate of Analysis (Y/N)? ____		

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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: Tomorrow Time Required: EOD ☑
Rush Confirmation Number: ____ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CrVI	Lafleche Landfill (TCLP METALS, REG. 153 PHCs)	# of Bottles	Comments
1		VS019	Dec. 14, 15	13:00	Soil	NA	✓	✓		1	
2		VS020	Dec 14, 15	13:15	Soil	NA	✓	✓		1	
3											
4											
5											
6											
7											
8											
9											
10											

14-Dec-15 14:40
Ema Gitej
B5P7068
FHB OTT-002

RECEIVED IN OTTAWA

or EE pick.

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tony Lyon	15/12/14	13:30	Fatemeh	2015/12/14	14:40	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	4, 4, 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

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B5P7068
Report Date: 2015/12/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 537168-16-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2015/12/17
Report #: R3811523
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5P9259
Received: 2015/12/16, 15:50

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	4	N/A	2015/12/17	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	4	2015/12/17	2015/12/17	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	4	2015/12/16	2015/12/17	OTT SOP-00003	EPA 6020
Moisture (1)	4	N/A	2015/12/17	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	4	2015/12/17	2015/12/17	CAM SOP-00318	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Ema Gitej
17 Dec 2015 18:30:07 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: EGitej@maxxam.ca
Phone# (905)817-5829

==========

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Maxxam Job #: B5P9259
Report Date: 2015/12/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BNQ928	BNQ928	BNQ929	BNQ930	BNQ931		
Sampling Date			2015/12/16 13:30	2015/12/16 13:30	2015/12/16 13:45	2015/12/16 14:00	2015/12/16 14:30		
COC Number			537168-16-01	537168-16-01	537168-16-01	537168-16-01	537168-16-01		
	UNITS	Criteria	VS021	VS021 Lab-Dup	VS022	VS023	VS024	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4316611
Acid Extractable Arsenic (As)	ug/g	**18**	2	2	1	2	3	1	4316611
Acid Extractable Barium (Ba)	ug/g	**390**	220	220	**490**	140	380	0.5	4316611
Acid Extractable Beryllium (Be)	ug/g	**4**	0.7	0.7	1.1	0.5	1.4	0.2	4316611
Acid Extractable Boron (B)	ug/g	**120**	7	7	<5	<5	5	5	4316611
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	0.1	<0.1	0.2	0.1	4316611
Acid Extractable Chromium (Cr)	ug/g	**160**	45	46	120	30	120	1	4316611
Acid Extractable Cobalt (Co)	ug/g	**22**	14	14	**37**	8.5	**24**	0.1	4316611
Acid Extractable Copper (Cu)	ug/g	**140**	24	24	55	16	46	0.5	4316611
Acid Extractable Lead (Pb)	ug/g	**120**	6	6	9	4	35	1	4316611
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	<0.05	0.16	0.05	4316611
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	1.0	1.0	0.6	<0.5	0.8	0.5	4316611
Acid Extractable Nickel (Ni)	ug/g	**100**	27	27	65	16	60	0.5	4316611
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4316611
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4316611
Acid Extractable Thallium (Tl)	ug/g	**1**	0.25	0.24	0.50	0.16	0.52	0.05	4316611
Acid Extractable Uranium (U)	ug/g	**23**	1.2	1.2	2.2	0.72	2.7	0.05	4316611
Acid Extractable Vanadium (V)	ug/g	**86**	66	66	**120**	50	**110**	5	4316611
Acid Extractable Zinc (Zn)	ug/g	**340**	73	75	140	45	210	5	4316611

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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.maxxam.ca

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A Bureau Veritas Group Company

Maxxam Job #: B5P9259
Report Date: 2015/12/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BNQ928	BNQ929	BNQ930	BNQ930	BNQ931		
Sampling Date			2015/12/16 13:30	2015/12/16 13:45	2015/12/16 14:00	2015/12/16 14:00	2015/12/16 14:30		
COC Number			537168-16-01	537168-16-01	537168-16-01	537168-16-01	537168-16-01		
	UNITS	Criteria	VS021	VS022	VS023	VS023 Lab-Dup	VS024	RDL	QC Batch
Inorganics									
Moisture	%	-	29	30	22	22	31	1.0	4317699
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.0071	<0.0071	<0.0071		<0.0071	0.0071	4316165
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050		<0.0050	0.0050	4317777
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050		<0.0050	0.0050	4317777
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050		<0.0050	0.0050	4317777
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050		0.010	0.0050	4317777
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050		0.013	0.0050	4317777
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050		0.024	0.0050	4317777
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050		0.0090	0.0050	4317777
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050		0.0079	0.0050	4317777
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050		0.012	0.0050	4317777
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050		<0.0050	0.0050	4317777
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050		0.023	0.0050	4317777
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050		<0.0050	0.0050	4317777
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050		0.0098	0.0050	4317777
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050		<0.0050	0.0050	4317777
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050		<0.0050	0.0050	4317777
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050		<0.0050	0.0050	4317777
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050		0.0098	0.0050	4317777
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050		0.021	0.0050	4317777
Surrogate Recovery (%)									
D10-Anthracene	%	-	86	84	85		84		4317777
D14-Terphenyl (FS)	%	-	93	92	89		89		4317777
D8-Acenaphthylene	%	-	79	81	79		82		4317777

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5P9259
Report Date: 2015/12/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			BNQ928	BNQ928	BNQ929	BNQ930	BNQ931		
Sampling Date			2015/12/16 13:30	2015/12/16 13:30	2015/12/16 13:45	2015/12/16 14:00	2015/12/16 14:30		
COC Number			537168-16-01	537168-16-01	537168-16-01	537168-16-01	537168-16-01		
	UNITS	Criteria	VS021	VS021 Lab-Dup	VS022	VS023	VS024	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4318291

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BNQ928
Sample ID: VS021
Matrix: Soil

Collected: 2015/12/16
Shipped:
Received: 2015/12/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4316165	N/A	2015/12/17	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4318291	2015/12/17	2015/12/17	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4316611	2015/12/16	2015/12/17	Raigamage Perera
Moisture	BAL	4317699	N/A	2015/12/17	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4317777	2015/12/17	2015/12/17	Lingyun Feng

Maxxam ID: BNQ928 Dup
Sample ID: VS021
Matrix: Soil

Collected: 2015/12/16
Shipped:
Received: 2015/12/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4318291	2015/12/17	2015/12/17	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4316611	2015/12/16	2015/12/17	Raigamage Perera

Maxxam ID: BNQ929
Sample ID: VS022
Matrix: Soil

Collected: 2015/12/16
Shipped:
Received: 2015/12/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4316165	N/A	2015/12/17	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4318291	2015/12/17	2015/12/17	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4316611	2015/12/16	2015/12/17	Raigamage Perera
Moisture	BAL	4317699	N/A	2015/12/17	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4317777	2015/12/17	2015/12/17	Lingyun Feng

Maxxam ID: BNQ930
Sample ID: VS023
Matrix: Soil

Collected: 2015/12/16
Shipped:
Received: 2015/12/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4316165	N/A	2015/12/17	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4318291	2015/12/17	2015/12/17	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4316611	2015/12/16	2015/12/17	Raigamage Perera
Moisture	BAL	4317699	N/A	2015/12/17	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4317777	2015/12/17	2015/12/17	Lingyun Feng

Maxxam ID: BNQ930 Dup
Sample ID: VS023
Matrix: Soil

Collected: 2015/12/16
Shipped:
Received: 2015/12/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4317699	N/A	2015/12/17	Min Yang

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Maxxam Job #: B5P9259
Report Date: 2015/12/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BNQ931
Sample ID: VS024
Matrix: Soil

Collected: 2015/12/16
Shipped:
Received: 2015/12/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4316165	N/A	2015/12/17	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4318291	2015/12/17	2015/12/17	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4316611	2015/12/16	2015/12/17	Raigamage Perera
Moisture	BAL	4317699	N/A	2015/12/17	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4317777	2015/12/17	2015/12/17	Lingyun Feng

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GENERAL COMMENTS

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

Package 1	4.3°C

Results relate only to the items tested.

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Maxxam Job #: B5P9259
Report Date: 2015/12/17

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4317777	D10-Anthracene	2015/12/17	86	50 - 130	82	50 - 130	82	%				
4317777	D14-Terphenyl (FS)	2015/12/17	91	50 - 130	88	50 - 130	89	%				
4317777	D8-Acenaphthylene	2015/12/17	83	50 - 130	82	50 - 130	82	%				
4316611	Acid Extractable Antimony (Sb)	2015/12/17	89	75 - 125	97	80 - 120	<0.2	ug/g	NC	35		
4316611	Acid Extractable Arsenic (As)	2015/12/17	93	75 - 125	97	80 - 120	<1	ug/g	NC	35		
4316611	Acid Extractable Barium (Ba)	2015/12/17	NC	75 - 125	102	80 - 120	<0.5	ug/g	1.4	35		
4316611	Acid Extractable Beryllium (Be)	2015/12/17	110	75 - 125	106	80 - 120	<0.2	ug/g	NC	35		
4316611	Acid Extractable Boron (B)	2015/12/17	104	75 - 125	105	80 - 120	<5	ug/g	NC	35		
4316611	Acid Extractable Cadmium (Cd)	2015/12/17	105	75 - 125	103	80 - 120	<0.1	ug/g	NC	35		
4316611	Acid Extractable Chromium (Cr)	2015/12/17	NC	75 - 125	106	80 - 120	<1	ug/g	0.88	35		
4316611	Acid Extractable Cobalt (Co)	2015/12/17	NC	75 - 125	106	80 - 120	<0.1	ug/g	1.6	35		
4316611	Acid Extractable Copper (Cu)	2015/12/17	NC	75 - 125	104	80 - 120	<0.5	ug/g	0.51	35		
4316611	Acid Extractable Lead (Pb)	2015/12/17	101	75 - 125	102	80 - 120	<1	ug/g	0.60	35		
4316611	Acid Extractable Mercury (Hg)	2015/12/17	109	75 - 125	105	80 - 120	<0.05	ug/g	NC	35		
4316611	Acid Extractable Molybdenum (Mo)	2015/12/17	105	75 - 125	104	80 - 120	<0.5	ug/g	NC	35		
4316611	Acid Extractable Nickel (Ni)	2015/12/17	NC	75 - 125	103	80 - 120	<0.5	ug/g	0.14	35		
4316611	Acid Extractable Selenium (Se)	2015/12/17	91	75 - 125	99	80 - 120	<0.5	ug/g	NC	35		
4316611	Acid Extractable Silver (Ag)	2015/12/17	102	75 - 125	100	80 - 120	<0.2	ug/g	NC	35		
4316611	Acid Extractable Thallium (Tl)	2015/12/17	103	75 - 125	102	80 - 120	<0.05	ug/g	NC	35		
4316611	Acid Extractable Uranium (U)	2015/12/17	100	75 - 125	100	80 - 120	<0.05	ug/g	0.39	25		
4316611	Acid Extractable Vanadium (V)	2015/12/17	NC	75 - 125	104	80 - 120	<5	ug/g	0.053	35		
4316611	Acid Extractable Zinc (Zn)	2015/12/17	NC	75 - 125	103	80 - 120	<5	ug/g	1.9	35		
4317699	Moisture	2015/12/17							0	20		
4317777	1-Methylnaphthalene	2015/12/17	95	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40		
4317777	2-Methylnaphthalene	2015/12/17	92	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40		
4317777	Acenaphthene	2015/12/17	88	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		
4317777	Acenaphthylene	2015/12/17	81	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40		
4317777	Anthracene	2015/12/17	73	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		
4317777	Benzo(a)anthracene	2015/12/17	77	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4317777	Benzo(a)pyrene	2015/12/17	77	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		
4317777	Benzo(b/j)fluoranthene	2015/12/17	104	50 - 130	112	50 - 130	<0.0050	ug/g	NC	40		

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QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4317777	Benzo(g,h,i)perylene	2015/12/17	67	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40		
4317777	Benzo(k)fluoranthene	2015/12/17	98	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40		
4317777	Chrysene	2015/12/17	89	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		
4317777	Dibenz(a,h)anthracene	2015/12/17	78	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40		
4317777	Fluoranthene	2015/12/17	88	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40		
4317777	Fluorene	2015/12/17	88	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40		
4317777	Indeno(1,2,3-cd)pyrene	2015/12/17	88	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40		
4317777	Naphthalene	2015/12/17	86	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40		
4317777	Phenanthrene	2015/12/17	91	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		
4317777	Pyrene	2015/12/17	88	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40		
4318291	Chromium (VI)	2015/12/17	0 (1)	75 - 125	99	80 - 120	<0.2	ug/g	NC	35	84	80 - 120

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Report Date: 2015/12/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Steve Roberts, Ottawa Lab Manager

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 537168
Attention:	Central Accounting	Attention:	Paul Hurst / Tony Lyon	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113		
	Ottawa ON K2H 5B7			Project Name:		COC #:	Project Manager:
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:		C#537168-16-01	Ema Gitej
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	phurst@golder.com / tlyon@golder.com	Sampled By:	Tony Lyon		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:

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: Tomorrow Time Required: EOD ☐
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 /CPMS Metals including Hg and CRVI	Laflache Landfill (TCLP METALS, REG 153 PHCs)	# of Bottles	Comments
1		VS021	Dec 16, '15	13:30	Soil		✓	✓		1	
2		VS022	↓	13:45	↓		✓	✓		1	
3		VS023	↓	14:00	↓		✓	✓		1	
4		VS024	↓	14:30	↓		✓	✓		1	
5											
6											
7											
8											
9											ON ICE PACK.
10											

16-Dec-15 15:50
Ema Gitej
B5P9259
FHB OTT-002

RECEIVED 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
Z Z Tony Lyon	15/12/16	15:30	[signature] Fatemeh	2015/12/16	15:50			4,4,5	Present	1	✓
									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

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

White: Maxxam Yellow: Client

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Maxxam
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Maxxam Job #: B5P9259
Report Date: 2015/12/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS022	BNQ929-02	Acid Extractable Barium (Ba)	390	490	0.5	ug/g
VS022	BNQ929-02	Acid Extractable Cobalt (Co)	22	37	0.1	ug/g
VS022	BNQ929-02	Acid Extractable Vanadium (V)	86	120	5	ug/g
VS024	BNQ931-02	Acid Extractable Cobalt (Co)	22	24	0.1	ug/g
VS024	BNQ931-02	Acid Extractable Vanadium (V)	86	110	5	ug/g

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Site#: 1525113
Your C.O.C. #: 537168-17-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2015/12/22
Report #: R3822853
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5Q1382
Received: 2015/12/18, 15:40

Sample Matrix: Soil
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	7	N/A	2015/12/21	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	7	2015/12/21	2015/12/21	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	7	2015/12/18	2015/12/21	OTT SOP-00003	EPA 6020
Moisture (1)	7	N/A	2015/12/19	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	7	2015/12/19	2015/12/19	CAM SOP-00318	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key

Ema Gitej
22 Dec 2015 09:39:55 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: EGitej@maxxam.ca
Phone# (905)817-5829

==========

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.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B5Q1382
Report Date: 2015/12/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: ALB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BOD126	BOD126	BOD127	BOD128	BOD129		
Sampling Date			2015/12/18 11:30	2015/12/18 11:30	2015/12/18 11:40	2015/12/18 11:50	2015/12/18 12:00		
COC Number			537168-17-01	537168-17-01	537168-17-01	537168-17-01	537168-17-01		
	UNITS	Criteria	VS022B	VS022B Lab-Dup	VS024B	VS025	VS026	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4320506
Acid Extractable Arsenic (As)	ug/g	**18**	1	1	1	<1	<1	1	4320506
Acid Extractable Barium (Ba)	ug/g	**390**	**430**	**420**	230	18	12	0.5	4320506
Acid Extractable Beryllium (Be)	ug/g	**4**	0.9	0.9	0.5	<0.2	<0.2	0.2	4320506
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	<5	<5	5	4320506
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.1	<0.1	<0.1	<0.1	<0.1	0.1	4320506
Acid Extractable Chromium (Cr)	ug/g	**160**	110	110	56	12	11	1	4320506
Acid Extractable Cobalt (Co)	ug/g	**22**	**25**	**24**	14	2.4	2.9	0.1	4320506
Acid Extractable Copper (Cu)	ug/g	**140**	52	51	27	4.7	3.8	0.5	4320506
Acid Extractable Lead (Pb)	ug/g	**120**	7	7	5	2	1	1	4320506
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4320506
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4320506
Acid Extractable Nickel (Ni)	ug/g	**100**	62	61	31	7.8	6.8	0.5	4320506
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4320506
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4320506
Acid Extractable Thallium (Tl)	ug/g	**1**	0.48	0.48	0.32	0.08	<0.05	0.05	4320506
Acid Extractable Uranium (U)	ug/g	**23**	1.7	1.7	0.95	0.46	0.44	0.05	4320506
Acid Extractable Vanadium (V)	ug/g	**86**	**120**	**110**	70	11	14	5	4320506
Acid Extractable Zinc (Zn)	ug/g	**340**	130	130	77	23	11	5	4320506

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5Q1382
Report Date: 2015/12/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: ALB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BOD130	BOD131	BOD132		
Sampling Date			2015/12/18 12:10	2015/12/18 12:20	2015/12/18 12:30		
COC Number			537168-17-01	537168-17-01	537168-17-01		
	UNITS	Criteria	VS027	VS028	VS029	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	0.2	4320506
Acid Extractable Arsenic (As)	ug/g	**18**	2	1	1	1	4320506
Acid Extractable Barium (Ba)	ug/g	**390**	32	29	13	0.5	4320506
Acid Extractable Beryllium (Be)	ug/g	**4**	0.3	0.2	<0.2	0.2	4320506
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	5	4320506
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	0.1	4320506
Acid Extractable Chromium (Cr)	ug/g	**160**	22	17	12	1	4320506
Acid Extractable Cobalt (Co)	ug/g	**22**	4.2	4.4	2.8	0.1	4320506
Acid Extractable Copper (Cu)	ug/g	**140**	7.2	5.6	4.0	0.5	4320506
Acid Extractable Lead (Pb)	ug/g	**120**	11	5	3	1	4320506
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	0.05	4320506
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	0.5	4320506
Acid Extractable Nickel (Ni)	ug/g	**100**	10	9.5	6.7	0.5	4320506
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	0.5	4320506
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	0.2	4320506
Acid Extractable Thallium (Tl)	ug/g	**1**	0.08	<0.05	<0.05	0.05	4320506
Acid Extractable Uranium (U)	ug/g	**23**	0.67	0.58	0.43	0.05	4320506
Acid Extractable Vanadium (V)	ug/g	**86**	24	22	14	5	4320506
Acid Extractable Zinc (Zn)	ug/g	**340**	41	26	17	5	4320506

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5Q1382
Report Date: 2015/12/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: ALB

O.REG 153 PAHS (SOIL)

Maxxam ID			BOD126	BOD127	BOD128	BOD129	BOD130		
Sampling Date			2015/12/18 11:30	2015/12/18 11:40	2015/12/18 11:50	2015/12/18 12:00	2015/12/18 12:10		
COC Number			537168-17-01	537168-17-01	537168-17-01	537168-17-01	537168-17-01		
	UNITS	Criteria	VS022B	VS024B	VS025	VS026	VS027	RDL	QC Batch
Inorganics									
Moisture	%	-	30	25	13	15	16	1.0	4321213
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	0.0071	4319712
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4321200
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4321200
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4321200
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	0.0062	<0.0050	0.0079	0.0050	4321200
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0071	<0.0050	0.0097	0.0050	4321200
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.012	<0.0050	0.016	0.0050	4321200
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	0.0057	<0.0050	0.0075	0.0050	4321200
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0055	0.0050	4321200
Chrysene	ug/g	**7**	<0.0050	<0.0050	0.0066	<0.0050	0.0095	0.0050	4321200
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4321200
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	0.014	<0.0050	0.018	0.0050	4321200
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4321200
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	0.0053	<0.0050	0.0070	0.0050	4321200
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4321200
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4321200
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4321200
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	0.0059	<0.0050	0.0086	0.0050	4321200
Pyrene	ug/g	**78**	<0.0050	<0.0050	0.013	<0.0050	0.016	0.0050	4321200
Surrogate Recovery (%)									
D10-Anthracene	%	-	86	84	92	93	84		4321200
D14-Terphenyl (FS)	%	-	90	89	95	96	90		4321200
D8-Acenaphthylene	%	-	81	78	92	85	80		4321200

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
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Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Report Date: 2015/12/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: ALB

O.REG 153 PAHS (SOIL)

Maxxam ID			BOD131	BOD131	BOD132	BOD132		
Sampling Date			2015/12/18 12:20	2015/12/18 12:20	2015/12/18 12:30	2015/12/18 12:30		
COC Number			537168-17-01	537168-17-01	537168-17-01	537168-17-01		
	UNITS	Criteria	VS028	VS028 Lab-Dup	VS029	VS029 Lab-Dup	RDL	QC Batch
Inorganics								
Moisture	%	-	14	15	6.9		1.0	4321213
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.0071		<0.0071		0.0071	4319712
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**7.9**	<0.0050		<0.0050	<0.0050	0.0050	4321200
Acenaphthylene	ug/g	**0.15**	<0.0050		<0.0050	<0.0050	0.0050	4321200
Anthracene	ug/g	**0.67**	<0.0050		<0.0050	<0.0050	0.0050	4321200
Benzo(a)anthracene	ug/g	**0.5**	0.0059		<0.0050	<0.0050	0.0050	4321200
Benzo(a)pyrene	ug/g	**0.3**	0.0061		<0.0050	<0.0050	0.0050	4321200
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.012		<0.0050	<0.0050	0.0050	4321200
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050		<0.0050	<0.0050	0.0050	4321200
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050		<0.0050	<0.0050	0.0050	4321200
Chrysene	ug/g	**7**	0.0068		<0.0050	<0.0050	0.0050	4321200
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050		<0.0050	<0.0050	0.0050	4321200
Fluoranthene	ug/g	**0.69**	0.014		<0.0050	<0.0050	0.0050	4321200
Fluorene	ug/g	**62**	<0.0050		<0.0050	<0.0050	0.0050	4321200
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050		<0.0050	<0.0050	0.0050	4321200
1-Methylnaphthalene	ug/g	**0.99**	<0.0050		<0.0050	<0.0050	0.0050	4321200
2-Methylnaphthalene	ug/g	**0.99**	<0.0050		<0.0050	<0.0050	0.0050	4321200
Naphthalene	ug/g	**0.6**	<0.0050		<0.0050	<0.0050	0.0050	4321200
Phenanthrene	ug/g	**6.2**	0.0082		<0.0050	<0.0050	0.0050	4321200
Pyrene	ug/g	**78**	0.012		<0.0050	<0.0050	0.0050	4321200
Surrogate Recovery (%)								
D10-Anthracene	%	-	82		87	82		4321200
D14-Terphenyl (FS)	%	-	86		94	91		4321200
D8-Acenaphthylene	%	-	79		80	80		4321200

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5Q1382
Report Date: 2015/12/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: ALB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			BOD126	BOD127	BOD128	BOD129	BOD130		
Sampling Date			2015/12/18 11:30	2015/12/18 11:40	2015/12/18 11:50	2015/12/18 12:00	2015/12/18 12:10		
COC Number			537168-17-01	537168-17-01	537168-17-01	537168-17-01	537168-17-01		
	UNITS	Criteria	VS022B	VS024B	VS025	VS026	VS027	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4320454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			BOD131	BOD132		
Sampling Date			2015/12/18 12:20	2015/12/18 12:30		
COC Number			537168-17-01	537168-17-01		
	UNITS	Criteria	VS028	VS029	RDL	QC Batch
Inorganics						
Chromium (VI)	ug/g	8	<0.2	<0.2	0.2	4320454

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B5Q1382
Report Date: 2015/12/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: ALB

TEST SUMMARY

Maxxam ID: BOD126
Sample ID: VS022B
Matrix: Soil

Collected: 2015/12/18
Shipped:
Received: 2015/12/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4319712	N/A	2015/12/21	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4320454	2015/12/21	2015/12/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4320506	2015/12/18	2015/12/21	Raigamage Perera
Moisture	BAL	4321213	N/A	2015/12/19	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4321200	2015/12/19	2015/12/19	Lingyun Feng

Maxxam ID: BOD126 Dup
Sample ID: VS022B
Matrix: Soil

Collected: 2015/12/18
Shipped:
Received: 2015/12/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4320506	2015/12/18	2015/12/21	Raigamage Perera

Maxxam ID: BOD127
Sample ID: VS024B
Matrix: Soil

Collected: 2015/12/18
Shipped:
Received: 2015/12/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4319712	N/A	2015/12/21	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4320454	2015/12/21	2015/12/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4320506	2015/12/18	2015/12/21	Raigamage Perera
Moisture	BAL	4321213	N/A	2015/12/19	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4321200	2015/12/19	2015/12/19	Lingyun Feng

Maxxam ID: BOD128
Sample ID: VS025
Matrix: Soil

Collected: 2015/12/18
Shipped:
Received: 2015/12/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4319712	N/A	2015/12/21	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4320454	2015/12/21	2015/12/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4320506	2015/12/18	2015/12/21	Raigamage Perera
Moisture	BAL	4321213	N/A	2015/12/19	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4321200	2015/12/19	2015/12/19	Lingyun Feng

Maxxam ID: BOD129
Sample ID: VS026
Matrix: Soil

Collected: 2015/12/18
Shipped:
Received: 2015/12/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4319712	N/A	2015/12/21	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4320454	2015/12/21	2015/12/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4320506	2015/12/18	2015/12/21	Raigamage Perera
Moisture	BAL	4321213	N/A	2015/12/19	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4321200	2015/12/19	2015/12/19	Lingyun Feng

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Maxxam Job #: B5Q1382
Report Date: 2015/12/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: ALB

TEST SUMMARY

Maxxam ID: BOD130
Sample ID: VS027
Matrix: Soil

Collected: 2015/12/18
Shipped:
Received: 2015/12/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4319712	N/A	2015/12/21	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4320454	2015/12/21	2015/12/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4320506	2015/12/18	2015/12/21	Raigamage Perera
Moisture	BAL	4321213	N/A	2015/12/19	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4321200	2015/12/19	2015/12/19	Lingyun Feng

Maxxam ID: BOD131
Sample ID: VS028
Matrix: Soil

Collected: 2015/12/18
Shipped:
Received: 2015/12/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4319712	N/A	2015/12/21	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4320454	2015/12/21	2015/12/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4320506	2015/12/18	2015/12/21	Raigamage Perera
Moisture	BAL	4321213	N/A	2015/12/19	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4321200	2015/12/19	2015/12/19	Lingyun Feng

Maxxam ID: BOD131 Dup
Sample ID: VS028
Matrix: Soil

Collected: 2015/12/18
Shipped:
Received: 2015/12/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4321213	N/A	2015/12/19	Valentina Kaftani

Maxxam ID: BOD132
Sample ID: VS029
Matrix: Soil

Collected: 2015/12/18
Shipped:
Received: 2015/12/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4319712	N/A	2015/12/21	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4320454	2015/12/21	2015/12/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4320506	2015/12/18	2015/12/21	Raigamage Perera
Moisture	BAL	4321213	N/A	2015/12/19	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4321200	2015/12/19	2015/12/19	Lingyun Feng

Maxxam ID: BOD132 Dup
Sample ID: VS029
Matrix: Soil

Collected: 2015/12/18
Shipped:
Received: 2015/12/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4321200	2015/12/19	2015/12/19	Lingyun Feng

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Maxxam Job #: B5Q1382
Report Date: 2015/12/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: ALB

GENERAL COMMENTS

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

Package 1	2.0°C

The cooler custody seal was present and intact.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: ALB

			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
4321200	D10-Anthracene	2015/12/19	86	50 - 130	80	50 - 130	73	%				
4321200	D14-Terphenyl (FS)	2015/12/19	95	50 - 130	88	50 - 130	80	%				
4321200	D8-Acenaphthylene	2015/12/19	81	50 - 130	78	50 - 130	73	%				
4320454	Chromium (VI)	2015/12/21	75	75 - 125	95	N/A	<0.2	ug/g	NC	35	81	80 - 120
4320506	Acid Extractable Antimony (Sb)	2015/12/21	54 (1)	75 - 125	98	80 - 120	<0.2	ug/g	NC	35		
4320506	Acid Extractable Arsenic (As)	2015/12/21	80	75 - 125	90	80 - 120	<1	ug/g	NC	35		
4320506	Acid Extractable Barium (Ba)	2015/12/21	NC	75 - 125	104	80 - 120	<0.5	ug/g	3.1	35		
4320506	Acid Extractable Beryllium (Be)	2015/12/21	100	75 - 125	104	80 - 120	<0.2	ug/g	NC	35		
4320506	Acid Extractable Boron (B)	2015/12/21	96	75 - 125	103	80 - 120	<5	ug/g	NC	35		
4320506	Acid Extractable Cadmium (Cd)	2015/12/21	97	75 - 125	98	80 - 120	<0.1	ug/g	NC	35		
4320506	Acid Extractable Chromium (Cr)	2015/12/21	NC	75 - 125	106	80 - 120	<1	ug/g	0.22	35		
4320506	Acid Extractable Cobalt (Co)	2015/12/21	NC	75 - 125	106	80 - 120	<0.1	ug/g	0.54	35		
4320506	Acid Extractable Copper (Cu)	2015/12/21	NC	75 - 125	104	80 - 120	<0.5	ug/g	0.90	35		
4320506	Acid Extractable Lead (Pb)	2015/12/21	100	75 - 125	107	80 - 120	<1	ug/g	1.2	35		
4320506	Acid Extractable Mercury (Hg)	2015/12/21	94	75 - 125	96	80 - 120	<0.05	ug/g	NC	35		
4320506	Acid Extractable Molybdenum (Mo)	2015/12/21	98	75 - 125	102	80 - 120	<0.5	ug/g	NC	35		
4320506	Acid Extractable Nickel (Ni)	2015/12/21	NC	75 - 125	102	80 - 120	<0.5	ug/g	2.7	35		
4320506	Acid Extractable Selenium (Se)	2015/12/21	87	75 - 125	95	80 - 120	<0.5	ug/g	NC	35		
4320506	Acid Extractable Silver (Ag)	2015/12/21	97	75 - 125	97	80 - 120	<0.2	ug/g	NC	35		
4320506	Acid Extractable Thallium (Tl)	2015/12/21	96	75 - 125	104	80 - 120	<0.05	ug/g	1.6	35		
4320506	Acid Extractable Uranium (U)	2015/12/21	101	75 - 125	104	80 - 120	<0.05	ug/g	0.76	25		
4320506	Acid Extractable Vanadium (V)	2015/12/21	NC	75 - 125	109	80 - 120	<5	ug/g	0.57	35		
4320506	Acid Extractable Zinc (Zn)	2015/12/21	NC	75 - 125	103	80 - 120	<5	ug/g	0.15	35		
4321200	1-Methylnaphthalene	2015/12/19	88	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40		
4321200	2-Methylnaphthalene	2015/12/19	84	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40		
4321200	Acenaphthene	2015/12/19	88	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		
4321200	Acenaphthylene	2015/12/19	77	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4321200	Anthracene	2015/12/19	70	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4321200	Benzo(a)anthracene	2015/12/19	78	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4321200	Benzo(a)pyrene	2015/12/19	91	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40		
4321200	Benzo(b/j)fluoranthene	2015/12/19	110	50 - 130	114	50 - 130	<0.0050	ug/g	NC	40		

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QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: ALB

			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
4321200	Benzo(g,h,i)perylene	2015/12/19	106	50 - 130	109	50 - 130	<0.0050	ug/g	NC	40		
4321200	Benzo(k)fluoranthene	2015/12/19	106	50 - 130	111	50 - 130	<0.0050	ug/g	NC	40		
4321200	Chrysene	2015/12/19	90	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40		
4321200	Dibenz(a,h)anthracene	2015/12/19	103	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40		
4321200	Fluoranthene	2015/12/19	90	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40		
4321200	Fluorene	2015/12/19	87	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40		
4321200	Indeno(1,2,3-cd)pyrene	2015/12/19	97	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40		
4321200	Naphthalene	2015/12/19	75	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40		
4321200	Phenanthrene	2015/12/19	94	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40		
4321200	Pyrene	2015/12/19	90	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		
4321213	Moisture	2015/12/19							4.1	20		

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(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 #: B5Q1382
Report Date: 2015/12/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: ALB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Eva Pranjic

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

Steve Roberts, Ottawa Lab Manager

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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name	#14090 Golder Associates Ltd	Company Name		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 537168
Attention	Central Accounting	Attention	Paul Hurst	P.O. #:			
Address	1931 Robertson Rd	Address		Project	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name			
Tel	(613) 592-9600 Fax (613) 592-9601	Tel	Fax	Site #:		C#537168-17-01	Ema Gitej
Email	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email	phurst@golder.com	Sampled By:	ALK & TZ		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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 > 6 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: [illegible] Time Required: [illegible] ☒
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	Leachate Landfill (TCLP METALS, REG 153 PHCs)	# of Bottles	Comments
1	[illegible]	VS022B	15/12/18	11:30	Soil		X	X		1	
2		VS024B	↓	11:40	↓		X	X		1	
3		VS025	↓	11:50	↓		X	X		1	
4		VS026	↓	12:00	↓		X	X		1	
5		VS027	↓	12:10	↓		X	X		1	
6		VS028	↓	12:20	↓		X	X		1	
7		VS029	↓	12:30	↓		X	X		1	
8											RECEIVED IN OTTAWA
9											ON ICE PACK.
10											

18-Dec-15 15:40
Ema Gitej
B5Q1382
FHB OTT-002

* 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
[signature] / Aaron Bradstreet	15/12/18	1300	[signature] Fatemeh	2015/12/18	15:40	0		3, 1, 2	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.

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

White: Maxxam Yellow: Client

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Maxxam Job #: B5Q1382
Report Date: 2015/12/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: ALB

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS022B	BOD126-02-Lab Dup	Acid Extractable Barium (Ba)	390	420	0.5	ug/g
VS022B	BOD126-02	Acid Extractable Barium (Ba)	390	430	0.5	ug/g
VS022B	BOD126-02-Lab Dup	Acid Extractable Cobalt (Co)	22	24	0.1	ug/g
VS022B	BOD126-02	Acid Extractable Cobalt (Co)	22	25	0.1	ug/g
VS022B	BOD126-02-Lab Dup	Acid Extractable Vanadium (V)	86	110	5	ug/g
VS022B	BOD126-02	Acid Extractable Vanadium (V)	86	120	5	ug/g

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 557328-08-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/05/19
Report #: R3998209
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6A0345
Received: 2016/05/18, 13:20

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	2	N/A	2016/05/19	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	2	2016/05/19	2016/05/19	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	2	2016/05/18	2016/05/19	OTT SOP-00003	EPA 6020
MOISTURE	2	N/A	2016/05/19	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	2	2016/05/18	2016/05/18	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key
Madison Bingley
Project Manager Assistant
19 May 2016 16:10:01 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager Assistant
Email: MBingley@maxxam.ca
Phone# (613)274-0573

==========

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Maxxam Job #: B6A0345
Report Date: 2016/05/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CJL160	CJL160	CJL161		
Sampling Date			2016/05/18 08:30	2016/05/18 08:30	2016/05/18 08:20		
COC Number			557328-08-01	557328-08-01	557328-08-01		
	UNITS	Criteria	VS168	VS168 Lab-Dup	VS167	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.2	<0.2	<0.2	0.2	4503487
Acid Extractable Arsenic (As)	ug/g	**18**	2	2	2	1	4503487
Acid Extractable Barium (Ba)	ug/g	**670**	140	140	160	0.5	4503487
Acid Extractable Beryllium (Be)	ug/g	**8**	0.6	0.6	0.6	0.2	4503487
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	5	4503487
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.1	<0.1	<0.1	0.1	4503487
Acid Extractable Chromium (Cr)	ug/g	**160**	39	40	34	1	4503487
Acid Extractable Cobalt (Co)	ug/g	**80**	9.4	9.6	9.5	0.1	4503487
Acid Extractable Copper (Cu)	ug/g	**230**	18	18	23	0.5	4503487
Acid Extractable Lead (Pb)	ug/g	**120**	5	5	5	1	4503487
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.05	<0.05	<0.05	0.05	4503487
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.5	<0.5	<0.5	0.5	4503487
Acid Extractable Nickel (Ni)	ug/g	**270**	22	23	23	0.5	4503487
Acid Extractable Selenium (Se)	ug/g	**5.5**	0.5	<0.5	<0.5	0.5	4503487
Acid Extractable Silver (Ag)	ug/g	**40**	<0.2	<0.2	<0.2	0.2	4503487
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.20	0.20	0.20	0.05	4503487
Acid Extractable Uranium (U)	ug/g	**33**	0.81	0.81	0.68	0.05	4503487
Acid Extractable Vanadium (V)	ug/g	**86**	48	50	51	5	4503487
Acid Extractable Zinc (Zn)	ug/g	**340**	62	63	61	5	4503487

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B6A0345
Report Date: 2016/05/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CJL160	CJL161	CJL161		
Sampling Date			2016/05/18 08:30	2016/05/18 08:20	2016/05/18 08:20		
COC Number			557328-08-01	557328-08-01	557328-08-01		
	UNITS	Criteria	VS168	VS167	VS167 Lab-Dup	RDL	QC Batch
Inorganics							
Moisture	%	-	16	21	21	0.2	4503545
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	76	<0.014	<0.014		0.014	4503147
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	96	<0.0050	<0.0050	<0.0050	0.0050	4503151
Acenaphthylene	ug/g	0.15	<0.0050	<0.0050	<0.0050	0.0050	4503151
Anthracene	ug/g	0.67	<0.0050	<0.0050	<0.0050	0.0050	4503151
Benzo(a)anthracene	ug/g	0.96	<0.0050	<0.0050	<0.0050	0.0050	4503151
Benzo(a)pyrene	ug/g	0.3	<0.0050	<0.0050	<0.0050	0.0050	4503151
Benzo(b/j)fluoranthene	ug/g	0.96	<0.0050	<0.0050	<0.0050	0.0050	4503151
Benzo(g,h,i)perylene	ug/g	9.6	<0.0050	<0.0050	<0.0050	0.0050	4503151
Benzo(k)fluoranthene	ug/g	0.96	<0.0050	<0.0050	<0.0050	0.0050	4503151
Chrysene	ug/g	9.6	<0.0050	<0.0050	<0.0050	0.0050	4503151
Dibenz(a,h)anthracene	ug/g	0.1	<0.0050	<0.0050	<0.0050	0.0050	4503151
Fluoranthene	ug/g	9.6	<0.0050	<0.0050	<0.0050	0.0050	4503151
Fluorene	ug/g	62	<0.0050	<0.0050	<0.0050	0.0050	4503151
Indeno(1,2,3-cd)pyrene	ug/g	0.76	<0.0050	<0.0050	<0.0050	0.0050	4503151
1-Methylnaphthalene	ug/g	76	<0.0050	<0.0050	<0.0050	0.0050	4503151
2-Methylnaphthalene	ug/g	76	<0.0050	<0.0050	<0.0050	0.0050	4503151
Naphthalene	ug/g	9.6	<0.0050	<0.0050	<0.0050	0.0050	4503151
Phenanthrene	ug/g	12	<0.0050	<0.0050	<0.0050	0.0050	4503151
Pyrene	ug/g	96	<0.0050	<0.0050	<0.0050	0.0050	4503151
Surrogate Recovery (%)							
D10-Anthracene	%	-	63	66	65		4503151
D14-Terphenyl (FS)	%	-	58	60	61		4503151
D8-Acenaphthylene	%	-	72	81	75		4503151

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6A0345
Report Date: 2016/05/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CJL160	CJL160	CJL161		
Sampling Date			2016/05/18 08:30	2016/05/18 08:30	2016/05/18 08:20		
COC Number			557328-08-01	557328-08-01	557328-08-01		
	UNITS	Criteria	VS168	VS168 Lab-Dup	VS167	RDL	QC Batch
Inorganics							
Chromium (VI)	ug/g	8	0.3	0.2	<0.2	0.2	4504758

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam
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Maxxam Job #: B6A0345
Report Date: 2016/05/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CJL160
Sample ID: VS168
Matrix: Soil

Collected: 2016/05/18
Shipped:
Received: 2016/05/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4503147	N/A	2016/05/19	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4504758	2016/05/19	2016/05/19	Lang Le
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4503487	2016/05/18	2016/05/19	Raigamage Perera
MOISTURE	BAL	4503545	N/A	2016/05/19	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4503151	2016/05/18	2016/05/18	Arezoo Habibagahi

Maxxam ID: CJL160 Dup
Sample ID: VS168
Matrix: Soil

Collected: 2016/05/18
Shipped:
Received: 2016/05/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4504758	2016/05/19	2016/05/19	Lang Le
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4503487	2016/05/18	2016/05/19	Raigamage Perera

Maxxam ID: CJL161
Sample ID: VS167
Matrix: Soil

Collected: 2016/05/18
Shipped:
Received: 2016/05/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4503147	N/A	2016/05/19	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4504758	2016/05/19	2016/05/19	Lang Le
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4503487	2016/05/18	2016/05/19	Raigamage Perera
MOISTURE	BAL	4503545	N/A	2016/05/19	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4503151	2016/05/18	2016/05/18	Arezoo Habibagahi

Maxxam ID: CJL161 Dup
Sample ID: VS167
Matrix: Soil

Collected: 2016/05/18
Shipped:
Received: 2016/05/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4503545	N/A	2016/05/19	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4503151	2016/05/18	2016/05/18	Arezoo Habibagahi

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Maxxam Job #: B6A0345
Report Date: 2016/05/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

GENERAL COMMENTS

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

Package 1	19.0°C

Results relate only to the items tested.

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Maxxam Job #: B6A0345
Report Date: 2016/05/19

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4503151	D10-Anthracene	2016/05/18	65	50 - 130	68	50 - 130	66	%				
4503151	D14-Terphenyl (FS)	2016/05/18	60	50 - 130	62	50 - 130	57	%				
4503151	D8-Acenaphthylene	2016/05/18	79	50 - 130	79	50 - 130	85	%				
4503151	1-Methylnaphthalene	2016/05/18	74	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40		
4503151	2-Methylnaphthalene	2016/05/18	68	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40		
4503151	Acenaphthene	2016/05/18	59	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4503151	Acenaphthylene	2016/05/18	74	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40		
4503151	Anthracene	2016/05/18	64	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40		
4503151	Benzo(a)anthracene	2016/05/18	63	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4503151	Benzo(a)pyrene	2016/05/18	54	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40		
4503151	Benzo(b/j)fluoranthene	2016/05/18	51	50 - 130	52	50 - 130	<0.0050	ug/g	NC	40		
4503151	Benzo(g,h,i)perylene	2016/05/18	50	50 - 130	50	50 - 130	<0.0050	ug/g	NC	40		
4503151	Benzo(k)fluoranthene	2016/05/18	51	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40		
4503151	Chrysene	2016/05/18	55	50 - 130	56	50 - 130	<0.0050	ug/g	NC	40		
4503151	Dibenz(a,h)anthracene	2016/05/18	61	50 - 130	59	50 - 130	<0.0050	ug/g	NC	40		
4503151	Fluoranthene	2016/05/18	80	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40		
4503151	Fluorene	2016/05/18	65	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4503151	Indeno(1,2,3-cd)pyrene	2016/05/18	60	50 - 130	58	50 - 130	<0.0050	ug/g	NC	40		
4503151	Naphthalene	2016/05/18	63	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40		
4503151	Phenanthrene	2016/05/18	56	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40		
4503151	Pyrene	2016/05/18	79	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40		
4503487	Acid Extractable Antimony (Sb)	2016/05/19	84	75 - 125	111	80 - 120	<0.2	ug/g	NC	35		
4503487	Acid Extractable Arsenic (As)	2016/05/19	98	75 - 125	103	80 - 120	<1	ug/g	NC	35		
4503487	Acid Extractable Barium (Ba)	2016/05/19	NC	75 - 125	105	80 - 120	<0.5	ug/g	0.31	35		
4503487	Acid Extractable Beryllium (Be)	2016/05/19	106	75 - 125	114	80 - 120	<0.2	ug/g	NC	35		
4503487	Acid Extractable Boron (B)	2016/05/19	102	75 - 125	109	80 - 120	<5	ug/g	NC	35		
4503487	Acid Extractable Cadmium (Cd)	2016/05/19	105	75 - 125	109	80 - 120	<0.1	ug/g	NC	35		
4503487	Acid Extractable Chromium (Cr)	2016/05/19	NC	75 - 125	101	80 - 120	<1	ug/g	2.7	35		
4503487	Acid Extractable Cobalt (Co)	2016/05/19	97	75 - 125	104	80 - 120	<0.1	ug/g	2.3	35		
4503487	Acid Extractable Copper (Cu)	2016/05/19	NC	75 - 125	104	80 - 120	<0.5	ug/g	0.66	35		
4503487	Acid Extractable Lead (Pb)	2016/05/19	99	75 - 125	107	80 - 120	<1	ug/g	1.3	35		

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Maxxam Job #: B6A0345
Report Date: 2016/05/19

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4503487	Acid Extractable Mercury (Hg)	2016/05/19	115	75 - 125	120	80 - 120	<0.05	ug/g	NC	35		
4503487	Acid Extractable Molybdenum (Mo)	2016/05/19	100	75 - 125	108	80 - 120	<0.5	ug/g	NC	35		
4503487	Acid Extractable Nickel (Ni)	2016/05/19	NC	75 - 125	106	80 - 120	<0.5	ug/g	2.7	35		
4503487	Acid Extractable Selenium (Se)	2016/05/19	102	75 - 125	109	80 - 120	<0.5	ug/g	NC	35		
4503487	Acid Extractable Silver (Ag)	2016/05/19	100	75 - 125	106	80 - 120	<0.2	ug/g	NC	35		
4503487	Acid Extractable Thallium (Tl)	2016/05/19	101	75 - 125	107	80 - 120	<0.05	ug/g	NC	35		
4503487	Acid Extractable Uranium (U)	2016/05/19	105	75 - 125	112	80 - 120	<0.05	ug/g	0.24	25		
4503487	Acid Extractable Vanadium (V)	2016/05/19	NC	75 - 125	101	80 - 120	<5	ug/g	4.2	35		
4503487	Acid Extractable Zinc (Zn)	2016/05/19	NC	75 - 125	107	80 - 120	<5	ug/g	1.3	35		
4503545	Moisture	2016/05/19							1.5	50		
4504758	Chromium (VI)	2016/05/19	70 (1)	75 - 125	88	80 - 120	<0.2	ug/g	NC	35	61 (2)	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) REF MAT is acceptable as it met the analytical limits of the Certificate of Analysis.

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Maxxam Job #: B6A0345
Report Date: 2016/05/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Steve Roberts, Ottawa Lab Manager

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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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557328
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113	COC #: C#557328-08-01	Project Manager: Parnian Babnr
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Project Name:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	Aaron Bradshaw		

NOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☒ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___	

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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: Next Day Time Required: ☒
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI								# of Bottles	Comments
1		VS168	16/05/18	830	Soil		X	X								1	
2		VS167	16/05/18	820	Soil		X	X								1	
3																	
4																	
5																	
6																	
7																	
8																	ON ICE PACK
9																	
10																	

18-May-16 13:20
Parnian Baber
B6A0345
FHB OTT-002

RECEIVED 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
Aaron Bradshaw	16/05/18		Fatemeh	2016/05/18	13:20	0		19,19,19	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B6A0345
Report Date: 2016/05/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 557328-10-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/05/24
Report #: R4002348
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6A2840
Received: 2016/05/20, 14:59

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	3	N/A	2016/05/24	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	3	2016/05/21	2016/05/21	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	3	2016/05/20	2016/05/24	OTT SOP-00003	EPA 6020
MOISTURE	3	N/A	2016/05/24	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	3	2016/05/20	2016/05/20	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key
Madison Bingley
Project Manager Assistant
24 May 2016 16:57:39 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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Maxxam
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Maxxam Job #: B6A2840
Report Date: 2016/05/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CJX797	CJX798	CJX799		
Sampling Date			2016/05/20 10:05	2016/05/20 11:30	2016/05/20 12:15		
COC Number			557328-10-01	557328-10-01	557328-10-01		
	UNITS	Criteria	VS169	VS170	VS171	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.2	<0.2	<0.2	0.2	4507365
Acid Extractable Arsenic (As)	ug/g	**18**	1	2	2	1	4507365
Acid Extractable Barium (Ba)	ug/g	**670**	140	170	170	0.5	4507365
Acid Extractable Beryllium (Be)	ug/g	**8**	0.5	0.7	0.6	0.2	4507365
Acid Extractable Boron (B)	ug/g	**120**	<5	6	<5	5	4507365
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.1	<0.1	<0.1	0.1	4507365
Acid Extractable Chromium (Cr)	ug/g	**160**	31	43	44	1	4507365
Acid Extractable Cobalt (Co)	ug/g	**80**	8.9	12	11	0.1	4507365
Acid Extractable Copper (Cu)	ug/g	**230**	19	24	23	0.5	4507365
Acid Extractable Lead (Pb)	ug/g	**120**	4	5	5	1	4507365
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.05	<0.05	<0.05	0.05	4507365
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.5	<0.5	<0.5	0.5	4507365
Acid Extractable Nickel (Ni)	ug/g	**270**	20	25	26	0.5	4507365
Acid Extractable Selenium (Se)	ug/g	**5.5**	<0.5	1.0	<0.5	0.5	4507365
Acid Extractable Silver (Ag)	ug/g	**40**	<0.2	<0.2	<0.2	0.2	4507365
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.17	0.24	0.23	0.05	4507365
Acid Extractable Uranium (U)	ug/g	**33**	0.56	0.60	0.79	0.05	4507365
Acid Extractable Vanadium (V)	ug/g	**86**	52	62	62	5	4507365
Acid Extractable Zinc (Zn)	ug/g	**340**	52	71	76	5	4507365

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B6A2840
Report Date: 2016/05/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CJX797	CJX798	CJX798	CJX799		
Sampling Date			2016/05/20 10:05	2016/05/20 11:30	2016/05/20 11:30	2016/05/20 12:15		
COC Number			557328-10-01	557328-10-01	557328-10-01	557328-10-01		
	UNITS	Criteria	VS169	VS170	VS170 Lab-Dup	VS171	RDL	QC Batch
Inorganics								
Moisture	%	-	20	25	24	22	0.2	4507361
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014		<0.014	0.014	4507252
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4507364
Surrogate Recovery (%)								
D10-Anthracene	%	-	62	59	61	59		4507364
D14-Terphenyl (FS)	%	-	57	55	59	56		4507364
D8-Acenaphthylene	%	-	58	55	59	56		4507364

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B6A2840
Report Date: 2016/05/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CJX797	CJX798	CJX799		
Sampling Date			2016/05/20 10:05	2016/05/20 11:30	2016/05/20 12:15		
COC Number			557328-10-01	557328-10-01	557328-10-01		
	UNITS	Criteria	VS169	VS170	VS171	RDL	QC Batch
Inorganics							
Chromium (VI)	ug/g	8	0.2	<0.2	0.5	0.2	4508392

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B6A2840
Report Date: 2016/05/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CJX797
Sample ID: VS169
Matrix: Soil

Collected: 2016/05/20
Shipped:
Received: 2016/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4507252	N/A	2016/05/24	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4508392	2016/05/21	2016/05/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4507365	2016/05/20	2016/05/24	Raigamage Perera
MOISTURE	BAL	4507361	N/A	2016/05/24	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4507364	2016/05/20	2016/05/20	Arezoo Habibagahi

Maxxam ID: CJX798
Sample ID: VS170
Matrix: Soil

Collected: 2016/05/20
Shipped:
Received: 2016/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4507252	N/A	2016/05/24	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4508392	2016/05/21	2016/05/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4507365	2016/05/20	2016/05/24	Raigamage Perera
MOISTURE	BAL	4507361	N/A	2016/05/24	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4507364	2016/05/20	2016/05/20	Arezoo Habibagahi

Maxxam ID: CJX798 Dup
Sample ID: VS170
Matrix: Soil

Collected: 2016/05/20
Shipped:
Received: 2016/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4507361	N/A	2016/05/24	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4507364	2016/05/20	2016/05/20	Arezoo Habibagahi

Maxxam ID: CJX799
Sample ID: VS171
Matrix: Soil

Collected: 2016/05/20
Shipped:
Received: 2016/05/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4507252	N/A	2016/05/24	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4508392	2016/05/21	2016/05/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4507365	2016/05/20	2016/05/24	Raigamage Perera
MOISTURE	BAL	4507361	N/A	2016/05/24	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4507364	2016/05/20	2016/05/20	Arezoo Habibagahi

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Maxxam Job #: B6A2840
Report Date: 2016/05/24

Golder Associates Ltd
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Sampler Initials: AB

GENERAL COMMENTS

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

Package 1	21.0°C

O.REG 153 PAHS (SOIL)

PAH Compounds in Soil by GC/MS (SIM): The recovery of the compound benzo(b/j)fluoranthene was slightly below the lower control limit. This may represent a low bias in some results for this compound.

Results relate only to the items tested.

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Report Date: 2016/05/24

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4507364	D10-Anthracene	2016/05/20	52	50 - 130	54	50 - 130	56	%				
4507364	D14-Terphenyl (FS)	2016/05/20	50	50 - 130	51	50 - 130	51	%				
4507364	D8-Acenaphthylene	2016/05/20	51	50 - 130	57	50 - 130	54	%				
4507361	Moisture	2016/05/24							2.1	50		
4507364	1-Methylnaphthalene	2016/05/20	53	50 - 130	56	50 - 130	<0.0050	ug/g	NC	40		
4507364	2-Methylnaphthalene	2016/05/20	56	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4507364	Acenaphthene	2016/05/20	51	50 - 130	51	50 - 130	<0.0050	ug/g	NC	40		
4507364	Acenaphthylene	2016/05/20	50	50 - 130	54	50 - 130	<0.0050	ug/g	NC	40		
4507364	Anthracene	2016/05/20	51	50 - 130	51	50 - 130	<0.0050	ug/g	NC	40		
4507364	Benzo(a)anthracene	2016/05/20	50	50 - 130	50	50 - 130	<0.0050	ug/g	NC	40		
4507364	Benzo(a)pyrene	2016/05/20	52	50 - 130	50	50 - 130	<0.0050	ug/g	NC	40		
4507364	Benzo(b/j)fluoranthene	2016/05/20	NC	50 - 130	NC	50 - 130	<0.0050	ug/g	NC	40		
4507364	Benzo(g,h,i)perylene	2016/05/20	51	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40		
4507364	Benzo(k)fluoranthene	2016/05/20	50	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40		
4507364	Chrysene	2016/05/20	55	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40		
4507364	Dibenz(a,h)anthracene	2016/05/20	51	50 - 130	55	50 - 130	<0.0050	ug/g	NC	40		
4507364	Fluoranthene	2016/05/20	56	50 - 130	58	50 - 130	<0.0050	ug/g	NC	40		
4507364	Fluorene	2016/05/20	50	50 - 130	52	50 - 130	<0.0050	ug/g	NC	40		
4507364	Indeno(1,2,3-cd)pyrene	2016/05/20	51	50 - 130	50	50 - 130	<0.0050	ug/g	NC	40		
4507364	Naphthalene	2016/05/20	53	50 - 130	54	50 - 130	<0.0050	ug/g	NC	40		
4507364	Phenanthrene	2016/05/20	50	50 - 130	51	50 - 130	<0.0050	ug/g	NC	40		
4507364	Pyrene	2016/05/20	53	50 - 130	56	50 - 130	<0.0050	ug/g	NC	40		
4507365	Acid Extractable Antimony (Sb)	2016/05/24	102	75 - 125	101	80 - 120	<0.2	ug/g	NC	35		
4507365	Acid Extractable Arsenic (As)	2016/05/24	104	75 - 125	100	80 - 120	<1	ug/g	NC	35		
4507365	Acid Extractable Barium (Ba)	2016/05/24	NC	75 - 125	98	80 - 120	<0.5	ug/g	0.11	35		
4507365	Acid Extractable Beryllium (Be)	2016/05/24	107	75 - 125	104	80 - 120	<0.2	ug/g	NC	35		
4507365	Acid Extractable Boron (B)	2016/05/24	106	75 - 125	103	80 - 120	<5	ug/g	NC	35		
4507365	Acid Extractable Cadmium (Cd)	2016/05/24	109	75 - 125	100	80 - 120	<0.1	ug/g	NC	35		
4507365	Acid Extractable Chromium (Cr)	2016/05/24	107	75 - 125	103	80 - 120	<1	ug/g	2.7	35		
4507365	Acid Extractable Cobalt (Co)	2016/05/24	105	75 - 125	103	80 - 120	<0.1	ug/g	7.7	35		
4507365	Acid Extractable Copper (Cu)	2016/05/24	96	75 - 125	102	80 - 120	<0.5	ug/g	3.6	35		

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Maxxam Job #: B6A2840
Report Date: 2016/05/24

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4507365	Acid Extractable Lead (Pb)	2016/05/24	103	75 - 125	101	80 - 120	<1	ug/g	1.3	35		
4507365	Acid Extractable Mercury (Hg)	2016/05/24	99	75 - 125	102	80 - 120	<0.05	ug/g	NC	35		
4507365	Acid Extractable Molybdenum (Mo)	2016/05/24	106	75 - 125	99	80 - 120	<0.5	ug/g	NC	35		
4507365	Acid Extractable Nickel (Ni)	2016/05/24	108	75 - 125	106	80 - 120	<0.5	ug/g	8.0	35		
4507365	Acid Extractable Selenium (Se)	2016/05/24	107	75 - 125	103	80 - 120	<0.5	ug/g	NC	35		
4507365	Acid Extractable Silver (Ag)	2016/05/24	105	75 - 125	100	80 - 120	<0.2	ug/g	NC	35		
4507365	Acid Extractable Thallium (Tl)	2016/05/24	99	75 - 125	100	80 - 120	<0.05	ug/g	NC	35		
4507365	Acid Extractable Uranium (U)	2016/05/24	108	75 - 125	106	80 - 120	<0.05	ug/g	5.0	25		
4507365	Acid Extractable Vanadium (V)	2016/05/24	104	75 - 125	107	80 - 120	<5	ug/g	NC	35		
4507365	Acid Extractable Zinc (Zn)	2016/05/24	103	75 - 125	102	80 - 120	<5	ug/g	NC	35		
4508392	Chromium (VI)	2016/05/21	45 (1)	75 - 125	86	80 - 120	<0.2	ug/g	NC	35	70 (2)	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

(2) REF MAT is acceptable as it met the analytical limits of the Certificate of Analysis.

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Maxxam Job #: B6A2840
Report Date: 2016/05/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Brad Newman, Scientific Specialist

Steve Roberts, Ottawa Lab Manager

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name	#14090 Golder Associates Ltd	Company Name		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557326
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name		C#557326-10-01	Parnian Baber
Tel:	(613) 592-9600 Fax (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com, Paul_Hurst@golder.com, GAL	Sampled By	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☒ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality _____	
☐ Table ___	☐ PWQO	
	☐ Other _____	

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 iCPMS Metals including Hg and CRVI								# of Bottles	Comments
1		VS169	16/05/20	10:05	Soil		X	X								1	
2		VS170	↓	11:30	↓		X	X								1	
3		VS171	↓	12:15	↓		X	X								1	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Turnaround Time (TAT) Required:
Please give 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: NEXT Day Time Required: ☒
Rush Confirmation Number: _____ (call lab for #)

20-May-16 14:59
Parnian Baber
B6A2840
FHB OTT-002

RECEIVED IN OTTAWA

ON ICE.

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Aaron Bradshaw	16/05/20	1400		2016/05/20	2016/05/20 15:14:20	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	21, 21, 21	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

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B6A2840
Report Date: 2016/05/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Your C.O.C. #: 557328-23-01, 557328-22-01, 557328-21-01

Report Date: 2016/05/27
Report #: R4006295
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6A6319
Received: 2016/05/26, 14:58

Sample Matrix: Soil
Samples Received: 21

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	21	N/A	2016/05/27	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	21	2016/05/27	2016/05/27	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	21	2016/05/27	2016/05/27	OTT SOP-00003	EPA 6020
MOISTURE	21	N/A	2016/05/27	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	15	2016/05/26	2016/05/26	OTT SOP-00011	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	6	2016/05/26	2016/05/27	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key Ema Gitej 27 May 2016 17:43:27 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager Assistant
Email: MBingley@maxxam.ca
Phone# (613)274-0573

==========

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Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CKQ037	CKQ037	CKQ038	CKQ039	CKQ040		
Sampling Date			2016/05/26 07:30	2016/05/26 07:30	2016/05/26 07:40	2016/05/26 07:50	2016/05/26 08:00		
COC Number			557328-23-01	557328-23-01	557328-23-01	557328-23-01	557328-23-01		
	UNITS	Criteria	VS180	VS180 Lab-Dup	VS181	VS182	VS183	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4514182
Acid Extractable Arsenic (As)	ug/g	**18**	1	1	1	1	1	1	4514182
Acid Extractable Barium (Ba)	ug/g	**390**	110	100	370	**410**	**430**	0.5	4514182
Acid Extractable Beryllium (Be)	ug/g	**4**	0.5	0.5	1.1	1.6	1.5	0.2	4514182
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	6	<5	6	5	4514182
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	0.1	0.1	0.1	4514182
Acid Extractable Chromium (Cr)	ug/g	**160**	31	31	130	130	150	1	4514182
Acid Extractable Cobalt (Co)	ug/g	**22**	8.1	8.0	**26**	**34**	**33**	0.1	4514182
Acid Extractable Copper (Cu)	ug/g	**140**	19	19	62	65	70	0.5	4514182
Acid Extractable Lead (Pb)	ug/g	**120**	4	4	7	10	9	1	4514182
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4514182
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	0.7	<0.5	0.5	4514182
Acid Extractable Nickel (Ni)	ug/g	**100**	19	19	68	75	76	0.5	4514182
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4514182
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4514182
Acid Extractable Thallium (Tl)	ug/g	**1**	0.14	0.13	0.47	0.51	0.54	0.05	4514182
Acid Extractable Uranium (U)	ug/g	**23**	0.91	0.92	1.8	2.7	2.4	0.05	4514182
Acid Extractable Vanadium (V)	ug/g	**86**	48	48	**120**	**140**	**140**	5	4514182
Acid Extractable Zinc (Zn)	ug/g	**340**	45	44	130	130	150	5	4514182

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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A Bureau Veritas Group Company

Maxxam Job #: B6A6319
Report Date: 2016/05/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CKQ041	CKQ042	CKQ043	CKQ044	CKQ045		
Sampling Date			2016/05/26 08:10	2016/05/26 08:15	2016/05/26 08:25	2016/05/26 08:35	2016/05/26 11:00		
COC Number			557328-23-01	557328-23-01	557328-23-01	557328-23-01	557328-23-01		
	UNITS	Criteria	VS184	VS1184	VS185	VS186	VS187	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4514182
Acid Extractable Arsenic (As)	ug/g	**18**	1	1	<1	<1	<1	1	4514182
Acid Extractable Barium (Ba)	ug/g	**390**	**430**	**440**	**560**	370	**410**	0.5	4514182
Acid Extractable Beryllium (Be)	ug/g	**4**	1.5	1.6	1.6	1.1	1.5	0.2	4514182
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	<5	<5	5	4514182
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.1	0.1	0.2	0.2	0.2	0.1	4514182
Acid Extractable Chromium (Cr)	ug/g	**160**	140	140	160	110	120	1	4514182
Acid Extractable Cobalt (Co)	ug/g	**22**	**30**	**32**	**34**	22	**29**	0.1	4514182
Acid Extractable Copper (Cu)	ug/g	**140**	54	55	66	45	55	0.5	4514182
Acid Extractable Lead (Pb)	ug/g	**120**	9	9	10	8	8	1	4514182
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4514182
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.6	0.6	0.9	<0.5	<0.5	0.5	4514182
Acid Extractable Nickel (Ni)	ug/g	**100**	74	76	85	57	70	0.5	4514182
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4514182
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4514182
Acid Extractable Thallium (Tl)	ug/g	**1**	0.50	0.50	0.53	0.43	0.53	0.05	4514182
Acid Extractable Uranium (U)	ug/g	**23**	2.2	2.1	2.0	1.4	1.7	0.05	4514182
Acid Extractable Vanadium (V)	ug/g	**86**	**130**	**130**	**140**	**100**	**130**	5	4514182
Acid Extractable Zinc (Zn)	ug/g	**340**	130	140	150	110	150	5	4514182

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
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Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CKQ046	CKQ047	CKQ048	CKQ049	CKQ050		
Sampling Date			2016/05/26 11:10	2016/05/26 11:20	2016/05/26 11:30	2016/05/26 11:40	2016/05/26 11:50		
COC Number			557328-23-01	557328-22-01	557328-22-01	557328-22-01	557328-22-01		
	UNITS	Criteria	VS188	VS189	VS190	VS191	VS192	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4514182
Acid Extractable Arsenic (As)	ug/g	**18**	<1	<1	<1	<1	<1	1	4514182
Acid Extractable Barium (Ba)	ug/g	**390**	**430**	46	35	14	12	0.5	4514182
Acid Extractable Beryllium (Be)	ug/g	**4**	1.5	0.3	0.3	<0.2	<0.2	0.2	4514182
Acid Extractable Boron (B)	ug/g	**120**	5	<5	<5	<5	<5	5	4514182
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4514182
Acid Extractable Chromium (Cr)	ug/g	**160**	120	25	18	11	10	1	4514182
Acid Extractable Cobalt (Co)	ug/g	**22**	**30**	5.3	4.2	2.6	3.0	0.1	4514182
Acid Extractable Copper (Cu)	ug/g	**140**	57	11	5.3	3.1	3.5	0.5	4514182
Acid Extractable Lead (Pb)	ug/g	**120**	9	3	2	2	2	1	4514182
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4514182
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4514182
Acid Extractable Nickel (Ni)	ug/g	**100**	65	13	10	6.9	6.9	0.5	4514182
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4514182
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4514182
Acid Extractable Thallium (Tl)	ug/g	**1**	0.54	0.07	<0.05	<0.05	<0.05	0.05	4514182
Acid Extractable Uranium (U)	ug/g	**23**	1.9	0.93	0.65	0.44	0.46	0.05	4514182
Acid Extractable Vanadium (V)	ug/g	**86**	**130**	27	30	15	13	5	4514182
Acid Extractable Zinc (Zn)	ug/g	**340**	150	24	15	18	24	5	4514182

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
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Maxxam Job #: B6A6319
Report Date: 2016/05/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CKQ051		CKQ052	CKQ053	CKQ054		
Sampling Date			2016/05/26 12:00		2016/05/26 12:10	2016/05/26 12:20	2016/05/26 12:30		
COC Number			557328-22-01		557328-22-01	557328-22-01	557328-22-01		
	UNITS	Criteria	VS193	QC Batch	VS194	VS195	VS196	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	7.5	<0.2	4514182	<0.2	<0.2	<0.2	0.2	4514186
Acid Extractable Arsenic (As)	ug/g	18	<1	4514182	<1	<1	<1	1	4514186
Acid Extractable Barium (Ba)	ug/g	390	13	4514182	23	18	22	0.5	4514186
Acid Extractable Beryllium (Be)	ug/g	4	<0.2	4514182	0.2	<0.2	0.2	0.2	4514186
Acid Extractable Boron (B)	ug/g	120	<5	4514182	<5	<5	<5	5	4514186
Acid Extractable Cadmium (Cd)	ug/g	1.2	<0.1	4514182	<0.1	<0.1	<0.1	0.1	4514186
Acid Extractable Chromium (Cr)	ug/g	160	15	4514182	17	12	16	1	4514186
Acid Extractable Cobalt (Co)	ug/g	22	3.0	4514182	3.5	2.5	3.0	0.1	4514186
Acid Extractable Copper (Cu)	ug/g	140	4.9	4514182	6.0	4.4	6.7	0.5	4514186
Acid Extractable Lead (Pb)	ug/g	120	3	4514182	3	3	2	1	4514186
Acid Extractable Mercury (Hg)	ug/g	0.27	<0.05	4514182	<0.05	<0.05	<0.05	0.05	4514186
Acid Extractable Molybdenum (Mo)	ug/g	6.9	<0.5	4514182	<0.5	<0.5	<0.5	0.5	4514186
Acid Extractable Nickel (Ni)	ug/g	100	7.4	4514182	8.0	6.5	8.0	0.5	4514186
Acid Extractable Selenium (Se)	ug/g	2.4	<0.5	4514182	<0.5	<0.5	<0.5	0.5	4514186
Acid Extractable Silver (Ag)	ug/g	20	<0.2	4514182	<0.2	<0.2	<0.2	0.2	4514186
Acid Extractable Thallium (Tl)	ug/g	1	<0.05	4514182	0.06	0.05	<0.05	0.05	4514186
Acid Extractable Uranium (U)	ug/g	23	0.61	4514182	0.63	0.67	0.61	0.05	4514186
Acid Extractable Vanadium (V)	ug/g	86	21	4514182	20	14	22	5	4514186
Acid Extractable Zinc (Zn)	ug/g	340	23	4514182	27	17	17	5	4514186

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Golder Associates Ltd
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O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CKQ054	CKQ055	CKQ056		CKQ067		
Sampling Date			2016/05/26 12:30	2016/05/26 12:35	2016/05/26 12:40		2016/05/26 12:50		
COC Number			557328-22-01	557328-22-01	557328-22-01		557328-21-01		
	UNITS	Criteria	VS196 Lab-Dup	VS1196	VS197	QC Batch	VS198	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	4514186	<0.2	0.2	4514182
Acid Extractable Arsenic (As)	ug/g	**18**	<1	<1	<1	4514186	<1	1	4514182
Acid Extractable Barium (Ba)	ug/g	**390**	21	23	61	4514186	19	0.5	4514182
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.2	0.2	0.4	4514186	0.2	0.2	4514182
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	4514186	<5	5	4514182
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	4514186	<0.1	0.1	4514182
Acid Extractable Chromium (Cr)	ug/g	**160**	15	18	23	4514186	15	1	4514182
Acid Extractable Cobalt (Co)	ug/g	**22**	2.8	3.1	7.4	4514186	2.7	0.1	4514182
Acid Extractable Copper (Cu)	ug/g	**140**	6.4	6.7	11	4514186	4.1	0.5	4514182
Acid Extractable Lead (Pb)	ug/g	**120**	2	3	4	4514186	4	1	4514182
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	4514186	<0.05	0.05	4514182
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	4514186	<0.5	0.5	4514182
Acid Extractable Nickel (Ni)	ug/g	**100**	7.2	8.0	17	4514186	7.3	0.5	4514182
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	4514186	<0.5	0.5	4514182
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	4514186	<0.2	0.2	4514182
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.05	0.06	0.09	4514186	<0.05	0.05	4514182
Acid Extractable Uranium (U)	ug/g	**23**	0.63	0.70	1.1	4514186	0.62	0.05	4514182
Acid Extractable Vanadium (V)	ug/g	**86**	22	28	32	4514186	22	5	4514182
Acid Extractable Zinc (Zn)	ug/g	**340**	16	17	49	4514186	17	5	4514182

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Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
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Golder Associates Ltd
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O.REG 153 PAHS (SOIL)

Maxxam ID			CKQ037	CKQ038	CKQ038	CKQ039	CKQ040		
Sampling Date			2016/05/26 07:30	2016/05/26 07:40	2016/05/26 07:40	2016/05/26 07:50	2016/05/26 08:00		
COC Number			557328-23-01	557328-23-01	557328-23-01	557328-23-01	557328-23-01		
	UNITS	Criteria	VS180	VS181	VS181 Lab-Dup	VS182	VS183	RDL	QC Batch
Inorganics									
Moisture	%	-	13	27	27	27	31	0.2	4513401
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	4513415
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Surrogate Recovery (%)									
D10-Anthracene	%	-	110	108	112	113	102		4513411
D14-Terphenyl (FS)	%	-	89	92	88	89	89		4513411
D8-Acenaphthylene	%	-	103	101	100	102	99		4513411

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O.REG 153 PAHS (SOIL)

Maxxam ID			CKQ041	CKQ042	CKQ043	CKQ044	CKQ045		
Sampling Date			2016/05/26 08:10	2016/05/26 08:15	2016/05/26 08:25	2016/05/26 08:35	2016/05/26 11:00		
COC Number			557328-23-01	557328-23-01	557328-23-01	557328-23-01	557328-23-01		
	UNITS	Criteria	VS184	VS1184	VS185	VS186	VS187	RDL	QC Batch
Inorganics									
Moisture	%	-	30	32	32	30	22	0.2	4513401
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4513415
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(a)anthracene	ug/g	**0.5**	0.0057	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Surrogate Recovery (%)									
D10-Anthracene	%	-	108	112	110	103	107		4513411
D14-Terphenyl (FS)	%	-	88	85	88	85	85		4513411
D8-Acenaphthylene	%	-	99	98	102	99	100		4513411

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6A6319
Report Date: 2016/05/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CKQ046	CKQ047	CKQ048	CKQ049	CKQ050		
Sampling Date			2016/05/26 11:10	2016/05/26 11:20	2016/05/26 11:30	2016/05/26 11:40	2016/05/26 11:50		
COC Number			557328-23-01	557328-22-01	557328-22-01	557328-22-01	557328-22-01		
	UNITS	Criteria	VS188	VS189	VS190	VS191	VS192	RDL	QC Batch
Inorganics									
Moisture	%	-	29	16	10	12	9.7	0.2	4513401
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4513415
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Surrogate Recovery (%)									
D10-Anthracene	%	-	105	106	106	104	111		4513411
D14-Terphenyl (FS)	%	-	87	87	83	85	87		4513411
D8-Acenaphthylene	%	-	98	99	97	98	102		4513411

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Report Date: 2016/05/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CKQ051	CKQ052	CKQ053	CKQ054	CKQ055		
Sampling Date			2016/05/26 12:00	2016/05/26 12:10	2016/05/26 12:20	2016/05/26 12:30	2016/05/26 12:35		
COC Number			557328-22-01	557328-22-01	557328-22-01	557328-22-01	557328-22-01		
	UNITS	Criteria	VS193	VS194	VS195	VS196	VS1196	RDL	QC Batch
Inorganics									
Moisture	%	-	13	10	13	15	15	0.2	4513401
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4513415
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	0.0051	<0.0050	0.0050	4513411
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4513411
Surrogate Recovery (%)									
D10-Anthracene	%	-	113	103	106	104	104		4513411
D14-Terphenyl (FS)	%	-	89	86	85	85	88		4513411
D8-Acenaphthylene	%	-	103	98	101	98	101		4513411

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Report Date: 2016/05/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CKQ056		CKQ067	CKQ067		
Sampling Date			2016/05/26 12:40		2016/05/26 12:50	2016/05/26 12:50		
COC Number			557328-22-01		557328-21-01	557328-21-01		
	UNITS	Criteria	VS197	QC Batch	VS198	VS198 Lab-Dup	RDL	QC Batch
Inorganics								
Moisture	%	-	7.3	4513401	12	11	0.2	4513547
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	4513415	<0.014		0.014	4513415
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**7.9**	<0.0050	4513411	<0.0050		0.0050	4513558
Acenaphthylene	ug/g	**0.15**	<0.0050	4513411	<0.0050		0.0050	4513558
Anthracene	ug/g	**0.67**	<0.0050	4513411	<0.0050		0.0050	4513558
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	4513411	<0.0050		0.0050	4513558
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	4513411	<0.0050		0.0050	4513558
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	4513411	<0.0050		0.0050	4513558
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	4513411	<0.0050		0.0050	4513558
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	4513411	<0.0050		0.0050	4513558
Chrysene	ug/g	**7**	0.0066	4513411	<0.0050		0.0050	4513558
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	4513411	<0.0050		0.0050	4513558
Fluoranthene	ug/g	**0.69**	<0.0050	4513411	<0.0050		0.0050	4513558
Fluorene	ug/g	**62**	<0.0050	4513411	<0.0050		0.0050	4513558
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	4513411	<0.0050		0.0050	4513558
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	4513411	<0.0050		0.0050	4513558
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	4513411	<0.0050		0.0050	4513558
Naphthalene	ug/g	**0.6**	<0.0050	4513411	<0.0050		0.0050	4513558
Phenanthrene	ug/g	**6.2**	<0.0050	4513411	<0.0050		0.0050	4513558
Pyrene	ug/g	**78**	0.0066	4513411	<0.0050		0.0050	4513558
Surrogate Recovery (%)								
D10-Anthracene	%	-	104	4513411	100			4513558
D14-Terphenyl (FS)	%	-	87	4513411	79			4513558
D8-Acenaphthylene	%	-	101	4513411	92			4513558

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CKQ037	CKQ038	CKQ039	CKQ040	CKQ041		
Sampling Date			2016/05/26 07:30	2016/05/26 07:40	2016/05/26 07:50	2016/05/26 08:00	2016/05/26 08:10		
COC Number			557328-23-01	557328-23-01	557328-23-01	557328-23-01	557328-23-01		
	UNITS	Criteria	VS180	VS181	VS182	VS183	VS184	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.3	0.5	0.3	0.4	0.4	0.2	4514425

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			CKQ042	CKQ043	CKQ044	CKQ045	CKQ046		
Sampling Date			2016/05/26 08:15	2016/05/26 08:25	2016/05/26 08:35	2016/05/26 11:00	2016/05/26 11:10		
COC Number			557328-23-01	557328-23-01	557328-23-01	557328-23-01	557328-23-01		
	UNITS	Criteria	VS1184	VS185	VS186	VS187	VS188	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.7	0.5	0.3	0.6	0.6	0.2	4514425

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			CKQ047	CKQ048	CKQ049	CKQ050	CKQ051		
Sampling Date			2016/05/26 11:20	2016/05/26 11:30	2016/05/26 11:40	2016/05/26 11:50	2016/05/26 12:00		
COC Number			557328-22-01	557328-22-01	557328-22-01	557328-22-01	557328-22-01		
	UNITS	Criteria	VS189	VS190	VS191	VS192	VS193	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.2	0.5	<0.2	<0.2	<0.2	0.2	4514425

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CKQ052	CKQ053	CKQ053	CKQ054	CKQ055		
Sampling Date			2016/05/26 12:10	2016/05/26 12:20	2016/05/26 12:20	2016/05/26 12:30	2016/05/26 12:35		
COC Number			557328-22-01	557328-22-01	557328-22-01	557328-22-01	557328-22-01		
	UNITS	Criteria	VS194	VS195	VS195 Lab-Dup	VS196	VS1196	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	0.3	0.3	<0.2	0.3	0.2	4514425

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			CKQ056		CKQ067	CKQ067		
Sampling Date			2016/05/26 12:40		2016/05/26 12:50	2016/05/26 12:50		
COC Number			557328-22-01		557328-21-01	557328-21-01		
	UNITS	Criteria	VS197	QC Batch	VS198	VS198 Lab-Dup	RDL	QC Batch
Inorganics								
Chromium (VI)	ug/g	8	<0.2	4514425	0.3	0.3	0.2	4514401

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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TEST SUMMARY

Maxxam ID: CKQ037
Sample ID: VS180
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/26	Arezoo Habibagahi

Maxxam ID: CKQ037 Dup
Sample ID: VS180
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera

Maxxam ID: CKQ038
Sample ID: VS181
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/26	Arezoo Habibagahi

Maxxam ID: CKQ038 Dup
Sample ID: VS181
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/26	Arezoo Habibagahi

Maxxam ID: CKQ039
Sample ID: VS182
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/26	Arezoo Habibagahi

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Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CKQ040
Sample ID: VS183
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/26	Arezoo Habibagahi

Maxxam ID: CKQ041
Sample ID: VS184
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	**4513401**	**N/A**	**2016/05/27**	**Liliana Gaburici**
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/26	Arezoo Habibagahi

Maxxam ID: CKQ042
Sample ID: VS1184
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/26	Arezoo Habibagahi

Maxxam ID: CKQ043
Sample ID: VS185
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/26	Arezoo Habibagahi

Maxxam ID: CKQ044
Sample ID: VS186
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin

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Report Date: 2016/05/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CKQ044
Sample ID: VS186
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/26	Arezoo Habibagahi

Maxxam ID: CKQ045
Sample ID: VS187
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/26	Arezoo Habibagahi

Maxxam ID: CKQ046
Sample ID: VS188
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/26	Arezoo Habibagahi

Maxxam ID: CKQ047
Sample ID: VS189
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/26	Arezoo Habibagahi

Maxxam ID: CKQ048
Sample ID: VS190
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici

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TEST SUMMARY

Maxxam ID: CKQ048
Sample ID: VS190
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/26	Arezoo Habibagahi

Maxxam ID: CKQ049
Sample ID: VS191
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/26	Arezoo Habibagahi

Maxxam ID: CKQ050
Sample ID: VS192
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/26	Arezoo Habibagahi

Maxxam ID: CKQ051
Sample ID: VS193
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/27	Arezoo Habibagahi

Maxxam ID: CKQ052
Sample ID: VS194
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514186	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/27	Arezoo Habibagahi

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TEST SUMMARY

Maxxam ID: CKQ053
Sample ID: VS195
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514186	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/27	Arezoo Habibagahi

Maxxam ID: CKQ053 Dup
Sample ID: VS195
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin

Maxxam ID: CKQ054
Sample ID: VS196
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514186	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/27	Arezoo Habibagahi

Maxxam ID: CKQ054 Dup
Sample ID: VS196
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514186	2016/05/27	2016/05/27	Raigamage Perera

Maxxam ID: CKQ055
Sample ID: VS1196
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514186	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/27	Arezoo Habibagahi

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TEST SUMMARY

Maxxam ID: CKQ056
Sample ID: VS197
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514425	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514186	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513401	N/A	2016/05/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513411	2016/05/26	2016/05/27	Arezoo Habibagahi

Maxxam ID: CKQ067
Sample ID: VS198
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4513415	N/A	2016/05/27	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4514401	2016/05/27	2016/05/27	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4514182	2016/05/27	2016/05/27	Raigamage Perera
MOISTURE	BAL	4513547	N/A	2016/05/27	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4513558	2016/05/26	2016/05/26	Arezoo Habibagahi

Maxxam ID: CKQ067 Dup
Sample ID: VS198
Matrix: Soil

Collected: 2016/05/26
Shipped:
Received: 2016/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4514401	2016/05/27	2016/05/27	Sally Coughlin
MOISTURE	BAL	4513547	N/A	2016/05/27	Arezoo Habibagahi

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Maxxam Job #: B6A6319
Report Date: 2016/05/27

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GENERAL COMMENTS

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

Package 1	23.7°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4513411	D10-Anthracene	2016/05/26	103	50 - 130	105	50 - 130	117	%				
4513411	D14-Terphenyl (FS)	2016/05/26	85	50 - 130	89	50 - 130	91	%				
4513411	D8-Acenaphthylene	2016/05/26	100	50 - 130	105	50 - 130	105	%				
4513558	D10-Anthracene	2016/05/26	94	50 - 130	98	50 - 130	107	%				
4513558	D14-Terphenyl (FS)	2016/05/26	78	50 - 130	80	50 - 130	80	%				
4513558	D8-Acenaphthylene	2016/05/26	94	50 - 130	98	50 - 130	94	%				
4513401	Moisture	2016/05/27							1.5	50		
4513411	1-Methylnaphthalene	2016/05/26	94	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40		
4513411	2-Methylnaphthalene	2016/05/26	83	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40		
4513411	Acenaphthene	2016/05/26	78	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4513411	Acenaphthylene	2016/05/26	94	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40		
4513411	Anthracene	2016/05/26	99	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40		
4513411	Benzo(a)anthracene	2016/05/26	128	50 - 130	125	50 - 130	<0.0050	ug/g	NC	40		
4513411	Benzo(a)pyrene	2016/05/26	99	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40		
4513411	Benzo(b/j)fluoranthene	2016/05/26	96	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40		
4513411	Benzo(g,h,i)perylene	2016/05/26	76	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40		
4513411	Benzo(k)fluoranthene	2016/05/26	89	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40		
4513411	Chrysene	2016/05/26	119	50 - 130	116	50 - 130	<0.0050	ug/g	NC	40		
4513411	Dibenz(a,h)anthracene	2016/05/26	100	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40		
4513411	Fluoranthene	2016/05/26	121	50 - 130	119	50 - 130	<0.0050	ug/g	NC	40		
4513411	Fluorene	2016/05/26	90	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40		
4513411	Indeno(1,2,3-cd)pyrene	2016/05/26	100	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40		
4513411	Naphthalene	2016/05/26	81	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40		
4513411	Phenanthrene	2016/05/26	84	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40		
4513411	Pyrene	2016/05/26	118	50 - 130	118	50 - 130	<0.0050	ug/g	NC	40		
4513547	Moisture	2016/05/27							9.5	50		
4513558	1-Methylnaphthalene	2016/05/26	86	50 - 130	90	50 - 130	<0.0050	ug/g	1.1	40		
4513558	2-Methylnaphthalene	2016/05/26	75	50 - 130	79	50 - 130	<0.0050	ug/g	2.0	40		
4513558	Acenaphthene	2016/05/26	69	50 - 130	71	50 - 130	<0.0050	ug/g	5.2	40		
4513558	Acenaphthylene	2016/05/26	87	50 - 130	89	50 - 130	<0.0050	ug/g	2.2	40		
4513558	Anthracene	2016/05/26	89	50 - 130	92	50 - 130	<0.0050	ug/g	3.4	40		

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Report Date: 2016/05/27

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
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Sampler Initials: AB

			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
4513558	Benzo(a)anthracene	2016/05/26	119	50 - 130	118	50 - 130	<0.0050	ug/g	3.7	40		
4513558	Benzo(a)pyrene	2016/05/26	96	50 - 130	98	50 - 130	<0.0050	ug/g	5.9	40		
4513558	Benzo(b/j)fluoranthene	2016/05/26	85	50 - 130	87	50 - 130	<0.0050	ug/g	1.0	40		
4513558	Benzo(g,h,i)perylene	2016/05/26	65	50 - 130	67	50 - 130	<0.0050	ug/g	0.30	40		
4513558	Benzo(k)fluoranthene	2016/05/26	76	50 - 130	80	50 - 130	<0.0050	ug/g	0.87	40		
4513558	Chrysene	2016/05/26	103	50 - 130	105	50 - 130	<0.0050	ug/g	7.2	40		
4513558	Dibenz(a,h)anthracene	2016/05/26	89	50 - 130	93	50 - 130	<0.0050	ug/g	1.6	40		
4513558	Fluoranthene	2016/05/26	110	50 - 130	112	50 - 130	<0.0050	ug/g	4.2	40		
4513558	Fluorene	2016/05/26	81	50 - 130	83	50 - 130	<0.0050	ug/g	3.1	40		
4513558	Indeno(1,2,3-cd)pyrene	2016/05/26	93	50 - 130	93	50 - 130	<0.0050	ug/g	2.9	40		
4513558	Naphthalene	2016/05/26	74	50 - 130	75	50 - 130	<0.0050	ug/g	2.5	40		
4513558	Phenanthrene	2016/05/26	76	50 - 130	78	50 - 130	<0.0050	ug/g	2.5	40		
4513558	Pyrene	2016/05/26	109	50 - 130	110	50 - 130	<0.0050	ug/g	3.1	40		
4514182	Acid Extractable Antimony (Sb)	2016/05/27	88	75 - 125	110	80 - 120	<0.2	ug/g	NC	35		
4514182	Acid Extractable Arsenic (As)	2016/05/27	103	75 - 125	104	80 - 120	<1	ug/g	NC	35		
4514182	Acid Extractable Barium (Ba)	2016/05/27	NC	75 - 125	103	80 - 120	<0.5	ug/g	3.3	35		
4514182	Acid Extractable Beryllium (Be)	2016/05/27	120	75 - 125	120	80 - 120	<0.2	ug/g	NC	35		
4514182	Acid Extractable Boron (B)	2016/05/27	116	75 - 125	119	80 - 120	<5	ug/g	NC	35		
4514182	Acid Extractable Cadmium (Cd)	2016/05/27	109	75 - 125	111	80 - 120	<0.1	ug/g	NC	35		
4514182	Acid Extractable Chromium (Cr)	2016/05/27	NC	75 - 125	110	80 - 120	<1	ug/g	0.13	35		
4514182	Acid Extractable Cobalt (Co)	2016/05/27	107	75 - 125	112	80 - 120	<0.1	ug/g	1.7	35		
4514182	Acid Extractable Copper (Cu)	2016/05/27	NC	75 - 125	108	80 - 120	<0.5	ug/g	0.088	35		
4514182	Acid Extractable Lead (Pb)	2016/05/27	108	75 - 125	108	80 - 120	<1	ug/g	NC	35		
4514182	Acid Extractable Mercury (Hg)	2016/05/27	111	75 - 125	108	80 - 120	<0.05	ug/g	NC	35		
4514182	Acid Extractable Molybdenum (Mo)	2016/05/27	105	75 - 125	108	80 - 120	<0.5	ug/g	NC	35		
4514182	Acid Extractable Nickel (Ni)	2016/05/27	NC	75 - 125	109	80 - 120	<0.5	ug/g	1.2	35		
4514182	Acid Extractable Selenium (Se)	2016/05/27	105	75 - 125	102	80 - 120	<0.5	ug/g	NC	35		
4514182	Acid Extractable Silver (Ag)	2016/05/27	105	75 - 125	107	80 - 120	<0.2	ug/g	NC	35		
4514182	Acid Extractable Thallium (Tl)	2016/05/27	107	75 - 125	106	80 - 120	<0.05	ug/g	NC	35		
4514182	Acid Extractable Uranium (U)	2016/05/27	108	75 - 125	106	80 - 120	<0.05	ug/g	1.1	25		
4514182	Acid Extractable Vanadium (V)	2016/05/27	NC	75 - 125	111	80 - 120	<5	ug/g	1.3	35		

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Maxxam Job #: B6A6319
Report Date: 2016/05/27

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4514182	Acid Extractable Zinc (Zn)	2016/05/27	NC	75 - 125	111	80 - 120	<5	ug/g	3.3	35		
4514186	Acid Extractable Antimony (Sb)	2016/05/27	97	75 - 125	105	80 - 120	<0.2	ug/g	NC	35		
4514186	Acid Extractable Arsenic (As)	2016/05/27	104	75 - 125	102	80 - 120	<1	ug/g	NC	35		
4514186	Acid Extractable Barium (Ba)	2016/05/27	NC	75 - 125	108	80 - 120	<0.5	ug/g	0.83	35		
4514186	Acid Extractable Beryllium (Be)	2016/05/27	115	75 - 125	102	80 - 120	<0.2	ug/g	NC	35		
4514186	Acid Extractable Boron (B)	2016/05/27	124	75 - 125	105	80 - 120	<5	ug/g	NC	35		
4514186	Acid Extractable Cadmium (Cd)	2016/05/27	102	75 - 125	104	80 - 120	<0.1	ug/g	NC	35		
4514186	Acid Extractable Chromium (Cr)	2016/05/27	NC	75 - 125	106	80 - 120	<1	ug/g	3.2	35		
4514186	Acid Extractable Cobalt (Co)	2016/05/27	107	75 - 125	106	80 - 120	<0.1	ug/g	7.2	35		
4514186	Acid Extractable Copper (Cu)	2016/05/27	104	75 - 125	108	80 - 120	<0.5	ug/g	4.4	35		
4514186	Acid Extractable Lead (Pb)	2016/05/27	101	75 - 125	105	80 - 120	<1	ug/g	NC	35		
4514186	Acid Extractable Mercury (Hg)	2016/05/27	94	75 - 125	104	80 - 120	<0.05	ug/g	NC	35		
4514186	Acid Extractable Molybdenum (Mo)	2016/05/27	105	75 - 125	104	80 - 120	<0.5	ug/g	NC	35		
4514186	Acid Extractable Nickel (Ni)	2016/05/27	107	75 - 125	107	80 - 120	<0.5	ug/g	11	35		
4514186	Acid Extractable Selenium (Se)	2016/05/27	105	75 - 125	101	80 - 120	<0.5	ug/g	NC	35		
4514186	Acid Extractable Silver (Ag)	2016/05/27	103	75 - 125	102	80 - 120	<0.2	ug/g	NC	35		
4514186	Acid Extractable Thallium (Tl)	2016/05/27	100	75 - 125	103	80 - 120	<0.05	ug/g	NC	35		
4514186	Acid Extractable Uranium (U)	2016/05/27	101	75 - 125	103	80 - 120	<0.05	ug/g	3.4	25		
4514186	Acid Extractable Vanadium (V)	2016/05/27	NC	75 - 125	109	80 - 120	<5	ug/g	NC	35		
4514186	Acid Extractable Zinc (Zn)	2016/05/27	NC	75 - 125	110	80 - 120	<5	ug/g	NC	35		
4514401	Chromium (VI)	2016/05/27	72 (1)	75 - 125	90	80 - 120	<0.2	ug/g	NC	35	64 (2)	75 - 125

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Maxxam Job #: B6A6319
Report Date: 2016/05/27

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4514425	Chromium (VI)	2016/05/27	79	75 - 125	87	80 - 120	<0.2	ug/g	NC	35	64 (2)	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

(2) REF MAT is acceptable as it met the analytical limits of the Certificate of Analysis.

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Maxxam Job #: B6A6319
Report Date: 2016/05/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Steve Roberts, Ottawa Lab Manager

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 3

INVOICE TO:
Company Name: #14090 Golder Associates Ltd
Attention: Central Accounting
Address: 1931 Robertson Rd
Ottawa ON K2H 5B7
Tel: (613) 592-9600 Fax: (613) 592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Paul, Tony, Aaron, Equis
Address:
Tel: Fax:
Email: Tony_Lyon@golder.com, Paul_Hurst@golder.com; GAL

PROJECT INFORMATION:
Quotation #: B57625
P.O. #:
Project: 1525113
Project Name:
Site #:
Sampled By: Aaron Bradshaw

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 557328
COC #: C#557328-23-01
Project Manager: Parnian Baber

NOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Med./Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☒ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

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

Special Instructions: #Prioritize samples on pg 3 of 3

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

Turnaround Time (TAT) Required:
Advance notice for rush proj
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: Next Day Time Required: ☒
Rush Confirmation Number: (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICP/MS Metals including Hg and CrVI								# of Bottles	Comments
1		VS180	16/05/26	7:30	Soil		X	X								1	
2		VS181	↓	7:40	↓		X	X								1	
3		VS182		7:50			X	X								1	
4		VS183		8:00			X	X								1	
5		VS184		8:10			X	X								1	
6		VS1184		8:15			X	X								1	
7		VS185		8:25			X	X								1	
8		VS186		8:35			X	X								1	
9		VS187		11:00			X	X								1	
10		VS188	↓	11:10	↓		X	X								1	

26-May-16 14:58
Parnian Baber
B6A6319
FHB OTT-002

RECEIVED IN OTTAWA

ON ICE

* 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
Aaron Bradshaw	16/05/26	14:45	Fatemeh	2016/05/26	14:59	0		24, 24, 23	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

PCL XL error

Error:	IllegalOperatorSequence
Operator:	BezierRelPath
Position:	577305

Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 557328-20-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/06/01
Report #: R4012292
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6A9561
Received: 2016/05/31, 13:35

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	5	N/A	2016/06/01	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	5	2016/06/01	2016/06/01	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	5	2016/05/31	2016/06/02	OTT SOP-00003	EPA 6020
MOISTURE	5	N/A	2016/06/01	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	5	2016/05/31	2016/05/31	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga

(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Ema Gitej
Senior Project Manager
01 Jun 2016 17:39:01 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager Assistant
Email: MBingley@maxxam.ca
Phone# (613)274-0573

==========

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Maxxam Job #: B6A9561
Report Date: 2016/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CLF806	CLF806	CLF807	CLF809	CLF810		
Sampling Date			2016/05/31 08:00	2016/05/31 08:00	2016/05/31 08:10	2016/05/31 08:20	2016/05/31 11:30		
COC Number			557328-20-01	557328-20-01	557328-20-01	557328-20-01	557328-20-01		
	UNITS	Criteria	VS199	VS199 Lab-Dup	VS200	VS201	VS183B	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4519067
Acid Extractable Arsenic (As)	ug/g	**18**	3	2	2	2	1	1	4519067
Acid Extractable Barium (Ba)	ug/g	**390**	200	200	190	190	**400**	0.5	4519067
Acid Extractable Beryllium (Be)	ug/g	**4**	0.8	0.7	0.7	0.7	1.1	0.2	4519067
Acid Extractable Boron (B)	ug/g	**120**	7	7	6	6	<5	5	4519067
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	<0.1	0.1	0.1	4519067
Acid Extractable Chromium (Cr)	ug/g	**160**	51	50	46	43	110	1	4519067
Acid Extractable Cobalt (Co)	ug/g	**22**	15	14	13	13	**29**	0.1	4519067
Acid Extractable Copper (Cu)	ug/g	**140**	27	27	25	26	61	0.5	4519067
Acid Extractable Lead (Pb)	ug/g	**120**	7	7	7	6	8	1	4519067
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4519067
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	<0.5	0.5	0.5	4519067
Acid Extractable Nickel (Ni)	ug/g	**100**	32	32	28	29	64	0.5	4519067
Acid Extractable Selenium (Se)	ug/g	**2.4**	0.8	1.2	1.0	1.1	0.7	0.5	4519067
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4519067
Acid Extractable Thallium (Tl)	ug/g	**1**	0.27	0.28	0.26	0.25	0.49	0.05	4519067
Acid Extractable Uranium (U)	ug/g	**23**	0.75	0.76	0.85	0.59	1.9	0.05	4519067
Acid Extractable Vanadium (V)	ug/g	**86**	68	67	64	62	**120**	5	4519067
Acid Extractable Zinc (Zn)	ug/g	**340**	81	79	76	73	140	5	4519067

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6A9561
Report Date: 2016/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CLF811		
Sampling Date			2016/05/31 11:40		
COC Number			557328-20-01		
	UNITS	Criteria	VS184B	RDL	QC Batch
Metals					
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	0.2	4519067
Acid Extractable Arsenic (As)	ug/g	**18**	1	1	4519067
Acid Extractable Barium (Ba)	ug/g	**390**	**470**	0.5	4519067
Acid Extractable Beryllium (Be)	ug/g	**4**	1.3	0.2	4519067
Acid Extractable Boron (B)	ug/g	**120**	<5	5	4519067
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.1	0.1	4519067
Acid Extractable Chromium (Cr)	ug/g	**160**	120	1	4519067
Acid Extractable Cobalt (Co)	ug/g	**22**	**27**	0.1	4519067
Acid Extractable Copper (Cu)	ug/g	**140**	55	0.5	4519067
Acid Extractable Lead (Pb)	ug/g	**120**	9	1	4519067
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	0.05	4519067
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.6	0.5	4519067
Acid Extractable Nickel (Ni)	ug/g	**100**	68	0.5	4519067
Acid Extractable Selenium (Se)	ug/g	**2.4**	1.2	0.5	4519067
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	0.2	4519067
Acid Extractable Thallium (Tl)	ug/g	**1**	0.56	0.05	4519067
Acid Extractable Uranium (U)	ug/g	**23**	1.8	0.05	4519067
Acid Extractable Vanadium (V)	ug/g	**86**	**120**	5	4519067
Acid Extractable Zinc (Zn)	ug/g	**340**	140	5	4519067

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6A9561
Report Date: 2016/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CLF806	CLF807	CLF807	CLF809	CLF810		
Sampling Date			2016/05/31 08:00	2016/05/31 08:10	2016/05/31 08:10	2016/05/31 08:20	2016/05/31 11:30		
COC Number			557328-20-01	557328-20-01	557328-20-01	557328-20-01	557328-20-01		
	UNITS	Criteria	VS199	VS200	VS200 Lab-Dup	VS201	VS183B	RDL	QC Batch
Inorganics									
Moisture	%	-	23	20	21	21	31	0.2	4519062
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	4519038
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4519051
Surrogate Recovery (%)									
D10-Anthracene	%	-	68	69	68	64	73		4519051
D14-Terphenyl (FS)	%	-	73	71	68	70	73		4519051
D8-Acenaphthylene	%	-	94	97	104	109	122		4519051

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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.maxxam.ca

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A Bureau Veritas Group Company

Maxxam Job #: B6A9561
Report Date: 2016/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CLF811		
Sampling Date			2016/05/31 11:40		
COC Number			557328-20-01		
	UNITS	Criteria	VS184B	RDL	QC Batch
Inorganics					
Moisture	%	-	32	0.2	4519062
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.014	4519038
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	4519051
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	4519051
Anthracene	ug/g	**0.67**	<0.0050	0.0050	4519051
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	4519051
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	4519051
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	4519051
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0050	4519051
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	4519051
Chrysene	ug/g	**7**	<0.0050	0.0050	4519051
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	4519051
Fluoranthene	ug/g	**0.69**	<0.0050	0.0050	4519051
Fluorene	ug/g	**62**	<0.0050	0.0050	4519051
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	4519051
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4519051
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4519051
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	4519051
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	4519051
Pyrene	ug/g	**78**	<0.0050	0.0050	4519051
Surrogate Recovery (%)					
D10-Anthracene	%	-	72		4519051
D14-Terphenyl (FS)	%	-	73		4519051
D8-Acenaphthylene	%	-	127		4519051

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water
Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CLF806	CLF807	CLF809	CLF809	CLF810		
Sampling Date			2016/05/31 08:00	2016/05/31 08:10	2016/05/31 08:20	2016/05/31 08:20	2016/05/31 11:30		
COC Number			557328-20-01	557328-20-01	557328-20-01	557328-20-01	557328-20-01		
	UNITS	Criteria	VS199	VS200	VS201	VS201 Lab-Dup	VS183B	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.9	0.9	0.6	0.6	1.1	0.2	4520429

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			CLF811		
Sampling Date			2016/05/31 11:40		
COC Number			557328-20-01		
	UNITS	Criteria	VS184B	RDL	QC Batch
Inorganics					
Chromium (VI)	ug/g	8	1.2	0.2	4520429

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CLF806
Sample ID: VS199
Matrix: Soil

Collected: 2016/05/31
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4519038	N/A	2016/06/01	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4520429	2016/06/01	2016/06/01	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4519067	2016/05/31	2016/06/02	Raigamage Perera
MOISTURE	BAL	4519062	N/A	2016/06/01	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4519051	2016/05/31	2016/05/31	Arezoo Habibagahi

Maxxam ID: CLF806 Dup
Sample ID: VS199
Matrix: Soil

Collected: 2016/05/31
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4519067	2016/05/31	2016/06/02	Raigamage Perera

Maxxam ID: CLF807
Sample ID: VS200
Matrix: Soil

Collected: 2016/05/31
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4519038	N/A	2016/06/01	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4520429	2016/06/01	2016/06/01	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4519067	2016/05/31	2016/06/02	Raigamage Perera
MOISTURE	BAL	4519062	N/A	2016/06/01	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4519051	2016/05/31	2016/05/31	Arezoo Habibagahi

Maxxam ID: CLF807 Dup
Sample ID: VS200
Matrix: Soil

Collected: 2016/05/31
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4519062	N/A	2016/06/01	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4519051	2016/05/31	2016/05/31	Arezoo Habibagahi

Maxxam ID: CLF809
Sample ID: VS201
Matrix: Soil

Collected: 2016/05/31
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4519038	N/A	2016/06/01	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4520429	2016/06/01	2016/06/01	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4519067	2016/05/31	2016/06/02	Raigamage Perera
MOISTURE	BAL	4519062	N/A	2016/06/01	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4519051	2016/05/31	2016/05/31	Arezoo Habibagahi

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Maxxam Job #: B6A9561
Report Date: 2016/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CLF809 Dup
Sample ID: VS201
Matrix: Soil

Collected: 2016/05/31
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4520429	2016/06/01	2016/06/01	Sally Coughlin

Maxxam ID: CLF810
Sample ID: VS183B
Matrix: Soil

Collected: 2016/05/31
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4519038	N/A	2016/06/01	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4520429	2016/06/01	2016/06/01	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4519067	2016/05/31	2016/06/02	Raigamage Perera
MOISTURE	BAL	4519062	N/A	2016/06/01	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4519051	2016/05/31	2016/05/31	Arezoo Habibagahi

Maxxam ID: CLF811
Sample ID: VS184B
Matrix: Soil

Collected: 2016/05/31
Shipped:
Received: 2016/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4519038	N/A	2016/06/01	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4520429	2016/06/01	2016/06/01	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4519067	2016/05/31	2016/06/02	Raigamage Perera
MOISTURE	BAL	4519062	N/A	2016/06/01	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4519051	2016/05/31	2016/05/31	Arezoo Habibagahi

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GENERAL COMMENTS

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

Package 1	21.0°C

Results relate only to the items tested.

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Report Date: 2016/06/01

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4519051	D10-Anthracene	2016/05/31	61	50 - 130	71	50 - 130	73	%		
4519051	D14-Terphenyl (FS)	2016/05/31	70	50 - 130	80	50 - 130	75	%		
4519051	D8-Acenaphthylene	2016/05/31	76	50 - 130	94	50 - 130	89	%		
4519051	1-Methylnaphthalene	2016/05/31	88	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
4519051	2-Methylnaphthalene	2016/05/31	85	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
4519051	Acenaphthene	2016/05/31	63	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
4519051	Acenaphthylene	2016/05/31	81	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
4519051	Anthracene	2016/05/31	68	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
4519051	Benzo(a)anthracene	2016/05/31	83	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
4519051	Benzo(a)pyrene	2016/05/31	92	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40
4519051	Benzo(b/j)fluoranthene	2016/05/31	80	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
4519051	Benzo(g,h,i)perylene	2016/05/31	68	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
4519051	Benzo(k)fluoranthene	2016/05/31	67	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4519051	Chrysene	2016/05/31	80	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4519051	Dibenz(a,h)anthracene	2016/05/31	79	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
4519051	Fluoranthene	2016/05/31	76	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
4519051	Fluorene	2016/05/31	68	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
4519051	Indeno(1,2,3-cd)pyrene	2016/05/31	82	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
4519051	Naphthalene	2016/05/31	68	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
4519051	Phenanthrene	2016/05/31	65	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
4519051	Pyrene	2016/05/31	77	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4519062	Moisture	2016/06/01							1.5	50
4519067	Acid Extractable Antimony (Sb)	2016/06/02	73 (1)	75 - 125	105	80 - 120	<0.2	ug/g	NC	35
4519067	Acid Extractable Arsenic (As)	2016/06/02	98	75 - 125	103	80 - 120	<1	ug/g	NC	35
4519067	Acid Extractable Barium (Ba)	2016/06/02	NC	75 - 125	106	80 - 120	<0.5	ug/g	1.9	35
4519067	Acid Extractable Beryllium (Be)	2016/06/02	110	75 - 125	108	80 - 120	<0.2	ug/g	NC	35
4519067	Acid Extractable Boron (B)	2016/06/02	106	75 - 125	110	80 - 120	<5	ug/g	NC	35
4519067	Acid Extractable Cadmium (Cd)	2016/06/02	105	75 - 125	105	80 - 120	<0.1	ug/g	NC	35
4519067	Acid Extractable Chromium (Cr)	2016/06/02	NC	75 - 125	105	80 - 120	<1	ug/g	2.9	35
4519067	Acid Extractable Cobalt (Co)	2016/06/02	NC	75 - 125	106	80 - 120	<0.1	ug/g	1.9	35
4519067	Acid Extractable Copper (Cu)	2016/06/02	NC	75 - 125	104	80 - 120	<0.5	ug/g	2.0	35

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QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4519067	Acid Extractable Lead (Pb)	2016/06/02	103	75 - 125	107	80 - 120	<1	ug/g	0.36	35
4519067	Acid Extractable Mercury (Hg)	2016/06/02	103	75 - 125	106	80 - 120	<0.05	ug/g	NC	35
4519067	Acid Extractable Molybdenum (Mo)	2016/06/02	106	75 - 125	105	80 - 120	<0.5	ug/g	NC	35
4519067	Acid Extractable Nickel (Ni)	2016/06/02	NC	75 - 125	107	80 - 120	<0.5	ug/g	0.71	35
4519067	Acid Extractable Selenium (Se)	2016/06/02	102	75 - 125	107	80 - 120	<0.5	ug/g	NC	35
4519067	Acid Extractable Silver (Ag)	2016/06/02	101	75 - 125	100	80 - 120	<0.2	ug/g	NC	35
4519067	Acid Extractable Thallium (Tl)	2016/06/02	103	75 - 125	105	80 - 120	<0.05	ug/g	6.0	35
4519067	Acid Extractable Uranium (U)	2016/06/02	104	75 - 125	104	80 - 120	<0.05	ug/g	2.3	25
4519067	Acid Extractable Vanadium (V)	2016/06/02	NC	75 - 125	108	80 - 120	<5	ug/g	1.6	35
4519067	Acid Extractable Zinc (Zn)	2016/06/02	NC	75 - 125	109	80 - 120	<5	ug/g	2.7	35
4520429	Chromium (VI)	2016/06/01	73 (2)	75 - 125	89	80 - 120	<0.2	ug/g	NC	35

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Brad Newman, Scientific Specialist

Steve Roberts, Ottawa Lab Manager

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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557326
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113		
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Project Name:		COC #:	Project Manager:
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com, Paul_Hurst@golder.com; GAL	Site #:		C#557326-20-01	Parnian Baber
				Sampled By:	Aaron Bradshaw		

NOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

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: Next Day Time Required: ☒
Rush Confirmation Number: _____ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC):

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle) Metals / Hg / Cr VI	O Reg 153 PAHs (Soil)	O Reg 153 ICPMS Metals including Hg and CrVI								# of Bottles	Comments
1		VS199	16/05/31	800	Soil		X	X								1	
2		VS200	↓	810	↓		X	X								1	
3		VS201	↓	820	↓		X	X								1	
4		VS183b	↓	1130	↓		X	X								1	
5		VS184b	↓	1140	↓		X	X								1	
6																	
7																	
8																	
9																	
10																	

31-May-16 13:35
Parnian Baber
B6A9561
FHB OTT-002

RECEIVED IN OTTAWA

ON ICE PACK.

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
Aaron Bradshaw	16/05/31			2016/05/31	13:35	0		21, 21, 21	Present	✓	
									Intact	✓	

Laboratory Use Only

* 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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6A9561
Report Date: 2016/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS183B	CLF810-01	Acid Extractable Barium (Ba)	390	400	0.5	ug/g
VS183B	CLF810-01	Acid Extractable Cobalt (Co)	22	29	0.1	ug/g
VS183B	CLF810-01	Acid Extractable Vanadium (V)	86	120	5	ug/g
VS184B	CLF811-01	Acid Extractable Barium (Ba)	390	470	0.5	ug/g
VS184B	CLF811-01	Acid Extractable Cobalt (Co)	22	27	0.1	ug/g
VS184B	CLF811-01	Acid Extractable Vanadium (V)	86	120	5	ug/g

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Maxxam
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Your Project #: 1525113
Your C.O.C. #: 557328-19-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/06/03
Report #: R4014908
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6B1675
Received: 2016/06/02, 11:00

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	3	N/A	2016/06/03	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	3	2016/06/03	2016/06/03	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	3	2016/06/02	2016/06/03	OTT SOP-00003	EPA 6020
MOISTURE	3	N/A	2016/06/03	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	3	2016/06/02	2016/06/03	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key
Madison Bingley
Project Manager Assistant
03 Jun 2016 17:56:02 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager Assistant
Email: MBingley@maxxam.ca
Phone# (613)274-0573

==========

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.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6B1675
Report Date: 2016/06/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CLP946	CLP946	CLP947	CLP948		
Sampling Date			2016/06/02 09:50	2016/06/02 09:50	2016/06/02 10:15	2016/06/02 10:30		
COC Number			557328-19-01	557328-19-01	557328-19-01	557328-19-01		
	UNITS	Criteria	VS183C	VS183C Lab-Dup	VS184C	VS181B	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	0.2	4522922
Acid Extractable Arsenic (As)	ug/g	**18**	1	1	1	2	1	4522922
Acid Extractable Barium (Ba)	ug/g	**390**	140	150	240	160	0.5	4522922
Acid Extractable Beryllium (Be)	ug/g	**4**	0.4	0.5	0.5	0.4	0.2	4522922
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	6	5	4522922
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	<0.1	0.1	4522922
Acid Extractable Chromium (Cr)	ug/g	**160**	30	31	52	31	1	4522922
Acid Extractable Cobalt (Co)	ug/g	**22**	10	10	15	10	0.1	4522922
Acid Extractable Copper (Cu)	ug/g	**140**	19	19	26	18	0.5	4522922
Acid Extractable Lead (Pb)	ug/g	**120**	5	5	5	5	1	4522922
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	<0.05	0.05	4522922
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	1.5	0.5	4522922
Acid Extractable Nickel (Ni)	ug/g	**100**	20	20	32	20	0.5	4522922
Acid Extractable Selenium (Se)	ug/g	**2.4**	0.8	1.1	0.8	0.8	0.5	4522922
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	0.2	4522922
Acid Extractable Thallium (Tl)	ug/g	**1**	0.18	0.19	0.29	0.17	0.05	4522922
Acid Extractable Uranium (U)	ug/g	**23**	0.65	0.64	0.67	0.82	0.05	4522922
Acid Extractable Vanadium (V)	ug/g	**86**	51	53	71	49	5	4522922
Acid Extractable Zinc (Zn)	ug/g	**340**	50	52	77	51	5	4522922

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6B1675
Report Date: 2016/06/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CLP946	CLP947	CLP947	CLP948		
Sampling Date			2016/06/02 09:50	2016/06/02 10:15	2016/06/02 10:15	2016/06/02 10:30		
COC Number			557328-19-01	557328-19-01	557328-19-01	557328-19-01		
	UNITS	Criteria	VS183C	VS184C	VS184C Lab-Dup	VS181B	RDL	QC Batch
Inorganics								
Moisture	%	-	23	27	27	23	0.2	4522544
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	0.014	4522513
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4522547
Surrogate Recovery (%)								
D10-Anthracene	%	-	62	66	62	57		4522547
D14-Terphenyl (FS)	%	-	72	77	77	75		4522547
D8-Acenaphthylene	%	-	59	61	60	59		4522547

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6B1675
Report Date: 2016/06/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CLP946	CLP947	CLP948		
Sampling Date			2016/06/02 09:50	2016/06/02 10:15	2016/06/02 10:30		
COC Number			557328-19-01	557328-19-01	557328-19-01		
	UNITS	Criteria	VS183C	VS184C	VS181B	RDL	QC Batch
Inorganics							
Chromium (VI)	ug/g	8	0.2	0.4	<0.2	0.2	4524295

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Report Date: 2016/06/03

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Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CLP946
Sample ID: VS183C
Matrix: Soil

Collected: 2016/06/02
Shipped:
Received: 2016/06/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4522513	N/A	2016/06/03	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4524295	2016/06/03	2016/06/03	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4522922	2016/06/02	2016/06/03	Raigamage Perera
MOISTURE	BAL	4522544	N/A	2016/06/03	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4522547	2016/06/02	2016/06/03	Arezoo Habibagahi

Maxxam ID: CLP946 Dup
Sample ID: VS183C
Matrix: Soil

Collected: 2016/06/02
Shipped:
Received: 2016/06/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4522922	2016/06/02	2016/06/03	Raigamage Perera

Maxxam ID: CLP947
Sample ID: VS184C
Matrix: Soil

Collected: 2016/06/02
Shipped:
Received: 2016/06/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4522513	N/A	2016/06/03	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4524295	2016/06/03	2016/06/03	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4522922	2016/06/02	2016/06/03	Raigamage Perera
MOISTURE	BAL	4522544	N/A	2016/06/03	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4522547	2016/06/02	2016/06/03	Arezoo Habibagahi

Maxxam ID: CLP947 Dup
Sample ID: VS184C
Matrix: Soil

Collected: 2016/06/02
Shipped:
Received: 2016/06/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4522544	N/A	2016/06/03	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4522547	2016/06/02	2016/06/03	Arezoo Habibagahi

Maxxam ID: CLP948
Sample ID: VS181B
Matrix: Soil

Collected: 2016/06/02
Shipped:
Received: 2016/06/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4522513	N/A	2016/06/03	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4524295	2016/06/03	2016/06/03	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4522922	2016/06/02	2016/06/03	Raigamage Perera
MOISTURE	BAL	4522544	N/A	2016/06/03	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4522547	2016/06/02	2016/06/03	Arezoo Habibagahi

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GENERAL COMMENTS

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

Package 1	15.7°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4522547	D10-Anthracene	2016/06/03	59	50 - 130	63	50 - 130	67	%		
4522547	D14-Terphenyl (FS)	2016/06/03	74	50 - 130	74	50 - 130	74	%		
4522547	D8-Acenaphthylene	2016/06/03	58	50 - 130	63	50 - 130	64	%		
4522544	Moisture	2016/06/03							0	50
4522547	1-Methylnaphthalene	2016/06/03	71	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
4522547	2-Methylnaphthalene	2016/06/03	74	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
4522547	Acenaphthene	2016/06/03	63	50 - 130	65	50 - 130	<0.0050	ug/g	NC	40
4522547	Acenaphthylene	2016/06/03	62	50 - 130	65	50 - 130	<0.0050	ug/g	NC	40
4522547	Anthracene	2016/06/03	64	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40
4522547	Benzo(a)anthracene	2016/06/03	83	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4522547	Benzo(a)pyrene	2016/06/03	79	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
4522547	Benzo(b/j)fluoranthene	2016/06/03	80	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
4522547	Benzo(g,h,i)perylene	2016/06/03	59	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40
4522547	Benzo(k)fluoranthene	2016/06/03	77	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
4522547	Chrysene	2016/06/03	78	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
4522547	Dibenz(a,h)anthracene	2016/06/03	59	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40
4522547	Fluoranthene	2016/06/03	72	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
4522547	Fluorene	2016/06/03	69	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
4522547	Indeno(1,2,3-cd)pyrene	2016/06/03	64	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
4522547	Naphthalene	2016/06/03	68	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
4522547	Phenanthrene	2016/06/03	65	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40
4522547	Pyrene	2016/06/03	74	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
4522922	Acid Extractable Antimony (Sb)	2016/06/03	84	75 - 125	102	80 - 120	<0.2	ug/g	NC	35
4522922	Acid Extractable Arsenic (As)	2016/06/03	104	75 - 125	103	80 - 120	<1	ug/g	NC	35
4522922	Acid Extractable Barium (Ba)	2016/06/03	NC	75 - 125	105	80 - 120	<0.5	ug/g	1.8	35
4522922	Acid Extractable Beryllium (Be)	2016/06/03	108	75 - 125	103	80 - 120	<0.2	ug/g	NC	35
4522922	Acid Extractable Boron (B)	2016/06/03	111	75 - 125	106	80 - 120	<5	ug/g	NC	35
4522922	Acid Extractable Cadmium (Cd)	2016/06/03	107	75 - 125	102	80 - 120	<0.1	ug/g	NC	35
4522922	Acid Extractable Chromium (Cr)	2016/06/03	NC	75 - 125	104	80 - 120	<1	ug/g	3.8	35
4522922	Acid Extractable Cobalt (Co)	2016/06/03	112	75 - 125	106	80 - 120	<0.1	ug/g	1.2	35
4522922	Acid Extractable Copper (Cu)	2016/06/03	NC	75 - 125	106	80 - 120	<0.5	ug/g	0.76	35

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QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4522922	Acid Extractable Lead (Pb)	2016/06/03	108	75 - 125	106	80 - 120	<1	ug/g	NC	35
4522922	Acid Extractable Mercury (Hg)	2016/06/03	113	75 - 125	110	80 - 120	<0.05	ug/g	NC	35
4522922	Acid Extractable Molybdenum (Mo)	2016/06/03	107	75 - 125	103	80 - 120	<0.5	ug/g	NC	35
4522922	Acid Extractable Nickel (Ni)	2016/06/03	NC	75 - 125	106	80 - 120	<0.5	ug/g	0.91	35
4522922	Acid Extractable Selenium (Se)	2016/06/03	108	75 - 125	110	80 - 120	0.5, RDL=0.5	ug/g	NC	35
4522922	Acid Extractable Silver (Ag)	2016/06/03	101	75 - 125	98	80 - 120	<0.2	ug/g	NC	35
4522922	Acid Extractable Thallium (Tl)	2016/06/03	107	75 - 125	105	80 - 120	<0.05	ug/g	NC	35
4522922	Acid Extractable Uranium (U)	2016/06/03	110	75 - 125	105	80 - 120	<0.05	ug/g	1.5	25
4522922	Acid Extractable Vanadium (V)	2016/06/03	NC	75 - 125	106	80 - 120	<5	ug/g	2.9	35
4522922	Acid Extractable Zinc (Zn)	2016/06/03	NC	75 - 125	105	80 - 120	<5	ug/g	2.8	35
4524295	Chromium (VI)	2016/06/03	0.22 (1)	75 - 125	89	80 - 120	<0.2	ug/g	NC	35

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B6B1675
Report Date: 2016/06/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557326
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#557326-19-01	Parnian Baber
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	Aaron Bradstreet		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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: Next Day Time Required: ☒ Rush Confirmation Number: (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI								# of Bottles	Comments
1		VS183C	16/06/02	950	soil		X	X								1	
2		VS184C	↓	1015	↓		X	X								1	
3		VS181b	↓	1030	↓		X	X								1	
4																	
5																	
6																	
7																	
8																	RECEIVED IN OTTAWA
9																	
10																	Tot 2016/6/02 ON ICE PACK

2-Jun-16 11:00
Parnian Baber
B6B1675
FHB OTT-002

* 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
Aaron Bradstreet	16/06/02	10:45	[illegible]	2016/06/02	11:00	0		16, 16, 15	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

Maxxam Job #: B6B1675
Report Date: 2016/06/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 557328-16-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/06/10
Report #: R4023296
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6B8020
Received: 2016/06/09, 15:30

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	4	N/A	2016/06/10	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	4	2016/06/10	2016/06/10	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	4	2016/06/09	2016/06/10	OTT SOP-00003	EPA 6020
MOISTURE	4	N/A	2016/06/10	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	4	2016/06/09	2016/06/10	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key
Madison Bingley
Project Manager Assistant
10 Jun 2016 17:15:45 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager Assistant
Email: MBingley@maxxam.ca
Phone# (613)274-0573

==========

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 Job #: B6B8020
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CMT005	CMT005	CMT006	CMT007	CMT008		
Sampling Date			2016/06/09 11:40	2016/06/09 11:40	2016/06/09 11:50	2016/06/09 12:30	2016/06/09 13:20		
	UNITS	Criteria	VS181 2'	VS181 2' Lab-Dup	VS181 4'	VS202	VS203	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4532972
Acid Extractable Arsenic (As)	ug/g	**18**	1	1	1	1	<1	1	4532972
Acid Extractable Barium (Ba)	ug/g	**390**	390	370	130	69	47	0.5	4532972
Acid Extractable Beryllium (Be)	ug/g	**4**	1.0	1.1	0.4	0.5	0.3	0.2	4532972
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	<5	<5	5	4532972
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4532972
Acid Extractable Chromium (Cr)	ug/g	**160**	110	110	30	34	24	1	4532972
Acid Extractable Cobalt (Co)	ug/g	**22**	**24**	**25**	8.4	9.0	5.1	0.1	4532972
Acid Extractable Copper (Cu)	ug/g	**140**	55	56	17	14	8.8	0.5	4532972
Acid Extractable Lead (Pb)	ug/g	**120**	8	8	5	8	8	1	4532972
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4532972
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4532972
Acid Extractable Nickel (Ni)	ug/g	**100**	63	64	18	18	11	0.5	4532972
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4532972
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4532972
Acid Extractable Thallium (Tl)	ug/g	**1**	0.50	0.49	0.15	0.13	0.09	0.05	4532972
Acid Extractable Uranium (U)	ug/g	**23**	1.6	1.6	0.61	1.3	1.1	0.05	4532972
Acid Extractable Vanadium (V)	ug/g	**86**	**120**	**120**	47	40	28	5	4532972
Acid Extractable Zinc (Zn)	ug/g	**340**	130	130	47	38	26	5	4532972

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6B8020
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Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CMT005	CMT005	CMT006	CMT007	CMT008		
Sampling Date			2016/06/09 11:40	2016/06/09 11:40	2016/06/09 11:50	2016/06/09 12:30	2016/06/09 13:20		
	UNITS	Criteria	VS181 2'	VS181 2' Lab-Dup	VS181 4'	VS202	VS203	RDL	QC Batch
Inorganics									
Moisture	%	-	27		22	7.5	12	0.2	4532909
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	4532908
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4532912
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4532912
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4532912
Benzo(a)anthracene	ug/g	**0.5**	0.0072	<0.0050	<0.0050	<0.0050	0.0061	0.0050	4532912
Benzo(a)pyrene	ug/g	**0.3**	0.010	<0.0050	<0.0050	<0.0050	0.0095	0.0050	4532912
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.0086	<0.0050	<0.0050	<0.0050	0.0068	0.0050	4532912
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0081	0.0050	4532912
Benzo(k)fluoranthene	ug/g	**0.78**	0.0065	0.0053	<0.0050	<0.0050	0.010	0.0050	4532912
Chrysene	ug/g	**7**	0.0086	<0.0050	<0.0050	0.0051	0.0095	0.0050	4532912
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4532912
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	0.0088	0.0050	4532912
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4532912
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4532912
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4532912
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4532912
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4532912
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	0.0061	0.0050	4532912
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0088	0.0050	4532912
Surrogate Recovery (%)									
D10-Anthracene	%	-	80	76	72	80	75		4532912
D14-Terphenyl (FS)	%	-	59	61	58	59	61		4532912
D8-Acenaphthylene	%	-	53	53	54	55	55		4532912

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
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Maxxam Job #: B6B8020
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CMT005	CMT006	CMT006	CMT007	CMT008		
Sampling Date			2016/06/09 11:40	2016/06/09 11:50	2016/06/09 11:50	2016/06/09 12:30	2016/06/09 13:20		
COC Number			557328-16-01	557328-16-01	557328-16-01	557328-16-01	557328-16-01		
	UNITS	Criteria	VS181 2'	VS181 4'	VS181 4' Lab-Dup	VS202	VS203	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.9	0.3	0.3	0.3	0.6	0.2	4533703

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
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Maxxam Job #: B6B8020
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CMT005
Sample ID: VS181 2'
Matrix: Soil

Collected: 2016/06/09
Shipped:
Received: 2016/06/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4532908	N/A	2016/06/10	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4533703	2016/06/10	2016/06/10	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4532972	2016/06/09	2016/06/10	Raigamage Perera
MOISTURE	BAL	4532909	N/A	2016/06/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4532912	2016/06/09	2016/06/10	Arezoo Habibagahi

Maxxam ID: CMT005 Dup
Sample ID: VS181 2'
Matrix: Soil

Collected: 2016/06/09
Shipped:
Received: 2016/06/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4532972	2016/06/09	2016/06/10	Raigamage Perera
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4532912	2016/06/09	2016/06/10	Arezoo Habibagahi

Maxxam ID: CMT006
Sample ID: VS181 4'
Matrix: Soil

Collected: 2016/06/09
Shipped:
Received: 2016/06/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4532908	N/A	2016/06/10	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4533703	2016/06/10	2016/06/10	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4532972	2016/06/09	2016/06/10	Raigamage Perera
MOISTURE	BAL	4532909	N/A	2016/06/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4532912	2016/06/09	2016/06/10	Arezoo Habibagahi

Maxxam ID: CMT006 Dup
Sample ID: VS181 4'
Matrix: Soil

Collected: 2016/06/09
Shipped:
Received: 2016/06/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4533703	2016/06/10	2016/06/10	Sally Coughlin

Maxxam ID: CMT007
Sample ID: VS202
Matrix: Soil

Collected: 2016/06/09
Shipped:
Received: 2016/06/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4532908	N/A	2016/06/10	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4533703	2016/06/10	2016/06/10	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4532972	2016/06/09	2016/06/10	Raigamage Perera
MOISTURE	BAL	4532909	N/A	2016/06/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4532912	2016/06/09	2016/06/10	Arezoo Habibagahi

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Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CMT008
Sample ID: VS203
Matrix: Soil

Collected: 2016/06/09
Shipped:
Received: 2016/06/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4532908	N/A	2016/06/10	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4533703	2016/06/10	2016/06/10	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4532972	2016/06/09	2016/06/10	Raigamage Perera
MOISTURE	BAL	4532909	N/A	2016/06/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4532912	2016/06/09	2016/06/10	Arezoo Habibagahi

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GENERAL COMMENTS

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

Package 1	17.0°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

Golder Associates Ltd
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			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4532912	D10-Anthracene	2016/06/10	76	50 - 130	76	50 - 130	87	%		
4532912	D14-Terphenyl (FS)	2016/06/10	64	50 - 130	66	50 - 130	62	%		
4532912	D8-Acenaphthylene	2016/06/10	96	50 - 130	102	50 - 130	103	%		
4532909	Moisture	2016/06/10							NC	50
4532912	1-Methylnaphthalene	2016/06/10	92	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
4532912	2-Methylnaphthalene	2016/06/10	90	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4532912	Acenaphthene	2016/06/10	69	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
4532912	Acenaphthylene	2016/06/10	102	50 - 130	110	50 - 130	<0.0050	ug/g	NC	40
4532912	Anthracene	2016/06/10	82	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
4532912	Benzo(a)anthracene	2016/06/10	107	50 - 130	116	50 - 130	<0.0050	ug/g	NC	40
4532912	Benzo(a)pyrene	2016/06/10	100	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
4532912	Benzo(b/j)fluoranthene	2016/06/10	94	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
4532912	Benzo(g,h,i)perylene	2016/06/10	75	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
4532912	Benzo(k)fluoranthene	2016/06/10	83	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
4532912	Chrysene	2016/06/10	93	50 - 130	116	50 - 130	<0.0050	ug/g	NC	40
4532912	Dibenz(a,h)anthracene	2016/06/10	73	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
4532912	Fluoranthene	2016/06/10	86	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4532912	Fluorene	2016/06/10	71	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
4532912	Indeno(1,2,3-cd)pyrene	2016/06/10	78	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4532912	Naphthalene	2016/06/10	75	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
4532912	Phenanthrene	2016/06/10	72	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
4532912	Pyrene	2016/06/10	87	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4532972	Acid Extractable Antimony (Sb)	2016/06/10	74 (1)	75 - 125	111	80 - 120	<0.2	ug/g	NC	35
4532972	Acid Extractable Arsenic (As)	2016/06/10	98	75 - 125	104	80 - 120	<1	ug/g	NC	35
4532972	Acid Extractable Barium (Ba)	2016/06/10	NC	75 - 125	112	80 - 120	<0.5	ug/g	3.6	35
4532972	Acid Extractable Beryllium (Be)	2016/06/10	112	75 - 125	109	80 - 120	<0.2	ug/g	4.1	35
4532972	Acid Extractable Boron (B)	2016/06/10	110	75 - 125	110	80 - 120	<5	ug/g	NC	35
4532972	Acid Extractable Cadmium (Cd)	2016/06/10	109	75 - 125	111	80 - 120	<0.1	ug/g	NC	35
4532972	Acid Extractable Chromium (Cr)	2016/06/10	NC	75 - 125	107	80 - 120	<1	ug/g	0.76	35
4532972	Acid Extractable Cobalt (Co)	2016/06/10	NC	75 - 125	110	80 - 120	<0.1	ug/g	2.8	35
4532972	Acid Extractable Copper (Cu)	2016/06/10	NC	75 - 125	108	80 - 120	<0.5	ug/g	1.0	35

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Report Date: 2016/06/10

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4532972	Acid Extractable Lead (Pb)	2016/06/10	102	75 - 125	111	80 - 120	<1	ug/g	2.3	35
4532972	Acid Extractable Mercury (Hg)	2016/06/10	102	75 - 125	113	80 - 120	<0.05	ug/g	NC	35
4532972	Acid Extractable Molybdenum (Mo)	2016/06/10	108	75 - 125	110	80 - 120	<0.5	ug/g	NC	35
4532972	Acid Extractable Nickel (Ni)	2016/06/10	NC	75 - 125	110	80 - 120	<0.5	ug/g	2.4	35
4532972	Acid Extractable Selenium (Se)	2016/06/10	103	75 - 125	103	80 - 120	<0.5	ug/g	NC	35
4532972	Acid Extractable Silver (Ag)	2016/06/10	104	75 - 125	107	80 - 120	<0.2	ug/g	NC	35
4532972	Acid Extractable Thallium (Tl)	2016/06/10	103	75 - 125	112	80 - 120	<0.05	ug/g	3.0	35
4532972	Acid Extractable Uranium (U)	2016/06/10	105	75 - 125	112	80 - 120	<0.05	ug/g	2.3	25
4532972	Acid Extractable Vanadium (V)	2016/06/10	NC	75 - 125	108	80 - 120	<5	ug/g	0.93	35
4532972	Acid Extractable Zinc (Zn)	2016/06/10	NC	75 - 125	108	80 - 120	<5	ug/g	2.8	35
4533703	Chromium (VI)	2016/06/10	79	75 - 125	86	80 - 120	<0.2	ug/g	NC	35

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(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 #: B6B8020
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Brad Newman, Scientific Specialist

Steve Roberts, Ottawa Lab Manager

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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #:
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			557328
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:			
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:		C#557328-16-01	Parnian Baber
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com, Paul_Hurst@golder.com, GAL	Sampled By:	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

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: Next Day Time Required: ___ ☒
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O Reg 153 PAHs (Soil)	O Reg 153 ICPMS Metals including Hg and CRVI								# of Bottles	Comments
1		VS181 2'	16/06/09	11:40	Soil		X	X								1	
2		VS181 4'	↓	11:50	↓		X	X								1	
3		VS202	↓	12:30	↓		X	X								1	
4		VS203	↓	13:20	↓		X	X								1	
5																	
6																	
7																	
8																	
9																	
10																	

9-Jun-16 15:30
Parnian Baber
B6B8020
FHB OTT-002

RECEIVED IN OTTAWA

ON ICE PACK

* 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
Aaron Bradshaw	16/06/09	14:30	Fatemeh Habibayah	2016/06/09	15:30	0		17, 17, 17	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

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Maxxam Job #: B6B8020
Report Date: 2016/06/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS181 2'	CMT005-01	Acid Extractable Cobalt (Co)	22	24	0.1	ug/g
VS181 2'	CMT005-01-Lab Dup	Acid Extractable Cobalt (Co)	22	25	0.1	ug/g
VS181 2'	CMT005-01	Acid Extractable Vanadium (V)	86	120	5	ug/g
VS181 2'	CMT005-01-Lab Dup	Acid Extractable Vanadium (V)	86	120	5	ug/g

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 557328-17-01, 557328-15-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/06/13
Report #: R4026596
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6B8935
Received: 2016/06/10, 13:15

Sample Matrix: Soil
Samples Received: 16

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	16	N/A	2016/06/13	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	16	2016/06/11	2016/06/13	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	16	2016/06/10	2016/06/13	OTT SOP-00003	EPA 6020
MOISTURE	16	N/A	2016/06/13	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	16	2016/06/12	2016/06/12	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga

(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Marissa Oddi
Customer Service Representative
13 Jun 2016 17:23:35 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager Assistant
Email: MBingley@maxxam.ca
Phone# (613)274-0573

==========

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Maxxam Job #: B6B8935
Report Date: 2016/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CMX720	CMX720	CMX721	CMX722	CMX723		
Sampling Date			2016/06/10 07:00	2016/06/10 07:00	2016/06/10 07:10	2016/06/10 07:10	2016/06/10 07:20		
COC Number			557328-17-01	557328-17-01	557328-17-01	557328-17-01	557328-17-01		
	UNITS	Criteria	VS204	VS204 Lab-Dup	VS205	VS0205	VS206	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	0.2	0.2	<0.2	0.2	4534585
Acid Extractable Arsenic (As)	ug/g	**18**	<1	<1	<1	<1	<1	1	4534585
Acid Extractable Barium (Ba)	ug/g	**390**	50	49	42	43	20	0.5	4534585
Acid Extractable Beryllium (Be)	ug/g	**4**	0.3	0.3	0.3	0.3	<0.2	0.2	4534585
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	<5	<5	5	4534585
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4534585
Acid Extractable Chromium (Cr)	ug/g	**160**	24	23	21	22	14	1	4534585
Acid Extractable Cobalt (Co)	ug/g	**22**	5.9	5.6	4.5	5.1	4.0	0.1	4534585
Acid Extractable Copper (Cu)	ug/g	**140**	10	10	8.6	8.8	5.0	0.5	4534585
Acid Extractable Lead (Pb)	ug/g	**120**	3	3	10	12	2	1	4534585
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4534585
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4534585
Acid Extractable Nickel (Ni)	ug/g	**100**	13	12	10	11	7.8	0.5	4534585
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4534585
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4534585
Acid Extractable Thallium (Tl)	ug/g	**1**	0.08	0.09	0.07	0.07	<0.05	0.05	4534585
Acid Extractable Uranium (U)	ug/g	**23**	0.74	0.74	0.89	0.96	0.51	0.05	4534585
Acid Extractable Vanadium (V)	ug/g	**86**	30	29	26	28	19	5	4534585
Acid Extractable Zinc (Zn)	ug/g	**340**	23	22	23	21	12	5	4534585

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6B8935
Report Date: 2016/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CMX724	CMX725	CMX726	CMX727	CMX728		
Sampling Date			2016/06/10 08:00	2016/06/10 08:10	2016/06/10 08:20	2016/06/10 08:30	2016/06/10 08:40		
COC Number			557328-17-01	557328-17-01	557328-17-01	557328-17-01	557328-17-01		
	UNITS	Criteria	VS207	VS208	VS209	VS210	VS211	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	7.5	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4534585
Acid Extractable Arsenic (As)	ug/g	18	1	<1	<1	<1	<1	1	4534585
Acid Extractable Barium (Ba)	ug/g	390	20	39	33	23	45	0.5	4534585
Acid Extractable Beryllium (Be)	ug/g	4	<0.2	0.3	0.2	0.2	0.3	0.2	4534585
Acid Extractable Boron (B)	ug/g	120	<5	<5	<5	<5	<5	5	4534585
Acid Extractable Cadmium (Cd)	ug/g	1.2	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4534585
Acid Extractable Chromium (Cr)	ug/g	160	13	21	18	17	16	1	4534585
Acid Extractable Cobalt (Co)	ug/g	22	3.7	5.3	4.7	4.2	5.4	0.1	4534585
Acid Extractable Copper (Cu)	ug/g	140	5.9	8.8	7.3	6.0	7.3	0.5	4534585
Acid Extractable Lead (Pb)	ug/g	120	10	7	4	3	4	1	4534585
Acid Extractable Mercury (Hg)	ug/g	0.27	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4534585
Acid Extractable Molybdenum (Mo)	ug/g	6.9	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4534585
Acid Extractable Nickel (Ni)	ug/g	100	7.1	11	9.2	8.8	11	0.5	4534585
Acid Extractable Selenium (Se)	ug/g	2.4	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4534585
Acid Extractable Silver (Ag)	ug/g	20	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4534585
Acid Extractable Thallium (Tl)	ug/g	1	<0.05	0.07	0.06	<0.05	0.08	0.05	4534585
Acid Extractable Uranium (U)	ug/g	23	0.46	0.73	0.67	0.49	0.68	0.05	4534585
Acid Extractable Vanadium (V)	ug/g	86	20	27	23	27	22	5	4534585
Acid Extractable Zinc (Zn)	ug/g	340	22	22	16	15	19	5	4534585

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CMX740	CMX741	CMX742	CMX743	CMX744		
Sampling Date			2016/06/10 09:00	2016/06/10 09:00	2016/06/10 09:20	2016/06/10 09:30	2016/06/10 10:00		
COC Number			557328-15-01	557328-15-01	557328-15-01	557328-15-01	557328-15-01		
	UNITS	Criteria	VS212	VS0212	VS213	VS214	VS215	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4534585
Acid Extractable Arsenic (As)	ug/g	**18**	<1	<1	<1	<1	<1	1	4534585
Acid Extractable Barium (Ba)	ug/g	**390**	23	23	34	57	44	0.5	4534585
Acid Extractable Beryllium (Be)	ug/g	**4**	0.2	0.3	0.3	0.4	0.2	0.2	4534585
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	<5	<5	5	4534585
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4534585
Acid Extractable Chromium (Cr)	ug/g	**160**	15	19	23	21	16	1	4534585
Acid Extractable Cobalt (Co)	ug/g	**22**	4.0	4.6	5.7	4.8	4.1	0.1	4534585
Acid Extractable Copper (Cu)	ug/g	**140**	5.4	5.9	8.0	13	9.8	0.5	4534585
Acid Extractable Lead (Pb)	ug/g	**120**	6	6	3	3	4	1	4534585
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4534585
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4534585
Acid Extractable Nickel (Ni)	ug/g	**100**	7.8	9.4	13	13	11	0.5	4534585
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4534585
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4534585
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.05	0.05	0.07	0.08	0.07	0.05	4534585
Acid Extractable Uranium (U)	ug/g	**23**	0.55	0.87	0.58	0.99	0.72	0.05	4534585
Acid Extractable Vanadium (V)	ug/g	**86**	20	24	28	25	17	5	4534585
Acid Extractable Zinc (Zn)	ug/g	**340**	18	23	20	21	17	5	4534585

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6B8935
Report Date: 2016/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CMX745	CMX746		
Sampling Date			2016/06/10 10:10	2016/06/10 10:30		
COC Number			557328-15-01	557328-15-01		
	UNITS	Criteria	VS216	VS217	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	7.5	<0.2	<0.2	0.2	4534585
Acid Extractable Arsenic (As)	ug/g	18	<1	<1	1	4534585
Acid Extractable Barium (Ba)	ug/g	390	39	49	0.5	4534585
Acid Extractable Beryllium (Be)	ug/g	4	0.3	0.3	0.2	4534585
Acid Extractable Boron (B)	ug/g	120	<5	<5	5	4534585
Acid Extractable Cadmium (Cd)	ug/g	1.2	<0.1	<0.1	0.1	4534585
Acid Extractable Chromium (Cr)	ug/g	160	18	21	1	4534585
Acid Extractable Cobalt (Co)	ug/g	22	3.5	4.9	0.1	4534585
Acid Extractable Copper (Cu)	ug/g	140	8.5	12	0.5	4534585
Acid Extractable Lead (Pb)	ug/g	120	2	3	1	4534585
Acid Extractable Mercury (Hg)	ug/g	0.27	<0.05	<0.05	0.05	4534585
Acid Extractable Molybdenum (Mo)	ug/g	6.9	<0.5	<0.5	0.5	4534585
Acid Extractable Nickel (Ni)	ug/g	100	11	13	0.5	4534585
Acid Extractable Selenium (Se)	ug/g	2.4	<0.5	<0.5	0.5	4534585
Acid Extractable Silver (Ag)	ug/g	20	<0.2	<0.2	0.2	4534585
Acid Extractable Thallium (Tl)	ug/g	1	0.05	0.08	0.05	4534585
Acid Extractable Uranium (U)	ug/g	23	1.6	1.1	0.05	4534585
Acid Extractable Vanadium (V)	ug/g	86	18	23	5	4534585
Acid Extractable Zinc (Zn)	ug/g	340	33	25	5	4534585

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6B8935
Report Date: 2016/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CMX720	CMX721	CMX721	CMX722	CMX723		
Sampling Date			2016/06/10 07:00	2016/06/10 07:10	2016/06/10 07:10	2016/06/10 07:10	2016/06/10 07:20		
COC Number			557328-17-01	557328-17-01	557328-17-01	557328-17-01	557328-17-01		
	UNITS	Criteria	VS204	VS205	VS205 Lab-Dup	VS0205	VS206	RDL	QC Batch
Inorganics									
Moisture	%	-	10	11	11	11	11	0.2	4536025
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	4534542
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0072	0.0069	0.012	<0.0050	0.0050	4536026
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0082	0.0082	0.015	<0.0050	0.0050	4536026
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.013	0.012	0.027	<0.0050	0.0050	4536026
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	0.0066	<0.0050	0.0050	4536026
Benzo(k)fluoranthene	ug/g	**0.78**	0.0072	<0.0050	0.0063	0.0076	<0.0050	0.0050	4536026
Chrysene	ug/g	**7**	<0.0050	0.0067	0.010	0.019	<0.0050	0.0050	4536026
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Fluoranthene	ug/g	**0.69**	<0.0050	0.011	0.012	0.019	<0.0050	0.0050	4536026
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Phenanthrene	ug/g	**6.2**	<0.0050	0.0062	0.0069	0.0098	<0.0050	0.0050	4536026
Pyrene	ug/g	**78**	<0.0050	0.010	<0.0050	0.019	<0.0050	0.0050	4536026
Surrogate Recovery (%)									
D10-Anthracene	%	-	90	72	73	68	83		4536026
D14-Terphenyl (FS)	%	-	74	69	70	70	70		4536026
D8-Acenaphthylene	%	-	62	64	64	63	68		4536026

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6B8935
Report Date: 2016/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CMX724	CMX725	CMX726	CMX727	CMX728		
Sampling Date			2016/06/10 08:00	2016/06/10 08:10	2016/06/10 08:20	2016/06/10 08:30	2016/06/10 08:40		
COC Number			557328-17-01	557328-17-01	557328-17-01	557328-17-01	557328-17-01		
	UNITS	Criteria	VS207	VS208	VS209	VS210	VS211	RDL	QC Batch
Inorganics									
Moisture	%	-	8.4	13	8.2	12	5.9	0.2	4536025
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4534542
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Benzo(a)anthracene	ug/g	**0.5**	0.0055	0.0090	<0.0050	<0.0050	<0.0050	0.0050	4536026
Benzo(a)pyrene	ug/g	**0.3**	0.0060	0.0060	<0.0050	<0.0050	<0.0050	0.0050	4536026
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.011	0.012	<0.0050	<0.0050	<0.0050	0.0050	4536026
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Benzo(k)fluoranthene	ug/g	**0.78**	0.0050	0.010	<0.0050	<0.0050	<0.0050	0.0050	4536026
Chrysene	ug/g	**7**	0.0073	0.010	<0.0050	<0.0050	<0.0050	0.0050	4536026
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Fluoranthene	ug/g	**0.69**	0.0087	0.014	<0.0050	<0.0050	<0.0050	0.0050	4536026
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Phenanthrene	ug/g	**6.2**	0.0060	0.0060	<0.0050	<0.0050	<0.0050	0.0050	4536026
Pyrene	ug/g	**78**	0.0092	0.012	<0.0050	<0.0050	<0.0050	0.0050	4536026
Surrogate Recovery (%)									
D10-Anthracene	%	-	73	82	127	79	78		4536026
D14-Terphenyl (FS)	%	-	67	70	51	66	65		4536026
D8-Acenaphthylene	%	-	62	62	62	63	60		4536026

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6B8935
Report Date: 2016/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CMX740	CMX741	CMX742	CMX743	CMX744		
Sampling Date			2016/06/10 09:00	2016/06/10 09:00	2016/06/10 09:20	2016/06/10 09:30	2016/06/10 10:00		
COC Number			557328-15-01	557328-15-01	557328-15-01	557328-15-01	557328-15-01		
	UNITS	Criteria	VS212	VS0212	VS213	VS214	VS215	RDL	QC Batch
Inorganics									
Moisture	%	-	10	13	14	10	6.6	0.2	4536025
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4534542
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0068	<0.0050	<0.0050	<0.0050	0.0050	4536026
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0079	<0.0050	<0.0050	<0.0050	0.0050	4536026
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0053	<0.0050	<0.0050	<0.0050	0.0050	4536026
Chrysene	ug/g	**7**	0.0052	0.0068	<0.0050	<0.0050	<0.0050	0.0050	4536026
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Fluoranthene	ug/g	**0.69**	0.0073	0.0084	<0.0050	<0.0050	<0.0050	0.0050	4536026
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Pyrene	ug/g	**78**	0.0057	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4536026
Surrogate Recovery (%)									
D10-Anthracene	%	-	81	73	83	73	81		4536026
D14-Terphenyl (FS)	%	-	73	68	73	69	74		4536026
D8-Acenaphthylene	%	-	66	63	70	66	73		4536026

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Report Date: 2016/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CMX745	CMX746		
Sampling Date			2016/06/10 10:10	2016/06/10 10:30		
COC Number			557328-15-01	557328-15-01		
	UNITS	Criteria	VS216	VS217	RDL	QC Batch
Inorganics						
Moisture	%	-	9.8	15	0.2	4536025
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	0.014	4534542
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	0.0050	4536026
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	0.0050	4536026
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	0.0050	4536026
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	0.0050	4536026
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0050	4536026
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	4536026
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	0.0050	4536026
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	4536026
Chrysene	ug/g	**7**	<0.0050	<0.0050	0.0050	4536026
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	0.0050	4536026
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	0.0050	4536026
Fluorene	ug/g	**62**	<0.0050	<0.0050	0.0050	4536026
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	0.0050	4536026
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	4536026
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	4536026
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	0.0050	4536026
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	0.0050	4536026
Pyrene	ug/g	**78**	<0.0050	<0.0050	0.0050	4536026
Surrogate Recovery (%)						
D10-Anthracene	%	-	70	72		4536026
D14-Terphenyl (FS)	%	-	69	72		4536026
D8-Acenaphthylene	%	-	67	71		4536026

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Report Date: 2016/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CMX720	CMX721	CMX722	CMX723	CMX723		
Sampling Date			2016/06/10 07:00	2016/06/10 07:10	2016/06/10 07:10	2016/06/10 07:20	2016/06/10 07:20		
COC Number			557328-17-01	557328-17-01	557328-17-01	557328-17-01	557328-17-01		
	UNITS	Criteria	VS204	VS205	VS0205	VS206	VS206 Lab-Dup	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.5	0.4	0.3	0.3	0.3	0.2	4535752

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			CMX724	CMX725	CMX726	CMX727	CMX728		
Sampling Date			2016/06/10 08:00	2016/06/10 08:10	2016/06/10 08:20	2016/06/10 08:30	2016/06/10 08:40		
COC Number			557328-17-01	557328-17-01	557328-17-01	557328-17-01	557328-17-01		
	UNITS	Criteria	VS207	VS208	VS209	VS210	VS211	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.2	0.3	0.3	0.3	0.2	0.2	4535752

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			CMX740	CMX741	CMX742	CMX743	CMX744		
Sampling Date			2016/06/10 09:00	2016/06/10 09:00	2016/06/10 09:20	2016/06/10 09:30	2016/06/10 10:00		
COC Number			557328-15-01	557328-15-01	557328-15-01	557328-15-01	557328-15-01		
	UNITS	Criteria	VS212	VS0212	VS213	VS214	VS215	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.2	0.3	0.3	<0.2	<0.2	0.2	4535752

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CMX745	CMX746		
Sampling Date			2016/06/10 10:10	2016/06/10 10:30		
COC Number			557328-15-01	557328-15-01		
	UNITS	Criteria	VS216	VS217	RDL	QC Batch
Inorganics						
Chromium (VI)	ug/g	8	0.2	0.3	0.2	4535752

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6B8935
Report Date: 2016/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CMX720
Sample ID: VS204
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4534542	N/A	2016/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

Maxxam ID: CMX720 Dup
Sample ID: VS204
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera

Maxxam ID: CMX721
Sample ID: VS205
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4534542	N/A	2016/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

Maxxam ID: CMX721 Dup
Sample ID: VS205
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

Maxxam ID: CMX722
Sample ID: VS0205
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4534542	N/A	2016/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

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Maxxam Job #: B6B8935
Report Date: 2016/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CMX723
Sample ID: VS206
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4534542	N/A	2016/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

Maxxam ID: CMX723 Dup
Sample ID: VS206
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera

Maxxam ID: CMX724
Sample ID: VS207
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4534542	N/A	2016/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

Maxxam ID: CMX725
Sample ID: VS208
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4534542	N/A	2016/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

Maxxam ID: CMX726
Sample ID: VS209
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4534542	N/A	2016/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

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Maxxam Job #: B6B8935
Report Date: 2016/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CMX727
Sample ID: VS210
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4534542	N/A	2016/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

Maxxam ID: CMX728
Sample ID: VS211
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4534542	N/A	2016/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

Maxxam ID: CMX740
Sample ID: VS212
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4534542	N/A	2016/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

Maxxam ID: CMX741
Sample ID: VS0212
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4534542	N/A	2016/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

Maxxam ID: CMX742
Sample ID: VS213
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4534542	N/A	2016/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera

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Report Date: 2016/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CMX742
Sample ID: VS213
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

Maxxam ID: CMX743
Sample ID: VS214
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4534542	N/A	2016/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

Maxxam ID: CMX744
Sample ID: VS215
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4534542	N/A	2016/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

Maxxam ID: CMX745
Sample ID: VS216
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4534542	N/A	2016/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

Maxxam ID: CMX746
Sample ID: VS217
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4534542	N/A	2016/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4535752	2016/06/11	2016/06/13	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4534585	2016/06/10	2016/06/13	Raigamage Perera
MOISTURE	BAL	4536025	N/A	2016/06/13	Liliana Gaburici

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Report Date: 2016/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CMX746
Sample ID: VS217
Matrix: Soil

Collected: 2016/06/10
Shipped:
Received: 2016/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4536026	2016/06/12	2016/06/12	Arezoo Habibagahi

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Client Project #: 1525113
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GENERAL COMMENTS

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

Package 1	15.7°C

Custody seal was present and intact on the cooler.

Results relate only to the items tested.

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Maxxam Job #: B6B8935
Report Date: 2016/06/13

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4536026	D10-Anthracene	2016/06/12	72	50 - 130	80	50 - 130	85	%		
4536026	D14-Terphenyl (FS)	2016/06/12	72	50 - 130	73	50 - 130	74	%		
4536026	D8-Acenaphthylene	2016/06/12	62	50 - 130	70	50 - 130	71	%		
4534585	Acid Extractable Antimony (Sb)	2016/06/13	95	75 - 125	102	80 - 120	<0.2	ug/g	NC	35
4534585	Acid Extractable Arsenic (As)	2016/06/13	106	75 - 125	106	80 - 120	<1	ug/g	NC	35
4534585	Acid Extractable Barium (Ba)	2016/06/13	NC	75 - 125	104	80 - 120	<0.5	ug/g	1.3	35
4534585	Acid Extractable Beryllium (Be)	2016/06/13	106	75 - 125	106	80 - 120	<0.2	ug/g	NC	35
4534585	Acid Extractable Boron (B)	2016/06/13	107	75 - 125	108	80 - 120	<5	ug/g	NC	35
4534585	Acid Extractable Cadmium (Cd)	2016/06/13	102	75 - 125	103	80 - 120	<0.1	ug/g	NC	35
4534585	Acid Extractable Chromium (Cr)	2016/06/13	NC	75 - 125	109	80 - 120	<1	ug/g	3.5	35
4534585	Acid Extractable Cobalt (Co)	2016/06/13	109	75 - 125	112	80 - 120	<0.1	ug/g	5.4	35
4534585	Acid Extractable Copper (Cu)	2016/06/13	104	75 - 125	106	80 - 120	<0.5	ug/g	2.1	35
4534585	Acid Extractable Lead (Pb)	2016/06/13	100	75 - 125	101	80 - 120	<1	ug/g	NC	35
4534585	Acid Extractable Mercury (Hg)	2016/06/13	99	75 - 125	99	80 - 120	<0.05	ug/g	NC	35
4534585	Acid Extractable Molybdenum (Mo)	2016/06/13	102	75 - 125	101	80 - 120	<0.5	ug/g	NC	35
4534585	Acid Extractable Nickel (Ni)	2016/06/13	NC	75 - 125	111	80 - 120	<0.5	ug/g	8.3	35
4534585	Acid Extractable Selenium (Se)	2016/06/13	111	75 - 125	111	80 - 120	<0.5	ug/g	NC	35
4534585	Acid Extractable Silver (Ag)	2016/06/13	99	75 - 125	99	80 - 120	<0.2	ug/g	NC	35
4534585	Acid Extractable Thallium (Tl)	2016/06/13	100	75 - 125	102	80 - 120	<0.05	ug/g	NC	35
4534585	Acid Extractable Uranium (U)	2016/06/13	101	75 - 125	104	80 - 120	<0.05	ug/g	1.0	25
4534585	Acid Extractable Vanadium (V)	2016/06/13	NC	75 - 125	113	80 - 120	<5	ug/g	2.1	35
4534585	Acid Extractable Zinc (Zn)	2016/06/13	NC	75 - 125	107	80 - 120	<5	ug/g	NC	35
4535752	Chromium (VI)	2016/06/13	80	75 - 125	82	80 - 120	<0.2	ug/g	NC	35
4536025	Moisture	2016/06/13							0.92	50
4536026	1-Methylnaphthalene	2016/06/12	83	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4536026	2-Methylnaphthalene	2016/06/12	85	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
4536026	Acenaphthene	2016/06/12	72	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
4536026	Acenaphthylene	2016/06/12	70	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
4536026	Anthracene	2016/06/12	84	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
4536026	Benzo(a)anthracene	2016/06/12	105	50 - 130	117	50 - 130	<0.0050	ug/g	NC	40
4536026	Benzo(a)pyrene	2016/06/12	107	50 - 130	122	50 - 130	<0.0050	ug/g	NC	40

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Report Date: 2016/06/13

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4536026	Benzo(b/j)fluoranthene	2016/06/12	105	50 - 130	129	50 - 130	<0.0050	ug/g	NC	40
4536026	Benzo(g,h,i)perylene	2016/06/12	95	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4536026	Benzo(k)fluoranthene	2016/06/12	80	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
4536026	Chrysene	2016/06/12	99	50 - 130	116	50 - 130	<0.0050	ug/g	NC	40
4536026	Dibenz(a,h)anthracene	2016/06/12	86	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
4536026	Fluoranthene	2016/06/12	86	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
4536026	Fluorene	2016/06/12	74	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
4536026	Indeno(1,2,3-cd)pyrene	2016/06/12	91	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4536026	Naphthalene	2016/06/12	80	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
4536026	Phenanthrene	2016/06/12	77	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4536026	Pyrene	2016/06/12	91	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Steve Roberts, Ottawa Lab Manager

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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CHAIN OF CUSTODY RECORD

Page 1 of 2

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557328
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#557328-17-01	Parnian Baber
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com, Paul_Hurst@golder.com, GAL	Sampled By:	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

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 (applies to entire submission)
Date Required: Next Day Time Required: ___ ☒
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	# of Bottles	Comments
1		VS204	16/06/10	700	Soil		X	X	1	
2		VS205		710			X	X	1	
3		VS0205		710			X	X	1	
4		VS206		720			X	X	1	
5		VS207		800			X	X	1	
6		VS208		810			X	X	1	
7		VS209		820			X	X	1	
8		VS210		830			X	X	1	
9		VS211		840			X	X	1	
10										ON ICE pack.

10-Jun-16 13:15
Parnian Baber
B6B8935
FHB OTT-002

RECEIVED 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
Aaron Bradshaw	16/06/10	12:45	HA Fatemeh Vahabzadeh	2016/06/10	13:15	0		16, 15, 16	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

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

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CHAIN OF CUSTODY RECORD

Page 22

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:	
Address:	1931 Robertson Rd	Address:		Project:	1526113
	Ottawa ON K2H 5B7			Project Name:	
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:	
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com, Paul_Hurst@golder.com; GAL	Sampled By:	Aaron Bradshaw

Laboratory Use Only:

Maxxam Job #:	Bottle Order #:
	557328
COC #:	Project Manager:
C#557328-15-01	Parrian Baber

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

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: Next Day Time Required: ___ ☒
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	# of Bottles	Comments
1		VS212	16/06/10	900	Soil		X	X	1	
2		VS0212	↓	900	↓		X	X	1	
3		VS213	↓	920	↓		X	X	1	
4		VS214	↓	930	↓		X	X	1	
5		VS215	↓	1000	↓		X	X	1	
6		VS216	↓	1010	↓		X	X	1	
7		VS217	↓	1030	↓		X	X	1	
8										
9										RECEIVED IN OTTAWA
10										ON ICE PACK.

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
A. Bradshaw / Aaron Bradshaw	16/06/10	12:45	[signature] Fatemeh Habibagahi	2016/06/10	13:15	0

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	16, 15, 16	Present	✓	
		Intact		

White: Maxxam Yellow: Client

* 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.

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B6B8935
Report Date: 2016/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 557328-14-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/06/16
Report #: R4031096
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6C2539
Received: 2016/06/15, 15:30

Sample Matrix: Soil
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	7	N/A	2016/06/16	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	7	2016/06/16	2016/06/16	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	7	2016/06/16	2016/06/16	OTT SOP-00003	EPA 6020
MOISTURE	7	N/A	2016/06/16	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	7	2016/06/15	2016/06/15	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga

(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key
Madison Bingley
Project Manager Assistant
16 Jun 2016 16:57:47 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager Assistant
Email: MBingley@maxxam.ca
Phone# (613)274-0573

==========

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
A Bureau Veritas Group Company

Maxxam Job #: B6C2539
Report Date: 2016/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CNQ473	CNQ473	CNQ474	CNQ475	CNQ476		
Sampling Date			2016/06/15 09:00	2016/06/15 09:00	2016/06/15 09:30	2016/06/15 09:40	2016/06/15 09:50		
COC Number			557328-14-01	557328-14-01	557328-14-01	557328-14-01	557328-14-01		
	UNITS	Criteria	VS072B	VS072B Lab-Dup	VS080B	VS081B	VS108B	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4541812
Acid Extractable Arsenic (As)	ug/g	**18**	1	1	<1	<1	<1	1	4541812
Acid Extractable Barium (Ba)	ug/g	**390**	**410**	390	320	**410**	370	0.5	4541812
Acid Extractable Beryllium (Be)	ug/g	**4**	1.0	1.0	0.7	0.9	1.0	0.2	4541812
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	<5	<5	5	4541812
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4541812
Acid Extractable Chromium (Cr)	ug/g	**160**	100	100	78	110	110	1	4541812
Acid Extractable Cobalt (Co)	ug/g	**22**	**26**	**27**	**23**	**27**	**23**	0.1	4541812
Acid Extractable Copper (Cu)	ug/g	**140**	49	51	42	59	50	0.5	4541812
Acid Extractable Lead (Pb)	ug/g	**120**	7	7	6	7	7	1	4541812
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4541812
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4541812
Acid Extractable Nickel (Ni)	ug/g	**100**	59	60	51	67	59	0.5	4541812
Acid Extractable Selenium (Se)	ug/g	**2.4**	1.8	1.6	1.7	1.3	1.6	0.5	4541812
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4541812
Acid Extractable Thallium (Tl)	ug/g	**1**	0.50	0.49	0.39	0.47	0.52	0.05	4541812
Acid Extractable Uranium (U)	ug/g	**23**	1.9	1.8	1.0	1.5	1.6	0.05	4541812
Acid Extractable Vanadium (V)	ug/g	**86**	**110**	**110**	**97**	**120**	**110**	5	4541812
Acid Extractable Zinc (Zn)	ug/g	**340**	130	130	110	140	130	5	4541812

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6C2539
Report Date: 2016/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CNQ477	CNQ478	CNQ479		
Sampling Date			2016/06/15 12:30	2016/06/15 14:00	2016/06/15 14:30		
COC Number			557328-14-01	557328-14-01	557328-14-01		
	UNITS	Criteria	VS037B	VS218	VS219	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	0.2	4541812
Acid Extractable Arsenic (As)	ug/g	**18**	<1	1	2	1	4541812
Acid Extractable Barium (Ba)	ug/g	**390**	40	130	200	0.5	4541812
Acid Extractable Beryllium (Be)	ug/g	**4**	0.3	0.4	0.6	0.2	4541812
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	8	5	4541812
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	0.1	4541812
Acid Extractable Chromium (Cr)	ug/g	**160**	19	26	45	1	4541812
Acid Extractable Cobalt (Co)	ug/g	**22**	3.8	8.2	13	0.1	4541812
Acid Extractable Copper (Cu)	ug/g	**140**	7.5	15	24	0.5	4541812
Acid Extractable Lead (Pb)	ug/g	**120**	3	4	6	1	4541812
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	0.05	4541812
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	1.1	0.5	4541812
Acid Extractable Nickel (Ni)	ug/g	**100**	11	16	28	0.5	4541812
Acid Extractable Selenium (Se)	ug/g	**2.4**	1.2	1.7	1.5	0.5	4541812
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	0.2	4541812
Acid Extractable Thallium (Tl)	ug/g	**1**	0.06	0.15	0.22	0.05	4541812
Acid Extractable Uranium (U)	ug/g	**23**	0.97	0.51	1.0	0.05	4541812
Acid Extractable Vanadium (V)	ug/g	**86**	21	42	65	5	4541812
Acid Extractable Zinc (Zn)	ug/g	**340**	24	43	81	5	4541812

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6C2539
Report Date: 2016/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CNQ473	CNQ474	CNQ474	CNQ475	CNQ476		
Sampling Date			2016/06/15 09:00	2016/06/15 09:30	2016/06/15 09:30	2016/06/15 09:40	2016/06/15 09:50		
COC Number			557328-14-01	557328-14-01	557328-14-01	557328-14-01	557328-14-01		
	UNITS	Criteria	VS072B	VS080B	VS080B Lab-Dup	VS081B	VS108B	RDL	QC Batch
Inorganics									
Moisture	%	-	29	27	26	30	29	0.2	4540767
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	4540765
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0051	<0.0050	<0.0050	<0.0050	0.0050	4540769
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4540769
Surrogate Recovery (%)									
D10-Anthracene	%	-	103	109	95	110	108		4540769
D14-Terphenyl (FS)	%	-	84	81	84	81	83		4540769
D8-Acenaphthylene	%	-	63	63	65	62	61		4540769

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6C2539
Report Date: 2016/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CNQ477	CNQ478	CNQ479		
Sampling Date			2016/06/15 12:30	2016/06/15 14:00	2016/06/15 14:30		
COC Number			557328-14-01	557328-14-01	557328-14-01		
	UNITS	Criteria	VS037B	VS218	VS219	RDL	QC Batch
Inorganics							
Moisture	%	-	18	22	28	0.2	4540767
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	0.014	4540765
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	0.0050	4540769
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	0.0050	4540769
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0050	4540769
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	0.0050	4540769
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	0.0050	4540769
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	4540769
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	0.0050	4540769
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	4540769
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	0.0050	4540769
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	0.0050	4540769
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	0.0050	4540769
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0050	4540769
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	0.0050	4540769
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	4540769
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	4540769
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	0.0050	4540769
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	0.0050	4540769
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	0.0050	4540769
Surrogate Recovery (%)							
D10-Anthracene	%	-	101	105	99		4540769
D14-Terphenyl (FS)	%	-	73	80	77		4540769
D8-Acenaphthylene	%	-	57	60	56		4540769

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6C2539
Report Date: 2016/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CNQ473	CNQ474	CNQ475	CNQ476	CNQ477		
Sampling Date			2016/06/15 09:00	2016/06/15 09:30	2016/06/15 09:40	2016/06/15 09:50	2016/06/15 12:30		
COC Number			557328-14-01	557328-14-01	557328-14-01	557328-14-01	557328-14-01		
	UNITS	Criteria	VS072B	VS080B	VS081B	VS108B	VS037B	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.7	0.6	0.8	0.6	<0.2	0.2	4541585

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			CNQ478	CNQ479	CNQ479		
Sampling Date			2016/06/15 14:00	2016/06/15 14:30	2016/06/15 14:30		
COC Number			557328-14-01	557328-14-01	557328-14-01		
	UNITS	Criteria	VS218	VS219	VS219 Lab-Dup	RDL	QC Batch
Inorganics							
Chromium (VI)	ug/g	8	0.2	<0.2	<0.2	0.2	4541585

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6C2539
Report Date: 2016/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CNQ473
Sample ID: VS072B
Matrix: Soil

Collected: 2016/06/15
Shipped:
Received: 2016/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4540765	N/A	2016/06/16	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4541585	2016/06/16	2016/06/16	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4541812	2016/06/16	2016/06/16	Raigamage Perera
MOISTURE	BAL	4540767	N/A	2016/06/16	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4540769	2016/06/15	2016/06/15	Arezoo Habibagahi

Maxxam ID: CNQ473 Dup
Sample ID: VS072B
Matrix: Soil

Collected: 2016/06/15
Shipped:
Received: 2016/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4541812	2016/06/16	2016/06/16	Raigamage Perera

Maxxam ID: CNQ474
Sample ID: VS080B
Matrix: Soil

Collected: 2016/06/15
Shipped:
Received: 2016/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4540765	N/A	2016/06/16	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4541585	2016/06/16	2016/06/16	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4541812	2016/06/16	2016/06/16	Raigamage Perera
MOISTURE	BAL	4540767	N/A	2016/06/16	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4540769	2016/06/15	2016/06/15	Arezoo Habibagahi

Maxxam ID: CNQ474 Dup
Sample ID: VS080B
Matrix: Soil

Collected: 2016/06/15
Shipped:
Received: 2016/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4540767	N/A	2016/06/16	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4540769	2016/06/15	2016/06/15	Arezoo Habibagahi

Maxxam ID: CNQ475
Sample ID: VS081B
Matrix: Soil

Collected: 2016/06/15
Shipped:
Received: 2016/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4540765	N/A	2016/06/16	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4541585	2016/06/16	2016/06/16	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4541812	2016/06/16	2016/06/16	Raigamage Perera
MOISTURE	BAL	4540767	N/A	2016/06/16	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4540769	2016/06/15	2016/06/15	Arezoo Habibagahi

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A Bureau Veritas Group Company

Maxxam Job #: B6C2539
Report Date: 2016/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CNQ476
Sample ID: VS108B
Matrix: Soil

Collected: 2016/06/15
Shipped:
Received: 2016/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4540765	N/A	2016/06/16	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4541585	2016/06/16	2016/06/16	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4541812	2016/06/16	2016/06/16	Raigamage Perera
MOISTURE	BAL	4540767	N/A	2016/06/16	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4540769	2016/06/15	2016/06/15	Arezoo Habibagahi

Maxxam ID: CNQ477
Sample ID: VS037B
Matrix: Soil

Collected: 2016/06/15
Shipped:
Received: 2016/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4540765	N/A	2016/06/16	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4541585	2016/06/16	2016/06/16	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4541812	2016/06/16	2016/06/16	Raigamage Perera
MOISTURE	BAL	4540767	N/A	2016/06/16	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4540769	2016/06/15	2016/06/15	Arezoo Habibagahi

Maxxam ID: CNQ478
Sample ID: VS218
Matrix: Soil

Collected: 2016/06/15
Shipped:
Received: 2016/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4540765	N/A	2016/06/16	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4541585	2016/06/16	2016/06/16	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4541812	2016/06/16	2016/06/16	Raigamage Perera
MOISTURE	BAL	4540767	N/A	2016/06/16	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4540769	2016/06/15	2016/06/15	Arezoo Habibagahi

Maxxam ID: CNQ479
Sample ID: VS219
Matrix: Soil

Collected: 2016/06/15
Shipped:
Received: 2016/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4540765	N/A	2016/06/16	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4541585	2016/06/16	2016/06/16	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4541812	2016/06/16	2016/06/16	Raigamage Perera
MOISTURE	BAL	4540767	N/A	2016/06/16	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4540769	2016/06/15	2016/06/15	Arezoo Habibagahi

Maxxam ID: CNQ479 Dup
Sample ID: VS219
Matrix: Soil

Collected: 2016/06/15
Shipped:
Received: 2016/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4541585	2016/06/16	2016/06/16	Sally Coughlin

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Report Date: 2016/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

GENERAL COMMENTS

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

Package 1	25.3°C

Results relate only to the items tested.

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Maxxam Job #: B6C2539
Report Date: 2016/06/16

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4540769	D10-Anthracene	2016/06/15	85	50 - 130	83	50 - 130	112	%		
4540769	D14-Terphenyl (FS)	2016/06/15	78	50 - 130	79	50 - 130	82	%		
4540769	D8-Acenaphthylene	2016/06/15	64	50 - 130	68	50 - 130	63	%		
4540767	Moisture	2016/06/16							4.1	50
4540769	1-Methylnaphthalene	2016/06/15	80	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4540769	2-Methylnaphthalene	2016/06/15	79	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
4540769	Acenaphthene	2016/06/15	69	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
4540769	Acenaphthylene	2016/06/15	69	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
4540769	Anthracene	2016/06/15	83	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4540769	Benzo(a)anthracene	2016/06/15	107	50 - 130	114	50 - 130	<0.0050	ug/g	NC	40
4540769	Benzo(a)pyrene	2016/06/15	91	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
4540769	Benzo(b/j)fluoranthene	2016/06/15	89	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
4540769	Benzo(g,h,i)perylene	2016/06/15	94	50 - 130	107	50 - 130	<0.0050	ug/g	NC	40
4540769	Benzo(k)fluoranthene	2016/06/15	73	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4540769	Chrysene	2016/06/15	94	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
4540769	Dibenz(a,h)anthracene	2016/06/15	98	50 - 130	111	50 - 130	<0.0050	ug/g	NC	40
4540769	Fluoranthene	2016/06/15	85	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4540769	Fluorene	2016/06/15	69	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
4540769	Indeno(1,2,3-cd)pyrene	2016/06/15	99	50 - 130	107	50 - 130	<0.0050	ug/g	NC	40
4540769	Naphthalene	2016/06/15	75	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
4540769	Phenanthrene	2016/06/15	71	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
4540769	Pyrene	2016/06/15	87	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4541585	Chromium (VI)	2016/06/16	0 (1)	75 - 125	89	80 - 120	<0.2	ug/g	NC	35
4541812	Acid Extractable Antimony (Sb)	2016/06/16	78	75 - 125	101	80 - 120	<0.2	ug/g	NC	35
4541812	Acid Extractable Arsenic (As)	2016/06/16	96	75 - 125	102	80 - 120	<1	ug/g	NC	35
4541812	Acid Extractable Barium (Ba)	2016/06/16	NC	75 - 125	103	80 - 120	<0.5	ug/g	4.2	35
4541812	Acid Extractable Beryllium (Be)	2016/06/16	104	75 - 125	106	80 - 120	<0.2	ug/g	NC	35
4541812	Acid Extractable Boron (B)	2016/06/16	101	75 - 125	106	80 - 120	<5	ug/g	NC	35
4541812	Acid Extractable Cadmium (Cd)	2016/06/16	103	75 - 125	102	80 - 120	<0.1	ug/g	NC	35
4541812	Acid Extractable Chromium (Cr)	2016/06/16	NC	75 - 125	104	80 - 120	<1	ug/g	1.8	35
4541812	Acid Extractable Cobalt (Co)	2016/06/16	NC	75 - 125	107	80 - 120	<0.1	ug/g	1.9	35

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Maxxam Job #: B6C2539
Report Date: 2016/06/16

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4541812	Acid Extractable Copper (Cu)	2016/06/16	NC	75 - 125	105	80 - 120	<0.5	ug/g	3.8	35
4541812	Acid Extractable Lead (Pb)	2016/06/16	97	75 - 125	104	80 - 120	<1	ug/g	3.4	35
4541812	Acid Extractable Mercury (Hg)	2016/06/16	100	75 - 125	105	80 - 120	<0.05	ug/g	NC	35
4541812	Acid Extractable Molybdenum (Mo)	2016/06/16	101	75 - 125	102	80 - 120	<0.5	ug/g	NC	35
4541812	Acid Extractable Nickel (Ni)	2016/06/16	NC	75 - 125	108	80 - 120	<0.5	ug/g	2.0	35
4541812	Acid Extractable Selenium (Se)	2016/06/16	102	75 - 125	110	80 - 120	0.9, RDL=0.5	ug/g	NC	35
4541812	Acid Extractable Silver (Ag)	2016/06/16	102	75 - 125	102	80 - 120	<0.2	ug/g	NC	35
4541812	Acid Extractable Thallium (Tl)	2016/06/16	98	75 - 125	101	80 - 120	<0.05	ug/g	2.8	35
4541812	Acid Extractable Uranium (U)	2016/06/16	102	75 - 125	107	80 - 120	<0.05	ug/g	2.1	25
4541812	Acid Extractable Vanadium (V)	2016/06/16	NC	75 - 125	107	80 - 120	<5	ug/g	2.3	35
4541812	Acid Extractable Zinc (Zn)	2016/06/16	NC	75 - 125	106	80 - 120	<5	ug/g	2.3	35

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B6C2539
Report Date: 2016/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Steve Roberts, Ottawa Lab Manager

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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6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557328
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#557328-14-01	Parnian Baber
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	Aaron Brakhaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Field Filtered (please circle): Metals / Hg / Cr VI

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 applied to entire submission)
Date Required: Next Day Time Required: ___ ☒
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPM2 Metals including Hg and CRVI	# of Bottles	Comments
1		VS072b	16/06/15	0900	Soil		X	X	1	
2		VS080b	↓	0930	↓		X	X	1	
3		VS081b		0940			X	X	1	
4		VS108b		0950			X	X	1	
5		VS037b		1230			X	X	1	
6		VS218		1400			X	X	1	
7		VS219	↓	1430	↓		X	X	1	
8										
9										
10										ON ICE PACK

15-Jun-16 15:30
Parnian Baber
B6C2539
FHB OTT-00:

RECEIVED 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	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
[signature] Aaron Brakhaw	16/06/15	1445	[signature] Fatemeh Habib	2016/06/15	15:30	0		25, 25, 26	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.

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

White: Maxxam Yellow: Client

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Maxxam Job #: B6C2539
Report Date: 2016/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS072B	CNQ473-01	Acid Extractable Barium (Ba)	390	410	0.5	ug/g
VS072B	CNQ473-01	Acid Extractable Cobalt (Co)	22	26	0.1	ug/g
VS072B	CNQ473-01-Lab Dup	Acid Extractable Cobalt (Co)	22	27	0.1	ug/g
VS072B	CNQ473-01	Acid Extractable Vanadium (V)	86	110	5	ug/g
VS072B	CNQ473-01-Lab Dup	Acid Extractable Vanadium (V)	86	110	5	ug/g
VS080B	CNQ474-01	Acid Extractable Cobalt (Co)	22	23	0.1	ug/g
VS080B	CNQ474-01	Acid Extractable Vanadium (V)	86	97	5	ug/g
VS081B	CNQ475-01	Acid Extractable Barium (Ba)	390	410	0.5	ug/g
VS081B	CNQ475-01	Acid Extractable Cobalt (Co)	22	27	0.1	ug/g
VS081B	CNQ475-01	Acid Extractable Vanadium (V)	86	120	5	ug/g
VS108B	CNQ476-01	Acid Extractable Cobalt (Co)	22	23	0.1	ug/g
VS108B	CNQ476-01	Acid Extractable Vanadium (V)	86	110	5	ug/g

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Your C.O.C. #: 557328-12-01, 557328-11-01, 557328-10-01

Report Date: 2016/06/20
Report #: R4035200
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6C4823
Received: 2016/06/17, 14:30

Sample Matrix: Soil
Samples Received: 25

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	25	N/A	2016/06/20	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (2)	25	2016/06/18	2016/06/20	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS (1)	25	2016/06/17	2016/06/18	OTT SOP-00003	EPA 6020
MOISTURE (1)	25	N/A	2016/06/20	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM) (1)	6	2016/06/17	2016/06/17	OTT SOP-00011	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM) (1)	19	2016/06/17	2016/06/18	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Ottawa

(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Marissa Oddi
Customer Service Representative
20 Jun 2016 17:57:45 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager Assistant
Email: MBingley@maxxam.ca
Phone# (613)274-0573

==========

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 Job #: B6C4823
Report Date: 2016/06/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			COC048	COC049	COC050	COC051	COC052		
Sampling Date			2016/06/17 07:10	2016/06/17 07:10	2016/06/17 07:20	2016/06/17 07:30	2016/06/17 07:40		
COC Number			557328-12-01	557328-12-01	557328-12-01	557328-12-01	557328-12-01		
	UNITS	Criteria	VS220	VS1220	VS221	VS222	VS223	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4544440
Acid Extractable Arsenic (As)	ug/g	**18**	<1	<1	<1	<1	2	1	4544440
Acid Extractable Barium (Ba)	ug/g	**390**	46	33	28	77	170	0.5	4544440
Acid Extractable Beryllium (Be)	ug/g	**4**	0.4	0.2	0.3	0.4	0.5	0.2	4544440
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	<5	6	5	4544440
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4544440
Acid Extractable Chromium (Cr)	ug/g	**160**	27	22	23	31	33	1	4544440
Acid Extractable Cobalt (Co)	ug/g	**22**	5.2	4.5	4.7	7.4	9.8	0.1	4544440
Acid Extractable Copper (Cu)	ug/g	**140**	11	7.8	8.0	13	18	0.5	4544440
Acid Extractable Lead (Pb)	ug/g	**120**	9	4	5	5	4	1	4544440
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4544440
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	<0.5	0.8	0.5	4544440
Acid Extractable Nickel (Ni)	ug/g	**100**	12	9.9	11	16	19	0.5	4544440
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4544440
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4544440
Acid Extractable Thallium (Tl)	ug/g	**1**	0.07	<0.05	0.05	0.06	0.18	0.05	4544440
Acid Extractable Uranium (U)	ug/g	**23**	1.1	0.80	0.82	0.72	0.79	0.05	4544440
Acid Extractable Vanadium (V)	ug/g	**86**	33	28	25	31	50	5	4544440
Acid Extractable Zinc (Zn)	ug/g	**340**	25	20	28	29	55	5	4544440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6C4823
Report Date: 2016/06/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			COC053	COC054	COC055	COC056	COC057		
Sampling Date			2016/06/17 07:40	2016/06/17 08:00	2016/06/17 08:20	2016/06/17 08:30	2016/06/17 08:40		
COC Number			557328-12-01	557328-12-01	557328-12-01	557328-12-01	557328-12-01		
	UNITS	Criteria	VS1223	VS224	VS225	VS226	VS227	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	7.5	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4544440
Acid Extractable Arsenic (As)	ug/g	18	2	<1	1	<1	<1	1	4544440
Acid Extractable Barium (Ba)	ug/g	390	160	26	70	52	39	0.5	4544440
Acid Extractable Beryllium (Be)	ug/g	4	0.5	<0.2	0.5	0.5	0.3	0.2	4544440
Acid Extractable Boron (B)	ug/g	120	6	<5	<5	<5	<5	5	4544440
Acid Extractable Cadmium (Cd)	ug/g	1.2	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4544440
Acid Extractable Chromium (Cr)	ug/g	160	33	15	39	30	22	1	4544440
Acid Extractable Cobalt (Co)	ug/g	22	9.9	4.1	7.8	6.0	6.2	0.1	4544440
Acid Extractable Copper (Cu)	ug/g	140	19	5.8	14	8.1	11	0.5	4544440
Acid Extractable Lead (Pb)	ug/g	120	5	2	6	11	2	1	4544440
Acid Extractable Mercury (Hg)	ug/g	0.27	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4544440
Acid Extractable Molybdenum (Mo)	ug/g	6.9	0.7	<0.5	0.8	<0.5	<0.5	0.5	4544440
Acid Extractable Nickel (Ni)	ug/g	100	21	9.1	15	15	13	0.5	4544440
Acid Extractable Selenium (Se)	ug/g	2.4	<0.5	<0.5	<0.5	0.6	0.7	0.5	4544440
Acid Extractable Silver (Ag)	ug/g	20	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4544440
Acid Extractable Thallium (Tl)	ug/g	1	0.19	0.05	0.08	0.11	0.06	0.05	4544440
Acid Extractable Uranium (U)	ug/g	23	0.74	0.47	1.9	1.4	0.44	0.05	4544440
Acid Extractable Vanadium (V)	ug/g	86	50	22	41	35	27	5	4544440
Acid Extractable Zinc (Zn)	ug/g	340	54	19	40	43	23	5	4544440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			COC064	COC064	COC065	COC066	COC067		
Sampling Date			2016/06/17 09:30	2016/06/17 09:30	2016/06/17 09:40	2016/06/17 09:50	2016/06/17 10:00		
COC Number			557328-11-01	557328-11-01	557328-11-01	557328-11-01	557328-11-01		
	UNITS	Criteria	VS228	VS228 Lab-Dup	VS229	VS230	VS231	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4544440
Acid Extractable Arsenic (As)	ug/g	**18**	<1	<1	<1	<1	<1	1	4544440
Acid Extractable Barium (Ba)	ug/g	**390**	40	40	69	46	33	0.5	4544440
Acid Extractable Beryllium (Be)	ug/g	**4**	0.2	0.3	0.4	0.3	0.4	0.2	4544440
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	<5	<5	5	4544440
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4544440
Acid Extractable Chromium (Cr)	ug/g	**160**	23	23	34	20	27	1	4544440
Acid Extractable Cobalt (Co)	ug/g	**22**	5.2	5.2	6.0	4.0	5.7	0.1	4544440
Acid Extractable Copper (Cu)	ug/g	**140**	12	11	15	12	13	0.5	4544440
Acid Extractable Lead (Pb)	ug/g	**120**	3	3	5	2	5	1	4544440
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4544440
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4544440
Acid Extractable Nickel (Ni)	ug/g	**100**	14	14	17	13	12	0.5	4544440
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	<0.5	0.5	0.5	4544440
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4544440
Acid Extractable Thallium (Tl)	ug/g	**1**	0.08	0.08	0.09	0.09	0.06	0.05	4544440
Acid Extractable Uranium (U)	ug/g	**23**	0.50	0.52	1.7	0.69	1.3	0.05	4544440
Acid Extractable Vanadium (V)	ug/g	**86**	29	29	34	21	37	5	4544440
Acid Extractable Zinc (Zn)	ug/g	**340**	24	24	31	24	24	5	4544440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Golder Associates Ltd
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Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			COC068	COC069	COC070	COC071	COC072		
Sampling Date			2016/06/17 12:00	2016/06/17 12:00	2016/06/17 12:10	2016/06/17 12:30	2016/06/17 12:40		
COC Number			557328-11-01	557328-11-01	557328-11-01	557328-11-01	557328-11-01		
	UNITS	Criteria	VS232	VS1232	VS233	VS234	VS235	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	7.5	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4544440
Acid Extractable Arsenic (As)	ug/g	18	<1	<1	<1	<1	<1	1	4544440
Acid Extractable Barium (Ba)	ug/g	390	38	39	43	39	27	0.5	4544440
Acid Extractable Beryllium (Be)	ug/g	4	0.3	0.3	0.2	0.3	<0.2	0.2	4544440
Acid Extractable Boron (B)	ug/g	120	<5	<5	<5	<5	<5	5	4544440
Acid Extractable Cadmium (Cd)	ug/g	1.2	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4544440
Acid Extractable Chromium (Cr)	ug/g	160	20	21	23	24	19	1	4544440
Acid Extractable Cobalt (Co)	ug/g	22	4.6	5.1	4.4	3.7	3.5	0.1	4544440
Acid Extractable Copper (Cu)	ug/g	140	8.2	8.8	9.8	11	6.1	0.5	4544440
Acid Extractable Lead (Pb)	ug/g	120	3	3	2	2	3	1	4544440
Acid Extractable Mercury (Hg)	ug/g	0.27	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4544440
Acid Extractable Molybdenum (Mo)	ug/g	6.9	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4544440
Acid Extractable Nickel (Ni)	ug/g	100	11	11	11	12	9.0	0.5	4544440
Acid Extractable Selenium (Se)	ug/g	2.4	<0.5	0.6	<0.5	<0.5	<0.5	0.5	4544440
Acid Extractable Silver (Ag)	ug/g	20	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4544440
Acid Extractable Thallium (Tl)	ug/g	1	<0.05	0.06	0.07	0.07	<0.05	0.05	4544440
Acid Extractable Uranium (U)	ug/g	23	0.63	0.71	0.94	0.82	1.4	0.05	4544440
Acid Extractable Vanadium (V)	ug/g	86	27	28	32	26	42	5	4544440
Acid Extractable Zinc (Zn)	ug/g	340	21	21	23	24	18	5	4544440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			COC073		COC089	COC089	COC090		
Sampling Date			2016/06/17 12:50		2016/06/17 13:00	2016/06/17 13:00	2016/06/17 13:00		
COC Number			557328-11-01		557328-10-01	557328-10-01	557328-10-01		
	UNITS	Criteria	VS236	QC Batch	VS237	VS237 Lab-Dup	VS1237	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	4544440	<0.2	<0.2	<0.2	0.2	4544479
Acid Extractable Arsenic (As)	ug/g	**18**	<1	4544440	<1	<1	<1	1	4544479
Acid Extractable Barium (Ba)	ug/g	**390**	38	4544440	39	38	39	0.5	4544479
Acid Extractable Beryllium (Be)	ug/g	**4**	0.3	4544440	0.3	0.4	0.3	0.2	4544479
Acid Extractable Boron (B)	ug/g	**120**	<5	4544440	<5	<5	<5	5	4544479
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	4544440	<0.1	<0.1	<0.1	0.1	4544479
Acid Extractable Chromium (Cr)	ug/g	**160**	20	4544440	24	24	21	1	4544479
Acid Extractable Cobalt (Co)	ug/g	**22**	5.7	4544440	4.4	4.3	3.7	0.1	4544479
Acid Extractable Copper (Cu)	ug/g	**140**	11	4544440	9.3	9.0	7.9	0.5	4544479
Acid Extractable Lead (Pb)	ug/g	**120**	3	4544440	3	4	6	1	4544479
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	4544440	<0.05	<0.05	<0.05	0.05	4544479
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	4544440	<0.5	<0.5	<0.5	0.5	4544479
Acid Extractable Nickel (Ni)	ug/g	**100**	12	4544440	11	11	10	0.5	4544479
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	4544440	0.5	<0.5	<0.5	0.5	4544479
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	4544440	<0.2	<0.2	<0.2	0.2	4544479
Acid Extractable Thallium (Tl)	ug/g	**1**	0.08	4544440	0.07	0.08	0.06	0.05	4544479
Acid Extractable Uranium (U)	ug/g	**23**	1.3	4544440	1.4	1.4	1.2	0.05	4544479
Acid Extractable Vanadium (V)	ug/g	**86**	24	4544440	36	36	23	5	4544479
Acid Extractable Zinc (Zn)	ug/g	**340**	24	4544440	20	20	21	5	4544479

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			COC091	COC092	COC093		
Sampling Date			2016/06/17 13:10	2016/06/17 13:20	2016/06/17 13:30		
COC Number			557328-10-01	557328-10-01	557328-10-01		
	UNITS	Criteria	VS238	VS239	VS240	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	7.5	<0.2	<0.2	<0.2	0.2	4544479
Acid Extractable Arsenic (As)	ug/g	18	<1	<1	<1	1	4544479
Acid Extractable Barium (Ba)	ug/g	390	44	29	22	0.5	4544479
Acid Extractable Beryllium (Be)	ug/g	4	0.4	0.2	<0.2	0.2	4544479
Acid Extractable Boron (B)	ug/g	120	<5	<5	<5	5	4544479
Acid Extractable Cadmium (Cd)	ug/g	1.2	<0.1	<0.1	<0.1	0.1	4544479
Acid Extractable Chromium (Cr)	ug/g	160	26	18	14	1	4544479
Acid Extractable Cobalt (Co)	ug/g	22	5.7	4.9	2.9	0.1	4544479
Acid Extractable Copper (Cu)	ug/g	140	10	7.9	4.6	0.5	4544479
Acid Extractable Lead (Pb)	ug/g	120	3	3	2	1	4544479
Acid Extractable Mercury (Hg)	ug/g	0.27	<0.05	<0.05	<0.05	0.05	4544479
Acid Extractable Molybdenum (Mo)	ug/g	6.9	<0.5	<0.5	<0.5	0.5	4544479
Acid Extractable Nickel (Ni)	ug/g	100	12	9.4	6.9	0.5	4544479
Acid Extractable Selenium (Se)	ug/g	2.4	<0.5	<0.5	<0.5	0.5	4544479
Acid Extractable Silver (Ag)	ug/g	20	<0.2	<0.2	<0.2	0.2	4544479
Acid Extractable Thallium (Tl)	ug/g	1	0.07	0.06	<0.05	0.05	4544479
Acid Extractable Uranium (U)	ug/g	23	1.9	1.0	1.0	0.05	4544479
Acid Extractable Vanadium (V)	ug/g	86	32	24	20	5	4544479
Acid Extractable Zinc (Zn)	ug/g	340	22	16	12	5	4544479

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
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Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			COC048	COC048	COC049	COC050	COC051		
Sampling Date			2016/06/17 07:10	2016/06/17 07:10	2016/06/17 07:10	2016/06/17 07:20	2016/06/17 07:30		
COC Number			557328-12-01	557328-12-01	557328-12-01	557328-12-01	557328-12-01		
	UNITS	Criteria	VS220	VS220 Lab-Dup	VS1220	VS221	VS222	RDL	QC Batch
Inorganics									
Moisture	%	-	18		14	16	18	0.2	4544350
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	0.0.	<0.014	0.014	4544391
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Benzo(a)anthracene	ug/g	**0.5**	0.0085	<0.0050	<0.0050	0.0062	<0.0050	0.0050	4544413
Benzo(a)pyrene	ug/g	**0.3**	0.015	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.019	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0052	<0.0050	<0.0050	<0.0050	0.0050	4544413
Benzo(k)fluoranthene	ug/g	**0.78**	0.0067	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Chrysene	ug/g	**7**	0.0085	<0.0050	<0.0050	0.0062	<0.0050	0.0050	4544413
Dibenz(a,h)anthracene	ug/g	**0.1**	0.010	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Fluoranthene	ug/g	**0.69**	0.011	<0.0050	<0.0050	0.0068	<0.0050	0.0050	4544413
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.0067	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Pyrene	ug/g	**78**	0.0091	<0.0050	<0.0050	0.0062	<0.0050	0.0050	4544413
Surrogate Recovery (%)									
D10-Anthracene	%	-	59	60	59	57	60		4544413
D14-Terphenyl (FS)	%	-	68	70	64	64	63		4544413
D8-Acenaphthylene	%	-	64	66	62	65	66		4544413

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QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6C4823
Report Date: 2016/06/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			COC052	COC053	COC054	COC055	COC056		
Sampling Date			2016/06/17 07:40	2016/06/17 07:40	2016/06/17 08:00	2016/06/17 08:20	2016/06/17 08:30		
COC Number			557328-12-01	557328-12-01	557328-12-01	557328-12-01	557328-12-01		
	UNITS	Criteria	VS223	VS1223	VS224	VS225	VS226	RDL	QC Batch
Inorganics									
Moisture	%	-	24	25	7.8	18	9.4	0.2	4544350
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4544391
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Surrogate Recovery (%)									
D10-Anthracene	%	-	58	61	60	59	57		4544413
D14-Terphenyl (FS)	%	-	66	67	63	65	66		4544413
D8-Acenaphthylene	%	-	64	63	65	63	63		4544413

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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A Bureau Veritas Group Company

Maxxam Job #: B6C4823
Report Date: 2016/06/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			COC057	COC064	COC065	COC066	COC067		
Sampling Date			2016/06/17 08:40	2016/06/17 09:30	2016/06/17 09:40	2016/06/17 09:50	2016/06/17 10:00		
COC Number			557328-12-01	557328-11-01	557328-11-01	557328-11-01	557328-11-01		
	UNITS	Criteria	VS227	VS228	VS229	VS230	VS231	RDL	QC Batch
Inorganics									
Moisture	%	-	19	19	12	6.5	15	0.2	4544350
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4544391
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	0.0050	4544413
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Chrysene	ug/g	**7**	<0.0050	<0.0050	0.0087	<0.0050	<0.0050	0.0050	4544413
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	0.0054	<0.0050	<0.0050	0.0050	4544413
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Pyrene	ug/g	**78**	<0.0050	<0.0050	0.0074	<0.0050	<0.0050	0.0050	4544413
Surrogate Recovery (%)									
D10-Anthracene	%	-	60	59	59	62	61		4544413
D14-Terphenyl (FS)	%	-	69	68	69	69	68		4544413
D8-Acenaphthylene	%	-	66	64	65	68	71		4544413

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6C4823
Report Date: 2016/06/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			COC068	COC069	COC070	COC071	COC072		
Sampling Date			2016/06/17 12:00	2016/06/17 12:00	2016/06/17 12:10	2016/06/17 12:30	2016/06/17 12:40		
COC Number			557328-11-01	557328-11-01	557328-11-01	557328-11-01	557328-11-01		
	UNITS	Criteria	VS232	VS1232	VS233	VS234	VS235	RDL	QC Batch
Inorganics									
Moisture	%	-	18	19	17	16	16	0.2	4544350
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4544391
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	0.011	0.0050	4544413
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	0.012	0.0050	4544413
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.013	0.0050	4544413
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	0.0092	0.0050	4544413
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	0.017	0.0050	4544413
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4544413
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	0.013	0.0050	4544413
Surrogate Recovery (%)									
D10-Anthracene	%	-	60	62	61	61	60		4544413
D14-Terphenyl (FS)	%	-	69	71	72	71	71		4544413
D8-Acenaphthylene	%	-	73	77	80	82	80		4544413

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Report Date: 2016/06/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			COC073	COC073		COC089	COC089	COC090		
Sampling Date			2016/06/17 12:50	2016/06/17 12:50		2016/06/17 13:00	2016/06/17 13:00	2016/06/17 13:00		
COC Number			557328-11-01	557328-11-01		557328-10-01	557328-10-01	557328-10-01		
	UNITS	Criteria	VS236	VS236 Lab-Dup	QC Batch	VS237	VS237 Lab-Dup	VS1237	RDL	QC Batch
Inorganics										
Moisture	%	-	17	16	4544410	16		16	0.2	4544410
Calculated Parameters										
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		4544391	<0.014		<0.014	0.014	4544391
Polyaromatic Hydrocarbons										
Acenaphthene	ug/g	**7.9**	<0.0050		4544413	<0.0050	<0.0050	<0.0050	0.0050	4544415
Acenaphthylene	ug/g	**0.15**	<0.0050		4544413	<0.0050	<0.0050	<0.0050	0.0050	4544415
Anthracene	ug/g	**0.67**	<0.0050		4544413	<0.0050	<0.0050	<0.0050	0.0050	4544415
Benzo(a)anthracene	ug/g	**0.5**	<0.0050		4544413	<0.0050	<0.0050	<0.0050	0.0050	4544415
Benzo(a)pyrene	ug/g	**0.3**	<0.0050		4544413	0.0095	<0.0050	0.012	0.0050	4544415
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050		4544413	<0.0050	<0.0050	0.018	0.0050	4544415
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050		4544413	0.012	<0.0050	<0.0050	0.0050	4544415
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050		4544413	<0.0050	<0.0050	0.0060	0.0050	4544415
Chrysene	ug/g	**7**	<0.0050		4544413	<0.0050	<0.0050	0.0085	0.0050	4544415
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050		4544413	<0.0050	<0.0050	<0.0050	0.0050	4544415
Fluoranthene	ug/g	**0.69**	<0.0050		4544413	<0.0050	<0.0050	0.016	0.0050	4544415
Fluorene	ug/g	**62**	<0.0050		4544413	<0.0050	<0.0050	<0.0050	0.0050	4544415
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050		4544413	<0.0050	<0.0050	<0.0050	0.0050	4544415
1-Methylnaphthalene	ug/g	**0.99**	<0.0050		4544413	<0.0050	<0.0050	<0.0050	0.0050	4544415
2-Methylnaphthalene	ug/g	**0.99**	<0.0050		4544413	<0.0050	<0.0050	<0.0050	0.0050	4544415
Naphthalene	ug/g	**0.6**	<0.0050		4544413	<0.0050	<0.0050	<0.0050	0.0050	4544415
Phenanthrene	ug/g	**6.2**	<0.0050		4544413	<0.0050	<0.0050	0.010	0.0050	4544415
Pyrene	ug/g	**78**	<0.0050		4544413	<0.0050	<0.0050	0.014	0.0050	4544415
Surrogate Recovery (%)										
D10-Anthracene	%	-	62		4544413	59	59	58		4544415
D14-Terphenyl (FS)	%	-	72		4544413	65	64	64		4544415
D8-Acenaphthylene	%	-	81		4544413	79	80	80		4544415

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Report Date: 2016/06/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			COC091	COC092	COC093		
Sampling Date			2016/06/17 13:10	2016/06/17 13:20	2016/06/17 13:30		
COC Number			557328-10-01	557328-10-01	557328-10-01		
	UNITS	Criteria	VS238	VS239	VS240	RDL	QC Batch
Inorganics							
Moisture	%	-	13	16	16	0.2	4544410
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	0.014	4544391
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	0.0050	4544415
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	0.0050	4544415
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0050	4544415
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	0.0050	4544415
Benzo(a)pyrene	ug/g	**0.3**	0.0074	<0.0050	<0.0050	0.0050	4544415
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.0054	<0.0050	<0.0050	0.0050	4544415
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0059	<0.0050	0.0050	4544415
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	4544415
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	0.0050	4544415
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	0.0050	4544415
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	0.0050	4544415
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0050	4544415
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	0.0050	4544415
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	4544415
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	4544415
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	0.0050	4544415
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	0.0050	4544415
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	0.0050	4544415
Surrogate Recovery (%)							
D10-Anthracene	%	-	58	60	60		4544415
D14-Terphenyl (FS)	%	-	67	69	68		4544415
D8-Acenaphthylene	%	-	80	83	84		4544415

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			COC048	COC049		COC050		COC051		
Sampling Date			2016/06/17 07:10	2016/06/17 07:10		2016/06/17 07:20		2016/06/17 07:30		
COC Number			557328-12-01	557328-12-01		557328-12-01		557328-12-01		
	UNITS	Criteria	VS220	VS1220	QC Batch	VS221	QC Batch	VS222	RDL	QC Batch
Inorganics										
Chromium (VI)	ug/g	8	0.7	0.6	4545559	0.3	4545555	0.3	0.2	4545559

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			COC052	COC053		COC054	COC055	COC056		
Sampling Date			2016/06/17 07:40	2016/06/17 07:40		2016/06/17 08:00	2016/06/17 08:20	2016/06/17 08:30		
COC Number			557328-12-01	557328-12-01		557328-12-01	557328-12-01	557328-12-01		
	UNITS	Criteria	VS223	VS1223	QC Batch	VS224	VS225	VS226	RDL	QC Batch
Inorganics										
Chromium (VI)	ug/g	8	<0.2	<0.2	4545555	<0.2	0.5	0.5	0.2	4545559

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			COC057	COC064	COC065	COC066	COC066		
Sampling Date			2016/06/17 08:40	2016/06/17 09:30	2016/06/17 09:40	2016/06/17 09:50	2016/06/17 09:50		
COC Number			557328-12-01	557328-11-01	557328-11-01	557328-11-01	557328-11-01		
	UNITS	Criteria	VS227	VS228	VS229	VS230	VS230 Lab-Dup	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.2	0.3	0.9	<0.2	<0.2	0.2	4545559

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			COC067	COC068	COC069	COC070	COC071		
Sampling Date			2016/06/17 10:00	2016/06/17 12:00	2016/06/17 12:00	2016/06/17 12:10	2016/06/17 12:30		
COC Number			557328-11-01	557328-11-01	557328-11-01	557328-11-01	557328-11-01		
	UNITS	Criteria	VS231	VS232	VS1232	VS233	VS234	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.4	0.3	0.5	0.3	0.4	0.2	4545559

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			COC072	COC073		COC089	COC090	COC091		
Sampling Date			2016/06/17 12:40	2016/06/17 12:50		2016/06/17 13:00	2016/06/17 13:00	2016/06/17 13:10		
COC Number			557328-11-01	557328-11-01		557328-10-01	557328-10-01	557328-10-01		
	UNITS	Criteria	VS235	VS236	QC Batch	VS237	VS1237	VS238	RDL	QC Batch
Inorganics										
Chromium (VI)	ug/g	8	0.2	<0.2	4545555	0.3	0.3	0.5	0.2	4545559

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			COC092	COC093		
Sampling Date			2016/06/17 13:20	2016/06/17 13:30		
COC Number			557328-10-01	557328-10-01		
	UNITS	Criteria	VS239	VS240	RDL	QC Batch
Inorganics						
Chromium (VI)	ug/g	8	0.2	0.2	0.2	4545559

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Sampler Initials: AB

TEST SUMMARY

Maxxam ID: COC048
Sample ID: VS220
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/17	Arezoo Habibagahi

Maxxam ID: COC048 Dup
Sample ID: VS220
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/17	Arezoo Habibagahi

Maxxam ID: COC049
Sample ID: VS1220
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/17	Arezoo Habibagahi

Maxxam ID: COC050
Sample ID: VS221
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545555	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/17	Arezoo Habibagahi

Maxxam ID: COC051
Sample ID: VS222
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/17	Arezoo Habibagahi

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TEST SUMMARY

Maxxam ID: COC052
Sample ID: VS223
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545555	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/17	Arezoo Habibagahi

Maxxam ID: COC053
Sample ID: VS1223
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545555	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/17	Arezoo Habibagahi

Maxxam ID: COC054
Sample ID: VS224
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/18	Arezoo Habibagahi

Maxxam ID: COC055
Sample ID: VS225
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/18	Arezoo Habibagahi

Maxxam ID: COC056
Sample ID: VS226
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera

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TEST SUMMARY

Maxxam ID: COC056
Sample ID: VS226
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/18	Arezoo Habibagahi

Maxxam ID: COC057
Sample ID: VS227
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/18	Arezoo Habibagahi

Maxxam ID: COC064
Sample ID: VS228
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/18	Arezoo Habibagahi

Maxxam ID: COC064 Dup
Sample ID: VS228
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera

Maxxam ID: COC065
Sample ID: VS229
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/18	Arezoo Habibagahi

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Report Date: 2016/06/20

Golder Associates Ltd
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TEST SUMMARY

Maxxam ID: COC066
Sample ID: VS230
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/18	Arezoo Habibagahi

Maxxam ID: COC066 Dup
Sample ID: VS230
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera

Maxxam ID: COC067
Sample ID: VS231
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/18	Arezoo Habibagahi

Maxxam ID: COC068
Sample ID: VS232
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/18	Arezoo Habibagahi

Maxxam ID: COC069
Sample ID: VS1232
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/18	Arezoo Habibagahi

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TEST SUMMARY

Maxxam ID: COC070
Sample ID: VS233
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/18	Arezoo Habibagahi

Maxxam ID: COC071
Sample ID: VS234
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/18	Arezoo Habibagahi

Maxxam ID: COC072
Sample ID: VS235
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545555	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544350	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/18	Arezoo Habibagahi

Maxxam ID: COC073
Sample ID: VS236
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545555	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544440	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544410	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544413	2016/06/17	2016/06/18	Arezoo Habibagahi

Maxxam ID: COC073 Dup
Sample ID: VS236
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4544410	N/A	2016/06/20	Liliana Gaburici

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TEST SUMMARY

Maxxam ID: COC089
Sample ID: VS237
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544479	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544410	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544415	2016/06/17	2016/06/18	Arezoo Habibagahi

Maxxam ID: COC089 Dup
Sample ID: VS237
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544479	2016/06/17	2016/06/18	Raigamage Perera
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544415	2016/06/17	2016/06/18	Arezoo Habibagahi

Maxxam ID: COC090
Sample ID: VS1237
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544479	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544410	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544415	2016/06/17	2016/06/18	Arezoo Habibagahi

Maxxam ID: COC091
Sample ID: VS238
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544479	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544410	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544415	2016/06/17	2016/06/18	Arezoo Habibagahi

Maxxam ID: COC092
Sample ID: VS239
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544479	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544410	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544415	2016/06/17	2016/06/18	Arezoo Habibagahi

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Maxxam Job #: B6C4823
Report Date: 2016/06/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: COC093
Sample ID: VS240
Matrix: Soil

Collected: 2016/06/17
Shipped:
Received: 2016/06/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4544391	N/A	2016/06/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4545559	2016/06/18	2016/06/20	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4544479	2016/06/17	2016/06/18	Raigamage Perera
MOISTURE	BAL	4544410	N/A	2016/06/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4544415	2016/06/17	2016/06/18	Arezoo Habibagahi

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GENERAL COMMENTS

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

Package 1	25.3°C

Custody seal was present and intact on the cooler.

Results relate only to the items tested.

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Maxxam Job #: B6C4823
Report Date: 2016/06/20

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4544413	D10-Anthracene	2016/06/17	58	50 - 130	62	50 - 130	61	%		
4544413	D14-Terphenyl (FS)	2016/06/17	76	50 - 130	78	50 - 130	77	%		
4544413	D8-Acenaphthylene	2016/06/17	64	50 - 130	67	50 - 130	68	%		
4544415	D10-Anthracene	2016/06/18	61	50 - 130	65	50 - 130	65	%		
4544415	D14-Terphenyl (FS)	2016/06/18	72	50 - 130	76	50 - 130	74	%		
4544415	D8-Acenaphthylene	2016/06/18	84	50 - 130	87	50 - 130	87	%		
4544350	Moisture	2016/06/20							2.3	50
4544410	Moisture	2016/06/20							4.8	50
4544413	1-Methylnaphthalene	2016/06/17	72	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
4544413	2-Methylnaphthalene	2016/06/17	66	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
4544413	Acenaphthene	2016/06/17	67	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
4544413	Acenaphthylene	2016/06/17	68	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
4544413	Anthracene	2016/06/17	70	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
4544413	Benzo(a)anthracene	2016/06/17	101	50 - 130	105	50 - 130	<0.0050	ug/g	NC	40
4544413	Benzo(a)pyrene	2016/06/17	87	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
4544413	Benzo(b/j)fluoranthene	2016/06/17	82	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4544413	Benzo(g,h,i)perylene	2016/06/17	79	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
4544413	Benzo(k)fluoranthene	2016/06/17	75	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4544413	Chrysene	2016/06/17	99	50 - 130	103	50 - 130	<0.0050	ug/g	NC	40
4544413	Dibenz(a,h)anthracene	2016/06/17	79	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
4544413	Fluoranthene	2016/06/17	83	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4544413	Fluorene	2016/06/17	64	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
4544413	Indeno(1,2,3-cd)pyrene	2016/06/17	99	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
4544413	Naphthalene	2016/06/17	67	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
4544413	Phenanthrene	2016/06/17	71	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
4544413	Pyrene	2016/06/17	82	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
4544415	1-Methylnaphthalene	2016/06/18	79	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
4544415	2-Methylnaphthalene	2016/06/18	72	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
4544415	Acenaphthene	2016/06/18	70	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
4544415	Acenaphthylene	2016/06/18	91	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
4544415	Anthracene	2016/06/18	76	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40

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Maxxam Job #: B6C4823
Report Date: 2016/06/20

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4544415	Benzo(a)anthracene	2016/06/18	112	50 - 130	116	50 - 130	<0.0050	ug/g	NC	40
4544415	Benzo(a)pyrene	2016/06/18	100	50 - 130	116	50 - 130	<0.0050	ug/g	NC	40
4544415	Benzo(b/j)fluoranthene	2016/06/18	88	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
4544415	Benzo(g,h,i)perylene	2016/06/18	80	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4544415	Benzo(k)fluoranthene	2016/06/18	82	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
4544415	Chrysene	2016/06/18	103	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40
4544415	Dibenz(a,h)anthracene	2016/06/18	81	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
4544415	Fluoranthene	2016/06/18	84	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
4544415	Fluorene	2016/06/18	72	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
4544415	Indeno(1,2,3-cd)pyrene	2016/06/18	99	50 - 130	115	50 - 130	<0.0050	ug/g	NC	40
4544415	Naphthalene	2016/06/18	69	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
4544415	Phenanthrene	2016/06/18	72	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
4544415	Pyrene	2016/06/18	84	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
4544440	Acid Extractable Antimony (Sb)	2016/06/18	96	75 - 125	107	80 - 120	<0.2	ug/g	NC	35
4544440	Acid Extractable Arsenic (As)	2016/06/18	102	75 - 125	103	80 - 120	<1	ug/g	NC	35
4544440	Acid Extractable Barium (Ba)	2016/06/18	NC	75 - 125	104	80 - 120	<0.5	ug/g	1.3	35
4544440	Acid Extractable Beryllium (Be)	2016/06/18	110	75 - 125	111	80 - 120	<0.2	ug/g	NC	35
4544440	Acid Extractable Boron (B)	2016/06/18	107	75 - 125	113	80 - 120	<5	ug/g	NC	35
4544440	Acid Extractable Cadmium (Cd)	2016/06/18	109	75 - 125	108	80 - 120	<0.1	ug/g	NC	35
4544440	Acid Extractable Chromium (Cr)	2016/06/18	NC	75 - 125	106	80 - 120	<1	ug/g	0.024	35
4544440	Acid Extractable Cobalt (Co)	2016/06/18	106	75 - 125	106	80 - 120	<0.1	ug/g	1.6	35
4544440	Acid Extractable Copper (Cu)	2016/06/18	103	75 - 125	105	80 - 120	<0.5	ug/g	6.7	35
4544440	Acid Extractable Lead (Pb)	2016/06/18	105	75 - 125	106	80 - 120	<1	ug/g	NC	35
4544440	Acid Extractable Mercury (Hg)	2016/06/18	111	75 - 125	109	80 - 120	<0.05	ug/g	NC	35
4544440	Acid Extractable Molybdenum (Mo)	2016/06/18	107	75 - 125	105	80 - 120	<0.5	ug/g	NC	35
4544440	Acid Extractable Nickel (Ni)	2016/06/18	NC	75 - 125	106	80 - 120	<0.5	ug/g	2.5	35
4544440	Acid Extractable Selenium (Se)	2016/06/18	109	75 - 125	108	80 - 120	<0.5	ug/g	NC	35
4544440	Acid Extractable Silver (Ag)	2016/06/18	104	75 - 125	105	80 - 120	<0.2	ug/g	NC	35
4544440	Acid Extractable Thallium (Tl)	2016/06/18	104	75 - 125	105	80 - 120	<0.05	ug/g	NC	35
4544440	Acid Extractable Uranium (U)	2016/06/18	106	75 - 125	107	80 - 120	<0.05	ug/g	4.0	25
4544440	Acid Extractable Vanadium (V)	2016/06/18	NC	75 - 125	108	80 - 120	<5	ug/g	1.2	35

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Maxxam Job #: B6C4823
Report Date: 2016/06/20

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4544440	Acid Extractable Zinc (Zn)	2016/06/18	NC	75 - 125	112	80 - 120	<5	ug/g	NC	35
4544479	Acid Extractable Antimony (Sb)	2016/06/18	92	75 - 125	107	80 - 120	<0.2	ug/g	NC	35
4544479	Acid Extractable Arsenic (As)	2016/06/18	100	75 - 125	101	80 - 120	<1	ug/g	NC	35
4544479	Acid Extractable Barium (Ba)	2016/06/18	NC	75 - 125	100	80 - 120	<0.5	ug/g	1.3	35
4544479	Acid Extractable Beryllium (Be)	2016/06/18	110	75 - 125	112	80 - 120	<0.2	ug/g	NC	35
4544479	Acid Extractable Boron (B)	2016/06/18	111	75 - 125	114	80 - 120	<5	ug/g	NC	35
4544479	Acid Extractable Cadmium (Cd)	2016/06/18	104	75 - 125	106	80 - 120	<0.1	ug/g	NC	35
4544479	Acid Extractable Chromium (Cr)	2016/06/18	NC	75 - 125	106	80 - 120	<1	ug/g	1.4	35
4544479	Acid Extractable Cobalt (Co)	2016/06/18	102	75 - 125	105	80 - 120	<0.1	ug/g	2.0	35
4544479	Acid Extractable Copper (Cu)	2016/06/18	101	75 - 125	104	80 - 120	<0.5	ug/g	2.5	35
4544479	Acid Extractable Lead (Pb)	2016/06/18	98	75 - 125	102	80 - 120	<1	ug/g	NC	35
4544479	Acid Extractable Mercury (Hg)	2016/06/18	102	75 - 125	106	80 - 120	<0.05	ug/g	NC	35
4544479	Acid Extractable Molybdenum (Mo)	2016/06/18	100	75 - 125	102	80 - 120	<0.5	ug/g	NC	35
4544479	Acid Extractable Nickel (Ni)	2016/06/18	106	75 - 125	105	80 - 120	<0.5	ug/g	3.4	35
4544479	Acid Extractable Selenium (Se)	2016/06/18	104	75 - 125	108	80 - 120	<0.5	ug/g	NC	35
4544479	Acid Extractable Silver (Ag)	2016/06/18	99	75 - 125	102	80 - 120	<0.2	ug/g	NC	35
4544479	Acid Extractable Thallium (Tl)	2016/06/18	99	75 - 125	101	80 - 120	<0.05	ug/g	NC	35
4544479	Acid Extractable Uranium (U)	2016/06/18	99	75 - 125	102	80 - 120	<0.05	ug/g	3.0	25
4544479	Acid Extractable Vanadium (V)	2016/06/18	NC	75 - 125	109	80 - 120	<5	ug/g	1.6	35
4544479	Acid Extractable Zinc (Zn)	2016/06/18	NC	75 - 125	104	80 - 120	<5	ug/g	NC	35
4545555	Chromium (VI)	2016/06/20	14 (1)	75 - 125	93	80 - 120	<0.2	ug/g	NC	35

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QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4545559	Chromium (VI)	2016/06/20	88	75 - 125	89	80 - 120	<0.2	ug/g	NC	35

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The sample was reanalyzed with the same results.

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Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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, Ottawa Lab Manager

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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RUSH

MAXXAM ANALYTICS
32 Colonnade Unit 1000
Nepean, Ontario, K2E 7J6
Phone: (613) 274-0573
Fax: (613) 274-0574

Maxxam

Golder Associates Ltd - Ottawa
Maxxam PM Madison Bingley

SUBCONTRACTING REQUEST FORM

To: Maxxam Analytics Mississauga **RUSH** **Job# B6C4823**

☐ Yes ☐ No International Sample/BioHazard (if yes, add copy of Movement Cert., heat treat is required prior to disposal)
☐ Yes ☐ No Special Protocol (if yes, Protocol _____)

Sample ID	Matrix	Test(s) Required	Container	Date Sampled	Date Required
COC048-02R \ VS220	S	Hexavalent Chromium in Soil by IC	1(VOCS)	2016/06/17 07:10	2016/06/20
COC049-02R \ VS1220	S	Hexavalent Chromium in Soil by IC	1(VOCS)	2016/06/17 07:10	2016/06/20
COC050-02R \ VS221	S	Hexavalent Chromium in Soil by IC	1(VOCS)	2016/06/17 07:20	2016/06/20
COC051-02R \ VS222	S	Hexavalent Chromium in Soil by IC	1(VOCS)	2016/06/17 07:30	2016/06/20
COC052-02R \ VS223	S	Hexavalent Chromium in Soil by IC	1(VOCS)	2016/06/17 07:40	2016/06/20
COC053-02R \ VS1223	S	Hexavalent Chromium in Soil by IC	1(VOCS)	2016/06/17 07:40	2016/06/20
COC054-02R \ VS224	S	Hexavalent Chromium in Soil by IC	1(VOCS)	2016/06/17 08:00	2016/06/20
COC055-02R \ VS225	S	Hexavalent Chromium in Soil by IC	1(VOCS)	2016/06/17 08:20	2016/06/20
COC056-02R \ VS226	S	Hexavalent Chromium in Soil by IC	1(VOCS)	2016/06/17 08:30	2016/06/20
COC057-02R \ VS227	S	Hexavalent Chromium in Soil by IC	1(VOCS)	2016/06/17 08:40	2016/06/20
COC064-02R \ VS228	S	Hexavalent Chromium in Soil by IC	1(VOCS)	2016/06/17 09:30	2016/06/20
COC065-02R \ VS229	S	Hexavalent Chromium in Soil by IC	1(VOCS)	2016/06/17 09:40	2016/06/20
COC066-02R \ VS230	S	Hexavalent Chromium in Soil by IC	1(VOCS)	2016/06/17 09:50	2016/06/20
COC067-02R \ VS231	S	Hexavalent Chromium in Soil by IC	1(VOCS)	2016/06/17 10:00	2016/06/20

Continued ..

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CHAIN OF CUSTODY RECORD

Page 1 of 3

INVOICE TO:
Company Name: #14090 Golder Associates Ltd
Attention: Central Accounting
Address: 1931 Robertson Rd
Ottawa ON K2H 5B7
Tel: (613) 592-9600 Fax: (613) 592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Paul, Tony, Aaron, Equis
Address:
Tel: Fax:
Email: Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL

PROJECT INFORMATION:
Quotation #: B57625
P.O. #:
Project: 1525113
Project Name:
Site #:
Sampled By: Aaron Bradshaw

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 557328
COC #: C#557328-12-01
Project Manager: Parnian Baber

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC):

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: Next Day (Mon for Fri)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle) Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI								# of Bottles	Comments
1		VS220	16/06/17	710	Soil		X	X								1	
2		VS1220	↓	710	↓		X	X								1	
3		VS221	↓	720	↓		X	X								1	
4		VS222	↓	730	↓		X	X								1	
5		VS223	↓	740	↓		X	X								1	
6		VS1223	↓	740	↓		X	X								1	
7		VS224	↓	800	↓		X	X								1	
8		VS225	↓	820	↓		X	X								1	
9		VS226	↓	830	↓		X	X								1	
10		VS227	↓	840	↓		X	X								1	

17-Jun-16 14:30
Parnian Baber
B6C4823
FHB OTT-002

RECEIVED IN OTTAWA

ON ICE PACK

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Aaron Bradshaw	16/06/17	1445	Fatemeh Habib	2016/06/17	14:30	0

Laboratory Use Only
Time Sensitive
Temperature (°C) on Receipt: 27, 25, 24

Custody Seal	Yes	No
Present	✓	
Intact	✓	

White: Maxxam Yellow: Client

* 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.

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 2 of 3

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557328
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113	COC #:	Project Manager:
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Project Name:		C#557328-11-01	Pamlan Baber
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com, Paul_Hurst@golder.com, GAL	Site #:			
				Sampled By:	Aaron Brookshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

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 applied to entire submission)
Date Required: Next Day Time Required: ☒
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): O.Reg 153 PAHs (Soil); O.Reg 153 ICPMS Metals including Hg and CrVI; Field Filtered (please circle): Metals / Hg / Cr VI

	Sample Barcode/Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CrVI								# of Bottles	Comments
1		VS228	16/06/17	930	Soil		X	X								1	
2		VS229	↓	940	↓		X	X								1	
3		VS230	↓	950	↓		X	X								1	
4		VS231	↓	1000	↓		X	X								1	
5		VS232	↓	1200	↓		X	X								1	
6		VS1232	↓	1200	↓		X	X								1	
7		VS233	↓	1210	↓		X	X								1	
8		VS234	↓	1230	↓		X	X								1	
9		VS235	↓	1240	↓		X	X								1	RECEIVED IN OTTAWA
10		VS236	↓	1250	↓		X	X								1	ON ICE PACK

* 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
Aaron Brookshaw	16/06/17	1445	Fatemeh Habib	2016/06/17	14:30	0		27, 25, 24	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.

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

White: Maxxam Yellow: Client

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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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 2 of 2

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557328
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #: C557328-10-01	Project Manager: Parnian Saber
	Ottawa ON K2H 5B7			Project Name:			
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI

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 applicable to entire submission)
Date Required: Next Day Time Required: ☒
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI								# of Bottles	Comments
1		VS237	16/06/17	1300	soil		X	+								1	
2		VS237	↓	1300	↓		+	+								1	
3		VS238	↓	1310	↓		+	+								1	
4		VS239	↓	1320	↓		+	+								1	
5		VS240	↓	1330	↓		X	+								1	
6																	
7																	
8																	
9																	RECEIVED IN OTTAWA
10																	On ICE pack.

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Aaron Bradshaw	16/06/17	14:45	Fateneh Habib	2016/06/17	14:30	0

Laboratory Use Only: Time Sensitive ___ Temperature (°C) on Receipt: 27, 25, 24

Custody Seal	Yes	No
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

Maxxam Job #: B6C4823
Report Date: 2016/06/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 557328-09-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/06/21
Report #: R4036428
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6C6288
Received: 2016/06/20, 15:30

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	9	N/A	2016/06/21	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	9	2016/06/21	2016/06/21	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	9	2016/06/20	2016/06/21	OTT SOP-00003	EPA 6020
MOISTURE	9	N/A	2016/06/21	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	9	2016/06/20	2016/06/20	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key
Madison Bingley
Project Manager Assistant
21 Jun 2016 16:51:46 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager Assistant
Email: MBingley@maxxam.ca
Phone# (613)274-0573
==========
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.maxxam.ca

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Maxxam Job #: B6C6288
Report Date: 2016/06/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			COJ319	COJ319	COJ320	COJ321	COJ322		
Sampling Date			2016/06/20 07:30	2016/06/20 07:30	2016/06/20 07:30	2016/06/20 07:40	2016/06/20 07:50		
COC Number			557328-09-01	557328-09-01	557328-09-01	557328-09-01	557328-09-01		
	UNITS	Criteria	VS241	VS241 Lab-Dup	VS1241	VS242	VS243	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4546942
Acid Extractable Arsenic (As)	ug/g	**18**	<1	<1	<1	<1	1	1	4546942
Acid Extractable Barium (Ba)	ug/g	**390**	36	37	34	29	52	0.5	4546942
Acid Extractable Beryllium (Be)	ug/g	**4**	0.3	0.3	0.2	0.2	0.5	0.2	4546942
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	<5	<5	5	4546942
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4546942
Acid Extractable Chromium (Cr)	ug/g	**160**	21	21	18	16	26	1	4546942
Acid Extractable Cobalt (Co)	ug/g	**22**	4.2	4.3	3.6	3.7	9.3	0.1	4546942
Acid Extractable Copper (Cu)	ug/g	**140**	7.5	7.5	7.0	6.3	13	0.5	4546942
Acid Extractable Lead (Pb)	ug/g	**120**	8	8	6	4	7	1	4546942
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4546942
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4546942
Acid Extractable Nickel (Ni)	ug/g	**100**	10	9.7	9.3	8.8	14	0.5	4546942
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4546942
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4546942
Acid Extractable Thallium (Tl)	ug/g	**1**	0.07	0.06	0.07	<0.05	0.16	0.05	4546942
Acid Extractable Uranium (U)	ug/g	**23**	2.1	2.0	1.6	0.83	1.7	0.05	4546942
Acid Extractable Vanadium (V)	ug/g	**86**	29	30	23	21	39	5	4546942
Acid Extractable Zinc (Zn)	ug/g	**340**	23	23	21	17	33	5	4546942

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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.maxxam.ca

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Maxxam Job #: B6C6288
Report Date: 2016/06/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			COJ323	COJ324	COJ325	COJ326	COJ327		
Sampling Date			2016/06/20 08:10	2016/06/20 08:20	2016/06/20 11:30	2016/06/20 13:00	2016/06/20 13:00		
COC Number			557328-09-01	557328-09-01	557328-09-01	557328-09-01	557328-09-01		
	UNITS	Criteria	VS244	VS245	VS022C	VS246	VS1246	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	7.5	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4546942
Acid Extractable Arsenic (As)	ug/g	18	1	<1	<1	2	2	1	4546942
Acid Extractable Barium (Ba)	ug/g	390	79	45	120	190	190	0.5	4546942
Acid Extractable Beryllium (Be)	ug/g	4	0.5	0.3	0.4	0.5	0.5	0.2	4546942
Acid Extractable Boron (B)	ug/g	120	<5	<5	<5	6	6	5	4546942
Acid Extractable Cadmium (Cd)	ug/g	1.2	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4546942
Acid Extractable Chromium (Cr)	ug/g	160	38	25	25	37	37	1	4546942
Acid Extractable Cobalt (Co)	ug/g	22	7.9	6.1	7.6	12	12	0.1	4546942
Acid Extractable Copper (Cu)	ug/g	140	17	8.7	15	22	22	0.5	4546942
Acid Extractable Lead (Pb)	ug/g	120	9	4	4	5	5	1	4546942
Acid Extractable Mercury (Hg)	ug/g	0.27	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4546942
Acid Extractable Molybdenum (Mo)	ug/g	6.9	<0.5	<0.5	<0.5	0.8	0.8	0.5	4546942
Acid Extractable Nickel (Ni)	ug/g	100	19	12	15	22	23	0.5	4546942
Acid Extractable Selenium (Se)	ug/g	2.4	<0.5	<0.5	<0.5	0.5	<0.5	0.5	4546942
Acid Extractable Silver (Ag)	ug/g	20	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4546942
Acid Extractable Thallium (Tl)	ug/g	1	0.13	0.07	0.14	0.21	0.20	0.05	4546942
Acid Extractable Uranium (U)	ug/g	23	2.7	1.6	0.74	0.87	0.84	0.05	4546942
Acid Extractable Vanadium (V)	ug/g	86	41	35	40	58	58	5	4546942
Acid Extractable Zinc (Zn)	ug/g	340	39	23	38	60	60	5	4546942

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6C6288
Report Date: 2016/06/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			COJ319	COJ319	COJ320	COJ321	COJ322		
Sampling Date			2016/06/20 07:30	2016/06/20 07:30	2016/06/20 07:30	2016/06/20 07:40	2016/06/20 07:50		
COC Number			557328-09-01	557328-09-01	557328-09-01	557328-09-01	557328-09-01		
	UNITS	Criteria	VS241	VS241 Lab-Dup	VS1241	VS242	VS243	RDL	QC Batch
Inorganics									
Moisture	%	-	12	12	11	13	8.0	0.2	4546901
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	4546897
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0058	<0.0050	<0.0050	<0.0050	0.0050	4546904
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0071	<0.0050	<0.0050	0.0050	4546904
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.014	<0.0050	0.0053	<0.0050	0.0050	4546904
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0058	<0.0050	0.0053	<0.0050	0.0050	4546904
Chrysene	ug/g	**7**	<0.0050	0.0064	0.0062	<0.0050	<0.0050	0.0050	4546904
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
Fluoranthene	ug/g	**0.69**	<0.0050	0.014	<0.0050	<0.0050	<0.0050	0.0050	4546904
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
Phenanthrene	ug/g	**6.2**	<0.0050	0.0093	<0.0050	<0.0050	<0.0050	0.0050	4546904
Pyrene	ug/g	**78**	<0.0050	0.011	<0.0050	<0.0050	<0.0050	0.0050	4546904
Surrogate Recovery (%)									
D10-Anthracene	%	-	53	54	52	53	52		4546904
D14-Terphenyl (FS)	%	-	60	62	61	61	59		4546904
D8-Acenaphthylene	%	-	61	60	60	60	59		4546904

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6C6288
Report Date: 2016/06/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			COJ323	COJ324	COJ325	COJ326	COJ327		
Sampling Date			2016/06/20 08:10	2016/06/20 08:20	2016/06/20 11:30	2016/06/20 13:00	2016/06/20 13:00		
COC Number			557328-09-01	557328-09-01	557328-09-01	557328-09-01	557328-09-01		
	UNITS	Criteria	VS244	VS245	VS022C	VS246	VS1246	RDL	QC Batch
Inorganics									
Moisture	%	-	12	15	21	27	27	0.2	4546901
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4546897
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0098	<0.0050	<0.0050	<0.0050	0.0050	4546904
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.016	<0.0050	<0.0050	<0.0050	0.0050	4546904
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.027	<0.0050	<0.0050	<0.0050	0.0050	4546904
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0098	0.0078	<0.0050	0.010	0.0050	4546904
Chrysene	ug/g	**7**	<0.0050	0.018	<0.0050	0.0097	<0.0050	0.0050	4546904
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
Fluoranthene	ug/g	**0.69**	<0.0050	0.023	<0.0050	<0.0050	<0.0050	0.0050	4546904
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0064	<0.0050	<0.0050	<0.0050	0.0050	4546904
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4546904
Phenanthrene	ug/g	**6.2**	<0.0050	0.0087	<0.0050	<0.0050	<0.0050	0.0050	4546904
Pyrene	ug/g	**78**	<0.0050	0.017	<0.0050	<0.0050	<0.0050	0.0050	4546904
Surrogate Recovery (%)									
D10-Anthracene	%	-	52	52	53	53	52		4546904
D14-Terphenyl (FS)	%	-	57	56	59	55	56		4546904
D8-Acenaphthylene	%	-	59	59	61	63	60		4546904

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6C6288
Report Date: 2016/06/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			COJ319	COJ320	COJ320	COJ321	COJ322		
Sampling Date			2016/06/20 07:30	2016/06/20 07:30	2016/06/20 07:30	2016/06/20 07:40	2016/06/20 07:50		
COC Number			557328-09-01	557328-09-01	557328-09-01	557328-09-01	557328-09-01		
	UNITS	Criteria	VS241	VS1241	VS1241 Lab-Dup	VS242	VS243	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.3	0.4	0.4	0.3	0.4	0.2	4547801

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			COJ323	COJ324	COJ325	COJ326	COJ327		
Sampling Date			2016/06/20 08:10	2016/06/20 08:20	2016/06/20 11:30	2016/06/20 13:00	2016/06/20 13:00		
COC Number			557328-09-01	557328-09-01	557328-09-01	557328-09-01	557328-09-01		
	UNITS	Criteria	VS244	VS245	VS022C	VS246	VS1246	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.4	0.7	0.3	<0.2	<0.2	0.2	4547801

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: COJ319
Sample ID: VS241
Matrix: Soil

Collected: 2016/06/20
Shipped:
Received: 2016/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4546897	N/A	2016/06/21	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4547801	2016/06/21	2016/06/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4546942	2016/06/20	2016/06/21	Raigamage Perera
MOISTURE	BAL	4546901	N/A	2016/06/21	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4546904	2016/06/20	2016/06/20	Arezoo Habibagahi

Maxxam ID: COJ319 Dup
Sample ID: VS241
Matrix: Soil

Collected: 2016/06/20
Shipped:
Received: 2016/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4546942	2016/06/20	2016/06/21	Raigamage Perera
MOISTURE	BAL	4546901	N/A	2016/06/21	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4546904	2016/06/20	2016/06/20	Arezoo Habibagahi

Maxxam ID: COJ320
Sample ID: VS1241
Matrix: Soil

Collected: 2016/06/20
Shipped:
Received: 2016/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4546897	N/A	2016/06/21	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4547801	2016/06/21	2016/06/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4546942	2016/06/20	2016/06/21	Raigamage Perera
MOISTURE	BAL	4546901	N/A	2016/06/21	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4546904	2016/06/20	2016/06/20	Arezoo Habibagahi

Maxxam ID: COJ320 Dup
Sample ID: VS1241
Matrix: Soil

Collected: 2016/06/20
Shipped:
Received: 2016/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4547801	2016/06/21	2016/06/21	Sally Coughlin

Maxxam ID: COJ321
Sample ID: VS242
Matrix: Soil

Collected: 2016/06/20
Shipped:
Received: 2016/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4546897	N/A	2016/06/21	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4547801	2016/06/21	2016/06/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4546942	2016/06/20	2016/06/21	Raigamage Perera
MOISTURE	BAL	4546901	N/A	2016/06/21	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4546904	2016/06/20	2016/06/20	Arezoo Habibagahi

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Client Project #: 1525113
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TEST SUMMARY

Maxxam ID: COJ322
Sample ID: VS243
Matrix: Soil

Collected: 2016/06/20
Shipped:
Received: 2016/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4546897	N/A	2016/06/21	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4547801	2016/06/21	2016/06/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4546942	2016/06/20	2016/06/21	Raigamage Perera
MOISTURE	BAL	4546901	N/A	2016/06/21	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4546904	2016/06/20	2016/06/20	Arezoo Habibagahi

Maxxam ID: COJ323
Sample ID: VS244
Matrix: Soil

Collected: 2016/06/20
Shipped:
Received: 2016/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4546897	N/A	2016/06/21	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4547801	2016/06/21	2016/06/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4546942	2016/06/20	2016/06/21	Raigamage Perera
MOISTURE	BAL	**4546901**	**N/A**	**2016/06/21**	**Liliana Gaburici**
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4546904	2016/06/20	2016/06/20	Arezoo Habibagahi

Maxxam ID: COJ324
Sample ID: VS245
Matrix: Soil

Collected: 2016/06/20
Shipped:
Received: 2016/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4546897	N/A	2016/06/21	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4547801	2016/06/21	2016/06/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4546942	2016/06/20	2016/06/21	Raigamage Perera
MOISTURE	BAL	4546901	N/A	2016/06/21	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4546904	2016/06/20	2016/06/20	Arezoo Habibagahi

Maxxam ID: COJ325
Sample ID: VS022C
Matrix: Soil

Collected: 2016/06/20
Shipped:
Received: 2016/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4546897	N/A	2016/06/21	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4547801	2016/06/21	2016/06/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4546942	2016/06/20	2016/06/21	Raigamage Perera
MOISTURE	BAL	4546901	N/A	2016/06/21	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4546904	2016/06/20	2016/06/20	Arezoo Habibagahi

Maxxam ID: COJ326
Sample ID: VS246
Matrix: Soil

Collected: 2016/06/20
Shipped:
Received: 2016/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4546897	N/A	2016/06/21	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4547801	2016/06/21	2016/06/21	Sally Coughlin

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Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: COJ326
Sample ID: VS246
Matrix: Soil

Collected: 2016/06/20
Shipped:
Received: 2016/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4546942	2016/06/20	2016/06/21	Raigamage Perera
MOISTURE	BAL	4546901	N/A	2016/06/21	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4546904	2016/06/20	2016/06/20	Arezoo Habibagahi

Maxxam ID: COJ327
Sample ID: VS1246
Matrix: Soil

Collected: 2016/06/20
Shipped:
Received: 2016/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4546897	N/A	2016/06/21	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4547801	2016/06/21	2016/06/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4546942	2016/06/20	2016/06/21	Raigamage Perera
MOISTURE	BAL	4546901	N/A	2016/06/21	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4546904	2016/06/20	2016/06/20	Arezoo Habibagahi

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Report Date: 2016/06/21

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GENERAL COMMENTS

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

Package 1	30.3°C

Results relate only to the items tested.

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Report Date: 2016/06/21

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4546904	D10-Anthracene	2016/06/20	54	50 - 130	63	50 - 130	57	%		
4546904	D14-Terphenyl (FS)	2016/06/20	69	50 - 130	75	50 - 130	66	%		
4546904	D8-Acenaphthylene	2016/06/20	59	50 - 130	67	50 - 130	65	%		
4546901	Moisture	2016/06/21							5.9	50
4546904	1-Methylnaphthalene	2016/06/20	73	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
4546904	2-Methylnaphthalene	2016/06/20	65	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
4546904	Acenaphthene	2016/06/20	65	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
4546904	Acenaphthylene	2016/06/20	68	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
4546904	Anthracene	2016/06/20	68	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
4546904	Benzo(a)anthracene	2016/06/20	96	50 - 130	107	50 - 130	<0.0050	ug/g	NC	40
4546904	Benzo(a)pyrene	2016/06/20	90	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
4546904	Benzo(b/j)fluoranthene	2016/06/20	83	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
4546904	Benzo(g,h,i)perylene	2016/06/20	72	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
4546904	Benzo(k)fluoranthene	2016/06/20	85	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4546904	Chrysene	2016/06/20	95	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
4546904	Dibenz(a,h)anthracene	2016/06/20	71	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40
4546904	Fluoranthene	2016/06/20	80	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4546904	Fluorene	2016/06/20	63	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
4546904	Indeno(1,2,3-cd)pyrene	2016/06/20	81	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4546904	Naphthalene	2016/06/20	66	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
4546904	Phenanthrene	2016/06/20	68	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
4546904	Pyrene	2016/06/20	80	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4546942	Acid Extractable Antimony (Sb)	2016/06/21	95	75 - 125	106	80 - 120	<0.2	ug/g	NC	35
4546942	Acid Extractable Arsenic (As)	2016/06/21	101	75 - 125	104	80 - 120	<1	ug/g	NC	35
4546942	Acid Extractable Barium (Ba)	2016/06/21	NC	75 - 125	102	80 - 120	<0.5	ug/g	2.5	35
4546942	Acid Extractable Beryllium (Be)	2016/06/21	105	75 - 125	108	80 - 120	<0.2	ug/g	NC	35
4546942	Acid Extractable Boron (B)	2016/06/21	105	75 - 125	109	80 - 120	<5	ug/g	NC	35
4546942	Acid Extractable Cadmium (Cd)	2016/06/21	102	75 - 125	105	80 - 120	<0.1	ug/g	NC	35
4546942	Acid Extractable Chromium (Cr)	2016/06/21	NC	75 - 125	107	80 - 120	<1	ug/g	0.24	35
4546942	Acid Extractable Cobalt (Co)	2016/06/21	102	75 - 125	108	80 - 120	<0.1	ug/g	3.6	35
4546942	Acid Extractable Copper (Cu)	2016/06/21	98	75 - 125	108	80 - 120	<0.5	ug/g	0.52	35

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QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4546942	Acid Extractable Lead (Pb)	2016/06/21	99	75 - 125	104	80 - 120	<1	ug/g	2.1	35
4546942	Acid Extractable Mercury (Hg)	2016/06/21	110	75 - 125	109	80 - 120	<0.05	ug/g	NC	35
4546942	Acid Extractable Molybdenum (Mo)	2016/06/21	98	75 - 125	103	80 - 120	<0.5	ug/g	NC	35
4546942	Acid Extractable Nickel (Ni)	2016/06/21	100	75 - 125	107	80 - 120	<0.5	ug/g	6.7	35
4546942	Acid Extractable Selenium (Se)	2016/06/21	97	75 - 125	99	80 - 120	<0.5	ug/g	NC	35
4546942	Acid Extractable Silver (Ag)	2016/06/21	99	75 - 125	104	80 - 120	<0.2	ug/g	NC	35
4546942	Acid Extractable Thallium (Tl)	2016/06/21	100	75 - 125	101	80 - 120	<0.05	ug/g	NC	35
4546942	Acid Extractable Uranium (U)	2016/06/21	105	75 - 125	107	80 - 120	<0.05	ug/g	5.1	25
4546942	Acid Extractable Vanadium (V)	2016/06/21	NC	75 - 125	108	80 - 120	<5	ug/g	1.9	35
4546942	Acid Extractable Zinc (Zn)	2016/06/21	NC	75 - 125	105	80 - 120	<5	ug/g	NC	35
4547801	Chromium (VI)	2016/06/21	81	75 - 125	93	80 - 120	<0.2	ug/g	NC	35

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Paul

Paul Rubinato, Analyst, Maxxam Analytics

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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:	
Address:	1931 Robertson Rd	Address:		Project:	1525113
	Ottawa ON K2H 5B7			Project Name:	
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:	
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	Aaron Bradshaw

Laboratory Use Only:

Maxxam Job #:	Bottle Order #:
	557328
COC #:	**Project Manager:**
C#557328-00-01	Parnian Baber

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

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 applicable to entire submission)
Date Required: Next Day Time Required: ___ ☒
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	# of Bottles	Comments
1		VS241	16/06/20	730	Soil		X	X	1	
2		VS1241		730			X	X	1	
3		VS242		740			X	X	1	
4		VS243		750			X	X	1	
5		VS244		810			X	X	1	
6		VS245		820			X	X	1	
7		VS022c		1130			X	X	1	
8		VS246		1300			X	X	1	RECEIVED IN OTTAWA
9		VS1246		1300			X	X	1	
10										ON ICE pack.

20-Jun-16 15:30
Parnian Baber
B6C6288
FHB OTT-002

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature] Aaron Bradshaw	16/06/20	14:45	HA Fatemeh Habib	2016/06/20	15:30	0

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	31, 30, 30	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

Maxxam Job #: B6C6288
Report Date: 2016/06/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 557328-07-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/06/28
Report #: R4044654
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6D1818
Received: 2016/06/27, 14:59

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	1	N/A	2016/06/28	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	1	2016/06/28	2016/06/28	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	1	2016/06/28	2016/06/28	OTT SOP-00003	EPA 6020
MOISTURE	1	N/A	2016/06/28	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	1	2016/06/27	2016/06/28	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Marissa Oddi
Customer Service Representative
28 Jun 2016 16:39:26 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager Assistant
Email: MBingley@maxxam.ca
Phone# (613)274-0573

==========

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 Job #: B6D1818
Report Date: 2016/06/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CPK165	CPK165		
Sampling Date			2016/06/27 14:10	2016/06/27 14:10		
COC Number			557328-07-01	557328-07-01		
	UNITS	Criteria	VS247	VS247 Lab-Dup	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	0.2	4557434
Acid Extractable Arsenic (As)	ug/g	**18**	<1	<1	1	4557434
Acid Extractable Barium (Ba)	ug/g	**390**	28	27	0.5	4557434
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.2	0.2	0.2	4557434
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	5	4557434
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	0.1	4557434
Acid Extractable Chromium (Cr)	ug/g	**160**	16	15	1	4557434
Acid Extractable Cobalt (Co)	ug/g	**22**	3.9	3.8	0.1	4557434
Acid Extractable Copper (Cu)	ug/g	**140**	7.1	6.5	0.5	4557434
Acid Extractable Lead (Pb)	ug/g	**120**	2	2	1	4557434
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	0.05	4557434
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	0.5	4557434
Acid Extractable Nickel (Ni)	ug/g	**100**	8.5	7.9	0.5	4557434
Acid Extractable Selenium (Se)	ug/g	**2.4**	1.0	0.7	0.5	4557434
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	0.2	4557434
Acid Extractable Thallium (Tl)	ug/g	**1**	0.05	0.05	0.05	4557434
Acid Extractable Uranium (U)	ug/g	**23**	0.69	0.63	0.05	4557434
Acid Extractable Vanadium (V)	ug/g	**86**	20	19	5	4557434
Acid Extractable Zinc (Zn)	ug/g	**340**	21	21	5	4557434

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6D1818
Report Date: 2016/06/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CPK165		
Sampling Date			2016/06/27 14:10		
COC Number			557328-07-01		
	UNITS	Criteria	VS247	RDL	QC Batch
Inorganics					
Moisture	%	-	17	0.2	4556440
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.014	4556412
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	4556449
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	4556449
Anthracene	ug/g	**0.67**	<0.0050	0.0050	4556449
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	4556449
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	4556449
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.0086	0.0050	4556449
Benzo(g,h,i)perylene	ug/g	**6.6**	0.0066	0.0050	4556449
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	4556449
Chrysene	ug/g	**7**	<0.0050	0.0050	4556449
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	4556449
Fluoranthene	ug/g	**0.69**	<0.0050	0.0050	4556449
Fluorene	ug/g	**62**	<0.0050	0.0050	4556449
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	4556449
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4556449
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4556449
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	4556449
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	4556449
Pyrene	ug/g	**78**	<0.0050	0.0050	4556449
Surrogate Recovery (%)					
D10-Anthracene	%	-	67		4556449
D14-Terphenyl (FS)	%	-	72		4556449
D8-Acenaphthylene	%	-	66		4556449

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water
Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B6D1818
Report Date: 2016/06/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CPK165	CPK165		
Sampling Date			2016/06/27 14:10	2016/06/27 14:10		
COC Number			557328-07-01	557328-07-01		
	UNITS	Criteria	VS247	VS247 Lab-Dup	RDL	QC Batch
Inorganics						
Chromium (VI)	ug/g	8	0.7	0.6	0.2	4557412

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Report Date: 2016/06/28

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Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CPK165
Sample ID: VS247
Matrix: Soil

Collected: 2016/06/27
Shipped:
Received: 2016/06/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4556412	N/A	2016/06/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4557412	2016/06/28	2016/06/28	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4557434	2016/06/28	2016/06/28	Raigamage Perera
MOISTURE	BAL	4556440	N/A	2016/06/28	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4556449	2016/06/27	2016/06/28	Arezoo Habibagahi

Maxxam ID: CPK165 Dup
Sample ID: VS247
Matrix: Soil

Collected: 2016/06/27
Shipped:
Received: 2016/06/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4557412	2016/06/28	2016/06/28	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4557434	2016/06/28	2016/06/28	Raigamage Perera

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Report Date: 2016/06/28

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GENERAL COMMENTS

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

Package 1	25.3°C

Results relate only to the items tested.

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Maxxam Job #: B6D1818
Report Date: 2016/06/28

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4556449	D10-Anthracene	2016/06/28	66	50 - 130	69	50 - 130	75	%		
4556449	D14-Terphenyl (FS)	2016/06/28	77	50 - 130	77	50 - 130	78	%		
4556449	D8-Acenaphthylene	2016/06/28	68	50 - 130	72	50 - 130	77	%		
4556440	Moisture	2016/06/28							0.48	50
4556449	1-Methylnaphthalene	2016/06/28	82	50 - 130	87	50 - 130	<0.0050	ug/g	4.7	40
4556449	2-Methylnaphthalene	2016/06/28	74	50 - 130	79	50 - 130	<0.0050	ug/g	3.0	40
4556449	Acenaphthene	2016/06/28	71	50 - 130	73	50 - 130	<0.0050	ug/g	8.3	40
4556449	Acenaphthylene	2016/06/28	78	50 - 130	82	50 - 130	<0.0050	ug/g	3.1	40
4556449	Anthracene	2016/06/28	80	50 - 130	84	50 - 130	<0.0050	ug/g	4.5	40
4556449	Benzo(a)anthracene	2016/06/28	101	50 - 130	110	50 - 130	<0.0050	ug/g	2.3	40
4556449	Benzo(a)pyrene	2016/06/28	92	50 - 130	101	50 - 130	<0.0050	ug/g	2.2	40
4556449	Benzo(b/j)fluoranthene	2016/06/28	93	50 - 130	100	50 - 130	<0.0050	ug/g	1.9	40
4556449	Benzo(g,h,i)perylene	2016/06/28	71	50 - 130	77	50 - 130	<0.0050	ug/g	8.1	40
4556449	Benzo(k)fluoranthene	2016/06/28	90	50 - 130	97	50 - 130	<0.0050	ug/g	1.1	40
4556449	Chrysene	2016/06/28	102	50 - 130	111	50 - 130	<0.0050	ug/g	1.9	40
4556449	Dibenz(a,h)anthracene	2016/06/28	70	50 - 130	73	50 - 130	<0.0050	ug/g	4.2	40
4556449	Fluoranthene	2016/06/28	89	50 - 130	92	50 - 130	<0.0050	ug/g	4.6	40
4556449	Fluorene	2016/06/28	71	50 - 130	72	50 - 130	<0.0050	ug/g	6.6	40
4556449	Indeno(1,2,3-cd)pyrene	2016/06/28	88	50 - 130	92	50 - 130	<0.0050	ug/g	12	40
4556449	Naphthalene	2016/06/28	70	50 - 130	74	50 - 130	<0.0050	ug/g	4.2	40
4556449	Phenanthrene	2016/06/28	77	50 - 130	81	50 - 130	<0.0050	ug/g	2.2	40
4556449	Pyrene	2016/06/28	92	50 - 130	95	50 - 130	<0.0050	ug/g	3.8	40
4557412	Chromium (VI)	2016/06/28	79	75 - 125	97	80 - 120	<0.2	ug/g	NC	35
4557434	Acid Extractable Antimony (Sb)	2016/06/28	96	75 - 125	100	80 - 120	<0.2	ug/g	NC	35
4557434	Acid Extractable Arsenic (As)	2016/06/28	102	75 - 125	99	80 - 120	<1	ug/g	NC	35
4557434	Acid Extractable Barium (Ba)	2016/06/28	NC	75 - 125	100	80 - 120	<0.5	ug/g	1.9	35
4557434	Acid Extractable Beryllium (Be)	2016/06/28	100	75 - 125	99	80 - 120	<0.2	ug/g	NC	35
4557434	Acid Extractable Boron (B)	2016/06/28	98	75 - 125	98	80 - 120	<5	ug/g	NC	35
4557434	Acid Extractable Cadmium (Cd)	2016/06/28	102	75 - 125	100	80 - 120	<0.1	ug/g	NC	35
4557434	Acid Extractable Chromium (Cr)	2016/06/28	NC	75 - 125	101	80 - 120	<1	ug/g	7.3	35
4557434	Acid Extractable Cobalt (Co)	2016/06/28	104	75 - 125	99	80 - 120	<0.1	ug/g	1.6	35

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Maxxam Job #: B6D1818
Report Date: 2016/06/28

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4557434	Acid Extractable Copper (Cu)	2016/06/28	100	75 - 125	100	80 - 120	<0.5	ug/g	9.3	35
4557434	Acid Extractable Lead (Pb)	2016/06/28	101	75 - 125	103	80 - 120	<1	ug/g	NC	35
4557434	Acid Extractable Mercury (Hg)	2016/06/28	107	75 - 125	112	80 - 120	<0.05	ug/g	NC	35
4557434	Acid Extractable Molybdenum (Mo)	2016/06/28	101	75 - 125	100	80 - 120	<0.5	ug/g	NC	35
4557434	Acid Extractable Nickel (Ni)	2016/06/28	105	75 - 125	100	80 - 120	<0.5	ug/g	7.1	35
4557434	Acid Extractable Selenium (Se)	2016/06/28	103	75 - 125	105	80 - 120	0.7, RDL=0.5	ug/g	NC	35
4557434	Acid Extractable Silver (Ag)	2016/06/28	98	75 - 125	98	80 - 120	<0.2	ug/g	NC	35
4557434	Acid Extractable Thallium (Tl)	2016/06/28	102	75 - 125	103	80 - 120	<0.05	ug/g	NC	35
4557434	Acid Extractable Uranium (U)	2016/06/28	108	75 - 125	110	80 - 120	<0.05	ug/g	8.5	25
4557434	Acid Extractable Vanadium (V)	2016/06/28	NC	75 - 125	103	80 - 120	<5	ug/g	NC	35
4557434	Acid Extractable Zinc (Zn)	2016/06/28	NC	75 - 125	100	80 - 120	<5	ug/g	NC	35

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 sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B6D1818
Report Date: 2016/06/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Steve Roberts, Ottawa Lab Manager

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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6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557328
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113		
	Ottawa ON K2H 5B7			Project Name:		COC #:	Project Manager:
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:		C#557328-07-01	Parnian Baber
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com, Paul_Hurst@golder.com, GAL	Sampled By:	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

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: Next Day Time Required: ☒
Rush Confirmation Number: ___ (call lab for #)

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (Metals / Hg / Cr VI)	O Reg 153 PAHs (Soil)	O Reg 153 ICPMS Metals including Hg and CRVI	# of Bottles	Comments
1		VS247	16/06/27	14:10	Soil		X	X	1	
2										
3										
4										
5										
6										
7										
8										
9										
10										

27-Jun-16 14:59
Parnian Baber
B6D1818
FHB OTT-002

RECEIVED IN OTTAWA

on ice pack.

* 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
Aaron Bradshaw	16/06/27	14:20	Fatemeh Habib	2016/06/27	14:59	0		26, 25, 25	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

Maxxam Job #: B6D1818
Report Date: 2016/06/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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A Bureau Veritas Group Company

Your Project #: 1525113
Site#: 1525113
Your C.O.C. #: 537168-19-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/01/12
Report #: R3847996
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B605239
Received: 2016/01/11, 16:10

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	6	N/A	2016/01/12	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	6	2016/01/12	2016/01/12	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	6	2016/01/11	2016/01/12	OTT SOP-00003	EPA 6020
MOISTURE	6	N/A	2016/01/12	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	6	2016/01/11	2016/01/11	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Parnian Baber
12 Jan 2016 16:24:13 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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 Job #: B605239
Report Date: 2016/01/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		BQG239	BQG239	BQG240	BQG241	BQG242		
Sampling Date		2016/01/11 08:00	2016/01/11 08:00	2016/01/11 09:00	2016/01/11 10:00	2016/01/11 11:00		
COC Number		537168-19-01	537168-19-01	537168-19-01	537168-19-01	537168-19-01		
	UNITS	VS031	VS031 Lab-Dup	VS032	VS033	VS034	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4340705
Acid Extractable Arsenic (As)	ug/g	2	2	3	3	2	1	4340705
Acid Extractable Barium (Ba)	ug/g	36	37	25	41	14	0.5	4340705
Acid Extractable Beryllium (Be)	ug/g	0.3	0.3	0.2	0.4	0.2	0.2	4340705
Acid Extractable Boron (B)	ug/g	<5	<5	<5	<5	<5	5	4340705
Acid Extractable Cadmium (Cd)	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4340705
Acid Extractable Chromium (Cr)	ug/g	18	19	18	21	14	1	4340705
Acid Extractable Cobalt (Co)	ug/g	4.4	4.5	4.8	5.8	2.9	0.1	4340705
Acid Extractable Copper (Cu)	ug/g	7.3	7.3	7.6	7.0	3.5	0.5	4340705
Acid Extractable Lead (Pb)	ug/g	9	10	13	15	4	1	4340705
Acid Extractable Mercury (Hg)	ug/g	<0.05	<0.05	0.08	<0.05	<0.05	0.05	4340705
Acid Extractable Molybdenum (Mo)	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4340705
Acid Extractable Nickel (Ni)	ug/g	10	10	9.0	11	6.9	0.5	4340705
Acid Extractable Selenium (Se)	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4340705
Acid Extractable Silver (Ag)	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4340705
Acid Extractable Thallium (Tl)	ug/g	0.05	<0.05	0.06	0.07	<0.05	0.05	4340705
Acid Extractable Uranium (U)	ug/g	0.63	0.67	0.57	0.73	0.53	0.05	4340705
Acid Extractable Vanadium (V)	ug/g	23	24	26	29	23	5	4340705
Acid Extractable Zinc (Zn)	ug/g	23	24	23	33	15	5	4340705

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B605239
Report Date: 2016/01/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		BQG243	BQG244		
Sampling Date		2016/01/11 12:00	2016/01/11 13:00		
COC Number		537168-19-01	537168-19-01		
	UNITS	VS035	VS036	RDL	QC Batch
Metals					
Acid Extractable Antimony (Sb)	ug/g	<0.2	<0.2	0.2	4340705
Acid Extractable Arsenic (As)	ug/g	2	1	1	4340705
Acid Extractable Barium (Ba)	ug/g	15	14	0.5	4340705
Acid Extractable Beryllium (Be)	ug/g	0.2	<0.2	0.2	4340705
Acid Extractable Boron (B)	ug/g	<5	<5	5	4340705
Acid Extractable Cadmium (Cd)	ug/g	<0.1	<0.1	0.1	4340705
Acid Extractable Chromium (Cr)	ug/g	11	9	1	4340705
Acid Extractable Cobalt (Co)	ug/g	2.2	1.8	0.1	4340705
Acid Extractable Copper (Cu)	ug/g	2.7	2.6	0.5	4340705
Acid Extractable Lead (Pb)	ug/g	3	5	1	4340705
Acid Extractable Mercury (Hg)	ug/g	<0.05	<0.05	0.05	4340705
Acid Extractable Molybdenum (Mo)	ug/g	<0.5	<0.5	0.5	4340705
Acid Extractable Nickel (Ni)	ug/g	6.3	4.3	0.5	4340705
Acid Extractable Selenium (Se)	ug/g	<0.5	<0.5	0.5	4340705
Acid Extractable Silver (Ag)	ug/g	<0.2	<0.2	0.2	4340705
Acid Extractable Thallium (Tl)	ug/g	<0.05	<0.05	0.05	4340705
Acid Extractable Uranium (U)	ug/g	0.49	0.40	0.05	4340705
Acid Extractable Vanadium (V)	ug/g	16	9	5	4340705
Acid Extractable Zinc (Zn)	ug/g	20	18	5	4340705

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B605239
Report Date: 2016/01/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID		BQG239	BQG240	BQG241	BQG242	BQG243		
Sampling Date		2016/01/11 08:00	2016/01/11 09:00	2016/01/11 10:00	2016/01/11 11:00	2016/01/11 12:00		
COC Number		537168-19-01	537168-19-01	537168-19-01	537168-19-01	537168-19-01		
	UNITS	VS031	VS032	VS033	VS034	VS035	RDL	QC Batch
Inorganics								
Moisture	%	12	12	12	15	20	0.2	4340054
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4340701
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4340057
Acenaphthylene	ug/g	<0.0050	0.0055	<0.0050	<0.0050	<0.0050	0.0050	4340057
Anthracene	ug/g	<0.0050	0.0055	<0.0050	<0.0050	<0.0050	0.0050	4340057
Benzo(a)anthracene	ug/g	0.011	0.027	0.012	<0.0050	<0.0050	0.0050	4340057
Benzo(a)pyrene	ug/g	0.017	0.033	0.018	<0.0050	<0.0050	0.0050	4340057
Benzo(b/j)fluoranthene	ug/g	0.022	0.044	0.018	<0.0050	<0.0050	0.0050	4340057
Benzo(g,h,i)perylene	ug/g	0.011	0.016	0.012	<0.0050	<0.0050	0.0050	4340057
Benzo(k)fluoranthene	ug/g	0.0056	0.011	0.0060	<0.0050	<0.0050	0.0050	4340057
Chrysene	ug/g	0.011	0.022	0.012	<0.0050	<0.0050	0.0050	4340057
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4340057
Fluoranthene	ug/g	0.028	0.055	0.024	<0.0050	<0.0050	0.0050	4340057
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4340057
Indeno(1,2,3-cd)pyrene	ug/g	0.011	0.016	0.0060	<0.0050	<0.0050	0.0050	4340057
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4340057
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4340057
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4340057
Phenanthrene	ug/g	0.017	0.016	0.012	<0.0050	<0.0050	0.0050	4340057
Pyrene	ug/g	0.022	0.044	0.018	<0.0050	<0.0050	0.0050	4340057
Surrogate Recovery (%)								
D10-Anthracene	%	83	77	74	76	76		4340057
D14-Terphenyl (FS)	%	93	79	76	77	76		4340057
D8-Acenaphthylene	%	81	74	72	73	74		4340057

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B605239
Report Date: 2016/01/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID		BQG244	BQG244		
Sampling Date		2016/01/11 13:00	2016/01/11 13:00		
COC Number		537168-19-01	537168-19-01		
	UNITS	VS036	VS036 Lab-Dup	RDL	QC Batch
Inorganics					
Moisture	%	19	19	0.2	4340702
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	<0.014		0.014	4340701
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	<0.0050		0.0050	4340057
Acenaphthylene	ug/g	<0.0050		0.0050	4340057
Anthracene	ug/g	<0.0050		0.0050	4340057
Benzo(a)anthracene	ug/g	<0.0050		0.0050	4340057
Benzo(a)pyrene	ug/g	<0.0050		0.0050	4340057
Benzo(b/j)fluoranthene	ug/g	<0.0050		0.0050	4340057
Benzo(g,h,i)perylene	ug/g	<0.0050		0.0050	4340057
Benzo(k)fluoranthene	ug/g	<0.0050		0.0050	4340057
Chrysene	ug/g	<0.0050		0.0050	4340057
Dibenz(a,h)anthracene	ug/g	<0.0050		0.0050	4340057
Fluoranthene	ug/g	0.0054		0.0050	4340057
Fluorene	ug/g	<0.0050		0.0050	4340057
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050		0.0050	4340057
1-Methylnaphthalene	ug/g	<0.0050		0.0050	4340057
2-Methylnaphthalene	ug/g	<0.0050		0.0050	4340057
Naphthalene	ug/g	<0.0050		0.0050	4340057
Phenanthrene	ug/g	<0.0050		0.0050	4340057
Pyrene	ug/g	0.0054		0.0050	4340057
Surrogate Recovery (%)					
D10-Anthracene	%	76			4340057
D14-Terphenyl (FS)	%	78			4340057
D8-Acenaphthylene	%	73			4340057

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B605239
Report Date: 2016/01/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		BQG239	BQG240	BQG241	BQG242	BQG243	BQG244		
Sampling Date		2016/01/11 08:00	2016/01/11 09:00	2016/01/11 10:00	2016/01/11 11:00	2016/01/11 12:00	2016/01/11 13:00		
COC Number		537168-19-01	537168-19-01	537168-19-01	537168-19-01	537168-19-01	537168-19-01		
	UNITS	VS031	VS032	VS033	VS034	VS035	VS036	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4340657

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B605239
Report Date: 2016/01/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: BQG239
Sample ID: VS031
Matrix: Soil

Collected: 2016/01/11
Shipped:
Received: 2016/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4340701	N/A	2016/01/12	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4340657	2016/01/12	2016/01/12	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4340705	2016/01/11	2016/01/12	Raigamage Perera
MOISTURE	BAL	4340054	N/A	2016/01/12	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4340057	2016/01/11	2016/01/11	Liliana Gaburici

Maxxam ID: BQG239 Dup
Sample ID: VS031
Matrix: Soil

Collected: 2016/01/11
Shipped:
Received: 2016/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4340705	2016/01/11	2016/01/12	Raigamage Perera

Maxxam ID: BQG240
Sample ID: VS032
Matrix: Soil

Collected: 2016/01/11
Shipped:
Received: 2016/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4340701	N/A	2016/01/12	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4340657	2016/01/12	2016/01/12	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4340705	2016/01/11	2016/01/12	Raigamage Perera
MOISTURE	BAL	4340054	N/A	2016/01/12	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4340057	2016/01/11	2016/01/11	Liliana Gaburici

Maxxam ID: BQG241
Sample ID: VS033
Matrix: Soil

Collected: 2016/01/11
Shipped:
Received: 2016/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4340701	N/A	2016/01/12	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4340657	2016/01/12	2016/01/12	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4340705	2016/01/11	2016/01/12	Raigamage Perera
MOISTURE	BAL	4340054	N/A	2016/01/12	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4340057	2016/01/11	2016/01/11	Liliana Gaburici

Maxxam ID: BQG242
Sample ID: VS034
Matrix: Soil

Collected: 2016/01/11
Shipped:
Received: 2016/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4340701	N/A	2016/01/12	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4340657	2016/01/12	2016/01/12	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4340705	2016/01/11	2016/01/12	Raigamage Perera
MOISTURE	BAL	4340054	N/A	2016/01/12	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4340057	2016/01/11	2016/01/11	Liliana Gaburici

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Maxxam Job #: B605239
Report Date: 2016/01/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: BQG243
Sample ID: VS035
Matrix: Soil

Collected: 2016/01/11
Shipped:
Received: 2016/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4340701	N/A	2016/01/12	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4340657	2016/01/12	2016/01/12	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4340705	2016/01/11	2016/01/12	Raigamage Perera
MOISTURE	BAL	4340054	N/A	2016/01/12	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4340057	2016/01/11	2016/01/11	Liliana Gaburici

Maxxam ID: BQG244
Sample ID: VS036
Matrix: Soil

Collected: 2016/01/11
Shipped:
Received: 2016/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4340701	N/A	2016/01/12	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4340657	2016/01/12	2016/01/12	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4340705	2016/01/11	2016/01/12	Raigamage Perera
MOISTURE	BAL	4340702	N/A	2016/01/12	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4340057	2016/01/11	2016/01/11	Liliana Gaburici

Maxxam ID: BQG244 Dup
Sample ID: VS036
Matrix: Soil

Collected: 2016/01/11
Shipped:
Received: 2016/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4340702	N/A	2016/01/12	Arezoo Habibagahi

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Maxxam Job #: B605239
Report Date: 2016/01/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

GENERAL COMMENTS

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

Package 1	0.7°C

Cooler custody seal was present and intact.

Results relate only to the items tested.

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Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B605239
Report Date: 2016/01/12

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4340057	D10-Anthracene	2016/01/11	80	50 - 130	82	50 - 130	82	%				
4340057	D14-Terphenyl (FS)	2016/01/11	85	50 - 130	85	50 - 130	82	%				
4340057	D8-Acenaphthylene	2016/01/11	80	50 - 130	81	50 - 130	79	%				
4340054	Moisture	2016/01/12							3.7	50		
4340057	1-Methylnaphthalene	2016/01/11	77	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40		
4340057	2-Methylnaphthalene	2016/01/11	86	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40		
4340057	Acenaphthene	2016/01/11	70	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40		
4340057	Acenaphthylene	2016/01/11	70	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40		
4340057	Anthracene	2016/01/11	71	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		
4340057	Benzo(a)anthracene	2016/01/11	71	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40		
4340057	Benzo(a)pyrene	2016/01/11	76	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40		
4340057	Benzo(b/j)fluoranthene	2016/01/11	83	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40		
4340057	Benzo(g,h,i)perylene	2016/01/11	72	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40		
4340057	Benzo(k)fluoranthene	2016/01/11	76	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40		
4340057	Chrysene	2016/01/11	73	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4340057	Dibenz(a,h)anthracene	2016/01/11	71	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40		
4340057	Fluoranthene	2016/01/11	76	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40		
4340057	Fluorene	2016/01/11	76	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40		
4340057	Indeno(1,2,3-cd)pyrene	2016/01/11	74	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40		
4340057	Naphthalene	2016/01/11	72	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40		
4340057	Phenanthrene	2016/01/11	74	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		
4340057	Pyrene	2016/01/11	71	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40		
4340657	Chromium (VI)	2016/01/12	1.0 (1)	75 - 125	93	80 - 120	<0.2	ug/g	NC	35	88	80 - 120
4340702	Moisture	2016/01/12							0.53	50		
4340705	Acid Extractable Antimony (Sb)	2016/01/12	95	75 - 125	102	80 - 120	<0.2	ug/g	NC	35		
4340705	Acid Extractable Arsenic (As)	2016/01/12	98	75 - 125	108	80 - 120	<1	ug/g	NC	35		
4340705	Acid Extractable Barium (Ba)	2016/01/12	NC	75 - 125	106	80 - 120	<0.5	ug/g	4.2	35		
4340705	Acid Extractable Beryllium (Be)	2016/01/12	107	75 - 125	111	80 - 120	<0.2	ug/g	NC	35		
4340705	Acid Extractable Boron (B)	2016/01/12	109	75 - 125	113	80 - 120	<5	ug/g	NC	35		
4340705	Acid Extractable Cadmium (Cd)	2016/01/12	98	75 - 125	102	80 - 120	<0.1	ug/g	NC	35		
4340705	Acid Extractable Chromium (Cr)	2016/01/12	NC	75 - 125	103	80 - 120	<1	ug/g	4.0	35		

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A Bureau Veritas Group Company

Maxxam Job #: B605239
Report Date: 2016/01/12

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4340705	Acid Extractable Cobalt (Co)	2016/01/12	103	75 - 125	107	80 - 120	<0.1	ug/g	2.3	35		
4340705	Acid Extractable Copper (Cu)	2016/01/12	98	75 - 125	106	80 - 120	<0.5	ug/g	0.75	35		
4340705	Acid Extractable Lead (Pb)	2016/01/12	99	75 - 125	107	80 - 120	<1	ug/g	3.8	35		
4340705	Acid Extractable Mercury (Hg)	2016/01/12	104	75 - 125	113	80 - 120	<0.05	ug/g	NC	35		
4340705	Acid Extractable Molybdenum (Mo)	2016/01/12	101	75 - 125	106	80 - 120	<0.5	ug/g	NC	35		
4340705	Acid Extractable Nickel (Ni)	2016/01/12	103	75 - 125	105	80 - 120	<0.5	ug/g	1.8	35		
4340705	Acid Extractable Selenium (Se)	2016/01/12	99	75 - 125	107	80 - 120	<0.5	ug/g	NC	35		
4340705	Acid Extractable Silver (Ag)	2016/01/12	98	75 - 125	104	80 - 120	<0.2	ug/g	NC	35		
4340705	Acid Extractable Thallium (Tl)	2016/01/12	100	75 - 125	106	80 - 120	<0.05	ug/g	NC	35		
4340705	Acid Extractable Uranium (U)	2016/01/12	98	75 - 125	105	80 - 120	<0.05	ug/g	6.1	25		
4340705	Acid Extractable Vanadium (V)	2016/01/12	NC	75 - 125	104	80 - 120	<5	ug/g	NC	35		
4340705	Acid Extractable Zinc (Zn)	2016/01/12	NC	75 - 125	102	80 - 120	<5	ug/g	NC	35		

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B605239
Report Date: 2016/01/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Steve Roberts, Ottawa Lab Manager

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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6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel.(905) 817-5700 Toll-Free.800-563-6266 Fax (905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 537168
Attention:	Central Accounting	Attention:	Paul Hurst / Aaron Bradshaw	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#537168-19-01	Ema Gitej
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	phurst@golder.com / abradshaw@golder.com	Sampled By:	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

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: Jan 12 Time Required: BOD ☐
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	Leftache Landfill (TCLP METALS, REG. 153 PHCs)	# of Bottles	Comments
1	VS031 →		Jan 11,15	800	Soil		X	X		1	
2	VS032 →		↓	900	↓		X	X		1	
3	VS033 →		↓	1000	↓		X	X		1	
4	VS034 →		↓	1100	↓		X	X		1	
5	VS035 →		↓	1200	↓		X	X		1	
6	VS036 →		↓	1300	↓		X	X		1	
7											
8											
9											
10											on ice pack

11-Jan-16 16:10
Ema Gitej
B605239

RECEIVED 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
A Bradshaw / Aaron Bradshaw	16/01/11	1400	Kelsey Pilon Kelsey Pilon	16/01/11	16:10			1, 1, 0	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Site#: 525113
Your C.O.C. #: 537168-30-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/01/27
Report #: R3868318
Version: 3 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B611872
Received: 2016/01/20, 14:46

Sample Matrix: Soil
Samples Received: 11

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	10	N/A	2016/01/21	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	10	2016/01/21	2016/01/21	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (3)	1	N/A	2016/01/21	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (4)	1	2016/01/25	2016/01/26	OTT SOP-00001	CCME CWS
Mercury (TCLP Leachable) (mg/L) (1)	1	N/A	2016/01/25	CAM SOP-00453	EPA 7470A m
Total Metals in TCLP Leachate by ICPMS (1)	1	2016/01/22	2016/01/22	CAM SOP-00447	EPA 6020A m
Acid Extr. Metals (aqua regia) by ICPMS	10	2016/01/20	2016/01/21	OTT SOP-00003	EPA 6020
MOISTURE	10	N/A	2016/01/21	CAM SOP-00445	McKeague 2nd ed 1978
MOISTURE	1	N/A	2016/01/26	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	10	2016/01/21	2016/01/21	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.
(3) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
(4) All CCME PHC results met required criteria unless otherwise stated in the report. 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 "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

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Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Site#: 525113
Your C.O.C. #: 537168-30-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/01/27
Report #: R3868318
Version: 3 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B611872
Received: 2016/01/20, 14:46

Encryption Key

Parnian Baber
27 Jan 2016 15:04:23 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573
==========
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 Job #: B611872
Report Date: 2016/01/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BRO667	BRO668	BRO669	BRO670	BRO671		
Sampling Date			2016/01/20 11:00	2016/01/20 11:10	2016/01/20 11:20	2016/01/20 11:30	2016/01/20 11:40		
COC Number			537168-30-01	537168-30-01	537168-30-01	537168-30-01	537168-30-01		
	UNITS	Criteria	VS037	VS038	VS039	VS040	VS041	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	7.5	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4352069
Acid Extractable Arsenic (As)	ug/g	18	3	2	2	2	2	1	4352069
Acid Extractable Barium (Ba)	ug/g	390	51	33	27	32	29	0.5	4352069
Acid Extractable Beryllium (Be)	ug/g	4	0.3	0.3	0.3	0.3	<0.2	0.2	4352069
Acid Extractable Boron (B)	ug/g	120	<5	<5	<5	<5	<5	5	4352069
Acid Extractable Cadmium (Cd)	ug/g	1.2	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4352069
Acid Extractable Chromium (Cr)	ug/g	160	22	22	17	21	16	1	4352069
Acid Extractable Cobalt (Co)	ug/g	22	5.2	6.1	5.6	8.6	4.3	0.1	4352069
Acid Extractable Copper (Cu)	ug/g	140	8.4	5.1	5.4	6.2	6.3	0.5	4352069
Acid Extractable Lead (Pb)	ug/g	120	20	7	11	13	19	1	4352069
Acid Extractable Mercury (Hg)	ug/g	0.27	0.51	<0.05	<0.05	0.07	0.08	0.05	4352069
Acid Extractable Molybdenum (Mo)	ug/g	6.9	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4352069
Acid Extractable Nickel (Ni)	ug/g	100	11	10	8.6	8.4	8.2	0.5	4352069
Acid Extractable Selenium (Se)	ug/g	2.4	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4352069
Acid Extractable Silver (Ag)	ug/g	20	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4352069
Acid Extractable Thallium (Tl)	ug/g	1	0.09	0.08	0.08	0.08	0.07	0.05	4352069
Acid Extractable Uranium (U)	ug/g	23	0.75	0.88	0.78	0.72	0.56	0.05	4352069
Acid Extractable Vanadium (V)	ug/g	86	27	25	20	31	20	5	4352069
Acid Extractable Zinc (Zn)	ug/g	340	39	36	32	32	28	5	4352069

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B611872
Report Date: 2016/01/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BRO671	BRO672	BRO673	BRO674	BRO675		
Sampling Date			2016/01/20 11:40	2016/01/20 11:50	2016/01/20 12:00	2016/01/20 12:10	2016/01/20 12:30		
COC Number			537168-30-01	537168-30-01	537168-30-01	537168-30-01	537168-30-01		
	UNITS	Criteria	VS041 Lab-Dup	VS042	VS043	VS044	VS1040	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4352069
Acid Extractable Arsenic (As)	ug/g	**18**	3	2	2	1	2	1	4352069
Acid Extractable Barium (Ba)	ug/g	**390**	30	38	37	29	31	0.5	4352069
Acid Extractable Beryllium (Be)	ug/g	**4**	0.2	0.3	0.3	0.3	0.2	0.2	4352069
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	<5	<5	5	4352069
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4352069
Acid Extractable Chromium (Cr)	ug/g	**160**	16	19	19	23	21	1	4352069
Acid Extractable Cobalt (Co)	ug/g	**22**	4.4	4.4	4.7	5.5	7.5	0.1	4352069
Acid Extractable Copper (Cu)	ug/g	**140**	6.8	7.2	7.7	6.8	6.1	0.5	4352069
Acid Extractable Lead (Pb)	ug/g	**120**	20	13	17	8	13	1	4352069
Acid Extractable Mercury (Hg)	ug/g	**0.27**	0.08	<0.05	0.05	<0.05	0.06	0.05	4352069
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	0.5	<0.5	0.5	4352069
Acid Extractable Nickel (Ni)	ug/g	**100**	8.3	9.6	8.9	12	9.0	0.5	4352069
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4352069
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4352069
Acid Extractable Thallium (Tl)	ug/g	**1**	0.06	0.08	0.08	0.08	0.07	0.05	4352069
Acid Extractable Uranium (U)	ug/g	**23**	0.62	0.68	0.74	0.72	0.79	0.05	4352069
Acid Extractable Vanadium (V)	ug/g	**86**	22	25	25	26	29	5	4352069
Acid Extractable Zinc (Zn)	ug/g	**340**	29	24	28	30	31	5	4352069

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B611872
Report Date: 2016/01/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BRO676		
Sampling Date			2016/01/20 12:30		
COC Number			537168-30-01		
	UNITS	Criteria	VS1037	RDL	QC Batch
Metals					
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	0.2	4352069
Acid Extractable Arsenic (As)	ug/g	**18**	3	1	4352069
Acid Extractable Barium (Ba)	ug/g	**390**	46	0.5	4352069
Acid Extractable Beryllium (Be)	ug/g	**4**	0.3	0.2	4352069
Acid Extractable Boron (B)	ug/g	**120**	<5	5	4352069
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	0.1	4352069
Acid Extractable Chromium (Cr)	ug/g	**160**	23	1	4352069
Acid Extractable Cobalt (Co)	ug/g	**22**	5.8	0.1	4352069
Acid Extractable Copper (Cu)	ug/g	**140**	8.1	0.5	4352069
Acid Extractable Lead (Pb)	ug/g	**120**	19	1	4352069
Acid Extractable Mercury (Hg)	ug/g	**0.27**	**0.50**	0.05	4352069
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	0.5	4352069
Acid Extractable Nickel (Ni)	ug/g	**100**	11	0.5	4352069
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	0.5	4352069
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	0.2	4352069
Acid Extractable Thallium (Tl)	ug/g	**1**	0.09	0.05	4352069
Acid Extractable Uranium (U)	ug/g	**23**	0.74	0.05	4352069
Acid Extractable Vanadium (V)	ug/g	**86**	29	5	4352069
Acid Extractable Zinc (Zn)	ug/g	**340**	40	5	4352069

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B611872
Report Date: 2016/01/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BRO667	BRO667	BRO668	BRO669	BRO670		
Sampling Date			2016/01/20 11:00	2016/01/20 11:00	2016/01/20 11:10	2016/01/20 11:20	2016/01/20 11:30		
COC Number			537168-30-01	537168-30-01	537168-30-01	537168-30-01	537168-30-01		
	UNITS	Criteria	VS037	VS037 Lab-Dup	VS038	VS039	VS040	RDL	QC Batch
Inorganics									
Moisture	%	-	31	29	28	14	16	0.2	4352084
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	4352026
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4351667
Acenaphthylene	ug/g	**0.15**	0.0060		<0.0050	<0.0050	<0.0050	0.0050	4351667
Anthracene	ug/g	**0.67**	0.0060		<0.0050	<0.0050	0.0052	0.0050	4351667
Benzo(a)anthracene	ug/g	**0.5**	0.030		0.013	0.0054	0.010	0.0050	4351667
Benzo(a)pyrene	ug/g	**0.3**	0.036		0.013	0.0054	0.016	0.0050	4351667
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.054		0.018	<0.010	0.031	0.010	4351667
Benzo(g,h,i)perylene	ug/g	**6.6**	0.018		0.0065	0.0054	0.0052	0.0050	4351667
Benzo(k)fluoranthene	ug/g	**0.78**	0.018		0.0065	<0.0050	0.010	0.0050	4351667
Chrysene	ug/g	**7**	0.024		0.013	0.0054	0.016	0.0050	4351667
Dibenz(a,h)anthracene	ug/g	**0.1**	0.0060		<0.0050	<0.0050	<0.0050	0.0050	4351667
Fluoranthene	ug/g	**0.69**	0.060		0.026	0.011	0.031	0.0050	4351667
Fluorene	ug/g	**62**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4351667
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.018		0.0065	0.0054	0.0052	0.0050	4351667
1-Methylnaphthalene	ug/g	**0.99**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4351667
2-Methylnaphthalene	ug/g	**0.99**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4351667
Naphthalene	ug/g	**0.6**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4351667
Phenanthrene	ug/g	**6.2**	0.024		0.0065	0.0054	0.010	0.0050	4351667
Pyrene	ug/g	**78**	0.048		0.019	0.011	0.021	0.0050	4351667
Surrogate Recovery (%)									
D10-Anthracene	%	-	86		85	80	82		4351667
D14-Terphenyl (FS)	%	-	86		86	82	84		4351667
D8-Acenaphthylene	%	-	83		81	77	80		4351667

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B611872
Report Date: 2016/01/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BRO671	BRO672	BRO673	BRO674	BRO675		
Sampling Date			2016/01/20 11:40	2016/01/20 11:50	2016/01/20 12:00	2016/01/20 12:10	2016/01/20 12:30		
COC Number			537168-30-01	537168-30-01	537168-30-01	537168-30-01	537168-30-01		
	UNITS	Criteria	VS041	VS042	VS043	VS044	VS1040	RDL	QC Batch
Inorganics									
Moisture	%	-	9.7	15	20	18	17	0.2	4352084
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4352026
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4351667
Acenaphthylene	ug/g	**0.15**	0.0057	<0.0050	0.0058	<0.0050	<0.0050	0.0050	4351667
Anthracene	ug/g	**0.67**	0.0057	<0.0050	0.0058	<0.0050	<0.0050	0.0050	4351667
Benzo(a)anthracene	ug/g	**0.5**	0.023	0.011	0.017	0.0062	0.012	0.0050	4351667
Benzo(a)pyrene	ug/g	**0.3**	0.029	0.017	0.023	0.0062	0.012	0.0050	4351667
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.046	0.023	0.035	0.012	0.019	0.010	4351667
Benzo(g,h,i)perylene	ug/g	**6.6**	0.017	0.011	0.012	0.0062	0.0062	0.0050	4351667
Benzo(k)fluoranthene	ug/g	**0.78**	0.011	0.0057	0.012	0.0062	0.0062	0.0050	4351667
Chrysene	ug/g	**7**	0.023	0.011	0.023	0.0062	0.012	0.0050	4351667
Dibenz(a,h)anthracene	ug/g	**0.1**	0.0057	<0.0050	0.0058	<0.0050	<0.0050	0.0050	4351667
Fluoranthene	ug/g	**0.69**	0.051	0.029	0.046	0.012	0.019	0.0050	4351667
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4351667
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.017	0.011	0.012	0.0062	0.0062	0.0050	4351667
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4351667
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4351667
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4351667
Phenanthrene	ug/g	**6.2**	0.017	0.011	0.017	0.0062	0.0062	0.0050	4351667
Pyrene	ug/g	**78**	0.040	0.023	0.035	0.012	0.019	0.0050	4351667
Surrogate Recovery (%)									
D10-Anthracene	%	-	80	82	83	91	89		4351667
D14-Terphenyl (FS)	%	-	81	81	84	95	90		4351667
D8-Acenaphthylene	%	-	77	79	80	90	85		4351667

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B611872
Report Date: 2016/01/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BRO676		
Sampling Date			2016/01/20 12:30		
COC Number			537168-30-01		
	UNITS	Criteria	VS1037	RDL	QC Batch
Inorganics					
Moisture	%	-	31	0.2	4352084
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.014	4352026
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	4351667
Acenaphthylene	ug/g	**0.15**	0.0071	0.0050	4351667
Anthracene	ug/g	**0.67**	0.0071	0.0050	4351667
Benzo(a)anthracene	ug/g	**0.5**	0.035	0.0050	4351667
Benzo(a)pyrene	ug/g	**0.3**	0.049	0.0050	4351667
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.063	0.010	4351667
Benzo(g,h,i)perylene	ug/g	**6.6**	0.028	0.0050	4351667
Benzo(k)fluoranthene	ug/g	**0.78**	0.021	0.0050	4351667
Chrysene	ug/g	**7**	0.035	0.0050	4351667
Dibenz(a,h)anthracene	ug/g	**0.1**	0.0071	0.0050	4351667
Fluoranthene	ug/g	**0.69**	0.078	0.0050	4351667
Fluorene	ug/g	**62**	<0.0050	0.0050	4351667
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.028	0.0050	4351667
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4351667
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4351667
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	4351667
Phenanthrene	ug/g	**6.2**	0.035	0.0050	4351667
Pyrene	ug/g	**78**	0.064	0.0050	4351667
Surrogate Recovery (%)					
D10-Anthracene	%	-	88		4351667
D14-Terphenyl (FS)	%	-	88		4351667
D8-Acenaphthylene	%	-	85		4351667

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water
Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Report Date: 2016/01/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID			BRO677		
Sampling Date			2016/01/20 12:40		
COC Number			537168-30-01		
	UNITS	Criteria	TCLP-DEBRIS 2	RDL	QC Batch
Inorganics					
Moisture	%	-	15	0.2	4356704
BTEX & F1 Hydrocarbons					
Benzene	ug/g	**0.21**	<0.02	0.02	4351872
Toluene	ug/g	**2.3**	<0.02	0.02	4351872
Ethylbenzene	ug/g	**2**	<0.02	0.02	4351872
o-Xylene	ug/g	-	<0.02	0.02	4351872
p+m-Xylene	ug/g	-	<0.04	0.04	4351872
Total Xylenes	ug/g	**3.1**	<0.04	0.04	4351872
F1 (C6-C10)	ug/g	**55**	<10	10	4351872
F1 (C6-C10) - BTEX	ug/g	**55**	<10	10	4351872
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/g	**98**	<10	10	4358396
F3 (C16-C34 Hydrocarbons)	ug/g	**300**	<50	50	4358396
F4 (C34-C50 Hydrocarbons)	ug/g	**2800**	<50	50	4358396
Reached Baseline at C50	ug/g	-	Yes		4358396
Surrogate Recovery (%)					
1,4-Difluorobenzene	%	-	94		4351872
4-Bromofluorobenzene	%	-	89		4351872
D10-Ethylbenzene	%	-	99		4351872
D4-1,2-Dichloroethane	%	-	101		4351872
o-Terphenyl	%	-	113		4358396

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water
Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Sampler Initials: TL

O.REG 558 TCLP METALS (SOIL)

Maxxam ID		BRO677		
Sampling Date		2016/01/20 12:40		
COC Number		537168-30-01		
	UNITS	TCLP-DEBRIS 2	RDL	QC Batch
Metals				
Leachable Mercury (Hg)	mg/L	<0.0010	0.0010	4354766
Leachable Arsenic (As)	mg/L	<0.20	0.20	4354818
Leachable Barium (Ba)	mg/L	0.50	0.20	4354818
Leachable Boron (B)	mg/L	<0.10	0.10	4354818
Leachable Cadmium (Cd)	mg/L	<0.050	0.050	4354818
Leachable Chromium (Cr)	mg/L	<0.10	0.10	4354818
Leachable Lead (Pb)	mg/L	<0.10	0.10	4354818
Leachable Selenium (Se)	mg/L	<0.10	0.10	4354818
Leachable Silver (Ag)	mg/L	<0.010	0.010	4354818
Leachable Uranium (U)	mg/L	<0.010	0.010	4354818

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			BRO667	BRO668	BRO669	BRO670	BRO671		
Sampling Date			2016/01/20 11:00	2016/01/20 11:10	2016/01/20 11:20	2016/01/20 11:30	2016/01/20 11:40		
COC Number			537168-30-01	537168-30-01	537168-30-01	537168-30-01	537168-30-01		
	UNITS	Criteria	VS037	VS038	VS039	VS040	VS041	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4353231

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			BRO672	BRO673	BRO674	BRO675	BRO675		
Sampling Date			2016/01/20 11:50	2016/01/20 12:00	2016/01/20 12:10	2016/01/20 12:30	2016/01/20 12:30		
COC Number			537168-30-01	537168-30-01	537168-30-01	537168-30-01	537168-30-01		
	UNITS	Criteria	VS042	VS043	VS044	VS1040	VS1040 Lab-Dup	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4353231

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			BRO676		
Sampling Date			2016/01/20 12:30		
COC Number			537168-30-01		
	UNITS	Criteria	VS1037	RDL	QC Batch
Inorganics					
Chromium (VI)	ug/g	8	<0.2	0.2	4353231

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B611872
Report Date: 2016/01/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BRO667
Sample ID: VS037
Matrix: Soil

Collected: 2016/01/20
Shipped:
Received: 2016/01/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4352026	N/A	2016/01/21	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4353231	2016/01/21	2016/01/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4352069	2016/01/20	2016/01/21	Raigamage Perera
MOISTURE	BAL	4352084	N/A	2016/01/21	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4351667	2016/01/21	2016/01/21	Liliana Gaburici

Maxxam ID: BRO667 Dup
Sample ID: VS037
Matrix: Soil

Collected: 2016/01/20
Shipped:
Received: 2016/01/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4352084	N/A	2016/01/21	Arezoo Habibagahi

Maxxam ID: BRO668
Sample ID: VS038
Matrix: Soil

Collected: 2016/01/20
Shipped:
Received: 2016/01/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4352026	N/A	2016/01/21	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4353231	2016/01/21	2016/01/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4352069	2016/01/20	2016/01/21	Raigamage Perera
MOISTURE	BAL	4352084	N/A	2016/01/21	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4351667	2016/01/21	2016/01/21	Liliana Gaburici

Maxxam ID: BRO669
Sample ID: VS039
Matrix: Soil

Collected: 2016/01/20
Shipped:
Received: 2016/01/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4352026	N/A	2016/01/21	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4353231	2016/01/21	2016/01/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4352069	2016/01/20	2016/01/21	Raigamage Perera
MOISTURE	BAL	4352084	N/A	2016/01/21	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4351667	2016/01/21	2016/01/21	Liliana Gaburici

Maxxam ID: BRO670
Sample ID: VS040
Matrix: Soil

Collected: 2016/01/20
Shipped:
Received: 2016/01/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4352026	N/A	2016/01/21	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4353231	2016/01/21	2016/01/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4352069	2016/01/20	2016/01/21	Raigamage Perera
MOISTURE	BAL	4352084	N/A	2016/01/21	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4351667	2016/01/21	2016/01/21	Liliana Gaburici

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Maxxam Job #: B611872
Report Date: 2016/01/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BRO671
Sample ID: VS041
Matrix: Soil

Collected: 2016/01/20
Shipped:
Received: 2016/01/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4352026	N/A	2016/01/21	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4353231	2016/01/21	2016/01/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4352069	2016/01/20	2016/01/21	Raigamage Perera
MOISTURE	BAL	4352084	N/A	2016/01/21	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4351667	2016/01/21	2016/01/21	Liliana Gaburici

Maxxam ID: BRO671 Dup
Sample ID: VS041
Matrix: Soil

Collected: 2016/01/20
Shipped:
Received: 2016/01/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4352069	2016/01/20	2016/01/21	Raigamage Perera

Maxxam ID: BRO672
Sample ID: VS042
Matrix: Soil

Collected: 2016/01/20
Shipped:
Received: 2016/01/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4352026	N/A	2016/01/21	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4353231	2016/01/21	2016/01/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4352069	2016/01/20	2016/01/21	Raigamage Perera
MOISTURE	BAL	4352084	N/A	2016/01/21	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4351667	2016/01/21	2016/01/21	Liliana Gaburici

Maxxam ID: BRO673
Sample ID: VS043
Matrix: Soil

Collected: 2016/01/20
Shipped:
Received: 2016/01/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4352026	N/A	2016/01/21	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4353231	2016/01/21	2016/01/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4352069	2016/01/20	2016/01/21	Raigamage Perera
MOISTURE	BAL	4352084	N/A	2016/01/21	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4351667	2016/01/21	2016/01/21	Liliana Gaburici

Maxxam ID: BRO674
Sample ID: VS044
Matrix: Soil

Collected: 2016/01/20
Shipped:
Received: 2016/01/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4352026	N/A	2016/01/21	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4353231	2016/01/21	2016/01/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4352069	2016/01/20	2016/01/21	Raigamage Perera
MOISTURE	BAL	4352084	N/A	2016/01/21	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4351667	2016/01/21	2016/01/21	Liliana Gaburici

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Maxxam Job #: B611872
Report Date: 2016/01/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BRO675
Sample ID: VS1040
Matrix: Soil

Collected: 2016/01/20
Shipped:
Received: 2016/01/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4352026	N/A	2016/01/21	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4353231	2016/01/21	2016/01/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4352069	2016/01/20	2016/01/21	Raigamage Perera
MOISTURE	BAL	4352084	N/A	2016/01/21	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4351667	2016/01/21	2016/01/21	Liliana Gaburici

Maxxam ID: BRO675 Dup
Sample ID: VS1040
Matrix: Soil

Collected: 2016/01/20
Shipped:
Received: 2016/01/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4353231	2016/01/21	2016/01/21	Sally Coughlin

Maxxam ID: BRO676
Sample ID: VS1037
Matrix: Soil

Collected: 2016/01/20
Shipped:
Received: 2016/01/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4352026	N/A	2016/01/21	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4353231	2016/01/21	2016/01/21	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4352069	2016/01/20	2016/01/21	Raigamage Perera
MOISTURE	BAL	4352084	N/A	2016/01/21	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4351667	2016/01/21	2016/01/21	Liliana Gaburici

Maxxam ID: BRO677
Sample ID: TCLP-DEBRIS 2
Matrix: Soil

Collected: 2016/01/20
Shipped:
Received: 2016/01/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4351872	N/A	2016/01/21	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4358396	2016/01/25	2016/01/26	Arezoo Habibagahi
Mercury (TCLP Leachable) (mg/L)	CV/AA	4354766	N/A	2016/01/25	Ron Morrison
Total Metals in TCLP Leachate by ICPMS	ICP1/MS	4354818	2016/01/22	2016/01/22	Cristina Petran
MOISTURE	BAL	4356704	N/A	2016/01/26	Lyndsey Hart

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Maxxam Job #: B611872
Report Date: 2016/01/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

GENERAL COMMENTS

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

Package 1	1.0°C

Cooler custody seal was present and intact.

Results relate only to the items tested.

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Maxxam Job #: B611872
Report Date: 2016/01/27

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		Leachate Blank		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS	% Recovery	QC Limits
4351667	D10-Anthracene	2016/01/21	78	50 - 130	83	50 - 130	85	%						
4351667	D14-Terphenyl (FS)	2016/01/21	77	50 - 130	83	50 - 130	84	%						
4351667	D8-Acenaphthylene	2016/01/21	73	50 - 130	80	50 - 130	81	%						
4351872	1,4-Difluorobenzene	2016/01/20	98	60 - 140	93	60 - 140	110	%						
4351872	4-Bromofluorobenzene	2016/01/20	100	60 - 140	94	60 - 140	101	%						
4351872	D10-Ethylbenzene	2016/01/20	106	30 - 130	116	30 - 130	103	%						
4351872	D4-1,2-Dichloroethane	2016/01/20	108	60 - 140	106	60 - 140	108	%						
4358396	o-Terphenyl	2016/01/26	122	30 - 130	110	30 - 130	107	%						
4351667	1-Methylnaphthalene	2016/01/21	73	50 - 130	77	50 - 130	<0.0050	ug/g	4.0	40				
4351667	2-Methylnaphthalene	2016/01/21	82	50 - 130	86	50 - 130	<0.0050	ug/g	4.8	40				
4351667	Acenaphthene	2016/01/21	68	50 - 130	70	50 - 130	<0.0050	ug/g	2.9	40				
4351667	Acenaphthylene	2016/01/21	65	50 - 130	71	50 - 130	<0.0050	ug/g	2.9	40				
4351667	Anthracene	2016/01/21	70	50 - 130	75	50 - 130	<0.0050	ug/g	4.1	40				
4351667	Benzo(a)anthracene	2016/01/21	69	50 - 130	70	50 - 130	<0.0050	ug/g	4.4	40				
4351667	Benzo(a)pyrene	2016/01/21	74	50 - 130	79	50 - 130	<0.0050	ug/g	5.2	40				
4351667	Benzo(b/j)fluoranthene	2016/01/21	84	50 - 130	84	50 - 130	<0.010	ug/g	4.9	40				
4351667	Benzo(g,h,i)perylene	2016/01/21	54	50 - 130	64	50 - 130	<0.0050	ug/g	3.1	40				
4351667	Benzo(k)fluoranthene	2016/01/21	78	50 - 130	77	50 - 130	<0.0050	ug/g	6.7	40				
4351667	Chrysene	2016/01/21	68	50 - 130	71	50 - 130	<0.0050	ug/g	2.9	40				
4351667	Dibenz(a,h)anthracene	2016/01/21	56	50 - 130	66	50 - 130	<0.0050	ug/g	3.0	40				
4351667	Fluoranthene	2016/01/21	75	50 - 130	79	50 - 130	<0.0050	ug/g	5.2	40				
4351667	Fluorene	2016/01/21	72	50 - 130	78	50 - 130	<0.0050	ug/g	6.6	40				
4351667	Indeno(1,2,3-cd)pyrene	2016/01/21	60	50 - 130	69	50 - 130	<0.0050	ug/g	4.3	40				
4351667	Naphthalene	2016/01/21	69	50 - 130	72	50 - 130	<0.0050	ug/g	4.3	40				
4351667	Phenanthrene	2016/01/21	71	50 - 130	75	50 - 130	<0.0050	ug/g	4.1	40				
4351667	Pyrene	2016/01/21	66	50 - 130	70	50 - 130	<0.0050	ug/g	5.9	40				
4351872	Benzene	2016/01/21	81	60 - 140	91	60 - 140	<0.02	ug/g	NC	50				
4351872	Ethylbenzene	2016/01/21	95	60 - 140	109	60 - 140	<0.02	ug/g	NC	50				
4351872	F1 (C6-C10) - BTEX	2016/01/21	0.0	N/A	0.0	N/A	<10	ug/g	NC	50				
4351872	F1 (C6-C10)	2016/01/21	102	60 - 140	99	80 - 120	<10	ug/g	NC	50				

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Maxxam Job #: B611872
Report Date: 2016/01/27

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		Leachate Blank		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS	% Recovery	QC Limits
4351872	o-Xylene	2016/01/21	98	60 - 140	111	60 - 140	<0.02	ug/g	NC	50				
4351872	p+m-Xylene	2016/01/21	90	60 - 140	103	60 - 140	<0.04	ug/g	NC	50				
4351872	Toluene	2016/01/21	90	60 - 140	100	60 - 140	<0.02	ug/g	NC	50				
4351872	Total Xylenes	2016/01/21					<0.04	ug/g	NC	50				
4352069	Acid Extractable Antimony (Sb)	2016/01/21	87	75 - 125	98	80 - 120	<0.2	ug/g	NC	35				
4352069	Acid Extractable Arsenic (As)	2016/01/21	97	75 - 125	102	80 - 120	<1	ug/g	NC	35				
4352069	Acid Extractable Barium (Ba)	2016/01/21	NC	75 - 125	104	80 - 120	<0.5	ug/g	2.3	35				
4352069	Acid Extractable Beryllium (Be)	2016/01/21	101	75 - 125	104	80 - 120	<0.2	ug/g	NC	35				
4352069	Acid Extractable Boron (B)	2016/01/21	109	75 - 125	110	80 - 120	<5	ug/g	NC	35				
4352069	Acid Extractable Cadmium (Cd)	2016/01/21	97	75 - 125	102	80 - 120	<0.1	ug/g	NC	35				
4352069	Acid Extractable Chromium (Cr)	2016/01/21	NC	75 - 125	104	80 - 120	<1	ug/g	0.53	35				
4352069	Acid Extractable Cobalt (Co)	2016/01/21	101	75 - 125	106	80 - 120	<0.1	ug/g	1.9	35				
4352069	Acid Extractable Copper (Cu)	2016/01/21	97	75 - 125	103	80 - 120	<0.5	ug/g	7.7	35				
4352069	Acid Extractable Lead (Pb)	2016/01/21	NC	75 - 125	106	80 - 120	<1	ug/g	4.6	35				
4352069	Acid Extractable Mercury (Hg)	2016/01/21	99	75 - 125	105	80 - 120	<0.05	ug/g	NC	35				
4352069	Acid Extractable Molybdenum (Mo)	2016/01/21	100	75 - 125	102	80 - 120	<0.5	ug/g	NC	35				
4352069	Acid Extractable Nickel (Ni)	2016/01/21	95	75 - 125	104	80 - 120	<0.5	ug/g	0.81	35				
4352069	Acid Extractable Selenium (Se)	2016/01/21	95	75 - 125	103	80 - 120	<0.5	ug/g	NC	35				
4352069	Acid Extractable Silver (Ag)	2016/01/21	96	75 - 125	101	80 - 120	<0.2	ug/g	NC	35				
4352069	Acid Extractable Thallium (Tl)	2016/01/21	100	75 - 125	103	80 - 120	<0.05	ug/g	NC	35				
4352069	Acid Extractable Uranium (U)	2016/01/21	104	75 - 125	107	80 - 120	<0.05	ug/g	10	25				
4352069	Acid Extractable Vanadium (V)	2016/01/21	NC	75 - 125	107	80 - 120	<5	ug/g	NC	35				
4352069	Acid Extractable Zinc (Zn)	2016/01/21	NC	75 - 125	97	80 - 120	<5	ug/g	4.9	35				
4352084	Moisture	2016/01/21							6.0	50				
4353231	Chromium (VI)	2016/01/21	77	75 - 125	91	80 - 120	<0.2	ug/g	NC	35			85	75 - 125
4354766	Leachable Mercury (Hg)	2016/01/25	103	75 - 125	93	80 - 120	<0.0010	mg/L	NC	25	<0.0010	mg/L		
4354818	Leachable Arsenic (As)	2016/01/22	103	80 - 120	98	80 - 120	<0.20	mg/L	NC	35	<0.20	mg/L		
4354818	Leachable Barium (Ba)	2016/01/22	97	80 - 120	103	80 - 120	<0.20	mg/L	NC	35	<0.20	mg/L		
4354818	Leachable Boron (B)	2016/01/22	95	80 - 120	101	80 - 120	<0.10	mg/L	NC	35	<0.10	mg/L		
4354818	Leachable Cadmium (Cd)	2016/01/22	102	80 - 120	98	80 - 120	<0.050	mg/L	NC	35	<0.050	mg/L		

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Maxxam Job #: B611872
Report Date: 2016/01/27

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		Leachate Blank		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS	% Recovery	QC Limits
4354818	Leachable Chromium (Cr)	2016/01/22	98	80 - 120	100	80 - 120	<0.10	mg/L	NC	35	<0.10	mg/L		
4354818	Leachable Lead (Pb)	2016/01/22	98	80 - 120	100	80 - 120	<0.10	mg/L	NC	35	<0.10	mg/L		
4354818	Leachable Selenium (Se)	2016/01/22	99	80 - 120	100	80 - 120	<0.10	mg/L	NC	35	<0.10	mg/L		
4354818	Leachable Silver (Ag)	2016/01/22	100	80 - 120	96	80 - 120	<0.010	mg/L	NC	35	<0.010	mg/L		
4354818	Leachable Uranium (U)	2016/01/22	98	80 - 120	99	80 - 120	<0.010	mg/L	NC	35	<0.010	mg/L		
4356704	Moisture	2016/01/26							26	50				
4358396	F2 (C10-C16 Hydrocarbons)	2016/01/26	93	50 - 130	85	80 - 120	<10	ug/g	NC	50				
4358396	F3 (C16-C34 Hydrocarbons)	2016/01/26	93	50 - 130	85	80 - 120	<50	ug/g	NC	50				
4358396	F4 (C34-C50 Hydrocarbons)	2016/01/26	93	50 - 130	85	80 - 120	<50	ug/g	NC	50				

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.

Leachate Blank: A blank matrix containing all reagents used in the leaching procedure. Used to determine any process contamination.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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A Bureau Veritas Group Company

Maxxam Job #: B611872
Report Date: 2016/01/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Paul Rubinato, Analyst, Maxxam Analytics

Steve Roberts, Ottawa Lab Manager

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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6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel (905) 817-5700 Toll-Free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:
Company Name: #14090 Golder Associates Ltd
Attention: Central Accounting
Address: 1931 Robertson Rd, Ottawa ON K2H 5B7
Tel: (613) 592-9600 Fax: (613) 592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Paul Hurst / Tom / Heron
Address:
Tel: Fax:
Email: phurst@golder.com / tyson / sarah.hay

PROJECT INFORMATION:
Quotation #: B57625
P.O. #:
Project: 1525113
Project Name:
Site #:
Sampled By: AB and TL

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 537168
COC #: C8537168-33-01
Project Manager:
Ema Gitej

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

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: Tomorrow EOD Time Required: EOD ☑
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICP/MS Metals including Hg and CRVI	Leachate Landfill (TCLP METALS, REG. 153 PHCs)							# of Bottles	Comments
1		VS037	Jan 20.16	11:00	Soil		✓	✓								1	Please report seperate from TCLP sample
2		VS038		11:10			✓	✓								1	
3		VS039		11:20			✓	✓								1	
4		VS040		11:30			✓	✓								1	
5		VS041		11:40			✓	✓								1	
6		VS042		11:50			✓	✓								1	
7		VS043		12:00			✓	✓								1	
8		VS044		12:10			✓	✓								1	
9		~~VS045~~ VS1040		12:30			✓	✓								1	
		VS1037		12:30			✓	✓								1	
10		~~VS0~~ TCLP-Debris 2		12:10					✓							4	-regular TAT for the TCLP sample

20-Jan-16 14:46
Ema Gitej
B611872

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature] Tony Lyons	16/01/20	15:00	Kelsey Pilon Kelsey Pilon	16/01/20	14:46	

Laboratory Use Only
Time Sensitive
Temperature (°C) on Receipt: 1,0,2
Custody Seal: Yes / No
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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

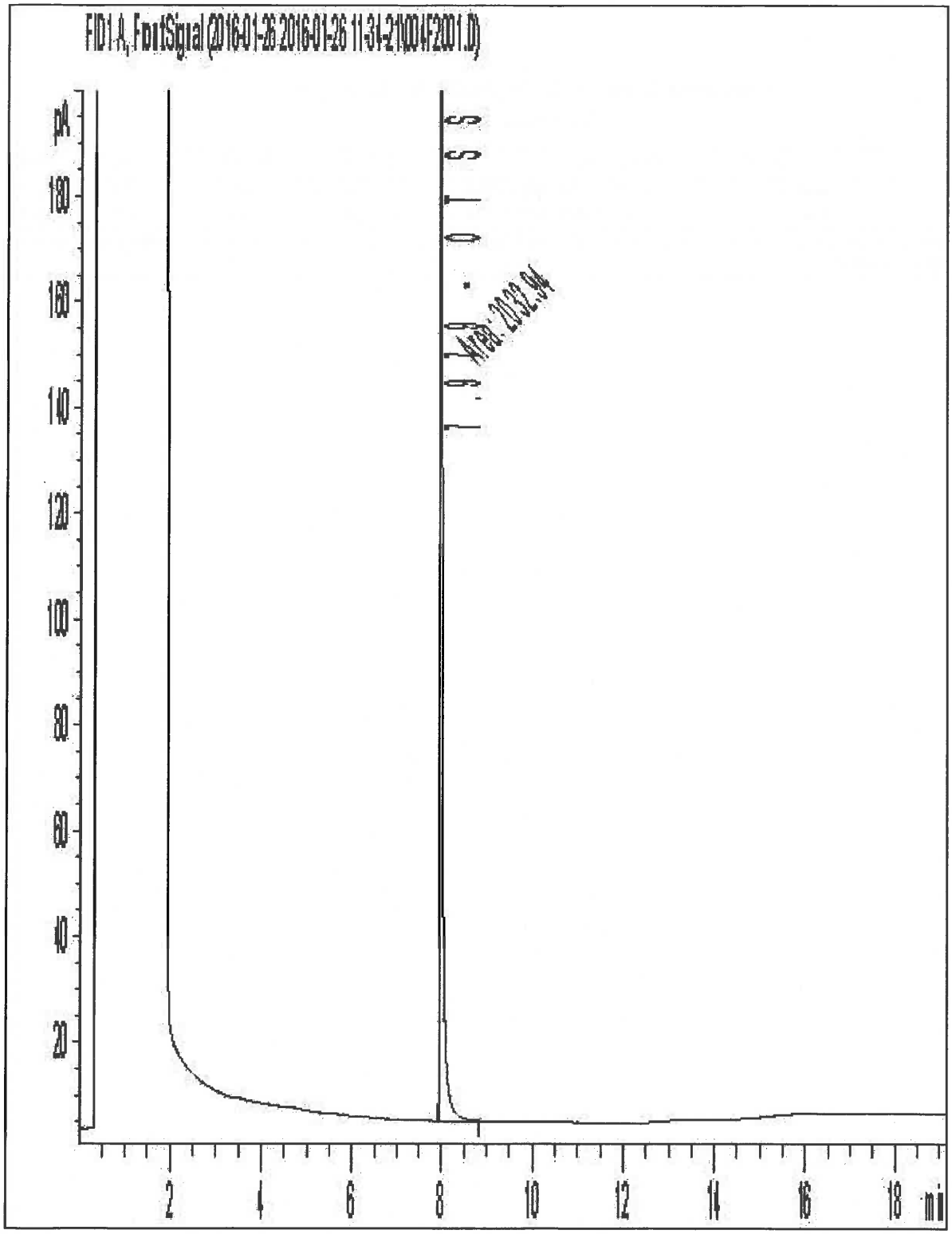
onic pack

RECEIVED IN OTTAWA

Maxxam Job #: B611872
Report Date: 2016/01/27
Maxxam Sample: BRO677

Golder Associates Ltd
Client Project #: 1525113
Client ID: TCLP-DEBRIS 2

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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Maxxam Job #: B611872
Report Date: 2016/01/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS037	BRO667-02	Acid Extractable Mercury (Hg)	0.27	0.51	0.05	ug/g
VS1037	BRO676-02	Acid Extractable Mercury (Hg)	0.27	0.50	0.05	ug/g

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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A Bureau Veritas Group Company

Your Project #: 1525113
Site#: 1525113
Your C.O.C. #: 537168-29-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/02/29
Report #: R3912395
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B639784
Received: 2016/02/26, 14:50

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	1	N/A	2016/02/29	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	1	2016/02/29	2016/02/29	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	1	2016/02/26	2016/02/29	OTT SOP-00003	EPA 6020
MOISTURE	1	N/A	2016/02/29	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	1	2016/02/29	2016/02/29	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga

(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Parnian Baber
29 Feb 2016 16:35:35 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

cosign

==========

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 Job #: B639784
Report Date: 2016/02/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BXT220	BXT220		
Sampling Date			2016/02/26 14:00	2016/02/26 14:00		
COC Number			537168-29-01	537168-29-01		
	UNITS	Criteria	VS046	VS046 Lab-Dup	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	0.2	4396907
Acid Extractable Arsenic (As)	ug/g	**18**	<1	<1	1	4396907
Acid Extractable Barium (Ba)	ug/g	**390**	40	39	0.5	4396907
Acid Extractable Beryllium (Be)	ug/g	**4**	0.4	0.3	0.2	4396907
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	5	4396907
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	0.1	4396907
Acid Extractable Chromium (Cr)	ug/g	**160**	22	22	1	4396907
Acid Extractable Cobalt (Co)	ug/g	**22**	5.3	5.2	0.1	4396907
Acid Extractable Copper (Cu)	ug/g	**140**	9.8	9.1	0.5	4396907
Acid Extractable Lead (Pb)	ug/g	**120**	3	3	1	4396907
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	0.05	4396907
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	0.5	4396907
Acid Extractable Nickel (Ni)	ug/g	**100**	9.6	9.3	0.5	4396907
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	0.5	4396907
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	0.2	4396907
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.05	<0.05	0.05	4396907
Acid Extractable Uranium (U)	ug/g	**23**	1.4	1.3	0.05	4396907
Acid Extractable Vanadium (V)	ug/g	**86**	28	27	5	4396907
Acid Extractable Zinc (Zn)	ug/g	**340**	19	19	5	4396907

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B639784
Report Date: 2016/02/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			BXT220	BXT220		
Sampling Date			2016/02/26 14:00	2016/02/26 14:00		
COC Number			537168-29-01	537168-29-01		
	UNITS	Criteria	VS046	VS046 Lab-Dup	RDL	QC Batch
Inorganics						
Moisture	%	-	14	14	0.2	4398113
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		0.014	4396724
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**7.9**	<0.0050		0.0050	4398114
Acenaphthylene	ug/g	**0.15**	<0.0050		0.0050	4398114
Anthracene	ug/g	**0.67**	<0.0050		0.0050	4398114
Benzo(a)anthracene	ug/g	**0.5**	<0.0050		0.0050	4398114
Benzo(a)pyrene	ug/g	**0.3**	<0.0050		0.0050	4398114
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050		0.0050	4398114
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050		0.0050	4398114
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050		0.0050	4398114
Chrysene	ug/g	**7**	<0.0050		0.0050	4398114
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050		0.0050	4398114
Fluoranthene	ug/g	**0.69**	<0.0050		0.0050	4398114
Fluorene	ug/g	**62**	<0.0050		0.0050	4398114
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050		0.0050	4398114
1-Methylnaphthalene	ug/g	**0.99**	<0.0050		0.0050	4398114
2-Methylnaphthalene	ug/g	**0.99**	<0.0050		0.0050	4398114
Naphthalene	ug/g	**0.6**	<0.0050		0.0050	4398114
Phenanthrene	ug/g	**6.2**	<0.0050		0.0050	4398114
Pyrene	ug/g	**78**	<0.0050		0.0050	4398114
Surrogate Recovery (%)						
D10-Anthracene	%	-	98			4398114
D14-Terphenyl (FS)	%	-	99			4398114
D8-Acenaphthylene	%	-	90			4398114

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B639784
Report Date: 2016/02/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			BXT220		
Sampling Date			2016/02/26 14:00		
COC Number			537168-29-01		
	UNITS	Criteria	VS046	RDL	QC Batch
Inorganics					
Chromium (VI)	ug/g	8	<0.2	0.2	4398221

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water
Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B639784
Report Date: 2016/02/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: BXT220
Sample ID: VS046
Matrix: Soil

Collected: 2016/02/26
Shipped:
Received: 2016/02/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4396724	N/A	2016/02/29	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4398221	2016/02/29	2016/02/29	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4396907	2016/02/26	2016/02/29	Raigamage Perera
MOISTURE	BAL	4398113	N/A	2016/02/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4398114	2016/02/29	2016/02/29	Liliana Gaburici

Maxxam ID: BXT220 Dup
Sample ID: VS046
Matrix: Soil

Collected: 2016/02/26
Shipped:
Received: 2016/02/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4396907	2016/02/26	2016/02/29	Raigamage Perera
MOISTURE	BAL	4398113	N/A	2016/02/29	Liliana Gaburici

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Maxxam Job #: B639784
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GENERAL COMMENTS

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

Package 1	0.3°C

Results relate only to the items tested.

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Maxxam Job #: B639784
Report Date: 2016/02/29

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4398114	D10-Anthracene	2016/02/29	85	50 - 130	91	50 - 130	95	%				
4398114	D14-Terphenyl (FS)	2016/02/29	88	50 - 130	89	50 - 130	90	%				
4398114	D8-Acenaphthylene	2016/02/29	78	50 - 130	83	50 - 130	86	%				
4396907	Acid Extractable Antimony (Sb)	2016/02/29	91	75 - 125	105	80 - 120	<0.2	ug/g	NC	35		
4396907	Acid Extractable Arsenic (As)	2016/02/29	103	75 - 125	105	80 - 120	<1	ug/g	NC	35		
4396907	Acid Extractable Barium (Ba)	2016/02/29	NC	75 - 125	107	80 - 120	<0.5	ug/g	1.0	35		
4396907	Acid Extractable Beryllium (Be)	2016/02/29	110	75 - 125	109	80 - 120	<0.2	ug/g	NC	35		
4396907	Acid Extractable Boron (B)	2016/02/29	105	75 - 125	117	80 - 120	<5	ug/g	NC	35		
4396907	Acid Extractable Cadmium (Cd)	2016/02/29	104	75 - 125	106	80 - 120	<0.1	ug/g	NC	35		
4396907	Acid Extractable Chromium (Cr)	2016/02/29	NC	75 - 125	105	80 - 120	<1	ug/g	3.3	35		
4396907	Acid Extractable Cobalt (Co)	2016/02/29	105	75 - 125	106	80 - 120	<0.1	ug/g	1.3	35		
4396907	Acid Extractable Copper (Cu)	2016/02/29	105	75 - 125	106	80 - 120	<0.5	ug/g	6.9	35		
4396907	Acid Extractable Lead (Pb)	2016/02/29	106	75 - 125	107	80 - 120	<1	ug/g	NC	35		
4396907	Acid Extractable Mercury (Hg)	2016/02/29	105	75 - 125	104	80 - 120	<0.05	ug/g	NC	35		
4396907	Acid Extractable Molybdenum (Mo)	2016/02/29	105	75 - 125	105	80 - 120	<0.5	ug/g	NC	35		
4396907	Acid Extractable Nickel (Ni)	2016/02/29	107	75 - 125	106	80 - 120	<0.5	ug/g	3.4	35		
4396907	Acid Extractable Selenium (Se)	2016/02/29	107	75 - 125	109	80 - 120	<0.5	ug/g	NC	35		
4396907	Acid Extractable Silver (Ag)	2016/02/29	102	75 - 125	106	80 - 120	<0.2	ug/g	NC	35		
4396907	Acid Extractable Thallium (Tl)	2016/02/29	106	75 - 125	108	80 - 120	<0.05	ug/g	NC	35		
4396907	Acid Extractable Uranium (U)	2016/02/29	106	75 - 125	107	80 - 120	<0.05	ug/g	9.4	25		
4396907	Acid Extractable Vanadium (V)	2016/02/29	NC	75 - 125	108	80 - 120	<5	ug/g	2.0	35		
4396907	Acid Extractable Zinc (Zn)	2016/02/29	NC	75 - 125	107	80 - 120	<5	ug/g	NC	35		
4398113	Moisture	2016/02/29							2.1	50		
4398114	1-Methylnaphthalene	2016/02/29	78	50 - 130	81	50 - 130	<0.0050	ug/g	3.0	40		
4398114	2-Methylnaphthalene	2016/02/29	78	50 - 130	82	50 - 130	<0.0050	ug/g	3.0	40		
4398114	Acenaphthene	2016/02/29	74	50 - 130	76	50 - 130	<0.0050	ug/g	3.3	40		
4398114	Acenaphthylene	2016/02/29	71	50 - 130	72	50 - 130	<0.0050	ug/g	5.3	40		
4398114	Anthracene	2016/02/29	77	50 - 130	80	50 - 130	<0.0050	ug/g	2.2	40		
4398114	Benzo(a)anthracene	2016/02/29	77	50 - 130	80	50 - 130	<0.0050	ug/g	2.6	40		
4398114	Benzo(a)pyrene	2016/02/29	82	50 - 130	82	50 - 130	<0.0050	ug/g	7.6	40		
4398114	Benzo(b/j)fluoranthene	2016/02/29	91	50 - 130	91	50 - 130	<0.0050	ug/g	7.7	40		

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Maxxam Job #: B639784
Report Date: 2016/02/29

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4398114	Benzo(g,h,i)perylene	2016/02/29	68	50 - 130	69	50 - 130	<0.0050	ug/g	13	40		
4398114	Benzo(k)fluoranthene	2016/02/29	95	50 - 130	98	50 - 130	<0.0050	ug/g	2.2	40		
4398114	Chrysene	2016/02/29	80	50 - 130	79	50 - 130	<0.0050	ug/g	3.4	40		
4398114	Dibenz(a,h)anthracene	2016/02/29	69	50 - 130	70	50 - 130	<0.0050	ug/g	9.9	40		
4398114	Fluoranthene	2016/02/29	78	50 - 130	80	50 - 130	<0.0050	ug/g	3.2	40		
4398114	Fluorene	2016/02/29	77	50 - 130	81	50 - 130	<0.0050	ug/g	2.2	40		
4398114	Indeno(1,2,3-cd)pyrene	2016/02/29	74	50 - 130	76	50 - 130	<0.0050	ug/g	9.0	40		
4398114	Naphthalene	2016/02/29	75	50 - 130	78	50 - 130	<0.0050	ug/g	3.6	40		
4398114	Phenanthrene	2016/02/29	76	50 - 130	80	50 - 130	<0.0050	ug/g	2.3	40		
4398114	Pyrene	2016/02/29	74	50 - 130	77	50 - 130	<0.0050	ug/g	2.2	40		
4398221	Chromium (VI)	2016/02/29	21 (1)	75 - 125	96	80 - 120	<0.2	ug/g	NC	35	81	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B639784
Report Date: 2016/02/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Steve Roberts, Ottawa Lab Manager

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 537168
Attention:	Central Accounting	Attention:	Paul Hurst	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113		
	Ottawa ON K2H 5B7			Project Name:		COC #:	Project Manager:
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:		C#537168-29-01	Ema Gitej
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	phurst@golder.com, aaron_bradshaw@golder.com	Sampled By:	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

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: one day Time Required: ☒
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals Including Hg and CrVI	Leachate Landfill (TCLP METALS, REG 153 PHCs)	# of Bottles	Comments
1		VS046	16/02/26	14:00	Soil		X	X		1	
2											
3											
4											
5											
6											
7											
8											
9											
10											on ice pack

26-Feb-16 14:50
Ema Gitej
B639784

RECEIVED 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	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
Aaron Bradshaw	16/02/26		Kelsey Pilon Kelsey Pilon	2016/02/26	14:50	0		1.0.0	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

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B639784
Report Date: 2016/02/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 537168-20-01, 537168-21-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/03/07
Report #: R3919755
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B644916
Received: 2016/03/04, 14:50

Sample Matrix: Soil
Samples Received: 14

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	14	N/A	2016/03/07	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	14	2016/03/07	2016/03/07	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	14	2016/03/04	2016/03/07	OTT SOP-00003	EPA 6020
MOISTURE	14	N/A	2016/03/07	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	14	2016/03/04	2016/03/07	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key
Madison Bingley
Project Manager Assistant
07 Mar 2016 16:49:00 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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
A Bureau Veritas Group Company

Maxxam Job #: B644916
Report Date: 2016/03/07

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BYV379	BYV379	BYV380	BYV381	BYV382		
Sampling Date			2016/03/04 12:40	2016/03/04 12:40	2016/03/04 13:00	2016/03/04 13:10	2016/03/04 13:20		
COC Number			537168-20-01	537168-20-01	537168-20-01	537168-20-01	537168-20-01		
	UNITS	Criteria	VS047	VS047 Lab-Dup	VS048	VS049	VS050	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4405770
Acid Extractable Arsenic (As)	ug/g	**18**	<1	<1	3	2	2	1	4405770
Acid Extractable Barium (Ba)	ug/g	**390**	85	86	270	170	170	0.5	4405770
Acid Extractable Beryllium (Be)	ug/g	**4**	0.4	0.4	2.0	0.7	0.8	0.2	4405770
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	8	<5	<5	5	4405770
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	0.3	<0.1	<0.1	0.1	4405770
Acid Extractable Chromium (Cr)	ug/g	**160**	31	31	130	42	41	1	4405770
Acid Extractable Cobalt (Co)	ug/g	**22**	7.2	7.3	16	12	12	0.1	4405770
Acid Extractable Copper (Cu)	ug/g	**140**	13	13	45	18	23	0.5	4405770
Acid Extractable Lead (Pb)	ug/g	**120**	4	4	12	6	6	1	4405770
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	0.08	<0.05	<0.05	0.05	4405770
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4405770
Acid Extractable Nickel (Ni)	ug/g	**100**	14	13	55	24	26	0.5	4405770
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	0.5	**2.6**	0.8	0.9	0.5	4405770
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	0.3	<0.2	<0.2	0.2	4405770
Acid Extractable Thallium (Tl)	ug/g	**1**	0.13	0.15	0.38	0.23	0.24	0.05	4405770
Acid Extractable Uranium (U)	ug/g	**23**	1.5	1.5	22	1.1	0.92	0.05	4405770
Acid Extractable Vanadium (V)	ug/g	**86**	51	51	**110**	58	61	5	4405770
Acid Extractable Zinc (Zn)	ug/g	**340**	35	35	140	59	61	5	4405770

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B644916
Report Date: 2016/03/07

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BYV383	BYV384	BYV385	BYV386	BYV387		
Sampling Date			2016/03/04 13:30	2016/03/04 13:40	2016/03/04 13:50	2016/03/04 14:00	2016/03/04 14:20		
COC Number			537168-20-01	537168-20-01	537168-20-01	537168-20-01	537168-20-01		
	UNITS	Criteria	VS051	VS052	VS053	VS054	VS055	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4405770
Acid Extractable Arsenic (As)	ug/g	**18**	<1	<1	3	<1	2	1	4405770
Acid Extractable Barium (Ba)	ug/g	**390**	62	190	190	62	99	0.5	4405770
Acid Extractable Beryllium (Be)	ug/g	**4**	0.5	0.6	0.8	0.4	0.6	0.2	4405770
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	5	<5	<5	5	4405770
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4405770
Acid Extractable Chromium (Cr)	ug/g	**160**	31	44	47	29	53	1	4405770
Acid Extractable Cobalt (Co)	ug/g	**22**	8.3	14	13	7.1	12	0.1	4405770
Acid Extractable Copper (Cu)	ug/g	**140**	8.9	18	24	11	22	0.5	4405770
Acid Extractable Lead (Pb)	ug/g	**120**	4	6	6	4	6	1	4405770
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4405770
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4405770
Acid Extractable Nickel (Ni)	ug/g	**100**	13	25	29	13	29	0.5	4405770
Acid Extractable Selenium (Se)	ug/g	**2.4**	0.6	0.6	0.5	0.6	0.6	0.5	4405770
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4405770
Acid Extractable Thallium (Tl)	ug/g	**1**	0.13	0.24	0.25	0.13	0.17	0.05	4405770
Acid Extractable Uranium (U)	ug/g	**23**	2.0	0.94	0.85	1.5	2.3	0.05	4405770
Acid Extractable Vanadium (V)	ug/g	**86**	64	65	67	44	56	5	4405770
Acid Extractable Zinc (Zn)	ug/g	**340**	34	68	69	33	58	5	4405770

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B644916
Report Date: 2016/03/07

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BYV388	BYV415	BYV416	BYV417	BYV418		
Sampling Date			2016/03/04 14:20	2016/03/04 14:30	2016/03/04 13:01	2016/03/04 13:01	2016/03/04 13:45		
COC Number			537168-20-01	537168-21-01	537168-21-01	537168-21-01	537168-21-01		
	UNITS	Criteria	VS056	VS057	VS1054	VS1047	NATIVE SAND(052)	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4405770
Acid Extractable Arsenic (As)	ug/g	**18**	2	2	1	1	<1	1	4405770
Acid Extractable Barium (Ba)	ug/g	**390**	170	160	68	120	41	0.5	4405770
Acid Extractable Beryllium (Be)	ug/g	**4**	0.7	0.6	0.4	0.6	0.2	0.2	4405770
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	<5	<5	5	4405770
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.2	<0.1	<0.1	<0.1	0.2	0.1	4405770
Acid Extractable Chromium (Cr)	ug/g	**160**	44	42	27	42	15	1	4405770
Acid Extractable Cobalt (Co)	ug/g	**22**	13	12	8.5	11	7.6	0.1	4405770
Acid Extractable Copper (Cu)	ug/g	**140**	17	18	12	19	4.0	0.5	4405770
Acid Extractable Lead (Pb)	ug/g	**120**	6	6	4	4	2	1	4405770
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4405770
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	<0.5	0.8	<0.5	0.5	4405770
Acid Extractable Nickel (Ni)	ug/g	**100**	26	23	13	63	8.3	0.5	4405770
Acid Extractable Selenium (Se)	ug/g	**2.4**	0.8	0.6	0.7	<0.5	0.5	0.5	4405770
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4405770
Acid Extractable Thallium (Tl)	ug/g	**1**	0.24	0.21	0.14	0.18	0.05	0.05	4405770
Acid Extractable Uranium (U)	ug/g	**23**	1.2	1.0	1.6	1.8	0.70	0.05	4405770
Acid Extractable Vanadium (V)	ug/g	**86**	60	60	49	60	23	5	4405770
Acid Extractable Zinc (Zn)	ug/g	**340**	59	63	32	62	21	5	4405770

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B644916
Report Date: 2016/03/07

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BYV379	BYV379	BYV380	BYV381	BYV382		
Sampling Date			2016/03/04 12:40	2016/03/04 12:40	2016/03/04 13:00	2016/03/04 13:10	2016/03/04 13:20		
COC Number			537168-20-01	537168-20-01	537168-20-01	537168-20-01	537168-20-01		
	UNITS	Criteria	VS047	VS047 Lab-Dup	VS048	VS049	VS050	RDL	QC Batch
Inorganics									
Moisture	%	-	18	18	30	21	21	0.2	4405901
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	4406400
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Surrogate Recovery (%)									
D10-Anthracene	%	-	92	94	89	93	99		4405906
D14-Terphenyl (FS)	%	-	91	92	92	95	102		4405906
D8-Acenaphthylene	%	-	85	87	84	87	92		4405906

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B644916
Report Date: 2016/03/07

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BYV383	BYV384	BYV385	BYV386	BYV387		
Sampling Date			2016/03/04 13:30	2016/03/04 13:40	2016/03/04 13:50	2016/03/04 14:00	2016/03/04 14:20		
COC Number			537168-20-01	537168-20-01	537168-20-01	537168-20-01	537168-20-01		
	UNITS	Criteria	VS051	VS052	VS053	VS054	VS055	RDL	QC Batch
Inorganics									
Moisture	%	-	16	23	21	16	19	0.2	4405901
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4406400
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Benzo(a)anthracene	ug/g	**0.5**	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Benzo(a)pyrene	ug/g	**0.3**	0.0057	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Benzo(g,h,i)perylene	ug/g	**6.6**	0.0057	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Chrysene	ug/g	**7**	0.0064	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Fluoranthene	ug/g	**0.69**	0.0064	<0.0050	<0.0050	<0.0050	0.0064	0.0050	4405906
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Pyrene	ug/g	**78**	0.0072	<0.0050	<0.0050	<0.0050	0.0064	0.0050	4405906
Surrogate Recovery (%)									
D10-Anthracene	%	-	95	94	94	98	96		4405906
D14-Terphenyl (FS)	%	-	97	93	98	97	99		4405906
D8-Acenaphthylene	%	-	91	91	92	95	93		4405906

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
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Maxxam Job #: B644916
Report Date: 2016/03/07

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			BYV388	BYV415	BYV416	BYV417	BYV418		
Sampling Date			2016/03/04 14:20	2016/03/04 14:30	2016/03/04 13:01	2016/03/04 13:01	2016/03/04 13:45		
COC Number			537168-20-01	537168-21-01	537168-21-01	537168-21-01	537168-21-01		
	UNITS	Criteria	VS056	VS057	VS1054	VS1047	NATIVE SAND(052)	RDL	QC Batch
Inorganics									
Moisture	%	-	22	18	16	18	24	0.2	4405901
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4406400
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	0.011	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4405906
Surrogate Recovery (%)									
D10-Anthracene	%	-	92	98	98	94	99		4405906
D14-Terphenyl (FS)	%	-	98	103	103	98	103		4405906
D8-Acenaphthylene	%	-	92	96	97	89	96		4405906

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B644916
Report Date: 2016/03/07

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			BYV379	BYV380	BYV381	BYV382	BYV382		
Sampling Date			2016/03/04 12:40	2016/03/04 13:00	2016/03/04 13:10	2016/03/04 13:20	2016/03/04 13:20		
COC Number			537168-20-01	537168-20-01	537168-20-01	537168-20-01	537168-20-01		
	UNITS	Criteria	VS047	VS048	VS049	VS050	VS050 Lab-Dup	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4407366

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			BYV383	BYV384	BYV385	BYV386	BYV387		
Sampling Date			2016/03/04 13:30	2016/03/04 13:40	2016/03/04 13:50	2016/03/04 14:00	2016/03/04 14:20		
COC Number			537168-20-01	537168-20-01	537168-20-01	537168-20-01	537168-20-01		
	UNITS	Criteria	VS051	VS052	VS053	VS054	VS055	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4407366

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

Maxxam ID			BYV388	BYV415	BYV416	BYV417	BYV418		
Sampling Date			2016/03/04 14:20	2016/03/04 14:30	2016/03/04 13:01	2016/03/04 13:01	2016/03/04 13:45		
COC Number			537168-20-01	537168-21-01	537168-21-01	537168-21-01	537168-21-01		
	UNITS	Criteria	VS056	VS057	VS1054	VS1047	NATIVE SAND(052)	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4407366

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B644916
Report Date: 2016/03/07

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BYV379
Sample ID: VS047
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4406400	N/A	2016/03/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4407366	2016/03/07	2016/03/07	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4405770	2016/03/04	2016/03/07	Raigamage Perera
MOISTURE	BAL	4405901	N/A	2016/03/07	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4405906	2016/03/04	2016/03/07	Liliana Gaburici

Maxxam ID: BYV379 Dup
Sample ID: VS047
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4405770	2016/03/04	2016/03/07	Raigamage Perera
MOISTURE	BAL	4405901	N/A	2016/03/07	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4405906	2016/03/04	2016/03/07	Liliana Gaburici

Maxxam ID: BYV380
Sample ID: VS048
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4406400	N/A	2016/03/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4407366	2016/03/07	2016/03/07	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4405770	2016/03/04	2016/03/07	Raigamage Perera
MOISTURE	BAL	4405901	N/A	2016/03/07	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4405906	2016/03/04	2016/03/07	Liliana Gaburici

Maxxam ID: BYV381
Sample ID: VS049
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4406400	N/A	2016/03/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4407366	2016/03/07	2016/03/07	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4405770	2016/03/04	2016/03/07	Raigamage Perera
MOISTURE	BAL	4405901	N/A	2016/03/07	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4405906	2016/03/04	2016/03/07	Liliana Gaburici

Maxxam ID: BYV382
Sample ID: VS050
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4406400	N/A	2016/03/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4407366	2016/03/07	2016/03/07	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4405770	2016/03/04	2016/03/07	Raigamage Perera
MOISTURE	BAL	4405901	N/A	2016/03/07	Liliana Gaburici

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Report Date: 2016/03/07

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Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BYV382
Sample ID: VS050
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4405906	2016/03/04	2016/03/07	Liliana Gaburici

Maxxam ID: BYV382 Dup
Sample ID: VS050
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4407366	2016/03/07	2016/03/07	Sally Coughlin

Maxxam ID: BYV383
Sample ID: VS051
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4406400	N/A	2016/03/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4407366	2016/03/07	2016/03/07	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4405770	2016/03/04	2016/03/07	Raigamage Perera
MOISTURE	BAL	4405901	N/A	2016/03/07	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4405906	2016/03/04	2016/03/07	Liliana Gaburici

Maxxam ID: BYV384
Sample ID: VS052
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4406400	N/A	2016/03/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4407366	2016/03/07	2016/03/07	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4405770	2016/03/04	2016/03/07	Raigamage Perera
MOISTURE	BAL	4405901	N/A	2016/03/07	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4405906	2016/03/04	2016/03/07	Liliana Gaburici

Maxxam ID: BYV385
Sample ID: VS053
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4406400	N/A	2016/03/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4407366	2016/03/07	2016/03/07	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4405770	2016/03/04	2016/03/07	Raigamage Perera
MOISTURE	BAL	4405901	N/A	2016/03/07	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4405906	2016/03/04	2016/03/07	Liliana Gaburici

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Sampler Initials: TL

TEST SUMMARY

Maxxam ID: BYV386
Sample ID: VS054
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4406400	N/A	2016/03/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4407366	2016/03/07	2016/03/07	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4405770	2016/03/04	2016/03/07	Raigamage Perera
MOISTURE	BAL	4405901	N/A	2016/03/07	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4405906	2016/03/04	2016/03/07	Liliana Gaburici

Maxxam ID: BYV387
Sample ID: VS055
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4406400	N/A	2016/03/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4407366	2016/03/07	2016/03/07	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4405770	2016/03/04	2016/03/07	Raigamage Perera
MOISTURE	BAL	4405901	N/A	2016/03/07	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4405906	2016/03/04	2016/03/07	Liliana Gaburici

Maxxam ID: BYV388
Sample ID: VS056
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4406400	N/A	2016/03/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4407366	2016/03/07	2016/03/07	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4405770	2016/03/04	2016/03/07	Raigamage Perera
MOISTURE	BAL	4405901	N/A	2016/03/07	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4405906	2016/03/04	2016/03/07	Liliana Gaburici

Maxxam ID: BYV415
Sample ID: VS057
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4406400	N/A	2016/03/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4407366	2016/03/07	2016/03/07	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4405770	2016/03/04	2016/03/07	Raigamage Perera
MOISTURE	BAL	4405901	N/A	2016/03/07	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4405906	2016/03/04	2016/03/07	Liliana Gaburici

Maxxam ID: BYV416
Sample ID: VS1054
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4406400	N/A	2016/03/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4407366	2016/03/07	2016/03/07	Sally Coughlin

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TEST SUMMARY

Maxxam ID: BYV416
Sample ID: VS1054
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4405770	2016/03/04	2016/03/07	Raigamage Perera
MOISTURE	BAL	4405901	N/A	2016/03/07	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4405906	2016/03/04	2016/03/07	Liliana Gaburici

Maxxam ID: BYV417
Sample ID: VS1047
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4406400	N/A	2016/03/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4407366	2016/03/07	2016/03/07	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4405770	2016/03/04	2016/03/07	Raigamage Perera
MOISTURE	BAL	4405901	N/A	2016/03/07	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4405906	2016/03/04	2016/03/07	Liliana Gaburici

Maxxam ID: BYV418
Sample ID: NATIVE SAND(052)
Matrix: Soil

Collected: 2016/03/04
Shipped:
Received: 2016/03/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4406400	N/A	2016/03/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4407366	2016/03/07	2016/03/07	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4405770	2016/03/04	2016/03/07	Raigamage Perera
MOISTURE	BAL	4405901	N/A	2016/03/07	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4405906	2016/03/04	2016/03/07	Liliana Gaburici

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GENERAL COMMENTS

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

Package 1	1.3°C

Custody seal was present and intact on the cooler.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4405906	D10-Anthracene	2016/03/07	92	50 - 130	100	50 - 130	98	%				
4405906	D14-Terphenyl (FS)	2016/03/07	98	50 - 130	102	50 - 130	92	%				
4405906	D8-Acenaphthylene	2016/03/07	89	50 - 130	97	50 - 130	88	%				
4405770	Acid Extractable Antimony (Sb)	2016/03/07	90	75 - 125	107	80 - 120	<0.2	ug/g	NC	35		
4405770	Acid Extractable Arsenic (As)	2016/03/07	101	75 - 125	107	80 - 120	<1	ug/g	NC	35		
4405770	Acid Extractable Barium (Ba)	2016/03/07	NC	75 - 125	103	80 - 120	<0.5	ug/g	0.49	35		
4405770	Acid Extractable Beryllium (Be)	2016/03/07	106	75 - 125	106	80 - 120	<0.2	ug/g	NC	35		
4405770	Acid Extractable Boron (B)	2016/03/07	103	75 - 125	105	80 - 120	<5	ug/g	NC	35		
4405770	Acid Extractable Cadmium (Cd)	2016/03/07	104	75 - 125	105	80 - 120	<0.1	ug/g	NC	35		
4405770	Acid Extractable Chromium (Cr)	2016/03/07	NC	75 - 125	108	80 - 120	<1	ug/g	0.71	35		
4405770	Acid Extractable Cobalt (Co)	2016/03/07	101	75 - 125	109	80 - 120	<0.1	ug/g	1.1	35		
4405770	Acid Extractable Copper (Cu)	2016/03/07	NC	75 - 125	109	80 - 120	<0.5	ug/g	0.78	35		
4405770	Acid Extractable Lead (Pb)	2016/03/07	103	75 - 125	109	80 - 120	<1	ug/g	NC	35		
4405770	Acid Extractable Mercury (Hg)	2016/03/07	106	75 - 125	108	80 - 120	<0.05	ug/g	NC	35		
4405770	Acid Extractable Molybdenum (Mo)	2016/03/07	104	75 - 125	105	80 - 120	<0.5	ug/g	NC	35		
4405770	Acid Extractable Nickel (Ni)	2016/03/07	NC	75 - 125	110	80 - 120	<0.5	ug/g	2.6	35		
4405770	Acid Extractable Selenium (Se)	2016/03/07	105	75 - 125	108	80 - 120	<0.5	ug/g	NC	35		
4405770	Acid Extractable Silver (Ag)	2016/03/07	104	75 - 125	105	80 - 120	<0.2	ug/g	NC	35		
4405770	Acid Extractable Thallium (Tl)	2016/03/07	103	75 - 125	106	80 - 120	<0.05	ug/g	NC	35		
4405770	Acid Extractable Uranium (U)	2016/03/07	103	75 - 125	107	80 - 120	<0.05	ug/g	0.31	25		
4405770	Acid Extractable Vanadium (V)	2016/03/07	NC	75 - 125	109	80 - 120	<5	ug/g	0.049	35		
4405770	Acid Extractable Zinc (Zn)	2016/03/07	NC	75 - 125	109	80 - 120	<5	ug/g	0.022	35		
4405901	Moisture	2016/03/07							1.1	50		
4405906	1-Methylnaphthalene	2016/03/07	77	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40		
4405906	2-Methylnaphthalene	2016/03/07	79	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40		
4405906	Acenaphthene	2016/03/07	73	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40		
4405906	Acenaphthylene	2016/03/07	75	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40		
4405906	Anthracene	2016/03/07	78	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40		
4405906	Benzo(a)anthracene	2016/03/07	76	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40		
4405906	Benzo(a)pyrene	2016/03/07	80	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40		
4405906	Benzo(b/j)fluoranthene	2016/03/07	88	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		

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Maxxam Job #: B644916
Report Date: 2016/03/07

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4405906	Benzo(g,h,i)perylene	2016/03/07	63	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40		
4405906	Benzo(k)fluoranthene	2016/03/07	92	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40		
4405906	Chrysene	2016/03/07	77	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40		
4405906	Dibenz(a,h)anthracene	2016/03/07	66	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40		
4405906	Fluoranthene	2016/03/07	81	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40		
4405906	Fluorene	2016/03/07	78	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40		
4405906	Indeno(1,2,3-cd)pyrene	2016/03/07	70	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		
4405906	Naphthalene	2016/03/07	74	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40		
4405906	Phenanthrene	2016/03/07	76	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40		
4405906	Pyrene	2016/03/07	74	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40		
4407366	Chromium (VI)	2016/03/07	94	75 - 125	102	80 - 120	<0.2	ug/g	NC	35	96	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B644916
Report Date: 2016/03/07

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Paul

Paul Rubinato, Analyst, Maxxam Analytics

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CHAIN OF CUSTODY RECORD

Page 1 of 2

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 837188
Attention:	Central Accounting	Attention:	Paul Hurst / Tony / Aaron	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113		
	Ottawa ON K2H 5B7			Project Name:		COC #:	Project Manager:
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:		C#537169-20-01	Ema Gitej
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	phurst@golder.com	Sampled By:	Tony Lyon		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☑ Res/Park ☑ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☑ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agr/Other ☑ For RSC	☐ MISA Municipality ____	
☐ Table ___	☐ PWQO	
	☐ Other ____	

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

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: EOD Mar 7/16 Time Required: EOD ☐
Rush Confirmation Number: ____ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICP/MS Metals including Hg and CrVI	Leachate Length (TCLP METALS, REG 153 PHCs)							# of Bottles	Comments
1		VS047	Mar 4, '16	12:40	Soil	N	✓	✓								1	
2		VS048		13:00			✓	✓								1	
3		VS049		13:10			✓	✓								1	
4		VS050		13:20			✓	✓								1	
5		VS051		13:30			✓	✓								1	
6		VS052		13:40			✓	✓								1	
7		VS053		13:50			✓	✓								1	
8		VS054		14:00			✓	✓								1	
9		VS055		14:20			✓	✓								1	ON ICE
10		VS056		14:20			✓	✓								1	

4-Mar-16 14:50
Ema Gitej
B644916
FHB OTT-002

* 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
Tony Lyon	16/03/04	15:00	Fatemeh	2016/03/4	14:50			2.1, 2.1	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

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

White: Maxxam Yellow: Client

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CHAIN OF CUSTODY RECORD

Page 2 of 2

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 537168
Attention:	Central Accounting	Attention:	Paul Hurst / Tony / Aaron	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:			
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:		C#537168-21-01	Ema Gilej
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	phurst@golder.com	Sampled By:	Tony Lyon		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

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: Mar 7, '16 Time Required: EOD ☐
Rush Confirmation Number: ___ *(call lab for #)*

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	Laflache Landfill (TCLP METALS, REG 153 PHCs)								# of Bottles	Comments
1		VS0057	Mar 4, 16	14:30	Soil	N	✓	✓									1	
2		VS1054	↓	13:01	↓	↓	✓	✓									1	
3		VS1047	↓	13:01	↓	↓	✓	✓									1	
4		Native Sand (052)	↓	13:45	↓	↓	✓	✓									1	
5																		
6																		
7																		
8																		
9																		ON ICE
10																		

* 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
Z Z Tony Lyon	16/03/04	15:00	SHA Fatemah	2016/03/04	14:50			2, 1, 1	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B644916
Report Date: 2016/03/07

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS048	BYV380-01	Acid Extractable Selenium (Se)	2.4	2.6	0.5	ug/g
VS048	BYV380-01	Acid Extractable Vanadium (V)	86	110	5	ug/g

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 537168-22-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/03/09
Report #: R3922970
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B647020
Received: 2016/03/08, 15:50

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	1	N/A	2016/03/09	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	1	2016/03/09	2016/03/09	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	1	2016/03/09	2016/03/09	OTT SOP-00003	EPA 6020
MOISTURE	1	N/A	2016/03/09	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	1	2016/03/09	2016/03/09	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Ema Gitej
09 Mar 2016 17:59:56 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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Maxxam Job #: B647020
Report Date: 2016/03/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BZG199	BZG199		
Sampling Date			2016/03/08 14:05	2016/03/08 14:05		
COC Number			537168-22-01	537168-22-01		
	UNITS	Criteria	VS048B	VS048B Lab-Dup	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	0.2	4410465
Acid Extractable Arsenic (As)	ug/g	**18**	2	2	1	4410465
Acid Extractable Barium (Ba)	ug/g	**390**	160	160	0.5	4410465
Acid Extractable Beryllium (Be)	ug/g	**4**	0.7	0.6	0.2	4410465
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	5	4410465
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	0.1	4410465
Acid Extractable Chromium (Cr)	ug/g	**160**	42	41	1	4410465
Acid Extractable Cobalt (Co)	ug/g	**22**	11	11	0.1	4410465
Acid Extractable Copper (Cu)	ug/g	**140**	24	23	0.5	4410465
Acid Extractable Lead (Pb)	ug/g	**120**	5	5	1	4410465
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	0.05	4410465
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	0.5	4410465
Acid Extractable Nickel (Ni)	ug/g	**100**	24	24	0.5	4410465
Acid Extractable Selenium (Se)	ug/g	**2.4**	0.6	<0.5	0.5	4410465
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	0.2	4410465
Acid Extractable Thallium (Tl)	ug/g	**1**	0.22	0.20	0.05	4410465
Acid Extractable Uranium (U)	ug/g	**23**	1.3	1.4	0.05	4410465
Acid Extractable Vanadium (V)	ug/g	**86**	58	57	5	4410465
Acid Extractable Zinc (Zn)	ug/g	**340**	63	62	5	4410465

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B647020
Report Date: 2016/03/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BL

O.REG 153 PAHS (SOIL)

Maxxam ID			BZG199	BZG199		
Sampling Date			2016/03/08 14:05	2016/03/08 14:05		
COC Number			537168-22-01	537168-22-01		
	UNITS	Criteria	VS048B	VS048B Lab-Dup	RDL	QC Batch
Inorganics						
Moisture	%	-	22	22	0.2	4410549
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		0.014	4409746
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**7.9**	<0.0050		0.0050	4410551
Acenaphthylene	ug/g	**0.15**	<0.0050		0.0050	4410551
Anthracene	ug/g	**0.67**	<0.0050		0.0050	4410551
Benzo(a)anthracene	ug/g	**0.5**	<0.0050		0.0050	4410551
Benzo(a)pyrene	ug/g	**0.3**	<0.0050		0.0050	4410551
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050		0.0050	4410551
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050		0.0050	4410551
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050		0.0050	4410551
Chrysene	ug/g	**7**	<0.0050		0.0050	4410551
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050		0.0050	4410551
Fluoranthene	ug/g	**0.69**	<0.0050		0.0050	4410551
Fluorene	ug/g	**62**	<0.0050		0.0050	4410551
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050		0.0050	4410551
1-Methylnaphthalene	ug/g	**0.99**	<0.0050		0.0050	4410551
2-Methylnaphthalene	ug/g	**0.99**	<0.0050		0.0050	4410551
Naphthalene	ug/g	**0.6**	<0.0050		0.0050	4410551
Phenanthrene	ug/g	**6.2**	<0.0050		0.0050	4410551
Pyrene	ug/g	**78**	<0.0050		0.0050	4410551
Surrogate Recovery (%)						
D10-Anthracene	%	-	95			4410551
D14-Terphenyl (FS)	%	-	95			4410551
D8-Acenaphthylene	%	-	92			4410551

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B647020
Report Date: 2016/03/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			BZG199		
Sampling Date			2016/03/08 14:05		
COC Number			537168-22-01		
	UNITS	Criteria	VS048B	RDL	QC Batch
Inorganics					
Chromium (VI)	ug/g	8	<0.2	0.2	4410667

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water
Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B647020
Report Date: 2016/03/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BL

TEST SUMMARY

Maxxam ID: BZG199
Sample ID: VS048B
Matrix: Soil

Collected: 2016/03/08
Shipped:
Received: 2016/03/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4409746	N/A	2016/03/09	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4410667	2016/03/09	2016/03/09	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4410465	2016/03/09	2016/03/09	Raigamage Perera
MOISTURE	BAL	4410549	N/A	2016/03/09	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4410551	2016/03/09	2016/03/09	Liliana Gaburici

Maxxam ID: BZG199 Dup
Sample ID: VS048B
Matrix: Soil

Collected: 2016/03/08
Shipped:
Received: 2016/03/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4410465	2016/03/09	2016/03/09	Raigamage Perera
MOISTURE	BAL	4410549	N/A	2016/03/09	Liliana Gaburici

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Maxxam Job #: B647020
Report Date: 2016/03/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BL

GENERAL COMMENTS

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

Package 1	3.0°C

Custody seal was present and intact on the cooler.

Results relate only to the items tested.

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Maxxam Job #: B647020
Report Date: 2016/03/09

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BL

			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
4410551	D10-Anthracene	2016/03/09	92	50 - 130	93	50 - 130	97	%				
4410551	D14-Terphenyl (FS)	2016/03/09	89	50 - 130	91	50 - 130	89	%				
4410551	D8-Acenaphthylene	2016/03/09	86	50 - 130	88	50 - 130	87	%				
4410465	Acid Extractable Antimony (Sb)	2016/03/09	81	75 - 125	105	80 - 120	<0.2	ug/g	NC	35		
4410465	Acid Extractable Arsenic (As)	2016/03/09	95	75 - 125	104	80 - 120	<1	ug/g	NC	35		
4410465	Acid Extractable Barium (Ba)	2016/03/09	NC	75 - 125	103	80 - 120	<0.5	ug/g	0.85	35		
4410465	Acid Extractable Beryllium (Be)	2016/03/09	112	75 - 125	108	80 - 120	<0.2	ug/g	NC	35		
4410465	Acid Extractable Boron (B)	2016/03/09	112	75 - 125	104	80 - 120	<5	ug/g	NC	35		
4410465	Acid Extractable Cadmium (Cd)	2016/03/09	105	75 - 125	103	80 - 120	<0.1	ug/g	NC	35		
4410465	Acid Extractable Chromium (Cr)	2016/03/09	NC	75 - 125	105	80 - 120	<1	ug/g	2.0	35		
4410465	Acid Extractable Cobalt (Co)	2016/03/09	107	75 - 125	105	80 - 120	<0.1	ug/g	0.40	35		
4410465	Acid Extractable Copper (Cu)	2016/03/09	NC	75 - 125	105	80 - 120	<0.5	ug/g	2.1	35		
4410465	Acid Extractable Lead (Pb)	2016/03/09	107	75 - 125	107	80 - 120	<1	ug/g	0.12	35		
4410465	Acid Extractable Mercury (Hg)	2016/03/09	105	75 - 125	104	80 - 120	<0.05	ug/g	NC	35		
4410465	Acid Extractable Molybdenum (Mo)	2016/03/09	105	75 - 125	104	80 - 120	<0.5	ug/g	NC	35		
4410465	Acid Extractable Nickel (Ni)	2016/03/09	NC	75 - 125	104	80 - 120	<0.5	ug/g	0.26	35		
4410465	Acid Extractable Selenium (Se)	2016/03/09	97	75 - 125	106	80 - 120	<0.5	ug/g	NC	35		
4410465	Acid Extractable Silver (Ag)	2016/03/09	104	75 - 125	103	80 - 120	<0.2	ug/g	NC	35		
4410465	Acid Extractable Thallium (Tl)	2016/03/09	105	75 - 125	105	80 - 120	<0.05	ug/g	NC	35		
4410465	Acid Extractable Uranium (U)	2016/03/09	110	75 - 125	106	80 - 120	<0.05	ug/g	7.4	25		
4410465	Acid Extractable Vanadium (V)	2016/03/09	NC	75 - 125	106	80 - 120	<5	ug/g	1.2	35		
4410465	Acid Extractable Zinc (Zn)	2016/03/09	NC	75 - 125	105	80 - 120	<5	ug/g	2.3	35		
4410549	Moisture	2016/03/09							0	50		
4410551	1-Methylnaphthalene	2016/03/09	73	50 - 130	75	50 - 130	<0.0050	ug/g	0.81	40		
4410551	2-Methylnaphthalene	2016/03/09	73	50 - 130	75	50 - 130	<0.0050	ug/g	0.81	40		
4410551	Acenaphthene	2016/03/09	68	50 - 130	77	50 - 130	<0.0050	ug/g	12	40		
4410551	Acenaphthylene	2016/03/09	67	50 - 130	70	50 - 130	<0.0050	ug/g	1.6	40		
4410551	Anthracene	2016/03/09	72	50 - 130	73	50 - 130	<0.0050	ug/g	0.41	40		
4410551	Benzo(a)anthracene	2016/03/09	70	50 - 130	71	50 - 130	<0.0050	ug/g	0.57	40		
4410551	Benzo(a)pyrene	2016/03/09	72	50 - 130	77	50 - 130	<0.0050	ug/g	1.0	40		
4410551	Benzo(b/j)fluoranthene	2016/03/09	76	50 - 130	78	50 - 130	<0.0050	ug/g	2.3	40		

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Maxxam Job #: B647020
Report Date: 2016/03/09

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BL

			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
4410551	Benzo(g,h,i)perylene	2016/03/09	61	50 - 130	70	50 - 130	<0.0050	ug/g	5.0	40		
4410551	Benzo(k)fluoranthene	2016/03/09	80	50 - 130	84	50 - 130	<0.0050	ug/g	4.8	40		
4410551	Chrysene	2016/03/09	69	50 - 130	73	50 - 130	<0.0050	ug/g	3.8	40		
4410551	Dibenz(a,h)anthracene	2016/03/09	62	50 - 130	74	50 - 130	<0.0050	ug/g	12	40		
4410551	Fluoranthene	2016/03/09	72	50 - 130	74	50 - 130	<0.0050	ug/g	1.1	40		
4410551	Fluorene	2016/03/09	72	50 - 130	74	50 - 130	<0.0050	ug/g	0	40		
4410551	Indeno(1,2,3-cd)pyrene	2016/03/09	66	50 - 130	76	50 - 130	<0.0050	ug/g	8.0	40		
4410551	Naphthalene	2016/03/09	70	50 - 130	72	50 - 130	<0.0050	ug/g	1.4	40		
4410551	Phenanthrene	2016/03/09	71	50 - 130	73	50 - 130	<0.0050	ug/g	0.83	40		
4410551	Pyrene	2016/03/09	68	50 - 130	70	50 - 130	<0.0050	ug/g	2.0	40		
4410667	Chromium (VI)	2016/03/09	65 (1)	75 - 125	91	80 - 120	<0.2	ug/g	NC	35	77	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(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 #: B647020
Report Date: 2016/03/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BL

VALIDATION SIGNATURE PAGE

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

Steve Roberts, Ottawa Lab Manager

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
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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 537168
Attention:	Central Accounting	Attention:	Paul Hurst	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#537168-22-01	Ema Gitej
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	phurst@golder.com	Sampled By:	B. Lockhart		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

Turnaround Time (TAT) Required

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: Mar. 3 EOD Time Required: EOD ☑
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 (CPMS Metals including Hg and CRVI)	Laflache Landfill (TCLP METALS, REG 153 PHCs)	# of Bottles	Comments
1		VS048B	8 Mar.	2:05	Soil	NA	✓	✓		1	
2											
3											
4											
5											
6											
7											
8											
9											
10											

8-Mar-16 15:5
Ema Gitej
B647020
FHB OTT-00

RECEIVED IN OTTAWA

ON ICE

* 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
[signature]	16/03/08	2:20	[signature] Fatemeh	2016/03/08	15:50			2,1,6	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B647020
Report Date: 2016/03/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BL

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 537168-28-01

Attention:Paul Hurst

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/03/11
Report #: R3925431
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B648009
Received: 2016/03/09, 15:25

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	2	N/A	2016/03/10	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	2	2016/03/10	2016/03/10	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	2	2016/03/09	2016/03/10	OTT SOP-00003	EPA 6020
MOISTURE	2	N/A	2016/03/10	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	2	2016/03/09	2016/03/10	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key

Parnian Baber
Project Manager
11 Mar 2016 10:46:51 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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Maxxam Job #: B648009
Report Date: 2016/03/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BF

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			BZL050	BZL050	BZL051		
Sampling Date			2016/03/08 16:30	2016/03/08 16:30	2016/03/08 16:32		
COC Number			537168-28-01	537168-28-01	537168-28-01		
	UNITS	Criteria	VS058	VS058 Lab-Dup	VS059	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.2	<0.2	<0.2	0.2	4411398
Acid Extractable Arsenic (As)	ug/g	**18**	2	2	1	1	4411398
Acid Extractable Barium (Ba)	ug/g	**390**	160	160	51	0.5	4411398
Acid Extractable Beryllium (Be)	ug/g	**4**	0.8	0.7	0.4	0.2	4411398
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	5	4411398
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.1	<0.1	<0.1	0.1	4411398
Acid Extractable Chromium (Cr)	ug/g	**160**	62	60	33	1	4411398
Acid Extractable Cobalt (Co)	ug/g	**22**	13	12	6.9	0.1	4411398
Acid Extractable Copper (Cu)	ug/g	**140**	22	22	11	0.5	4411398
Acid Extractable Lead (Pb)	ug/g	**120**	10	9	5	1	4411398
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.05	<0.05	<0.05	0.05	4411398
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.5	<0.5	0.5	0.5	4411398
Acid Extractable Nickel (Ni)	ug/g	**100**	31	30	16	0.5	4411398
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.5	<0.5	<0.5	0.5	4411398
Acid Extractable Silver (Ag)	ug/g	**20**	<0.2	<0.2	<0.2	0.2	4411398
Acid Extractable Thallium (Tl)	ug/g	**1**	0.25	0.27	0.12	0.05	4411398
Acid Extractable Uranium (U)	ug/g	**23**	1.6	1.7	0.75	0.05	4411398
Acid Extractable Vanadium (V)	ug/g	**86**	67	67	40	5	4411398
Acid Extractable Zinc (Zn)	ug/g	**340**	71	68	37	5	4411398

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B648009
Report Date: 2016/03/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BF

O.REG 153 PAHS (SOIL)

Maxxam ID			BZL050	BZL050	BZL051		
Sampling Date			2016/03/08 16:30	2016/03/08 16:30	2016/03/08 16:32		
COC Number			537168-28-01	537168-28-01	537168-28-01		
	UNITS	Criteria	VS058	VS058 Lab-Dup	VS059	RDL	QC Batch
Inorganics							
Moisture	%	-	26	27	21	0.2	4411397
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	0.014	4411385
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	0.0050	4411403
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	0.0050	4411403
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	0.0053	0.0050	4411403
Benzo(a)anthracene	ug/g	**0.5**	0.0070	0.010	0.014	0.0050	4411403
Benzo(a)pyrene	ug/g	**0.3**	0.0084	0.010	0.015	0.0050	4411403
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0078	0.023	0.0050	4411403
Benzo(g,h,i)perylene	ug/g	**6.6**	0.0070	0.0085	0.0099	0.0050	4411403
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0099	0.0050	4411403
Chrysene	ug/g	**7**	0.0091	0.011	0.017	0.0050	4411403
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	0.0050	4411403
Fluoranthene	ug/g	**0.69**	0.0098	0.016	0.025	0.0050	4411403
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0050	4411403
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0052	0.0094	0.0050	4411403
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	4411403
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	4411403
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	0.0050	4411403
Phenanthrene	ug/g	**6.2**	0.0056	0.0085	0.014	0.0050	4411403
Pyrene	ug/g	**78**	0.0098	0.014	0.022	0.0050	4411403
Surrogate Recovery (%)							
D10-Anthracene	%	-	77	79	79		4411403
D14-Terphenyl (FS)	%	-	73	75	78		4411403
D8-Acenaphthylene	%	-	68	72	73		4411403

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B648009
Report Date: 2016/03/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BF

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			BZL050	BZL050	BZL051		
Sampling Date			2016/03/08 16:30	2016/03/08 16:30	2016/03/08 16:32		
COC Number			537168-28-01	537168-28-01	537168-28-01		
	UNITS	Criteria	VS058	VS058 Lab-Dup	VS059	RDL	QC Batch
Inorganics							
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	0.2	4412593

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Residential/Parkland/Institutional Property Use - Coarse Texture

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Maxxam Job #: B648009
Report Date: 2016/03/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BF

TEST SUMMARY

Maxxam ID: BZL050
Sample ID: VS058
Matrix: Soil

Collected: 2016/03/08
Shipped:
Received: 2016/03/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4411385	N/A	2016/03/10	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4412593	2016/03/10	2016/03/10	Lang Le
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4411398	2016/03/09	2016/03/10	Raigamage Perera
MOISTURE	BAL	4411397	N/A	2016/03/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4411403	2016/03/09	2016/03/10	Liliana Gaburici

Maxxam ID: BZL050 Dup
Sample ID: VS058
Matrix: Soil

Collected: 2016/03/08
Shipped:
Received: 2016/03/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4412593	2016/03/10	2016/03/10	Lang Le
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4411398	2016/03/09	2016/03/10	Raigamage Perera
MOISTURE	BAL	4411397	N/A	2016/03/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4411403	2016/03/09	2016/03/10	Liliana Gaburici

Maxxam ID: BZL051
Sample ID: VS059
Matrix: Soil

Collected: 2016/03/08
Shipped:
Received: 2016/03/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4411385	N/A	2016/03/10	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4412593	2016/03/10	2016/03/10	Lang Le
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4411398	2016/03/09	2016/03/10	Raigamage Perera
MOISTURE	BAL	4411397	N/A	2016/03/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4411403	2016/03/09	2016/03/10	Liliana Gaburici

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Maxxam Job #: B648009
Report Date: 2016/03/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BF

GENERAL COMMENTS

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

Package 1	1.0°C

Custody seal was present and intact on the cooler.

Revised Report (2016-03-11): Criteria added.

Results relate only to the items tested.

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Maxxam Job #: B648009
Report Date: 2016/03/11

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BF

			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
4411403	D10-Anthracene	2016/03/10	76	50 - 130	80	50 - 130	96	%				
4411403	D14-Terphenyl (FS)	2016/03/10	73	50 - 130	77	50 - 130	94	%				
4411403	D8-Acenaphthylene	2016/03/10	71	50 - 130	73	50 - 130	87	%				
4411397	Moisture	2016/03/10							3.5	50		
4411398	Acid Extractable Antimony (Sb)	2016/03/10	85	75 - 125	103	80 - 120	<0.2	ug/g	NC	35		
4411398	Acid Extractable Arsenic (As)	2016/03/10	102	75 - 125	105	80 - 120	<1	ug/g	NC	35		
4411398	Acid Extractable Barium (Ba)	2016/03/10	NC	75 - 125	102	80 - 120	<0.5	ug/g	2.7	35		
4411398	Acid Extractable Beryllium (Be)	2016/03/10	122	75 - 125	117	80 - 120	<0.2	ug/g	NC	35		
4411398	Acid Extractable Boron (B)	2016/03/10	110	75 - 125	109	80 - 120	<5	ug/g	NC	35		
4411398	Acid Extractable Cadmium (Cd)	2016/03/10	104	75 - 125	104	80 - 120	<0.1	ug/g	NC	35		
4411398	Acid Extractable Chromium (Cr)	2016/03/10	NC	75 - 125	105	80 - 120	<1	ug/g	2.5	35		
4411398	Acid Extractable Cobalt (Co)	2016/03/10	NC	75 - 125	105	80 - 120	<0.1	ug/g	1.5	35		
4411398	Acid Extractable Copper (Cu)	2016/03/10	NC	75 - 125	105	80 - 120	<0.5	ug/g	0.93	35		
4411398	Acid Extractable Lead (Pb)	2016/03/10	107	75 - 125	106	80 - 120	<1	ug/g	0.75	35		
4411398	Acid Extractable Mercury (Hg)	2016/03/10	109	75 - 125	105	80 - 120	<0.05	ug/g	NC	35		
4411398	Acid Extractable Molybdenum (Mo)	2016/03/10	105	75 - 125	104	80 - 120	<0.5	ug/g	NC	35		
4411398	Acid Extractable Nickel (Ni)	2016/03/10	NC	75 - 125	104	80 - 120	<0.5	ug/g	3.0	35		
4411398	Acid Extractable Selenium (Se)	2016/03/10	103	75 - 125	106	80 - 120	<0.5	ug/g	NC	35		
4411398	Acid Extractable Silver (Ag)	2016/03/10	102	75 - 125	102	80 - 120	<0.2	ug/g	NC	35		
4411398	Acid Extractable Thallium (Tl)	2016/03/10	106	75 - 125	104	80 - 120	<0.05	ug/g	NC	35		
4411398	Acid Extractable Uranium (U)	2016/03/10	110	75 - 125	107	80 - 120	<0.05	ug/g	4.8	25		
4411398	Acid Extractable Vanadium (V)	2016/03/10	NC	75 - 125	107	80 - 120	<5	ug/g	0.91	35		
4411398	Acid Extractable Zinc (Zn)	2016/03/10	NC	75 - 125	107	80 - 120	<5	ug/g	3.4	35		
4411403	1-Methylnaphthalene	2016/03/10	77	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40		
4411403	2-Methylnaphthalene	2016/03/10	77	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40		
4411403	Acenaphthene	2016/03/10	73	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40		
4411403	Acenaphthylene	2016/03/10	70	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40		
4411403	Anthracene	2016/03/10	76	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40		
4411403	Benzo(a)anthracene	2016/03/10	70	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4411403	Benzo(a)pyrene	2016/03/10	74	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40		
4411403	Benzo(b/j)fluoranthene	2016/03/10	77	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40		

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Maxxam Job #: B648009
Report Date: 2016/03/11

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BF

			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
4411403	Benzo(g,h,i)perylene	2016/03/10	65	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40		
4411403	Benzo(k)fluoranthene	2016/03/10	84	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40		
4411403	Chrysene	2016/03/10	70	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40		
4411403	Dibenz(a,h)anthracene	2016/03/10	68	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40		
4411403	Fluoranthene	2016/03/10	74	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40		
4411403	Fluorene	2016/03/10	77	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40		
4411403	Indeno(1,2,3-cd)pyrene	2016/03/10	71	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40		
4411403	Naphthalene	2016/03/10	73	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4411403	Phenanthrene	2016/03/10	73	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40		
4411403	Pyrene	2016/03/10	69	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40		
4412593	Chromium (VI)	2016/03/10	86	75 - 125	92	80 - 120	<0.2	ug/g	NC	35	83	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B648009
Report Date: 2016/03/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BF

VALIDATION SIGNATURE PAGE

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

Steve Roberts, Ottawa Lab Manager

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:
Company Name: #14090 Golder Associates Ltd
Attention: Central Accounting
Address: 1931 Robertson Rd
Ottawa ON K2H 5B7
Tel: (613) 592-9600 Fax: (613) 592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Paul Hurst
Address:
Tel: Fax:
Email: phurst@golder.com

PROJECT INFORMATION:
Quotation #: B57625
P.O. #:
Project: 1525113
Project Name:
Site #:
Sampled By:

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 537168
COC #: C#537168-28-01
Project Manager: Ema Gitej

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

Turnaround Time (TAT) Required:
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: March 10 Time Required: EOD ☑
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CrVI	Leachate Landfill (TCLP METALS, REG. 153 PHCs)	# of Bottles	Comments
1		VS058	March 8	4:30			✓	✓		1	
2		VS059	March 8	4:32			✓	✓		1	
3											
4											
5											
6											
7											
8											
9											
10											

9-Mar-16 15:25
Ema Gitej
B648009
FHB OTT-002

RECEIVED IN OTTAWA

on ice pick.

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Blanc	16/03/08	4:50	Fatemeh	2016/03/09	15:25	
	~~16/03/10~~					

Laboratory Use Only: Time Sensitive | Temperature (°C) on Receipt: 1, 2, 0 | Custody Seal: Present ✓, Intact ✓ | Yes | No

* 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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B648009
Report Date: 2016/03/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BF

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Site#: 6147

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Your C.O.C. #: 537168-24-01, 537168-23-01, 537168-27-01

Report Date: 2016/04/18
Report #: R3964734
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B674215
Received: 2016/04/14, 14:59

Sample Matrix: Soil
Samples Received: 23

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	18	N/A	2016/04/18	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 3)	23	2016/04/15	2016/04/15	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	23	2016/04/15	2016/04/15	CAM SOP-00447	EPA 6020A m
Moisture (2)	5	N/A	2016/04/15	ATL SOP 00001	OMOE Handbook 1983 m
MOISTURE	18	N/A	2016/04/18	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds by GCMS (SIM) (2, 3)	5	2016/04/15	2016/04/15	ATL SOP 00102	EPA 8270D 2007 m
PAH Compounds in Soil by GC/MS (SIM)	18	2016/04/16	2016/04/18	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

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Your Project #: 1525113
Site#: 6147

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Your C.O.C. #: 537168-24-01, 537168-23-01, 537168-27-01

Report Date: 2016/04/18
Report #: R3964734
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B674215
Received: 2016/04/14, 14:59

Encryption Key

Parnian Baber
Project Manager
18 Apr 2016 15:09:54 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573
==========
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Maxxam Job #: B674215
Report Date: 2016/04/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CEP557	CEP558		CEP559	CEP560		
Sampling Date			2016/04/14	2016/04/14		2016/04/14	2016/04/14		
COC Number			537168-24-01	537168-24-01		537168-24-01	537168-24-01		
	UNITS	Criteria	VS060	VS061	QC Batch	VS062	VS063	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	40	0.28	0.25	4459184	<0.20	<0.20	0.20	4459264
Acid Extractable Arsenic (As)	ug/g	18	3.3	1.8	4459184	1.3	<1.0	1.0	4459264
Acid Extractable Barium (Ba)	ug/g	670	110	87	4459184	120	140	0.50	4459264
Acid Extractable Beryllium (Be)	ug/g	8	0.40	0.46	4459184	0.45	0.50	0.20	4459264
Acid Extractable Boron (B)	ug/g	120	<5.0	<5.0	4459184	<5.0	<5.0	5.0	4459264
Acid Extractable Cadmium (Cd)	ug/g	1.9	0.22	0.12	4459184	<0.10	<0.10	0.10	4459264
Acid Extractable Chromium (Cr)	ug/g	160	35	39	4459184	30	46	1.0	4459264
Acid Extractable Cobalt (Co)	ug/g	80	7.7	8.4	4459184	7.7	11	0.10	4459264
Acid Extractable Copper (Cu)	ug/g	230	18	15	4459184	20	17	0.50	4459264
Acid Extractable Lead (Pb)	ug/g	120	46	9.7	4459184	3.9	4.3	1.0	4459264
Acid Extractable Molybdenum (Mo)	ug/g	40	<0.50	<0.50	4459184	<0.50	<0.50	0.50	4459264
Acid Extractable Nickel (Ni)	ug/g	270	19	19	4459184	18	24	0.50	4459264
Acid Extractable Selenium (Se)	ug/g	5.5	<0.50	<0.50	4459184	<0.50	<0.50	0.50	4459264
Acid Extractable Silver (Ag)	ug/g	40	<0.20	<0.20	4459184	<0.20	<0.20	0.20	4459264
Acid Extractable Thallium (Tl)	ug/g	3.3	0.16	0.14	4459184	0.14	0.23	0.050	4459264
Acid Extractable Uranium (U)	ug/g	33	0.90	0.91	4459184	0.85	1.3	0.050	4459264
Acid Extractable Vanadium (V)	ug/g	86	40	41	4459184	45	49	5.0	4459264
Acid Extractable Zinc (Zn)	ug/g	340	130	54	4459184	46	58	5.0	4459264
Acid Extractable Mercury (Hg)	ug/g	3.9	0.10	<0.050	4459184	<0.050	<0.050	0.050	4459264

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B674215
Report Date: 2016/04/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CEP561	CEP561	CEP562	CEP563		
Sampling Date			2016/04/14	2016/04/14	2016/04/14	2016/04/14		
COC Number			537168-24-01	537168-24-01	537168-24-01	537168-24-01		
	UNITS	Criteria	VS064	VS064 Lab-Dup	VS065	VS066	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.20	<0.20	<0.20	<0.20	0.20	4459264
Acid Extractable Arsenic (As)	ug/g	**18**	1.9	2.2	<1.0	1.8	1.0	4459264
Acid Extractable Barium (Ba)	ug/g	**670**	68	67	19	76	0.50	4459264
Acid Extractable Beryllium (Be)	ug/g	**8**	0.43	0.43	<0.20	0.48	0.20	4459264
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.0	4459264
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.10	<0.10	<0.10	<0.10	0.10	4459264
Acid Extractable Chromium (Cr)	ug/g	**160**	41	40	12	42	1.0	4459264
Acid Extractable Cobalt (Co)	ug/g	**80**	7.5	7.2	2.8	8.8	0.10	4459264
Acid Extractable Copper (Cu)	ug/g	**230**	16	15	4.3	17	0.50	4459264
Acid Extractable Lead (Pb)	ug/g	**120**	9.2	8.6	2.7	7.5	1.0	4459264
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.50	<0.50	<0.50	<0.50	0.50	4459264
Acid Extractable Nickel (Ni)	ug/g	**270**	18	17	6.7	20	0.50	4459264
Acid Extractable Selenium (Se)	ug/g	**5.5**	<0.50	<0.50	<0.50	<0.50	0.50	4459264
Acid Extractable Silver (Ag)	ug/g	**40**	<0.20	<0.20	<0.20	<0.20	0.20	4459264
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.13	0.13	<0.050	0.12	0.050	4459264
Acid Extractable Uranium (U)	ug/g	**33**	1.5	1.4	0.48	1.6	0.050	4459264
Acid Extractable Vanadium (V)	ug/g	**86**	40	40	13	41	5.0	4459264
Acid Extractable Zinc (Zn)	ug/g	**340**	38	40	13	39	5.0	4459264
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.050	<0.050	<0.050	<0.050	0.050	4459264

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CEP564		CEP565	CEP566	CEP568		
Sampling Date			2016/04/14		2016/04/14	2016/04/14	2016/04/14		
COC Number			537168-24-01		537168-24-01	537168-24-01	537168-23-01		
	UNITS	Criteria	VS067	QC Batch	VS068	VS069	VS070	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	40	<0.20	4459184	<0.20	<0.20	<0.20	0.20	4459264
Acid Extractable Arsenic (As)	ug/g	18	<1.0	4459184	1.1	<1.0	<1.0	1.0	4459264
Acid Extractable Barium (Ba)	ug/g	670	110	4459184	150	15	18	0.50	4459264
Acid Extractable Beryllium (Be)	ug/g	8	0.38	4459184	0.51	<0.20	0.22	0.20	4459264
Acid Extractable Boron (B)	ug/g	120	<5.0	4459184	<5.0	<5.0	<5.0	5.0	4459264
Acid Extractable Cadmium (Cd)	ug/g	1.9	<0.10	4459184	<0.10	<0.10	<0.10	0.10	4459264
Acid Extractable Chromium (Cr)	ug/g	160	34	4459184	47	6.0	13	1.0	4459264
Acid Extractable Cobalt (Co)	ug/g	80	9.3	4459184	12	1.9	3.9	0.10	4459264
Acid Extractable Copper (Cu)	ug/g	230	14	4459184	23	3.1	6.1	0.50	4459264
Acid Extractable Lead (Pb)	ug/g	120	3.7	4459184	4.2	1.3	2.2	1.0	4459264
Acid Extractable Molybdenum (Mo)	ug/g	40	<0.50	4459184	<0.50	<0.50	<0.50	0.50	4459264
Acid Extractable Nickel (Ni)	ug/g	270	18	4459184	25	3.8	8.7	0.50	4459264
Acid Extractable Selenium (Se)	ug/g	5.5	<0.50	4459184	<0.50	<0.50	<0.50	0.50	4459264
Acid Extractable Silver (Ag)	ug/g	40	<0.20	4459184	<0.20	<0.20	<0.20	0.20	4459264
Acid Extractable Thallium (Tl)	ug/g	3.3	0.17	4459184	0.21	<0.050	0.052	0.050	4459264
Acid Extractable Uranium (U)	ug/g	33	1.0	4459184	1.2	0.43	0.49	0.050	4459264
Acid Extractable Vanadium (V)	ug/g	86	41	4459184	56	9.3	17	5.0	4459264
Acid Extractable Zinc (Zn)	ug/g	340	43	4459184	54	7.3	15	5.0	4459264
Acid Extractable Mercury (Hg)	ug/g	3.9	<0.050	4459184	<0.050	<0.050	<0.050	0.050	4459264

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B674215
Report Date: 2016/04/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CEP569		CEP570		CEP571		
Sampling Date			2016/04/14		2016/04/14		2016/04/14		
COC Number			537168-23-01		537168-23-01		537168-23-01		
	UNITS	Criteria	VS071	QC Batch	VS072	QC Batch	VS073	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.20	4459264	<0.20	4459184	<0.20	0.20	4459264
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	4459264	1.5	4459184	<1.0	1.0	4459264
Acid Extractable Barium (Ba)	ug/g	**670**	18	4459264	420	4459184	26	0.50	4459264
Acid Extractable Beryllium (Be)	ug/g	**8**	<0.20	4459264	1.1	4459184	<0.20	0.20	4459264
Acid Extractable Boron (B)	ug/g	**120**	<5.0	4459264	<5.0	4459184	<5.0	5.0	4459264
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.10	4459264	<0.10	4459184	<0.10	0.10	4459264
Acid Extractable Chromium (Cr)	ug/g	**160**	11	4459264	120	4459184	9.0	1.0	4459264
Acid Extractable Cobalt (Co)	ug/g	**80**	3.7	4459264	28	4459184	2.4	0.10	4459264
Acid Extractable Copper (Cu)	ug/g	**230**	5.5	4459264	62	4459184	5.1	0.50	4459264
Acid Extractable Lead (Pb)	ug/g	**120**	2.2	4459264	7.7	4459184	1.6	1.0	4459264
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.50	4459264	0.51	4459184	<0.50	0.50	4459264
Acid Extractable Nickel (Ni)	ug/g	**270**	7.1	4459264	65	4459184	5.8	0.50	4459264
Acid Extractable Selenium (Se)	ug/g	**5.5**	<0.50	4459264	<0.50	4459184	<0.50	0.50	4459264
Acid Extractable Silver (Ag)	ug/g	**40**	<0.20	4459264	<0.20	4459184	<0.20	0.20	4459264
Acid Extractable Thallium (Tl)	ug/g	**3.3**	<0.050	4459264	0.50	4459184	<0.050	0.050	4459264
Acid Extractable Uranium (U)	ug/g	**33**	0.46	4459264	2.3	4459184	0.57	0.050	4459264
Acid Extractable Vanadium (V)	ug/g	**86**	16	4459264	**120**	4459184	11	5.0	4459264
Acid Extractable Zinc (Zn)	ug/g	**340**	13	4459264	130	4459184	10	5.0	4459264
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.050	4459264	<0.050	4459184	<0.050	0.050	4459264

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B674215
Report Date: 2016/04/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CEP572	CEP573		CEP574	CEP575		
Sampling Date			2016/04/14	2016/04/14		2016/04/14	2016/04/14		
COC Number			537168-23-01	537168-23-01		537168-23-01	537168-23-01		
	UNITS	Criteria	VS1073	VS074	QC Batch	VS075	VS076	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	40	<0.20	<0.20	4459184	<0.20	<0.20	0.20	4459264
Acid Extractable Arsenic (As)	ug/g	18	<1.0	<1.0	4459184	<1.0	<1.0	1.0	4459264
Acid Extractable Barium (Ba)	ug/g	670	24	26	4459184	13	21	0.50	4459264
Acid Extractable Beryllium (Be)	ug/g	8	<0.20	0.21	4459184	<0.20	<0.20	0.20	4459264
Acid Extractable Boron (B)	ug/g	120	<5.0	<5.0	4459184	<5.0	<5.0	5.0	4459264
Acid Extractable Cadmium (Cd)	ug/g	1.9	<0.10	<0.10	4459184	<0.10	<0.10	0.10	4459264
Acid Extractable Chromium (Cr)	ug/g	160	8.8	12	4459184	8.5	10	1.0	4459264
Acid Extractable Cobalt (Co)	ug/g	80	2.4	3.7	4459184	2.4	3.4	0.10	4459264
Acid Extractable Copper (Cu)	ug/g	230	4.9	5.1	4459184	3.5	5.1	0.50	4459264
Acid Extractable Lead (Pb)	ug/g	120	2.0	2.1	4459184	1.9	1.6	1.0	4459264
Acid Extractable Molybdenum (Mo)	ug/g	40	<0.50	<0.50	4459184	<0.50	<0.50	0.50	4459264
Acid Extractable Nickel (Ni)	ug/g	270	5.3	7.1	4459184	4.9	7.5	0.50	4459264
Acid Extractable Selenium (Se)	ug/g	5.5	<0.50	<0.50	4459184	<0.50	<0.50	0.50	4459264
Acid Extractable Silver (Ag)	ug/g	40	<0.20	<0.20	4459184	<0.20	<0.20	0.20	4459264
Acid Extractable Thallium (Tl)	ug/g	3.3	<0.050	<0.050	4459184	<0.050	<0.050	0.050	4459264
Acid Extractable Uranium (U)	ug/g	33	0.58	0.54	4459184	0.33	0.32	0.050	4459264
Acid Extractable Vanadium (V)	ug/g	86	12	14	4459184	14	15	5.0	4459264
Acid Extractable Zinc (Zn)	ug/g	340	11	14	4459184	11	14	5.0	4459264
Acid Extractable Mercury (Hg)	ug/g	3.9	<0.050	<0.050	4459184	<0.050	<0.050	0.050	4459264

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Report Date: 2016/04/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CEP576	CEP577	CEP587	CEP588	CEP589		
Sampling Date			2016/04/14	2016/04/14	2016/04/14	2016/04/14	2016/04/14		
COC Number			537168-23-01	537168-23-01	537168-27-01	537168-27-01	537168-27-01		
	UNITS	Criteria	VS077	VS078	VS079	VS080	VS081	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4459264
Acid Extractable Arsenic (As)	ug/g	**18**	1.3	1.0	1.0	1.6	1.7	1.0	4459264
Acid Extractable Barium (Ba)	ug/g	**670**	92	35	59	370	270	0.50	4459264
Acid Extractable Beryllium (Be)	ug/g	**8**	0.43	0.23	0.39	1.1	0.77	0.20	4459264
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4459264
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	4459264
Acid Extractable Chromium (Cr)	ug/g	**160**	42	17	26	110	91	1.0	4459264
Acid Extractable Cobalt (Co)	ug/g	**80**	10	2.8	6.7	29	20	0.10	4459264
Acid Extractable Copper (Cu)	ug/g	**230**	15	9.8	13	56	46	0.50	4459264
Acid Extractable Lead (Pb)	ug/g	**120**	5.0	2.1	3.8	7.8	7.4	1.0	4459264
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.50	<0.50	<0.50	0.72	<0.50	0.50	4459264
Acid Extractable Nickel (Ni)	ug/g	**270**	19	9.4	15	61	47	0.50	4459264
Acid Extractable Selenium (Se)	ug/g	**5.5**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4459264
Acid Extractable Silver (Ag)	ug/g	**40**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4459264
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.13	<0.050	0.090	0.44	0.33	0.050	4459264
Acid Extractable Uranium (U)	ug/g	**33**	1.1	0.70	1.4	2.4	1.7	0.050	4459264
Acid Extractable Vanadium (V)	ug/g	**86**	67	18	25	**100**	**89**	5.0	4459264
Acid Extractable Zinc (Zn)	ug/g	**340**	37	18	29	120	93	5.0	4459264
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4459264

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B674215
Report Date: 2016/04/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CEP557	CEP558	CEP558	CEP559	CEP560		
Sampling Date			2016/04/14	2016/04/14	2016/04/14	2016/04/14	2016/04/14		
COC Number			537168-24-01	537168-24-01	537168-24-01	537168-24-01	537168-24-01		
	UNITS	Criteria	VS060	VS061	VS061 Lab-Dup	VS062	VS063	RDL	QC Batch
Inorganics									
Moisture	%	-	26	27	27	20	16	0.2	4460398
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014		<0.014	<0.014	0.014	4457932
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Anthracene	ug/g	**0.67**	0.0086	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Benzo(a)anthracene	ug/g	**0.96**	0.029	0.0079	0.0098	<0.0050	<0.0050	0.0050	4460400
Benzo(a)pyrene	ug/g	**0.3**	0.027	0.0095	0.0098	<0.0050	<0.0050	0.0050	4460400
Benzo(b/j)fluoranthene	ug/g	**0.96**	0.038	0.011	0.0098	<0.0050	<0.0050	0.0050	4460400
Benzo(g,h,i)perylene	ug/g	**9.6**	0.016	0.011	0.0098	<0.0050	0.0070	0.0050	4460400
Benzo(k)fluoranthene	ug/g	**0.96**	0.016	0.0063	0.0075	<0.0050	<0.0050	0.0050	4460400
Chrysene	ug/g	**9.6**	0.027	0.0079	0.011	<0.0050	<0.0050	0.0050	4460400
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0079	0.0068	<0.0050	<0.0050	0.0050	4460400
Fluoranthene	ug/g	**9.6**	0.070	0.0079	0.017	<0.0050	<0.0050	0.0050	4460400
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	0.016	0.012	0.0098	<0.0050	0.0064	0.0050	4460400
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Phenanthrene	ug/g	**12**	0.027	<0.0050	0.0075	<0.0050	<0.0050	0.0050	4460400
Pyrene	ug/g	**96**	0.059	0.0079	0.015	<0.0050	<0.0050	0.0050	4460400
Surrogate Recovery (%)									
D10-Anthracene	%	-	64	62	64	67	65		4460400
D14-Terphenyl (FS)	%	-	65	65	67	69	64		4460400
D8-Acenaphthylene	%	-	57	55	58	59	57		4460400

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B674215
Report Date: 2016/04/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CEP561	CEP562	CEP563	CEP564	CEP565		
Sampling Date			2016/04/14	2016/04/14	2016/04/14	2016/04/14	2016/04/14		
COC Number			537168-24-01	537168-24-01	537168-24-01	537168-24-01	537168-24-01		
	UNITS	Criteria	VS064	VS065	VS066	VS067	VS068	RDL	QC Batch
Inorganics									
Moisture	%	-	25	11	20	20	25	0.2	4460398
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4457932
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Benzo(a)anthracene	ug/g	**0.96**	0.0060	0.0068	<0.0050	0.013	<0.0050	0.0050	4460400
Benzo(a)pyrene	ug/g	**0.3**	0.0060	0.0075	<0.0050	0.013	<0.0050	0.0050	4460400
Benzo(b/j)fluoranthene	ug/g	**0.96**	0.0060	0.0068	<0.0050	0.017	<0.0050	0.0050	4460400
Benzo(g,h,i)perylene	ug/g	**9.6**	0.0067	<0.0050	<0.0050	0.0090	<0.0050	0.0050	4460400
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	0.0084	<0.0050	0.0050	4460400
Chrysene	ug/g	**9.6**	0.0067	0.0075	<0.0050	0.014	0.0056	0.0050	4460400
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Fluoranthene	ug/g	**9.6**	0.0087	0.0093	0.0056	0.032	<0.0050	0.0050	4460400
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	0.0073	<0.0050	<0.0050	0.0095	<0.0050	0.0050	4460400
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	0.013	<0.0050	0.0050	4460400
Pyrene	ug/g	**96**	0.0073	0.0087	0.0056	0.028	<0.0050	0.0050	4460400
Surrogate Recovery (%)									
D10-Anthracene	%	-	65	62	64	65	65		4460400
D14-Terphenyl (FS)	%	-	65	63	65	68	66		4460400
D8-Acenaphthylene	%	-	57	54	56	57	57		4460400

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
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Report Date: 2016/04/18

Golder Associates Ltd
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Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CEP566	CEP568	CEP569	CEP570	CEP571		
Sampling Date			2016/04/14	2016/04/14	2016/04/14	2016/04/14	2016/04/14		
COC Number			537168-24-01	537168-23-01	537168-23-01	537168-23-01	537168-23-01		
	UNITS	Criteria	VS069	VS070	VS071	VS072	VS073	RDL	QC Batch
Inorganics									
Moisture	%	-	8.4	16	9.6	27	11	0.2	4460398
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4457932
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	0.0061	<0.0050	<0.0050	0.0050	4460400
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	0.0073	<0.0050	<0.0050	0.0050	4460400
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Pyrene	ug/g	**96**	<0.0050	<0.0050	0.0067	<0.0050	<0.0050	0.0050	4460400
Surrogate Recovery (%)									
D10-Anthracene	%	-	61	62	62	63	62		4460400
D14-Terphenyl (FS)	%	-	61	63	61	62	63		4460400
D8-Acenaphthylene	%	-	54	55	55	56	55		4460400

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Report Date: 2016/04/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CEP572	CEP573	CEP574	CEP575		
Sampling Date			2016/04/14	2016/04/14	2016/04/14	2016/04/14		
COC Number			537168-23-01	537168-23-01	537168-23-01	537168-23-01		
	UNITS	Criteria	VS1073	VS074	VS075	VS076	RDL	QC Batch
Inorganics								
Moisture	%	-	13	11	8.5	12	0.2	4460398
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014	<0.014	<0.014	0.014	4457932
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4460400
Surrogate Recovery (%)								
D10-Anthracene	%	-	61	63	60	62		4460400
D14-Terphenyl (FS)	%	-	64	61	60	63		4460400
D8-Acenaphthylene	%	-	55	55	54	55		4460400

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B674215
Report Date: 2016/04/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

RESULTS OF ANALYSES OF SOIL

Maxxam ID		CEP576	CEP577	CEP587	CEP588	CEP589		
Sampling Date		2016/04/14	2016/04/14	2016/04/14	2016/04/14	2016/04/14		
COC Number		537168-23-01	537168-23-01	537168-27-01	537168-27-01	537168-27-01		
	UNITS	VS077	VS078	VS079	VS080	VS081	RDL	QC Batch
Inorganics								
Moisture	%	16	15	11	31	29	1.0	4458905

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Golder Associates Ltd
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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CEP557	CEP558	CEP559	CEP560	CEP561		
Sampling Date			2016/04/14	2016/04/14	2016/04/14	2016/04/14	2016/04/14		
COC Number			537168-24-01	537168-24-01	537168-24-01	537168-24-01	537168-24-01		
	UNITS	Criteria	VS060	VS061	VS062	VS063	VS064	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4458964

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

Maxxam ID			CEP562	CEP563	CEP564	CEP565	CEP566		
Sampling Date			2016/04/14	2016/04/14	2016/04/14	2016/04/14	2016/04/14		
COC Number			537168-24-01	537168-24-01	537168-24-01	537168-24-01	537168-24-01		
	UNITS	Criteria	VS065	VS066	VS067	VS068	VS069	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4458964

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

Maxxam ID			CEP566	CEP568	CEP569	CEP570	CEP571		
Sampling Date			2016/04/14	2016/04/14	2016/04/14	2016/04/14	2016/04/14		
COC Number			537168-24-01	537168-23-01	537168-23-01	537168-23-01	537168-23-01		
	UNITS	Criteria	VS069 Lab-Dup	VS070	VS071	VS072	VS073	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4458964

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Report Date: 2016/04/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CEP572	CEP573	CEP574	CEP575		CEP576		
Sampling Date			2016/04/14	2016/04/14	2016/04/14	2016/04/14		2016/04/14		
COC Number			537168-23-01	537168-23-01	537168-23-01	537168-23-01		537168-23-01		
	UNITS	Criteria	VS1073	VS074	VS075	VS076	QC Batch	VS077	RDL	QC Batch
Inorganics										
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	4458964	<0.2	0.2	4458894

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

Maxxam ID			CEP577	CEP587	CEP587	CEP588	CEP589		
Sampling Date			2016/04/14	2016/04/14	2016/04/14	2016/04/14	2016/04/14		
COC Number			537168-23-01	537168-27-01	537168-27-01	537168-27-01	537168-27-01		
	UNITS	Criteria	VS078	VS079	VS079 Lab-Dup	VS080	VS081	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4458894

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID			CEP576	CEP577	CEP587	CEP588	CEP589		
Sampling Date			2016/04/14	2016/04/14	2016/04/14	2016/04/14	2016/04/14		
COC Number			537168-23-01	537168-23-01	537168-27-01	537168-27-01	537168-27-01		
	UNITS	Criteria	VS077	VS078	VS079	VS080	VS081	RDL	QC Batch
Polyaromatic Hydrocarbons									
1-Methylnaphthalene	mg/kg	**76**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4458663
2-Methylnaphthalene	mg/kg	**76**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Acenaphthene	mg/kg	**96**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Acenaphthylene	mg/kg	**0.15**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Anthracene	mg/kg	**0.67**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Benzo(a)anthracene	mg/kg	**0.96**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Benzo(a)pyrene	mg/kg	**0.3**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Benzo(b)fluoranthene	mg/kg	**0.96**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Benzo(g,h,i)perylene	mg/kg	**9.6**	0.015	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Benzo(j)fluoranthene	mg/kg	**-**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Benzo(k)fluoranthene	mg/kg	**0.96**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Chrysene	mg/kg	**9.6**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Dibenz(a,h)anthracene	mg/kg	**0.1**	0.019	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Fluoranthene	mg/kg	**9.6**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Fluorene	mg/kg	**62**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Indeno(1,2,3-cd)pyrene	mg/kg	**0.76**	0.018	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Naphthalene	mg/kg	**9.6**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Phenanthrene	mg/kg	**12**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Pyrene	mg/kg	**96**	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4458663
Surrogate Recovery (%)									
D10-Anthracene	%	-	88	89	95	99	93		4458663
D14-Terphenyl (FS)	%	-	87	97	115	101	92		4458663
D8-Acenaphthylene	%	-	94	94	98	96	91		4458663

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Report Date: 2016/04/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CEP557
Sample ID: VS060
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459184	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

Maxxam ID: CEP558
Sample ID: VS061
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459184	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

Maxxam ID: CEP558 Dup
Sample ID: VS061
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

Maxxam ID: CEP559
Sample ID: VS062
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

Maxxam ID: CEP560
Sample ID: VS063
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

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Maxxam Job #: B674215
Report Date: 2016/04/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CEP561
Sample ID: VS064
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

Maxxam ID: CEP561 Dup
Sample ID: VS064
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran

Maxxam ID: CEP562
Sample ID: VS065
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

Maxxam ID: CEP563
Sample ID: VS066
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

Maxxam ID: CEP564
Sample ID: VS067
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459184	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

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Maxxam Job #: B674215
Report Date: 2016/04/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CEP565
Sample ID: VS068
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

Maxxam ID: CEP566
Sample ID: VS069
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

Maxxam ID: CEP566 Dup
Sample ID: VS069
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin

Maxxam ID: CEP568
Sample ID: VS070
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

Maxxam ID: CEP569
Sample ID: VS071
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

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Client Project #: 1525113
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TEST SUMMARY

Maxxam ID: CEP570
Sample ID: VS072
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459184	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

Maxxam ID: CEP571
Sample ID: VS073
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

Maxxam ID: CEP572
Sample ID: VS1073
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459184	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

Maxxam ID: CEP573
Sample ID: VS074
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459184	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

Maxxam ID: CEP574
Sample ID: VS075
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin

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TEST SUMMARY

Maxxam ID: CEP574
Sample ID: VS075
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

Maxxam ID: CEP575
Sample ID: VS076
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4457932	N/A	2016/04/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4458964	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
MOISTURE	BAL	4460398	N/A	2016/04/18	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4460400	2016/04/16	2016/04/18	Liliana Gaburici

Maxxam ID: CEP576
Sample ID: VS077
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4458894	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
Moisture	BAL	4458905	N/A	2016/04/15	Julia McGovern
PAH Compounds by GCMS (SIM)	GC/MS	4458663	2016/04/15	2016/04/15	Gina Thompson

Maxxam ID: CEP577
Sample ID: VS078
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4458894	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
Moisture	BAL	4458905	N/A	2016/04/15	Julia McGovern
PAH Compounds by GCMS (SIM)	GC/MS	4458663	2016/04/15	2016/04/15	Gina Thompson

Maxxam ID: CEP587
Sample ID: VS079
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4458894	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
Moisture	BAL	4458905	N/A	2016/04/15	Julia McGovern
PAH Compounds by GCMS (SIM)	GC/MS	4458663	2016/04/15	2016/04/15	Gina Thompson

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TEST SUMMARY

Maxxam ID: CEP587 Dup
Sample ID: VS079
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4458894	2016/04/15	2016/04/15	Sally Coughlin

Maxxam ID: CEP588
Sample ID: VS080
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4458894	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
Moisture	BAL	4458905	N/A	2016/04/15	Julia McGovern
PAH Compounds by GCMS (SIM)	GC/MS	4458663	2016/04/15	2016/04/15	Gina Thompson

Maxxam ID: CEP589
Sample ID: VS081
Matrix: Soil

Collected: 2016/04/14
Shipped:
Received: 2016/04/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4458894	2016/04/15	2016/04/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4459264	2016/04/15	2016/04/15	Cristina Petran
Moisture	BAL	4458905	N/A	2016/04/15	Julia McGovern
PAH Compounds by GCMS (SIM)	GC/MS	4458663	2016/04/15	2016/04/15	Gina Thompson

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Maxxam Job #: B674215
Report Date: 2016/04/18

Golder Associates Ltd
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GENERAL COMMENTS

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

Package 1	14.3°C

Results relate only to the items tested.

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Report Date: 2016/04/18

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4458663	D10-Anthracene	2016/04/15	83	30 - 130	97	30 - 130	101	%				
4458663	D14-Terphenyl (FS)	2016/04/15	76	30 - 130	105	30 - 130	99	%				
4458663	D8-Acenaphthylene	2016/04/15	96	30 - 130	100	30 - 130	95	%				
4460400	D10-Anthracene	2016/04/17	63	50 - 130	67	50 - 130	67	%				
4460400	D14-Terphenyl (FS)	2016/04/17	64	50 - 130	71	50 - 130	65	%				
4460400	D8-Acenaphthylene	2016/04/17	56	50 - 130	60	50 - 130	59	%				
4458663	1-Methylnaphthalene	2016/04/18	101	30 - 130	98	30 - 130	<0.010	mg/kg	NC	50		
4458663	2-Methylnaphthalene	2016/04/18	105	30 - 130	108	30 - 130	<0.010	mg/kg	NC	50		
4458663	Acenaphthene	2016/04/18	101	30 - 130	94	30 - 130	<0.010	mg/kg	NC	50		
4458663	Acenaphthylene	2016/04/18	96	30 - 130	92	30 - 130	<0.010	mg/kg	NC	50		
4458663	Anthracene	2016/04/18	75	30 - 130	85	30 - 130	<0.010	mg/kg	NC	50		
4458663	Benzo(a)anthracene	2016/04/18	20 (1)	30 - 130	98	30 - 130	<0.010	mg/kg	NC	50		
4458663	Benzo(a)pyrene	2016/04/18	4.6 (1)	30 - 130	90	30 - 130	<0.010	mg/kg	NC	50		
4458663	Benzo(b)fluoranthene	2016/04/18	5.9 (1)	30 - 130	88	30 - 130	<0.010	mg/kg	NC	50		
4458663	Benzo(g,h,i)perylene	2016/04/18	0.88 (1)	30 - 130	102	30 - 130	<0.010	mg/kg	NC	50		
4458663	Benzo(j)fluoranthene	2016/04/18	6.4 (1)	30 - 130	89	30 - 130	<0.010	mg/kg	NC	50		
4458663	Benzo(k)fluoranthene	2016/04/18	5.8 (1)	30 - 130	96	30 - 130	<0.010	mg/kg	NC	50		
4458663	Chrysene	2016/04/18	19 (1)	30 - 130	98	30 - 130	<0.010	mg/kg	NC	50		
4458663	Dibenz(a,h)anthracene	2016/04/18	0.84 (1)	30 - 130	106	30 - 130	<0.010	mg/kg	NC	50		
4458663	Fluoranthene	2016/04/18	64	30 - 130	94	30 - 130	<0.010	mg/kg	NC	50		
4458663	Fluorene	2016/04/18	98	30 - 130	96	30 - 130	<0.010	mg/kg	NC	50		
4458663	Indeno(1,2,3-cd)pyrene	2016/04/18	0.87 (1)	30 - 130	101	30 - 130	<0.010	mg/kg	NC	50		
4458663	Naphthalene	2016/04/18	106	30 - 130	103	30 - 130	<0.010	mg/kg	NC	50		
4458663	Phenanthrene	2016/04/18	84	30 - 130	99	30 - 130	<0.010	mg/kg	NC	50		
4458663	Pyrene	2016/04/18	61	30 - 130	94	30 - 130	<0.010	mg/kg	NC	50		
4458894	Chromium (VI)	2016/04/15	84	75 - 125	98	80 - 120	<0.2	ug/g	NC	35	95	75 - 125
4458964	Chromium (VI)	2016/04/15	92	75 - 125	97	80 - 120	<0.2	ug/g	NC	35	85	75 - 125
4459184	Acid Extractable Antimony (Sb)	2016/04/15	98	75 - 125	101	80 - 120	<0.20	ug/g	NC	30		
4459184	Acid Extractable Arsenic (As)	2016/04/15	96	75 - 125	97	80 - 120	<1.0	ug/g	NC	30		
4459184	Acid Extractable Barium (Ba)	2016/04/15	NC	75 - 125	101	80 - 120	<0.50	ug/g	5.3	30		
4459184	Acid Extractable Beryllium (Be)	2016/04/15	97	75 - 125	100	80 - 120	<0.20	ug/g	NC	30		

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Report Date: 2016/04/18

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4459184	Acid Extractable Boron (B)	2016/04/15	93	75 - 125	96	80 - 120	<5.0	ug/g	NC	30		
4459184	Acid Extractable Cadmium (Cd)	2016/04/15	98	75 - 125	101	80 - 120	<0.10	ug/g	NC	30		
4459184	Acid Extractable Chromium (Cr)	2016/04/15	97	75 - 125	101	80 - 120	<1.0	ug/g	1.6	30		
4459184	Acid Extractable Cobalt (Co)	2016/04/15	97	75 - 125	102	80 - 120	<0.10	ug/g	3.0	30		
4459184	Acid Extractable Copper (Cu)	2016/04/15	93	75 - 125	102	80 - 120	<0.50	ug/g	7.3	30		
4459184	Acid Extractable Lead (Pb)	2016/04/15	94	75 - 125	98	80 - 120	<1.0	ug/g	NC	30		
4459184	Acid Extractable Mercury (Hg)	2016/04/15	99	75 - 125	108	80 - 120	<0.050	ug/g				
4459184	Acid Extractable Molybdenum (Mo)	2016/04/15	100	75 - 125	102	80 - 120	<0.50	ug/g	NC	30		
4459184	Acid Extractable Nickel (Ni)	2016/04/15	97	75 - 125	102	80 - 120	<0.50	ug/g	0.30	30		
4459184	Acid Extractable Selenium (Se)	2016/04/15	100	75 - 125	104	80 - 120	<0.50	ug/g	NC	30		
4459184	Acid Extractable Silver (Ag)	2016/04/15	97	75 - 125	101	80 - 120	<0.20	ug/g	NC	30		
4459184	Acid Extractable Thallium (Tl)	2016/04/15	93	75 - 125	99	80 - 120	<0.050	ug/g	NC	30		
4459184	Acid Extractable Uranium (U)	2016/04/15	95	75 - 125	99	80 - 120	<0.050	ug/g	1.1	30		
4459184	Acid Extractable Vanadium (V)	2016/04/15	NC	75 - 125	100	80 - 120	<5.0	ug/g	NC	30		
4459184	Acid Extractable Zinc (Zn)	2016/04/15	NC	75 - 125	98	80 - 120	<5.0	ug/g	NC	30		
4459264	Acid Extractable Antimony (Sb)	2016/04/15	90	75 - 125	100	80 - 120	<0.20	ug/g	NC	30		
4459264	Acid Extractable Arsenic (As)	2016/04/15	102	75 - 125	96	80 - 120	<1.0	ug/g	NC	30		
4459264	Acid Extractable Barium (Ba)	2016/04/15	NC	75 - 125	104	80 - 120	<0.50	ug/g	1.2	30		
4459264	Acid Extractable Beryllium (Be)	2016/04/15	101	75 - 125	99	80 - 120	<0.20	ug/g	NC	30		
4459264	Acid Extractable Boron (B)	2016/04/15	96	75 - 125	97	80 - 120	<5.0	ug/g	NC	30		
4459264	Acid Extractable Cadmium (Cd)	2016/04/15	99	75 - 125	100	80 - 120	<0.10	ug/g	NC	30		
4459264	Acid Extractable Chromium (Cr)	2016/04/15	NC	75 - 125	100	80 - 120	<1.0	ug/g	1.5	30		
4459264	Acid Extractable Cobalt (Co)	2016/04/15	100	75 - 125	101	80 - 120	<0.10	ug/g	4.1	30		
4459264	Acid Extractable Copper (Cu)	2016/04/15	NC	75 - 125	103	80 - 120	<0.50	ug/g	4.5	30		
4459264	Acid Extractable Lead (Pb)	2016/04/15	93	75 - 125	96	80 - 120	<1.0	ug/g	6.6	30		
4459264	Acid Extractable Mercury (Hg)	2016/04/15	102	75 - 125	104	80 - 120	<0.050	ug/g	NC	30		
4459264	Acid Extractable Molybdenum (Mo)	2016/04/15	100	75 - 125	102	80 - 120	<0.50	ug/g	NC	30		
4459264	Acid Extractable Nickel (Ni)	2016/04/15	NC	75 - 125	103	80 - 120	<0.50	ug/g	5.0	30		
4459264	Acid Extractable Selenium (Se)	2016/04/15	99	75 - 125	102	80 - 120	<0.50	ug/g	NC	30		
4459264	Acid Extractable Silver (Ag)	2016/04/15	99	75 - 125	100	80 - 120	<0.20	ug/g	NC	30		
4459264	Acid Extractable Thallium (Tl)	2016/04/15	97	75 - 125	97	80 - 120	<0.050	ug/g	NC	30		

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Report Date: 2016/04/18

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4459264	Acid Extractable Uranium (U)	2016/04/15	97	75 - 125	97	80 - 120	<0.050	ug/g	3.2	30		
4459264	Acid Extractable Vanadium (V)	2016/04/15	NC	75 - 125	99	80 - 120	<5.0	ug/g	0.62	30		
4459264	Acid Extractable Zinc (Zn)	2016/04/15	NC	75 - 125	97	80 - 120	<5.0	ug/g	5.5	30		
4460398	Moisture	2016/04/18							1.1	50		
4460400	1-Methylnaphthalene	2016/04/18	58	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40		
4460400	2-Methylnaphthalene	2016/04/18	61	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4460400	Acenaphthene	2016/04/18	56	50 - 130	59	50 - 130	<0.0050	ug/g	NC	40		
4460400	Acenaphthylene	2016/04/18	57	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40		
4460400	Anthracene	2016/04/18	63	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40		
4460400	Benzo(a)anthracene	2016/04/18	63	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4460400	Benzo(a)pyrene	2016/04/18	54	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40		
4460400	Benzo(b/j)fluoranthene	2016/04/18	57	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40		
4460400	Benzo(g,h,i)perylene	2016/04/18	53	50 - 130	56	50 - 130	<0.0050	ug/g	NC	40		
4460400	Benzo(k)fluoranthene	2016/04/18	56	50 - 130	56	50 - 130	<0.0050	ug/g	NC	40		
4460400	Chrysene	2016/04/18	58	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40		
4460400	Dibenz(a,h)anthracene	2016/04/18	56	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4460400	Fluoranthene	2016/04/18	71	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40		
4460400	Fluorene	2016/04/18	57	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4460400	Indeno(1,2,3-cd)pyrene	2016/04/18	56	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40		
4460400	Naphthalene	2016/04/18	59	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40		
4460400	Phenanthrene	2016/04/18	56	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40		

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Maxxam Job #: B674215
Report Date: 2016/04/18

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4460400	Pyrene	2016/04/18	74	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40		

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Matrix Spike: results are outside acceptance limit. Analysis was repeated with similar results.

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Maxxam Job #: B674215
Report Date: 2016/04/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Alan Stewart, Scientific Specialist (Organics)

Cristina Carriere, Scientific Services

Rosemarie MacDonald, Scientific Specialist (Organics)

Steve Roberts, Ottawa Lab Manager

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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 537168
Attention:	Central Accounting	Attention:	Paul Hurst	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113		
	Ottawa ON K2H 5B7			Project Name:		COC #:	Project Manager:
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:		C#537168-24-01	Ema Gitej
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	phurst@golder.com	Sampled By:	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

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: Next Day Time Required: ☒ Rush Confirmation Number: (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	Leachate Landfill (TCLP METALS, REG 153 PHCs)						# of Bottles	Comments
1		VS060	16/04/14	900	soil		X	X							1	
2		VS061		915			X	X							1	
3		VS062		930			X	X							1	
4		VS063		945			X	X							1	
5		VS064		1000			X	X							1	
6		VS065		1015			X	X							1	
7		VS066		1030			X	X							1	
8		VS067		1045			X	X							1	
9		VS068		1100			X	X							1	ON ICE PACK.
10		VS069		1115			X	X							1	(ICE PACKS were used)

14-Apr-16 14:59
Ema Gitej
B674215
FHB OTT-002

RECEIVED 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
Aaron Bradshaw	16/04/14	1430		2016/04/14	14:59	0		14,15,14	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

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

White: Maxxam Yellow: Client

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CHAIN OF CUSTODY RECORD

Page 23 of 23

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 537168
Attention:	Central Accounting	Attention:	Paul Hurst	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:			
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:		C#537168-23-01	Erna Gitej
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	phurst@golder.com	Sampled By:	Aaron Bradshaw		

OF REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

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: Next Day Time Required: ___ ☒
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O Reg 153 PAHs (Soil)	O Reg 153 ICPMS Metals including Hg and CRVI	Laflache Landfill (TCLP METALS, REG 153 PHCs)	# of Bottles	Comments
1		VS070	16/04/14	1130	Soil		X	X		1	
2		VS071	↓	1145	↓		X	X		1	
3		VS072	↓	1200	↓		X	X		1	
4		VS073	↓	1215	↓		X	X		1	
5		VS1073	↓	1215	↓		X	X		1	
6		VS074	↓	1230	↓		X	X		1	RECEIVED IN OTTAWA
7		VS075	↓	1245	↓		X	X		1	RECEIVED IN OTTAWA
8		VS076	↓	1300	↓		X	X		1	
9		VS077	↓	1315	↓		X	X		1	ON warm ICE packs
10		VS078	↓	1320	↓						

* 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
A. Bradshaw / Aaron Bradshaw	16/04/14	1430	[signature]	2016/04/14	14:59	0		14, 15, 14	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.

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

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CHAIN OF CUSTODY RECORD

Page 3 of 3

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name	#14090 Golder Associates Ltd	Company Name		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 537168
Attention:	Central Accounting	Attention:	Paul Hurst	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #: C#537168-27-01	Project Manager: Ema Gitej
	Ottawa ON K2H 5B7			Project Name:			
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	phurst@golder.com	Sampled By:	Aaron Bradshaw		

NOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI

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: Next day Time Required: ☒ Rush Confirmation Number: ____ (call lab for it)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	Leachate Lands3 (TCLP METALS, REG. 558 PHCs)							# of Bottles	Comments
1		VS079	16/04/14	1330	Soil		X	X								1	
2		VS080	↓	1340	↓		X	X								1	
3		VS081	↓	1400	↓		X	X								1	
4																	
5																	
6																	RECEIVED IN OTTAWA
7																	
8																	RECEIVED IN OTTAWA
9																	ON warm ice packs
10																	

* 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
Aaron Bradshaw	16/04/14	1430	[signature]	2016/04/14	14:59	0		14, 15, 14	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

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

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Maxxam Job #: B674215
Report Date: 2016/04/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS072	CEP570-01	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS080	CEP588-01	Acid Extractable Vanadium (V)	86	100	5.0	ug/g
VS081	CEP589-01	Acid Extractable Vanadium (V)	86	89	5.0	ug/g

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 537168-26-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/04/19
Report #: R3966108
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B676567
Received: 2016/04/18, 16:20

Sample Matrix: Soil
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	5	N/A	2016/04/19	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	5	2016/04/19	2016/04/19	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (3)	2	N/A	2016/04/18	OTT SOP-00002	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil (3)	5	N/A	2016/04/19	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (4)	7	2016/04/18	2016/04/19	OTT SOP-00001	CCME CWS
Acid Extr. Metals (aqua regia) by ICPMS	5	2016/04/19	2016/04/19	OTT SOP-00003	EPA 6020
MOISTURE	10	N/A	2016/04/19	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	5	2016/04/18	2016/04/18	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.
(3) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
(4) All CCME PHC results met required criteria unless otherwise stated in the report. 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 "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

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Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 537168-26-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/04/19
Report #: R3966108
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B676567
Received: 2016/04/18, 16:20

Encryption Key

Parnian Baber
Project Manager
19 Apr 2016 16:31:25 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573
==========
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Maxxam Job #: B676567
Report Date: 2016/04/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CFB306	CFB307	CFB310	CFB311	CFB312		
Sampling Date			2016/04/18 09:20	2016/04/18 09:30	2016/04/18 14:20	2016/04/18 14:30	2016/04/18 14:40		
COC Number			537168-26-01	537168-26-01	537168-26-01	537168-26-01	537168-26-01		
	UNITS	Criteria	VS087	VS088	VS091	VS092	VS093	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	40	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4461360
Acid Extractable Arsenic (As)	ug/g	18	2	<1	1	1	2	1	4461360
Acid Extractable Barium (Ba)	ug/g	670	120	36	230	170	180	0.5	4461360
Acid Extractable Beryllium (Be)	ug/g	8	0.4	0.2	0.6	0.5	0.7	0.2	4461360
Acid Extractable Boron (B)	ug/g	120	<5	<5	<5	<5	<5	5	4461360
Acid Extractable Cadmium (Cd)	ug/g	1.9	<0.1	<0.1	<0.1	<0.1	0.1	0.1	4461360
Acid Extractable Chromium (Cr)	ug/g	160	33	21	57	42	43	1	4461360
Acid Extractable Cobalt (Co)	ug/g	80	8.7	5.2	16	12	12	0.1	4461360
Acid Extractable Copper (Cu)	ug/g	230	15	6.4	29	19	24	0.5	4461360
Acid Extractable Lead (Pb)	ug/g	120	4	3	5	6	6	1	4461360
Acid Extractable Mercury (Hg)	ug/g	3.9	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4461360
Acid Extractable Molybdenum (Mo)	ug/g	40	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4461360
Acid Extractable Nickel (Ni)	ug/g	270	19	13	34	26	27	0.5	4461360
Acid Extractable Selenium (Se)	ug/g	5.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4461360
Acid Extractable Silver (Ag)	ug/g	40	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4461360
Acid Extractable Thallium (Tl)	ug/g	3.3	0.16	0.09	0.29	0.22	0.22	0.05	4461360
Acid Extractable Uranium (U)	ug/g	33	0.62	0.63	1.0	1.0	0.99	0.05	4461360
Acid Extractable Vanadium (V)	ug/g	86	51	26	70	58	61	5	4461360
Acid Extractable Zinc (Zn)	ug/g	340	45	32	81	67	66	5	4461360

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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.maxxam.ca

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A Bureau Veritas Group Company

Maxxam Job #: B676567
Report Date: 2016/04/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CFB306	CFB307	CFB310	CFB311	CFB312		
Sampling Date			2016/04/18 09:20	2016/04/18 09:30	2016/04/18 14:20	2016/04/18 14:30	2016/04/18 14:40		
COC Number			537168-26-01	537168-26-01	537168-26-01	537168-26-01	537168-26-01		
	UNITS	Criteria	VS087	VS088	VS091	VS092	VS093	RDL	QC Batch
Inorganics									
Moisture	%	-			20	20	19	0.2	4461280
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4461356
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
Fluoranthene	ug/g	**9.6**	0.0064	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4461442
Surrogate Recovery (%)									
D10-Anthracene	%	-	55	57	56	55	56		4461442
D14-Terphenyl (FS)	%	-	67	71	68	68	68		4461442
D8-Acenaphthylene	%	-	54	56	55	52	54		4461442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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A Bureau Veritas Group Company

Maxxam Job #: B676567
Report Date: 2016/04/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID			CFB303	CFB303	CFB304	CFB305	CFB306		
Sampling Date			2016/04/18 09:00	2016/04/18 09:00	2016/04/18 09:05	2016/04/18 09:10	2016/04/18 09:20		
COC Number			537168-26-01	537168-26-01	537168-26-01	537168-26-01	537168-26-01		
	UNITS	Criteria	VS085	VS085 Lab-Dup	VS0185	VS086	VS087	RDL	QC Batch
Inorganics									
Moisture	%	-	14		13	17	15	0.2	4461280
BTEX & F1 Hydrocarbons									
Benzene	ug/g	**0.32**	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4461265
Toluene	ug/g	**68**	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4461265
Ethylbenzene	ug/g	**9.5**	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4461265
o-Xylene	ug/g	-	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4461265
p+m-Xylene	ug/g	-	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	4461265
Total Xylenes	ug/g	**26**	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	4461265
F1 (C6-C10)	ug/g	**55**	<10	<10	<10	<10	<10	10	4461265
F1 (C6-C10) - BTEX	ug/g	**55**	<10	<10	<10	<10	<10	10	4461265
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	**230**	<10		<10	<10	<10	10	4461282
F3 (C16-C34 Hydrocarbons)	ug/g	**1700**	<50		<50	<50	<50	50	4461282
F4 (C34-C50 Hydrocarbons)	ug/g	**3300**	<50		<50	<50	<50	50	4461282
Reached Baseline at C50	ug/g	-	Yes		Yes	Yes	Yes		4461282
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	-	98	99	98	97	98		4461265
4-Bromofluorobenzene	%	-	98	89	93	93	98		4461265
D10-Ethylbenzene	%	-	109	109	105	105	122		4461265
D4-1,2-Dichloroethane	%	-	106	106	105	109	106		4461265
o-Terphenyl	%	-	101		100	99	100		4461282

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Sampler Initials: AB

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID			CFB307	CFB308	CFB309		
Sampling Date			2016/04/18 09:30	2016/04/18 09:40	2016/04/18 09:50		
COC Number			537168-26-01	537168-26-01	537168-26-01		
	UNITS	Criteria	VS088	VS089	VS090	RDL	QC Batch
Inorganics							
Moisture	%	-	19	17	25	0.2	4461280
BTEX & F1 Hydrocarbons							
Benzene	ug/g	**0.32**	<0.02	<0.02	<0.02	0.02	4461265
Toluene	ug/g	**68**	<0.02	<0.02	<0.02	0.02	4461265
Ethylbenzene	ug/g	**9.5**	<0.02	<0.02	<0.02	0.02	4461265
o-Xylene	ug/g	-	<0.02	<0.02	<0.02	0.02	4461265
p+m-Xylene	ug/g	-	<0.04	<0.04	<0.04	0.04	4461265
Total Xylenes	ug/g	**26**	<0.04	<0.04	<0.04	0.04	4461265
F1 (C6-C10)	ug/g	**55**	<10	<10	<10	10	4461265
F1 (C6-C10) - BTEX	ug/g	**55**	<10	<10	<10	10	4461265
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/g	**230**	<10	<10	<10	10	4461282
F3 (C16-C34 Hydrocarbons)	ug/g	**1700**	<50	<50	<50	50	4461282
F4 (C34-C50 Hydrocarbons)	ug/g	**3300**	<50	<50	<50	50	4461282
Reached Baseline at C50	ug/g	-	Yes	Yes	Yes		4461282
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	-	99	98	95		4461265
4-Bromofluorobenzene	%	-	90	101	92		4461265
D10-Ethylbenzene	%	-	106	118	105		4461265
D4-1,2-Dichloroethane	%	-	111	111	100		4461265
o-Terphenyl	%	-	102	100	97		4461282

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CFB306	CFB306	CFB307	CFB310	CFB311		
Sampling Date			2016/04/18 09:20	2016/04/18 09:20	2016/04/18 09:30	2016/04/18 14:20	2016/04/18 14:30		
COC Number			537168-26-01	537168-26-01	537168-26-01	537168-26-01	537168-26-01		
	UNITS	Criteria	VS087	VS087 Lab-Dup	VS088	VS091	VS092	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4462966

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

Maxxam ID			CFB312		
Sampling Date			2016/04/18 14:40		
COC Number			537168-26-01		
	UNITS	Criteria	VS093	RDL	QC Batch
Inorganics					
Chromium (VI)	ug/g	8	<0.2	0.2	4462966

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
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Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CFB303
Sample ID: VS085
Matrix: Soil

Collected: 2016/04/18
Shipped:
Received: 2016/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4461265	N/A	2016/04/18	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4461282	2016/04/18	2016/04/19	Liliana Gaburici
MOISTURE	BAL	4461280	N/A	2016/04/19	Liliana Gaburici

Maxxam ID: CFB303 Dup
Sample ID: VS085
Matrix: Soil

Collected: 2016/04/18
Shipped:
Received: 2016/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4461265	N/A	2016/04/18	Lyndsey Hart

Maxxam ID: CFB304
Sample ID: VS0185
Matrix: Soil

Collected: 2016/04/18
Shipped:
Received: 2016/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4461265	N/A	2016/04/18	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4461282	2016/04/18	2016/04/19	Liliana Gaburici
MOISTURE	BAL	4461280	N/A	2016/04/19	Liliana Gaburici

Maxxam ID: CFB305
Sample ID: VS086
Matrix: Soil

Collected: 2016/04/18
Shipped:
Received: 2016/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4461265	N/A	2016/04/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4461282	2016/04/18	2016/04/19	Liliana Gaburici
MOISTURE	BAL	4461280	N/A	2016/04/19	Liliana Gaburici

Maxxam ID: CFB306
Sample ID: VS087
Matrix: Soil

Collected: 2016/04/18
Shipped:
Received: 2016/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4461356	N/A	2016/04/19	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4462966	2016/04/19	2016/04/19	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4461265	N/A	2016/04/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4461282	2016/04/18	2016/04/19	Liliana Gaburici
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4461360	2016/04/19	2016/04/19	Raigamage Perera
MOISTURE	BAL	4461280	N/A	2016/04/19	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4461442	2016/04/18	2016/04/18	Arezoo Habibagahi

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TEST SUMMARY

Maxxam ID: CFB306 Dup
Sample ID: VS087
Matrix: Soil

Collected: 2016/04/18
Shipped:
Received: 2016/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4462966	2016/04/19	2016/04/19	Sally Coughlin

Maxxam ID: CFB307
Sample ID: VS088
Matrix: Soil

Collected: 2016/04/18
Shipped:
Received: 2016/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4461356	N/A	2016/04/19	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4462966	2016/04/19	2016/04/19	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4461265	N/A	2016/04/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4461282	2016/04/18	2016/04/19	Liliana Gaburici
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4461360	2016/04/19	2016/04/19	Raigamage Perera
MOISTURE	BAL	4461280	N/A	2016/04/19	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4461442	2016/04/18	2016/04/18	Arezoo Habibagahi

Maxxam ID: CFB308
Sample ID: VS089
Matrix: Soil

Collected: 2016/04/18
Shipped:
Received: 2016/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4461265	N/A	2016/04/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4461282	2016/04/18	2016/04/19	Liliana Gaburici
MOISTURE	BAL	4461280	N/A	2016/04/19	Liliana Gaburici

Maxxam ID: CFB309
Sample ID: VS090
Matrix: Soil

Collected: 2016/04/18
Shipped:
Received: 2016/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4461265	N/A	2016/04/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4461282	2016/04/18	2016/04/19	Liliana Gaburici
MOISTURE	BAL	4461280	N/A	2016/04/19	Liliana Gaburici

Maxxam ID: CFB310
Sample ID: VS091
Matrix: Soil

Collected: 2016/04/18
Shipped:
Received: 2016/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4461356	N/A	2016/04/19	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4462966	2016/04/19	2016/04/19	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4461360	2016/04/19	2016/04/19	Raigamage Perera
MOISTURE	BAL	4461280	N/A	2016/04/19	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4461442	2016/04/18	2016/04/18	Arezoo Habibagahi

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TEST SUMMARY

Maxxam ID: CFB311
Sample ID: VS092
Matrix: Soil

Collected: 2016/04/18
Shipped:
Received: 2016/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4461356	N/A	2016/04/19	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4462966	2016/04/19	2016/04/19	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4461360	2016/04/19	2016/04/19	Raigamage Perera
MOISTURE	BAL	4461280	N/A	2016/04/19	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4461442	2016/04/18	2016/04/18	Arezoo Habibagahi

Maxxam ID: CFB312
Sample ID: VS093
Matrix: Soil

Collected: 2016/04/18
Shipped:
Received: 2016/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4461356	N/A	2016/04/19	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4462966	2016/04/19	2016/04/19	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4461360	2016/04/19	2016/04/19	Raigamage Perera
MOISTURE	BAL	4461280	N/A	2016/04/19	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4461442	2016/04/18	2016/04/18	Arezoo Habibagahi

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GENERAL COMMENTS

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

Package 1	14.7°C

Custody seal was present and intact on the cooler.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4461265	1,4-Difluorobenzene	2016/04/18	102	60 - 140	103	60 - 140	97	%				
4461265	4-Bromofluorobenzene	2016/04/18	89	60 - 140	87	60 - 140	93	%				
4461265	D10-Ethylbenzene	2016/04/18	102	30 - 130	106	30 - 130	97	%				
4461265	D4-1,2-Dichloroethane	2016/04/18	111	60 - 140	110	60 - 140	108	%				
4461282	o-Terphenyl	2016/04/18	103	30 - 130	98	30 - 130	99	%				
4461442	D10-Anthracene	2016/04/18	57	50 - 130	60	50 - 130	61	%				
4461442	D14-Terphenyl (FS)	2016/04/18	65	50 - 130	72	50 - 130	75	%				
4461442	D8-Acenaphthylene	2016/04/18	54	50 - 130	56	50 - 130	58	%				
4461265	Benzene	2016/04/18	105	60 - 140	93	60 - 140	<0.02	ug/g	NC	50		
4461265	Ethylbenzene	2016/04/18	117	60 - 140	101	60 - 140	<0.02	ug/g	NC	50		
4461265	F1 (C6-C10) - BTEX	2016/04/18					<10	ug/g	NC	50		
4461265	F1 (C6-C10)	2016/04/18	111	60 - 140	111	80 - 120	<10	ug/g	NC	50		
4461265	o-Xylene	2016/04/18	122	60 - 140	108	60 - 140	<0.02	ug/g	NC	50		
4461265	p+m-Xylene	2016/04/18	109	60 - 140	96	60 - 140	<0.04	ug/g	NC	50		
4461265	Toluene	2016/04/18	102	60 - 140	91	60 - 140	<0.02	ug/g	NC	50		
4461265	Total Xylenes	2016/04/18					<0.04	ug/g	NC	50		
4461280	Moisture	2016/04/19							20	50		
4461282	F2 (C10-C16 Hydrocarbons)	2016/04/18					<10	ug/g	NC	50		
4461282	F3 (C16-C34 Hydrocarbons)	2016/04/18	99	50 - 130	87	80 - 120	<50	ug/g	NC	50		
4461282	F4 (C34-C50 Hydrocarbons)	2016/04/18	99	50 - 130	87	80 - 120	<50	ug/g	NC	50		
4461360	Acid Extractable Antimony (Sb)	2016/04/19	85	75 - 125	101	80 - 120	<0.2	ug/g	NC	35		
4461360	Acid Extractable Arsenic (As)	2016/04/19	102	75 - 125	98	80 - 120	<1	ug/g	NC	35		
4461360	Acid Extractable Barium (Ba)	2016/04/19	NC	75 - 125	101	80 - 120	<0.5	ug/g	2.1	35		
4461360	Acid Extractable Beryllium (Be)	2016/04/19	98	75 - 125	97	80 - 120	<0.2	ug/g	NC	35		
4461360	Acid Extractable Boron (B)	2016/04/19	95	75 - 125	95	80 - 120	<5	ug/g	NC	35		
4461360	Acid Extractable Cadmium (Cd)	2016/04/19	102	75 - 125	99	80 - 120	<0.1	ug/g	NC	35		
4461360	Acid Extractable Chromium (Cr)	2016/04/19	NC	75 - 125	98	80 - 120	<1	ug/g	1.4	35		
4461360	Acid Extractable Cobalt (Co)	2016/04/19	104	75 - 125	102	80 - 120	<0.1	ug/g	0.99	35		
4461360	Acid Extractable Copper (Cu)	2016/04/19	NC	75 - 125	101	80 - 120	<0.5	ug/g	4.2	35		
4461360	Acid Extractable Lead (Pb)	2016/04/19	99	75 - 125	102	80 - 120	<1	ug/g	NC	35		
4461360	Acid Extractable Mercury (Hg)	2016/04/19	114	75 - 125	121 (1)	80 - 120	<0.05	ug/g	NC	35		

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A Bureau Veritas Group Company

Maxxam Job #: B676567
Report Date: 2016/04/19

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4461360	Acid Extractable Molybdenum (Mo)	2016/04/19	103	75 - 125	106	80 - 120	<0.5	ug/g	NC	35		
4461360	Acid Extractable Nickel (Ni)	2016/04/19	NC	75 - 125	102	80 - 120	<0.5	ug/g	1.8	35		
4461360	Acid Extractable Selenium (Se)	2016/04/19	102	75 - 125	104	80 - 120	<0.5	ug/g	NC	35		
4461360	Acid Extractable Silver (Ag)	2016/04/19	107	75 - 125	106	80 - 120	<0.2	ug/g	NC	35		
4461360	Acid Extractable Thallium (Tl)	2016/04/19	100	75 - 125	101	80 - 120	<0.05	ug/g	NC	35		
4461360	Acid Extractable Uranium (U)	2016/04/19	106	75 - 125	107	80 - 120	<0.05	ug/g	3.7	25		
4461360	Acid Extractable Vanadium (V)	2016/04/19	NC	75 - 125	95	80 - 120	<5	ug/g	0.071	35		
4461360	Acid Extractable Zinc (Zn)	2016/04/19	NC	75 - 125	97	80 - 120	<5	ug/g	28	35		
4461442	1-Methylnaphthalene	2016/04/18	63	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4461442	2-Methylnaphthalene	2016/04/18	62	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40		
4461442	Acenaphthene	2016/04/18	59	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40		
4461442	Acenaphthylene	2016/04/18	55	50 - 130	55	50 - 130	<0.0050	ug/g	NC	40		
4461442	Anthracene	2016/04/18	60	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4461442	Benzo(a)anthracene	2016/04/18	55	50 - 130	56	50 - 130	<0.0050	ug/g	NC	40		
4461442	Benzo(a)pyrene	2016/04/18	56	50 - 130	55	50 - 130	<0.0050	ug/g	NC	40		
4461442	Benzo(b/j)fluoranthene	2016/04/18	60	50 - 130	62	50 - 130	<0.0050	ug/g	NC	40		
4461442	Benzo(g,h,i)perylene	2016/04/18	55	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40		
4461442	Benzo(k)fluoranthene	2016/04/18	58	50 - 130	59	50 - 130	<0.0050	ug/g	NC	40		
4461442	Chrysene	2016/04/18	56	50 - 130	56	50 - 130	<0.0050	ug/g	NC	40		
4461442	Dibenz(a,h)anthracene	2016/04/18	55	50 - 130	58	50 - 130	<0.0050	ug/g	NC	40		
4461442	Fluoranthene	2016/04/18	68	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40		
4461442	Fluorene	2016/04/18	56	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4461442	Indeno(1,2,3-cd)pyrene	2016/04/18	57	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4461442	Naphthalene	2016/04/18	56	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40		
4461442	Phenanthrene	2016/04/18	59	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4461442	Pyrene	2016/04/18	70	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		

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A Bureau Veritas Group Company

Maxxam Job #: B676567
Report Date: 2016/04/19

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4462966	Chromium (VI)	2016/04/19	4.5 (2)	75 - 125	99	80 - 120	<0.2	ug/g	NC	35	81	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B676567
Report Date: 2016/04/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Brad Newman, Scientific Specialist

Paul Rubinato, Analyst, Maxxam Analytics

Steve Roberts, Ottawa Lab Manager

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of

INVOICE TO:
Company Name: #14090 Golder Associates Ltd
Attention: Central Accounting
Address: 1931 Robertson Rd, Ottawa ON K2H 5B7
Tel: (613) 592-9600 Fax: (613) 592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Paul Hurst
Address:
Tel: Fax:
Email: phurst@golder.com, Lindsay@golder.com

PROJECT INFORMATION:
Quotation #: B57625
P.O. #:
Project: 1525113
Project Name:
Site #:
Sampled By: Lana Bradshaw

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 537158
COC #: C#537158-26-01
Project Manager: Ema Gitej

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

Turnaround Time (TAT) Required:
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: Next Day Time Required: ☒
Rush Confirmation Number: (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 (ICP/MS Metals including Hg and CRVI)	Leachate Landfill (TCLP METALS, REG 153 PHCs)	PHC & BTEX							# of Bottles	Comments
1		VS085	16/04/18	0900	Soil					X							3	
2		VS0185	↓	0905	↓					X							3	
3		VS086		0910						X							3	
4		VS087		0920			X	X		X							3	
5		VS088		0930			X	X		X							3	
6		VS089		0940						X							3	
7		VS090		0950						X							3	
8		VS091		1420			X	X									1	
9		VS092	↓	1430	↓		X	X		~~X~~ HB							1	on ice pack.
10		VS093	↓	1440	↓		X	X									1	

18-Apr-16 16:20
Ema Gitej
B676567
FHB OTT-002

RECEIVED 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
Lana Bradshaw	16/04/18	1500	Fatemeh	2016/04/18	16:20	0

Laboratory Use Only
Time Sensitive:
Temperature (°C) on Receipt: 14, 15, 15
Custody Seal: Present ✓ Intact ✓ Yes / No

* 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.

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

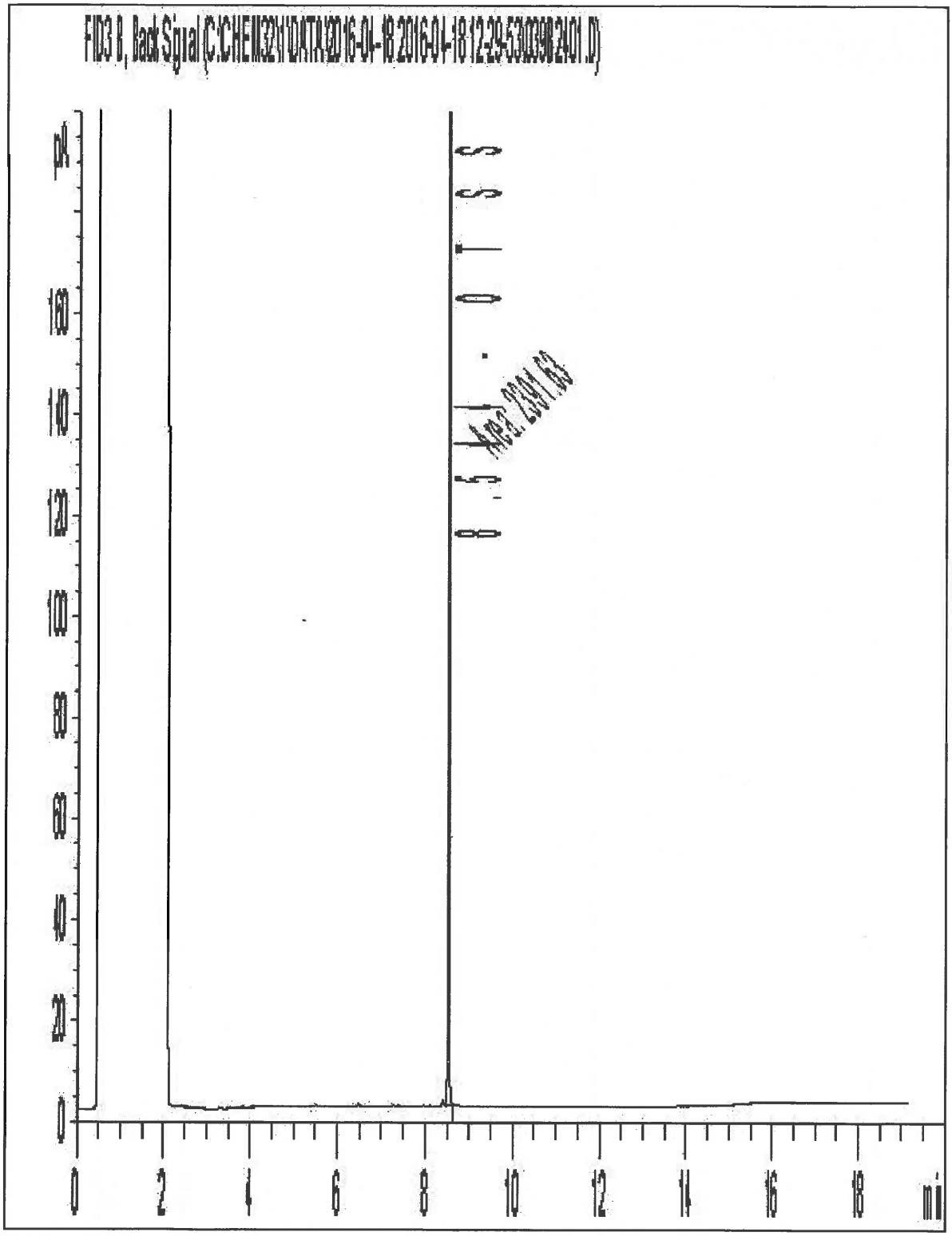
White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B676567
Report Date: 2016/04/19
Maxxam Sample: CFB303

Golder Associates Ltd
Client Project #: 1525113
Client ID: VS085

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

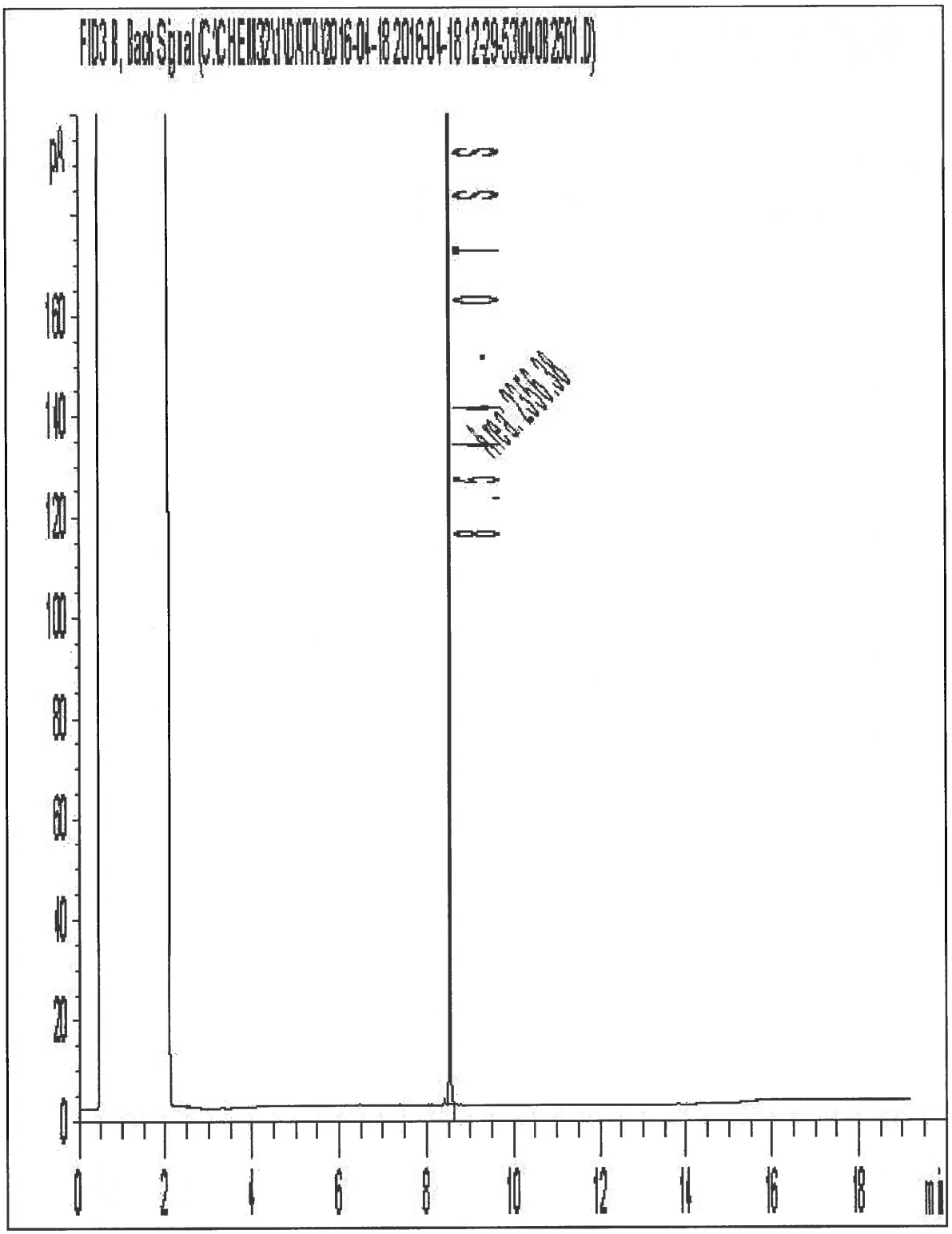


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B676567
Report Date: 2016/04/19
Maxxam Sample: CFB304

Golder Associates Ltd
Client Project #: 1525113
Client ID: VS0185

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

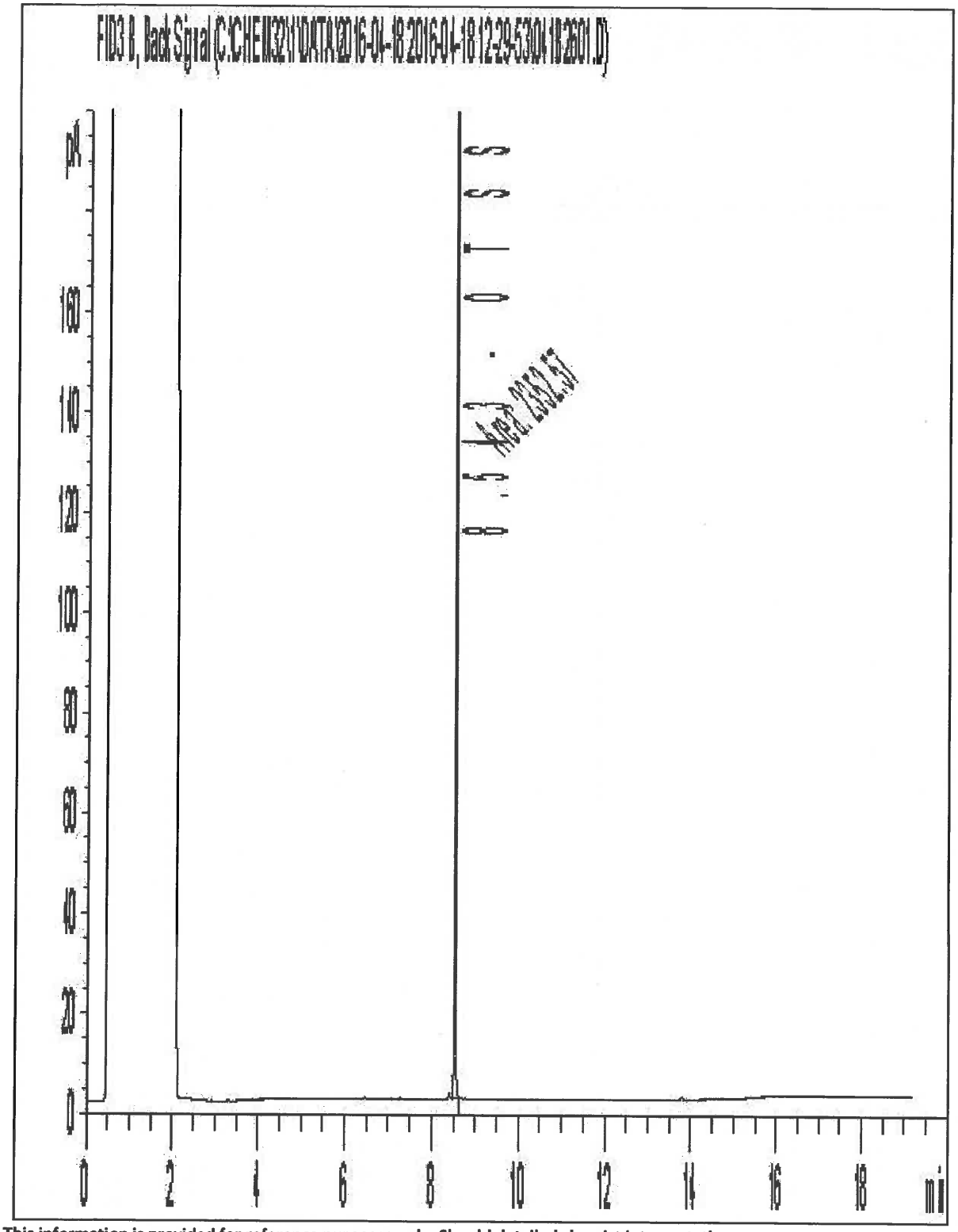


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B676567
Report Date: 2016/04/19
Maxxam Sample: CFB305

Golder Associates Ltd
Client Project #: 1525113
Client ID: VS086

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

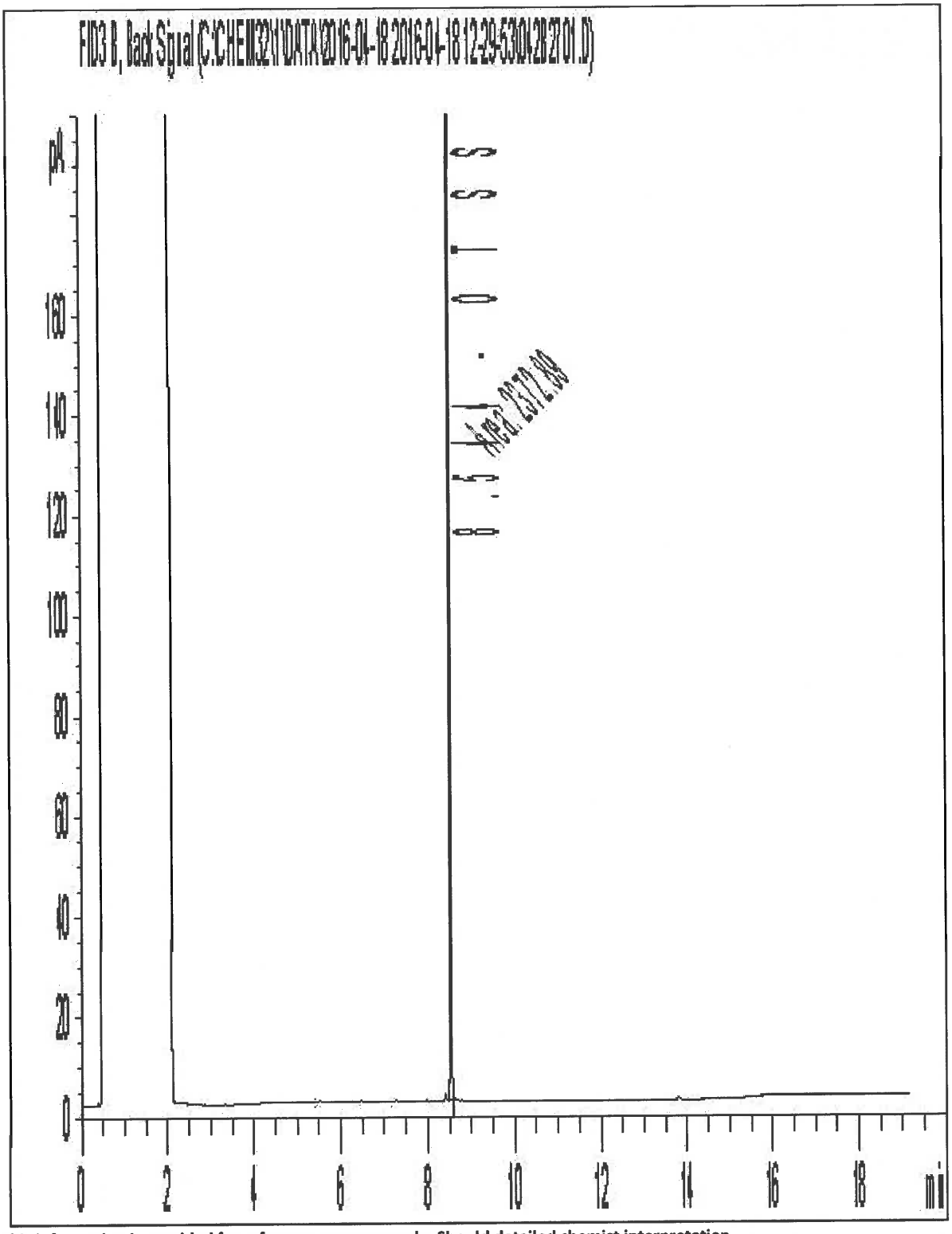


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B676567
Report Date: 2016/04/19
Maxxam Sample: CFB306

Golder Associates Ltd
Client Project #: 1525113
Client ID: VS087

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

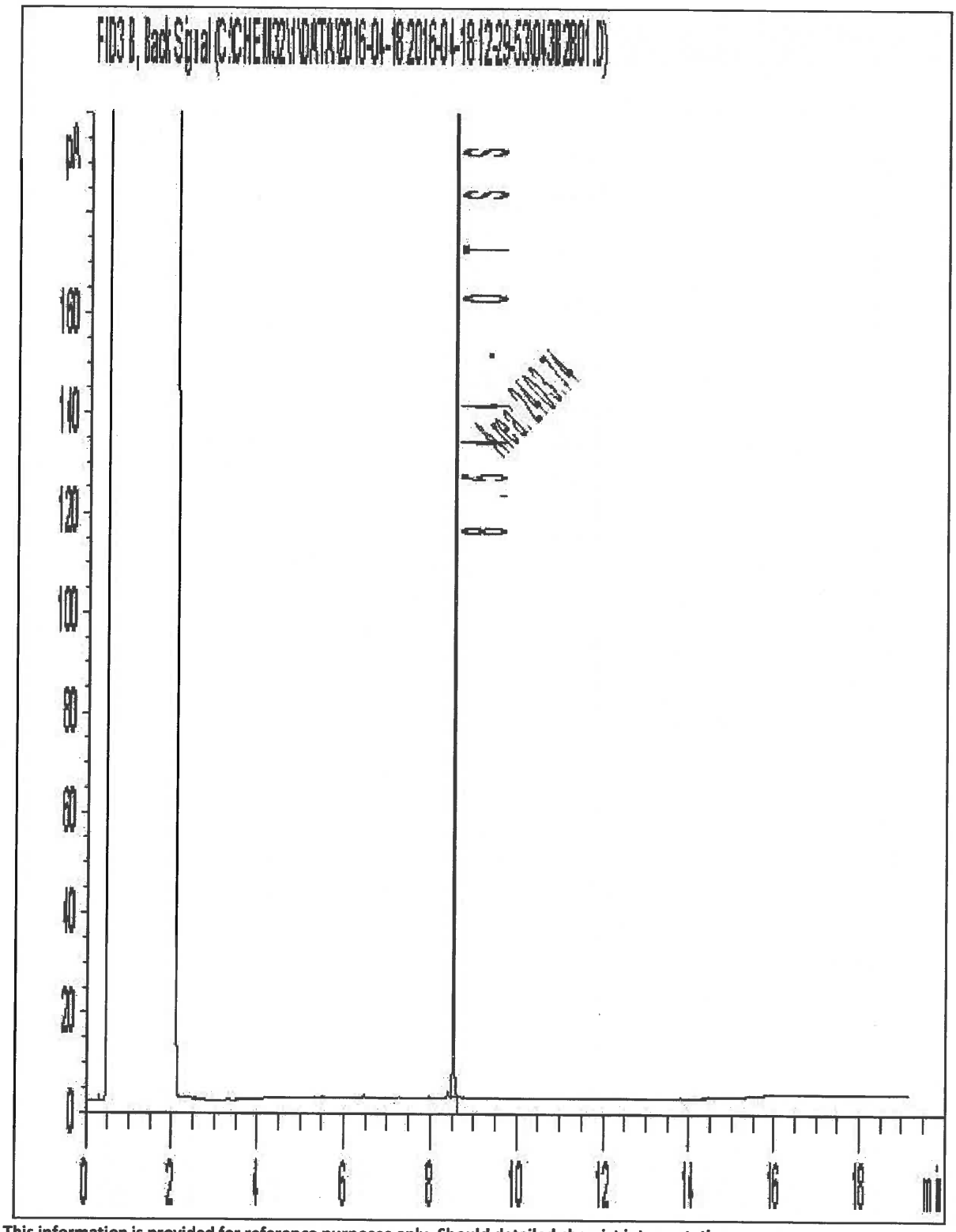


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B676567
Report Date: 2016/04/19
Maxxam Sample: CFB307

Golder Associates Ltd
Client Project #: 1525113
Client ID: VS088

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

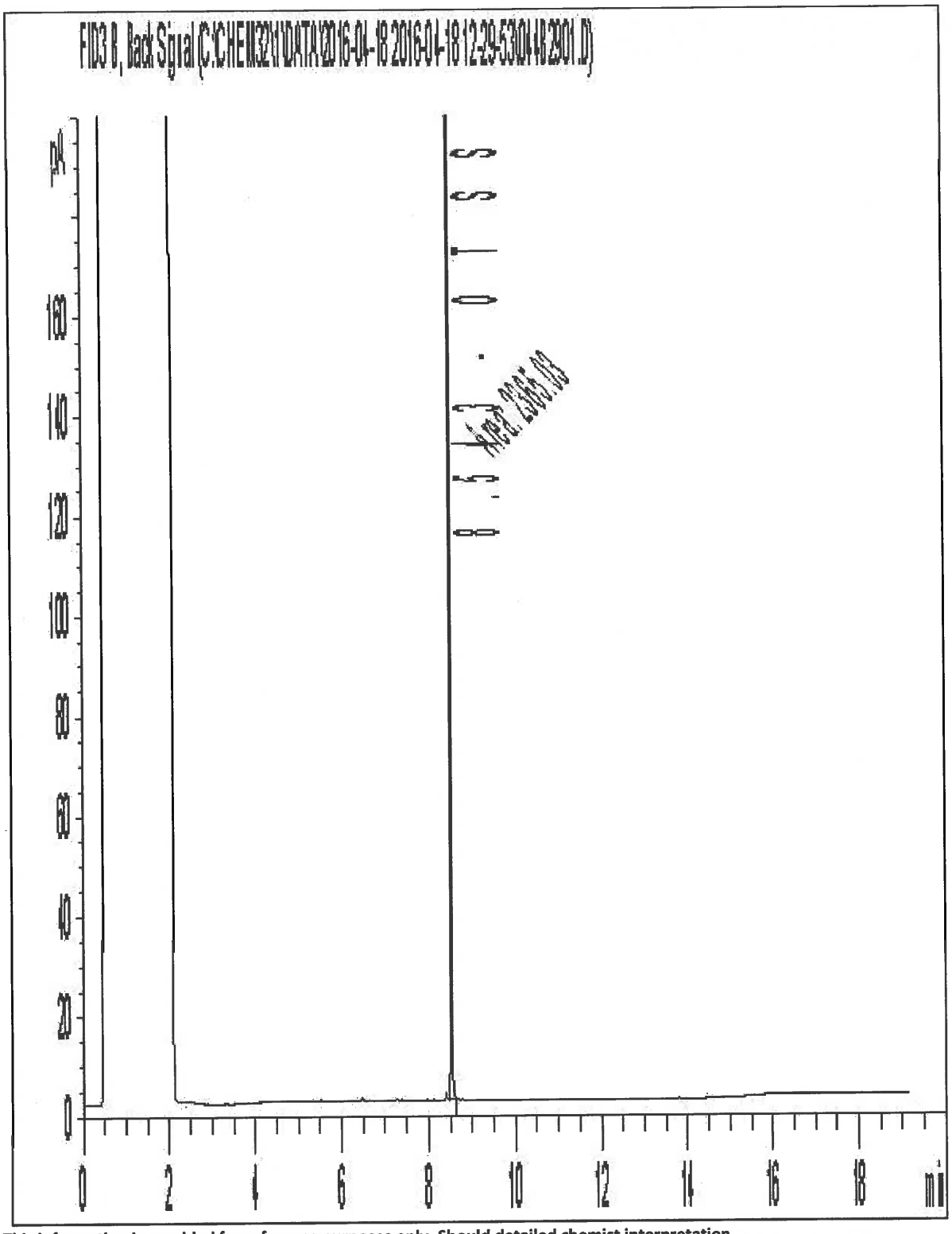


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B676567
Report Date: 2016/04/19
Maxxam Sample: CFB308

Golder Associates Ltd
Client Project #: 1525113
Client ID: VS089

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

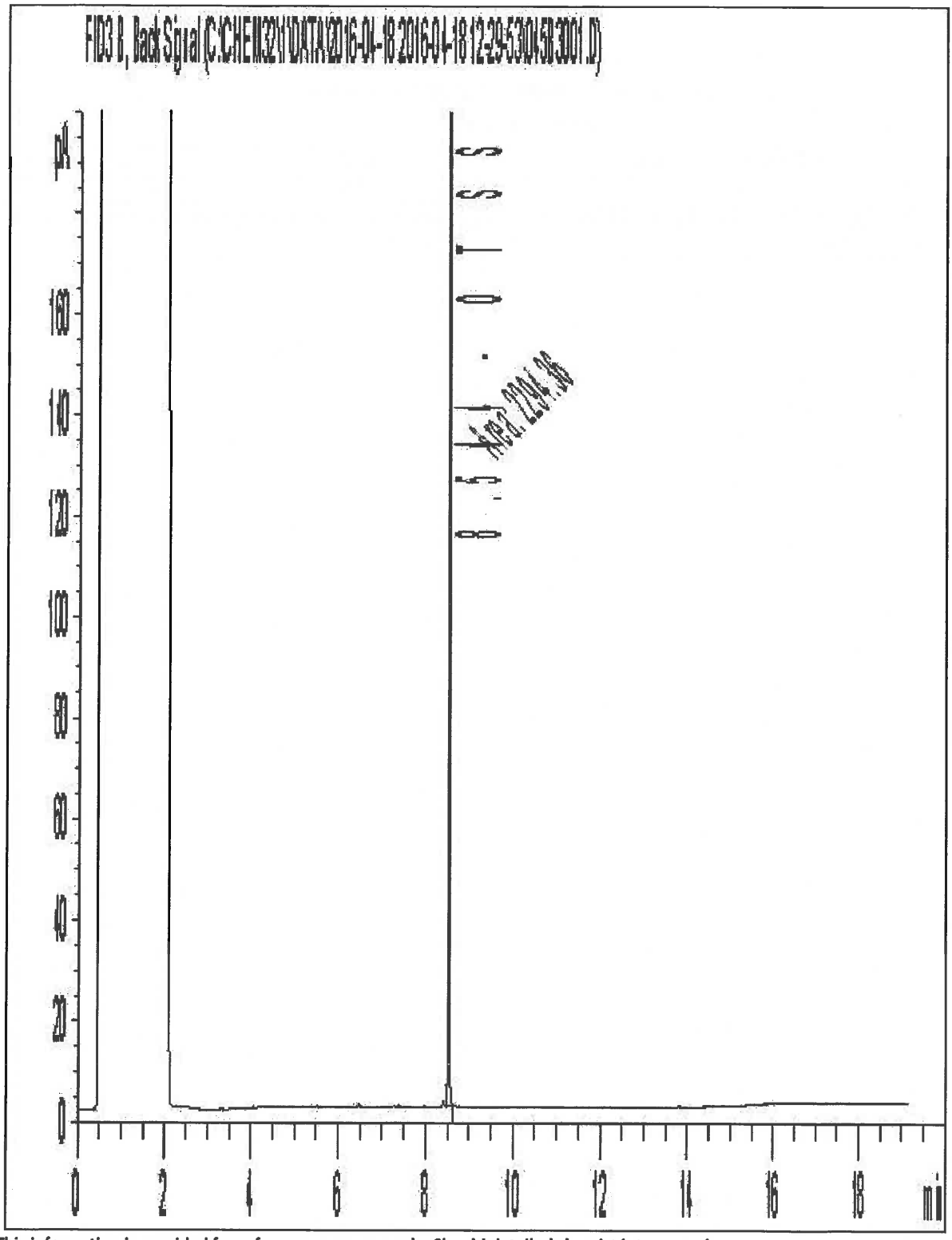


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B676567
Report Date: 2016/04/19
Maxxam Sample: CFB309

Golder Associates Ltd
Client Project #: 1525113
Client ID: VS090

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.

Maxxam Job #: B676567
Report Date: 2016/04/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 557328-01-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/04/20
Report #: R3967294
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B677493
Received: 2016/04/19, 15:40

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	3	N/A	2016/04/20	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	3	2016/04/20	2016/04/20	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	3	2016/04/19	2016/04/20	OTT SOP-00003	EPA 6020
MOISTURE	3	N/A	2016/04/20	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	3	2016/04/19	2016/04/19	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key

Parnian Baber
Project Manager
20 Apr 2016 16:50:41 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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 Job #: B677493
Report Date: 2016/04/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CFF536	CFF536	CFF537	CFF538		
Sampling Date			2016/04/19 08:30	2016/04/19 08:30	2016/04/19 13:00	2016/04/19 13:10		
COC Number			557328-01-01	557328-01-01	557328-01-01	557328-01-01		
	UNITS	Criteria	VS094	VS094 Lab-Dup	VS095	VS1095	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.2	<0.2	<0.2	<0.2	0.2	4463475
Acid Extractable Arsenic (As)	ug/g	**18**	<1	<1	2	2	1	4463475
Acid Extractable Barium (Ba)	ug/g	**670**	77	77	180	180	0.5	4463475
Acid Extractable Beryllium (Be)	ug/g	**8**	0.4	0.4	0.6	0.7	0.2	4463475
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	<5	5	4463475
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.1	<0.1	<0.1	<0.1	0.1	4463475
Acid Extractable Chromium (Cr)	ug/g	**160**	33	33	39	41	1	4463475
Acid Extractable Cobalt (Co)	ug/g	**80**	8.7	9.0	13	13	0.1	4463475
Acid Extractable Copper (Cu)	ug/g	**230**	7.4	7.6	19	20	0.5	4463475
Acid Extractable Lead (Pb)	ug/g	**120**	4	4	5	6	1	4463475
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.05	<0.05	<0.05	<0.05	0.05	4463475
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.5	<0.5	<0.5	<0.5	0.5	4463475
Acid Extractable Nickel (Ni)	ug/g	**270**	16	16	30	24	0.5	4463475
Acid Extractable Selenium (Se)	ug/g	**5.5**	<0.5	<0.5	<0.5	<0.5	0.5	4463475
Acid Extractable Silver (Ag)	ug/g	**40**	<0.2	<0.2	<0.2	<0.2	0.2	4463475
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.13	0.14	0.21	0.21	0.05	4463475
Acid Extractable Uranium (U)	ug/g	**33**	1.0	1.1	0.61	0.65	0.05	4463475
Acid Extractable Vanadium (V)	ug/g	**86**	45	46	55	60	5	4463475
Acid Extractable Zinc (Zn)	ug/g	**340**	43	45	60	63	5	4463475

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B677493
Report Date: 2016/04/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CFF536	CFF537	CFF537	CFF538		
Sampling Date			2016/04/19 08:30	2016/04/19 13:00	2016/04/19 13:00	2016/04/19 13:10		
COC Number			557328-01-01	557328-01-01	557328-01-01	557328-01-01		
	UNITS	Criteria	VS094	VS095	VS095 Lab-Dup	VS1095	RDL	QC Batch
Inorganics								
Moisture	%	-	16	22	21	19	0.2	4463690
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014		<0.014	0.014	4463679
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4463684
Surrogate Recovery (%)								
D10-Anthracene	%	-	52	53	52	53		4463684
D14-Terphenyl (FS)	%	-	58	65	63	62		4463684
D8-Acenaphthylene	%	-	50	51	50	52		4463684

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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.maxxam.ca

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Maxxam Job #: B677493
Report Date: 2016/04/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CFF536	CFF537	CFF538	CFF538		
Sampling Date			2016/04/19 08:30	2016/04/19 13:00	2016/04/19 13:10	2016/04/19 13:10		
COC Number			557328-01-01	557328-01-01	557328-01-01	557328-01-01		
	UNITS	Criteria	VS094	VS095	VS1095	VS1095 Lab-Dup	RDL	QC Batch
Inorganics								
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	0.2	4464619

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B677493
Report Date: 2016/04/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CFF536
Sample ID: VS094
Matrix: Soil

Collected: 2016/04/19
Shipped:
Received: 2016/04/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4463679	N/A	2016/04/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4464619	2016/04/20	2016/04/20	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4463475	2016/04/19	2016/04/20	Raigamage Perera
MOISTURE	BAL	4463690	N/A	2016/04/20	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4463684	2016/04/19	2016/04/19	Arezoo Habibagahi

Maxxam ID: CFF536 Dup
Sample ID: VS094
Matrix: Soil

Collected: 2016/04/19
Shipped:
Received: 2016/04/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4463475	2016/04/19	2016/04/20	Raigamage Perera

Maxxam ID: CFF537
Sample ID: VS095
Matrix: Soil

Collected: 2016/04/19
Shipped:
Received: 2016/04/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4463679	N/A	2016/04/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4464619	2016/04/20	2016/04/20	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4463475	2016/04/19	2016/04/20	Raigamage Perera
MOISTURE	BAL	4463690	N/A	2016/04/20	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4463684	2016/04/19	2016/04/19	Arezoo Habibagahi

Maxxam ID: CFF537 Dup
Sample ID: VS095
Matrix: Soil

Collected: 2016/04/19
Shipped:
Received: 2016/04/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4463690	N/A	2016/04/20	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4463684	2016/04/19	2016/04/19	Arezoo Habibagahi

Maxxam ID: CFF538
Sample ID: VS1095
Matrix: Soil

Collected: 2016/04/19
Shipped:
Received: 2016/04/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4463679	N/A	2016/04/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4464619	2016/04/20	2016/04/20	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4463475	2016/04/19	2016/04/20	Raigamage Perera
MOISTURE	BAL	4463690	N/A	2016/04/20	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4463684	2016/04/19	2016/04/19	Arezoo Habibagahi

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Maxxam Job #: B677493
Report Date: 2016/04/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CFF538 Dup
Sample ID: VS1095
Matrix: Soil

Collected: 2016/04/19
Shipped:
Received: 2016/04/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4464619	2016/04/20	2016/04/20	Sally Coughlin

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GENERAL COMMENTS

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

Package 1	14.7°C

Custody seal was present and intact on the cooler.

Results relate only to the items tested.

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Maxxam Job #: B677493
Report Date: 2016/04/20

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4463684	D10-Anthracene	2016/04/19	53	50 - 130	53	50 - 130	54	%				
4463684	D14-Terphenyl (FS)	2016/04/19	53	50 - 130	52	50 - 130	58	%				
4463684	D8-Acenaphthylene	2016/04/19	50	50 - 130	50	50 - 130	51	%				
4463475	Acid Extractable Antimony (Sb)	2016/04/20	98	75 - 125	102	80 - 120	<0.2	ug/g	NC	35		
4463475	Acid Extractable Arsenic (As)	2016/04/20	100	75 - 125	101	80 - 120	<1	ug/g	NC	35		
4463475	Acid Extractable Barium (Ba)	2016/04/20	NC	75 - 125	100	80 - 120	<0.5	ug/g	0.57	35		
4463475	Acid Extractable Beryllium (Be)	2016/04/20	97	75 - 125	98	80 - 120	<0.2	ug/g	NC	35		
4463475	Acid Extractable Boron (B)	2016/04/20	93	75 - 125	99	80 - 120	<5	ug/g	NC	35		
4463475	Acid Extractable Cadmium (Cd)	2016/04/20	102	75 - 125	102	80 - 120	<0.1	ug/g	NC	35		
4463475	Acid Extractable Chromium (Cr)	2016/04/20	NC	75 - 125	101	80 - 120	<1	ug/g	1.3	35		
4463475	Acid Extractable Cobalt (Co)	2016/04/20	98	75 - 125	103	80 - 120	<0.1	ug/g	3.1	35		
4463475	Acid Extractable Copper (Cu)	2016/04/20	98	75 - 125	103	80 - 120	<0.5	ug/g	3.4	35		
4463475	Acid Extractable Lead (Pb)	2016/04/20	98	75 - 125	101	80 - 120	<1	ug/g	NC	35		
4463475	Acid Extractable Mercury (Hg)	2016/04/20	101	75 - 125	108	80 - 120	<0.05	ug/g	NC	35		
4463475	Acid Extractable Molybdenum (Mo)	2016/04/20	101	75 - 125	101	80 - 120	<0.5	ug/g	NC	35		
4463475	Acid Extractable Nickel (Ni)	2016/04/20	NC	75 - 125	103	80 - 120	<0.5	ug/g	0.41	35		
4463475	Acid Extractable Selenium (Se)	2016/04/20	101	75 - 125	103	80 - 120	<0.5	ug/g	NC	35		
4463475	Acid Extractable Silver (Ag)	2016/04/20	106	75 - 125	106	80 - 120	<0.2	ug/g	NC	35		
4463475	Acid Extractable Thallium (Tl)	2016/04/20	96	75 - 125	101	80 - 120	<0.05	ug/g	NC	35		
4463475	Acid Extractable Uranium (U)	2016/04/20	104	75 - 125	109	80 - 120	<0.05	ug/g	7.9	25		
4463475	Acid Extractable Vanadium (V)	2016/04/20	NC	75 - 125	104	80 - 120	<5	ug/g	0.60	35		
4463475	Acid Extractable Zinc (Zn)	2016/04/20	NC	75 - 125	102	80 - 120	<5	ug/g	6.1	35		
4463684	1-Methylnaphthalene	2016/04/19	59	50 - 130	58	50 - 130	<0.0050	ug/g	NC	40		
4463684	2-Methylnaphthalene	2016/04/19	58	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40		
4463684	Acenaphthene	2016/04/19	55	50 - 130	55	50 - 130	<0.0050	ug/g	NC	40		
4463684	Acenaphthylene	2016/04/19	50	50 - 130	50	50 - 130	<0.0050	ug/g	NC	40		
4463684	Anthracene	2016/04/19	54	50 - 130	54	50 - 130	<0.0050	ug/g	NC	40		
4463684	Benzo(a)anthracene	2016/04/19	57	50 - 130	55	50 - 130	<0.0050	ug/g	NC	40		
4463684	Benzo(a)pyrene	2016/04/19	51	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40		
4463684	Benzo(b/j)fluoranthene	2016/04/19	53	50 - 130	52	50 - 130	<0.0050	ug/g	NC	40		
4463684	Benzo(g,h,i)perylene	2016/04/19	55	50 - 130	52	50 - 130	<0.0050	ug/g	NC	40		

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Maxxam Job #: B677493
Report Date: 2016/04/20

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4463684	Benzo(k)fluoranthene	2016/04/19	57	50 - 130	51	50 - 130	<0.0050	ug/g	NC	40		
4463684	Chrysene	2016/04/19	53	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40		
4463684	Dibenz(a,h)anthracene	2016/04/19	57	50 - 130	54	50 - 130	<0.0050	ug/g	NC	40		
4463684	Fluoranthene	2016/04/19	62	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4463684	Fluorene	2016/04/19	53	50 - 130	52	50 - 130	<0.0050	ug/g	NC	40		
4463684	Indeno(1,2,3-cd)pyrene	2016/04/19	52	50 - 130	52	50 - 130	<0.0050	ug/g	NC	40		
4463684	Naphthalene	2016/04/19	53	50 - 130	52	50 - 130	<0.0050	ug/g	NC	40		
4463684	Phenanthrene	2016/04/19	56	50 - 130	54	50 - 130	<0.0050	ug/g	NC	40		
4463684	Pyrene	2016/04/19	65	50 - 130	65	50 - 130	<0.0050	ug/g	NC	40		
4463690	Moisture	2016/04/20							4.2	50		
4464619	Chromium (VI)	2016/04/20	40 (1)	75 - 125	102	80 - 120	<0.2	ug/g	NC	35	85	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B677493
Report Date: 2016/04/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:	
Address:	1931 Robertson Rd	Address:		Project:	1525113
	Ottawa ON K2H 5B7			Project Name:	
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:	
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	Aaron Bradshaw

Laboratory Use Only:

Maxxam Job #:	Bottle Order #:
	557328
COC #:	Project Manager:
C#557328-01-01	Parnian Baber

NOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

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: Next Day Time Required: ___ ☒
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	Leitsche Landfill (TCLP METALS, REG. 153 PHCs)	# of Bottles	Comments
1		VS094	16/04/19	0830	Soil		X	X		1	
2		VS095	↓	1300	↓		X	X		1	
3		VS1095	↓	1310	↓		X	X		1	
4											
5											
6											
7											
8											
9											ON ICE PACK.
10											

19-Apr-16 15:4(
Parnian Baber
B677493
FHB OTT-00

RECEIVED 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
[signature] Aaron Bradshaw	16/04/19	1500	[signature] HA Fatemeh	2016/04/19	15:40	0		15, 14, 15	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

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Maxxam Job #: B677493
Report Date: 2016/04/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 557328-02-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/04/21
Report #: R3968580
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B678454
Received: 2016/04/20, 14:50

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	5	N/A	2016/04/21	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	5	2016/04/21	2016/04/21	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	5	2016/04/21	2016/04/21	CAM SOP-00447	EPA 6020A m
MOISTURE	5	N/A	2016/04/21	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	5	2016/04/20	2016/04/21	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Jolanta Goralczyk
Project Manager
21 Apr 2016 17:23:26 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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Maxxam Job #: B678454
Report Date: 2016/04/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CFK383	CFK384	CFK385	CFK386	CFK387		
Sampling Date			2016/04/20 09:00	2016/04/20 10:20	2016/04/20 13:40	2016/04/20 13:50	2016/04/20 14:00		
COC Number			557328-02-01	557328-02-01	557328-02-01	557328-02-01	557328-02-01		
	UNITS	Criteria	VS096	VS097	VS098	VS1098	VS099	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4466717
Acid Extractable Arsenic (As)	ug/g	**18**	2.1	1.5	<1.0	<1.0	1.5	1.0	4466717
Acid Extractable Barium (Ba)	ug/g	**670**	160	190	180	170	170	0.50	4466717
Acid Extractable Beryllium (Be)	ug/g	**8**	0.59	0.66	0.65	0.66	0.61	0.20	4466717
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	5.5	5.2	<5.0	5.0	4466717
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.10	0.14	<0.10	<0.10	<0.10	0.10	4466717
Acid Extractable Chromium (Cr)	ug/g	**160**	35	43	39	40	37	1.0	4466717
Acid Extractable Cobalt (Co)	ug/g	**80**	11	9.6	11	11	9.9	0.10	4466717
Acid Extractable Copper (Cu)	ug/g	**230**	18	21	19	19	19	0.50	4466717
Acid Extractable Lead (Pb)	ug/g	**120**	5.1	5.5	6.0	5.9	5.1	1.0	4466717
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4466717
Acid Extractable Nickel (Ni)	ug/g	**270**	21	23	22	21	20	0.50	4466717
Acid Extractable Selenium (Se)	ug/g	**5.5**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4466717
Acid Extractable Silver (Ag)	ug/g	**40**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4466717
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.18	0.24	0.22	0.21	0.22	0.050	4466717
Acid Extractable Uranium (U)	ug/g	**33**	0.63	0.59	0.80	0.94	0.79	0.050	4466717
Acid Extractable Vanadium (V)	ug/g	**86**	51	50	60	59	52	5.0	4466717
Acid Extractable Zinc (Zn)	ug/g	**340**	56	79	67	66	58	5.0	4466717
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4466717

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B678454
Report Date: 2016/04/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CFK383	CFK384	CFK384	CFK385	CFK386		
Sampling Date			2016/04/20 09:00	2016/04/20 10:20	2016/04/20 10:20	2016/04/20 13:40	2016/04/20 13:50		
COC Number			557328-02-01	557328-02-01	557328-02-01	557328-02-01	557328-02-01		
	UNITS	Criteria	VS096	VS097	VS097 Lab-Dup	VS098	VS1098	RDL	QC Batch
Inorganics									
Moisture	%	-	18	24	21	21	21	0.2	4465311
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014		<0.014	<0.014	0.014	4465303
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
Benzo(g,h,i)perylene	ug/g	**9.6**	0.0083	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4465312
Surrogate Recovery (%)									
D10-Anthracene	%	-	75	74	76	75	77		4465312
D14-Terphenyl (FS)	%	-	97	96	102	104	100		4465312
D8-Acenaphthylene	%	-	68	69	70	71	74		4465312

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B678454
Report Date: 2016/04/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CFK387		
Sampling Date			2016/04/20 14:00		
COC Number			557328-02-01		
	UNITS	Criteria	VS099	RDL	QC Batch
Inorganics					
Moisture	%	-	21	0.2	4465311
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	0.014	4465303
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**96**	<0.0050	0.0050	4465312
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	4465312
Anthracene	ug/g	**0.67**	<0.0050	0.0050	4465312
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	0.0050	4465312
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	4465312
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	0.0050	4465312
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	0.0050	4465312
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	0.0050	4465312
Chrysene	ug/g	**9.6**	<0.0050	0.0050	4465312
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	4465312
Fluoranthene	ug/g	**9.6**	<0.0050	0.0050	4465312
Fluorene	ug/g	**62**	<0.0050	0.0050	4465312
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	0.0050	4465312
1-Methylnaphthalene	ug/g	**76**	<0.0050	0.0050	4465312
2-Methylnaphthalene	ug/g	**76**	<0.0050	0.0050	4465312
Naphthalene	ug/g	**9.6**	<0.0050	0.0050	4465312
Phenanthrene	ug/g	**12**	<0.0050	0.0050	4465312
Pyrene	ug/g	**96**	<0.0050	0.0050	4465312
Surrogate Recovery (%)					
D10-Anthracene	%	-	78		4465312
D14-Terphenyl (FS)	%	-	104		4465312
D8-Acenaphthylene	%	-	74		4465312

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water
Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Report Date: 2016/04/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CFK383	CFK384	CFK384	CFK385	CFK386		
Sampling Date			2016/04/20 09:00	2016/04/20 10:20	2016/04/20 10:20	2016/04/20 13:40	2016/04/20 13:50		
COC Number			557328-02-01	557328-02-01	557328-02-01	557328-02-01	557328-02-01		
	UNITS	Criteria	VS096	VS097	VS097 Lab-Dup	VS098	VS1098	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4466600

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

Maxxam ID			CFK387		
Sampling Date			2016/04/20 14:00		
COC Number			557328-02-01		
	UNITS	Criteria	VS099	RDL	QC Batch
Inorganics					
Chromium (VI)	ug/g	8	<0.2	0.2	4466600

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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TEST SUMMARY

Maxxam ID: CFK383
Sample ID: VS096
Matrix: Soil

Collected: 2016/04/20
Shipped:
Received: 2016/04/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4465303	N/A	2016/04/21	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4466600	2016/04/21	2016/04/21	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4466717	2016/04/21	2016/04/21	Grace Bu
MOISTURE	BAL	4465311	N/A	2016/04/21	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4465312	2016/04/20	2016/04/21	Arezoo Habibagahi

Maxxam ID: CFK384
Sample ID: VS097
Matrix: Soil

Collected: 2016/04/20
Shipped:
Received: 2016/04/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4465303	N/A	2016/04/21	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4466600	2016/04/21	2016/04/21	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4466717	2016/04/21	2016/04/21	Grace Bu
MOISTURE	BAL	4465311	N/A	2016/04/21	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4465312	2016/04/20	2016/04/21	Arezoo Habibagahi

Maxxam ID: CFK384 Dup
Sample ID: VS097
Matrix: Soil

Collected: 2016/04/20
Shipped:
Received: 2016/04/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4466600	2016/04/21	2016/04/21	Sally Coughlin
MOISTURE	BAL	4465311	N/A	2016/04/21	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4465312	2016/04/20	2016/04/21	Arezoo Habibagahi

Maxxam ID: CFK385
Sample ID: VS098
Matrix: Soil

Collected: 2016/04/20
Shipped:
Received: 2016/04/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4465303	N/A	2016/04/21	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4466600	2016/04/21	2016/04/21	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4466717	2016/04/21	2016/04/21	Grace Bu
MOISTURE	BAL	4465311	N/A	2016/04/21	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4465312	2016/04/20	2016/04/21	Arezoo Habibagahi

Maxxam ID: CFK386
Sample ID: VS1098
Matrix: Soil

Collected: 2016/04/20
Shipped:
Received: 2016/04/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4465303	N/A	2016/04/21	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4466600	2016/04/21	2016/04/21	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4466717	2016/04/21	2016/04/21	Grace Bu
MOISTURE	BAL	4465311	N/A	2016/04/21	Arezoo Habibagahi

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Report Date: 2016/04/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CFK386
Sample ID: VS1098
Matrix: Soil

Collected: 2016/04/20
Shipped:
Received: 2016/04/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4465312	2016/04/20	2016/04/21	Arezoo Habibagahi

Maxxam ID: CFK387
Sample ID: VS099
Matrix: Soil

Collected: 2016/04/20
Shipped:
Received: 2016/04/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4465303	N/A	2016/04/21	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4466600	2016/04/21	2016/04/21	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4466717	2016/04/21	2016/04/21	Grace Bu
MOISTURE	BAL	4465311	N/A	2016/04/21	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4465312	2016/04/20	2016/04/21	Arezoo Habibagahi

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GENERAL COMMENTS

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

Package 1	14.3°C

Custody seal was present and intact on the cooler.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4465312	D10-Anthracene	2016/04/21	70	50 - 130	72	50 - 130	73	%				
4465312	D14-Terphenyl (FS)	2016/04/21	85	50 - 130	92	50 - 130	94	%				
4465312	D8-Acenaphthylene	2016/04/21	65	50 - 130	67	50 - 130	68	%				
4465311	Moisture	2016/04/21							11	50		
4465312	1-Methylnaphthalene	2016/04/21	79	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40		
4465312	2-Methylnaphthalene	2016/04/21	78	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40		
4465312	Acenaphthene	2016/04/21	69	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40		
4465312	Acenaphthylene	2016/04/21	64	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40		
4465312	Anthracene	2016/04/21	75	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40		
4465312	Benzo(a)anthracene	2016/04/21	97	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40		
4465312	Benzo(a)pyrene	2016/04/21	88	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40		
4465312	Benzo(b/j)fluoranthene	2016/04/21	90	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40		
4465312	Benzo(g,h,i)perylene	2016/04/21	82	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40		
4465312	Benzo(k)fluoranthene	2016/04/21	88	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40		
4465312	Chrysene	2016/04/21	95	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40		
4465312	Dibenz(a,h)anthracene	2016/04/21	85	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40		
4465312	Fluoranthene	2016/04/21	84	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40		
4465312	Fluorene	2016/04/21	65	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40		
4465312	Indeno(1,2,3-cd)pyrene	2016/04/21	90	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40		
4465312	Naphthalene	2016/04/21	70	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40		
4465312	Phenanthrene	2016/04/21	77	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40		
4465312	Pyrene	2016/04/21	94	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40		
4466600	Chromium (VI)	2016/04/21	69 (1)	75 - 125	96	80 - 120	<0.2	ug/g	NC	35	88	75 - 125
4466717	Acid Extractable Antimony (Sb)	2016/04/21	100	75 - 125	102	80 - 120	<0.20	ug/g	NC	30		
4466717	Acid Extractable Arsenic (As)	2016/04/21	99	75 - 125	95	80 - 120	<1.0	ug/g	NC	30		
4466717	Acid Extractable Barium (Ba)	2016/04/21	NC	75 - 125	105	80 - 120	<0.50	ug/g	14	30		
4466717	Acid Extractable Beryllium (Be)	2016/04/21	102	75 - 125	100	80 - 120	<0.20	ug/g	NC	30		
4466717	Acid Extractable Boron (B)	2016/04/21	99	75 - 125	98	80 - 120	<5.0	ug/g	NC	30		
4466717	Acid Extractable Cadmium (Cd)	2016/04/21	101	75 - 125	97	80 - 120	<0.10	ug/g	NC	30		
4466717	Acid Extractable Chromium (Cr)	2016/04/21	95	75 - 125	97	80 - 120	<1.0	ug/g	11	30		
4466717	Acid Extractable Cobalt (Co)	2016/04/21	92	75 - 125	95	80 - 120	<0.10	ug/g	5.9	30		

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QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4466717	Acid Extractable Copper (Cu)	2016/04/21	NC	75 - 125	97	80 - 120	<0.50	ug/g	3.3	30		
4466717	Acid Extractable Lead (Pb)	2016/04/21	NC	75 - 125	96	80 - 120	<1.0	ug/g	3.7	30		
4466717	Acid Extractable Mercury (Hg)	2016/04/21	103	75 - 125	102	80 - 120	<0.050	ug/g				
4466717	Acid Extractable Molybdenum (Mo)	2016/04/21	100	75 - 125	98	80 - 120	<0.50	ug/g	NC	30		
4466717	Acid Extractable Nickel (Ni)	2016/04/21	89	75 - 125	93	80 - 120	<0.50	ug/g	8.0	30		
4466717	Acid Extractable Selenium (Se)	2016/04/21	99	75 - 125	96	80 - 120	<0.50	ug/g	NC	30		
4466717	Acid Extractable Silver (Ag)	2016/04/21	98	75 - 125	96	80 - 120	<0.20	ug/g	NC	30		
4466717	Acid Extractable Thallium (Tl)	2016/04/21	92	75 - 125	94	80 - 120	<0.050	ug/g	NC	30		
4466717	Acid Extractable Uranium (U)	2016/04/21	95	75 - 125	96	80 - 120	<0.050	ug/g	0.20	30		
4466717	Acid Extractable Vanadium (V)	2016/04/21	NC	75 - 125	96	80 - 120	<5.0	ug/g	NC	30		
4466717	Acid Extractable Zinc (Zn)	2016/04/21	NC	75 - 125	101	80 - 120	<5.0	ug/g	3.6	30		

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B678454
Report Date: 2016/04/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Brad Newman, Scientific Specialist

Paul Rubinato, Analyst, Maxxam Analytics

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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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557328
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#557328-02-01	Parnian Baber
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com, Paul_Hurst@golder.com; GAL	Sampled By:	Aaron Bordstrom		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

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: Next Day Time Required: ☒
Rush Confirmation Number: (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICP/MS Metals including Hg and CRVI	Leachate Landfill (TCLP METALS, REG. 153 PHCs)	# of Bottles	Comments
1		VS096	16/04/20	0900	Soil		X	X		1	
2		VS097	↓	1020	↓		X	X		1	
3		VS098	↓	1340	↓		X	X		1	20-Apr-16 14:50 Parnian Baber
4		VS1098	↓	1350	↓		X	X		1	B678454
5		VS099	↓	1400	↓		X	X		1	FHB OTT-002
6											
7											RECEIVED IN OTTAWA
8											
9											ON ICE PACK
10											

* 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
Aaron Bordstrom	16/04/20	1500	HA Federneh	~~2016/04/20~~ 2016/04/20	14:55	0		15,13,15	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B678454
Report Date: 2016/04/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 557328-03-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/04/22
Report #: R3969785
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B679641
Received: 2016/04/21, 15:40

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	8	N/A	2016/04/22	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	8	2016/04/22	2016/04/22	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	8	2016/04/21	2016/04/22	OTT SOP-00003	EPA 6020
MOISTURE	8	N/A	2016/04/23	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	8	2016/04/21	2016/04/21	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Augustyna Dobosz
Project Manager
22 Apr 2016 17:03:44 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573
==========
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Maxxam Job #: B679641
Report Date: 2016/04/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		CFQ189	CFQ189	CFQ190	CFQ191	CFQ192		
Sampling Date		2016/04/21 10:20	2016/04/21 10:20	2016/04/21 10:30	2016/04/21 10:40	2016/04/21 10:50		
COC Number		557328-03-01	557328-03-01	557328-03-01	557328-03-01	557328-03-01		
	UNITS	VS100	VS100 Lab-Dup	VS101	VS1101	VS102	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4467483
Acid Extractable Arsenic (As)	ug/g	2	2	1	2	1	1	4467483
Acid Extractable Barium (Ba)	ug/g	200	200	150	170	190	0.5	4467483
Acid Extractable Beryllium (Be)	ug/g	0.7	0.7	0.7	0.6	0.7	0.2	4467483
Acid Extractable Boron (B)	ug/g	<5	<5	<5	<5	<5	5	4467483
Acid Extractable Cadmium (Cd)	ug/g	<0.1	<0.1	0.1	0.1	<0.1	0.1	4467483
Acid Extractable Chromium (Cr)	ug/g	47	46	38	41	46	1	4467483
Acid Extractable Cobalt (Co)	ug/g	14	13	14	14	12	0.1	4467483
Acid Extractable Copper (Cu)	ug/g	21	21	13	16	21	0.5	4467483
Acid Extractable Lead (Pb)	ug/g	6	6	6	7	6	1	4467483
Acid Extractable Mercury (Hg)	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4467483
Acid Extractable Molybdenum (Mo)	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4467483
Acid Extractable Nickel (Ni)	ug/g	29	27	21	23	27	0.5	4467483
Acid Extractable Selenium (Se)	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4467483
Acid Extractable Silver (Ag)	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4467483
Acid Extractable Thallium (Tl)	ug/g	0.25	0.24	0.19	0.21	0.25	0.05	4467483
Acid Extractable Uranium (U)	ug/g	0.64	0.65	0.66	0.75	0.92	0.05	4467483
Acid Extractable Vanadium (V)	ug/g	61	60	52	53	55	5	4467483
Acid Extractable Zinc (Zn)	ug/g	78	76	64	68	75	5	4467483

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B679641
Report Date: 2016/04/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		CFQ193	CFQ194	CFQ195	CFQ196		
Sampling Date		2016/04/21 14:00	2016/04/21 14:10	2016/04/21 14:20	2016/04/21 14:30		
COC Number		557328-03-01	557328-03-01	557328-03-01	557328-03-01		
	UNITS	VS103	VS104	VS105	VS106	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	<0.2	<0.2	<0.2	<0.2	0.2	4467483
Acid Extractable Arsenic (As)	ug/g	2	1	1	<1	1	4467483
Acid Extractable Barium (Ba)	ug/g	170	200	190	160	0.5	4467483
Acid Extractable Beryllium (Be)	ug/g	0.7	0.7	0.6	0.6	0.2	4467483
Acid Extractable Boron (B)	ug/g	<5	<5	<5	<5	5	4467483
Acid Extractable Cadmium (Cd)	ug/g	<0.1	<0.1	<0.1	<0.1	0.1	4467483
Acid Extractable Chromium (Cr)	ug/g	42	47	45	38	1	4467483
Acid Extractable Cobalt (Co)	ug/g	12	14	12	12	0.1	4467483
Acid Extractable Copper (Cu)	ug/g	20	23	22	16	0.5	4467483
Acid Extractable Lead (Pb)	ug/g	6	6	5	5	1	4467483
Acid Extractable Mercury (Hg)	ug/g	<0.05	<0.05	<0.05	<0.05	0.05	4467483
Acid Extractable Molybdenum (Mo)	ug/g	<0.5	<0.5	<0.5	<0.5	0.5	4467483
Acid Extractable Nickel (Ni)	ug/g	25	30	26	22	0.5	4467483
Acid Extractable Selenium (Se)	ug/g	<0.5	<0.5	<0.5	0.6	0.5	4467483
Acid Extractable Silver (Ag)	ug/g	<0.2	<0.2	<0.2	<0.2	0.2	4467483
Acid Extractable Thallium (Tl)	ug/g	0.22	0.24	0.22	0.21	0.05	4467483
Acid Extractable Uranium (U)	ug/g	0.55	0.77	0.63	0.95	0.05	4467483
Acid Extractable Vanadium (V)	ug/g	55	59	55	51	5	4467483
Acid Extractable Zinc (Zn)	ug/g	72	77	71	59	5	4467483

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2016/04/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID		CFQ189	CFQ190	CFQ190	CFQ191	CFQ192	CFQ193		
Sampling Date		2016/04/21 10:20	2016/04/21 10:30	2016/04/21 10:30	2016/04/21 10:40	2016/04/21 10:50	2016/04/21 14:00		
COC Number		557328-03-01	557328-03-01	557328-03-01	557328-03-01	557328-03-01	557328-03-01		
	UNITS	VS100	VS101	VS101 Lab-Dup	VS1101	VS102	VS103	RDL	QC Batch
Inorganics									
Moisture	%	19	16	16	18	21	20	0.2	4467451
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	<0.014	<0.014		<0.014	<0.014	<0.014	0.014	4467402
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4467440
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4467440
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4467440
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4467440
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4467440
Benzo(b/j)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4467440
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4467440
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4467440
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4467440
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4467440
Fluoranthene	ug/g	<0.0050	0.0077	0.0092	0.0085	<0.0050	<0.0050	0.0050	4467440
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4467440
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4467440
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4467440
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4467440
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4467440
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4467440
Pyrene	ug/g	<0.0050	0.0065	0.0071	0.0067	<0.0050	<0.0050	0.0050	4467440
Surrogate Recovery (%)									
D10-Anthracene	%	75	66	68	68	70	77		4467440
D14-Terphenyl (FS)	%	96	91	86	93	95	103		4467440
D8-Acenaphthylene	%	74	65	67	68	69	79		4467440

RDL = Reportable Detection Limit
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Maxxam Job #: B679641
Report Date: 2016/04/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID		CFQ194	CFQ195	CFQ196		
Sampling Date		2016/04/21 14:10	2016/04/21 14:20	2016/04/21 14:30		
COC Number		557328-03-01	557328-03-01	557328-03-01		
	UNITS	VS104	VS105	VS106	RDL	QC Batch
Inorganics						
Moisture	%	22	22	19	0.2	4467451
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	<0.014	<0.014	0.018	0.014	4467402
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	<0.0050	0.011	<0.0050	0.0050	4467440
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	4467440
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	4467440
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	4467440
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	4467440
Benzo(b/j)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	4467440
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	4467440
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	4467440
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	4467440
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	4467440
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	4467440
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	4467440
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	4467440
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	0.0097	0.0050	4467440
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	0.0082	0.0050	4467440
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	4467440
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	4467440
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	4467440
Surrogate Recovery (%)						
D10-Anthracene	%	68	69	68		4467440
D14-Terphenyl (FS)	%	90	91	93		4467440
D8-Acenaphthylene	%	70	71	71		4467440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B679641
Report Date: 2016/04/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		CFQ189	CFQ190	CFQ191	CFQ192	CFQ193	CFQ194		
Sampling Date		2016/04/21 10:20	2016/04/21 10:30	2016/04/21 10:40	2016/04/21 10:50	2016/04/21 14:00	2016/04/21 14:10		
COC Number		557328-03-01	557328-03-01	557328-03-01	557328-03-01	557328-03-01	557328-03-01		
	UNITS	VS100	VS101	VS1101	VS102	VS103	VS104	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4468501

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		CFQ195	CFQ195	CFQ196		
Sampling Date		2016/04/21 14:20	2016/04/21 14:20	2016/04/21 14:30		
COC Number		557328-03-01	557328-03-01	557328-03-01		
	UNITS	VS105	VS105 Lab-Dup	VS106	RDL	QC Batch
Inorganics						
Chromium (VI)	ug/g	<0.2	<0.2	<0.2	0.2	4468501

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B679641
Report Date: 2016/04/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CFQ189
Sample ID: VS100
Matrix: Soil

Collected: 2016/04/21
Shipped:
Received: 2016/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4467402	N/A	2016/04/22	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4468501	2016/04/22	2016/04/22	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4467483	2016/04/21	2016/04/22	Raigamage Perera
MOISTURE	BAL	4467451	N/A	2016/04/23	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4467440	2016/04/21	2016/04/21	Arezoo Habibagahi

Maxxam ID: CFQ189 Dup
Sample ID: VS100
Matrix: Soil

Collected: 2016/04/21
Shipped:
Received: 2016/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4467483	2016/04/21	2016/04/22	Raigamage Perera

Maxxam ID: CFQ190
Sample ID: VS101
Matrix: Soil

Collected: 2016/04/21
Shipped:
Received: 2016/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4467402	N/A	2016/04/22	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4468501	2016/04/22	2016/04/22	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4467483	2016/04/21	2016/04/22	Raigamage Perera
MOISTURE	BAL	4467451	N/A	2016/04/23	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4467440	2016/04/21	2016/04/21	Arezoo Habibagahi

Maxxam ID: CFQ190 Dup
Sample ID: VS101
Matrix: Soil

Collected: 2016/04/21
Shipped:
Received: 2016/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4467451	N/A	2016/04/23	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4467440	2016/04/21	2016/04/21	Arezoo Habibagahi

Maxxam ID: CFQ191
Sample ID: VS1101
Matrix: Soil

Collected: 2016/04/21
Shipped:
Received: 2016/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4467402	N/A	2016/04/22	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4468501	2016/04/22	2016/04/22	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4467483	2016/04/21	2016/04/22	Raigamage Perera
MOISTURE	BAL	4467451	N/A	2016/04/23	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4467440	2016/04/21	2016/04/21	Arezoo Habibagahi

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Maxxam Job #: B679641
Report Date: 2016/04/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CFQ192
Sample ID: VS102
Matrix: Soil

Collected: 2016/04/21
Shipped:
Received: 2016/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4467402	N/A	2016/04/22	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4468501	2016/04/22	2016/04/22	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4467483	2016/04/21	2016/04/22	Raigamage Perera
MOISTURE	BAL	4467451	N/A	2016/04/23	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4467440	2016/04/21	2016/04/21	Arezoo Habibagahi

Maxxam ID: CFQ193
Sample ID: VS103
Matrix: Soil

Collected: 2016/04/21
Shipped:
Received: 2016/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4467402	N/A	2016/04/22	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4468501	2016/04/22	2016/04/22	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4467483	2016/04/21	2016/04/22	Raigamage Perera
MOISTURE	BAL	4467451	N/A	2016/04/23	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4467440	2016/04/21	2016/04/21	Arezoo Habibagahi

Maxxam ID: CFQ194
Sample ID: VS104
Matrix: Soil

Collected: 2016/04/21
Shipped:
Received: 2016/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4467402	N/A	2016/04/22	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4468501	2016/04/22	2016/04/22	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4467483	2016/04/21	2016/04/22	Raigamage Perera
MOISTURE	BAL	4467451	N/A	2016/04/23	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4467440	2016/04/21	2016/04/21	Arezoo Habibagahi

Maxxam ID: CFQ195
Sample ID: VS105
Matrix: Soil

Collected: 2016/04/21
Shipped:
Received: 2016/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4467402	N/A	2016/04/22	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4468501	2016/04/22	2016/04/22	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4467483	2016/04/21	2016/04/22	Raigamage Perera
MOISTURE	BAL	4467451	N/A	2016/04/23	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4467440	2016/04/21	2016/04/21	Arezoo Habibagahi

Maxxam ID: CFQ195 Dup
Sample ID: VS105
Matrix: Soil

Collected: 2016/04/21
Shipped:
Received: 2016/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4468501	2016/04/22	2016/04/22	Sally Coughlin

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Maxxam Job #: B679641
Report Date: 2016/04/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CFQ196
Sample ID: VS106
Matrix: Soil

Collected: 2016/04/21
Shipped:
Received: 2016/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4467402	N/A	2016/04/22	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4468501	2016/04/22	2016/04/22	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4467483	2016/04/21	2016/04/22	Raigamage Perera
MOISTURE	BAL	4467451	N/A	2016/04/23	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4467440	2016/04/21	2016/04/21	Arezoo Habibagahi

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Report Date: 2016/04/22

Golder Associates Ltd
Client Project #: 1525113
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GENERAL COMMENTS

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

Package 1	21.3°C

Custody seal was present and intact on the cooler.

Results relate only to the items tested.

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Maxxam Job #: B679641
Report Date: 2016/04/22

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4467440	D10-Anthracene	2016/04/21	67	50 - 130	69	50 - 130	70	%				
4467440	D14-Terphenyl (FS)	2016/04/21	88	50 - 130	93	50 - 130	86	%				
4467440	D8-Acenaphthylene	2016/04/21	68	50 - 130	68	50 - 130	72	%				
4467440	1-Methylnaphthalene	2016/04/21	74	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		
4467440	2-Methylnaphthalene	2016/04/21	73	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40		
4467440	Acenaphthene	2016/04/21	68	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40		
4467440	Acenaphthylene	2016/04/21	65	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4467440	Anthracene	2016/04/21	70	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40		
4467440	Benzo(a)anthracene	2016/04/21	64	50 - 130	65	50 - 130	<0.0050	ug/g	NC	40		
4467440	Benzo(a)pyrene	2016/04/21	68	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4467440	Benzo(b/j)fluoranthene	2016/04/21	71	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40		
4467440	Benzo(g,h,i)perylene	2016/04/21	65	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4467440	Benzo(k)fluoranthene	2016/04/21	72	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4467440	Chrysene	2016/04/21	65	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40		
4467440	Dibenz(a,h)anthracene	2016/04/21	64	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4467440	Fluoranthene	2016/04/21	84	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40		
4467440	Fluorene	2016/04/21	66	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40		
4467440	Indeno(1,2,3-cd)pyrene	2016/04/21	67	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40		
4467440	Naphthalene	2016/04/21	66	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40		
4467440	Phenanthrene	2016/04/21	68	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40		
4467440	Pyrene	2016/04/21	87	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40		
4467451	Moisture	2016/04/23							2.5	50		
4467483	Acid Extractable Antimony (Sb)	2016/04/22	81	75 - 125	102	80 - 120	<0.2	ug/g	NC	35		
4467483	Acid Extractable Arsenic (As)	2016/04/22	101	75 - 125	101	80 - 120	<1	ug/g	NC	35		
4467483	Acid Extractable Barium (Ba)	2016/04/22	NC	75 - 125	101	80 - 120	<0.5	ug/g	1.6	35		
4467483	Acid Extractable Beryllium (Be)	2016/04/22	99	75 - 125	99	80 - 120	<0.2	ug/g	NC	35		
4467483	Acid Extractable Boron (B)	2016/04/22	98	75 - 125	99	80 - 120	<5	ug/g	NC	35		
4467483	Acid Extractable Cadmium (Cd)	2016/04/22	102	75 - 125	102	80 - 120	<0.1	ug/g	NC	35		
4467483	Acid Extractable Chromium (Cr)	2016/04/22	NC	75 - 125	104	80 - 120	<1	ug/g	1.4	35		
4467483	Acid Extractable Cobalt (Co)	2016/04/22	NC	75 - 125	105	80 - 120	<0.1	ug/g	3.6	35		
4467483	Acid Extractable Copper (Cu)	2016/04/22	NC	75 - 125	103	80 - 120	<0.5	ug/g	2.4	35		

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Report Date: 2016/04/22

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4467483	Acid Extractable Lead (Pb)	2016/04/22	101	75 - 125	103	80 - 120	<1	ug/g	1.2	35		
4467483	Acid Extractable Mercury (Hg)	2016/04/22	106	75 - 125	107	80 - 120	<0.05	ug/g	NC	35		
4467483	Acid Extractable Molybdenum (Mo)	2016/04/22	102	75 - 125	103	80 - 120	<0.5	ug/g	NC	35		
4467483	Acid Extractable Nickel (Ni)	2016/04/22	NC	75 - 125	106	80 - 120	<0.5	ug/g	4.6	35		
4467483	Acid Extractable Selenium (Se)	2016/04/22	100	75 - 125	105	80 - 120	<0.5	ug/g	NC	35		
4467483	Acid Extractable Silver (Ag)	2016/04/22	101	75 - 125	103	80 - 120	<0.2	ug/g	NC	35		
4467483	Acid Extractable Thallium (Tl)	2016/04/22	101	75 - 125	103	80 - 120	<0.05	ug/g	NC	35		
4467483	Acid Extractable Uranium (U)	2016/04/22	105	75 - 125	109	80 - 120	<0.05	ug/g	1.2	25		
4467483	Acid Extractable Vanadium (V)	2016/04/22	NC	75 - 125	95	80 - 120	<5	ug/g	2.3	35		
4467483	Acid Extractable Zinc (Zn)	2016/04/22	NC	75 - 125	114	80 - 120	<5	ug/g	3.8	35		
4468501	Chromium (VI)	2016/04/22	61 (1)	75 - 125	89	80 - 120	<0.2	ug/g	NC	35	81	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B679641
Report Date: 2016/04/22

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Paul

Paul Rubinato, Analyst, Maxxam Analytics

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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557328
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#557328-03-01	Parnian Baber
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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 Cindna/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: Next Day Time Required: ☒
Rush Confirmation Number: ✓ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	Leitsche Landfill (TCLP METALS, REG. 153 PHCs)	# of Bottles	Comments
1		VS100	16/04/21	1020	Soil		X	X		1	
2		VS101		1030			X	X		1	
3		VS1101		1040			X	X		1	
4		VS102		1050			X	X		1	
5		VS103		1400			X	X		1	
6		VS104		1410			X	X		1	
7		VS105		1420			X	X		1	
8		VS106		1430			X	X		1	
9											On ICE pack.
10											

21-Apr-16 15:40
Parnian Baber
B679641

RECEIVED 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
[signature] Aaron Bradshaw	16/04/21	1500	[signature] Fatemeh	2016/04/21	15:40	0		21, 22, 21	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 557328-04-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/04/25
Report #: R3972065
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B680704
Received: 2016/04/22, 15:40

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	2	N/A	2016/04/25	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	2	2016/04/25	2016/04/25	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	2	2016/04/22	2016/04/25	OTT SOP-00003	EPA 6020
MOISTURE	2	N/A	2016/04/25	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	2	2016/04/22	2016/04/22	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key Parnian Baber Parnian Baber
Project Manager
25 Apr 2016 16:09:27 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573
==========
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Maxxam Job #: B680704
Report Date: 2016/04/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CFV767	CFV767	CFV768		
Sampling Date			2016/04/22 13:30	2016/04/22 13:30	2016/04/22 13:40		
COC Number			557328-04-01	557328-04-01	557328-04-01		
	UNITS	Criteria	VS107	VS107 Lab-Dup	VS108	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.2	<0.2	<0.2	0.2	4469252
Acid Extractable Arsenic (As)	ug/g	**18**	1	1	<1	1	4469252
Acid Extractable Barium (Ba)	ug/g	**670**	150	150	440	0.5	4469252
Acid Extractable Beryllium (Be)	ug/g	**8**	0.5	0.5	1.3	0.2	4469252
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	5	4469252
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.1	<0.1	0.1	0.1	4469252
Acid Extractable Chromium (Cr)	ug/g	**160**	35	36	120	1	4469252
Acid Extractable Cobalt (Co)	ug/g	**80**	9.4	10	33	0.1	4469252
Acid Extractable Copper (Cu)	ug/g	**230**	20	22	54	0.5	4469252
Acid Extractable Lead (Pb)	ug/g	**120**	5	5	9	1	4469252
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.05	<0.05	<0.05	0.05	4469252
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.5	<0.5	<0.5	0.5	4469252
Acid Extractable Nickel (Ni)	ug/g	**270**	21	22	67	0.5	4469252
Acid Extractable Selenium (Se)	ug/g	**5.5**	0.7	0.5	<0.5	0.5	4469252
Acid Extractable Silver (Ag)	ug/g	**40**	<0.2	<0.2	<0.2	0.2	4469252
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.18	0.18	0.54	0.05	4469252
Acid Extractable Uranium (U)	ug/g	**33**	0.62	0.65	2.3	0.05	4469252
Acid Extractable Vanadium (V)	ug/g	**86**	52	53	**120**	5	4469252
Acid Extractable Zinc (Zn)	ug/g	**340**	55	58	130	5	4469252

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B680704
Report Date: 2016/04/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CFV767	CFV768	CFV768		
Sampling Date			2016/04/22 13:30	2016/04/22 13:40	2016/04/22 13:40		
COC Number			557328-04-01	557328-04-01	557328-04-01		
	UNITS	Criteria	VS107	VS108	VS108 Lab-Dup	RDL	QC Batch
Inorganics							
Moisture	%	-	22	28	27	0.2	4469286
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014		0.014	4469239
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	0.0050	4469288
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	0.0050	4469288
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0050	4469288
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	0.0050	4469288
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	0.0050	4469288
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	0.0050	4469288
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	0.0050	4469288
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	0.0050	4469288
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	0.0050	4469288
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	0.0050	4469288
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	0.0050	4469288
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0050	4469288
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	0.0050	4469288
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	0.0050	4469288
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	0.0050	4469288
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	0.0050	4469288
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	0.0050	4469288
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	0.0050	4469288
Surrogate Recovery (%)							
D10-Anthracene	%	-	69	67	69		4469288
D14-Terphenyl (FS)	%	-	95	91	93		4469288
D8-Acenaphthylene	%	-	65	63	64		4469288

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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.maxxam.ca

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A Bureau Veritas Group Company

Maxxam Job #: B680704
Report Date: 2016/04/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CFV767	CFV767	CFV768		
Sampling Date			2016/04/22 13:30	2016/04/22 13:30	2016/04/22 13:40		
COC Number			557328-04-01	557328-04-01	557328-04-01		
	UNITS	Criteria	VS107	VS107 Lab-Dup	VS108	RDL	QC Batch
Inorganics							
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	0.2	4470905

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B680704
Report Date: 2016/04/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CFV767
Sample ID: VS107
Matrix: Soil

Collected: 2016/04/22
Shipped:
Received: 2016/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4469239	N/A	2016/04/25	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4470905	2016/04/25	2016/04/25	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4469252	2016/04/22	2016/04/25	Raigamage Perera
MOISTURE	BAL	4469286	N/A	2016/04/25	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4469288	2016/04/22	2016/04/22	Arezoo Habibagahi

Maxxam ID: CFV767 Dup
Sample ID: VS107
Matrix: Soil

Collected: 2016/04/22
Shipped:
Received: 2016/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4470905	2016/04/25	2016/04/25	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4469252	2016/04/22	2016/04/25	Raigamage Perera

Maxxam ID: CFV768
Sample ID: VS108
Matrix: Soil

Collected: 2016/04/22
Shipped:
Received: 2016/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4469239	N/A	2016/04/25	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4470905	2016/04/25	2016/04/25	Manoj Gera
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4469252	2016/04/22	2016/04/25	Raigamage Perera
MOISTURE	BAL	4469286	N/A	2016/04/25	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4469288	2016/04/22	2016/04/22	Arezoo Habibagahi

Maxxam ID: CFV768 Dup
Sample ID: VS108
Matrix: Soil

Collected: 2016/04/22
Shipped:
Received: 2016/04/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4469286	N/A	2016/04/25	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4469288	2016/04/22	2016/04/22	Arezoo Habibagahi

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Maxxam Job #: B680704
Report Date: 2016/04/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

GENERAL COMMENTS

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

Package 1	13.7°C

Custody seal was present and intact on the cooler.

Results relate only to the items tested.

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Maxxam Job #: B680704
Report Date: 2016/04/25

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4469288	D10-Anthracene	2016/04/22	69	50 - 130	68	50 - 130	71	%				
4469288	D14-Terphenyl (FS)	2016/04/22	80	50 - 130	81	50 - 130	96	%				
4469288	D8-Acenaphthylene	2016/04/22	63	50 - 130	61	50 - 130	68	%				
4469252	Acid Extractable Antimony (Sb)	2016/04/25	70 (1)	75 - 125	98	80 - 120	<0.2	ug/g	NC	35		
4469252	Acid Extractable Arsenic (As)	2016/04/25	96	75 - 125	97	80 - 120	<1	ug/g	NC	35		
4469252	Acid Extractable Barium (Ba)	2016/04/25	NC	75 - 125	102	80 - 120	<0.5	ug/g	2.0	35		
4469252	Acid Extractable Beryllium (Be)	2016/04/25	95	75 - 125	96	80 - 120	<0.2	ug/g	NC	35		
4469252	Acid Extractable Boron (B)	2016/04/25	94	75 - 125	93	80 - 120	<5	ug/g	NC	35		
4469252	Acid Extractable Cadmium (Cd)	2016/04/25	98	75 - 125	98	80 - 120	<0.1	ug/g	NC	35		
4469252	Acid Extractable Chromium (Cr)	2016/04/25	NC	75 - 125	97	80 - 120	<1	ug/g	3.1	35		
4469252	Acid Extractable Cobalt (Co)	2016/04/25	100	75 - 125	99	80 - 120	<0.1	ug/g	5.9	35		
4469252	Acid Extractable Copper (Cu)	2016/04/25	NC	75 - 125	99	80 - 120	<0.5	ug/g	7.6	35		
4469252	Acid Extractable Lead (Pb)	2016/04/25	98	75 - 125	100	80 - 120	<1	ug/g	NC	35		
4469252	Acid Extractable Mercury (Hg)	2016/04/25	98	75 - 125	94	80 - 120	<0.05	ug/g	NC	35		
4469252	Acid Extractable Molybdenum (Mo)	2016/04/25	97	75 - 125	96	80 - 120	<0.5	ug/g	NC	35		
4469252	Acid Extractable Nickel (Ni)	2016/04/25	NC	75 - 125	96	80 - 120	<0.5	ug/g	4.0	35		
4469252	Acid Extractable Selenium (Se)	2016/04/25	94	75 - 125	98	80 - 120	<0.5	ug/g	NC	35		
4469252	Acid Extractable Silver (Ag)	2016/04/25	99	75 - 125	100	80 - 120	<0.2	ug/g	NC	35		
4469252	Acid Extractable Thallium (Tl)	2016/04/25	98	75 - 125	98	80 - 120	<0.05	ug/g	NC	35		
4469252	Acid Extractable Uranium (U)	2016/04/25	103	75 - 125	103	80 - 120	<0.05	ug/g	5.5	25		
4469252	Acid Extractable Vanadium (V)	2016/04/25	NC	75 - 125	100	80 - 120	<5	ug/g	2.6	35		
4469252	Acid Extractable Zinc (Zn)	2016/04/25	NC	75 - 125	100	80 - 120	<5	ug/g	5.6	35		
4469286	Moisture	2016/04/25							1.8	50		
4469288	1-Methylnaphthalene	2016/04/22	78	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4469288	2-Methylnaphthalene	2016/04/22	76	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		
4469288	Acenaphthene	2016/04/22	75	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40		
4469288	Acenaphthylene	2016/04/22	61	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4469288	Anthracene	2016/04/22	72	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40		
4469288	Benzo(a)anthracene	2016/04/22	77	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40		
4469288	Benzo(a)pyrene	2016/04/22	74	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4469288	Benzo(b/j)fluoranthene	2016/04/22	76	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40		

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Maxxam Job #: B680704
Report Date: 2016/04/25

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4469288	Benzo(g,h,i)perylene	2016/04/22	72	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4469288	Benzo(k)fluoranthene	2016/04/22	76	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4469288	Chrysene	2016/04/22	73	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4469288	Dibenz(a,h)anthracene	2016/04/22	74	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4469288	Fluoranthene	2016/04/22	83	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40		
4469288	Fluorene	2016/04/22	69	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40		
4469288	Indeno(1,2,3-cd)pyrene	2016/04/22	77	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40		
4469288	Naphthalene	2016/04/22	70	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4469288	Phenanthrene	2016/04/22	74	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40		
4469288	Pyrene	2016/04/22	92	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40		
4470905	Chromium (VI)	2016/04/25	83	75 - 125	97	80 - 120	<0.2	ug/g	NC	35	83	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(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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A Bureau Veritas Group Company

Maxxam Job #: B680704
Report Date: 2016/04/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

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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6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557328
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113		
	Ottawa ON K2H 5B7			Project Name:		COC #:	Project Manager:
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:		C#557328-04-01	Parnian Baber
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	Aaron Brockton		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC):

Turnaround Time (TAT) Required:

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: Next day Time Required: ☒
Rush Confirmation Number: (call lab for it)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	Leachate Landfill (TCLP METALS, REG. 153 PHCs)	# of Bottles	Comments
1		VS107	16/04/22	1330	soil		X	X		1	
2		VS108	16/04/22	1340	soil		X	X		1	
3											
4											
5											
6											
7											RECEIVED IN OTTAWA
8											
9											ON ICE pack.
10											

22-Apr-16 15:40
Parnian Baber
B680704
FHB OTT-002

* 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
Aaron Brockton	16/04/22	1500	[illegible]	2016/04/22	15:40	0		14, 14, 13	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B680704
Report Date: 2016/04/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS108	CFV768-02	Acid Extractable Vanadium (V)	86	120	5	ug/g

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 557328-05-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/04/26
Report #: R3973292
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B681984
Received: 2016/04/25, 15:40

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	9	N/A	2016/04/26	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	9	2016/04/26	2016/04/26	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	9	2016/04/26	2016/04/26	CAM SOP-00447	EPA 6020A m
MOISTURE	9	N/A	2016/04/26	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	9	2016/04/25	2016/04/26	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key
Madison Bingley
Project Manager Assistant
26 Apr 2016 16:47:04 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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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A Bureau Veritas Group Company

Maxxam Job #: B681984
Report Date: 2016/04/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CGC246	CGC247	CGC247	CGC248	CGC249		
Sampling Date			2016/04/25 08:00	2016/04/25 08:05	2016/04/25 08:05	2016/04/25 08:10	2016/04/25 08:20		
COC Number			557328-05-01	557328-05-01	557328-05-01	557328-05-01	557328-05-01		
	UNITS	Criteria	VS109	VS1109	VS1109 Lab-Dup	VS110	VS111	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4473046
Acid Extractable Arsenic (As)	ug/g	**18**	1.2	1.2	1.1	1.3	2.2	1.0	4473046
Acid Extractable Barium (Ba)	ug/g	**670**	140	140	140	170	170	0.50	4473046
Acid Extractable Beryllium (Be)	ug/g	**8**	0.49	0.50	0.49	0.61	0.54	0.20	4473046
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4473046
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	4473046
Acid Extractable Chromium (Cr)	ug/g	**160**	34	35	33	39	37	1.0	4473046
Acid Extractable Cobalt (Co)	ug/g	**80**	7.9	8.3	8.1	12	11	0.10	4473046
Acid Extractable Copper (Cu)	ug/g	**230**	22	22	21	24	24	0.50	4473046
Acid Extractable Lead (Pb)	ug/g	**120**	4.3	4.5	4.3	5.7	5.0	1.0	4473046
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4473046
Acid Extractable Nickel (Ni)	ug/g	**270**	20	20	19	24	22	0.50	4473046
Acid Extractable Selenium (Se)	ug/g	**5.5**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4473046
Acid Extractable Silver (Ag)	ug/g	**40**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4473046
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.16	0.19	0.17	0.23	0.21	0.050	4473046
Acid Extractable Uranium (U)	ug/g	**33**	0.87	0.86	0.88	0.79	0.76	0.050	4473046
Acid Extractable Vanadium (V)	ug/g	**86**	49	52	49	55	52	5.0	4473046
Acid Extractable Zinc (Zn)	ug/g	**340**	52	54	53	67	64	5.0	4473046
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4473046

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B681984
Report Date: 2016/04/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CGC250	CGC251	CGC252	CGC253	CGC254		
Sampling Date			2016/04/25 09:30	2016/04/25 09:40	2016/04/25 12:10	2016/04/25 13:50	2016/04/25 13:55		
COC Number			557328-05-01	557328-05-01	557328-05-01	557328-05-01	557328-05-01		
	UNITS	Criteria	VS112	VS113	VS114	VS115	VS1115	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4473046
Acid Extractable Arsenic (As)	ug/g	**18**	1.6	1.3	1.6	2.4	2.5	1.0	4473046
Acid Extractable Barium (Ba)	ug/g	**670**	200	130	170	200	210	0.50	4473046
Acid Extractable Beryllium (Be)	ug/g	**8**	0.69	0.50	0.59	0.68	0.72	0.20	4473046
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4473046
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	4473046
Acid Extractable Chromium (Cr)	ug/g	**160**	44	33	40	46	47	1.0	4473046
Acid Extractable Cobalt (Co)	ug/g	**80**	13	9.2	11	14	13	0.10	4473046
Acid Extractable Copper (Cu)	ug/g	**230**	27	15	22	25	27	0.50	4473046
Acid Extractable Lead (Pb)	ug/g	**120**	6.1	4.4	5.2	6.3	6.3	1.0	4473046
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4473046
Acid Extractable Nickel (Ni)	ug/g	**270**	28	18	23	29	29	0.50	4473046
Acid Extractable Selenium (Se)	ug/g	**5.5**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4473046
Acid Extractable Silver (Ag)	ug/g	**40**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4473046
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.25	0.16	0.24	0.25	0.28	0.050	4473046
Acid Extractable Uranium (U)	ug/g	**33**	0.85	0.88	0.68	0.76	0.72	0.050	4473046
Acid Extractable Vanadium (V)	ug/g	**86**	62	47	52	60	61	5.0	4473046
Acid Extractable Zinc (Zn)	ug/g	**340**	77	51	67	74	78	5.0	4473046
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4473046

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B681984
Report Date: 2016/04/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CGC246	CGC246	CGC247	CGC248	CGC249		
Sampling Date			2016/04/25 08:00	2016/04/25 08:00	2016/04/25 08:05	2016/04/25 08:10	2016/04/25 08:20		
COC Number			557328-05-01	557328-05-01	557328-05-01	557328-05-01	557328-05-01		
	UNITS	Criteria	VS109	VS109 Lab-Dup	VS1109	VS110	VS111	RDL	QC Batch
Inorganics									
Moisture	%	-	21	20	21	18	24	0.2	4471801
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014		<0.014	<0.014	<0.014	0.014	4471807
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**96**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
Acenaphthylene	ug/g	**0.15**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
Anthracene	ug/g	**0.67**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
Benzo(a)anthracene	ug/g	**0.96**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
Benzo(a)pyrene	ug/g	**0.3**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
Chrysene	ug/g	**9.6**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
Fluoranthene	ug/g	**9.6**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
Fluorene	ug/g	**62**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
1-Methylnaphthalene	ug/g	**76**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
2-Methylnaphthalene	ug/g	**76**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
Naphthalene	ug/g	**9.6**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
Phenanthrene	ug/g	**12**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
Pyrene	ug/g	**96**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	4471412
Surrogate Recovery (%)									
D10-Anthracene	%	-	70		68	65	72		4471412
D14-Terphenyl (FS)	%	-	89		84	82	89		4471412
D8-Acenaphthylene	%	-	69		70	76	76		4471412

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B681984
Report Date: 2016/04/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CGC250	CGC251	CGC252	CGC253	CGC254		
Sampling Date			2016/04/25 09:30	2016/04/25 09:40	2016/04/25 12:10	2016/04/25 13:50	2016/04/25 13:55		
COC Number			557328-05-01	557328-05-01	557328-05-01	557328-05-01	557328-05-01		
	UNITS	Criteria	VS112	VS113	VS114	VS115	VS1115	RDL	QC Batch
Inorganics									
Moisture	%	-	23	18	21	21	22	0.2	4471801
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4471807
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
Fluoranthene	ug/g	**9.6**	<0.0050	0.0066	<0.0050	<0.0050	<0.0050	0.0050	4471412
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
2-Methylnaphthalene	ug/g	**76**	0.013	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4471412
Surrogate Recovery (%)									
D10-Anthracene	%	-	69	68	72	71	73		4471412
D14-Terphenyl (FS)	%	-	87	85	89	87	90		4471412
D8-Acenaphthylene	%	-	70	70	73	71	74		4471412

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B681984
Report Date: 2016/04/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CGC246	CGC247	CGC247	CGC248	CGC249		
Sampling Date			2016/04/25 08:00	2016/04/25 08:05	2016/04/25 08:05	2016/04/25 08:10	2016/04/25 08:20		
COC Number			557328-05-01	557328-05-01	557328-05-01	557328-05-01	557328-05-01		
	UNITS	Criteria	VS109	VS1109	VS1109 Lab-Dup	VS110	VS111	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4472705

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

Maxxam ID			CGC250	CGC251	CGC252	CGC253	CGC254		
Sampling Date			2016/04/25 09:30	2016/04/25 09:40	2016/04/25 12:10	2016/04/25 13:50	2016/04/25 13:55		
COC Number			557328-05-01	557328-05-01	557328-05-01	557328-05-01	557328-05-01		
	UNITS	Criteria	VS112	VS113	VS114	VS115	VS1115	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4472705

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B681984
Report Date: 2016/04/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CGC246
Sample ID: VS109
Matrix: Soil

Collected: 2016/04/25
Shipped:
Received: 2016/04/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4471807	N/A	2016/04/26	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4472705	2016/04/26	2016/04/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4473046	2016/04/26	2016/04/26	Grace Bu
MOISTURE	BAL	4471801	N/A	2016/04/26	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4471412	2016/04/25	2016/04/26	Arezoo Habibagahi

Maxxam ID: CGC246 Dup
Sample ID: VS109
Matrix: Soil

Collected: 2016/04/25
Shipped:
Received: 2016/04/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4471801	N/A	2016/04/26	Arezoo Habibagahi

Maxxam ID: CGC247
Sample ID: VS1109
Matrix: Soil

Collected: 2016/04/25
Shipped:
Received: 2016/04/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4471807	N/A	2016/04/26	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4472705	2016/04/26	2016/04/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4473046	2016/04/26	2016/04/26	Grace Bu
MOISTURE	BAL	4471801	N/A	2016/04/26	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4471412	2016/04/25	2016/04/26	Arezoo Habibagahi

Maxxam ID: CGC247 Dup
Sample ID: VS1109
Matrix: Soil

Collected: 2016/04/25
Shipped:
Received: 2016/04/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4472705	2016/04/26	2016/04/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4473046	2016/04/26	2016/04/26	Grace Bu

Maxxam ID: CGC248
Sample ID: VS110
Matrix: Soil

Collected: 2016/04/25
Shipped:
Received: 2016/04/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4471807	N/A	2016/04/26	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4472705	2016/04/26	2016/04/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4473046	2016/04/26	2016/04/26	Grace Bu
MOISTURE	BAL	4471801	N/A	2016/04/26	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4471412	2016/04/25	2016/04/26	Arezoo Habibagahi

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Maxxam Job #: B681984
Report Date: 2016/04/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CGC249
Sample ID: VS111
Matrix: Soil

Collected: 2016/04/25
Shipped:
Received: 2016/04/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4471807	N/A	2016/04/26	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4472705	2016/04/26	2016/04/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4473046	2016/04/26	2016/04/26	Grace Bu
MOISTURE	BAL	4471801	N/A	2016/04/26	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4471412	2016/04/25	2016/04/26	Arezoo Habibagahi

Maxxam ID: CGC250
Sample ID: VS112
Matrix: Soil

Collected: 2016/04/25
Shipped:
Received: 2016/04/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4471807	N/A	2016/04/26	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4472705	2016/04/26	2016/04/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4473046	2016/04/26	2016/04/26	Grace Bu
MOISTURE	BAL	4471801	N/A	2016/04/26	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4471412	2016/04/25	2016/04/26	Arezoo Habibagahi

Maxxam ID: CGC251
Sample ID: VS113
Matrix: Soil

Collected: 2016/04/25
Shipped:
Received: 2016/04/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4471807	N/A	2016/04/26	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4472705	2016/04/26	2016/04/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4473046	2016/04/26	2016/04/26	Grace Bu
MOISTURE	BAL	4471801	N/A	2016/04/26	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4471412	2016/04/25	2016/04/26	Arezoo Habibagahi

Maxxam ID: CGC252
Sample ID: VS114
Matrix: Soil

Collected: 2016/04/25
Shipped:
Received: 2016/04/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4471807	N/A	2016/04/26	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4472705	2016/04/26	2016/04/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4473046	2016/04/26	2016/04/26	Grace Bu
MOISTURE	BAL	4471801	N/A	2016/04/26	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4471412	2016/04/25	2016/04/26	Arezoo Habibagahi

Maxxam ID: CGC253
Sample ID: VS115
Matrix: Soil

Collected: 2016/04/25
Shipped:
Received: 2016/04/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4471807	N/A	2016/04/26	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4472705	2016/04/26	2016/04/26	Sally Coughlin

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Maxxam Job #: B681984
Report Date: 2016/04/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CGC253
Sample ID: VS115
Matrix: Soil

Collected: 2016/04/25
Shipped:
Received: 2016/04/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4473046	2016/04/26	2016/04/26	Grace Bu
MOISTURE	BAL	4471801	N/A	2016/04/26	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4471412	2016/04/25	2016/04/26	Arezoo Habibagahi

Maxxam ID: CGC254
Sample ID: VS1115
Matrix: Soil

Collected: 2016/04/25
Shipped:
Received: 2016/04/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4471807	N/A	2016/04/26	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4472705	2016/04/26	2016/04/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4473046	2016/04/26	2016/04/26	Grace Bu
MOISTURE	BAL	4471801	N/A	2016/04/26	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4471412	2016/04/25	2016/04/26	Arezoo Habibagahi

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GENERAL COMMENTS

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

Package 1	14.3°C

Custody seal was present and intact on the cooler.

Results relate only to the items tested.

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Report Date: 2016/04/26

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4471412	D10-Anthracene	2016/04/26	59	50 - 130	72	50 - 130	70	%				
4471412	D14-Terphenyl (FS)	2016/04/26	63	50 - 130	84	50 - 130	69	%				
4471412	D8-Acenaphthylene	2016/04/26	54	50 - 130	70	50 - 130	65	%				
4471412	1-Methylnaphthalene	2016/04/26	68	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40		
4471412	2-Methylnaphthalene	2016/04/26	61	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4471412	Acenaphthene	2016/04/26	63	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4471412	Acenaphthylene	2016/04/26	53	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4471412	Anthracene	2016/04/26	61	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4471412	Benzo(a)anthracene	2016/04/26	60	50 - 130	64	50 - 130	<0.0050	ug/g	16	40		
4471412	Benzo(a)pyrene	2016/04/26	57	50 - 130	66	50 - 130	<0.0050	ug/g	8.2	40		
4471412	Benzo(b/j)fluoranthene	2016/04/26	67	50 - 130	69	50 - 130	<0.0050	ug/g	1.8	40		
4471412	Benzo(g,h,i)perylene	2016/04/26	51	50 - 130	66	50 - 130	<0.0050	ug/g	0.042	40		
4471412	Benzo(k)fluoranthene	2016/04/26	67	50 - 130	66	50 - 130	<0.0050	ug/g	15	40		
4471412	Chrysene	2016/04/26	64	50 - 130	65	50 - 130	<0.0050	ug/g	4.0	40		
4471412	Dibenz(a,h)anthracene	2016/04/26	53	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40		
4471412	Fluoranthene	2016/04/26	69	50 - 130	80	50 - 130	<0.0050	ug/g	15	40		
4471412	Fluorene	2016/04/26	60	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4471412	Indeno(1,2,3-cd)pyrene	2016/04/26	55	50 - 130	71	50 - 130	<0.0050	ug/g	0.97	40		
4471412	Naphthalene	2016/04/26	58	50 - 130	65	50 - 130	<0.0050	ug/g	NC	40		
4471412	Phenanthrene	2016/04/26	61	50 - 130	67	50 - 130	<0.0050	ug/g	12	40		
4471412	Pyrene	2016/04/26	69	50 - 130	84	50 - 130	<0.0050	ug/g	13	40		
4471801	Moisture	2016/04/26							0.98	50		
4472705	Chromium (VI)	2016/04/26	72 (1)	75 - 125	89	80 - 120	<0.2	ug/g	NC	35	87	75 - 125
4473046	Acid Extractable Antimony (Sb)	2016/04/26	75	75 - 125	99	80 - 120	<0.20	ug/g	NC	30		
4473046	Acid Extractable Arsenic (As)	2016/04/26	94	75 - 125	96	80 - 120	<1.0	ug/g	NC	30		
4473046	Acid Extractable Barium (Ba)	2016/04/26	NC	75 - 125	96	80 - 120	<0.50	ug/g	3.4	30		
4473046	Acid Extractable Beryllium (Be)	2016/04/26	95	75 - 125	94	80 - 120	<0.20	ug/g	NC	30		
4473046	Acid Extractable Boron (B)	2016/04/26	88	75 - 125	95	80 - 120	<5.0	ug/g	NC	30		
4473046	Acid Extractable Cadmium (Cd)	2016/04/26	98	75 - 125	97	80 - 120	<0.10	ug/g	NC	30		
4473046	Acid Extractable Chromium (Cr)	2016/04/26	NC	75 - 125	95	80 - 120	<1.0	ug/g	4.9	30		
4473046	Acid Extractable Cobalt (Co)	2016/04/26	90	75 - 125	92	80 - 120	<0.10	ug/g	2.9	30		

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Report Date: 2016/04/26

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4473046	Acid Extractable Copper (Cu)	2016/04/26	NC	75 - 125	95	80 - 120	<0.50	ug/g	2.2	30		
4473046	Acid Extractable Lead (Pb)	2016/04/26	95	75 - 125	96	80 - 120	<1.0	ug/g	NC	30		
4473046	Acid Extractable Mercury (Hg)	2016/04/26	102	75 - 125	104	80 - 120	<0.050	ug/g	NC	30		
4473046	Acid Extractable Molybdenum (Mo)	2016/04/26	97	75 - 125	95	80 - 120	<0.50	ug/g	NC	30		
4473046	Acid Extractable Nickel (Ni)	2016/04/26	NC	75 - 125	96	80 - 120	<0.50	ug/g	1.9	30		
4473046	Acid Extractable Selenium (Se)	2016/04/26	92	75 - 125	98	80 - 120	<0.50	ug/g	NC	30		
4473046	Acid Extractable Silver (Ag)	2016/04/26	96	75 - 125	95	80 - 120	<0.20	ug/g	NC	30		
4473046	Acid Extractable Thallium (Tl)	2016/04/26	95	75 - 125	96	80 - 120	<0.050	ug/g	NC	30		
4473046	Acid Extractable Uranium (U)	2016/04/26	100	75 - 125	98	80 - 120	<0.050	ug/g	2.5	30		
4473046	Acid Extractable Vanadium (V)	2016/04/26	NC	75 - 125	95	80 - 120	<5.0	ug/g	5.9	30		
4473046	Acid Extractable Zinc (Zn)	2016/04/26	NC	75 - 125	98	80 - 120	<5.0	ug/g	3.3	30		

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B681984
Report Date: 2016/04/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

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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6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel (905) 817-5700 Toll-Free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557328
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113	CDC #: C#557328-05-01	Project Manager: Parnian Baber
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Project Name:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	Aaron Brockton		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Field Filtered (please circle): Metals / Hg / Cr VI

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: Next Day Time Required: ☒
Rush Confirmation Number: (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	Leftache Landfill (TCLP METALS, REG 153 PHCs)							# of Bottles	Comments
1		VS109	16/04/25	0800	Soil		X	X								1	
2		VS1109		0805			X	X								1	
3		VS110		0810			X	X								1	
4		VS111		0820			X	X								1	
5		VS112		0930			X	X								1	
6		VS113		0940			X	X								1	
7		VS114		1210			X	X								1	
8		VS115		1350			X	X								1	
9		VS1115		1355			X	X								1	ON ICE PACK
10																	

25-Apr-16 15:40
Parnian Baber
B681984
FHB OTT-002

RECEIVED 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
Aaron Brockton	16/04/25	1500	Fatemeh	2016/04/25	15:40	0		14, 14, 15	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B681984
Report Date: 2016/04/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 557328-06-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/04/27
Report #: R3974666
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B682963
Received: 2016/04/26, 15:30

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	8	N/A	2016/04/27	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	8	2016/04/27	2016/04/27	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	8	2016/04/27	2016/04/27	CAM SOP-00447	EPA 6020A m
MOISTURE	8	N/A	2016/04/27	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	8	2016/04/26	2016/04/26	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key

Parnian Baber
27 Apr 2016 17:57:13 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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Maxxam Job #: B682963
Report Date: 2016/04/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CGG723	CGG724	CGG725	CGG726	CGG727		
Sampling Date			2016/04/26 07:30	2016/04/26 07:35	2016/04/26 07:50	2016/04/26 08:00	2016/04/26 08:10		
COC Number			557328-06-01	557328-06-01	557328-06-01	557328-06-01	557328-06-01		
	UNITS	Criteria	VS116	VS1116	VS117	VS118	VS119	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4474862
Acid Extractable Arsenic (As)	ug/g	**18**	2.2	2.0	2.0	2.6	1.8	1.0	4474862
Acid Extractable Barium (Ba)	ug/g	**670**	170	170	210	190	200	0.50	4474862
Acid Extractable Beryllium (Be)	ug/g	**8**	0.65	0.63	0.68	0.61	0.62	0.20	4474862
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	5.1	5.2	5.0	4474862
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	4474862
Acid Extractable Chromium (Cr)	ug/g	**160**	42	41	45	46	46	1.0	4474862
Acid Extractable Cobalt (Co)	ug/g	**80**	14	13	12	12	13	0.10	4474862
Acid Extractable Copper (Cu)	ug/g	**230**	22	21	25	28	27	0.50	4474862
Acid Extractable Lead (Pb)	ug/g	**120**	6.2	6.1	6.4	6.1	5.7	1.0	4474862
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4474862
Acid Extractable Nickel (Ni)	ug/g	**270**	24	23	27	27	28	0.50	4474862
Acid Extractable Selenium (Se)	ug/g	**5.5**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4474862
Acid Extractable Silver (Ag)	ug/g	**40**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4474862
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.25	0.24	0.24	0.27	0.24	0.050	4474862
Acid Extractable Uranium (U)	ug/g	**33**	0.95	0.87	0.81	0.67	0.71	0.050	4474862
Acid Extractable Vanadium (V)	ug/g	**86**	59	58	58	63	61	5.0	4474862
Acid Extractable Zinc (Zn)	ug/g	**340**	69	67	77	75	78	5.0	4474862
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4474862

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B682963
Report Date: 2016/04/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CGG728	CGG729	CGG730		
Sampling Date			2016/04/26 09:30	2016/04/26 09:35	2016/04/26 09:50		
COC Number			557328-06-01	557328-06-01	557328-06-01		
	UNITS	Criteria	VS120	VS1120	VS121	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.20	<0.20	<0.20	0.20	4474862
Acid Extractable Arsenic (As)	ug/g	**18**	1.7	1.3	1.6	1.0	4474862
Acid Extractable Barium (Ba)	ug/g	**670**	190	170	190	0.50	4474862
Acid Extractable Beryllium (Be)	ug/g	**8**	0.57	0.52	0.59	0.20	4474862
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	5.1	5.0	4474862
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.10	<0.10	<0.10	0.10	4474862
Acid Extractable Chromium (Cr)	ug/g	**160**	42	37	43	1.0	4474862
Acid Extractable Cobalt (Co)	ug/g	**80**	11	10	12	0.10	4474862
Acid Extractable Copper (Cu)	ug/g	**230**	24	22	29	0.50	4474862
Acid Extractable Lead (Pb)	ug/g	**120**	5.1	4.9	5.4	1.0	4474862
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.50	<0.50	<0.50	0.50	4474862
Acid Extractable Nickel (Ni)	ug/g	**270**	25	23	26	0.50	4474862
Acid Extractable Selenium (Se)	ug/g	**5.5**	<0.50	<0.50	<0.50	0.50	4474862
Acid Extractable Silver (Ag)	ug/g	**40**	<0.20	<0.20	<0.20	0.20	4474862
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.24	0.19	0.24	0.050	4474862
Acid Extractable Uranium (U)	ug/g	**33**	0.63	0.58	0.54	0.050	4474862
Acid Extractable Vanadium (V)	ug/g	**86**	55	51	58	5.0	4474862
Acid Extractable Zinc (Zn)	ug/g	**340**	71	63	74	5.0	4474862
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.050	<0.050	<0.050	0.050	4474862

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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A Bureau Veritas Group Company

Maxxam Job #: B682963
Report Date: 2016/04/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CGG723	CGG724	CGG724	CGG725	CGG726		
Sampling Date			2016/04/26 07:30	2016/04/26 07:35	2016/04/26 07:35	2016/04/26 07:50	2016/04/26 08:00		
COC Number			557328-06-01	557328-06-01	557328-06-01	557328-06-01	557328-06-01		
	UNITS	Criteria	VS116	VS1116	VS1116 Lab-Dup	VS117	VS118	RDL	QC Batch
Inorganics									
Moisture	%	-	21	21		21	21	0.2	4473008
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014		<0.014	<0.014	0.014	4473398
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Surrogate Recovery (%)									
D10-Anthracene	%	-	73	71	72	71	77		4473366
D14-Terphenyl (FS)	%	-	87	84	87	86	92		4473366
D8-Acenaphthylene	%	-	76	76	73	72	76		4473366

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B682963
Report Date: 2016/04/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CGG727	CGG728	CGG729	CGG730		
Sampling Date			2016/04/26 08:10	2016/04/26 09:30	2016/04/26 09:35	2016/04/26 09:50		
COC Number			557328-06-01	557328-06-01	557328-06-01	557328-06-01		
	UNITS	Criteria	VS119	VS120	VS1120	VS121	RDL	QC Batch
Inorganics								
Moisture	%	-	22	21	21	22	0.2	4473008
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	76	<0.014	<0.014	<0.014	<0.014	0.014	4473398
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	96	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Acenaphthylene	ug/g	0.15	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Anthracene	ug/g	0.67	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Benzo(a)anthracene	ug/g	0.96	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Benzo(a)pyrene	ug/g	0.3	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Benzo(b/j)fluoranthene	ug/g	0.96	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Benzo(g,h,i)perylene	ug/g	9.6	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Benzo(k)fluoranthene	ug/g	0.96	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Chrysene	ug/g	9.6	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Dibenz(a,h)anthracene	ug/g	0.1	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Fluoranthene	ug/g	9.6	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Fluorene	ug/g	62	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Indeno(1,2,3-cd)pyrene	ug/g	0.76	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
1-Methylnaphthalene	ug/g	76	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
2-Methylnaphthalene	ug/g	76	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Naphthalene	ug/g	9.6	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Phenanthrene	ug/g	12	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Pyrene	ug/g	96	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4473366
Surrogate Recovery (%)								
D10-Anthracene	%	-	72	75	72	71		4473366
D14-Terphenyl (FS)	%	-	87	90	85	84		4473366
D8-Acenaphthylene	%	-	75	75	70	72		4473366

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Report Date: 2016/04/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CGG723	CGG724	CGG725	CGG726	CGG727		
Sampling Date			2016/04/26 07:30	2016/04/26 07:35	2016/04/26 07:50	2016/04/26 08:00	2016/04/26 08:10		
COC Number			557328-06-01	557328-06-01	557328-06-01	557328-06-01	557328-06-01		
	UNITS	Criteria	VS116	VS1116	VS117	VS118	VS119	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4474322

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

Maxxam ID			CGG728	CGG729	CGG730		
Sampling Date			2016/04/26 09:30	2016/04/26 09:35	2016/04/26 09:50		
COC Number			557328-06-01	557328-06-01	557328-06-01		
	UNITS	Criteria	VS120	VS1120	VS121	RDL	QC Batch
Inorganics							
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	0.2	4474322

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Golder Associates Ltd
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Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CGG723
Sample ID: VS116
Matrix: Soil

Collected: 2016/04/26
Shipped:
Received: 2016/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4473398	N/A	2016/04/27	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4474322	2016/04/27	2016/04/27	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4474862	2016/04/27	2016/04/27	Viviana Canzonieri
MOISTURE	BAL	4473008	N/A	2016/04/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4473366	2016/04/26	2016/04/26	Arezoo Habibagahi

Maxxam ID: CGG724
Sample ID: VS1116
Matrix: Soil

Collected: 2016/04/26
Shipped:
Received: 2016/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4473398	N/A	2016/04/27	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4474322	2016/04/27	2016/04/27	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4474862	2016/04/27	2016/04/27	Viviana Canzonieri
MOISTURE	BAL	4473008	N/A	2016/04/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4473366	2016/04/26	2016/04/26	Arezoo Habibagahi

Maxxam ID: CGG724 Dup
Sample ID: VS1116
Matrix: Soil

Collected: 2016/04/26
Shipped:
Received: 2016/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4473366	2016/04/26	2016/04/26	Arezoo Habibagahi

Maxxam ID: CGG725
Sample ID: VS117
Matrix: Soil

Collected: 2016/04/26
Shipped:
Received: 2016/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4473398	N/A	2016/04/27	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4474322	2016/04/27	2016/04/27	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4474862	2016/04/27	2016/04/27	Viviana Canzonieri
MOISTURE	BAL	4473008	N/A	2016/04/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4473366	2016/04/26	2016/04/26	Arezoo Habibagahi

Maxxam ID: CGG726
Sample ID: VS118
Matrix: Soil

Collected: 2016/04/26
Shipped:
Received: 2016/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4473398	N/A	2016/04/27	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4474322	2016/04/27	2016/04/27	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4474862	2016/04/27	2016/04/27	Viviana Canzonieri
MOISTURE	BAL	4473008	N/A	2016/04/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4473366	2016/04/26	2016/04/26	Arezoo Habibagahi

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Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CGG727
Sample ID: VS119
Matrix: Soil

Collected: 2016/04/26
Shipped:
Received: 2016/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4473398	N/A	2016/04/27	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4474322	2016/04/27	2016/04/27	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4474862	2016/04/27	2016/04/27	Viviana Canzonieri
MOISTURE	BAL	4473008	N/A	2016/04/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4473366	2016/04/26	2016/04/26	Arezoo Habibagahi

Maxxam ID: CGG728
Sample ID: VS120
Matrix: Soil

Collected: 2016/04/26
Shipped:
Received: 2016/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4473398	N/A	2016/04/27	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4474322	2016/04/27	2016/04/27	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4474862	2016/04/27	2016/04/27	Viviana Canzonieri
MOISTURE	BAL	4473008	N/A	2016/04/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4473366	2016/04/26	2016/04/26	Arezoo Habibagahi

Maxxam ID: CGG729
Sample ID: VS1120
Matrix: Soil

Collected: 2016/04/26
Shipped:
Received: 2016/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4473398	N/A	2016/04/27	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4474322	2016/04/27	2016/04/27	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4474862	2016/04/27	2016/04/27	Viviana Canzonieri
MOISTURE	BAL	4473008	N/A	2016/04/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4473366	2016/04/26	2016/04/26	Arezoo Habibagahi

Maxxam ID: CGG730
Sample ID: VS121
Matrix: Soil

Collected: 2016/04/26
Shipped:
Received: 2016/04/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4473398	N/A	2016/04/27	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4474322	2016/04/27	2016/04/27	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4474862	2016/04/27	2016/04/27	Viviana Canzonieri
MOISTURE	BAL	4473008	N/A	2016/04/27	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4473366	2016/04/26	2016/04/26	Arezoo Habibagahi

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Report Date: 2016/04/27

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GENERAL COMMENTS

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

Package 1	10.0°C

Custody seal was present and intact on the cooler.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4473366	D10-Anthracene	2016/04/26	73	50 - 130	76	50 - 130	75	%				
4473366	D14-Terphenyl (FS)	2016/04/26	91	50 - 130	96	50 - 130	90	%				
4473366	D8-Acenaphthylene	2016/04/26	76	50 - 130	82	50 - 130	75	%				
4473008	Moisture	2016/04/27							6.6	50		
4473366	1-Methylnaphthalene	2016/04/26	80	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40		
4473366	2-Methylnaphthalene	2016/04/26	72	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40		
4473366	Acenaphthene	2016/04/26	72	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		
4473366	Acenaphthylene	2016/04/26	70	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4473366	Anthracene	2016/04/26	69	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40		
4473366	Benzo(a)anthracene	2016/04/26	66	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4473366	Benzo(a)pyrene	2016/04/26	67	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40		
4473366	Benzo(b/j)fluoranthene	2016/04/26	74	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40		
4473366	Benzo(g,h,i)perylene	2016/04/26	61	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40		
4473366	Benzo(k)fluoranthene	2016/04/26	70	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40		
4473366	Chrysene	2016/04/26	66	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4473366	Dibenz(a,h)anthracene	2016/04/26	62	50 - 130	62	50 - 130	<0.0050	ug/g	NC	40		
4473366	Fluoranthene	2016/04/26	86	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40		
4473366	Fluorene	2016/04/26	70	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40		
4473366	Indeno(1,2,3-cd)pyrene	2016/04/26	67	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40		
4473366	Naphthalene	2016/04/26	67	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40		
4473366	Phenanthrene	2016/04/26	67	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4473366	Pyrene	2016/04/26	86	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40		
4474322	Chromium (VI)	2016/04/27	20 (1)	75 - 125	94	80 - 120	<0.2	ug/g	NC	35	85	75 - 125
4474862	Acid Extractable Antimony (Sb)	2016/04/27	94	75 - 125	101	80 - 120	<0.20	ug/g	NC	30		
4474862	Acid Extractable Arsenic (As)	2016/04/27	97	75 - 125	102	80 - 120	<1.0	ug/g	NC	30		
4474862	Acid Extractable Barium (Ba)	2016/04/27	NC	75 - 125	101	80 - 120	<0.50	ug/g	2.7	30		
4474862	Acid Extractable Beryllium (Be)	2016/04/27	92	75 - 125	95	80 - 120	<0.20	ug/g	NC	30		
4474862	Acid Extractable Boron (B)	2016/04/27	80	75 - 125	94	80 - 120	<5.0	ug/g	NC	30		
4474862	Acid Extractable Cadmium (Cd)	2016/04/27	95	75 - 125	101	80 - 120	<0.10	ug/g	NC	30		
4474862	Acid Extractable Chromium (Cr)	2016/04/27	NC	75 - 125	101	80 - 120	<1.0	ug/g	2.7	30		
4474862	Acid Extractable Cobalt (Co)	2016/04/27	94	75 - 125	100	80 - 120	<0.10	ug/g	1.7	30		

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Maxxam Job #: B682963
Report Date: 2016/04/27

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4474862	Acid Extractable Copper (Cu)	2016/04/27	NC	75 - 125	102	80 - 120	<0.50	ug/g	1.2	30		
4474862	Acid Extractable Lead (Pb)	2016/04/27	NC	75 - 125	103	80 - 120	<1.0	ug/g	2.1	30		
4474862	Acid Extractable Mercury (Hg)	2016/04/27	102	75 - 125	109	80 - 120	<0.050	ug/g	NC	30		
4474862	Acid Extractable Molybdenum (Mo)	2016/04/27	96	75 - 125	101	80 - 120	<0.50	ug/g	NC	30		
4474862	Acid Extractable Nickel (Ni)	2016/04/27	90	75 - 125	102	80 - 120	<0.50	ug/g	3.7	30		
4474862	Acid Extractable Selenium (Se)	2016/04/27	96	75 - 125	101	80 - 120	<0.50	ug/g	NC	30		
4474862	Acid Extractable Silver (Ag)	2016/04/27	95	75 - 125	99	80 - 120	<0.20	ug/g	NC	30		
4474862	Acid Extractable Thallium (Tl)	2016/04/27	92	75 - 125	100	80 - 120	<0.050	ug/g	NC	30		
4474862	Acid Extractable Uranium (U)	2016/04/27	95	75 - 125	103	80 - 120	<0.050	ug/g	3.4	30		
4474862	Acid Extractable Vanadium (V)	2016/04/27	NC	75 - 125	101	80 - 120	<5.0	ug/g	NC	30		
4474862	Acid Extractable Zinc (Zn)	2016/04/27	NC	75 - 125	103	80 - 120	<5.0	ug/g	2.7	30		

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B682963
Report Date: 2016/04/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

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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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of

INVOICE TO:
Company Name: #14090 Golder Associates Ltd
Attention: Central Accounting
Address: 1931 Robertson Rd
Ottawa ON K2H 5B7
Tel: (613) 592-9600 Fax: (613) 592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Paul, Tony, Aaron, Equis
Address:
Tel: Fax:
Email: Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL

PROJECT INFORMATION:
Quotation #: B57625
P.O. #:
Project: 1525113
Project Name:
Site #:
Sampled By: Aaron Brockshaw

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 557928
COC #: C#557328-06-01
Project Manager: Parnian Baber

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): O.Reg 153 PAHs (8ea); O.Reg 153 ICPMS Metals including Hg and CRVI; Leachate Leach: (TCLP METALS, REG 153 PHCs)

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: Next Day Time Required: ☒
Rush Confirmation Number: (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (8ea)	O.Reg 153 ICPMS Metals including Hg and CRVI	Leachate Leach: (TCLP METALS, REG 153 PHCs)							# of Bottles	Comments
1		VS116	16/04/26	0730	SOIL		X	X								1	
2		VS1116	↓	0735	↓		X	X								1	
3		VS117	↓	0750	↓		X	X								1	
4		VS118	↓	0800	↓		X	X								1	
5		VS119	↓	0810	↓		X	X								1	
6		VS120	↓	0730	↓		X	X								1	
7		VS1120	↓	0935	↓		X	X								1	
8		VS121	↓	0950	↓		X	X								1	
9																	
10																	

26-Apr-16 15:3(
Parnian Baber
B682963
FHB OTT-00:

RECEIVED IN OTTAWA

ON ICE PACK

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Aaron Brockshaw	16/04/26	1500		2016/04/26	15:30	0

Laboratory Use Only: Time Sensitive; Temperature (°C) on Receipt: 10,10,10; Custody Seal: Present ✓, Intact; Yes / No

* 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

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

White: Maxxam Yellow: Client

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Maxxam Job #: B682963
Report Date: 2016/04/27

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 557328-01-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/04/28
Report #: R3975758
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B684071
Received: 2016/04/27, 16:50

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	3	N/A	2016/04/28	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	3	2016/04/28	2016/04/28	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	3	2016/04/27	2016/04/28	OTT SOP-00003	EPA 6020
MOISTURE	3	N/A	2016/04/28	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	3	2016/04/27	2016/04/28	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Parnian Baber
Project Manager
28 Apr 2016 17:01:09 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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Maxxam Job #: B684071
Report Date: 2016/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CGM170	CGM170	CGM171	CGM172		
Sampling Date			2016/04/27 08:00	2016/04/27 08:00	2016/04/27 11:30	2016/04/27 13:30		
COC Number			557328-01-01	557328-01-01	557328-01-01	557328-01-01		
	UNITS	Criteria	VS122	VS122 Lab-Dup	VS123	VS124	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.2	<0.2	0.2	<0.2	0.2	4475318
Acid Extractable Arsenic (As)	ug/g	**18**	2	2	2	2	1	4475318
Acid Extractable Barium (Ba)	ug/g	**670**	200	200	190	190	0.5	4475318
Acid Extractable Beryllium (Be)	ug/g	**8**	0.7	0.6	0.6	0.7	0.2	4475318
Acid Extractable Boron (B)	ug/g	**120**	6	6	6	6	5	4475318
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.1	<0.1	<0.1	<0.1	0.1	4475318
Acid Extractable Chromium (Cr)	ug/g	**160**	44	44	44	45	1	4475318
Acid Extractable Cobalt (Co)	ug/g	**80**	12	12	13	14	0.1	4475318
Acid Extractable Copper (Cu)	ug/g	**230**	22	22	25	24	0.5	4475318
Acid Extractable Lead (Pb)	ug/g	**120**	6	6	6	6	1	4475318
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.05	<0.05	<0.05	<0.05	0.05	4475318
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.5	<0.5	<0.5	<0.5	0.5	4475318
Acid Extractable Nickel (Ni)	ug/g	**270**	26	26	28	28	0.5	4475318
Acid Extractable Selenium (Se)	ug/g	**5.5**	<0.5	<0.5	<0.5	<0.5	0.5	4475318
Acid Extractable Silver (Ag)	ug/g	**40**	<0.2	<0.2	<0.2	<0.2	0.2	4475318
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.23	0.24	0.26	0.25	0.05	4475318
Acid Extractable Uranium (U)	ug/g	**33**	0.58	0.61	0.59	0.62	0.05	4475318
Acid Extractable Vanadium (V)	ug/g	**86**	60	60	59	61	5	4475318
Acid Extractable Zinc (Zn)	ug/g	**340**	71	72	72	76	5	4475318

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B684071
Report Date: 2016/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CGM170	CGM171	CGM171	CGM172		
Sampling Date			2016/04/27 08:00	2016/04/27 11:30	2016/04/27 11:30	2016/04/27 13:30		
COC Number			557328-01-01	557328-01-01	557328-01-01	557328-01-01		
	UNITS	Criteria	VS122	VS123	VS123 Lab-Dup	VS124	RDL	QC Batch
Inorganics								
Moisture	%	-	22	22	22	23	0.2	4475319
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	76	<0.014	<0.014		<0.014	0.014	4475309
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	96	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
Acenaphthylene	ug/g	0.15	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
Anthracene	ug/g	0.67	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
Benzo(a)anthracene	ug/g	0.96	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
Benzo(a)pyrene	ug/g	0.3	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
Benzo(b/j)fluoranthene	ug/g	0.96	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
Benzo(g,h,i)perylene	ug/g	9.6	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
Benzo(k)fluoranthene	ug/g	0.96	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
Chrysene	ug/g	9.6	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
Dibenz(a,h)anthracene	ug/g	0.1	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
Fluoranthene	ug/g	9.6	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
Fluorene	ug/g	62	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
Indeno(1,2,3-cd)pyrene	ug/g	0.76	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
1-Methylnaphthalene	ug/g	76	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
2-Methylnaphthalene	ug/g	76	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
Naphthalene	ug/g	9.6	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
Phenanthrene	ug/g	12	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
Pyrene	ug/g	96	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4475311
Surrogate Recovery (%)								
D10-Anthracene	%	-	78	78	82	80		4475311
D14-Terphenyl (FS)	%	-	89	87	95	94		4475311
D8-Acenaphthylene	%	-	71	70	73	72		4475311

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B684071
Report Date: 2016/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CGM170	CGM170	CGM171	CGM172		
Sampling Date			2016/04/27 08:00	2016/04/27 08:00	2016/04/27 11:30	2016/04/27 13:30		
COC Number			557328-01-01	557328-01-01	557328-01-01	557328-01-01		
	UNITS	Criteria	VS122	VS122 Lab-Dup	VS123	VS124	RDL	QC Batch
Inorganics								
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	0.2	4476388

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B684071
Report Date: 2016/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CGM170
Sample ID: VS122
Matrix: Soil

Collected: 2016/04/27
Shipped:
Received: 2016/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4475309	N/A	2016/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4476388	2016/04/28	2016/04/28	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4475318	2016/04/27	2016/04/28	Raigamage Perera
MOISTURE	BAL	4475319	N/A	2016/04/28	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4475311	2016/04/27	2016/04/28	Arezoo Habibagahi

Maxxam ID: CGM170 Dup
Sample ID: VS122
Matrix: Soil

Collected: 2016/04/27
Shipped:
Received: 2016/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4476388	2016/04/28	2016/04/28	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4475318	2016/04/27	2016/04/28	Raigamage Perera

Maxxam ID: CGM171
Sample ID: VS123
Matrix: Soil

Collected: 2016/04/27
Shipped:
Received: 2016/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4475309	N/A	2016/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4476388	2016/04/28	2016/04/28	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4475318	2016/04/27	2016/04/28	Raigamage Perera
MOISTURE	BAL	4475319	N/A	2016/04/28	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4475311	2016/04/27	2016/04/28	Arezoo Habibagahi

Maxxam ID: CGM171 Dup
Sample ID: VS123
Matrix: Soil

Collected: 2016/04/27
Shipped:
Received: 2016/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4475319	N/A	2016/04/28	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4475311	2016/04/27	2016/04/28	Arezoo Habibagahi

Maxxam ID: CGM172
Sample ID: VS124
Matrix: Soil

Collected: 2016/04/27
Shipped:
Received: 2016/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4475309	N/A	2016/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4476388	2016/04/28	2016/04/28	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4475318	2016/04/27	2016/04/28	Raigamage Perera
MOISTURE	BAL	4475319	N/A	2016/04/28	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4475311	2016/04/27	2016/04/28	Arezoo Habibagahi

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Maxxam Job #: B684071
Report Date: 2016/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

GENERAL COMMENTS

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

Package 1	14.0°C

Results relate only to the items tested.

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A Bureau Veritas Group Company

Maxxam Job #: B684071
Report Date: 2016/04/28

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4475311	D10-Anthracene	2016/04/28	72	50 - 130	78	50 - 130	78	%				
4475311	D14-Terphenyl (FS)	2016/04/28	82	50 - 130	83	50 - 130	86	%				
4475311	D8-Acenaphthylene	2016/04/28	67	50 - 130	72	50 - 130	69	%				
4475311	1-Methylnaphthalene	2016/04/28	80	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40		
4475311	2-Methylnaphthalene	2016/04/28	72	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40		
4475311	Acenaphthene	2016/04/28	72	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40		
4475311	Acenaphthylene	2016/04/28	63	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4475311	Anthracene	2016/04/28	70	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4475311	Benzo(a)anthracene	2016/04/28	68	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40		
4475311	Benzo(a)pyrene	2016/04/28	66	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4475311	Benzo(b/j)fluoranthene	2016/04/28	71	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		
4475311	Benzo(g,h,i)perylene	2016/04/28	54	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40		
4475311	Benzo(k)fluoranthene	2016/04/28	68	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4475311	Chrysene	2016/04/28	65	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40		
4475311	Dibenz(a,h)anthracene	2016/04/28	54	50 - 130	58	50 - 130	<0.0050	ug/g	NC	40		
4475311	Fluoranthene	2016/04/28	81	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40		
4475311	Fluorene	2016/04/28	67	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40		
4475311	Indeno(1,2,3-cd)pyrene	2016/04/28	59	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40		
4475311	Naphthalene	2016/04/28	67	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40		
4475311	Phenanthrene	2016/04/28	69	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40		
4475311	Pyrene	2016/04/28	89	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40		
4475318	Acid Extractable Antimony (Sb)	2016/04/28	77	75 - 125	98	80 - 120	<0.2	ug/g	NC	35		
4475318	Acid Extractable Arsenic (As)	2016/04/28	95	75 - 125	99	80 - 120	<1	ug/g	NC	35		
4475318	Acid Extractable Barium (Ba)	2016/04/28	NC	75 - 125	103	80 - 120	<0.5	ug/g	1.7	35		
4475318	Acid Extractable Beryllium (Be)	2016/04/28	110	75 - 125	108	80 - 120	<0.2	ug/g	NC	35		
4475318	Acid Extractable Boron (B)	2016/04/28	104	75 - 125	104	80 - 120	<5	ug/g	NC	35		
4475318	Acid Extractable Cadmium (Cd)	2016/04/28	104	75 - 125	100	80 - 120	<0.1	ug/g	NC	35		
4475318	Acid Extractable Chromium (Cr)	2016/04/28	NC	75 - 125	102	80 - 120	<1	ug/g	0.040	35		
4475318	Acid Extractable Cobalt (Co)	2016/04/28	102	75 - 125	102	80 - 120	<0.1	ug/g	0.22	35		
4475318	Acid Extractable Copper (Cu)	2016/04/28	NC	75 - 125	103	80 - 120	<0.5	ug/g	0.84	35		
4475318	Acid Extractable Lead (Pb)	2016/04/28	102	75 - 125	102	80 - 120	<1	ug/g	0.39	35		

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Maxxam Job #: B684071
Report Date: 2016/04/28

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4475318	Acid Extractable Mercury (Hg)	2016/04/28	101	75 - 125	107	80 - 120	<0.05	ug/g	NC	35		
4475318	Acid Extractable Molybdenum (Mo)	2016/04/28	101	75 - 125	100	80 - 120	<0.5	ug/g	NC	35		
4475318	Acid Extractable Nickel (Ni)	2016/04/28	NC	75 - 125	103	80 - 120	<0.5	ug/g	0.17	35		
4475318	Acid Extractable Selenium (Se)	2016/04/28	96	75 - 125	102	80 - 120	<0.5	ug/g	NC	35		
4475318	Acid Extractable Silver (Ag)	2016/04/28	102	75 - 125	102	80 - 120	<0.2	ug/g	NC	35		
4475318	Acid Extractable Thallium (Tl)	2016/04/28	100	75 - 125	102	80 - 120	<0.05	ug/g	NC	35		
4475318	Acid Extractable Uranium (U)	2016/04/28	106	75 - 125	107	80 - 120	<0.05	ug/g	4.7	25		
4475318	Acid Extractable Vanadium (V)	2016/04/28	NC	75 - 125	106	80 - 120	<5	ug/g	0.066	35		
4475318	Acid Extractable Zinc (Zn)	2016/04/28	NC	75 - 125	101	80 - 120	<5	ug/g	1.5	35		
4475319	Moisture	2016/04/28							0.92	50		
4476388	Chromium (VI)	2016/04/28	67 (1)	75 - 125	93	80 - 120	<0.2	ug/g	NC	35	80	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B684071
Report Date: 2016/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Steve Roberts, Ottawa Lab Manager

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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6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700. Toll-Free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557328
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#557328-01-01	Parnian Baber
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com, Paul_Hurst@golder.com, GAL	Sampled By:	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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: Next Day Time Required: ___ ☒
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	# of Bottles	Comments
1		VS122	16/04/27	0800	Soil		X	X	1	
2		VS123	↓	1130	↓		X	X	1	
3		VS124	↓	1330	↓		X	X	1	
4										
5										
6										
7										
8										
9										
10										

27-Apr-16 16:5(
Parnian Baber
B684071
FHB OTT-00:

RECEIVED IN OTTAWA

ON ICE PACK

* 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
[signature] Aaron Bradshaw	16/04/27	1430	[signature] Fatemeh	2016/04/27	16:50	0		14,14,14	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B684071
Report Date: 2016/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 557328-08-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/04/29
Report #: R3977226
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B684982
Received: 2016/04/28, 14:59

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	2	N/A	2016/04/29	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	2	2016/04/29	2016/04/29	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	2	2016/04/29	2016/04/29	OTT SOP-00003	EPA 6020
MOISTURE	2	N/A	2016/04/29	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	2	2016/04/28	2016/04/29	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Augustyna Dobosz
Project Manager
29 Apr 2016 17:11:59 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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 Job #: B684982
Report Date: 2016/04/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CGQ495	CGQ495	CGQ496		
Sampling Date			2016/04/28 11:00	2016/04/28 11:00	2016/04/28 11:05		
COC Number			557328-08-01	557328-08-01	557328-08-01		
	UNITS	Criteria	VS125	VS125 Lab-Dup	VS1125	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.2	<0.2	<0.2	0.2	4477886
Acid Extractable Arsenic (As)	ug/g	**18**	2	2	2	1	4477886
Acid Extractable Barium (Ba)	ug/g	**670**	210	210	210	0.5	4477886
Acid Extractable Beryllium (Be)	ug/g	**8**	0.6	0.8	0.7	0.2	4477886
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	5	4477886
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.1	<0.1	<0.1	0.1	4477886
Acid Extractable Chromium (Cr)	ug/g	**160**	47	49	47	1	4477886
Acid Extractable Cobalt (Co)	ug/g	**80**	13	14	13	0.1	4477886
Acid Extractable Copper (Cu)	ug/g	**230**	21	22	21	0.5	4477886
Acid Extractable Lead (Pb)	ug/g	**120**	6	6	6	1	4477886
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.05	<0.05	<0.05	0.05	4477886
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.5	<0.5	<0.5	0.5	4477886
Acid Extractable Nickel (Ni)	ug/g	**270**	27	29	27	0.5	4477886
Acid Extractable Selenium (Se)	ug/g	**5.5**	<0.5	0.6	0.8	0.5	4477886
Acid Extractable Silver (Ag)	ug/g	**40**	<0.2	<0.2	<0.2	0.2	4477886
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.28	0.27	0.25	0.05	4477886
Acid Extractable Uranium (U)	ug/g	**33**	0.67	0.66	0.65	0.05	4477886
Acid Extractable Vanadium (V)	ug/g	**86**	61	64	60	5	4477886
Acid Extractable Zinc (Zn)	ug/g	**340**	76	80	77	5	4477886

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B684982
Report Date: 2016/04/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CGQ495	CGQ496	CGQ496		
Sampling Date			2016/04/28 11:00	2016/04/28 11:05	2016/04/28 11:05		
COC Number			557328-08-01	557328-08-01	557328-08-01		
	UNITS	Criteria	VS125	VS1125	VS1125 Lab-Dup	RDL	QC Batch
Inorganics							
Moisture	%	-	20	19	20	0.2	4477126
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014		0.014	4477065
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	0.0050	4477131
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	0.0050	4477131
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0050	4477131
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	0.0050	4477131
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	0.0050	4477131
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	0.0050	4477131
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	0.0050	4477131
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	0.0050	4477131
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	0.0050	4477131
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	0.0050	4477131
Fluoranthene	ug/g	**9.6**	<0.0050	0.0074	<0.0050	0.0050	4477131
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0050	4477131
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	0.0050	4477131
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	0.0050	4477131
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	0.0050	4477131
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	0.0050	4477131
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	0.0050	4477131
Pyrene	ug/g	**96**	<0.0050	0.0074	<0.0050	0.0050	4477131
Surrogate Recovery (%)							
D10-Anthracene	%	-	82	85	87		4477131
D14-Terphenyl (FS)	%	-	84	93	93		4477131
D8-Acenaphthylene	%	-	70	67	69		4477131

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B684982
Report Date: 2016/04/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CGQ495	CGQ495	CGQ496		
Sampling Date			2016/04/28 11:00	2016/04/28 11:00	2016/04/28 11:05		
COC Number			557328-08-01	557328-08-01	557328-08-01		
	UNITS	Criteria	VS125	VS125 Lab-Dup	VS1125	RDL	QC Batch
Inorganics							
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	0.2	4478129

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B684982
Report Date: 2016/04/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CGQ495
Sample ID: VS125
Matrix: Soil

Collected: 2016/04/28
Shipped:
Received: 2016/04/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4477065	N/A	2016/04/29	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4478129	2016/04/29	2016/04/29	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4477886	2016/04/29	2016/04/29	Raigamage Perera
MOISTURE	BAL	4477126	N/A	2016/04/29	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4477131	2016/04/28	2016/04/29	Arezoo Habibagahi

Maxxam ID: CGQ495 Dup
Sample ID: VS125
Matrix: Soil

Collected: 2016/04/28
Shipped:
Received: 2016/04/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4478129	2016/04/29	2016/04/29	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4477886	2016/04/29	2016/04/29	Raigamage Perera

Maxxam ID: CGQ496
Sample ID: VS1125
Matrix: Soil

Collected: 2016/04/28
Shipped:
Received: 2016/04/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4477065	N/A	2016/04/29	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4478129	2016/04/29	2016/04/29	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4477886	2016/04/29	2016/04/29	Raigamage Perera
MOISTURE	BAL	4477126	N/A	2016/04/29	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4477131	2016/04/28	2016/04/29	Arezoo Habibagahi

Maxxam ID: CGQ496 Dup
Sample ID: VS1125
Matrix: Soil

Collected: 2016/04/28
Shipped:
Received: 2016/04/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4477126	N/A	2016/04/29	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4477131	2016/04/28	2016/04/29	Arezoo Habibagahi

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Maxxam Job #: B684982
Report Date: 2016/04/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

GENERAL COMMENTS

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

Package 1	16.7°C

Custody seal was present and intact on the cooler.

Results relate only to the items tested.

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Report Date: 2016/04/29

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4477131	D10-Anthracene	2016/04/29	72	50 - 130	79	50 - 130	75	%				
4477131	D14-Terphenyl (FS)	2016/04/29	75	50 - 130	87	50 - 130	80	%				
4477131	D8-Acenaphthylene	2016/04/29	65	50 - 130	72	50 - 130	63	%				
4477126	Moisture	2016/04/29							5.1	50		
4477131	1-Methylnaphthalene	2016/04/29	80	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40		
4477131	2-Methylnaphthalene	2016/04/29	72	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40		
4477131	Acenaphthene	2016/04/29	71	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40		
4477131	Acenaphthylene	2016/04/29	61	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40		
4477131	Anthracene	2016/04/29	67	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4477131	Benzo(a)anthracene	2016/04/29	66	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40		
4477131	Benzo(a)pyrene	2016/04/29	62	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4477131	Benzo(b/j)fluoranthene	2016/04/29	69	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40		
4477131	Benzo(g,h,i)perylene	2016/04/29	56	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40		
4477131	Benzo(k)fluoranthene	2016/04/29	62	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4477131	Chrysene	2016/04/29	63	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40		
4477131	Dibenz(a,h)anthracene	2016/04/29	57	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40		
4477131	Fluoranthene	2016/04/29	75	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40		
4477131	Fluorene	2016/04/29	65	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40		
4477131	Indeno(1,2,3-cd)pyrene	2016/04/29	55	50 - 130	58	50 - 130	<0.0050	ug/g	NC	40		
4477131	Naphthalene	2016/04/29	68	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		
4477131	Phenanthrene	2016/04/29	67	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		
4477131	Pyrene	2016/04/29	83	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40		
4477886	Acid Extractable Antimony (Sb)	2016/04/29	88	75 - 125	102	80 - 120	<0.2	ug/g	NC	35		
4477886	Acid Extractable Arsenic (As)	2016/04/29	101	75 - 125	101	80 - 120	<1	ug/g	NC	35		
4477886	Acid Extractable Barium (Ba)	2016/04/29	NC	75 - 125	108	80 - 120	<0.5	ug/g	0.95	35		
4477886	Acid Extractable Beryllium (Be)	2016/04/29	108	75 - 125	102	80 - 120	<0.2	ug/g	NC	35		
4477886	Acid Extractable Boron (B)	2016/04/29	108	75 - 125	104	80 - 120	<5	ug/g	NC	35		
4477886	Acid Extractable Cadmium (Cd)	2016/04/29	106	75 - 125	101	80 - 120	<0.1	ug/g	NC	35		
4477886	Acid Extractable Chromium (Cr)	2016/04/29	NC	75 - 125	105	80 - 120	<1	ug/g	4.2	35		
4477886	Acid Extractable Cobalt (Co)	2016/04/29	NC	75 - 125	103	80 - 120	<0.1	ug/g	5.5	35		
4477886	Acid Extractable Copper (Cu)	2016/04/29	NC	75 - 125	105	80 - 120	<0.5	ug/g	4.6	35		

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Maxxam Job #: B684982
Report Date: 2016/04/29

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4477886	Acid Extractable Lead (Pb)	2016/04/29	108	75 - 125	109	80 - 120	<1	ug/g	2.7	35		
4477886	Acid Extractable Mercury (Hg)	2016/04/29	109	75 - 125	109	80 - 120	<0.05	ug/g	NC	35		
4477886	Acid Extractable Molybdenum (Mo)	2016/04/29	109	75 - 125	101	80 - 120	<0.5	ug/g	NC	35		
4477886	Acid Extractable Nickel (Ni)	2016/04/29	NC	75 - 125	102	80 - 120	<0.5	ug/g	7.2	35		
4477886	Acid Extractable Selenium (Se)	2016/04/29	102	75 - 125	106	80 - 120	0.5, RDL=0.5	ug/g	NC	35		
4477886	Acid Extractable Silver (Ag)	2016/04/29	103	75 - 125	101	80 - 120	<0.2	ug/g	NC	35		
4477886	Acid Extractable Thallium (Tl)	2016/04/29	108	75 - 125	107	80 - 120	<0.05	ug/g	2.9	35		
4477886	Acid Extractable Uranium (U)	2016/04/29	110	75 - 125	110	80 - 120	<0.05	ug/g	2.0	25		
4477886	Acid Extractable Vanadium (V)	2016/04/29	NC	75 - 125	105	80 - 120	<5	ug/g	5.0	35		
4477886	Acid Extractable Zinc (Zn)	2016/04/29	NC	75 - 125	102	80 - 120	<5	ug/g	5.3	35		
4478129	Chromium (VI)	2016/04/29	86	75 - 125	95	80 - 120	<0.2	ug/g	NC	35	80	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B684982
Report Date: 2016/04/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Brad Newman, Scientific Specialist

Paul Rubinato, Analyst, Maxxam Analytics

Steve Roberts, Ottawa Lab Manager

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6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:
Company Name: #14090 Golder Associates Ltd
Attention: Central Accounting
Address: 1931 Robertson Rd
Ottawa ON K2H 5B7
Tel: (613) 592-9600 Fax: (613) 592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Paul, Tony, Aaron, Equis
Address:
Tel: Fax:
Email: Tony_Lyon@golder.com, Paul_Hurst@golder.com, GAL

PROJECT INFORMATION:
Quotation #: B57625
P.O. #:
Project: 1525113
Project Name:
Site #:
Sampled By: Aaron Bradshaw

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 557326
COC #: C#557326-01
Project Manager: Parnian Baber

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

Turnaround Time (TAT) Required:
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: Next Day (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICP/MS Metals including Hg and CRVI	Leachate Landfill (TCLP METALS, REG. 153 PHCs)							# of Bottles	Comments
1		VS125	16/04/28	1100	Soil		X	X								1	
2		VS125	↓	1105	↓		X	X								1	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

28-Apr-16 14:59
Parnian Baber
B684982
FHB OTT-002

RECEIVED IN OTTAWA

ON ICE

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
A. Bradshaw Aaron Bradshaw	16/04/28	1500		2016/04/28	14:59	0		17, 16, 17	Present	✓	
									Intact		

Laboratory Use Only

* 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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B684982
Report Date: 2016/04/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 557328-09-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/05/02
Report #: R3979482
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B686087
Received: 2016/04/29, 15:30

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	2	N/A	2016/05/02	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	2	2016/04/30	2016/05/02	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	2	2016/05/02	2016/05/02	CAM SOP-00447	EPA 6020A m
MOISTURE	2	N/A	2016/05/02	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	2	2016/04/29	2016/04/29	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Marissa Oddi
Customer Service Representative
02 May 2016 17:26:54 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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Maxxam Job #: B686087
Report Date: 2016/05/02

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CGV509	CGV510		
Sampling Date			2016/04/29 09:30	2016/04/29 13:15		
COC Number			557328-09-01	557328-09-01		
	UNITS	Criteria	VS126	VS127	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.20	<0.20	0.20	4480617
Acid Extractable Arsenic (As)	ug/g	**18**	1.9	1.3	1.0	4480617
Acid Extractable Barium (Ba)	ug/g	**670**	210	210	0.50	4480617
Acid Extractable Beryllium (Be)	ug/g	**8**	0.67	0.68	0.20	4480617
Acid Extractable Boron (B)	ug/g	**120**	6.0	6.7	5.0	4480617
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.10	<0.10	0.10	4480617
Acid Extractable Chromium (Cr)	ug/g	**160**	47	47	1.0	4480617
Acid Extractable Cobalt (Co)	ug/g	**80**	13	11	0.10	4480617
Acid Extractable Copper (Cu)	ug/g	**230**	27	26	0.50	4480617
Acid Extractable Lead (Pb)	ug/g	**120**	6.0	5.6	1.0	4480617
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.50	<0.50	0.50	4480617
Acid Extractable Nickel (Ni)	ug/g	**270**	28	26	0.50	4480617
Acid Extractable Selenium (Se)	ug/g	**5.5**	<0.50	<0.50	0.50	4480617
Acid Extractable Silver (Ag)	ug/g	**40**	<0.20	<0.20	0.20	4480617
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.27	0.26	0.050	4480617
Acid Extractable Uranium (U)	ug/g	**33**	0.85	0.65	0.050	4480617
Acid Extractable Vanadium (V)	ug/g	**86**	60	55	5.0	4480617
Acid Extractable Zinc (Zn)	ug/g	**340**	81	77	5.0	4480617
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.050	<0.050	0.050	4480617

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B686087
Report Date: 2016/05/02

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CGV509	CGV510	CGV510		
Sampling Date			2016/04/29 09:30	2016/04/29 13:15	2016/04/29 13:15		
COC Number			557328-09-01	557328-09-01	557328-09-01		
	UNITS	Criteria	VS126	VS127	VS127 Lab-Dup	RDL	QC Batch
Inorganics							
Moisture	%	-	22	22	22	0.2	4478977
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014		0.014	4478953
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	0.0050	4479006
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	0.0050	4479006
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0050	4479006
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	0.0050	4479006
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	0.0050	4479006
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	0.0050	4479006
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	0.0050	4479006
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	0.0050	4479006
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	0.0050	4479006
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	0.0050	4479006
Fluoranthene	ug/g	**9.6**	<0.0050	0.020	0.016	0.0050	4479006
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0050	4479006
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	0.0050	4479006
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	0.0050	4479006
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	0.0050	4479006
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	0.0050	4479006
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	0.0050	4479006
Pyrene	ug/g	**96**	<0.0050	0.011	0.0092	0.0050	4479006
Surrogate Recovery (%)							
D10-Anthracene	%	-	99	104	105		4479006
D14-Terphenyl (FS)	%	-	91	89	91		4479006
D8-Acenaphthylene	%	-	64	62	62		4479006

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B686087
Report Date: 2016/05/02

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CGV509	CGV510		
Sampling Date			2016/04/29 09:30	2016/04/29 13:15		
COC Number			557328-09-01	557328-09-01		
	UNITS	Criteria	VS126	VS127	RDL	QC Batch
Inorganics						
Chromium (VI)	ug/g	8	<0.2	<0.2	0.2	4479745

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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.maxxam.ca

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A Bureau Veritas Group Company

Maxxam Job #: B686087
Report Date: 2016/05/02

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CGV509
Sample ID: VS126
Matrix: Soil

Collected: 2016/04/29
Shipped:
Received: 2016/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4478953	N/A	2016/05/02	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4479745	2016/04/30	2016/05/02	Manoj Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4480617	2016/05/02	2016/05/02	Viviana Canzonieri
MOISTURE	BAL	4478977	N/A	2016/05/02	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4479006	2016/04/29	2016/04/29	Arezoo Habibagahi

Maxxam ID: CGV510
Sample ID: VS127
Matrix: Soil

Collected: 2016/04/29
Shipped:
Received: 2016/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4478953	N/A	2016/05/02	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4479745	2016/04/30	2016/05/02	Manoj Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4480617	2016/05/02	2016/05/02	Viviana Canzonieri
MOISTURE	BAL	4478977	N/A	2016/05/02	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4479006	2016/04/29	2016/04/29	Arezoo Habibagahi

Maxxam ID: CGV510 Dup
Sample ID: VS127
Matrix: Soil

Collected: 2016/04/29
Shipped:
Received: 2016/04/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4478977	N/A	2016/05/02	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4479006	2016/04/29	2016/04/29	Arezoo Habibagahi

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GENERAL COMMENTS

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

Package 1	18.0°C

Custody seal was present and intact on the cooler.

Results relate only to the items tested.

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Maxxam Job #: B686087
Report Date: 2016/05/02

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4479006	D10-Anthracene	2016/04/29	82	50 - 130	85	50 - 130	110	%				
4479006	D14-Terphenyl (FS)	2016/04/29	90	50 - 130	87	50 - 130	92	%				
4479006	D8-Acenaphthylene	2016/04/29	69	50 - 130	70	50 - 130	67	%				
4478977	Moisture	2016/05/02							1.4	50		
4479006	1-Methylnaphthalene	2016/04/29	78	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40		
4479006	2-Methylnaphthalene	2016/04/29	68	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4479006	Acenaphthene	2016/04/29	68	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40		
4479006	Acenaphthylene	2016/04/29	64	50 - 130	65	50 - 130	<0.0050	ug/g	NC	40		
4479006	Anthracene	2016/04/29	75	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40		
4479006	Benzo(a)anthracene	2016/04/29	62	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4479006	Benzo(a)pyrene	2016/04/29	61	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4479006	Benzo(b/j)fluoranthene	2016/04/29	76	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40		
4479006	Benzo(g,h,i)perylene	2016/04/29	51	50 - 130	52	50 - 130	<0.0050	ug/g	NC	40		
4479006	Benzo(k)fluoranthene	2016/04/29	53	50 - 130	55	50 - 130	<0.0050	ug/g	NC	40		
4479006	Chrysene	2016/04/29	64	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4479006	Dibenz(a,h)anthracene	2016/04/29	50	50 - 130	51	50 - 130	<0.0050	ug/g	NC	40		
4479006	Fluoranthene	2016/04/29	88	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40		
4479006	Fluorene	2016/04/29	64	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4479006	Indeno(1,2,3-cd)pyrene	2016/04/29	51	50 - 130	51	50 - 130	<0.0050	ug/g	NC	40		
4479006	Naphthalene	2016/04/29	65	50 - 130	65	50 - 130	<0.0050	ug/g	NC	40		
4479006	Phenanthrene	2016/04/29	63	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4479006	Pyrene	2016/04/29	89	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40		
4479745	Chromium (VI)	2016/05/02	55 (1)	75 - 125	92	80 - 120	<0.2	ug/g	NC	35	86	75 - 125
4480617	Acid Extractable Antimony (Sb)	2016/05/02	96	75 - 125	101	80 - 120	<0.20	ug/g	NC	30		
4480617	Acid Extractable Arsenic (As)	2016/05/02	98	75 - 125	98	80 - 120	<1.0	ug/g	NC	30		
4480617	Acid Extractable Barium (Ba)	2016/05/02	NC	75 - 125	100	80 - 120	<0.50	ug/g	8.2	30		
4480617	Acid Extractable Beryllium (Be)	2016/05/02	95	75 - 125	92	80 - 120	<0.20	ug/g	NC	30		
4480617	Acid Extractable Boron (B)	2016/05/02	91	75 - 125	90	80 - 120	<5.0	ug/g	NC	30		
4480617	Acid Extractable Cadmium (Cd)	2016/05/02	100	75 - 125	98	80 - 120	<0.10	ug/g	NC	30		
4480617	Acid Extractable Chromium (Cr)	2016/05/02	96	75 - 125	94	80 - 120	<1.0	ug/g	6.7	30		
4480617	Acid Extractable Cobalt (Co)	2016/05/02	92	75 - 125	93	80 - 120	<0.10	ug/g	10	30		

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Maxxam Job #: B686087
Report Date: 2016/05/02

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4480617	Acid Extractable Copper (Cu)	2016/05/02	90	75 - 125	94	80 - 120	<0.50	ug/g	12	30		
4480617	Acid Extractable Lead (Pb)	2016/05/02	95	75 - 125	96	80 - 120	<1.0	ug/g	NC	30		
4480617	Acid Extractable Mercury (Hg)	2016/05/02	94	75 - 125	95	80 - 120	<0.050	ug/g	NC	30		
4480617	Acid Extractable Molybdenum (Mo)	2016/05/02	99	75 - 125	96	80 - 120	<0.50	ug/g	NC	30		
4480617	Acid Extractable Nickel (Ni)	2016/05/02	91	75 - 125	94	80 - 120	<0.50	ug/g	10	30		
4480617	Acid Extractable Selenium (Se)	2016/05/02	97	75 - 125	97	80 - 120	<0.50	ug/g	NC	30		
4480617	Acid Extractable Silver (Ag)	2016/05/02	98	75 - 125	95	80 - 120	<0.20	ug/g	NC	30		
4480617	Acid Extractable Thallium (Tl)	2016/05/02	95	75 - 125	96	80 - 120	<0.050	ug/g	NC	30		
4480617	Acid Extractable Uranium (U)	2016/05/02	100	75 - 125	97	80 - 120	<0.050	ug/g	1.6	30		
4480617	Acid Extractable Vanadium (V)	2016/05/02	97	75 - 125	96	80 - 120	<5.0	ug/g	NC	30		
4480617	Acid Extractable Zinc (Zn)	2016/05/02	NC	75 - 125	91	80 - 120	<5.0	ug/g	NC	30		

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B686087
Report Date: 2016/05/02

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Paul

Paul Rubinato, Analyst, Maxxam Analytics

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:
Company Name: #14090 Golder Associates Ltd
Attention: Central Accounting
Address: 1931 Robertson Rd, Ottawa ON K2H 5B7
Tel: (613) 592-9600 Fax: (613) 592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Paul, Tony, Aaron, Equis
Address:
Tel: Fax:
Email: Tony_Lyon@golder.com, Paul_Hurst@golder.com; GAL

PROJECT INFORMATION:
Quotation #: B57625
P.O. #:
Project: 1525113
Project Name:
Site #:
Sampled By: Aaron Bookshow

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 557328
COC #: C#557328-09-01
Project Manager: Parnian Baber

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

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: Next day (call lab for it)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 IOPMS Metals including Hg and CRVI	Leachate Landfill (TCLP METALS, REG. 153 PHCs)	# of Bottles	Comments
1		VS126	16/04/29	0930	Soil		X	X		1	
2		VS127	↓	1315	↓		X	X		1	
3											
4											
5											
6											
7											
8											
9											
10											

29-Apr-16 15:30
Parnian Baber
B686087
FHB
OTT-002

RECEIVED IN OTTAWA

ON ICE pack.

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
Aaron Bookshow	16/04/29	1500	FH	2016/04/29	15:30	0		18, 18, 18	Present	✓	
									Intact	✓	

Laboratory Use Only

* 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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B686087
Report Date: 2016/05/02

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Success Through Science®

Your Project #: 1525113
Your C.O.C. #: 557328-10-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/05/03
Report #: R3980752
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B687239
Received: 2016/05/02, 15:50

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	6	N/A	2016/05/03	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (2)	6	2016/05/03	2016/05/03	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS (1)	6	2016/05/02	2016/05/03	OTT SOP-00003	EPA 6020
MOISTURE (1)	6	N/A	2016/05/03	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM) (1)	6	2016/05/02	2016/05/03	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Ottawa
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Ema Gitej
03 May 2016 18:02:57 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (905) 817-5700

==========

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Maxxam Job #: B687239
Report Date: 2016/05/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CHB290	CHB290	CHB291	CHB292	CHB293		
Sampling Date			2016/05/02 08:00	2016/05/02 08:00	2016/05/02 08:30	2016/05/02 09:10	2016/05/02 09:15		
COC Number			557328-10-01	557328-10-01	557328-10-01	557328-10-01	557328-10-01		
	UNITS	Criteria	VS128	VS128 Lab-Dup	VS129	VS130	VS1130	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4481320
Acid Extractable Arsenic (As)	ug/g	**18**	2	2	2	2	2	1	4481320
Acid Extractable Barium (Ba)	ug/g	**670**	230	240	200	190	200	0.5	4481320
Acid Extractable Beryllium (Be)	ug/g	**8**	0.8	0.8	0.7	0.7	0.7	0.2	4481320
Acid Extractable Boron (B)	ug/g	**120**	6	6	6	6	7	5	4481320
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4481320
Acid Extractable Chromium (Cr)	ug/g	**160**	50	50	50	47	50	1	4481320
Acid Extractable Cobalt (Co)	ug/g	**80**	15	15	14	13	13	0.1	4481320
Acid Extractable Copper (Cu)	ug/g	**230**	21	20	27	26	27	0.5	4481320
Acid Extractable Lead (Pb)	ug/g	**120**	7	7	6	6	6	1	4481320
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4481320
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4481320
Acid Extractable Nickel (Ni)	ug/g	**270**	28	28	30	28	30	0.5	4481320
Acid Extractable Selenium (Se)	ug/g	**5.5**	<0.5	0.7	0.6	0.8	<0.5	0.5	4481320
Acid Extractable Silver (Ag)	ug/g	**40**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4481320
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.27	0.29	0.26	0.26	0.27	0.05	4481320
Acid Extractable Uranium (U)	ug/g	**33**	0.62	0.65	0.68	0.56	0.55	0.05	4481320
Acid Extractable Vanadium (V)	ug/g	**86**	67	67	66	67	68	5	4481320
Acid Extractable Zinc (Zn)	ug/g	**340**	81	79	79	75	80	5	4481320

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B687239
Report Date: 2016/05/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CHB294	CHB295		
Sampling Date			2016/05/02 12:40	2016/05/02 14:15		
COC Number			557328-10-01	557328-10-01		
	UNITS	Criteria	VS131	VS132	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	40	<0.2	<0.2	0.2	4481320
Acid Extractable Arsenic (As)	ug/g	18	2	2	1	4481320
Acid Extractable Barium (Ba)	ug/g	670	190	180	0.5	4481320
Acid Extractable Beryllium (Be)	ug/g	8	0.8	0.7	0.2	4481320
Acid Extractable Boron (B)	ug/g	120	7	6	5	4481320
Acid Extractable Cadmium (Cd)	ug/g	1.9	<0.1	<0.1	0.1	4481320
Acid Extractable Chromium (Cr)	ug/g	160	49	43	1	4481320
Acid Extractable Cobalt (Co)	ug/g	80	13	12	0.1	4481320
Acid Extractable Copper (Cu)	ug/g	230	27	26	0.5	4481320
Acid Extractable Lead (Pb)	ug/g	120	6	6	1	4481320
Acid Extractable Mercury (Hg)	ug/g	3.9	<0.05	<0.05	0.05	4481320
Acid Extractable Molybdenum (Mo)	ug/g	40	<0.5	<0.5	0.5	4481320
Acid Extractable Nickel (Ni)	ug/g	270	29	29	0.5	4481320
Acid Extractable Selenium (Se)	ug/g	5.5	0.7	0.7	0.5	4481320
Acid Extractable Silver (Ag)	ug/g	40	<0.2	<0.2	0.2	4481320
Acid Extractable Thallium (Tl)	ug/g	3.3	0.25	0.23	0.05	4481320
Acid Extractable Uranium (U)	ug/g	33	0.56	0.52	0.05	4481320
Acid Extractable Vanadium (V)	ug/g	86	67	60	5	4481320
Acid Extractable Zinc (Zn)	ug/g	340	76	69	5	4481320

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B687239
Report Date: 2016/05/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CHB290	CHB291	CHB291	CHB292	CHB293		
Sampling Date			2016/05/02 08:00	2016/05/02 08:30	2016/05/02 08:30	2016/05/02 09:10	2016/05/02 09:15		
COC Number			557328-10-01	557328-10-01	557328-10-01	557328-10-01	557328-10-01		
	UNITS	Criteria	VS128	VS129	VS129 Lab-Dup	VS130	VS1130	RDL	QC Batch
Inorganics									
Moisture	%	-	20	20	19	21	21	0.2	4481287
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014		<0.014	<0.014	0.014	4481261
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4481289
Surrogate Recovery (%)									
D10-Anthracene	%	-	68	68	68	67	66		4481289
D14-Terphenyl (FS)	%	-	72	73	74	74	72		4481289
D8-Acenaphthylene	%	-	59	59	61	60	59		4481289

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B687239
Report Date: 2016/05/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CHB294	CHB295		
Sampling Date			2016/05/02 12:40	2016/05/02 14:15		
COC Number			557328-10-01	557328-10-01		
	UNITS	Criteria	VS131	VS132	RDL	QC Batch
Inorganics						
Moisture	%	-	22	21	0.2	4481287
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014	0.014	4481261
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	0.0050	4481289
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	0.0050	4481289
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	0.0050	4481289
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	0.0050	4481289
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0050	4481289
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	0.0050	4481289
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	0.0050	4481289
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	0.0050	4481289
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	0.0050	4481289
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	0.0050	4481289
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	0.0050	4481289
Fluorene	ug/g	**62**	<0.0050	<0.0050	0.0050	4481289
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	0.0050	4481289
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	0.0050	4481289
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	0.0050	4481289
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	0.0050	4481289
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	0.0050	4481289
Pyrene	ug/g	**96**	<0.0050	<0.0050	0.0050	4481289
Surrogate Recovery (%)						
D10-Anthracene	%	-	62	64		4481289
D14-Terphenyl (FS)	%	-	72	69		4481289
D8-Acenaphthylene	%	-	58	57		4481289

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CHB290	CHB291	CHB292	CHB292	CHB293		
Sampling Date			2016/05/02 08:00	2016/05/02 08:30	2016/05/02 09:10	2016/05/02 09:10	2016/05/02 09:15		
COC Number			557328-10-01	557328-10-01	557328-10-01	557328-10-01	557328-10-01		
	UNITS	Criteria	VS128	VS129	VS130	VS130 Lab-Dup	VS1130	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4482190

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

Maxxam ID			CHB294	CHB295		
Sampling Date			2016/05/02 12:40	2016/05/02 14:15		
COC Number			557328-10-01	557328-10-01		
	UNITS	Criteria	VS131	VS132	RDL	QC Batch
Inorganics						
Chromium (VI)	ug/g	8	<0.2	<0.2	0.2	4482190

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Report Date: 2016/05/03

Golder Associates Ltd
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TEST SUMMARY

Maxxam ID: CHB290
Sample ID: VS128
Matrix: Soil

Collected: 2016/05/02
Shipped:
Received: 2016/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4481261	N/A	2016/05/03	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4482190	2016/05/03	2016/05/03	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4481320	2016/05/02	2016/05/03	Raigamage Perera
MOISTURE	BAL	4481287	N/A	2016/05/03	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4481289	2016/05/02	2016/05/03	Arezoo Habibagahi

Maxxam ID: CHB290 Dup
Sample ID: VS128
Matrix: Soil

Collected: 2016/05/02
Shipped:
Received: 2016/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4481320	2016/05/02	2016/05/03	Raigamage Perera

Maxxam ID: CHB291
Sample ID: VS129
Matrix: Soil

Collected: 2016/05/02
Shipped:
Received: 2016/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4481261	N/A	2016/05/03	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4482190	2016/05/03	2016/05/03	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4481320	2016/05/02	2016/05/03	Raigamage Perera
MOISTURE	BAL	4481287	N/A	2016/05/03	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4481289	2016/05/02	2016/05/03	Arezoo Habibagahi

Maxxam ID: CHB291 Dup
Sample ID: VS129
Matrix: Soil

Collected: 2016/05/02
Shipped:
Received: 2016/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4481287	N/A	2016/05/03	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4481289	2016/05/02	2016/05/03	Arezoo Habibagahi

Maxxam ID: CHB292
Sample ID: VS130
Matrix: Soil

Collected: 2016/05/02
Shipped:
Received: 2016/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4481261	N/A	2016/05/03	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4482190	2016/05/03	2016/05/03	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4481320	2016/05/02	2016/05/03	Raigamage Perera
MOISTURE	BAL	4481287	N/A	2016/05/03	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4481289	2016/05/02	2016/05/03	Arezoo Habibagahi

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TEST SUMMARY

Maxxam ID: CHB292 Dup
Sample ID: VS130
Matrix: Soil

Collected: 2016/05/02
Shipped:
Received: 2016/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4482190	2016/05/03	2016/05/03	Sally Coughlin

Maxxam ID: CHB293
Sample ID: VS1130
Matrix: Soil

Collected: 2016/05/02
Shipped:
Received: 2016/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4481261	N/A	2016/05/03	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4482190	2016/05/03	2016/05/03	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4481320	2016/05/02	2016/05/03	Raigamage Perera
MOISTURE	BAL	4481287	N/A	2016/05/03	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4481289	2016/05/02	2016/05/03	Arezoo Habibagahi

Maxxam ID: CHB294
Sample ID: VS131
Matrix: Soil

Collected: 2016/05/02
Shipped:
Received: 2016/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4481261	N/A	2016/05/03	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4482190	2016/05/03	2016/05/03	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4481320	2016/05/02	2016/05/03	Raigamage Perera
MOISTURE	BAL	4481287	N/A	2016/05/03	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4481289	2016/05/02	2016/05/03	Arezoo Habibagahi

Maxxam ID: CHB295
Sample ID: VS132
Matrix: Soil

Collected: 2016/05/02
Shipped:
Received: 2016/05/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4481261	N/A	2016/05/03	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4482190	2016/05/03	2016/05/03	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4481320	2016/05/02	2016/05/03	Raigamage Perera
MOISTURE	BAL	4481287	N/A	2016/05/03	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4481289	2016/05/02	2016/05/03	Arezoo Habibagahi

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GENERAL COMMENTS

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

Package 1	12.0°C

Custody seal was present and intact on the cooler.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4481289	D10-Anthracene	2016/05/03	69	50 - 130	71	50 - 130	72	%				
4481289	D14-Terphenyl (FS)	2016/05/03	70	50 - 130	73	50 - 130	72	%				
4481289	D8-Acenaphthylene	2016/05/03	60	50 - 130	62	50 - 130	60	%				
4481287	Moisture	2016/05/03							1.5	50		
4481289	1-Methylnaphthalene	2016/05/03	70	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40		
4481289	2-Methylnaphthalene	2016/05/03	65	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40		
4481289	Acenaphthene	2016/05/03	71	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40		
4481289	Acenaphthylene	2016/05/03	56	50 - 130	56	50 - 130	<0.0050	ug/g	NC	40		
4481289	Anthracene	2016/05/03	70	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40		
4481289	Benzo(a)anthracene	2016/05/03	58	50 - 130	59	50 - 130	<0.0050	ug/g	NC	40		
4481289	Benzo(a)pyrene	2016/05/03	58	50 - 130	58	50 - 130	<0.0050	ug/g	NC	40		
4481289	Benzo(b/j)fluoranthene	2016/05/03	68	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40		
4481289	Benzo(g,h,i)perylene	2016/05/03	59	50 - 130	59	50 - 130	<0.0050	ug/g	NC	40		
4481289	Benzo(k)fluoranthene	2016/05/03	60	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40		
4481289	Chrysene	2016/05/03	58	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4481289	Dibenz(a,h)anthracene	2016/05/03	54	50 - 130	58	50 - 130	<0.0050	ug/g	NC	40		
4481289	Fluoranthene	2016/05/03	77	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40		
4481289	Fluorene	2016/05/03	65	50 - 130	65	50 - 130	<0.0050	ug/g	NC	40		
4481289	Indeno(1,2,3-cd)pyrene	2016/05/03	63	50 - 130	58	50 - 130	<0.0050	ug/g	NC	40		
4481289	Naphthalene	2016/05/03	65	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40		
4481289	Phenanthrene	2016/05/03	62	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40		
4481289	Pyrene	2016/05/03	77	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40		
4481320	Acid Extractable Antimony (Sb)	2016/05/03	83	75 - 125	101	80 - 120	<0.2	ug/g	NC	35		
4481320	Acid Extractable Arsenic (As)	2016/05/03	102	75 - 125	103	80 - 120	<1	ug/g	NC	35		
4481320	Acid Extractable Barium (Ba)	2016/05/03	NC	75 - 125	102	80 - 120	<0.5	ug/g	2.8	35		
4481320	Acid Extractable Beryllium (Be)	2016/05/03	108	75 - 125	107	80 - 120	<0.2	ug/g	NC	35		
4481320	Acid Extractable Boron (B)	2016/05/03	105	75 - 125	108	80 - 120	<5	ug/g	NC	35		
4481320	Acid Extractable Cadmium (Cd)	2016/05/03	106	75 - 125	103	80 - 120	<0.1	ug/g	NC	35		
4481320	Acid Extractable Chromium (Cr)	2016/05/03	NC	75 - 125	107	80 - 120	<1	ug/g	0.95	35		
4481320	Acid Extractable Cobalt (Co)	2016/05/03	NC	75 - 125	106	80 - 120	<0.1	ug/g	0.16	35		
4481320	Acid Extractable Copper (Cu)	2016/05/03	NC	75 - 125	107	80 - 120	<0.5	ug/g	2.5	35		

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QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4481320	Acid Extractable Lead (Pb)	2016/05/03	101	75 - 125	105	80 - 120	<1	ug/g	1.1	35		
4481320	Acid Extractable Mercury (Hg)	2016/05/03	97	75 - 125	104	80 - 120	<0.05	ug/g	NC	35		
4481320	Acid Extractable Molybdenum (Mo)	2016/05/03	108	75 - 125	103	80 - 120	<0.5	ug/g	NC	35		
4481320	Acid Extractable Nickel (Ni)	2016/05/03	NC	75 - 125	105	80 - 120	<0.5	ug/g	0.37	35		
4481320	Acid Extractable Selenium (Se)	2016/05/03	106	75 - 125	109	80 - 120	0.5, RDL=0.5	ug/g	NC	35		
4481320	Acid Extractable Silver (Ag)	2016/05/03	104	75 - 125	103	80 - 120	<0.2	ug/g	NC	35		
4481320	Acid Extractable Thallium (Tl)	2016/05/03	101	75 - 125	103	80 - 120	<0.05	ug/g	7.6	35		
4481320	Acid Extractable Uranium (U)	2016/05/03	104	75 - 125	107	80 - 120	<0.05	ug/g	4.2	25		
4481320	Acid Extractable Vanadium (V)	2016/05/03	NC	75 - 125	110	80 - 120	<5	ug/g	0.68	35		
4481320	Acid Extractable Zinc (Zn)	2016/05/03	NC	75 - 125	108	80 - 120	<5	ug/g	3.1	35		
4482190	Chromium (VI)	2016/05/03	72 (1)	75 - 125	92	80 - 120	<0.2	ug/g	NC	35	84	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B687239
Report Date: 2016/05/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Steve Roberts, Ottawa Lab Manager

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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:
Company Name: #14090 Golder Associates Ltd
Attention: Central Accounting
Address: 1931 Robertson Rd
Ottawa ON K2H 5B7
Tel: (613) 592-9600 Fax: (613) 592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Paul, Tony, Aaron, Equis
Address:
Tel: Fax:
Email: Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL

PROJECT INFORMATION:
Quotation #: B57625
P.O. #:
Project: 1525113
Project Name:
Site #:
Sampled By: Aaron Bradshaw

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 557328
COC #: C#557328-10-01
Project Manager: Damian Baber

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): O.Reg 153 PAHs (Soil); O.Reg 153 ICPMS Metals including Hg and CRVI; Leitrim Landfill (TCLP METALS, REG. 153 PHCs)

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 applicable to entire submission): Date Required: Next Day Time Required: ___ ☒
Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	Leitrim Landfill (TCLP METALS, REG. 153 PHCs)	# of Bottles	Comments
1		VS128	16/05/02	0800	SO:1		X	X		1	
2		VS129	↓	0830	↓		X	X		1	
3		VS130	↓	0910	↓		X	X		1	
4		VS1130	↓	0915	↓		X	X		1	
5		VS131	↓	1240	↓		X	X		1	
6		VS132	↓	1415	↓		X	X		1	
7											
8											
9											
10											

2-May-16 15:5
Damian Baber
B687239
FHB OTT-00

RECEIVED IN OTTAWA
on ice pack.

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
Aaron Bradshaw	16/05/02	1430	J. Fatemeh	2016/05/12	15:50	0		12.12.12	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B687239
Report Date: 2016/05/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 557328-11-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/05/05
Report #: R3983340
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B689313
Received: 2016/05/04, 14:59

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	6	N/A	2016/05/05	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	6	2016/05/05	2016/05/05	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	6	2016/05/04	2016/05/05	OTT SOP-00003	EPA 6020
MOISTURE	6	N/A	2016/05/05	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	6	2016/05/04	2016/05/04	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Parnian Baber
Project Manager
05 May 2016 16:56:00 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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Maxxam Job #: B689313
Report Date: 2016/05/05

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CHK335	CHK335	CHK336	CHK337	CHK338		
Sampling Date			2016/05/04 09:00	2016/05/04 09:00	2016/05/04 09:10	2016/05/04 09:20	2016/05/04 09:25		
COC Number			557328-11-01	557328-11-01	557328-11-01	557328-11-01	557328-11-01		
	UNITS	Criteria	VS133	VS133 Lab-Dup	VS134	VS135	VS1135	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	40	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4484635
Acid Extractable Arsenic (As)	ug/g	18	2	2	1	2	2	1	4484635
Acid Extractable Barium (Ba)	ug/g	670	200	200	160	190	190	0.5	4484635
Acid Extractable Beryllium (Be)	ug/g	8	0.7	0.7	0.5	0.6	0.7	0.2	4484635
Acid Extractable Boron (B)	ug/g	120	6	5	<5	<5	5	5	4484635
Acid Extractable Cadmium (Cd)	ug/g	1.9	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4484635
Acid Extractable Chromium (Cr)	ug/g	160	44	45	37	43	44	1	4484635
Acid Extractable Cobalt (Co)	ug/g	80	14	14	11	13	13	0.1	4484635
Acid Extractable Copper (Cu)	ug/g	230	24	25	16	21	22	0.5	4484635
Acid Extractable Lead (Pb)	ug/g	120	6	6	5	6	6	1	4484635
Acid Extractable Mercury (Hg)	ug/g	3.9	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4484635
Acid Extractable Molybdenum (Mo)	ug/g	40	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4484635
Acid Extractable Nickel (Ni)	ug/g	270	28	28	22	26	26	0.5	4484635
Acid Extractable Selenium (Se)	ug/g	5.5	0.8	<0.5	0.6	0.7	0.8	0.5	4484635
Acid Extractable Silver (Ag)	ug/g	40	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4484635
Acid Extractable Thallium (Tl)	ug/g	3.3	0.26	0.25	0.20	0.24	0.24	0.05	4484635
Acid Extractable Uranium (U)	ug/g	33	0.67	0.67	0.53	0.67	0.67	0.05	4484635
Acid Extractable Vanadium (V)	ug/g	86	61	62	49	59	61	5	4484635
Acid Extractable Zinc (Zn)	ug/g	340	72	72	60	70	71	5	4484635

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B689313
Report Date: 2016/05/05

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CHK339	CHK340		
Sampling Date			2016/05/04 12:30	2016/05/04 12:40		
COC Number			557328-11-01	557328-11-01		
	UNITS	Criteria	VS136	VS137	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	40	<0.2	<0.2	0.2	4484635
Acid Extractable Arsenic (As)	ug/g	18	2	2	1	4484635
Acid Extractable Barium (Ba)	ug/g	670	210	220	0.5	4484635
Acid Extractable Beryllium (Be)	ug/g	8	0.7	0.7	0.2	4484635
Acid Extractable Boron (B)	ug/g	120	6	<5	5	4484635
Acid Extractable Cadmium (Cd)	ug/g	1.9	<0.1	<0.1	0.1	4484635
Acid Extractable Chromium (Cr)	ug/g	160	48	47	1	4484635
Acid Extractable Cobalt (Co)	ug/g	80	13	13	0.1	4484635
Acid Extractable Copper (Cu)	ug/g	230	26	23	0.5	4484635
Acid Extractable Lead (Pb)	ug/g	120	6	6	1	4484635
Acid Extractable Mercury (Hg)	ug/g	3.9	<0.05	<0.05	0.05	4484635
Acid Extractable Molybdenum (Mo)	ug/g	40	<0.5	<0.5	0.5	4484635
Acid Extractable Nickel (Ni)	ug/g	270	31	28	0.5	4484635
Acid Extractable Selenium (Se)	ug/g	5.5	0.6	0.5	0.5	4484635
Acid Extractable Silver (Ag)	ug/g	40	<0.2	<0.2	0.2	4484635
Acid Extractable Thallium (Tl)	ug/g	3.3	0.27	0.25	0.05	4484635
Acid Extractable Uranium (U)	ug/g	33	0.88	0.74	0.05	4484635
Acid Extractable Vanadium (V)	ug/g	86	66	64	5	4484635
Acid Extractable Zinc (Zn)	ug/g	340	79	78	5	4484635

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B689313
Report Date: 2016/05/05

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CHK335	CHK336	CHK336	CHK337	CHK338		
Sampling Date			2016/05/04 09:00	2016/05/04 09:10	2016/05/04 09:10	2016/05/04 09:20	2016/05/04 09:25		
COC Number			557328-11-01	557328-11-01	557328-11-01	557328-11-01	557328-11-01		
	UNITS	Criteria	VS133	VS134	VS134 Lab-Dup	VS135	VS1135	RDL	QC Batch
Inorganics									
Moisture	%	-	21	18		18	18	0.2	4483818
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014		<0.014	<0.014	0.014	4484621
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4484640
Surrogate Recovery (%)									
D10-Anthracene	%	-	65	62	65	62	63		4484640
D14-Terphenyl (FS)	%	-	71	67	72	64	68		4484640
D8-Acenaphthylene	%	-	63	61	62	57	59		4484640

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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.maxxam.ca

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Maxxam Job #: B689313
Report Date: 2016/05/05

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CHK339	CHK340		
Sampling Date			2016/05/04 12:30	2016/05/04 12:40		
COC Number			557328-11-01	557328-11-01		
	UNITS	Criteria	VS136	VS137	RDL	QC Batch
Inorganics						
Moisture	%	-	21	20	0.2	4483818
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014	0.014	4484621
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	0.0050	4484640
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	0.0050	4484640
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	0.0050	4484640
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	0.0050	4484640
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0050	4484640
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	0.0050	4484640
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	0.0050	4484640
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	0.0050	4484640
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	0.0050	4484640
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	0.0050	4484640
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	0.0050	4484640
Fluorene	ug/g	**62**	<0.0050	<0.0050	0.0050	4484640
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	0.0050	4484640
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	0.0050	4484640
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	0.0050	4484640
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	0.0050	4484640
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	0.0050	4484640
Pyrene	ug/g	**96**	<0.0050	<0.0050	0.0050	4484640
Surrogate Recovery (%)						
D10-Anthracene	%	-	62	63		4484640
D14-Terphenyl (FS)	%	-	68	67		4484640
D8-Acenaphthylene	%	-	61	61		4484640

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B689313
Report Date: 2016/05/05

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CHK335	CHK335	CHK336	CHK337	CHK338		
Sampling Date			2016/05/04 09:00	2016/05/04 09:00	2016/05/04 09:10	2016/05/04 09:20	2016/05/04 09:25		
COC Number			557328-11-01	557328-11-01	557328-11-01	557328-11-01	557328-11-01		
	UNITS	Criteria	VS133	VS133 Lab-Dup	VS134	VS135	VS1135	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4485744

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

Maxxam ID			CHK339	CHK340		
Sampling Date			2016/05/04 12:30	2016/05/04 12:40		
COC Number			557328-11-01	557328-11-01		
	UNITS	Criteria	VS136	VS137	RDL	QC Batch
Inorganics						
Chromium (VI)	ug/g	8	<0.2	<0.2	0.2	4485744

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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A Bureau Veritas Group Company

Maxxam Job #: B689313
Report Date: 2016/05/05

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CHK335
Sample ID: VS133
Matrix: Soil

Collected: 2016/05/04
Shipped:
Received: 2016/05/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4484621	N/A	2016/05/05	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4485744	2016/05/05	2016/05/05	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4484635	2016/05/04	2016/05/05	Raigamage Perera
MOISTURE	BAL	4483818	N/A	2016/05/05	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4484640	2016/05/04	2016/05/04	Arezoo Habibagahi

Maxxam ID: CHK335 Dup
Sample ID: VS133
Matrix: Soil

Collected: 2016/05/04
Shipped:
Received: 2016/05/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4485744	2016/05/05	2016/05/05	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4484635	2016/05/04	2016/05/05	Raigamage Perera

Maxxam ID: CHK336
Sample ID: VS134
Matrix: Soil

Collected: 2016/05/04
Shipped:
Received: 2016/05/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4484621	N/A	2016/05/05	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4485744	2016/05/05	2016/05/05	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4484635	2016/05/04	2016/05/05	Raigamage Perera
MOISTURE	BAL	4483818	N/A	2016/05/05	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4484640	2016/05/04	2016/05/04	Arezoo Habibagahi

Maxxam ID: CHK336 Dup
Sample ID: VS134
Matrix: Soil

Collected: 2016/05/04
Shipped:
Received: 2016/05/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4484640	2016/05/04	2016/05/04	Arezoo Habibagahi

Maxxam ID: CHK337
Sample ID: VS135
Matrix: Soil

Collected: 2016/05/04
Shipped:
Received: 2016/05/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4484621	N/A	2016/05/05	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4485744	2016/05/05	2016/05/05	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4484635	2016/05/04	2016/05/05	Raigamage Perera
MOISTURE	BAL	4483818	N/A	2016/05/05	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4484640	2016/05/04	2016/05/04	Arezoo Habibagahi

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Maxxam Job #: B689313
Report Date: 2016/05/05

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CHK338
Sample ID: VS1135
Matrix: Soil

Collected: 2016/05/04
Shipped:
Received: 2016/05/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4484621	N/A	2016/05/05	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4485744	2016/05/05	2016/05/05	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4484635	2016/05/04	2016/05/05	Raigamage Perera
MOISTURE	BAL	4483818	N/A	2016/05/05	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4484640	2016/05/04	2016/05/04	Arezoo Habibagahi

Maxxam ID: CHK339
Sample ID: VS136
Matrix: Soil

Collected: 2016/05/04
Shipped:
Received: 2016/05/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4484621	N/A	2016/05/05	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4485744	2016/05/05	2016/05/05	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4484635	2016/05/04	2016/05/05	Raigamage Perera
MOISTURE	BAL	4483818	N/A	2016/05/05	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4484640	2016/05/04	2016/05/04	Arezoo Habibagahi

Maxxam ID: CHK340
Sample ID: VS137
Matrix: Soil

Collected: 2016/05/04
Shipped:
Received: 2016/05/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4484621	N/A	2016/05/05	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4485744	2016/05/05	2016/05/05	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4484635	2016/05/04	2016/05/05	Raigamage Perera
MOISTURE	BAL	4483818	N/A	2016/05/05	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4484640	2016/05/04	2016/05/04	Arezoo Habibagahi

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Maxxam Job #: B689313
Report Date: 2016/05/05

Golder Associates Ltd
Client Project #: 1525113
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GENERAL COMMENTS

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

Package 1	17.3°C

Custody seal was present and inract on the cooler.

Results relate only to the items tested.

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Maxxam Job #: B689313
Report Date: 2016/05/05

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4484640	D10-Anthracene	2016/05/04	63	50 - 130	65	50 - 130	70	%				
4484640	D14-Terphenyl (FS)	2016/05/04	68	50 - 130	69	50 - 130	69	%				
4484640	D8-Acenaphthylene	2016/05/04	62	50 - 130	64	50 - 130	63	%				
4483818	Moisture	2016/05/05							1.8	50		
4484635	Acid Extractable Antimony (Sb)	2016/05/05	80	75 - 125	106	80 - 120	<0.2	ug/g	NC	35		
4484635	Acid Extractable Arsenic (As)	2016/05/05	99	75 - 125	105	80 - 120	<1	ug/g	NC	35		
4484635	Acid Extractable Barium (Ba)	2016/05/05	NC	75 - 125	106	80 - 120	<0.5	ug/g	1.0	35		
4484635	Acid Extractable Beryllium (Be)	2016/05/05	106	75 - 125	106	80 - 120	<0.2	ug/g	NC	35		
4484635	Acid Extractable Boron (B)	2016/05/05	104	75 - 125	103	80 - 120	<5	ug/g	NC	35		
4484635	Acid Extractable Cadmium (Cd)	2016/05/05	107	75 - 125	105	80 - 120	<0.1	ug/g	NC	35		
4484635	Acid Extractable Chromium (Cr)	2016/05/05	NC	75 - 125	106	80 - 120	<1	ug/g	1.7	35		
4484635	Acid Extractable Cobalt (Co)	2016/05/05	NC	75 - 125	107	80 - 120	<0.1	ug/g	0.59	35		
4484635	Acid Extractable Copper (Cu)	2016/05/05	NC	75 - 125	108	80 - 120	<0.5	ug/g	1.6	35		
4484635	Acid Extractable Lead (Pb)	2016/05/05	103	75 - 125	104	80 - 120	<1	ug/g	2.1	35		
4484635	Acid Extractable Mercury (Hg)	2016/05/05	111	75 - 125	109	80 - 120	<0.05	ug/g	NC	35		
4484635	Acid Extractable Molybdenum (Mo)	2016/05/05	103	75 - 125	106	80 - 120	<0.5	ug/g	NC	35		
4484635	Acid Extractable Nickel (Ni)	2016/05/05	NC	75 - 125	107	80 - 120	<0.5	ug/g	0.021	35		
4484635	Acid Extractable Selenium (Se)	2016/05/05	102	75 - 125	106	80 - 120	<0.5	ug/g	NC	35		
4484635	Acid Extractable Silver (Ag)	2016/05/05	107	75 - 125	105	80 - 120	<0.2	ug/g	NC	35		
4484635	Acid Extractable Thallium (Tl)	2016/05/05	102	75 - 125	103	80 - 120	<0.05	ug/g	1.9	35		
4484635	Acid Extractable Uranium (U)	2016/05/05	107	75 - 125	107	80 - 120	<0.05	ug/g	0.16	25		
4484635	Acid Extractable Vanadium (V)	2016/05/05	NC	75 - 125	110	80 - 120	<5	ug/g	2.0	35		
4484635	Acid Extractable Zinc (Zn)	2016/05/05	NC	75 - 125	108	80 - 120	<5	ug/g	0.12	35		
4484640	1-Methylnaphthalene	2016/05/04	68	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40		
4484640	2-Methylnaphthalene	2016/05/04	69	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40		
4484640	Acenaphthene	2016/05/04	64	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4484640	Acenaphthylene	2016/05/04	57	50 - 130	59	50 - 130	<0.0050	ug/g	NC	40		
4484640	Anthracene	2016/05/04	57	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40		
4484640	Benzo(a)anthracene	2016/05/04	53	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40		
4484640	Benzo(a)pyrene	2016/05/04	53	50 - 130	52	50 - 130	<0.0050	ug/g	NC	40		
4484640	Benzo(b/j)fluoranthene	2016/05/04	60	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40		

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Maxxam Job #: B689313
Report Date: 2016/05/05

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4484640	Benzo(g,h,i)perylene	2016/05/04	51	50 - 130	52	50 - 130	<0.0050	ug/g	NC	40		
4484640	Benzo(k)fluoranthene	2016/05/04	55	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40		
4484640	Chrysene	2016/05/04	56	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40		
4484640	Dibenz(a,h)anthracene	2016/05/04	51	50 - 130	52	50 - 130	<0.0050	ug/g	NC	40		
4484640	Fluoranthene	2016/05/04	68	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40		
4484640	Fluorene	2016/05/04	64	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40		
4484640	Indeno(1,2,3-cd)pyrene	2016/05/04	56	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40		
4484640	Naphthalene	2016/05/04	66	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4484640	Phenanthrene	2016/05/04	55	50 - 130	56	50 - 130	<0.0050	ug/g	NC	40		
4484640	Pyrene	2016/05/04	64	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4485744	Chromium (VI)	2016/05/05	79	75 - 125	92	80 - 120	<0.2	ug/g	NC	35	84	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B689313
Report Date: 2016/05/05

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Paul Rubinato, Analyst, Maxxam Analytics

Steve Roberts, Ottawa Lab Manager

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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #:
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			557328
Address:	1931 Robertson Rd	Address:		Project:	1526113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#557328-11-01	Parnian Baber
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

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: Next Day Time Required: ___ ☒
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals Including Hg and CRVI	Leftache Landfill (TCLP METALS, REG. 153 PHCs)							# of Bottles	Comments
1		VS133	16/05/04	0900	Soil		X	X								1	
2		VS134	↓	0910	↓		X	X								1	
3		VS135	↓	0920	↓		X	X								1	4-May-16 14:59 Parnian Baber B689313 FHB OTT-002
4		VS1135	↓	0925	↓		X	X								1	
5		VS136	↓	1230	↓		X	X								1	
6		VS137	↓	1240	↓		X	X								1	
7																	
8																	RECEIVED IN OTTAWA
9																	ON ICE PACK.
10																	

* 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
[signature] Aaron Bradshaw	12/05/04	1430	[signature]	2016/05/14	14:59	0		17, 17, 18	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

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Maxxam Job #: B689313
Report Date: 2016/05/05

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 557328-02-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/05/06
Report #: R3984311
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B690408
Received: 2016/05/05, 14:59

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	3	N/A	2016/05/06	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	3	2016/05/06	2016/05/06	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	3	2016/05/05	2016/05/06	OTT SOP-00003	EPA 6020
MOISTURE	3	N/A	2016/05/06	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	3	2016/05/05	2016/05/05	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Parnian Baber
Project Manager
06 May 2016 15:30:45 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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Maxxam Job #: B690408
Report Date: 2016/05/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CHP137	CHP137	CHP138	CHP139		
Sampling Date			2016/05/05 10:15	2016/05/05 10:15	2016/05/05 10:25	2016/05/05 13:30		
COC Number			557328-02-01	557328-02-01	557328-02-01	557328-02-01		
	UNITS	Criteria	VS138	VS138 Lab-Dup	VS139	VS140	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.2	<0.2	<0.2	<0.2	0.2	4486692
Acid Extractable Arsenic (As)	ug/g	**18**	2	2	3	3	1	4486692
Acid Extractable Barium (Ba)	ug/g	**670**	170	170	220	190	0.5	4486692
Acid Extractable Beryllium (Be)	ug/g	**8**	0.6	0.6	0.8	0.7	0.2	4486692
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	6	5	5	4486692
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.1	<0.1	<0.1	<0.1	0.1	4486692
Acid Extractable Chromium (Cr)	ug/g	**160**	40	41	49	45	1	4486692
Acid Extractable Cobalt (Co)	ug/g	**80**	12	11	14	13	0.1	4486692
Acid Extractable Copper (Cu)	ug/g	**230**	19	19	26	25	0.5	4486692
Acid Extractable Lead (Pb)	ug/g	**120**	6	6	6	6	1	4486692
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.05	<0.05	<0.05	<0.05	0.05	4486692
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.5	<0.5	<0.5	<0.5	0.5	4486692
Acid Extractable Nickel (Ni)	ug/g	**270**	23	23	30	29	0.5	4486692
Acid Extractable Selenium (Se)	ug/g	**5.5**	<0.5	<0.5	<0.5	<0.5	0.5	4486692
Acid Extractable Silver (Ag)	ug/g	**40**	<0.2	<0.2	<0.2	<0.2	0.2	4486692
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.22	0.23	0.26	0.25	0.05	4486692
Acid Extractable Uranium (U)	ug/g	**33**	0.81	0.77	0.60	0.55	0.05	4486692
Acid Extractable Vanadium (V)	ug/g	**86**	55	55	66	59	5	4486692
Acid Extractable Zinc (Zn)	ug/g	**340**	70	70	81	75	5	4486692

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B690408
Report Date: 2016/05/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CHP137	CHP138	CHP138	CHP139		
Sampling Date			2016/05/05 10:15	2016/05/05 10:25	2016/05/05 10:25	2016/05/05 13:30		
COC Number			557328-02-01	557328-02-01	557328-02-01	557328-02-01		
	UNITS	Criteria	VS138	VS139	VS139 Lab-Dup	VS140	RDL	QC Batch
Inorganics								
Moisture	%	-	18	21	21	20	0.2	4486563
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014		<0.014	0.014	4486550
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**96**	<0.0050	0.011	0.010	<0.0050	0.0050	4486565
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4486565
Surrogate Recovery (%)								
D10-Anthracene	%	-	67	65	64	65		4486565
D14-Terphenyl (FS)	%	-	71	68	66	71		4486565
D8-Acenaphthylene	%	-	65	64	60	62		4486565

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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A Bureau Veritas Group Company

Maxxam Job #: B690408
Report Date: 2016/05/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CHP137	CHP137	CHP138	CHP139		
Sampling Date			2016/05/05 10:15	2016/05/05 10:15	2016/05/05 10:25	2016/05/05 13:30		
COC Number			557328-02-01	557328-02-01	557328-02-01	557328-02-01		
	UNITS	Criteria	VS138	VS138 Lab-Dup	VS139	VS140	RDL	QC Batch
Inorganics								
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	0.2	4487608

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Report Date: 2016/05/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CHP137
Sample ID: VS138
Matrix: Soil

Collected: 2016/05/05
Shipped:
Received: 2016/05/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4486550	N/A	2016/05/06	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4487608	2016/05/06	2016/05/06	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4486692	2016/05/05	2016/05/06	Raigamage Perera
MOISTURE	BAL	4486563	N/A	2016/05/06	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4486565	2016/05/05	2016/05/05	Arezoo Habibagahi

Maxxam ID: CHP137 Dup
Sample ID: VS138
Matrix: Soil

Collected: 2016/05/05
Shipped:
Received: 2016/05/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4487608	2016/05/06	2016/05/06	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4486692	2016/05/05	2016/05/06	Raigamage Perera

Maxxam ID: CHP138
Sample ID: VS139
Matrix: Soil

Collected: 2016/05/05
Shipped:
Received: 2016/05/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4486550	N/A	2016/05/06	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4487608	2016/05/06	2016/05/06	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4486692	2016/05/05	2016/05/06	Raigamage Perera
MOISTURE	BAL	4486563	N/A	2016/05/06	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4486565	2016/05/05	2016/05/05	Arezoo Habibagahi

Maxxam ID: CHP138 Dup
Sample ID: VS139
Matrix: Soil

Collected: 2016/05/05
Shipped:
Received: 2016/05/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4486563	N/A	2016/05/06	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4486565	2016/05/05	2016/05/05	Arezoo Habibagahi

Maxxam ID: CHP139
Sample ID: VS140
Matrix: Soil

Collected: 2016/05/05
Shipped:
Received: 2016/05/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4486550	N/A	2016/05/06	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4487608	2016/05/06	2016/05/06	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4486692	2016/05/05	2016/05/06	Raigamage Perera
MOISTURE	BAL	4486563	N/A	2016/05/06	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4486565	2016/05/05	2016/05/05	Arezoo Habibagahi

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Report Date: 2016/05/06

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GENERAL COMMENTS

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

Package 1	18.3°C

Results relate only to the items tested.

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Maxxam Job #: B690408
Report Date: 2016/05/06

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4486565	D10-Anthracene	2016/05/05	63	50 - 130	67	50 - 130	72	%				
4486565	D14-Terphenyl (FS)	2016/05/05	67	50 - 130	70	50 - 130	71	%				
4486565	D8-Acenaphthylene	2016/05/05	63	50 - 130	66	50 - 130	68	%				
4486563	Moisture	2016/05/06							0.47	50		
4486565	1-Methylnaphthalene	2016/05/05	75	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		
4486565	2-Methylnaphthalene	2016/05/05	68	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4486565	Acenaphthene	2016/05/05	64	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40		
4486565	Acenaphthylene	2016/05/05	59	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4486565	Anthracene	2016/05/05	61	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4486565	Benzo(a)anthracene	2016/05/05	63	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40		
4486565	Benzo(a)pyrene	2016/05/05	58	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40		
4486565	Benzo(b/j)fluoranthene	2016/05/05	66	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40		
4486565	Benzo(g,h,i)perylene	2016/05/05	51	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40		
4486565	Benzo(k)fluoranthene	2016/05/05	60	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4486565	Chrysene	2016/05/05	57	50 - 130	58	50 - 130	<0.0050	ug/g	NC	40		
4486565	Dibenz(a,h)anthracene	2016/05/05	66	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4486565	Fluoranthene	2016/05/05	72	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40		
4486565	Fluorene	2016/05/05	68	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4486565	Indeno(1,2,3-cd)pyrene	2016/05/05	65	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4486565	Naphthalene	2016/05/05	67	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4486565	Phenanthrene	2016/05/05	58	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40		
4486565	Pyrene	2016/05/05	70	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40		
4486692	Acid Extractable Antimony (Sb)	2016/05/06	77	75 - 125	101	80 - 120	<0.2	ug/g	NC	35		
4486692	Acid Extractable Arsenic (As)	2016/05/06	99	75 - 125	103	80 - 120	<1	ug/g	NC	35		
4486692	Acid Extractable Barium (Ba)	2016/05/06	NC	75 - 125	105	80 - 120	<0.5	ug/g	0.027	35		
4486692	Acid Extractable Beryllium (Be)	2016/05/06	105	75 - 125	103	80 - 120	<0.2	ug/g	NC	35		
4486692	Acid Extractable Boron (B)	2016/05/06	103	75 - 125	105	80 - 120	<5	ug/g	NC	35		
4486692	Acid Extractable Cadmium (Cd)	2016/05/06	106	75 - 125	102	80 - 120	<0.1	ug/g	NC	35		
4486692	Acid Extractable Chromium (Cr)	2016/05/06	NC	75 - 125	104	80 - 120	<1	ug/g	0.84	35		
4486692	Acid Extractable Cobalt (Co)	2016/05/06	108	75 - 125	108	80 - 120	<0.1	ug/g	3.4	35		
4486692	Acid Extractable Copper (Cu)	2016/05/06	NC	75 - 125	104	80 - 120	<0.5	ug/g	0.61	35		

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Maxxam Job #: B690408
Report Date: 2016/05/06

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4486692	Acid Extractable Lead (Pb)	2016/05/06	104	75 - 125	104	80 - 120	<1	ug/g	1.5	35		
4486692	Acid Extractable Mercury (Hg)	2016/05/06	108	75 - 125	107	80 - 120	<0.05	ug/g	NC	35		
4486692	Acid Extractable Molybdenum (Mo)	2016/05/06	106	75 - 125	103	80 - 120	<0.5	ug/g	NC	35		
4486692	Acid Extractable Nickel (Ni)	2016/05/06	NC	75 - 125	107	80 - 120	<0.5	ug/g	0.12	35		
4486692	Acid Extractable Selenium (Se)	2016/05/06	103	75 - 125	107	80 - 120	<0.5	ug/g	NC	35		
4486692	Acid Extractable Silver (Ag)	2016/05/06	105	75 - 125	102	80 - 120	<0.2	ug/g	NC	35		
4486692	Acid Extractable Thallium (Tl)	2016/05/06	102	75 - 125	103	80 - 120	<0.05	ug/g	NC	35		
4486692	Acid Extractable Uranium (U)	2016/05/06	108	75 - 125	106	80 - 120	<0.05	ug/g	4.5	25		
4486692	Acid Extractable Vanadium (V)	2016/05/06	NC	75 - 125	105	80 - 120	<5	ug/g	0.079	35		
4486692	Acid Extractable Zinc (Zn)	2016/05/06	NC	75 - 125	106	80 - 120	<5	ug/g	0.29	35		
4487608	Chromium (VI)	2016/05/06	72 (1)	75 - 125	99	80 - 120	<0.2	ug/g	NC	35	83	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The sample was reanalyzed with the same results.

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Maxxam Job #: B690408
Report Date: 2016/05/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Paul

Paul Rubinato, Analyst, Maxxam Analytics

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557328
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#557328-02-01	Parnian Baber
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com, Paul_Hurst@golder.com, GAL	Sampled By:	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions

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

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: Next Day Time Required: ___ ☒
Rush Confirmation Number: ___ *(call lab for #)*

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	# of Bottles	Comments
1		VS138	16/05/05	10:15	Soil		X	X	1	
2		VS139	↓	10:25	↓		X	X	1	
3		VS140	↓	13:30	↓		X	X	1	
4										
5										
6										
7										
8										
9										
10										

5-May-16 14:59
Parnian Baber
B690408
FHB OTT-002

RECEIVED IN OTTAWA

DN ILE PACK.

* 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
[signature] Aaron Bradshaw	16/05/05	14:45	[signature]	2016/05/05	14:59	0		18, 18, 19	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

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B690408
Report Date: 2016/05/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 557328-03-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/05/11
Report #: R3989249
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B692859
Received: 2016/05/09, 15:20

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	3	N/A	2016/05/10	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	3	2016/05/10	2016/05/11	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	3	2016/05/09	2016/05/11	OTT SOP-00003	EPA 6020
MOISTURE	3	N/A	2016/05/10	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	3	2016/05/09	2016/05/10	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key
Madison Bingley
Project Manager Assistant
11 May 2016 17:25:46 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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 Job #: B692859
Report Date: 2016/05/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CIA669	CIA669	CIA670	CIA671		
Sampling Date			2016/05/09 14:00	2016/05/09 14:00	2016/05/09 14:10	2016/05/09 14:05		
COC Number			557328-03-01	557328-03-01	557328-03-01	557328-03-01		
	UNITS	Criteria	VS141	VS141 Lab-Dup	VS142	VS1141	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.2	<0.2	<0.2	<0.2	0.2	4490859
Acid Extractable Arsenic (As)	ug/g	**18**	2	2	2	2	1	4490859
Acid Extractable Barium (Ba)	ug/g	**670**	240	240	190	230	0.5	4490859
Acid Extractable Beryllium (Be)	ug/g	**8**	0.8	0.8	0.6	0.9	0.2	4490859
Acid Extractable Boron (B)	ug/g	**120**	7	7	6	7	5	4490859
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.1	<0.1	<0.1	<0.1	0.1	4490859
Acid Extractable Chromium (Cr)	ug/g	**160**	56	57	46	56	1	4490859
Acid Extractable Cobalt (Co)	ug/g	**80**	16	16	13	16	0.1	4490859
Acid Extractable Copper (Cu)	ug/g	**230**	30	32	26	31	0.5	4490859
Acid Extractable Lead (Pb)	ug/g	**120**	7	7	6	7	1	4490859
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.05	<0.05	<0.05	<0.05	0.05	4490859
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.5	<0.5	<0.5	<0.5	0.5	4490859
Acid Extractable Nickel (Ni)	ug/g	**270**	34	36	29	35	0.5	4490859
Acid Extractable Selenium (Se)	ug/g	**5.5**	0.5	1.1	1.0	0.8	0.5	4490859
Acid Extractable Silver (Ag)	ug/g	**40**	<0.2	<0.2	<0.2	<0.2	0.2	4490859
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.31	0.31	0.25	0.29	0.05	4490859
Acid Extractable Uranium (U)	ug/g	**33**	1.0	1.0	0.58	0.90	0.05	4490859
Acid Extractable Vanadium (V)	ug/g	**86**	72	75	65	72	5	4490859
Acid Extractable Zinc (Zn)	ug/g	**340**	88	90	73	87	5	4490859

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B692859
Report Date: 2016/05/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			CIA669	CIA670	CIA670	CIA671		
Sampling Date			2016/05/09 14:00	2016/05/09 14:10	2016/05/09 14:10	2016/05/09 14:05		
COC Number			557328-03-01	557328-03-01	557328-03-01	557328-03-01		
	UNITS	Criteria	VS141	VS142	VS142 Lab-Dup	VS1141	RDL	QC Batch
Inorganics								
Moisture	%	-	25	24	25	23	0.2	4490824
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014		<0.014	0.014	4490815
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4490840
Surrogate Recovery (%)								
D10-Anthracene	%	-	64	60	64	65		4490840
D14-Terphenyl (FS)	%	-	61	68	70	61		4490840
D8-Acenaphthylene	%	-	68	63	68	68		4490840

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B692859
Report Date: 2016/05/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CIA669	CIA670	CIA670	CIA671		
Sampling Date			2016/05/09 14:00	2016/05/09 14:10	2016/05/09 14:10	2016/05/09 14:05		
COC Number			557328-03-01	557328-03-01	557328-03-01	557328-03-01		
	UNITS	Criteria	VS141	VS142	VS142 Lab-Dup	VS1141	RDL	QC Batch
Inorganics								
Chromium (VI)	ug/g	8	0.3	0.6	0.6	0.4	0.2	4491686

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B692859
Report Date: 2016/05/11

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Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: CIA669
Sample ID: VS141
Matrix: Soil

Collected: 2016/05/09
Shipped:
Received: 2016/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4490815	N/A	2016/05/10	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4491686	2016/05/10	2016/05/11	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4490859	2016/05/09	2016/05/11	Raigamage Perera
MOISTURE	BAL	4490824	N/A	2016/05/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4490840	2016/05/09	2016/05/10	Arezoo Habibagahi

Maxxam ID: CIA669 Dup
Sample ID: VS141
Matrix: Soil

Collected: 2016/05/09
Shipped:
Received: 2016/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4490859	2016/05/09	2016/05/11	Raigamage Perera

Maxxam ID: CIA670
Sample ID: VS142
Matrix: Soil

Collected: 2016/05/09
Shipped:
Received: 2016/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4490815	N/A	2016/05/10	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4491686	2016/05/10	2016/05/11	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4490859	2016/05/09	2016/05/11	Raigamage Perera
MOISTURE	BAL	4490824	N/A	2016/05/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4490840	2016/05/09	2016/05/10	Arezoo Habibagahi

Maxxam ID: CIA670 Dup
Sample ID: VS142
Matrix: Soil

Collected: 2016/05/09
Shipped:
Received: 2016/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4491686	2016/05/10	2016/05/11	Sally Coughlin
MOISTURE	BAL	4490824	N/A	2016/05/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4490840	2016/05/09	2016/05/10	Arezoo Habibagahi

Maxxam ID: CIA671
Sample ID: VS1141
Matrix: Soil

Collected: 2016/05/09
Shipped:
Received: 2016/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4490815	N/A	2016/05/10	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4491686	2016/05/10	2016/05/11	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4490859	2016/05/09	2016/05/11	Raigamage Perera
MOISTURE	BAL	4490824	N/A	2016/05/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4490840	2016/05/09	2016/05/10	Arezoo Habibagahi

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Report Date: 2016/05/11

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Client Project #: 1525113
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GENERAL COMMENTS

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

Package 1	18.0°C

Results relate only to the items tested.

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Report Date: 2016/05/11

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4490840	D10-Anthracene	2016/05/10	66	50 - 130	66	50 - 130	68	%				
4490840	D14-Terphenyl (FS)	2016/05/10	66	50 - 130	64	50 - 130	68	%				
4490840	D8-Acenaphthylene	2016/05/10	65	50 - 130	68	50 - 130	70	%				
4490824	Moisture	2016/05/10							6.1	50		
4490840	1-Methylnaphthalene	2016/05/10	78	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4490840	2-Methylnaphthalene	2016/05/10	72	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40		
4490840	Acenaphthene	2016/05/10	68	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4490840	Acenaphthylene	2016/05/10	58	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40		
4490840	Anthracene	2016/05/10	61	50 - 130	62	50 - 130	<0.0050	ug/g	NC	40		
4490840	Benzo(a)anthracene	2016/05/10	60	50 - 130	65	50 - 130	<0.0050	ug/g	NC	40		
4490840	Benzo(a)pyrene	2016/05/10	59	50 - 130	58	50 - 130	<0.0050	ug/g	NC	40		
4490840	Benzo(b/j)fluoranthene	2016/05/10	60	50 - 130	59	50 - 130	<0.0050	ug/g	NC	40		
4490840	Benzo(g,h,i)perylene	2016/05/10	57	50 - 130	51	50 - 130	<0.0050	ug/g	NC	40		
4490840	Benzo(k)fluoranthene	2016/05/10	58	50 - 130	58	50 - 130	<0.0050	ug/g	NC	40		
4490840	Chrysene	2016/05/10	55	50 - 130	59	50 - 130	<0.0050	ug/g	NC	40		
4490840	Dibenz(a,h)anthracene	2016/05/10	76	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40		
4490840	Fluoranthene	2016/05/10	73	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40		
4490840	Fluorene	2016/05/10	68	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4490840	Indeno(1,2,3-cd)pyrene	2016/05/10	72	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40		
4490840	Naphthalene	2016/05/10	76	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40		
4490840	Phenanthrene	2016/05/10	58	50 - 130	59	50 - 130	<0.0050	ug/g	NC	40		
4490840	Pyrene	2016/05/10	70	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4490859	Acid Extractable Antimony (Sb)	2016/05/11	81	75 - 125	102	80 - 120	<0.2	ug/g	NC	35		
4490859	Acid Extractable Arsenic (As)	2016/05/11	100	75 - 125	101	80 - 120	<1	ug/g	NC	35		
4490859	Acid Extractable Barium (Ba)	2016/05/11	NC	75 - 125	103	80 - 120	<0.5	ug/g	1.2	35		
4490859	Acid Extractable Beryllium (Be)	2016/05/11	113	75 - 125	109	80 - 120	<0.2	ug/g	NC	35		
4490859	Acid Extractable Boron (B)	2016/05/11	110	75 - 125	113	80 - 120	<5	ug/g	NC	35		
4490859	Acid Extractable Cadmium (Cd)	2016/05/11	107	75 - 125	105	80 - 120	<0.1	ug/g	NC	35		
4490859	Acid Extractable Chromium (Cr)	2016/05/11	NC	75 - 125	107	80 - 120	<1	ug/g	1.4	35		
4490859	Acid Extractable Cobalt (Co)	2016/05/11	NC	75 - 125	106	80 - 120	<0.1	ug/g	2.8	35		
4490859	Acid Extractable Copper (Cu)	2016/05/11	NC	75 - 125	107	80 - 120	<0.5	ug/g	5.5	35		

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QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			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
4490859	Acid Extractable Lead (Pb)	2016/05/11	105	75 - 125	107	80 - 120	<1	ug/g	1.2	35		
4490859	Acid Extractable Mercury (Hg)	2016/05/11	104	75 - 125	105	80 - 120	<0.05	ug/g	NC	35		
4490859	Acid Extractable Molybdenum (Mo)	2016/05/11	105	75 - 125	107	80 - 120	<0.5	ug/g	NC	35		
4490859	Acid Extractable Nickel (Ni)	2016/05/11	NC	75 - 125	111	80 - 120	<0.5	ug/g	3.6	35		
4490859	Acid Extractable Selenium (Se)	2016/05/11	103	75 - 125	108	80 - 120	0.7, RDL=0.5	ug/g	NC	35		
4490859	Acid Extractable Silver (Ag)	2016/05/11	106	75 - 125	106	80 - 120	<0.2	ug/g	NC	35		
4490859	Acid Extractable Thallium (Tl)	2016/05/11	104	75 - 125	106	80 - 120	<0.05	ug/g	1.9	35		
4490859	Acid Extractable Uranium (U)	2016/05/11	107	75 - 125	109	80 - 120	<0.05	ug/g	0.35	25		
4490859	Acid Extractable Vanadium (V)	2016/05/11	NC	75 - 125	105	80 - 120	<5	ug/g	3.3	35		
4490859	Acid Extractable Zinc (Zn)	2016/05/11	NC	75 - 125	108	80 - 120	<5	ug/g	2.1	35		
4491686	Chromium (VI)	2016/05/11	75	75 - 125	86	80 - 120	<0.2	ug/g	NC	35	89	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Report Date: 2016/05/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

VALIDATION SIGNATURE PAGE

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

Brad Newman, Scientific Specialist

Paul Rubinato, Analyst, Maxxam Analytics

Steve Roberts, Ottawa Lab Manager

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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6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-Free:800-563-6266 Fax (905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557328
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113		
				Project Name:		COC #:	Project Manager:
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:		C#557328-03-01	Parnian Baber
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	Tony Lyon		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality _____	
☐ Table ___	☐ PWQO	
	☐ Other _____	

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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: Tomorrow Time Required: EOD ☑
Rush Confirmation Number: _____ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI								# of Bottles	Comments
1		VS0141	May 9, '16	14:00	Soil	NA	✓	✓								1	
2		VS0142	↓	14:10	↓	↓	✓	✓								1	
3		VS1141	↓	14:05	↓	↓	✓	✓								1	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

9-May-16 15:20
Parnian Baber
B692859
FHB OTT-002

RECEIVED IN OTTAWA

on ICE pack.

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tony Lyon	16/05/09	14:30	[signature]	2016/05/09	15:20	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	18,18,18	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B692859
Report Date: 2016/05/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 557328-04-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/05/11
Report #: R3989563
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B693929
Received: 2016/05/10, 15:40

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	6	N/A	2016/05/11	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	6	2016/05/11	2016/05/11	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	6	2016/05/10	2016/05/12	OTT SOP-00003	EPA 6020
MOISTURE	6	N/A	2016/05/11	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	6	2016/05/10	2016/05/11	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Ema Gitej
11 May 2016 19:06:03 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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
A Bureau Veritas Group Company

Maxxam Job #: B693929
Report Date: 2016/05/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CIF544	CIF544	CIF545	CIF546	CIF547		
Sampling Date			2016/05/10 09:00	2016/05/10 09:00	2016/05/10 09:05	2016/05/10 09:15	2016/05/10 09:25		
COC Number			557328-04-01	557328-04-01	557328-04-01	557328-04-01	557328-04-01		
	UNITS	Criteria	VS143	VS143 Lab-Dup	VS1143	VS144	VS145	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4492414
Acid Extractable Arsenic (As)	ug/g	**18**	2	2	2	2	2	1	4492414
Acid Extractable Barium (Ba)	ug/g	**670**	180	180	180	210	180	0.5	4492414
Acid Extractable Beryllium (Be)	ug/g	**8**	0.7	0.8	0.7	0.7	0.7	0.2	4492414
Acid Extractable Boron (B)	ug/g	**120**	5	5	<5	6	5	5	4492414
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4492414
Acid Extractable Chromium (Cr)	ug/g	**160**	45	44	42	51	45	1	4492414
Acid Extractable Cobalt (Co)	ug/g	**80**	13	13	13	14	13	0.1	4492414
Acid Extractable Copper (Cu)	ug/g	**230**	22	22	21	28	21	0.5	4492414
Acid Extractable Lead (Pb)	ug/g	**120**	6	6	6	7	6	1	4492414
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4492414
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4492414
Acid Extractable Nickel (Ni)	ug/g	**270**	25	25	24	32	26	0.5	4492414
Acid Extractable Selenium (Se)	ug/g	**5.5**	0.5	1.0	<0.5	0.7	0.8	0.5	4492414
Acid Extractable Silver (Ag)	ug/g	**40**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4492414
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.23	0.24	0.23	0.27	0.24	0.05	4492414
Acid Extractable Uranium (U)	ug/g	**33**	0.92	0.95	0.94	0.70	0.94	0.05	4492414
Acid Extractable Vanadium (V)	ug/g	**86**	57	58	55	66	62	5	4492414
Acid Extractable Zinc (Zn)	ug/g	**340**	68	68	65	77	66	5	4492414

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B693929
Report Date: 2016/05/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CIF548	CIF549		
Sampling Date			2016/05/10 09:35	2016/05/10 09:45		
COC Number			557328-04-01	557328-04-01		
	UNITS	Criteria	VS146	VS147	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	40	<0.2	<0.2	0.2	4492414
Acid Extractable Arsenic (As)	ug/g	18	2	1	1	4492414
Acid Extractable Barium (Ba)	ug/g	670	210	200	0.5	4492414
Acid Extractable Beryllium (Be)	ug/g	8	0.7	0.8	0.2	4492414
Acid Extractable Boron (B)	ug/g	120	6	7	5	4492414
Acid Extractable Cadmium (Cd)	ug/g	1.9	<0.1	<0.1	0.1	4492414
Acid Extractable Chromium (Cr)	ug/g	160	48	48	1	4492414
Acid Extractable Cobalt (Co)	ug/g	80	15	11	0.1	4492414
Acid Extractable Copper (Cu)	ug/g	230	21	23	0.5	4492414
Acid Extractable Lead (Pb)	ug/g	120	7	6	1	4492414
Acid Extractable Mercury (Hg)	ug/g	3.9	<0.05	<0.05	0.05	4492414
Acid Extractable Molybdenum (Mo)	ug/g	40	<0.5	<0.5	0.5	4492414
Acid Extractable Nickel (Ni)	ug/g	270	28	28	0.5	4492414
Acid Extractable Selenium (Se)	ug/g	5.5	<0.5	0.6	0.5	4492414
Acid Extractable Silver (Ag)	ug/g	40	<0.2	<0.2	0.2	4492414
Acid Extractable Thallium (Tl)	ug/g	3.3	0.28	0.26	0.05	4492414
Acid Extractable Uranium (U)	ug/g	33	0.96	1.2	0.05	4492414
Acid Extractable Vanadium (V)	ug/g	86	63	61	5	4492414
Acid Extractable Zinc (Zn)	ug/g	340	77	73	5	4492414

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
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Soil - Industrial/Commercial/Community- Coarse Texture

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Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CIF544	CIF545	CIF545	CIF546	CIF547		
Sampling Date			2016/05/10 09:00	2016/05/10 09:05	2016/05/10 09:05	2016/05/10 09:15	2016/05/10 09:25		
COC Number			557328-04-01	557328-04-01	557328-04-01	557328-04-01	557328-04-01		
	UNITS	Criteria	VS143	VS1143	VS1143 Lab-Dup	VS144	VS145	RDL	QC Batch
Inorganics									
Moisture	%	-	19	19	19	20	17	0.2	4492409
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014		<0.014	<0.014	0.014	4492393
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4492411
Surrogate Recovery (%)									
D10-Anthracene	%	-	76	78	73	77	76		4492411
D14-Terphenyl (FS)	%	-	66	68	66	67	66		4492411
D8-Acenaphthylene	%	-	87	87	83	85	84		4492411

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B693929
Report Date: 2016/05/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CIF548	CIF549		
Sampling Date			2016/05/10 09:35	2016/05/10 09:45		
COC Number			557328-04-01	557328-04-01		
	UNITS	Criteria	VS146	VS147	RDL	QC Batch
Inorganics						
Moisture	%	-	21	24	0.2	4492409
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014	0.014	4492393
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	0.0050	4492411
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	0.0050	4492411
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	0.0050	4492411
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	0.0050	4492411
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0050	4492411
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	0.0050	4492411
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	0.0050	4492411
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	0.0050	4492411
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	0.0050	4492411
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	0.0050	4492411
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	0.0050	4492411
Fluorene	ug/g	**62**	<0.0050	<0.0050	0.0050	4492411
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	0.0050	4492411
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	0.0050	4492411
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	0.0050	4492411
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	0.0050	4492411
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	0.0050	4492411
Pyrene	ug/g	**96**	<0.0050	<0.0050	0.0050	4492411
Surrogate Recovery (%)						
D10-Anthracene	%	-	78	76		4492411
D14-Terphenyl (FS)	%	-	69	69		4492411
D8-Acenaphthylene	%	-	84	85		4492411

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B693929
Report Date: 2016/05/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CIF544	CIF545	CIF546	CIF547	CIF548		
Sampling Date			2016/05/10 09:00	2016/05/10 09:05	2016/05/10 09:15	2016/05/10 09:25	2016/05/10 09:35		
COC Number			557328-04-01	557328-04-01	557328-04-01	557328-04-01	557328-04-01		
	UNITS	Criteria	VS143	VS1143	VS144	VS145	VS146	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.4	0.4	0.3	0.3	0.4	0.2	4493237

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

Maxxam ID			CIF549	CIF549		
Sampling Date			2016/05/10 09:45	2016/05/10 09:45		
COC Number			557328-04-01	557328-04-01		
	UNITS	Criteria	VS147	VS147 Lab-Dup	RDL	QC Batch
Inorganics						
Chromium (VI)	ug/g	8	<0.2	<0.2	0.2	4493237

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B693929
Report Date: 2016/05/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CIF544
Sample ID: VS143
Matrix: Soil

Collected: 2016/05/10
Shipped:
Received: 2016/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4492393	N/A	2016/05/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4493237	2016/05/11	2016/05/11	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4492414	2016/05/10	2016/05/12	Raigamage Perera
MOISTURE	BAL	4492409	N/A	2016/05/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4492411	2016/05/10	2016/05/11	Arezoo Habibagahi

Maxxam ID: CIF544 Dup
Sample ID: VS143
Matrix: Soil

Collected: 2016/05/10
Shipped:
Received: 2016/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4492414	2016/05/10	2016/05/12	Raigamage Perera

Maxxam ID: CIF545
Sample ID: VS1143
Matrix: Soil

Collected: 2016/05/10
Shipped:
Received: 2016/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4492393	N/A	2016/05/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4493237	2016/05/11	2016/05/11	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4492414	2016/05/10	2016/05/12	Raigamage Perera
MOISTURE	BAL	4492409	N/A	2016/05/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4492411	2016/05/10	2016/05/11	Arezoo Habibagahi

Maxxam ID: CIF545 Dup
Sample ID: VS1143
Matrix: Soil

Collected: 2016/05/10
Shipped:
Received: 2016/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4492409	N/A	2016/05/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4492411	2016/05/10	2016/05/11	Arezoo Habibagahi

Maxxam ID: CIF546
Sample ID: VS144
Matrix: Soil

Collected: 2016/05/10
Shipped:
Received: 2016/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4492393	N/A	2016/05/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4493237	2016/05/11	2016/05/11	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4492414	2016/05/10	2016/05/12	Raigamage Perera
MOISTURE	BAL	4492409	N/A	2016/05/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4492411	2016/05/10	2016/05/11	Arezoo Habibagahi

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Maxxam Job #: B693929
Report Date: 2016/05/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CIF547
Sample ID: VS145
Matrix: Soil

Collected: 2016/05/10
Shipped:
Received: 2016/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4492393	N/A	2016/05/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4493237	2016/05/11	2016/05/11	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4492414	2016/05/10	2016/05/12	Raigamage Perera
MOISTURE	BAL	4492409	N/A	2016/05/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4492411	2016/05/10	2016/05/11	Arezoo Habibagahi

Maxxam ID: CIF548
Sample ID: VS146
Matrix: Soil

Collected: 2016/05/10
Shipped:
Received: 2016/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4492393	N/A	2016/05/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4493237	2016/05/11	2016/05/11	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4492414	2016/05/10	2016/05/12	Raigamage Perera
MOISTURE	BAL	4492409	N/A	2016/05/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4492411	2016/05/10	2016/05/11	Arezoo Habibagahi

Maxxam ID: CIF549
Sample ID: VS147
Matrix: Soil

Collected: 2016/05/10
Shipped:
Received: 2016/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4492393	N/A	2016/05/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4493237	2016/05/11	2016/05/11	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4492414	2016/05/10	2016/05/12	Raigamage Perera
MOISTURE	BAL	4492409	N/A	2016/05/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4492411	2016/05/10	2016/05/11	Arezoo Habibagahi

Maxxam ID: CIF549 Dup
Sample ID: VS147
Matrix: Soil

Collected: 2016/05/10
Shipped:
Received: 2016/05/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4493237	2016/05/11	2016/05/11	Sally Coughlin

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Maxxam Job #: B693929
Report Date: 2016/05/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

GENERAL COMMENTS

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

Package 1	15.7°C

Custody seal was present and intact on the cooler.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4492411	D10-Anthracene	2016/05/11	64	50 - 130	70	50 - 130	75	%				
4492411	D14-Terphenyl (FS)	2016/05/11	54	50 - 130	59	50 - 130	64	%				
4492411	D8-Acenaphthylene	2016/05/11	73	50 - 130	75	50 - 130	83	%				
4492409	Moisture	2016/05/11							0.53	50		
4492411	1-Methylnaphthalene	2016/05/11	74	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		
4492411	2-Methylnaphthalene	2016/05/11	68	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4492411	Acenaphthene	2016/05/11	63	50 - 130	65	50 - 130	<0.0050	ug/g	NC	40		
4492411	Acenaphthylene	2016/05/11	66	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4492411	Anthracene	2016/05/11	61	50 - 130	65	50 - 130	<0.0050	ug/g	NC	40		
4492411	Benzo(a)anthracene	2016/05/11	64	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40		
4492411	Benzo(a)pyrene	2016/05/11	56	50 - 130	56	50 - 130	<0.0050	ug/g	NC	40		
4492411	Benzo(b/j)fluoranthene	2016/05/11	58	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40		
4492411	Benzo(g,h,i)perylene	2016/05/11	51	50 - 130	50	50 - 130	<0.0050	ug/g	NC	40		
4492411	Benzo(k)fluoranthene	2016/05/11	56	50 - 130	55	50 - 130	<0.0050	ug/g	NC	40		
4492411	Chrysene	2016/05/11	54	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40		
4492411	Dibenz(a,h)anthracene	2016/05/11	54	50 - 130	58	50 - 130	<0.0050	ug/g	NC	40		
4492411	Fluoranthene	2016/05/11	72	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4492411	Fluorene	2016/05/11	66	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4492411	Indeno(1,2,3-cd)pyrene	2016/05/11	51	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40		
4492411	Naphthalene	2016/05/11	63	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4492411	Phenanthrene	2016/05/11	58	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4492411	Pyrene	2016/05/11	72	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40		
4492414	Acid Extractable Antimony (Sb)	2016/05/12	81	75 - 125	104	80 - 120	<0.2	ug/g	NC	35		
4492414	Acid Extractable Arsenic (As)	2016/05/12	102	75 - 125	103	80 - 120	<1	ug/g	NC	35		
4492414	Acid Extractable Barium (Ba)	2016/05/12	NC	75 - 125	106	80 - 120	<0.5	ug/g	2.4	35		
4492414	Acid Extractable Beryllium (Be)	2016/05/12	111	75 - 125	111	80 - 120	<0.2	ug/g	NC	35		
4492414	Acid Extractable Boron (B)	2016/05/12	112	75 - 125	111	80 - 120	<5	ug/g	NC	35		
4492414	Acid Extractable Cadmium (Cd)	2016/05/12	107	75 - 125	105	80 - 120	<0.1	ug/g	NC	35		
4492414	Acid Extractable Chromium (Cr)	2016/05/12	NC	75 - 125	109	80 - 120	<1	ug/g	2.6	35		
4492414	Acid Extractable Cobalt (Co)	2016/05/12	NC	75 - 125	108	80 - 120	<0.1	ug/g	0.085	35		
4492414	Acid Extractable Copper (Cu)	2016/05/12	NC	75 - 125	109	80 - 120	<0.5	ug/g	0.66	35		

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Report Date: 2016/05/11

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4492414	Acid Extractable Lead (Pb)	2016/05/12	104	75 - 125	106	80 - 120	<1	ug/g	3.7	35		
4492414	Acid Extractable Mercury (Hg)	2016/05/12	102	75 - 125	106	80 - 120	<0.05	ug/g	NC	35		
4492414	Acid Extractable Molybdenum (Mo)	2016/05/12	104	75 - 125	107	80 - 120	<0.5	ug/g	NC	35		
4492414	Acid Extractable Nickel (Ni)	2016/05/12	NC	75 - 125	109	80 - 120	<0.5	ug/g	1.1	35		
4492414	Acid Extractable Selenium (Se)	2016/05/12	102	75 - 125	106	80 - 120	0.6, RDL=0.5	ug/g	NC	35		
4492414	Acid Extractable Silver (Ag)	2016/05/12	107	75 - 125	107	80 - 120	<0.2	ug/g	NC	35		
4492414	Acid Extractable Thallium (Tl)	2016/05/12	103	75 - 125	105	80 - 120	<0.05	ug/g	NC	35		
4492414	Acid Extractable Uranium (U)	2016/05/12	106	75 - 125	106	80 - 120	<0.05	ug/g	3.2	25		
4492414	Acid Extractable Vanadium (V)	2016/05/12	NC	75 - 125	104	80 - 120	<5	ug/g	2.4	35		
4492414	Acid Extractable Zinc (Zn)	2016/05/12	NC	75 - 125	105	80 - 120	<5	ug/g	0.39	35		
4493237	Chromium (VI)	2016/05/11	47 (1)	75 - 125	82	80 - 120	<0.2	ug/g	NC	35	94	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B693929
Report Date: 2016/05/11

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Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Eva Pranjic, M.Sc., C.Chem, Scientific Specialist

Steve Roberts, Ottawa Lab Manager

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 557328
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1525113	COC #: C#557328-04-01	Project Manager: Parnian Baber
	Ottawa ON K2H 5B7			Project Name:			
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

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 applied to entire submission)
Date Required: NEXT Day Time Required: ☒
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O Reg 153 PAHs (Soil)	O Reg 153 ICP/MS Metals including Hg and CRVI								# of Bottles	Comments
1		VS143	16/05/10	0700	Soil		X	X								1	
2		VS1143	↓	0705	↓		X	X								1	
3		VS144	↓	0915	↓		X	X								1	
4		VS145	↓	0925	↓		X	X								1	
5		VS146	↓	0935	↓		X	X								1	
6		VS147	↓	0945	↓		X	X								1	
7																	
8																	
9																	on ICE pack.
10																	

10-May-16 15:40
Parnian Baber
B693929
FHB OTT-00

RECEIVED 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	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
Aaron Bradshaw	16/05/10	14:45		2016/05/10	15:40	0		15,16,16	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.

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

White: Maxxam Yellow: Client

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Maxxam Job #: B693929
Report Date: 2016/05/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 557328-05-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/05/14
Report #: R3992891
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B696124
Received: 2016/05/12, 15:00

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	2	N/A	2016/05/13	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	2	2016/05/13	2016/05/13	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	2	2016/05/12	2016/05/13	OTT SOP-00003	EPA 6020
MOISTURE	2	N/A	2016/05/13	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	2	2016/05/12	2016/05/12	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key
Madison Bingley
Project Manager Assistant
16 May 2016 09:14:57 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573

==========

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Maxxam Job #: B696124
Report Date: 2016/05/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CIQ505	CIQ505	CIQ506		
Sampling Date			2016/05/12 09:00	2016/05/12 09:00	2016/05/12 09:10		
COC Number			557328-05-01	557328-05-01	557328-05-01		
	UNITS	Criteria	VS151	VS151 Lab-Dup	VS152	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.2	<0.2	<0.2	0.2	4495884
Acid Extractable Arsenic (As)	ug/g	**18**	2	2	2	1	4495884
Acid Extractable Barium (Ba)	ug/g	**670**	190	180	210	0.5	4495884
Acid Extractable Beryllium (Be)	ug/g	**8**	0.7	0.7	0.7	0.2	4495884
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	5	4495884
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.1	<0.1	<0.1	0.1	4495884
Acid Extractable Chromium (Cr)	ug/g	**160**	41	40	44	1	4495884
Acid Extractable Cobalt (Co)	ug/g	**80**	10	10	13	0.1	4495884
Acid Extractable Copper (Cu)	ug/g	**230**	15	15	21	0.5	4495884
Acid Extractable Lead (Pb)	ug/g	**120**	6	6	6	1	4495884
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.05	<0.05	<0.05	0.05	4495884
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.5	<0.5	<0.5	0.5	4495884
Acid Extractable Nickel (Ni)	ug/g	**270**	21	21	29	0.5	4495884
Acid Extractable Selenium (Se)	ug/g	**5.5**	<0.5	<0.5	<0.5	0.5	4495884
Acid Extractable Silver (Ag)	ug/g	**40**	<0.2	<0.2	<0.2	0.2	4495884
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.23	0.22	0.27	0.05	4495884
Acid Extractable Uranium (U)	ug/g	**33**	0.98	0.93	0.68	0.05	4495884
Acid Extractable Vanadium (V)	ug/g	**86**	53	52	61	5	4495884
Acid Extractable Zinc (Zn)	ug/g	**340**	75	75	76	5	4495884

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B696124
Report Date: 2016/05/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CIQ505	CIQ506	CIQ506		
Sampling Date			2016/05/12 09:00	2016/05/12 09:10	2016/05/12 09:10		
COC Number			557328-05-01	557328-05-01	557328-05-01		
	UNITS	Criteria	VS151	VS152	VS152 Lab-Dup	RDL	QC Batch
Inorganics							
Moisture	%	-	14	18	18	0.2	4495879
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014		0.014	4495872
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	0.0050	4495882
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	0.0050	4495882
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0050	4495882
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	0.0050	4495882
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	0.0050	4495882
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	0.0050	4495882
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	0.0050	4495882
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	0.0050	4495882
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	0.0050	4495882
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	0.0050	4495882
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	0.0050	4495882
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0050	4495882
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	0.0050	4495882
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	0.0050	4495882
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	0.0050	4495882
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	0.0050	4495882
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	0.0050	4495882
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	0.0050	4495882
Surrogate Recovery (%)							
D10-Anthracene	%	-	64	64	68		4495882
D14-Terphenyl (FS)	%	-	54	53	55		4495882
D8-Acenaphthylene	%	-	66	65	68		4495882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B696124
Report Date: 2016/05/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CIQ505	CIQ506		
Sampling Date			2016/05/12 09:00	2016/05/12 09:10		
COC Number			557328-05-01	557328-05-01		
	UNITS	Criteria	VS151	VS152	RDL	QC Batch
Inorganics						
Chromium (VI)	ug/g	8	0.3	<0.2	0.2	4496944

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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.maxxam.ca

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Maxxam Job #: B696124
Report Date: 2016/05/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CIQ505
Sample ID: VS151
Matrix: Soil

Collected: 2016/05/12
Shipped:
Received: 2016/05/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4495872	N/A	2016/05/13	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4496944	2016/05/13	2016/05/13	Lang Le
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4495884	2016/05/12	2016/05/13	Raigamage Perera
MOISTURE	BAL	4495879	N/A	2016/05/13	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4495882	2016/05/12	2016/05/12	Arezoo Habibagahi

Maxxam ID: CIQ505 Dup
Sample ID: VS151
Matrix: Soil

Collected: 2016/05/12
Shipped:
Received: 2016/05/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4495884	2016/05/12	2016/05/13	Raigamage Perera

Maxxam ID: CIQ506
Sample ID: VS152
Matrix: Soil

Collected: 2016/05/12
Shipped:
Received: 2016/05/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4495872	N/A	2016/05/13	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4496944	2016/05/13	2016/05/13	Lang Le
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4495884	2016/05/12	2016/05/13	Raigamage Perera
MOISTURE	BAL	4495879	N/A	2016/05/13	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4495882	2016/05/12	2016/05/12	Arezoo Habibagahi

Maxxam ID: CIQ506 Dup
Sample ID: VS152
Matrix: Soil

Collected: 2016/05/12
Shipped:
Received: 2016/05/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4495879	N/A	2016/05/13	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4495882	2016/05/12	2016/05/12	Arezoo Habibagahi

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Maxxam Job #: B696124
Report Date: 2016/05/14

Golder Associates Ltd
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GENERAL COMMENTS

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

Package 1	20.0°C

Results relate only to the items tested.

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Maxxam Job #: B696124
Report Date: 2016/05/14

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4495882	D10-Anthracene	2016/05/12	57	50 - 130	71	50 - 130	67	%				
4495882	D14-Terphenyl (FS)	2016/05/12	51	50 - 130	57	50 - 130	55	%				
4495882	D8-Acenaphthylene	2016/05/12	60	50 - 130	69	50 - 130	67	%				
4495879	Moisture	2016/05/13							1.7	50		
4495882	1-Methylnaphthalene	2016/05/12	59	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4495882	2-Methylnaphthalene	2016/05/12	54	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4495882	Acenaphthene	2016/05/12	53	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40		
4495882	Acenaphthylene	2016/05/12	53	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40		
4495882	Anthracene	2016/05/12	54	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40		
4495882	Benzo(a)anthracene	2016/05/12	53	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40		
4495882	Benzo(a)pyrene	2016/05/12	52	50 - 130	56	50 - 130	<0.0050	ug/g	NC	40		
4495882	Benzo(b/j)fluoranthene	2016/05/12	52	50 - 130	54	50 - 130	<0.0050	ug/g	NC	40		
4495882	Benzo(g,h,i)perylene	2016/05/12	50	50 - 130	51	50 - 130	<0.0050	ug/g	NC	40		
4495882	Benzo(k)fluoranthene	2016/05/12	51	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40		
4495882	Chrysene	2016/05/12	57	50 - 130	54	50 - 130	<0.0050	ug/g	NC	40		
4495882	Dibenz(a,h)anthracene	2016/05/12	50	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40		
4495882	Fluoranthene	2016/05/12	65	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40		
4495882	Fluorene	2016/05/12	55	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4495882	Indeno(1,2,3-cd)pyrene	2016/05/12	50	50 - 130	51	50 - 130	<0.0050	ug/g	NC	40		
4495882	Naphthalene	2016/05/12	52	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40		
4495882	Phenanthrene	2016/05/12	50	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4495882	Pyrene	2016/05/12	64	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40		
4495884	Acid Extractable Antimony (Sb)	2016/05/13	84	75 - 125	103	80 - 120	<0.2	ug/g	NC	35		
4495884	Acid Extractable Arsenic (As)	2016/05/13	100	75 - 125	101	80 - 120	<1	ug/g	NC	35		
4495884	Acid Extractable Barium (Ba)	2016/05/13	NC	75 - 125	106	80 - 120	<0.5	ug/g	4.5	35		
4495884	Acid Extractable Beryllium (Be)	2016/05/13	102	75 - 125	101	80 - 120	<0.2	ug/g	NC	35		
4495884	Acid Extractable Boron (B)	2016/05/13	103	75 - 125	97	80 - 120	<5	ug/g	NC	35		
4495884	Acid Extractable Cadmium (Cd)	2016/05/13	102	75 - 125	103	80 - 120	<0.1	ug/g	NC	35		
4495884	Acid Extractable Chromium (Cr)	2016/05/13	NC	75 - 125	100	80 - 120	<1	ug/g	0.92	35		
4495884	Acid Extractable Cobalt (Co)	2016/05/13	98	75 - 125	101	80 - 120	<0.1	ug/g	1.2	35		
4495884	Acid Extractable Copper (Cu)	2016/05/13	NC	75 - 125	104	80 - 120	<0.5	ug/g	2.5	35		

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Maxxam Job #: B696124
Report Date: 2016/05/14

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4495884	Acid Extractable Lead (Pb)	2016/05/13	103	75 - 125	102	80 - 120	<1	ug/g	3.2	35		
4495884	Acid Extractable Mercury (Hg)	2016/05/13	101	75 - 125	104	80 - 120	<0.05	ug/g	NC	35		
4495884	Acid Extractable Molybdenum (Mo)	2016/05/13	100	75 - 125	106	80 - 120	<0.5	ug/g	NC	35		
4495884	Acid Extractable Nickel (Ni)	2016/05/13	NC	75 - 125	104	80 - 120	<0.5	ug/g	0.30	35		
4495884	Acid Extractable Selenium (Se)	2016/05/13	102	75 - 125	105	80 - 120	<0.5	ug/g	NC	35		
4495884	Acid Extractable Silver (Ag)	2016/05/13	98	75 - 125	103	80 - 120	<0.2	ug/g	NC	35		
4495884	Acid Extractable Thallium (Tl)	2016/05/13	101	75 - 125	103	80 - 120	<0.05	ug/g	NC	35		
4495884	Acid Extractable Uranium (U)	2016/05/13	105	75 - 125	103	80 - 120	<0.05	ug/g	5.0	25		
4495884	Acid Extractable Vanadium (V)	2016/05/13	NC	75 - 125	100	80 - 120	<5	ug/g	1.5	35		
4495884	Acid Extractable Zinc (Zn)	2016/05/13	NC	75 - 125	104	80 - 120	<5	ug/g	0.50	35		
4496944	Chromium (VI)	2016/05/13	72 (1)	75 - 125	84	80 - 120	<0.2	ug/g	NC	35	80	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B696124
Report Date: 2016/05/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Paul

Paul Rubinato, Analyst, Maxxam Analytics

Steve Roberts, Ottawa Lab Manager

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #	B57625	Maxxam Job #:	Bottle Order #: 557328
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #			
Address:	1931 Robertson Rd	Address:		Project:	1525113		
	Ottawa ON K2H 5B7			Project Name:		COC #: C#557328-05-01	Project Manager: Parnian Baber
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	Aaron Brockshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

Turnaround Time (TAT) Required:

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: Next day Time Required: ☒
Rush Confirmation Number: (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI								# of Bottles	Comments
1		VS151	16/05/12	0900	Soil		X	X								1	
2		VS152	16/05/12	0910	Soil		X	X								1	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

12-May-16 15:00
Parnian Baber
B696124
FHB OTT-002

RECEIVED IN OTTAWA

On ICE pack

* 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
A. Brockshaw / Aaron Brockshaw	16/05/12	1445	[illegible]	2016/05/12	15:00	0		20, 20, 20	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B696124
Report Date: 2016/05/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 557328-06-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/05/17
Report #: R3995933
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B698511
Received: 2016/05/16, 15:15

Sample Matrix: Soil
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	10	N/A	2016/05/17	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	10	2016/05/17	2016/05/17	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	10	2016/05/16	2016/05/17	OTT SOP-00003	EPA 6020
MOISTURE	10	N/A	2016/05/17	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	10	2016/05/16	2016/05/17	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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

Encryption Key

Ema Gitej
17 May 2016 17:50:34 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager Assistant
Email: MBingley@maxxam.ca
Phone# (613)274-0573

==========

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Maxxam Job #: B698511
Report Date: 2016/05/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CJC226	CJC226	CJC227	CJC228	CJC229		
Sampling Date			2016/05/16 07:30	2016/05/16 07:30	2016/05/16 07:40	2016/05/16 08:00	2016/05/16 08:10		
COC Number			557328-06-01	557328-06-01	557328-06-01	557328-06-01	557328-06-01		
	UNITS	Criteria	VS153	VS153 Lab-Dup	VS154	VS155	VS156	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4500234
Acid Extractable Arsenic (As)	ug/g	**18**	2	2	2	2	2	1	4500234
Acid Extractable Barium (Ba)	ug/g	**670**	150	140	180	150	190	0.5	4500234
Acid Extractable Beryllium (Be)	ug/g	**8**	0.6	0.6	0.6	0.5	0.6	0.2	4500234
Acid Extractable Boron (B)	ug/g	**120**	<5	<5	<5	<5	5	5	4500234
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4500234
Acid Extractable Chromium (Cr)	ug/g	**160**	35	33	41	34	42	1	4500234
Acid Extractable Cobalt (Co)	ug/g	**80**	11	9.8	13	10	12	0.1	4500234
Acid Extractable Copper (Cu)	ug/g	**230**	21	20	29	23	26	0.5	4500234
Acid Extractable Lead (Pb)	ug/g	**120**	5	5	6	5	6	1	4500234
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4500234
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4500234
Acid Extractable Nickel (Ni)	ug/g	**270**	20	20	25	21	28	0.5	4500234
Acid Extractable Selenium (Se)	ug/g	**5.5**	0.8	0.9	0.8	0.6	1.0	0.5	4500234
Acid Extractable Silver (Ag)	ug/g	**40**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4500234
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.19	0.18	0.24	0.18	0.22	0.05	4500234
Acid Extractable Uranium (U)	ug/g	**33**	0.83	0.78	0.64	0.77	0.83	0.05	4500234
Acid Extractable Vanadium (V)	ug/g	**86**	51	50	59	50	61	5	4500234
Acid Extractable Zinc (Zn)	ug/g	**340**	55	52	71	55	68	5	4500234

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B698511
Report Date: 2016/05/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CJC230	CJC231	CJC232	CJC233	CJC234		
Sampling Date			2016/05/16 08:15	2016/05/16 08:25	2016/05/16 11:00	2016/05/16 12:30	2016/05/16 12:50		
COC Number			557328-06-01	557328-06-01	557328-06-01	557328-06-01	557328-06-01		
	UNITS	Criteria	VS1156	VS157	VS158	VS159	VS160	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	40	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4500234
Acid Extractable Arsenic (As)	ug/g	18	3	1	3	2	3	1	4500234
Acid Extractable Barium (Ba)	ug/g	670	190	170	200	180	190	0.5	4500234
Acid Extractable Beryllium (Be)	ug/g	8	0.7	0.6	0.7	0.7	0.6	0.2	4500234
Acid Extractable Boron (B)	ug/g	120	5	5	6	<5	5	5	4500234
Acid Extractable Cadmium (Cd)	ug/g	1.9	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4500234
Acid Extractable Chromium (Cr)	ug/g	160	43	38	47	40	43	1	4500234
Acid Extractable Cobalt (Co)	ug/g	80	13	11	14	12	13	0.1	4500234
Acid Extractable Copper (Cu)	ug/g	230	25	20	26	20	24	0.5	4500234
Acid Extractable Lead (Pb)	ug/g	120	6	6	7	6	6	1	4500234
Acid Extractable Mercury (Hg)	ug/g	3.9	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4500234
Acid Extractable Molybdenum (Mo)	ug/g	40	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4500234
Acid Extractable Nickel (Ni)	ug/g	270	28	22	28	23	26	0.5	4500234
Acid Extractable Selenium (Se)	ug/g	5.5	0.8	0.7	1.0	<0.5	0.5	0.5	4500234
Acid Extractable Silver (Ag)	ug/g	40	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4500234
Acid Extractable Thallium (Tl)	ug/g	3.3	0.23	0.19	0.26	0.21	0.25	0.05	4500234
Acid Extractable Uranium (U)	ug/g	33	0.80	0.87	0.68	0.74	0.57	0.05	4500234
Acid Extractable Vanadium (V)	ug/g	86	61	51	63	58	60	5	4500234
Acid Extractable Zinc (Zn)	ug/g	340	69	64	77	63	70	5	4500234

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B698511
Report Date: 2016/05/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CJC235		
Sampling Date			2016/05/16 14:10		
COC Number			557328-06-01		
	UNITS	Criteria	VS161	RDL	QC Batch
Metals					
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.2	0.2	4500234
Acid Extractable Arsenic (As)	ug/g	**18**	3	1	4500234
Acid Extractable Barium (Ba)	ug/g	**670**	200	0.5	4500234
Acid Extractable Beryllium (Be)	ug/g	**8**	0.7	0.2	4500234
Acid Extractable Boron (B)	ug/g	**120**	6	5	4500234
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.1	0.1	4500234
Acid Extractable Chromium (Cr)	ug/g	**160**	44	1	4500234
Acid Extractable Cobalt (Co)	ug/g	**80**	13	0.1	4500234
Acid Extractable Copper (Cu)	ug/g	**230**	23	0.5	4500234
Acid Extractable Lead (Pb)	ug/g	**120**	7	1	4500234
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.05	0.05	4500234
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.5	0.5	4500234
Acid Extractable Nickel (Ni)	ug/g	**270**	26	0.5	4500234
Acid Extractable Selenium (Se)	ug/g	**5.5**	0.6	0.5	4500234
Acid Extractable Silver (Ag)	ug/g	**40**	<0.2	0.2	4500234
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.25	0.05	4500234
Acid Extractable Uranium (U)	ug/g	**33**	0.62	0.05	4500234
Acid Extractable Vanadium (V)	ug/g	**86**	63	5	4500234
Acid Extractable Zinc (Zn)	ug/g	**340**	71	5	4500234

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CJC226	CJC227	CJC227	CJC228	CJC229		
Sampling Date			2016/05/16 07:30	2016/05/16 07:40	2016/05/16 07:40	2016/05/16 08:00	2016/05/16 08:10		
COC Number			557328-06-01	557328-06-01	557328-06-01	557328-06-01	557328-06-01		
	UNITS	Criteria	VS153	VS154	VS154 Lab-Dup	VS155	VS156	RDL	QC Batch
Inorganics									
Moisture	%	-	19	21	21	17	20	0.2	4500243
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014		<0.014	<0.014	0.014	4500026
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	0.0057	0.0050	4500255
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Surrogate Recovery (%)									
D10-Anthracene	%	-	73	75	73	72	70		4500255
D14-Terphenyl (FS)	%	-	62	63	63	63	65		4500255
D8-Acenaphthylene	%	-	79	78	77	78	76		4500255

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B698511
Report Date: 2016/05/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CJC230	CJC231	CJC232	CJC233	CJC234		
Sampling Date			2016/05/16 08:15	2016/05/16 08:25	2016/05/16 11:00	2016/05/16 12:30	2016/05/16 12:50		
COC Number			557328-06-01	557328-06-01	557328-06-01	557328-06-01	557328-06-01		
	UNITS	Criteria	VS1156	VS157	VS158	VS159	VS160	RDL	QC Batch
Inorganics									
Moisture	%	-	20	20	22	20	22	0.2	4500243
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4500026
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4500255
Surrogate Recovery (%)									
D10-Anthracene	%	-	71	74	71	75	72		4500255
D14-Terphenyl (FS)	%	-	64	64	63	64	60		4500255
D8-Acenaphthylene	%	-	75	77	77	79	77		4500255

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Report Date: 2016/05/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CJC235		
Sampling Date			2016/05/16 14:10		
COC Number			557328-06-01		
	UNITS	Criteria	VS161	RDL	QC Batch
Inorganics					
Moisture	%	-	21	0.2	4500243
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	0.014	4500026
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**96**	<0.0050	0.0050	4500255
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	4500255
Anthracene	ug/g	**0.67**	<0.0050	0.0050	4500255
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	0.0050	4500255
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	4500255
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	0.0050	4500255
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	0.0050	4500255
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	0.0050	4500255
Chrysene	ug/g	**9.6**	<0.0050	0.0050	4500255
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	4500255
Fluoranthene	ug/g	**9.6**	<0.0050	0.0050	4500255
Fluorene	ug/g	**62**	<0.0050	0.0050	4500255
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	0.0050	4500255
1-Methylnaphthalene	ug/g	**76**	<0.0050	0.0050	4500255
2-Methylnaphthalene	ug/g	**76**	<0.0050	0.0050	4500255
Naphthalene	ug/g	**9.6**	<0.0050	0.0050	4500255
Phenanthrene	ug/g	**12**	<0.0050	0.0050	4500255
Pyrene	ug/g	**96**	<0.0050	0.0050	4500255
Surrogate Recovery (%)					
D10-Anthracene	%	-	72		4500255
D14-Terphenyl (FS)	%	-	60		4500255
D8-Acenaphthylene	%	-	73		4500255

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water
Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CJC226	CJC227	CJC227	CJC228	CJC229		
Sampling Date			2016/05/16 07:30	2016/05/16 07:40	2016/05/16 07:40	2016/05/16 08:00	2016/05/16 08:10		
COC Number			557328-06-01	557328-06-01	557328-06-01	557328-06-01	557328-06-01		
	UNITS	Criteria	VS153	VS154	VS154 Lab-Dup	VS155	VS156	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.3	0.3	0.3	0.6	0.2	0.2	4501271

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

Maxxam ID			CJC230	CJC231	CJC232	CJC233	CJC234		
Sampling Date			2016/05/16 08:15	2016/05/16 08:25	2016/05/16 11:00	2016/05/16 12:30	2016/05/16 12:50		
COC Number			557328-06-01	557328-06-01	557328-06-01	557328-06-01	557328-06-01		
	UNITS	Criteria	VS1156	VS157	VS158	VS159	VS160	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.4	0.2	<0.2	0.4	0.3	0.2	4501271

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

Maxxam ID			CJC235		
Sampling Date			2016/05/16 14:10		
COC Number			557328-06-01		
	UNITS	Criteria	VS161	RDL	QC Batch
Inorganics					
Chromium (VI)	ug/g	8	0.4	0.2	4501271

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water
Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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TEST SUMMARY

Maxxam ID: CJC226
Sample ID: VS153
Matrix: Soil

Collected: 2016/05/16
Shipped:
Received: 2016/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4500026	N/A	2016/05/17	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4501271	2016/05/17	2016/05/17	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4500234	2016/05/16	2016/05/17	Raigamage Perera
MOISTURE	BAL	4500243	N/A	2016/05/17	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4500255	2016/05/16	2016/05/17	Arezoo Habibagahi

Maxxam ID: CJC226 Dup
Sample ID: VS153
Matrix: Soil

Collected: 2016/05/16
Shipped:
Received: 2016/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4500234	2016/05/16	2016/05/17	Raigamage Perera

Maxxam ID: CJC227
Sample ID: VS154
Matrix: Soil

Collected: 2016/05/16
Shipped:
Received: 2016/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4500026	N/A	2016/05/17	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4501271	2016/05/17	2016/05/17	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4500234	2016/05/16	2016/05/17	Raigamage Perera
MOISTURE	BAL	4500243	N/A	2016/05/17	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4500255	2016/05/16	2016/05/17	Arezoo Habibagahi

Maxxam ID: CJC227 Dup
Sample ID: VS154
Matrix: Soil

Collected: 2016/05/16
Shipped:
Received: 2016/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4501271	2016/05/17	2016/05/17	Sally Coughlin
MOISTURE	BAL	4500243	N/A	2016/05/17	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4500255	2016/05/16	2016/05/17	Arezoo Habibagahi

Maxxam ID: CJC228
Sample ID: VS155
Matrix: Soil

Collected: 2016/05/16
Shipped:
Received: 2016/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4500026	N/A	2016/05/17	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4501271	2016/05/17	2016/05/17	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4500234	2016/05/16	2016/05/17	Raigamage Perera
MOISTURE	BAL	4500243	N/A	2016/05/17	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4500255	2016/05/16	2016/05/17	Arezoo Habibagahi

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Report Date: 2016/05/17

Golder Associates Ltd
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Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CJC229
Sample ID: VS156
Matrix: Soil

Collected: 2016/05/16
Shipped:
Received: 2016/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4500026	N/A	2016/05/17	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4501271	2016/05/17	2016/05/17	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4500234	2016/05/16	2016/05/17	Raigamage Perera
MOISTURE	BAL	4500243	N/A	2016/05/17	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4500255	2016/05/16	2016/05/17	Arezoo Habibagahi

Maxxam ID: CJC230
Sample ID: VS1156
Matrix: Soil

Collected: 2016/05/16
Shipped:
Received: 2016/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4500026	N/A	2016/05/17	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4501271	2016/05/17	2016/05/17	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4500234	2016/05/16	2016/05/17	Raigamage Perera
MOISTURE	BAL	4500243	N/A	2016/05/17	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4500255	2016/05/16	2016/05/17	Arezoo Habibagahi

Maxxam ID: CJC231
Sample ID: VS157
Matrix: Soil

Collected: 2016/05/16
Shipped:
Received: 2016/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4500026	N/A	2016/05/17	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4501271	2016/05/17	2016/05/17	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4500234	2016/05/16	2016/05/17	Raigamage Perera
MOISTURE	BAL	4500243	N/A	2016/05/17	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4500255	2016/05/16	2016/05/17	Arezoo Habibagahi

Maxxam ID: CJC232
Sample ID: VS158
Matrix: Soil

Collected: 2016/05/16
Shipped:
Received: 2016/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4500026	N/A	2016/05/17	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4501271	2016/05/17	2016/05/17	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4500234	2016/05/16	2016/05/17	Raigamage Perera
MOISTURE	BAL	4500243	N/A	2016/05/17	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4500255	2016/05/16	2016/05/17	Arezoo Habibagahi

Maxxam ID: CJC233
Sample ID: VS159
Matrix: Soil

Collected: 2016/05/16
Shipped:
Received: 2016/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4500026	N/A	2016/05/17	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4501271	2016/05/17	2016/05/17	Sally Coughlin

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Maxxam Job #: B698511
Report Date: 2016/05/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CJC233
Sample ID: VS159
Matrix: Soil

Collected: 2016/05/16
Shipped:
Received: 2016/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4500234	2016/05/16	2016/05/17	Raigamage Perera
MOISTURE	BAL	4500243	N/A	2016/05/17	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4500255	2016/05/16	2016/05/17	Arezoo Habibagahi

Maxxam ID: CJC234
Sample ID: VS160
Matrix: Soil

Collected: 2016/05/16
Shipped:
Received: 2016/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4500026	N/A	2016/05/17	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4501271	2016/05/17	2016/05/17	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4500234	2016/05/16	2016/05/17	Raigamage Perera
MOISTURE	BAL	4500243	N/A	2016/05/17	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4500255	2016/05/16	2016/05/17	Arezoo Habibagahi

Maxxam ID: CJC235
Sample ID: VS161
Matrix: Soil

Collected: 2016/05/16
Shipped:
Received: 2016/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4500026	N/A	2016/05/17	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4501271	2016/05/17	2016/05/17	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4500234	2016/05/16	2016/05/17	Raigamage Perera
MOISTURE	BAL	4500243	N/A	2016/05/17	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4500255	2016/05/16	2016/05/17	Arezoo Habibagahi

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GENERAL COMMENTS

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

Package 1	12.3°C

Results relate only to the items tested.

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Report Date: 2016/05/17

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4500255	D10-Anthracene	2016/05/17	59	50 - 130	65	50 - 130	68	%				
4500255	D14-Terphenyl (FS)	2016/05/17	52	50 - 130	56	50 - 130	57	%				
4500255	D8-Acenaphthylene	2016/05/17	62	50 - 130	69	50 - 130	69	%				
4500234	Acid Extractable Antimony (Sb)	2016/05/17	78	75 - 125	103	80 - 120	<0.2	ug/g	NC	35		
4500234	Acid Extractable Arsenic (As)	2016/05/17	93	75 - 125	104	80 - 120	<1	ug/g	NC	35		
4500234	Acid Extractable Barium (Ba)	2016/05/17	NC	75 - 125	112	80 - 120	0.8, RDL=0.5	ug/g	3.8	35		
4500234	Acid Extractable Beryllium (Be)	2016/05/17	102	75 - 125	106	80 - 120	<0.2	ug/g	NC	35		
4500234	Acid Extractable Boron (B)	2016/05/17	99	75 - 125	107	80 - 120	<5	ug/g	NC	35		
4500234	Acid Extractable Cadmium (Cd)	2016/05/17	102	75 - 125	106	80 - 120	<0.1	ug/g	NC	35		
4500234	Acid Extractable Chromium (Cr)	2016/05/17	NC	75 - 125	107	80 - 120	<1	ug/g	3.2	35		
4500234	Acid Extractable Cobalt (Co)	2016/05/17	104	75 - 125	107	80 - 120	<0.1	ug/g	7.9	35		
4500234	Acid Extractable Copper (Cu)	2016/05/17	NC	75 - 125	109	80 - 120	<0.5	ug/g	5.9	35		
4500234	Acid Extractable Lead (Pb)	2016/05/17	99	75 - 125	107	80 - 120	<1	ug/g	NC	35		
4500234	Acid Extractable Mercury (Hg)	2016/05/17	105	75 - 125	110	80 - 120	<0.05	ug/g	NC	35		
4500234	Acid Extractable Molybdenum (Mo)	2016/05/17	98	75 - 125	105	80 - 120	<0.5	ug/g	NC	35		
4500234	Acid Extractable Nickel (Ni)	2016/05/17	NC	75 - 125	108	80 - 120	<0.5	ug/g	0.47	35		
4500234	Acid Extractable Selenium (Se)	2016/05/17	94	75 - 125	100	80 - 120	<0.5	ug/g	NC	35		
4500234	Acid Extractable Silver (Ag)	2016/05/17	100	75 - 125	105	80 - 120	<0.2	ug/g	NC	35		
4500234	Acid Extractable Thallium (Tl)	2016/05/17	101	75 - 125	106	80 - 120	<0.05	ug/g	NC	35		
4500234	Acid Extractable Uranium (U)	2016/05/17	102	75 - 125	105	80 - 120	<0.05	ug/g	5.7	25		
4500234	Acid Extractable Vanadium (V)	2016/05/17	NC	75 - 125	104	80 - 120	<5	ug/g	3.7	35		
4500234	Acid Extractable Zinc (Zn)	2016/05/17	NC	75 - 125	108	80 - 120	<5	ug/g	5.4	35		
4500243	Moisture	2016/05/17							0.95	50		
4500255	1-Methylnaphthalene	2016/05/17	60	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40		
4500255	2-Methylnaphthalene	2016/05/17	55	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40		
4500255	Acenaphthene	2016/05/17	52	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40		
4500255	Acenaphthylene	2016/05/17	57	50 - 130	62	50 - 130	<0.0050	ug/g	NC	40		
4500255	Anthracene	2016/05/17	55	50 - 130	62	50 - 130	<0.0050	ug/g	NC	40		
4500255	Benzo(a)anthracene	2016/05/17	53	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4500255	Benzo(a)pyrene	2016/05/17	52	50 - 130	52	50 - 130	<0.0050	ug/g	NC	40		
4500255	Benzo(b/j)fluoranthene	2016/05/17	52	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40		

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Report Date: 2016/05/17

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4500255	Benzo(g,h,i)perylene	2016/05/17	50	50 - 130	51	50 - 130	<0.0050	ug/g	NC	40		
4500255	Benzo(k)fluoranthene	2016/05/17	53	50 - 130	52	50 - 130	<0.0050	ug/g	NC	40		
4500255	Chrysene	2016/05/17	55	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40		
4500255	Dibenz(a,h)anthracene	2016/05/17	53	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40		
4500255	Fluoranthene	2016/05/17	67	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4500255	Fluorene	2016/05/17	56	50 - 130	62	50 - 130	<0.0050	ug/g	NC	40		
4500255	Indeno(1,2,3-cd)pyrene	2016/05/17	53	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40		
4500255	Naphthalene	2016/05/17	51	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40		
4500255	Phenanthrene	2016/05/17	50	50 - 130	55	50 - 130	<0.0050	ug/g	NC	40		
4500255	Pyrene	2016/05/17	66	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40		
4501271	Chromium (VI)	2016/05/17	66 (1)	75 - 125	83	80 - 120	<0.2	ug/g	NC	35	85	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B698511
Report Date: 2016/05/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Steve Roberts, Ottawa Lab Manager

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) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:
Company Name: #14090 Golder Associates Ltd
Attention: Central Accounting
Address: 1931 Robertson Rd, Ottawa ON K2H 5B7
Tel: (613) 592-9600 Fax: (613) 592-9601
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Paul, Tony, Aaron, Equis
Address:
Tel: Fax:
Email: Tony_Lyon@golder.com, Paul_Hurst@golder.com; GAL

PROJECT INFORMATION:
Quotation #: B57625
P.O. #:
Project: 1525113
Project Name:
Site #:
Sampled By: Aaron Bradshaw

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 557328
COC #: C#557328-06-01
Project Manager: Parnian Baber

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

Turnaround Time (TAT) Required:
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: Next Day (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI								# of Bottles	Comments
1		VS153	16/05/16	0730	Soil		X	X								1	
2		VS154		0740			X	X								1	
3		VS155		0800			X	X								1	
4		VS156		0810			X	X								1	
5		VS1156		0815			X	X								1	
6		VS157		0825			X	X								1	
7		VS158		1100			X	X								1	
8		VS159		1230			X	X								1	
9		VS160		1250			X	X								1	
10		VS161		1410			X	X								1	

16-May-16 15:15
Parnian Baber
B698511
FHB
OTT-002

RECEIVED IN OTTAWA

on ICE pack.

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
A. Bradshaw Aaron Bradshaw	16/05/16	14:45	HA Footsmith	2016/05/16	15:15	0		14, 12, 11	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B698511
Report Date: 2016/05/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 1525113
Your C.O.C. #: 557328-07-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/05/18
Report #: R3997139
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B699654
Received: 2016/05/17, 16:30

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	6	N/A	2016/05/18	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	6	2016/05/18	2016/05/18	CAM SOP-00436	EPA 3060/7199 m
Acid Extr. Metals (aqua regia) by ICPMS	6	2016/05/17	2016/05/18	OTT SOP-00003	EPA 6020
MOISTURE	6	N/A	2016/05/18	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	6	2016/05/17	2016/05/18	OTT SOP-00011	EPA 8270D m

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.

Maxxam Analytics is accredited 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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Ema Gitej
18 May 2016 17:58:04 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager Assistant
Email: MBingley@maxxam.ca
Phone# (613)274-0573

==========

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Maxxam Job #: B699654
Report Date: 2016/05/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CJH713	CJH713	CJH714	CJH715	CJH716		
Sampling Date			2016/05/17 08:00	2016/05/17 08:00	2016/05/17 08:10	2016/05/17 08:15	2016/05/17 08:25		
COC Number			557328-07-01	557328-07-01	557328-07-01	557328-07-01	557328-07-01		
	UNITS	Criteria	VS162	VS162 Lab-Dup	VS163	VS1163	VS164	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**40**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4502101
Acid Extractable Arsenic (As)	ug/g	**18**	2	2	2	2	2	1	4502101
Acid Extractable Barium (Ba)	ug/g	**670**	210	210	210	200	210	0.5	4502101
Acid Extractable Beryllium (Be)	ug/g	**8**	0.7	0.8	0.7	0.8	0.7	0.2	4502101
Acid Extractable Boron (B)	ug/g	**120**	6	6	6	6	5	5	4502101
Acid Extractable Cadmium (Cd)	ug/g	**1.9**	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	4502101
Acid Extractable Chromium (Cr)	ug/g	**160**	46	46	51	50	46	1	4502101
Acid Extractable Cobalt (Co)	ug/g	**80**	14	14	14	13	15	0.1	4502101
Acid Extractable Copper (Cu)	ug/g	**230**	26	26	27	27	25	0.5	4502101
Acid Extractable Lead (Pb)	ug/g	**120**	7	7	6	6	6	1	4502101
Acid Extractable Mercury (Hg)	ug/g	**3.9**	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	4502101
Acid Extractable Molybdenum (Mo)	ug/g	**40**	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	4502101
Acid Extractable Nickel (Ni)	ug/g	**270**	29	30	31	31	29	0.5	4502101
Acid Extractable Selenium (Se)	ug/g	**5.5**	1.0	0.8	0.7	<0.5	0.7	0.5	4502101
Acid Extractable Silver (Ag)	ug/g	**40**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4502101
Acid Extractable Thallium (Tl)	ug/g	**3.3**	0.27	0.25	0.28	0.28	0.25	0.05	4502101
Acid Extractable Uranium (U)	ug/g	**33**	0.66	0.75	0.80	0.79	0.92	0.05	4502101
Acid Extractable Vanadium (V)	ug/g	**86**	65	65	67	67	65	5	4502101
Acid Extractable Zinc (Zn)	ug/g	**340**	76	75	81	79	74	5	4502101

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Maxxam Job #: B699654
Report Date: 2016/05/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CJH717	CJH718		
Sampling Date			2016/05/17 13:10	2016/05/17 13:20		
COC Number			557328-07-01	557328-07-01		
	UNITS	Criteria	VS165	VS166	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	40	<0.2	<0.2	0.2	4502101
Acid Extractable Arsenic (As)	ug/g	18	2	1	1	4502101
Acid Extractable Barium (Ba)	ug/g	670	200	170	0.5	4502101
Acid Extractable Beryllium (Be)	ug/g	8	0.6	0.6	0.2	4502101
Acid Extractable Boron (B)	ug/g	120	5	5	5	4502101
Acid Extractable Cadmium (Cd)	ug/g	1.9	<0.1	<0.1	0.1	4502101
Acid Extractable Chromium (Cr)	ug/g	160	44	39	1	4502101
Acid Extractable Cobalt (Co)	ug/g	80	14	12	0.1	4502101
Acid Extractable Copper (Cu)	ug/g	230	24	20	0.5	4502101
Acid Extractable Lead (Pb)	ug/g	120	6	6	1	4502101
Acid Extractable Mercury (Hg)	ug/g	3.9	<0.05	<0.05	0.05	4502101
Acid Extractable Molybdenum (Mo)	ug/g	40	<0.5	<0.5	0.5	4502101
Acid Extractable Nickel (Ni)	ug/g	270	27	24	0.5	4502101
Acid Extractable Selenium (Se)	ug/g	5.5	1.2	<0.5	0.5	4502101
Acid Extractable Silver (Ag)	ug/g	40	<0.2	<0.2	0.2	4502101
Acid Extractable Thallium (Tl)	ug/g	3.3	0.25	0.21	0.05	4502101
Acid Extractable Uranium (U)	ug/g	33	0.63	0.80	0.05	4502101
Acid Extractable Vanadium (V)	ug/g	86	64	58	5	4502101
Acid Extractable Zinc (Zn)	ug/g	340	74	65	5	4502101

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B699654
Report Date: 2016/05/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CJH713	CJH714	CJH714	CJH715	CJH716		
Sampling Date			2016/05/17 08:00	2016/05/17 08:10	2016/05/17 08:10	2016/05/17 08:15	2016/05/17 08:25		
COC Number			557328-07-01	557328-07-01	557328-07-01	557328-07-01	557328-07-01		
	UNITS	Criteria	VS162	VS163	VS163 Lab-Dup	VS1163	VS164	RDL	QC Batch
Inorganics									
Moisture	%	-	22	22	21	22	21	0.2	4502078
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014		<0.014	<0.014	0.014	4502059
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
Pyrene	ug/g	**96**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4502081
Surrogate Recovery (%)									
D10-Anthracene	%	-	71	73	75	71	70		4502081
D14-Terphenyl (FS)	%	-	64	65	68	64	64		4502081
D8-Acenaphthylene	%	-	81	78	81	76	76		4502081

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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A Bureau Veritas Group Company

Maxxam Job #: B699654
Report Date: 2016/05/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CJH717	CJH718		
Sampling Date			2016/05/17 13:10	2016/05/17 13:20		
COC Number			557328-07-01	557328-07-01		
	UNITS	Criteria	VS165	VS166	RDL	QC Batch
Inorganics						
Moisture	%	-	22	21	0.2	4502078
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**76**	<0.014	<0.014	0.014	4502059
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**96**	<0.0050	<0.0050	0.0050	4502081
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	0.0050	4502081
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	0.0050	4502081
Benzo(a)anthracene	ug/g	**0.96**	<0.0050	<0.0050	0.0050	4502081
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0050	4502081
Benzo(b/j)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	0.0050	4502081
Benzo(g,h,i)perylene	ug/g	**9.6**	<0.0050	<0.0050	0.0050	4502081
Benzo(k)fluoranthene	ug/g	**0.96**	<0.0050	<0.0050	0.0050	4502081
Chrysene	ug/g	**9.6**	<0.0050	<0.0050	0.0050	4502081
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	0.0050	4502081
Fluoranthene	ug/g	**9.6**	<0.0050	<0.0050	0.0050	4502081
Fluorene	ug/g	**62**	<0.0050	<0.0050	0.0050	4502081
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	<0.0050	<0.0050	0.0050	4502081
1-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	0.0050	4502081
2-Methylnaphthalene	ug/g	**76**	<0.0050	<0.0050	0.0050	4502081
Naphthalene	ug/g	**9.6**	<0.0050	<0.0050	0.0050	4502081
Phenanthrene	ug/g	**12**	<0.0050	<0.0050	0.0050	4502081
Pyrene	ug/g	**96**	<0.0050	<0.0050	0.0050	4502081
Surrogate Recovery (%)						
D10-Anthracene	%	-	71	73		4502081
D14-Terphenyl (FS)	%	-	66	73		4502081
D8-Acenaphthylene	%	-	78	81		4502081

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CJH713	CJH714	CJH715	CJH716	CJH717		
Sampling Date			2016/05/17 08:00	2016/05/17 08:10	2016/05/17 08:15	2016/05/17 08:25	2016/05/17 13:10		
COC Number			557328-07-01	557328-07-01	557328-07-01	557328-07-01	557328-07-01		
	UNITS	Criteria	VS162	VS163	VS1163	VS164	VS165	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	0.4	0.2	0.4	0.3	0.2	0.2	4502934

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

Maxxam ID			CJH717	CJH718		
Sampling Date			2016/05/17 13:10	2016/05/17 13:20		
COC Number			557328-07-01	557328-07-01		
	UNITS	Criteria	VS165 Lab-Dup	VS166	RDL	QC Batch
Inorganics						
Chromium (VI)	ug/g	8	0.2	<0.2	0.2	4502934

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
Soil - Industrial/Commercial/Community- Coarse Texture

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Report Date: 2016/05/18

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Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CJH713
Sample ID: VS162
Matrix: Soil

Collected: 2016/05/17
Shipped:
Received: 2016/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4502059	N/A	2016/05/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4502934	2016/05/18	2016/05/18	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4502101	2016/05/17	2016/05/18	Raigamage Perera
MOISTURE	BAL	4502078	N/A	2016/05/18	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4502081	2016/05/17	2016/05/18	Arezoo Habibagahi

Maxxam ID: CJH713 Dup
Sample ID: VS162
Matrix: Soil

Collected: 2016/05/17
Shipped:
Received: 2016/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4502101	2016/05/17	2016/05/18	Raigamage Perera

Maxxam ID: CJH714
Sample ID: VS163
Matrix: Soil

Collected: 2016/05/17
Shipped:
Received: 2016/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4502059	N/A	2016/05/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4502934	2016/05/18	2016/05/18	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4502101	2016/05/17	2016/05/18	Raigamage Perera
MOISTURE	BAL	4502078	N/A	2016/05/18	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4502081	2016/05/17	2016/05/18	Arezoo Habibagahi

Maxxam ID: CJH714 Dup
Sample ID: VS163
Matrix: Soil

Collected: 2016/05/17
Shipped:
Received: 2016/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4502078	N/A	2016/05/18	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4502081	2016/05/17	2016/05/18	Arezoo Habibagahi

Maxxam ID: CJH715
Sample ID: VS1163
Matrix: Soil

Collected: 2016/05/17
Shipped:
Received: 2016/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4502059	N/A	2016/05/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4502934	2016/05/18	2016/05/18	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4502101	2016/05/17	2016/05/18	Raigamage Perera
MOISTURE	BAL	4502078	N/A	2016/05/18	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4502081	2016/05/17	2016/05/18	Arezoo Habibagahi

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Report Date: 2016/05/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CJH716
Sample ID: VS164
Matrix: Soil

Collected: 2016/05/17
Shipped:
Received: 2016/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4502059	N/A	2016/05/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4502934	2016/05/18	2016/05/18	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4502101	2016/05/17	2016/05/18	Raigamage Perera
MOISTURE	BAL	4502078	N/A	2016/05/18	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4502081	2016/05/17	2016/05/18	Arezoo Habibagahi

Maxxam ID: CJH717
Sample ID: VS165
Matrix: Soil

Collected: 2016/05/17
Shipped:
Received: 2016/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4502059	N/A	2016/05/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4502934	2016/05/18	2016/05/18	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4502101	2016/05/17	2016/05/18	Raigamage Perera
MOISTURE	BAL	4502078	N/A	2016/05/18	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4502081	2016/05/17	2016/05/18	Arezoo Habibagahi

Maxxam ID: CJH717 Dup
Sample ID: VS165
Matrix: Soil

Collected: 2016/05/17
Shipped:
Received: 2016/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4502934	2016/05/18	2016/05/18	Sally Coughlin

Maxxam ID: CJH718
Sample ID: VS166
Matrix: Soil

Collected: 2016/05/17
Shipped:
Received: 2016/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4502059	N/A	2016/05/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4502934	2016/05/18	2016/05/18	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	4502101	2016/05/17	2016/05/18	Raigamage Perera
MOISTURE	BAL	4502078	N/A	2016/05/18	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4502081	2016/05/17	2016/05/18	Arezoo Habibagahi

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Report Date: 2016/05/18

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GENERAL COMMENTS

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

Package 1	17.0°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4502081	D10-Anthracene	2016/05/18	75	50 - 130	73	50 - 130	74	%				
4502081	D14-Terphenyl (FS)	2016/05/18	68	50 - 130	63	50 - 130	61	%				
4502081	D8-Acenaphthylene	2016/05/18	83	50 - 130	81	50 - 130	80	%				
4502078	Moisture	2016/05/18							1.9	50		
4502081	1-Methylnaphthalene	2016/05/18	80	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40		
4502081	2-Methylnaphthalene	2016/05/18	73	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40		
4502081	Acenaphthene	2016/05/18	68	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40		
4502081	Acenaphthylene	2016/05/18	77	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40		
4502081	Anthracene	2016/05/18	72	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4502081	Benzo(a)anthracene	2016/05/18	72	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40		
4502081	Benzo(a)pyrene	2016/05/18	62	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4502081	Benzo(b/j)fluoranthene	2016/05/18	55	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40		
4502081	Benzo(g,h,i)perylene	2016/05/18	51	50 - 130	56	50 - 130	<0.0050	ug/g	NC	40		
4502081	Benzo(k)fluoranthene	2016/05/18	55	50 - 130	50	50 - 130	<0.0050	ug/g	NC	40		
4502081	Chrysene	2016/05/18	62	50 - 130	59	50 - 130	<0.0050	ug/g	NC	40		
4502081	Dibenz(a,h)anthracene	2016/05/18	70	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40		
4502081	Fluoranthene	2016/05/18	91	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40		
4502081	Fluorene	2016/05/18	73	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40		
4502081	Indeno(1,2,3-cd)pyrene	2016/05/18	70	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40		
4502081	Naphthalene	2016/05/18	66	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40		
4502081	Phenanthrene	2016/05/18	64	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40		
4502081	Pyrene	2016/05/18	90	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40		
4502101	Acid Extractable Antimony (Sb)	2016/05/18	85	75 - 125	101	80 - 120	<0.2	ug/g	NC	35		
4502101	Acid Extractable Arsenic (As)	2016/05/18	102	75 - 125	99	80 - 120	<1	ug/g	NC	35		
4502101	Acid Extractable Barium (Ba)	2016/05/18	NC	75 - 125	102	80 - 120	<0.5	ug/g	0.53	35		
4502101	Acid Extractable Beryllium (Be)	2016/05/18	108	75 - 125	98	80 - 120	<0.2	ug/g	NC	35		
4502101	Acid Extractable Boron (B)	2016/05/18	106	75 - 125	99	80 - 120	<5	ug/g	NC	35		
4502101	Acid Extractable Cadmium (Cd)	2016/05/18	106	75 - 125	99	80 - 120	<0.1	ug/g	NC	35		
4502101	Acid Extractable Chromium (Cr)	2016/05/18	NC	75 - 125	102	80 - 120	<1	ug/g	0.31	35		
4502101	Acid Extractable Cobalt (Co)	2016/05/18	NC	75 - 125	99	80 - 120	<0.1	ug/g	1.7	35		
4502101	Acid Extractable Copper (Cu)	2016/05/18	NC	75 - 125	98	80 - 120	<0.5	ug/g	0.17	35		

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Report Date: 2016/05/18

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			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
4502101	Acid Extractable Lead (Pb)	2016/05/18	106	75 - 125	101	80 - 120	<1	ug/g	0.78	35		
4502101	Acid Extractable Mercury (Hg)	2016/05/18	100	75 - 125	98	80 - 120	<0.05	ug/g	NC	35		
4502101	Acid Extractable Molybdenum (Mo)	2016/05/18	103	75 - 125	99	80 - 120	<0.5	ug/g	NC	35		
4502101	Acid Extractable Nickel (Ni)	2016/05/18	NC	75 - 125	102	80 - 120	<0.5	ug/g	2.2	35		
4502101	Acid Extractable Selenium (Se)	2016/05/18	105	75 - 125	101	80 - 120	0.8, RDL=0.5	ug/g	NC	35		
4502101	Acid Extractable Silver (Ag)	2016/05/18	106	75 - 125	100	80 - 120	<0.2	ug/g	NC	35		
4502101	Acid Extractable Thallium (Tl)	2016/05/18	105	75 - 125	100	80 - 120	<0.05	ug/g	8.9	35		
4502101	Acid Extractable Uranium (U)	2016/05/18	107	75 - 125	101	80 - 120	<0.05	ug/g	12	25		
4502101	Acid Extractable Vanadium (V)	2016/05/18	NC	75 - 125	108	80 - 120	<5	ug/g	0.21	35		
4502101	Acid Extractable Zinc (Zn)	2016/05/18	NC	75 - 125	102	80 - 120	<5	ug/g	1.2	35		
4502934	Chromium (VI)	2016/05/18	56 (1)	75 - 125	82	80 - 120	<0.2	ug/g	NC	35	83	75 - 125

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 sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B699654
Report Date: 2016/05/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Brad Newman, Scientific Specialist

Steve Roberts, Ottawa Lab Manager

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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 657328
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113	COC #: C#557328-07-01	Project Manager: Parnian Baber
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Project Name:			
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	Aaron Bradshaw		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

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

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

Special Instructions:

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

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: Next Day Time Required: ___ ☒
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI								# of Bottles	Comments
1		VS162	16/05/17	8:00	Soil		X	X								1	
2		VS163	↓	8:10	↓		X	X								1	
3		VS1163		8:15			X	X								1	
4		VS164		8:25			X	X								1	
5		VS165		13:10			X	X								1	
6		VS166	↓	13:20	↓		X	X								1	
7																	
8																	
9																	
10																	

17-May-16 16:30
Parnian Baber
B699654
FHB OTT-002

RECEIVED IN OTTAWA

On ICE. pack.

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
Aaron Bradshaw	16/05/17	19:45		2016/05/17	16:30	0		17, 17, 17	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.

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

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B699654
Report Date: 2016/05/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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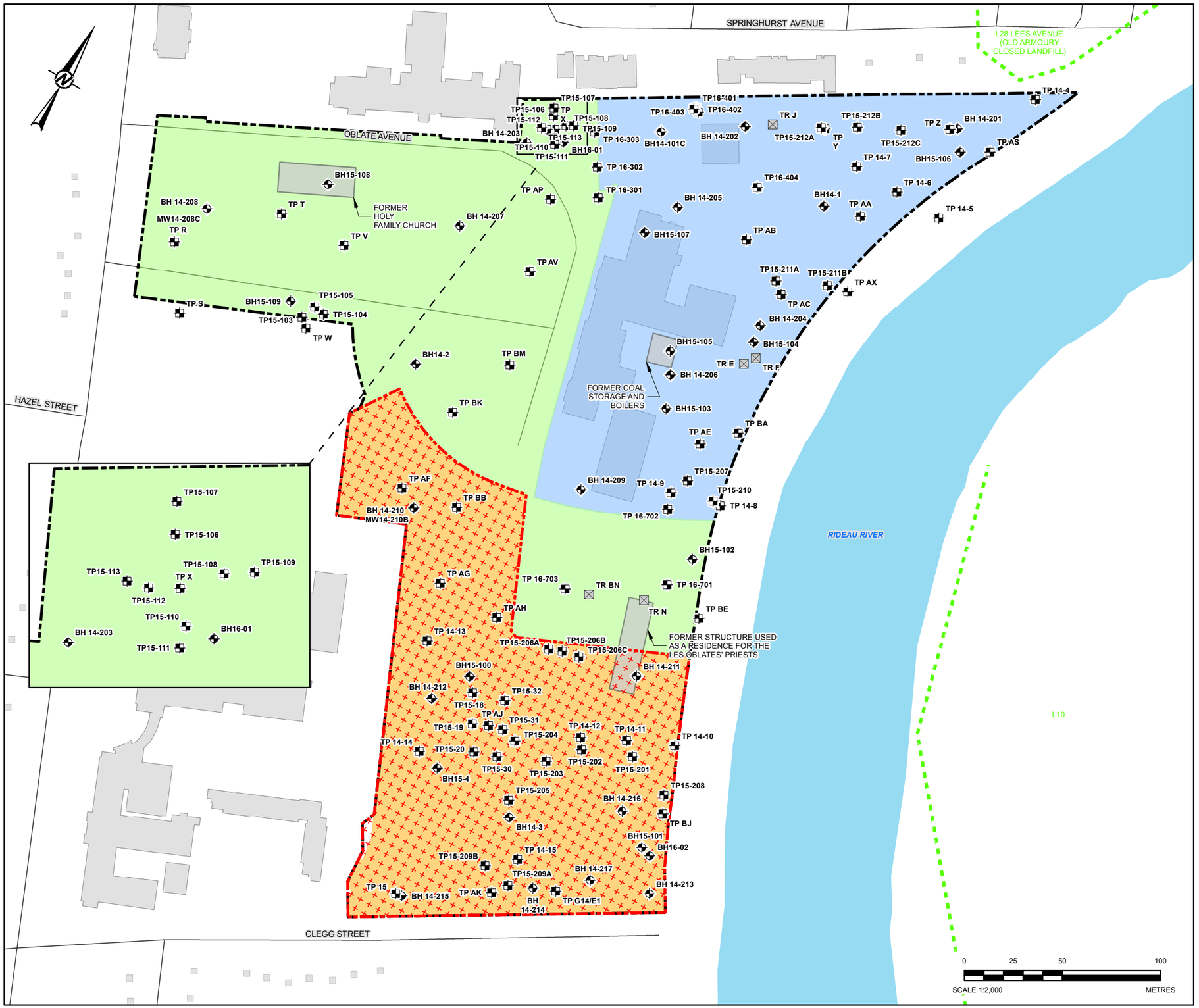
APPENDIX H

Property Wide Features, Borehole, Trench, and Test Pit Locations



LEGEND

- BOREHOLE/MONITORING WELL LOCATION
- TEST PIT LOCATION
- TRENCH LOCATION
- APPROXIMATE FORMER LANDFILL SITE BOUNDARY
- PHASE TWO PROPERTY
- PHASE ONE PROPERTY
- RSC#1 PROPERTY
- RSC#2 PROPERTY
- RSC#3 PROPERTY

NOTES

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-1

LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2011
DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9 VERTICAL DATUM: CGVD28

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #1
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
PROPERTY WIDE FEATURES, BOREHOLE, TRENCH, AND TEST PIT LOCATIONS

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-07-06
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	APPENDIX
1525113	1000/1	0	H

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

Path: N:\Active\Spatial_IM\The_Regional_Group\RegionalGroupOblatesProp\Ottawa\GIS\MXDs\1525113\Ph1000_AdjPhIIESAs\Reg153_04_PhIIESAs\Phase1\1525113-1000-1-HS-00H1.mxd

As a global, employee-owned organisation with over 50 years of experience, Golder Associates is driven by our purpose to engineer earth's development while preserving earth's integrity. We deliver solutions that help our clients achieve their sustainable development goals by providing a wide range of independent consulting, design and construction services in our specialist areas of earth, environment and energy.

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