September 2017

OTTAWA 50 YEARS in 2017

REPORT ON

Phase Two Environmental Site Assessment
Oblates Property RSC #3
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: 1525113-1000-3

Distribution:

1 e-copy - Greystone Village Inc.

1 e-copy - Golder Associates Ltd.

Golder Associates

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 (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 filing 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 #3 (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 #3, described as Part of Lot H, Concession D, Rideau Front, Geographic Township of Nepean, designated as Parts 10 and 11 on Plan 4R-29138, City of Ottawa being part of PIN 04203-0843 (LT), known municipally at 175 Main Street.	"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.

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 titled *"Phase One Environmental Site Assessment, Oblates Property, 175 Main Street, Ottawa, Ontario"*, dated November 2014, updated in May 2016. A Site specific Phase One ESA Update report entitled "*Phase One Environmental Site Assessment Update, RSC #3 – 175 Main Street, Ottawa, Ontario*" dated August 2017 (Phase One ESA report) was prepared to support the filing of RSC 3. The Phase One ESA identified Potentially Contaminating Activities (PCAs) and Areas of Potential Environmental Concern (APECs) for the Site. The following APECs were identified for the Site:

- **APEC 1**– The former presence of a gasoline 100,000 L UST and a pump associated with the former presence of a private fuel station on Site.
- **APEC 2** – The presence of fill containing construction debris, asphalt, concrete and potentially some refuse at the Property and specifically, within the southeast part of the Site.
- **APEC 3** – The presence of fill containing ash originating from the historical coal burning was reportedly deposited across the Site;

- **APEC 4** (a, b, c, and d) – The presence of pole mounted transformers in use near the laundry/workshop building in the north part of the Site.
- **APEC 5** (a, b and c) – The presence of transformers in use in a Hydro Ottawa vault in the basement of the main building in the central section of the Site.
- **APEC 6**– The presence of a private garage where oil changes, maintenance and minor repairs are performed for the convent's vehicles (on Site).
- **APEC 7**– Diesel containing AST used to fuel the backup generator on Site.
- **APEC 8**– Diesel containing AST used to fuel landscaping and maintenance equipment on Site.
- **APEC 9**– Lees Avenue closed landfill (L-28) adjacent to the northeast of the Site.

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 in terms of groundwater flow direction. All PCA/APECs identified for the Property are shown on Figure 1A. As such, they were not interpreted to cause APECs for RSC #3 (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 were 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 Property during the Phase One ESA completed by Golder, filing of a RSC is 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 #2 and RSC #3, which were completed from July 2016 to August 2016, and December 2016 to August 2017, respectively.

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, surrounding the Deschâtelets building, where it is up to 0.6 m thick. Across the rest of the site topsoil is typically about 0 to 0.15 metres thick, except in the northwestern section of the site where it ranges from 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 1 to 6.5 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 Site (up to 6.5 metres).
- The soil fill layer is present mainly in the western part of the Site, and sporadically across the eastern portion of the Site. The debris fill layer underlies the majority of the Site except for the westernmost section and a limited number of locations where soil fill was identified. In the westernmost part of the Site, the soil fill layer generally consists of silty sand and is typically about 0 to 1.5 metres thick. The debris fill layer ranges in thickness from approximately 0 to 6.5 m (being thickest at the southeast 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.
- 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* – No soil samples were submitted from the topsoil layer. Topsoil, where present, was appropriately managed during the remediation and was either removed as debris, or sampled, delineated and stripped during the remediation. Further details are provided in Appendix G – Remediation Report.
  - *Debris Fill layer* – six (6) of the fifteen (15) soil samples analyzed for metals exceeded MOECC Table 3 Standards; nine (9) of the fifteen (15) samples analyzed for PAHs exceeded MOECC Table 3 Standards; and no (0) exceedances were noted in the six (6) samples analyzed for PHCs or the one (1) sample analysed for pH.
  - *Soil Fill layer* – no exceedances were identified in any of the soil samples collected from the soil fill layer and submitted for laboratory analysis – six (6) soil samples analyzed for PHCs F1 to F4 and BTEX, eleven (11) samples analyzed for metals, twelve (12) samples analyzed for metals PAHs, five (5) samples analyzed for PCBs, and 2 analyzed for pH.
  - *Native Silty Clay layer* – one (1) PAH exceedance was identified of the eleven (11) samples submitted from the native silty clay layer. The exceedance was present in a sample collected from the uppermost silty clay layer, and may have contained some of the debris layer. The sample submitted for PAH analysis below the sample with exceedances did not contain any PAH exceedances. No other exceedances were identified in the six (6) samples submitted for PHCs, eight (8) samples submitted for metals, three (3) samples submitted for PCBs, one (1) sample submitted for VOCs, and two (2) samples analyzed for pH.
- 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 and PAH samples, sixteen (16) PHC samples, six (6) VOC samples, and four (4) PCB 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 APECs 1, 4, 5, 6, 7, 8 and 9 do not appear to have negatively impacted the soil or groundwater conditions at the Site. APECs 2 and 3 are documented to have associated metal and PAH impacts, which are generally limited to the debris fill layer. One sample from the silty clay layer was found to have a PAH exceedance from the uppermost silty clay layer, and may have contained some of the overlying debris. The sample submitted from directly beneath this sample did not contain a PAH exceedance. As such, the silty clay layer is interpreted to be unimpacted.

Remediation of the Site (RSC #3) was completed based on the findings of this Phase Two ESA. The remediation was conducted from December 2016 to August 2017 to remove impacted soils identified on-Site, and is discussed in further detail in Appendix G Remediation Report. As part of the remediation, soil from the RSC #1 area was imported to the Site; further details are outlined in Appendix I Soil Brought to the Phase Two Property.

Table of Contents

1.0 EXECUTIVE SUMMARY I

2.0 INTRODUCTION 1

2.1 Site Description 3

2.2 Property Ownership 3

2.3 Current and Proposed Future Uses 3

2.4 Applicable Site Condition Standards 4

2.5 Phase Two ESA Objectives 5

3.0 BACKGROUND INFORMATION 6

3.1 Physical Setting 6

3.2 Past Investigations 6

3.2.1 Phase One ESA 6

4.0 SCOPE OF THE PHASE TWO ESA INVESTIGATION 6

4.1 Overview of Site Investigation 14

4.2 Media Investigated 19

4.3 Phase One Conceptual Site Model 19

4.4 Deviations from Sampling and Analysis Plan 22

4.5 Impediments 22

5.0 INVESTIGATION METHOD 23

5.1 General 23

5.1.1 Site Specific Health and Safety 23

5.2 Drilling and Excavation 23

5.3 Soil: Sampling 24

5.3.1 Soil Sample Requirements 25

5.4 Field Screening Measurements 25

5.5 Groundwater: Monitoring Well Installation 26

5.6 Groundwater: Sampling 27

5.7 Sediment Sampling 28

5.8 Analytical Testing 28

5.9 Residue Management Procedures 28

5.10 Elevation Surveying 29
5.11 Quality Assurance and Quality Control Measures 29
6.0 REVIEW AND EVALUATION 31
6.1 Geology 31
6.2 Groundwater: Elevations and Flow Direction 32
6.3 Groundwater: Hydraulic Conductivity, Hydraulic Gradients and Velocity 34
6.3.1 Hydraulic Conductivity 34
6.3.2 Horizontal Hydraulic Gradient 34
6.3.3 Vertical Hydraulic Gradients 34
6.3.4 Groundwater Velocity 34
6.4 Soil: Texture 35
6.5 Soil: Field Screening 35
6.6 Soil: Quality 35
6.6.1 Discussion of Soils Exceedances By Stratigraphic Layer 37
6.7 Groundwater Quality 38
6.8 Sediment Quality 39
6.9 Quality Assurance and Quality Control Results 39
6.9.1 Precision 39
6.9.2 Accuracy 40
6.9.3 Completeness 41
6.9.4 Representativeness 41
6.9.5 Comparability 41
6.10 Phase Two Conceptual Site Model 41
7.0 CONCLUSIONS 56
8.0 LIMITATIONS 58
9.0 SIGNATURES 59
10.0 REFERENCES 60

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

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

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

Figure 5D: PCB Analysis and Exceedances in Soil Fill and Native Clay

Figure 5E: VOC Analysis and Exceedances in Soil Fill and Native Clay

Figure 6: Interpreted Native Clay Surface Elevation

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

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

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

Figure 7D: Cross-Section A-A' (Interpreted geological and hydrogeological conditions) with Groundwater 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 PCB analysis and exceedances

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

Figure 9: Conceptual Site Model Potential Receptor Pathways

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
RSC #3 Remediation Report

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

APPENDIX I
Soil Brought to the Phase Two Property

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 Figure 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 filing 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 #3 (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 #3, described as Part of Lot H, Concession D, Rideau Front, Geographic Township of Nepean, designated as Parts 10 and 11 on Plan 4R-29138, City of Ottawa being part of PIN 04203-0843 (LT), known municipally at 175 Main Street.	"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 #3) was completed based on the findings of this Phase Two ESA. The remediation is discussed in further detail in Appendix G Remediation Report. Remediation of the Site (RSC #3) was completed based on the findings of this Phase Two ESA. As part of the remediation, soil from the RSC #1 area was imported to the Site, further details are outlined in Appendix I Soil Brought to the Phase Two Property.

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, Oblates Property, 175 Main Street, Ottawa, Ontario"*, dated November 2014, updated in May 2016. A Site specific Phase One ESA Update report entitled "*Phase One Environmental Site Assessment Update, RSC #3 – 175 Main Street, Ottawa, Ontario*" dated August 2017 (Phase One ESA report) was prepared to support the filing of RSC #3. The Phase One ESA identified Potentially Contaminating Activities (PCAs) and Areas of Potential Environmental Concern (APECs) for the Site. The following APECs were identified for the Site:

- **APEC 1**– The former presence of a gasoline 100,000 L UST and a pump associated with the former presence of a private fuel station on Site.
- **APEC 2** – The presence of fill containing construction debris, asphalt, concrete and potentially some refuse at the Property and specifically, within the southeast part of the Site.

- **APEC 3** – The presence of fill containing ash originating from the historical coal burning was reportedly deposited across the Site;
- **APEC 4** (a, b, c, and d) – The presence of pole mounted transformers in use near the laundry/workshop building in the north part of the Site.
- **APEC 5** (a, b and c) – The presence of transformers in use in a Hydro Ottawa vault in the basement of the main building in the central section of the Site.
- **APEC 6**– The presence of a private garage where oil changes, maintenance and minor repairs are performed for the convent's vehicles (on Site).
- **APEC 7**– Diesel containing AST used to fuel the backup generator on Site.
- **APEC 8**– Diesel containing AST used to fuel landscaping and maintenance equipment on Site.
- **APEC 9**– Lees Avenue closed landfill (L-28) adjacent to the northeast of the Site.

The remediation for the lands to the south and west is documented in two reports entitled: *Phase Two Environmental Site Assessment, Oblates Property RSC #1, 175 Main Street, Ottawa, Ontario*, dated August 2016 and *Phase Two Environmental Site Assessment, Oblates Property RSC #2, 175 Main Street, Ottawa, Ontario*, dated September 2016. Other PCAs/APECS identified in the Phase One ESA for the Site are located off-Site and generally are down- to cross-gradient from the Site in terms of groundwater flow direction. All PCAs/APECs identified for the Site are shown on Figure 1A. As such, they were not interpreted to cause APECs for RSC #3 (see Section 3.2.1 for a detailed discussion of the APEC that is 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 was 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 Property during the Phase One ESA completed by Golder, filing of RSC(s) is required by the City of Ottawa as part of the Site Plan Approval and for the purpose of the City's Brownfields Redevelopment Program.

This Phase Two ESA report addresses the APECs that are applicable for the Site identified in the Phase One ESA Update conducted for the Site and provides a summary and interpretation of the data relating to the Site. 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.

<u>Notes regarding some of the terminology used in this Phase Two ESA report:</u>

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 northeastern sections 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 as shown on Figure 1A. 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, designated as Parts 10 and 11 on Plan 4R-29138, City of Ottawa being part of PIN 04203-0843 (LT), known municipally as 175 Main Street. 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 includes the main Oblates Residence (Deschâtelets) complex and part of the landscaped lawns surrounding it.

The Site is bounded to the west by the landscaped lawns and driveways associated with the Deschâtelets building, to the east by the Rideau River (separated by a 30 metre buffer of land), to the south by residential houses under construction, and residential buildings to the north.

Based on the approved Community Design Plan, the Property, including the Site 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, provided 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 Site currently consists of the Oblates Residence (Deschâtelets) complex and associated landscaped lawns and the current property use of the Site is residential. The Site is proposed to be redeveloped with a medium density residential development. Thus, the proposed future use of the Site is also residential.

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

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 Site 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 August 23, 2017 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 Site, bedrock was not encountered at any of the boreholes completed at the Site 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 Site 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 7.05 and 7.8. 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 or Site. As such, the Site is not considered an environmentally sensitive area;
- The current and proposed most stringent land use of the Site is residential; and,
- Based on observed soil conditions in the boreholes and test pits completed at the Site, 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 Site (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 assess the location and concentration of contaminants in the land or water on, in or under the Site; and,
- To determine if the soil and groundwater quality at the Site 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 Site; and,
- Conducting field sampling of soil and groundwater and analysis for all COCs associated with the APECs identified at the Site.

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 Site and the surrounding lands have a downward slope to the east (towards the Rideau River). The Rideau River is located 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 in the southeastern section of the Site the is a downwards slope from south to north. The southeast section of the Site is significantly higher in elevation than the area to the east and northeast due to in-filling activities, which reportedly occurred sometime between 1902 and 1922 to prevent flooding. This section of the Site 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 Site, the subsurface conditions at the Property consist of fill, underlain by silty clay and clayey silt, and then sand and glacial till. The thickness of the fill is generally between 0-1 metres in the western section of the Site and up to 6-7 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 10 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:** Residential houses, Convent Sacre Coeur, and Springhurst Avenue.
- **West:** Greenspace and land under development (RSC#2), followed by St. Paul University campus and Main Street, followed by residential houses and some retail and office buildings. Immaculata High School is located to the northwest.
- **South:** Residential development under construction followed by Clegg Street and sports fields and residential houses.
- **East:** Pedestrian pathway and greenspace followed by the Rideau River.

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. A Site specific Phase One ESA Update report entitled "*Phase One Environmental Site Assessment Update, RSC #3 – 175 Main Street, Ottawa, Ontario*" dated

August 2017 (Phase One ESA report) was prepared to support the filing of RSC #3. 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 200 m to the northwest of the Site, hydraulically cross gradient	No, due to distance (200 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 300m northeast of the Site, hydraulically cross and down gradient	No, due to distance (300 m) and the PCA is cross to down 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.

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 4 – Former St. Paul dump	Approximately 75 m to the southwest of the Site, hydraulically cross gradient.	No, due to distance (75 m) and the PCA is up to cross gradient from the Site. In addition, this PCA was addressed as part of the Property wide Phase II (reported under separate cover) and impacts were not noted in the soil or groundwater where the worst case impacts were suspected as noted in Appendix H and in data tables 3 and 4 accompanying this report).	**#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 to the south west of the Property and potentially may have extended onto the Property.	PHC F1-F4, BTEX, PAH, metals.	Soil and groundwater.
PCA 5 - Former industrial site – Royal Canadian Engineers Workshop	Approximately 80 m northeast of the Site, hydraulically cross gradient.	No, due to distance from the site 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 approximately 80 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.	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)
PCA 6 (APEC 1)- Former presence of a gasoline UST and a pump associated with the former presence of a private fuel station on the Property.	On-Site, west of the laundry/ workshop building.	Yes.	**#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.
PCA 7 (APEC 3) - Fill of unknown composition and possible presence of ash.	On 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.	Yes.	**#9** Coal Gasification Ash originating from historical coal burning was reportedly deposited on the Property.	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)
PCA 8a, b, c, and d (APEC 4) - Presence of four pole mounts transformers	On Site.	Yes.	**#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 (APEC 5) - Presence of three pad mounted transformers	On Site, located in a Hydro Ottawa owned transformer room in the Deschâtelets building	Yes.	**#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
PCA 10 (APEC 6) - Presence of a private garage on the Property.	On Site.	Yes.	**#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 (APEC 7) – Diesel containing AST associated with backup generator	On Site.	Yes.	**#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.

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 12 (APEC 8) – Diesel containing AST used to fuel landscaping and maintenance equipment	On Site.	Yes.	**#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 landscaping and maintenance equipment.	PHC F1-F4, BTEX.	Soil and groundwater.
PCA 13 (APEC 9) – Lees Avenue closed landfill (L-28)	Located adjacent to the northeast of the Site, hydraulic cross to up gradient.	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 landfill L-28 (Old Armoury) is located adjacent 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.	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)
PCA 14 (APEC 2) - Presence of fill of unknown composition and quality	Across the eastern portion 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 eastern portion of 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 following APECs are relevant to the Site (i.e., RSC #3):

- **APEC 1** (PCA 6) – The former presence of a gasoline 100,000 L UST and a pump associated with the former presence of a private fuel station on Site.
- **APEC 2** (PCA 14) – The presence of fill containing construction debris, asphalt, concrete and potentially some refuse at the Property and specifically, within the southeast part of the Site.
- **APEC 3** (PCA 7) – The presence of fill containing ash originating from the historical coal burning was reportedly deposited across the Site;
- **APEC 4** (a, b, c, and d, PCA 8) – The presence of pole mounted transformers in use near the laundry/workshop building in the north part of the Site.
- **APEC 5** (a, b and c, PCA 9) – The presence of transformers in use in a Hydro Ottawa vault in the basement of the main building in the central section of the Site.
- **APEC 6** (PCA 10) – The presence of a private garage where oil changes, maintenance and minor repairs are performed for the convent's vehicles (on Site).
- **APEC 7** (PCA 11) – Diesel containing AST used to fuel the backup generator on Site.
- **APEC 8** (PCA 12) – Diesel containing AST used to fuel landscaping and maintenance equipment on Site.
- **APEC 9** (PCA 13) – Lees Avenue closed landfill (L-28) adjacent to the northeast of the Site.

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 PCAs associated with the historical use of the Property; 2) identifying the APECs 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 APEC, 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 #2 and RSC #3 areas, which were completed from July 2016 to August 2016, and December 2016 to August 2017, respectively. The third stage of the investigation includes work completed from July 2016 to August 2017.

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 #3 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, EQ Homes and 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** – Ninety one (91) test pits and five (5) trenches were advanced across the Property, of which twenty seven (27) test pits and three (3) 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 twenty (20) out of the twenty seven (27) 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), polychlorinated biphenyl (PCBs), 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 ninety one (91) 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, seventeen (17) were located on the Site, fourteen (14) of which had at least one soil sample submitted for laboratory analysis of metals, pH, PAHs, PCBs, PHCs and/or VOCs (including BTEX). 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 twenty two (22) of the boreholes across the Property, eleven (11) of which are located on the Site. In addition, standpipes were installed in ten (10) of boreholes drilled for geotechnical purposes across the Property.

  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 shown Appendix 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, VOC (including BTEX), PAHs, PCBs, 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. Each of the eleven (11) monitoring wells installed on the Site had at least one groundwater sample submitted for laboratory analysis of metals (including mercury and hexavalent chromium), VOCs, PCBs, 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 APECs and PCAs identified by the Phase One ESA

Area of Potential Environmental Concern (APEC)	Borehole/Test Pit/Trench ID	Monitoring Well Installation	Rationale	Summary of Analyses	
				Soil	Groundwater
APECs for the Site (RSC #3)					
APEC 1 - Former presence of fuel UST	BH14-101C	MW14-101C	Environmental borehole completed in the vicinity of the former UST to investigate the potential for impacts on the soil and groundwater quality	PHCs F1 to F4, BTEX	Metals, PAH, PHCs F1 to F4, BTEX
APEC 2 - Presence of fill containing construction debris, asphalt, concrete	TP14-8, TP15-207, TP15-210,	No monitoring well installed	Test pits completed to investigate fill composition and thickness, potential presence of construction debris and ash	-	-
	TP14-9		Test pit completed in southern part of the Property to investigate fill quality, composition, and thickness, potential presence of construction debris and ash	PHCs F1-F4, BTEX, PAHs and metals	-
	BH14-209	MW14-209A (deep) MW14-209B (shallow) Installed for geotechnical purposes	Investigate the fill thickness and composition and potential groundwater impacts at the west part of the Property where no previous data were collected.	-	-

Area of Potential Environmental Concern (APEC)	Borehole/Test Pit/Trench ID	Monitoring Well Installation	Rationale	Summary of Analyses	
				Soil	Groundwater
APECs for the Site (RSC #3)					
APEC 3 and APEC 9 - Presence of fill of unknown composition and possible presence of ash that was reportedly spread on the Property and Lees Avenue closed landfill L-28 on adjacent lands just to the northeast of the Property	TP14-4	No monitoring well installed	Test pits completed in the northeast corner of RSC #3 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 Property	PHCs F1-F4, BTEX, PAHs, pH and metals	-
	TP Z, TP AS	No monitoring well installed		Metals, PAHs	-
	BH15-106	MW15-106	Investigate fill thickness, fill quality and groundwater quality in the area of APEC 3 and 9	Metals, PAH	PHCs F1 to F4, VOC, PAHs, metals, CrVI and Hg
	BH14-201	No monitoring well installed	Investigate the fill thickness, composition and quality at the northeast part of the Property	Metals, PAHs	-
APEC 3 - Presence of fill of unknown composition and possible presence of ash that was reportedly spread on the Property	BH14-1	MW14-1	Combined geo-environmental borehole completed in the northeast part of the Site to investigate potential impacts on the groundwater quality	-	PHCs F1 to F4, BTEX, PAHs, metals, CrVI and Hg
	BH14-206	No monitoring well installed	Investigate the fill thickness, composition and quality at the central part of the Site in the area where the former coal storage and historic buildings were located.	Metals, PAHs	-
	TP14-5, TP AC, TP BA, TR E	No monitoring well installed	Completed to investigate fill quality, composition and thickness and potential presence of ash	PHCs F1-F4, BTEX, PAHs and metals	-
	TP14-6, TP14-7, TP15-211A/B, TP15-212A/B/C BH14-202 BH14-204	No monitoring well installed	Completed to investigate fill composition and thickness and potential presence of ash	-	-
	BH14-205	MW14-205 Installed for geotechnical purposes			
	TP Y, TP AA, TP AB, TP AE, TP AX TR F, TR J	No monitoring well installed	Investigate the fill thickness, composition and fill quality across the Site	Metals, PAHs	-

Area of Potential Environmental Concern (APEC)	Borehole/Test Pit/Trench ID	Monitoring Well Installation	Rationale	Summary of Analyses	
				Soil	Groundwater
APECs for the Site (RSC #3)					
	BH15-103	MW15-103	Investigate fill thickness, fill quality and groundwater quality in the area of the former coal storage and boilers.	Metals, PAH	PHCs F1 to F4, VOC, PAHs, metals, CrVI and Hg
	BH15-104	MW15-104			
	BH15-105	MW15-105			
APEC 4a, 4b, 4c, and 4d – Pole mounted transformers in use	TP16-01, TP16-02, TP16-03, TP16-04	No monitoring wells installed	Investigate the potential impacts from the pole mounted transformers	PCB, PHCs F1 to F4, BTEX	-
APEC 5a, 5b, and 5c – Pad mounted transformers in use located in the basement of the Deschâtelets building	BH16-118 BH16-119	MW16-118 MW16-119	Investigate the soil and groundwater quality in the area of the transformers	PHCs F1 to F4, BTEX, and PCBs	PHCs F1 to F4, BTEX, and PCBs
APEC 6 - Presence of a private garage	BH15-107, BH15-107A	MW15-107	Investigate potential impacts to soil and groundwater from the garage.	Metals, PAH, PHC, and VOC	Metals, PAH, PHC, and VOC
	BH14-205	No monitoring wells installed	Preliminary investigation into the potential environmental impacts of the garage.	Metals, PAHs, PHC F1-F4 (if field evidence of impact) Samples to be submitted based on field screening	-
APEC 7 – Presence of diesel containing AST used to fuel backup generator	BH16-117	MW16-117	Investigate the soil and groundwater quality in the area of the AST	PHCs F1 to F4, and BTEX	PHCs F1 to F4, and BTEX

Area of Potential Environmental Concern (APEC)	Borehole/Test Pit/Trench ID	Monitoring Well Installation	Rationale	Summary of Analyses	
				Soil	Groundwater
APECs for the Site (RSC #3)					
APEC 8 – Presence of diesel containing AST used to fuel landscaping and maintenance equipment	BH16-120	MW16-120	Investigate the soil and groundwater quality in the area of the AST, and investigate soil/GW downgradient of transformer room	PHCs F1 to F4, BTEX, and PCBs	PHCs F1 to F4, BTEX, and PCBs

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

Created by: TL
Checked by: PH

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.

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 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 eastern and northeastern section of the Phase One Property. The Phase One 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 was comprised of the Oblates Residence (Deschâtelets) building and part of the surrounding lawns. The Deschâtelets building was built in 1885 and additions/extensions were added

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 (which is off-Site) from Main Street have heritage designation. The exterior areas of the Site were largely under remediation at the time of the site visit. Since the Phase One Property development in 1885 until the purchase by Regional in 2014, the Phase One Property, including the Site, has been used by the Religious Order of the Oblates of Mary Immaculate as a convent and the operations carried out at the Phase One Property have been related to residential type activities. Remedial work on the Site began in December 2016.

- There is a pronounced slope of the land that comprises the Site downwards from west to east. Due to filling activities that reportedly occurred sometime between 1902 and 1922 to prevent flooding, filling occurred in the eastern section of the Site (i.e., east of the Deschâtelets building), from the Rideau River's edge extending approximately 100 metres west towards the Deschâtelets building. It is understood that the soil fill contained concrete, some asphalt, brick, ash, and potentially garbage (APEC 2).
- Ash originating from the historical coal burning was reportedly deposited on the on the Site in the past. The fill of suspect and/or unknown quality is considered an APEC for the Site (APEC 3).
- 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 (APEC 6). The garage was in operation from the 1940s until 2014. A historical gasoline UST was previously located at the north part of the Site and west of the laundry/workshop building, which was used to fuel the vehicles of the convent's residents (APEC 1).
- Seven transformers were identified on the Site, four were pole mount transformers near the laundry/workshop building (APEC 4a, 4b, 4c, and 4d) and three were reportedly located in a transformer vault in the basement of the main building (APEC 5a, 5b, and 5c).
- Two diesel-containing ASTs were identified on the Site. One of the ASTs was used to fuel the backup generator (APEC 7) and the other AST was used to fuel landscape and maintenance equipment (APEC 8).
- Four former landfills were identified within 300 metres of the Site:
  - St. Paul University Dump (PCA #4) was located approximately 75 m to the southwest of the Site. This was not considered an APEC for the Site due to the distance from the Site and the PCA was inferred to be cross gradient of the Site;
  - Lee's Avenue (Old Armoury) Landfill (L-28) is present on lands adjacent to the north of the Property (APEC 9);
  - Former Riverside Drive Landfill is present approximately 100 m east of the Property, across the Rideau River (PCA #2). It was not considered an APEC for the Site due to the distance and the river separating the PCA and Site; and,
  - Lees Avenue (near Hurdman Bridge) Landfill (L-12) is present approximately 300 m northeast of the Property (PCA #3) and is associated with the former industrial site Currie Products Ltd. It was not considered an APEC for the Site due to the distance from the Site and it was inferred to be down to cross gradient from the Site.
- There were two former industrial sites within the study area of the Phase One 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 it from the Site and inferred to be down to cross gradient from the Site;
  - Former Group I industrial site – Currie Products Ltd. – with an associated landfill (L-12) (PCA #3). Not considered an APEC for the Site due to the distance separating it from the Site and inferred to be cross gradient from the Site.
- A former retail fuel outlet was present approximately 200 metres to the northwest of the western section of the Site (PCA #1). It was not considered an APEC for the Site due to the distance from the Site and it was inferred to be cross gradient from the Site.
- 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 Site is provided by the municipal drinking water system. No drinking water wells are present on the Site, Phase One Property or on the Phase One ESA Study area.
- The Rideau River is located east of the Site and runs along the east Phase One Property boundary; however, the Site itself is not within 30 metres of the River.
- At the time of the Phase I ESA, the neighbouring properties south, west and north of the Site were used for residential (or construction of future residential), community and parkland purposes and the Rideau River and 30 metre buffer of land that is not to be developed is located to the east.
- The subsurface conditions at the Site consist of fill, underlain by silty clay and clayey silt, overlying sand and glacial till. The thickness of the fill is expected to be 6-7 metres at the southeast part of the Site. 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 10 and 25 metres. The depth to the water table is expected to be between 3 and 8 metres below ground surface (mbgs) and to typically be in the upper portion of the native clay overburden.
- Groundwater flow is to the east towards the Rideau River.

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

- **APEC #1** (PCA #6) – The former presence of a gasoline 100,000 L UST and a pump associated with the former presence of a private fuel station on Site.
- **APEC 2** (PCA #14) – The presence of fill containing construction debris, asphalt, concrete and potentially some refuse at the Property and specifically, within the southeast part of the Site.
- **APEC #3** (PCA #7) – The presence of fill containing ash originating from the historical coal burning was reportedly deposited across the Site;
- **APEC #4 a, b, c, and d** (PCA #8 a, b, c and d) – The presence of pole mounted transformers in use near the laundry/workshop building in the north part of the Site.
- **APEC #5 a, b, and c** (PCA #9 a, b and c) – The presence of transformers in use in a Hydro Ottawa vault in the basement of the main building in the central section of the Site.

- **APEC #6** (PCA #10) – The presence of a private garage where oil changes, maintenance and minor repairs are performed for the convent's vehicles (on Site).
- **APEC #7** (PCA #11) – Diesel containing AST used to fuel the backup generator on Site.
- **APEC #8** (PCA #12) – Diesel containing AST used to fuel landscaping and maintenance equipment on Site.
- **APEC #9** (PCA #13) – Lees Avenue closed landfill (L-28) adjacent to the northeast of the Site.

4.4 Deviations from Sampling and Analysis Plan

As per the Sampling and Analysis Plan (provided in Appendix A), seventeen (17) 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 Site 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 Site in order to better characterize the fill quality and composition and to achieve better spatial coverage.

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 as part of the Phase Two ESA.

Given that the Phase Two ESA work program followed the Sampling and Analysis Plan 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 nine (39) environmental or geo-environmental boreholes were drilled on the Property, seventeen (17) of which were combined geo-environmental and environmental boreholes advanced on the Site 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 ninety one (91) 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) – PCBs, PHC F1 to F4, VOCs, 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 PCBs, PHC F1 to F4, VOCs, 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 on RSC #3 (including duplicates)	Number of Duplicate Samples on RSC #3
PHC F1-F4 and BTEX	18	2
Metals	35	2
PAHs	38	2
VOC	1	0
PCB	8	0
pH	14	0

Created by: TL Checked by: SRH

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 Site. 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 metres 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 Site 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 Site, 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 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 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, five (5) 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.
- The fifth event was completed on November 11, 2016, and was completed as part of the third stage of the investigation.

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. Additional rounds of water level measurements were completed on September 9, 2014, November 11, 2016, and March 16, 2017. 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 five (5) 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: PCBs, VOCs, PHCs F1 to F4, 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, with the exception of the event conducted on November 11, 2016.

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	13 (plus 3 duplicates)	20 (plus 4 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)
PCBs	0	0	3 (plus 1 duplicate)	3 (plus 1 duplicate)
VOCs	2	1	5 (plus 1 duplicate)	8 (plus 1 duplicate)

Created by: TL Checked by: SRH

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 purge 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. Soil cuttings from the additional investigations were removed as part of the remediation to the Site.

5.10 Elevation Surveying

Golder completed a survey of each drilling and test pit location using a Trimble R8 global positioning device with an accuracy +/- 2 cm on August 20, 2014, March 5, 2015, and October 18, 2016. 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 to geodetic datum.

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;
- If applicable, 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 was in accordance with standard chain of custody procedures.

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 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, surrounding the Deschâtelets building, where it is up to 0.6 m thick. Across the rest of the site, topsoil is typically about 0 to 0.15 metres thick, except in the northwestern section of the site where it ranges from 0.1 to 0.55 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 1 to 6.5 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 Site (up to 6.5 metres).

The soil fill layer is present mainly in the western part of the Site, and sporadically across the eastern portion of the site. The debris fill layer underlies the majority of the site except for the westernmost section and several sporadic locations where soil fill was identified. In the westernmost part of the Site, the soil fill layer generally consists of silty sand and is typically about 0 to 1.5 metres thick. The debris fill layer ranges in thickness from approximately 0 to 6.5 m (being thickest at the southeast 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.

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 Site.

Discussion regarding each of the stratigraphic layers, in order as typically encountered at the Site, 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 at the Site is between 0 and 0.15 metres, with the exception of the area immediately east of the Deschâtelets building where thicker topsoil was noted (up to 0.6 m). In the west part of the Site, the topsoil is thicker and is between 0.1 and 0.55 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 0 (nonexistent) to roughly 6.5 metres across the Site. The thickest fill layer containing debris/refuse was encountered in the eastern section of the Site and was approximately 6.5 metres thick. 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.

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

- 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 in the western section of the Site. The thickness of the soil fill layer ranged from about 0 to 1.5 metres in the west part of the Site and from 0 to about 2 metres in the east part of the Site. Where encountered, the soil fill existed beneath the debris fill in the east part of the Site. Sporadically across the Site, pockets of soil fill also exist.
- Native soil – underlying the fill, the native soil at the Site consists of silty clay starting from a depth of about 0.6 to 6.5 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 part of the Site, and then declines towards the Rideau River to the east. The lowest silty clay surface elevations are towards the northeast at an elevation of about 56.5 mASL.

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

Based on the PCAs and APECs identified at the Site 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, MW16-02, MW16-117, MW16-118, MW16-119, and MW16-120) 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 Site 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 Site.

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 MW15-100 series monitoring

wells were collected on March 24, 2015. Water levels from the monitoring wells installed during the third stage of the investigation (MW16-117, MW16-118, MW16-119, and MW16-120) were collected on November 11, 2016. Two additional rounds of water levels were collected as part of the third stage of the investigation on December 6, 2016 and March 16, 2017. These water levels were part of the decommissioning of remaining monitoring wells on the Property.

The water levels collected as part of the third stage of the investigation were limited, as many of the monitoring wells across the Property had previously been decommissioned, buried, or destroyed during the remedial work and site servicing. As such, the water levels from September 9, 2014, were considered the best representation of the conditions at the Property and were used to determine hydrogeological conditions at the Property (and subsequently at the Site).

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 sand 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 that 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 x 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		
RSC #3										
PHC F1-F4 and BTEX	0	NA	6	0	6 (1)	0	6 (1)	0	18 (2)	0
Metals	0	NA	11 (1)	0	15	6	8 (1)	0	35 (2)	6
PAHs	0	NA	12 (1)	0	15	9	11 (1)	1	38 (2)	10
PCBs	0	NA	5	0	0	NA	3	0	8	0
VOCs	0	NA	0	NA	0	NA	1	0	1	0
pH	0	NA	2	0	1	0	2	0	5	0

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

Created by: TL Checked by: SRH

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 thirty five (35) soil samples, including two (2) duplicates, collected from different soil/fill layers and submitted for metal analysis, six (6) samples of the fifteen (15) collected from the debris layer exceeded the applicable MOECC Table 3 for lead and/or mercury. No metal exceedances were found in the soil samples collected from native soil or the soil fill layer with no debris/refuse.

PHC F1 to F4 and BTEX

The analytical results indicated that of the eighteen (18) soil samples, including two (2) duplicate samples, collected from different soil/fill layers and submitted for PHC F1 to F4 and BTEX analysis, no exceedances of the MOECC Table 3 Standards were identified.

PAHs

The analytical results indicated that of the thirty eight (38) soil samples, including two (2) duplicate soil samples, collected from different soil/fill layers and submitted for PAHs analysis, nine (9) of the fifteen (15) soil samples collected from the debris layer exceeded the MOECC Table 3 Standards for at least one PAH compound. One (1) soil sample collected from the native silty clay exceeded the MOECC Table 3 Standards for at least one PAH compound. This sample was collected from the uppermost native silty clay and is interpreted to have contained some of the overlying debris layer. The sample submitted from directly beneath this sample (BH16-216, SA8 6.0 – 6.6 mbgs) did not contain any PAH exceedances.

No other 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 collected from the native silty clay layer submitted for VOC analysis met the MOECC Table 3 Standards.

PCBs

The analytical results indicated that the eight (8) soil samples submitted for PCB analysis met the MOECC Table 3 Standards. The PCB samples were submitted from the soil fill and native silty clay layers.

pH Soil Results

A review of the pH soil analytical results showed that the pH of the five soil samples (TP14-4, BH16-117 SA6, BH16-118 SA3, BH16-119 SA4, and BH16-216 SA4) analysed for pH (7.63, 7.8, 7.05, 7.73, and 7.56, 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 stratigraphic layer.

Debris Layer

In the debris layer six (6) of fifteen (15) metals samples and nine (9) of fifteen (15) PAH samples had concentrations exceeding MOECC Table 3 Standards. There were no identified exceedances in the six (6) samples submitted for PHC analysis, or the one (1) sample submitted for pH analysis. Based on these results, the entire debris layer was interpreted to be impacted. The areas of metals and PAH impacted debris fill are presented on Figures 4A and 4B, respectively, and on cross sections Figures 7A, 7B, 8A, and 8B. As described in Section 6.1 of the report, the debris fill layer was encountered across the majority of the Site, with the exception of the westernmost boundary, and isolated pockets.

Native Silty Clay Layer

The native silty clay layer had six (6) samples submitted for PHC analysis, eight (8) samples submitted for metals analysis, eleven (11) samples submitted for PAH analysis, three (3) samples submitted for PCB analysis, one (1) sample submitted for VOC analysis, and one (1) sample submitted for pH analysis. One (1) exceedance (for PAHs) was identified in the native silty clay layer at location BH16-216 SA7, 5.3 – 5.9 mbgs. This sample was collected from the uppermost native silty clay and is interpreted to have contained some of the overlying debris layer. The sample submitted from directly beneath this sample (BH16-216, SA8 6.0 – 6.6 mbgs) did not contain any PAH exceedances. No other exceedances were identified in the native silty clay layer. As such, this exceedance is interpreted to be related to the debris layer.

Given that this exceedance was identified in the uppermost native silty clay and unlying debris fill, it would be addressed by the remediation (and subsequent verification sampling) of the debris layer.

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	23 (including 4 duplicates)	None
Metals including CrVI and Hg	23 (including 3 duplicates)	None
PAHs	22 (including 3 duplicates)	None
VOCs	9 (including 1 duplicate)	None
PCB	3 (including 1 duplicate)	None

A review of the groundwater analytical results indicated that the concentrations of PHCs F1 to F4, VOC (including BTEX), PCB, 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. The results of the groundwater analyses are also presented on Figures 7D and 8E.

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 four (4) duplicate soil samples from samples TP AA SA3, TR E SA2, BH15-106 SA3, and BH16-117 SA6 for 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 #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
	BH16-117 SA6	BH16-117 SA6A	PHC F1 to F4, BTEX

Created by: TL Checked by: SRH

- Collection of three (3) duplicate groundwater samples as outlined in the table below:

Location (RSC#)	Original soil sample ID	Field duplicate ID	Parameters analyzed
On Site (RSC #3)	BH14-101C	BH14-102	PHC F1 to F4, BTEX
	MW15-106	DUP-1	PHC F1 to F4, VOC, PAHs, and metals
	MW16-118	DUP1	PHC F1 to F4, BTEX, PCBs

Created by: TL Checked by: SRH

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 PCBs, PHCs, VOCs, and PAHs and 20% for metals, and in soil between a sample and its duplicate is 50% for VOCs, 40% for PCBs, 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.

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.

Groundwater RPD

The RPDs for PCBs, 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

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

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

Figure 5D: PCB Analysis and Exceedances in Soil Fill and Native Clay

Figure 5E: VOC Analysis and Exceedances in Soil Fill and Native Clay

Figure 6: Interpreted Native Clay Surface Elevation

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

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

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

Figure 7D: Cross-Section A-A' (Interpreted geological and hydrogeological conditions) with Groundwater 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 PCB analysis and exceedances

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

Figure 9: Conceptual Site Model Potential Receptor Pathways

Figure G1 – Final Bottom Elevation and Extent of Debris Remedial Excavation

Figure G2 – Cross Section A-A' (RSC #3 Remediation)

Figure G3 – Cross Section D-D' (RSC #3 Remediation)

The figures were prepared using data from the RSC Property. However, where applicable, data from areas of the 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 surface elevation (Figure 6).

Physical Setting

The RSC Property is the eastern and northeastern 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 comprised of the Oblates Residence (Deschâtelets) building and part of the surrounding lawns. The surrounding properties include residential, community, institutional and parkland, as summarized below:

- **North:** Residential houses, Convent Sacre Coeur, and Springhurst Avenue.
- **West:** Greenspace and land under development (RSC#2), followed by St. Paul University campus and Main Street, followed by residential houses and some retail and office buildings. Immaculata High School is located to the northwest.
- **South:** Residential development under construction followed by Clegg Street and sports fields and residential houses.
- **East:** Pedestrian pathway and greenspace followed by the Rideau River.

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 7.05 and 7.8. 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 eastern and northeastern portion of 175 Main Street and is comprised of the Oblates Residence (Deschâtelets) building and part of the surrounding lawns. The original 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. It is assumed that during this timeframe the RSC Property would have been grassed and landscaped as the yard to the main residence.

Filling activities occurred, reportedly sometime between 1902 and 1922, in the eastern section of the Site to prevent flooding. The filling occurred from the Rideau River’s edge extending approximately 100 metres west towards the Deschâtelets building. It is understood that the soil fill contained concrete, some asphalt, brick, ash, and potentially garbage (APEC 2).

Ash originating from the historical coal burning was reportedly deposited on the Site in the past. The fill of suspect and/or unknown quality is considered an APEC for the Site (APEC 3).

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 (APEC 6). The garage was in operation from the 1940s until 2014. A historical gasoline UST was previously located at the north part of the Site and west of the laundry/workshop building, which was used to fuel the vehicles of the convent's residents (APEC 1).

Seven transformers were identified on the Site, as shown on Figure 1A; four were pole mount transformers near the laundry/workshop building (APEC 4a, 4b, 4c, and 4d) and three were reportedly located in a transformer vault in the basement of the main building (APEC 5a, 5b, and 5c).

Two diesel-containing ASTs were identified on the Site, as shown on Figure 1A. One of the ASTs was used to fuel the backup generator (APEC 7) and the other AST was used to fuel landscape and maintenance equipment (APEC 8).

Potable Water Wells

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

Subsurface Utilities

Limited 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, surrounding the Deschâtelets building, where it is up to 0.6 m thick. Across the rest of the site topsoil is typically about 0 to 0.15 metres thick, except in the northwestern section of the site where it ranges from 0.1 to 0.55 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 1 to 6.5 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 Site (up to 6.5 metres).

The soil fill layer is present mainly in the western part of the Site, and sporadically across the eastern portion of the site. The debris fill layer underlies the majority of the Site except for the westernmost section and several sporadic locations where soil fill was identified. In the westernmost part of the Site, the soil fill layer generally consists of silty sand and is typically about 0 to 1.5 metres thick. The debris fill layer ranges in thickness from approximately 0 to 6.5 m (being thickest at the southeast 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.

The upper portion of the silty clay with sand seams is inferred to represent the shallow water bearing unit located between approximately 1 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 10 and 25 metres. Bedrock was not encountered at any of the boreholes located on the Site; however, bedrock was encountered at approximately 31 mbgs in a borehole south of the Site, on the Property (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 Site were measured in the two (2) shallow monitoring wells (MW14-1 and MW14-101C), two (2) shallow standpipes (MW14-205B and MW14-209B) and in the two deeper standpipes (MW14-205A and MW14-209A) on September 9, 2014. In addition, water levels were collected from the five (5) monitoring wells installed in 2015 (MW15-103 to MW15107) on March 24, 2016, and from the four (4) monitoring wells installed in 2016 (MW16-117 to MW16-120) on November 11, 2016. Two additional rounds of water levels were collected on December 6, 2016 and March 16, 2017; however, these events were limited as many of the monitoring wells across the Site had previously been decommissioned, buried, or destroyed, during the remedial work and site servicing. As such, the water levels from September 9, 2014, were considered the best representation of the conditions at the Property and were used to determine hydrogeological conditions at the Property (and subsequently at the Site). The water levels measured in the shallow monitoring wells and standpipes were between 0.74 mbgs and 5.46 mbgs and the water levels measured in the deeper standpipes installed in the silty sand were between 6.45 mbgs and 6.79 mbgs. Based on the water level measurements, the groundwater elevations at the shallow monitoring wells and standpipes were between 55.97 mASL and 62.57 mASL and at the deeper standpipes installed in the silty sand were between 57.84 mASL and 57.93 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 2A. 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 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 calculated vertical hydraulic gradients at the Site were 0.6 (at MW14-209A/B) and 0.4 (at MW14-205A/B) downwards. Across the Property, hydraulic gradients ranged from 0.81 downwards (at MW14-210A/B, on the Property, west of the Site) to 0.01 upwards (at MW14-213A/B, on the Property, south of the Site). Across the Property, 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 x 10^{-7} to 1 x 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 x 10^{-5} m/s for the silty sand, 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 about 1.5 m/yr.

Proposed Buildings and Other Structures

Future use at the Site is understood to consist of residential development, including singles and townhomes, 4 to 5 storey condominiums and a multi-storey retirement home as shown on Figure 1B. Below grade structures include single storey basements for the residential homes and below grade parking at the retirement home and condominiums.

Potentially Contaminating Activities and Areas of Potential Environmental Concern

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

APEC or PCA for the Phase One Property	Location of Area of Potential Environmental Concern in relation to the Site	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 200 m to the northwest of the Site, hydraulically cross gradient	#28. Gasoline and associated products storage in fixed tanks. Former retail fuel outlet	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	Potentially Contaminating Activity (PCA) and Description of the Activity	Contaminants of Potential Concern	Media Potentially Impacted (groundwater, soil and/or sediment)
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	#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 300m northeast of the Site, hydraulically cross and down gradient	#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 – Former St. Paul dump	Approximately 75 m to the southwest of the Site, hydraulically cross gradient.	#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 to the south west of the Property and potentially may have extended onto the Property.	PHC F1-F4, BTEX, PAH, metals.	Soil and groundwater.
PCA 5 - Former industrial site – Royal Canadian Engineers Workshop	Approximately 80 m northeast of the Site, hydraulically cross gradient.	#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 approximately 80 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.	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	Potentially Contaminating Activity (PCA) and Description of the Activity	Contaminants of Potential Concern	Media Potentially Impacted (groundwater, soil and/or sediment)
PCA 6 (APEC 1)- Former presence of a gasoline UST and a pump associated with the former presence of a private fuel station on the Property.	On-Site, west of the laundry/ workshop building.	#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.
PCA 7 (APEC 3) - Fill of unknown composition and possible presence of ash.	On 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.	#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 (APEC 4) - Presence of four pole mounted transformers	On 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

APEC or PCA for the Phase One Property	Location of Area of Potential Environmental Concern in relation to the Site	Potentially Contaminating Activity (PCA) and Description of the Activity	Contaminants of Potential Concern	Media Potentially Impacted (groundwater, soil and/or sediment)
PCA 9 a, b, and c (APEC 5) - Presence of three pad mounted transformers	On Site, located in a Hydro Ottawa owned transformer room in the Deschâtelets building	#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
PCA 10 (APEC 6) - Presence of a private garage on the Property.	On 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 (APEC 7) – Diesel containing AST associated with backup generator	On 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 (APEC 8) – Diesel containing AST used to fuel landscaping and maintenance equipment	On 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 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	Potentially Contaminating Activity (PCA) and Description of the Activity	Contaminants of Potential Concern	Media Potentially Impacted (groundwater, soil and/or sediment)
PCA 13 (APEC 9) – Lees Avenue closed landfill (L-28)	Located adjacent to the northeast of the Site, hydraulic cross to up gradient.	#58 Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners. The former landfill L-28 (Old Armoury) is located adjacent 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.	PHC F1-F4, BTEX, PAH, metals.	Soil and groundwater.
PCA 14 (APEC 2) - Presence of fill of unknown composition and quality	Across the eastern portion 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 eastern portion of 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
PAHs – Polycyclic Aromatic Hydrocarbons

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 #3) APECs 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 for the Site (RSC #3)					
APEC 1 - Former presence of fuel UST	BH14-101C	MW14-101C	Environmental borehole completed in the vicinity of the former UST to investigate the potential for impacts on the soil and groundwater quality	PHCs F1 to F4, BTEX	Metals, PAH, PHCs F1 to F4, BTEX
APEC 2 - Presence of fill containing construction debris, asphalt, concrete	TP14-8, TP15-207, TP15-210,	No monitoring well installed	Test pits completed to investigate fill composition and thickness, potential presence of construction debris and ash	-	-
	TP14-9		Test pit completed in southern part of the Property to investigate fill quality, composition, and thickness, potential presence of construction debris and ash	PHCs F1-F4, BTEX, PAHs and metals	-
	BH14-209	MW14-209A (deep) MW14-209B (shallow) Installed for geotechnical purposes	Investigate the fill thickness and composition and potential groundwater impacts at the west part of the Property where no previous data were collected.	-	-
APEC 3 and APEC 9 - Presence of fill of unknown composition and possible presence of ash that was reportedly spread on the Property and Lees Avenue closed landfill L-28 on adjacent lands just to the northeast of the Property	TP14-4	No monitoring well installed	Test pits completed in the northeast corner of RSC #3 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 Property	PHCs F1-F4, BTEX, PAHs, pH and metals	-
	TP Z, TP AS	No monitoring well installed		Metals, PAHs	-
	BH15-106	MW15-106	Investigate fill thickness, fill quality and groundwater quality in the area of APEC 3 and 9	Metals, PAH	PHCs F1 to F4, VOC, PAHs, metals, CrVI and Hg

Area of Potential Environmental Concern (APEC)	Borehole/Test Pit/Trench ID	Monitoring Well Installation	Rationale	Summary of Analyses	
				Soil	Groundwater
APECs for the Site (RSC #3)					
	BH14-201	No monitoring well installed	Investigate the fill thickness, composition and quality at the northeast part of the Property	Metals, PAHs	-
APEC 3 - Presence of fill of unknown composition and possible presence of ash that was reportedly spread on the Property	BH14-1	MW14-1	Combined geo-environmental borehole completed in the northeast part of the Site to investigate potential impacts on the groundwater quality	-	PHCs F1 to F4, BTEX, PAHs, metals, CrVI and Hg
	BH14-206	No monitoring well installed	Investigate the fill thickness, composition and quality at the central part of the Site in the area where the former coal storage and historic buildings were located.	Metals, PAHs	-
	TP14-5, TP AC, TP BA, TR E	No monitoring well installed	Completed to investigate fill quality, composition and thickness and potential presence of ash	PHCs F1-F4, BTEX, PAHs and metals	-
	TP14-6, TP14-7, TP15-211A/B, TP15-212A/B/C BH14-202 BH14-204	No monitoring well installed	Completed to investigate fill composition and thickness and potential presence of ash	-	-
	BH14-205	MW14-205 Installed for geotechnical purposes			
	TP Y, TP AA, TP AB, TP AE, TP AX TR F, TR J	No monitoring well installed	Investigate the fill thickness, composition and fill quality across the Property	Metals, PAHs	-
	BH15-103	MW15-103	Investigate fill thickness, fill quality and groundwater quality in the area of the former coal storage and boilers.	Metals, PAH	PHCs F1 to F4, VOC, PAHs, metals, CrVI and Hg
	BH15-104	MW15-104			
	BH15-105	MW15-105			
APEC 4a, 4b, 4c, and 4d – Pole mounted transformers in use	TP16-01, TP16-02, TP16-03, TP16-04	No monitoring wells installed	Investigate the potential impacts from the pole mounted transformers	PCB, PHCs F1 to F4, BTEX	-

Area of Potential Environmental Concern (APEC)	Borehole/Test Pit/Trench ID	Monitoring Well Installation	Rationale	Summary of Analyses	
				Soil	Groundwater
APECs for the Site (RSC #3)					
APEC 5a, 5b, and 5c – Pad mounted transformers in use located in the basement of the Deschâtelets building	BH16-118 BH16-119	MW16-118 MW16-119	Investigate the soil and groundwater quality in the area of the transformers	PHCs F1 to F4, BTEX, and PCBs	PHCs F1 to F4, BTEX, and PCBs
APEC 6 - Presence of a private garage	BH15-107, BH15-107A	MW15-107	Investigate potential impacts to soil and groundwater from the garage.	Metals, PAH, PHC, and VOC	Metals, PAH, PHC, and VOC
	BH14-205	No monitoring wells installed	Preliminary investigation into the potential environmental impacts of the garage.	Metals, PAHs, PHC F1-F4 (if field evidence of impact) Samples to be submitted based on field screening	-
APEC 7 – Presence of diesel containing AST used to fuel backup generator	BH16-117	MW16-117	Investigate the soil and groundwater quality in the area of the AST	PHCs F1 to F4, and BTEX	PHCs F1 to F4, and BTEX
APEC 8 – Presence of diesel containing AST used to fuel landscaping and maintenance equipment	BH16-120	MW16-120	Investigate the soil and groundwater quality in the area of the AST, and investigate soil/GW downgradient of transformer room	PHCs F1 to F4, BTEX, and PCBs	PHCs F1 to F4, BTEX, and PCBs

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 2** (PCA 14) – The presence of fill containing construction debris, asphalt, concrete and potentially some refuse at the Property and specifically, within the east and southeast part of the Site.
- **APEC 3** (PCA 7) – The presence of fill containing ash originating from the historical coal burning was reportedly deposited across the Site;

Metals and/or PAHs exceedances in soil were identified in the debris fill layer at the test pits and boreholes completed at the Site. One PAH exceedance was identified in the uppermost clay layer, immediately beneath the debris layer. No other impacts were identified in the native soil or groundwater.

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 #3

- 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* – No soil samples were submitted from the topsoil layer. Topsoil, where present, was appropriately managed during the remediation and was either removed as debris, or sampled, delineated and stripped during the remediation. Further details are provided in Appendix G – Remediation Report.
  - *Debris Fill layer* – six (6) of the fifteen (15) soil samples analyzed for metals exceeded MOECC Table 3 Standards; nine (9) of the fifteen (15) samples analyzed for PAHs exceeded MOECC Table 3 Standards; and no (0) exceedances were noted in the six (6) samples analyzed for PHCs or the one (1) sample analysed for pH.
  - *Soil Fill layer* – no exceedances were identified in any of the soil samples collected from the soil fill layer and submitted for laboratory analysis – six (6) soil samples analyzed for PHCs F1 to F4 and BTEX, eleven (11) samples analyzed for metals, twelve (12) samples analyzed for metals PAHs, five (5) samples analyzed for PCBs, and two (2) analyzed for pH.
  - *Native Silty Clay layer* – one (1) PAH exceedance was identified in the eleven (11) samples submitted from the native silty clay layer. The exceedance was present in a sample collected from the uppermost part of the silty clay layer, and may have contained some of the debris layer. No other exceedances were identified in the six (6) samples submitted for PHCs, eight (8) samples submitted for metals, three (3) samples submitted for PCBs, one (1) sample submitted for VOCs, and two (2) samples analyzed for pH.
- 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 and PAH samples, sixteen (16) PHC samples, six (6) VOC samples, and four (4) PCB 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 metal and PAH impacts are generally limited to the debris fill layer. The one sample from the silty clay layer that was found to have a PAH exceedance was from the uppermost silty clay layer, and may have contained some of the overlying debris layer. The sample submitted from directly beneath this sample did not contain PAH exceedances. As such, the silty clay layer is interpreted to be unimpacted.
- The discontinuous soil fill layer and the native soil are not impacted. Given that no impacts were identified in the native silty clay layer (other than the one listed above) 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, it is interpreted that the debris fill layer represents 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 1.4 mbgs and 6.8 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 (metals, PAHs, PHCs F1 to F4, VOCs, and PCBs) exceeding the applicable MOECC Table 3 Standard, indicating that the COCs (metals and PAHs) 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, 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 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 nine (9) APECs identified at the Site are as follows:

- **APEC #1** (PCA #6) – The former presence of a gasoline 100,000 L UST and a pump associated with the former presence of a private fuel station on Site.
- **APEC 2** (PCA #14) – The presence of fill containing construction debris, asphalt, concrete and potentially some refuse at the Property and specifically, within the southeast part of the Site.
- **APEC #3** (PCA #7) – The presence of fill containing ash originating from the historical coal burning was reportedly deposited across the Site;
- **APEC #4 a, b, c, and d** (PCA #8 a, b, c and d) – The presence of pole mounted transformers in use near the laundry/workshop building in the north part of the Site.
- **APEC #5 a, b, and c** (PCA #9 a, b and c) – The presence of transformers in use in a Hydro Ottawa vault in the basement of the main building in the central section of the Site.
- **APEC #6** (PCA #10) – The presence of a private garage where oil changes, maintenance and minor repairs are performed for the convent's vehicles (on Site).
- **APEC #7** (PCA #11) – Diesel containing AST used to fuel the backup generator on Site.
- **APEC #8** (PCA #12) – Diesel containing AST used to fuel landscaping and maintenance equipment on Site.
- **APEC #9** (PCA #13) – Lees Avenue closed landfill (L-28) adjacent to the northeast of 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, surrounding the Deschâtelets building, where it is up to 0.6 m thick. Across the rest of the site topsoil is typically about 0 to 0.15 metres thick, except in the northwestern section of the site where it ranges from 0.1 to 0.55 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 1 to 6.5 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 Site (up to 6.5 metres).
- The soil fill layer is present mainly in the western part of the Site, and sporadically across the eastern portion of the site. The debris fill layer underlies the majority of the site except for the westernmost section and several sporadic locations where soil fill was identified. In the westernmost part of the Site, the soil fill layer generally consists of silty sand and is typically about 0 to 1.5 metres thick. The debris fill layer ranges in

thickness from approximately 0 to 6.5 m (being thickest at the southeast 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.

- 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* – No soil samples were submitted from the topsoil layer. Topsoil, where present, was appropriately managed during the remediation and was either removed as debris, or sampled, delineated and stripped during the remediation. Further details are provided in Appendix G – Remediation Report.
  - *Debris Fill layer* – six (6) of the fifteen (15) soil samples analyzed for metals exceeded MOECC Table 3 Standards; nine (9) of the fifteen (15) samples analyzed for PAHs exceeded MOECC Table 3 Standards; and none (0) exceedances were noted in the six (6) samples analyzed for PHCs or the one (1) samples analysed for pH.
  - *Soil Fill layer* – no exceedances were identified in any of the soil samples collected from the soil fill layer and submitted for laboratory analysis – six (6) soil samples analyzed for PHCs F1 to F4 and BTEX, eleven (11) samples analyzed for metals, twelve (12) samples analyzed for metals PAHs, five (5) samples analyzed for PCBs, and 2 analyzed for pH.
  - *Native Silty Clay layer* – one (1) PAH exceedances was identified of the eleven (11) samples submitted from the native silty clay layer. The exceedance was present in a sample collected from the uppermost silty clay layer, and may have contained some of the debris layer. No other exceedances were identified in the six (6) samples submitted for PHCs, eight (8) samples submitted for metals, three (3) samples submitted for PCBs, one (1) sample submitted for VOCs, and two (2) samples analyzed for pH.
- 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 and PAH samples, sixteen (16) PHC samples, six (6) VOC samples, and four (4) PCB 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 APECs 1, 4, 5, 6, 7, 8 and 9 do not appear to have negatively impacted the soil or groundwater conditions at the Site. APECs 2 and 3 are documented to have associated metal and PAH impacts, which are generally limited to the debris fill layer. One sample from the silty clay layer was found to have a PAH exceedance from the uppermost silty clay layer, and may have contained some of the overlying debris. The sample submitted from directly beneath this sample did not contain a PAH exceedances. As such, the silty clay layer is interpreted to be unimpacted.
- 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.

Remediation of the Site (RSC #3) was completed based on the findings of this Phase Two ESA. The remediation was conducted from December 2016 to August 2017 to remove impacted soils identified on-Site, and is discussed in further detail in Appendix G Remediation Report. As part of the remediation, soil from the RSC #1 area was imported to the Site; further details are outlined in Appendix I Soil Brought to the Phase Two Property.

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_{ESA}
Associate, Environmental Engineer

Paul Smolkin, P.Eng.
Principal

TL/PH/PAS/hw

\\golder.gds\gal\Ottawa\Active\2015\3 Proj\1525113 Regional Oblates Brownfields 175 Main St\04_Reporting\09 - RSC 3 - Phase II ESA\Reg 153. Ph II ESA Rpt Oblates 1525113_ph_PAS review.docx

Golder, Golder Associates and the GA globe design are trademarks of Golder Associates Corporation.

10.0 REFERENCES

Freeze, R.A. and Cherry, J.A. 1979. Groundwater. Science, 29 p.

Map 1506A, Surficial Geology, Ottawa, Ontario, Belanger J. R., Urban Geology of the National Capital Area, Geological Survey of Canada, Open file D3256, 2001.

Map 1508A. Generalized Bedrock Geology, Ottawa, Ontario, Belanger J. R., Urban Geology of the National Capital Area, Geological Survey of Canada, Open file D3256, 2001.

MOECC, 2011. Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04, dated June, 2011.

MOECC, 2013. 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.

MOECC. 2004. Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, March 9, 2004 (amended in July 2009 and effective as of July 1, 2011).

MOECC. 2011. Ontario Regulation 153/04, as amended, Record of Site Condition - Part XV.1 of the Environmental Protection Act, amended October 31, 2011.

MOECC. 2011. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, dated April 15, 2011.

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.

TABLES

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
	BH16-117	60.82	4.88	1.5-4.6	59.32-56.22	1.3-4.88	0.3-1.3	Spanning: 1. FILL - silty sand, brown 2. Silty clay (native)	31-Oct-16
	BH16-118	60.4	4.88	1.5-4.6	58.9-55.8	1.2-4.88	0.3-1.2	Silty clay, grey to grey brown (native)	31-Oct-16
	BH16-119	63.3	6.1	4.8-6.1	58.5-57.2	4.25-6.1	0.3-4.25	Silty clay, grey (native)	31-Oct-16
	BH16-120	60.46	4.27	2.7-4.27	57-76-56-19	2.3-4.27	0.3-2.3	Silty clay, grey to grey brown (native)	31-Oct-16

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

Prepared by: TL
Checked by: SRH / BEM

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

RSC #	Monitoring Well/ Standpipe	Depth to Groundwater (mbTOP), April 3, 2014	Depth to Groundwater (mbTOP), August 26, 2014	Depth to Groundwater (mbTOP), September 9, 2014	Depth to Groundwater (mbgs), September 9, 2014	Depth to Groundwater (mbgs), March 24, 2015	Depth to Groundwater (mbgs), November 11, 2016	Depth to Groundwater (mbgs), December 6, 2016	Depth to Groundwater (mbTOP), March 16, 2017 ***	Depth to Groundwater (mbgs), March 16, 2017 ***	Ground surface elevation (mASL)	Calculated Groundwater Elevation (mASL), September 9, 2014	Calculated Groundwater Elevation (mASL), March 24, 2015	Calculated Groundwater Elevation (mASL), November 11, 2016	Calculated Groundwater Elevation (mASL), December 6, 2016	Calculated Groundwater Elevation (mASL), March 16, 2017
1	MW14-3	4.96	5.76	5.45	4.49	-	-	-	-	-	64.467	59.98	-	-	-	-
	MW14-210A**	-	8.5	8.47	7.53	-	-	-	8.78	7.84	65.758	58.23	-	-	-	57.918
	MW14-210B	-	4.09	2.76	1.82	-	-	-	5.86	4.92	65.758	63.94	-	-	-	60.838
	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	-	-	5.72	5.85	5.13	64.456	58.996	-	-	58.736	59.326
	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	-	-	dry	dry	dry	64.969	62.59	-	-	dry	dry
	MW15-102	-	-	-	-	6.206	-	-	-	-	63.56	-	57.354	-	-	-
3	MW14-1	4.65	3.89	2.74	1.86	-	-	0.92	1.62	0.74	59.246	57.39	-	-	58.326	58.506
	MW14-101C	4.25	4.68	3.79	3.16	-	-	2.63	-	-	64.05	60.89	-	-	61.42	-
	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	-	2.88	-	-	63.31	-	60.43	-	60.43	-
	MW15-106	-	-	-	-	2.945	-	2.15	3.09	2.19	58.91	-	55.965	-	56.76	56.72
	MW15-107	-	-	-	-	2.745	-	2.045	2.03	2.115	64.62	-	61.875	-	62.575	62.505
	BH16-117	-	-	-	-	-	1.4	-	1.3	1.38	60.82	-	-	59.42	-	59.44
	BH16-118	-	-	-	-	-	1.63	1.54	-	-	60.4	-	-	58.77	58.86	-
	BH16-119	-	-	-	-	-	5.46	2.73	-	-	63.3	-	-	57.84	60.57	-
	BH16-120	-	-	-	-	-	1.94	1.83	-	-	60.46	-	-	58.52	58.63	-

Notes:
mbTOP: metres below top of pipe
mASL: metres above sea level
mbgs: metres below ground surface
* mbgs
** standpipes installed for geotechnical purposes
*** Many of the monitoring wells were decomissioned, destroyed, or buried at the time of the March 2017 water level collection. Groundwater elevations collected in March 2017 may be effected by the construction activities at the site.
A- deep
B-shallow
C-shallowest monitoring well
installed for environmental purposes

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

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 2 and PCA 4 -** 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 2 and APEC 3 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 3 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 2 and APEC 3** 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**

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
2	**APEC 2 and APEC 3** 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	**APEC 1 -** 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]

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
3	**APEC 3 and 9 -** Potential presence of ash spread across the Property 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 and 9 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 2 and 3 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]

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
3	**APEC 2 and 3** 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]
	APEC 4a, 4b, 4c, 4d - 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]
	APEC 5a, 5b, 5c and 7- Presence of transformers on the property and presence of a diesel containing AST (used to fuel the backup generator) on the Property.	Area surrounding the transformer room and AST used to fuel the backup generator.	16-118	SA3 1.2 - 1.8 silty clay (native soil)	31-Oct-16	1.3	None	Investigate the potential impacts associated with the pad mounted transformers and AST used to fuel the backup generator present on the Property	PHCs and PCBs	R4242126	None[2]
			16-119	SA6 3.0 - 3.6 silty clay (native soil)	01-Nov-16	2.1	None		PHCs and PCBs	R4242126	None[2]
			16-120	SA6 3.0 - 3.6 silty clay (native soil)	01-Nov-16	2.8	None		PHCs and PCBs	R4242126	None[2]
	APEC 6 - 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 6 (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]
	APEC 8 - Presence of a diesel containing AST (for fueling landscaping equipment) on the Property.	Immediately downgradient of the AST used for fueling landscaping equipment.	16-117	SA6 3.0 - 3.6 silty clay (native soil)	31-Oct-16	2.3	None	Investigate potential impacts from AST, highest PID reading from the borehole was selected.	PHCs and PCBs	R4242126	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
Bold and shaded parameters exceed MOE Table 3 Standards
NM-not measured

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. 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
5. PID- photionization detector
6. Table to be read in conjunction with accompanying report

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 2 -** 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 2 and PCA 4 - 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	A**PEC 1** - 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
	APEC 3 - 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
	A**PEC 3 and 9 -** Potential presence of ash spread across the Property 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
	APEC 5a, 5b, 5c and 7- Presence of transformers on the property and presence of a diesel containing AST (used to fuel the backup generator) on the Property.	16-118	11-Nov-16	1.5-4.6	clear, colourless, no sediment, no odour or sheen	PHCs and PCBs	R4254249	None
		16-119	11-Nov-16	4.8-6.1	clear, colourless, no sediment, no odour or sheen	PHCs and PCBs	R4254249	None
		16-120	11-Nov-16	2.7-4.3	clear, colourless, no sediment, no odour or sheen	PHCs and PCBs	R4254249	None
	A**PEC 6** - 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
	APEC 8 - Presence of a diesel containing AST (for fueling landscaping equipment) on the Property.	16-117	11-Nov-16	1.5-4.6	clear, colourless, no sediment, no odour or sheen	PHCs	R4254249	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 #			RSC #1											
			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
			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
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
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
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
General Chemistry														
Moisture, Percent	%	--	15	24	--	--	24	22	--	8.6	23	26	22	24
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
Arsenic	ug/g	18	2.8	2.9	--	--	3.9	2.8	--	<1.0	1.3	1.1	3.1	1.8
Barium	ug/g	390	78	200	--	--	220	210	--	23	140	380	170	210
Beryllium	ug/g	4	0.23	0.53	--	--	0.64	0.71	--	0.21	0.43	0.82	0.41	0.64
Boron	ug/g	120	<5.0	<5.0	--	--	7.1	5.3	--	<5.0	<5.0	5.0	<5.0	7.2
Boron, Hot Water Soluble	ug/g	1.5	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/g	1.2	0.37	0.17	--	--	0.20	<0.10	--	<0.10	<0.10	0.11	<0.10	<0.10
Chromium	ug/g	160	18	62	--	--	45	50	--	11	31	95	46	52
Cobalt	ug/g	22	5.1	13	--	--	11	12	--	3.6	8.2	22	11	13
Copper	ug/g	140	21	38	--	--	31	28	--	5.4	19	52	31	28
Hexavalent Chromium	ug/g	8	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/g	120	**130**	86	--	--	110	7.6	--	1.9	4.3	6.8	**230**	7.1
Mercury	ug/g	0.27	0.12	0.11	--	--	**0.33**	<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
Nickel	ug/g	100	13	36	--	--	28	29	--	6.5	18	52	26	28
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	0.091	0.26	--	--	0.22	0.27	--	<0.050	0.17	0.48	0.21	0.29
Uranium	ug/g	23	0.44	0.72	--	--	0.96	0.76	--	0.87	0.57	0.86	0.66	0.66
Vanadium	ug/g	86	24	62	--	--	50	59	--	22	47	**97**	48	63
Zinc	ug/g	340	93	110	--	--	99	88	--	12	50	130	81	86
Semi-VOCs														
1- & 2-Methylnaphthalene	ug/g	0.99 (5)	0.059	<0.0071	--	--	**2.5**	<0.0071	--	<0.0071	<0.0071	<0.0071	0.071	<0.0071
1-Methylnaphthalene	ug/g	0.99 (5)	0.028	<0.0050	--	--	0.93	<0.0050	--	<0.0050	<0.0050	<0.0050	0.034	<0.0050
2-Methylnaphthalene	ug/g	0.99 (5)	0.031	<0.0050	--	--	**1.5**	<0.0050	--	<0.0050	<0.0050	<0.0050	0.037	<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
Acenaphthylene	ug/g	0.15	0.062	0.0067	--	--	0.12	<0.0050	--	<0.0050	<0.0050	<0.0050	0.059	<0.0050
Anthracene	ug/g	0.67	0.25	0.0092	--	--	**5.0**	<0.0050	--	<0.0050	<0.0050	<0.0050	0.24	<0.0050
Benzo [b,j] fluoranthene	ug/g	--	0.85	0.047	--	--	6.7	<0.0050	--	<0.0050	<0.0050	<0.0050	0.60	<0.0050
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
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
Benzo[b]fluoranthene	ug/g	0.78	--	--	--	--	--	--	--	--	--	--	--	--
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
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
Chrysene	ug/g	7	0.56	0.029	--	--	6.1	<0.0050	--	<0.0050	<0.0050	<0.0050	0.51	<0.0050
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
Fluoranthene	ug/g	0.69	**1.5**	0.080	--	--	**15**	<0.0050	--	<0.0050	<0.0050	<0.0050	**1.3**	<0.0050
Fluorene	ug/g	62	0.093	<0.0050	--	--	2.9	<0.0050	--	<0.0050	<0.0050	<0.0050	0.093	<0.0050
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
Naphthalene	ug/g	0.6	0.053	<0.0050	--	--	**3.7**	<0.0050	--	<0.0050	<0.0050	<0.0050	0.032	<0.0050
Phenanthrene	ug/g	6.2	0.88	0.034	--	--	**18**	<0.0050	--	<0.0050	<0.0050	<0.0050	0.77	<0.0050
Pyrene	ug/g	78	1.2	0.067	--	--	12	<0.0050	--	<0.0050	<0.0050	<0.0050	1.0	<0.0050

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

RSC #			RSC #1										
			TP 14-10	TP 14-10	TP 14-12	TP 14-15	TP 14-15	TP15-18	TP15-19	TP15-20	TP15-30	TP15-31	TP15-32
			31-Mar-2014	31-Mar-2014	31-Mar-2014 (3)	31-Mar-2014 (3)	31-Mar-2014	03-Nov-2015	03-Nov-2015	03-Nov-2015	03-Nov-2015	03-Nov-2015	03-Nov-2015
Parameter	**Unit**		TP14-10 SA2	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
Layer	-	**REG153 (11) T3-R/P/I**	Debris	Debris	Debris	Debris	Native Silty Clay	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil
Sample Depth	m	**SOIL COARSE (1) (2)**	0.6 - 1.6	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
General Chemistry													
Moisture, Percent	%	--	14	15	23	16	15						
pH	-		--	--	--	7.38	--	--	--	--	--	--	--
Metals													
Antimony	ug/g	7.5	**18**	**18**	0.26	1.4	<0.20	--	--	--	--	--	--
Arsenic	ug/g	18	2.5	2.5	1.8	4.9	1.6	--	--	--	--	--	--
Barium	ug/g	390	94	79	110	99	60	--	--	--	--	--	--
Beryllium	ug/g	4	0.24	0.24	0.35	0.27	0.32	--	--	--	--	--	--
Boron	ug/g	120	<5.0	<5.0	<5.0	<5.0	<5.0	--	--	--	--	--	--
Boron, Hot Water Soluble	ug/g	1.5	0.11	0.13	0.71	0.67	0.099	--	--	--	--	--	--
Cadmium	ug/g	1.2	0.50	0.31	0.12	0.20	<0.10	--	--	--	--	--	--
Chromium	ug/g	160	11	13	40	16	29	--	--	--	--	--	--
Cobalt	ug/g	22	3.2	3.9	8.4	4.3	6.3	--	--	--	--	--	--
Copper	ug/g	140	13	14	25	34	12	--	--	--	--	--	--
Hexavalent Chromium	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	--	--	--	--
Lead	ug/g	120	**370**	**340**	28	120	4.0	--	--	--	--	--	--
Mercury	ug/g	0.27	<0.050	<0.050	0.097	0.27	<0.050	--	--	--	--	--	--
Molybdenum	ug/g	6.9	<0.50	<0.50	<0.50	0.78	<0.50	--	--	--	--	--	--
Nickel	ug/g	100	7.3	7.8	22	13	15	--	--	--	--	--	--
Selenium	ug/g	2.4	<0.50	<0.50	<0.50	0.72	<0.50	--	--	--	--	--	--
Silver	ug/g	20	<0.20	<0.20	<0.20	<0.20	<0.20	--	--	--	--	--	--
Thallium	ug/g	1	0.075	0.078	0.14	0.14	0.11	--	--	--	--	--	--
Uranium	ug/g	23	0.78	0.61	0.58	0.36	0.79	--	--	--	--	--	--
Vanadium	ug/g	86	14	15	39	22	37	--	--	--	--	--	--
Zinc	ug/g	340	200	180	60	85	36	--	--	--	--	--	--
Semi-VOCs													
1- & 2-Methylnaphthalene	ug/g	0.99 (5)	<0.0071	<0.0071	0.055	**1.7**	--	0.014	0.011	<0.0071	<0.0071	<0.0071	<0.0071
1-Methylnaphthalene	ug/g	0.99 (5)	<0.0050	<0.0050	0.023	0.87	--	0.0065	0.0053	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	0.99 (5)	<0.0050	<0.0050	0.033	0.87	--	0.0074	0.0061	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	7.9	<0.0050	<0.0050	0.10	4.0	--	0.0061	0.0089	<0.0050	<0.0050	0.0073	<0.0050
Acenaphthylene	ug/g	0.15	0.012	0.033	0.12	**1.0**	--	0.034	0.035	0.021	0.022	0.022	0.028
Anthracene	ug/g	0.67	0.017	0.027	0.39	**9.0**	--	0.032	0.039	0.016	0.016	0.025	0.022
Benzo [b,j] fluoranthene	ug/g	--	0.092	0.17	1.0	12	--	0.18	0.20	0.10	0.14	0.22	0.14
Benzo[a]anthracene	ug/g	0.5	0.070	0.13	**1.0**	**15**	--	0.14	0.16	0.063	0.095	0.15	0.099
Benzo[a]pyrene	ug/g	0.3	0.065	0.13	**0.91**	**12**	--	0.13	0.15	0.072	0.10	0.15	0.11
Benzo[b]fluoranthene	ug/g	0.78	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	6.6	0.047	0.092	0.53	6.0	--	0.076	0.092	0.046	0.065	0.096	0.070
Benzo[k]fluoranthene	ug/g	0.78	0.033	0.063	0.38	**4.6**	--	0.060	0.075	0.034	0.055	0.086	0.049
Chrysene	ug/g	7	0.062	0.11	0.75	**12**	--	0.12	0.14	0.066	0.086	0.13	0.095
Dibenzo[a,h]anthracene	ug/g	0.1	0.011	0.021	**0.14**	**1.5**	--	0.020	0.024	0.011	0.015	0.016	0.017
Fluoranthene	ug/g	0.69	0.14	0.22	**2.0**	**32**	--	0.27	0.31	0.15	0.20	0.26	0.20
Fluorene	ug/g	62	0.0052	0.0068	0.12	3.8	--	0.0087	0.012	0.0053	<0.0050	0.0066	0.0065
Indeno[1,2,3-cd]pyrene	ug/g	0.38	0.050	0.099	**0.64**	**7.3**	--	0.095	0.11	0.057	0.076	0.10	0.081
Naphthalene	ug/g	0.6	<0.0050	<0.0050	0.056	**0.82**	--	<0.0050	0.0055	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	ug/g	6.2	0.076	0.088	1.2	**30**	--	0.11	0.13	0.073	0.072	0.10	0.084
Pyrene	ug/g	78	0.12	0.19	1.6	26	--	0.22	0.26	0.12	0.17	0.21	0.18

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

RSC #			RSC #1											
			TP15-201	TP15-201	TP AF	TP AF	TP AG	TP AH	TP AH	TP AH	TP AJ	TP AJ	TP AK	TP AK
			25-Nov-2015 (3)	25-Nov-2015	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
Parameter	**Unit**		TP15-201 FILL	TP15-201 Native Silty Clay	AF SA1	AF SA3	AG SA4	AH SA2	AH SA3	AH SA4	AJ SA1	AJ SA3	AK SA1	AK SA3
Layer	-	**REG153 (11) T3-R/P/I**	Debris	Native Silty Clay	Soil Fill	Soil Fill	Soil Fill	Debris	Soil Fill	Soil Fill	Topsoil	Soil Fill	Debris	Debris
Sample Depth	m	**SOIL COARSE (1) (2)**	5.0 - 5.2	7.8 - 8.0	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
General Chemistry														
Moisture, Percent	%	--	22	23	9.5	12	20	18	20	16	7.8	18	9.1	13
pH	-		--	--	--	--	--	--	--	--	--	--	--	--
Metals														
Antimony	ug/g	7.5	0.27	<0.20	--	<0.20	<0.20	1.2	<0.20	<0.20	0.28	<0.20	<0.20	<0.20
Arsenic	ug/g	18	1.9	2.1	--	1.3	2.4	8.6	3.1	<1.0	5.2	<1.0	2.4	2.9
Barium	ug/g	390	230	190	--	21	71	77	99	19	43	28	85	110
Beryllium	ug/g	4	0.50	0.59	--	<0.20	0.33	1.5	0.57	<0.20	0.26	0.23	0.39	0.42
Boron	ug/g	120	<5.0	<5.0	--	<5.0	<5.0	<5.0	5.8	<5.0	<5.0	<5.0	<5.0	<5.0
Boron, Hot Water Soluble	ug/g	1.5	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/g	1.2	0.27	<0.10	--	<0.10	<0.10	0.21	<0.10	<0.10	0.22	<0.10	0.12	0.19
Chromium	ug/g	160	58	40	--	15	29	13	60	13	20	16	28	41
Cobalt	ug/g	22	12	13	--	3.6	7.7	11	8.9	2.5	4.6	3.4	6.6	8.9
Copper	ug/g	140	33	24	--	7.8	15	32	21	5.2	13	7.0	17	24
Hexavalent Chromium	ug/g	8	<0.2	<0.2	--	--	--	--	--	--	--	--	--	--
Lead	ug/g	120	**160**	6.1	--	2.1	3.5	99	11	2.1	33	1.9	38	36
Mercury	ug/g	0.27	0.14	<0.050	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/g	6.9	<0.50	<0.50	--	<0.50	0.60	2.9	<0.50	<0.50	<0.50	<0.50	<0.50	0.52
Nickel	ug/g	100	33	27	--	7.5	18	24	24	6.2	10	9.6	16	23
Selenium	ug/g	2.4	<0.50	<0.50	--	<0.50	<0.50	0.55	<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	0.27	0.23	--	<0.050	0.10	0.20	0.20	<0.050	0.097	0.059	0.14	0.16
Uranium	ug/g	23	0.63	0.53	--	0.94	1.8	0.57	2.4	1.2	0.74	0.56	0.68	0.72
Vanadium	ug/g	86	60	58	--	27	54	28	58	25	23	19	34	41
Zinc	ug/g	340	130	71	--	14	34	71	58	12	68	20	51	64
Semi-VOCs														
1- & 2-Methylnaphthalene	ug/g	0.99 (5)	**1.6**	<0.0071	--	<0.0071	<0.0071	0.018	<0.0071	<0.0071	0.017	<0.0071	0.032	0.072
1-Methylnaphthalene	ug/g	0.99 (5)	0.68	<0.0050	--	<0.0050	<0.0050	0.0091	<0.0050	<0.0050	0.011	<0.0050	0.016	0.032
2-Methylnaphthalene	ug/g	0.99 (5)	0.89	<0.0050	--	<0.0050	<0.0050	0.0091	<0.0050	<0.0050	0.0062	<0.0050	0.017	0.040
Acenaphthene	ug/g	7.9	2.1	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.049	<0.0050	0.11	0.11
Acenaphthylene	ug/g	0.15	**1.1**	<0.0050	--	<0.0050	<0.0050	0.012	<0.0050	<0.0050	0.038	<0.0050	0.043	0.11
Anthracene	ug/g	0.67	**6.7**	<0.0050	--	<0.0050	<0.0050	0.011	<0.0050	<0.0050	0.17	<0.0050	0.30	0.31
Benzo [b,j] fluoranthene	ug/g	--	13	<0.0050	--	<0.0050	<0.0050	0.092	<0.0050	0.0068	0.53	<0.0050	0.78	1.2
Benzo[a]anthracene	ug/g	0.5	**14**	<0.0050	--	<0.0050	<0.0050	0.053	<0.0050	<0.0050	0.42	<0.0050	**0.63**	**0.88**
Benzo[a]pyrene	ug/g	0.3	**9.9**	<0.0050	--	<0.0050	<0.0050	0.058	<0.0050	<0.0050	**0.35**	<0.0050	**0.56**	**0.82**
Benzo[b]fluoranthene	ug/g	0.78	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	6.6	4.6	<0.0050	--	<0.0050	<0.0050	0.046	<0.0050	<0.0050	0.20	<0.0050	0.33	0.60
Benzo[k]fluoranthene	ug/g	0.78	**4.4**	<0.0050	--	<0.0050	<0.0050	0.032	<0.0050	<0.0050	0.17	<0.0050	0.25	0.45
Chrysene	ug/g	7	**9.7**	<0.0050	--	<0.0050	<0.0050	0.059	<0.0050	0.0052	0.39	<0.0050	0.54	0.74
Dibenzo[a,h]anthracene	ug/g	0.1	**1.2**	<0.0050	--	<0.0050	<0.0050	0.0091	<0.0050	<0.0050	0.060	<0.0050	0.087	**0.14**
Fluoranthene	ug/g	0.69	**30**	0.0084	--	<0.0050	<0.0050	0.12	<0.0050	0.0094	**0.96**	<0.0050	**1.4**	**1.9**
Fluorene	ug/g	62	3.6	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.057	<0.0050	0.14	0.13
Indeno[1,2,3-cd]pyrene	ug/g	0.38	**5.9**	<0.0050	--	<0.0050	<0.0050	0.043	<0.0050	<0.0050	0.23	<0.0050	0.36	**0.61**
Naphthalene	ug/g	0.6	**1.7**	<0.0050	--	<0.0050	<0.0050	0.0068	<0.0050	<0.0050	0.0057	<0.0050	0.026	0.096
Phenanthrene	ug/g	6.2	**23**	<0.0050	--	<0.0050	<0.0050	0.053	<0.0050	0.0052	0.64	<0.0050	1.1	1.2
Pyrene	ug/g	78	24	0.0065	--	<0.0050	<0.0050	0.097	0.0074	0.0094	0.70	<0.0050	1.1	1.5

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

RSC #			RSC #1		
			TP BJ	TP BJ	TP G14/E1
			30-Jul-2014	30-Jul-2014	29-Jul-2014
Parameter	Unit		BJ SA3	BJ SA5	G14/E1 SA 2
Layer	-	REG153 (11) T3-R/P/I	Debris	Native Silty Clay	Debris
Sample Depth	m	SOIL COARSE (1) (2)	1.1 - 1.5	3.5 - 3.8	1 - 1.0001
General Chemistry					
Moisture, Percent	%	--	27	28	17
pH	-		--	--	--
Metals					
Antimony	ug/g	7.5	0.42	--	<0.20
Arsenic	ug/g	18	2.2	--	2.3
Barium	ug/g	390	**400**	--	150
Beryllium	ug/g	4	0.79	--	0.47
Boron	ug/g	120	<5.0	--	<5.0
Boron, Hot Water Soluble	ug/g	1.5	--	--	--
Cadmium	ug/g	1.2	0.12	--	0.12
Chromium	ug/g	160	120	--	53
Cobalt	ug/g	22	**26**	--	12
Copper	ug/g	140	57	--	29
Hexavalent Chromium	ug/g	8	--	--	--
Lead	ug/g	120	14	--	26
Mercury	ug/g	0.27	--	--	--
Molybdenum	ug/g	6.9	0.69	--	0.66
Nickel	ug/g	100	68	--	31
Selenium	ug/g	2.4	<0.50	--	<0.50
Silver	ug/g	20	<0.20	--	<0.20
Thallium	ug/g	1	0.46	--	0.19
Uranium	ug/g	23	0.67	--	1.0
Vanadium	ug/g	86	**120**	--	55
Zinc	ug/g	340	140	--	70
Semi-VOCs					
1- & 2-Methylnaphthalene	ug/g	0.99 (5)	0.089	--	<0.0071
1-Methylnaphthalene	ug/g	0.99 (5)	0.043	--	<0.0050
2-Methylnaphthalene	ug/g	0.99 (5)	0.047	--	<0.0050
Acenaphthene	ug/g	7.9	0.17	--	<0.0050
Acenaphthylene	ug/g	0.15	0.013	--	0.021
Anthracene	ug/g	0.67	0.34	--	0.011
Benzo [b,j] fluoranthene	ug/g	--	0.63	--	0.065
Benzo[a]anthracene	ug/g	0.5	**0.57**	--	0.032
Benzo[a]pyrene	ug/g	0.3	**0.44**	--	0.045
Benzo[b]fluoranthene	ug/g	0.78	--	--	--
Benzo[g,h,i]perylene	ug/g	6.6	0.25	--	0.038
Benzo[k]fluoranthene	ug/g	0.78	0.24	--	0.021
Chrysene	ug/g	7	0.47	--	0.037
Dibenzo[a,h]anthracene	ug/g	0.1	0.072	--	0.0085
Fluoranthene	ug/g	0.69	**1.4**	--	0.048
Fluorene	ug/g	62	0.19	--	<0.0050
Indeno[1,2,3-cd]pyrene	ug/g	0.38	0.28	--	0.040
Naphthalene	ug/g	0.6	0.11	--	<0.0050
Phenanthrene	ug/g	6.2	1.4	--	0.019
Pyrene	ug/g	78	1.0	--	0.043

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

RSC #			RSC #2											
			BH15-102	BH15-102	BH15-108	BH15-108	BH15-109	BH15-109	TP15-103	TP15-104	TP15-105	TP15-106	TP15-107	TP15-108
			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
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
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
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
General Chemistry														
Moisture, Percent	%	--	26	20	20	25	19	23	14	18	19	18	18	25
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 (5)	0.035	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	0.027	0.012	0.014
1-Methylnaphthalene	ug/g	0.99 (5)	0.017	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.015	0.0062	0.0067
2-Methylnaphthalene	ug/g	0.99 (5)	0.018	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	0.012	0.0055	0.0075
Acenaphthene	ug/g	7.9	0.066	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.071	0.026	0.027
Acenaphthylene	ug/g	0.15	0.090	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.014	0.022	0.030	0.084	0.020	0.023
Anthracene	ug/g	0.67	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.012	0.021	0.022	0.49	0.066	0.072
Benzo [b,j] fluoranthene	ug/g	--	0.76	<0.0050	0.016	<0.0050	<0.0050	<0.0050	0.089	0.14	0.18	1.5	0.25	0.37
Benzo[a]anthracene	ug/g	0.5	**0.61**	<0.0050	0.012	<0.0050	<0.0050	<0.0050	0.050	0.085	0.096	**1.2**	0.19	0.27
Benzo[a]pyrene	ug/g	0.3	**0.65**	<0.0050	0.011	<0.0050	<0.0050	<0.0050	0.061	0.099	0.12	**1.2**	0.18	0.27
Benzo[b]fluoranthene	ug/g	0.78	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	6.6	0.38	<0.0050	0.0076	<0.0050	<0.0050	<0.0050	0.043	0.067	0.085	0.72	0.12	0.18
Benzo[k]fluoranthene	ug/g	0.78	0.26	<0.0050	0.0052	<0.0050	<0.0050	<0.0050	0.033	0.053	0.066	0.56	0.096	0.14
Chrysene	ug/g	7	0.47	<0.0050	0.0093	<0.0050	<0.0050	<0.0050	0.050	0.087	0.11	1.0	0.18	0.25
Dibenzo[a,h]anthracene	ug/g	0.1	0.092	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.010	0.017	0.022	**0.17**	0.036	0.046
Fluoranthene	ug/g	0.69	**1.2**	<0.0050	0.024	<0.0050	<0.0050	<0.0050	0.11	0.19	0.24	**3.7**	0.44	0.61
Fluorene	ug/g	62	0.067	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0068	0.0070	0.12	0.028	0.027
Indeno[1,2,3-cd]pyrene	ug/g	0.38	**0.45**	<0.0050	0.0070	<0.0050	<0.0050	<0.0050	0.048	0.077	0.098	**0.83**	0.14	0.19
Naphthalene	ug/g	0.6	0.032	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0097	0.0056	0.0066
Phenanthrene	ug/g	6.2	0.47	<0.0050	0.015	<0.0050	<0.0050	<0.0050	0.051	0.092	0.11	2.2	0.27	0.32
Pyrene	ug/g	78	0.97	<0.0050	0.023	<0.0050	<0.0050	<0.0050	0.093	0.15	0.19	2.4	0.33	0.47

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

RSC #			RSC #2											
			TP15-110	TP15-112	TP16-301	TP16-302	TP16-303	TP16-701	TP16-702	TP16-703	TP AP	TP AV	TP AV	TP BE
			19-Nov-2015	19-Nov-2015	28-Jul-2016	28-Jul-2016	28-Jul-2016	11-Aug-16	11-Aug-16	11-Aug-16	31-Jul-2014	31-Jul-2014	31-Jul-2014	30-Jul-2014
Parameter	**Unit**		TP15-110	TP15-112	TP16-301	TP16-302	TP16-303	TP16-701	TP16-703	TP16-703	AP SA3	AV SA1	AV SA3	BE SA1
Layer	-	**REG153 (11) T3-R/P/I**	Topsoil	Topsoil	Soil Fill	Soil Fill	Soil Fill	Native Silty Clay	Debris	Soil Fill	Soil Fill	Topsoil	Soil Fill	Debris
Sample Depth	m	**SOIL COARSE** (1) (2)	0 - 0.30	0 - 0.30	0.75 - 0.85	0.75 - 0.85	0.95 - 1.05	5.45 - 5.55	3.45 - 3.55	0.45 - 0.55	0.7 - 0.85	0 - 0.2	0.6 - 0.9	0.4 - 0.8
General Chemistry														
Moisture, Percent	%	--	22	20	13	14	5.5	--	--	--	16	17	17	18
pH	-		--	--	7.18	--	--	7.34	7.32	7.17	--	--	--	--
Metals														
Antimony	ug/g	7.5	--	--	<0.20	<0.20	<0.20	--	--	--	<0.20	0.24	<0.20	0.95
Arsenic	ug/g	18	--	--	1.1	1.1	1.0	--	--	--	1.4	3.5	1.2	2.8
Barium	ug/g	390	--	--	30	29	24	--	--	--	48	52	29	230
Beryllium	ug/g	4	--	--	0.23	0.25	0.21	--	--	--	0.41	0.41	0.26	0.53
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	--	--				--	--	--	--	--	--	--
Cadmium	ug/g	1.2	--	--	<0.10	<0.10	<0.10	--	--	--	<0.10	0.17	<0.10	0.17
Chromium	ug/g	160	--	--	20	22	18	--	--	--	34	26	23	61
Cobalt	ug/g	22	--	--	4.2	5.2	3.3	--	--	--	7.2	5.7	4.8	14
Copper	ug/g	140	--	--	7.5	9.2	6.4	--	--	--	6.7	10	4.7	33
Hexavalent Chromium	ug/g	8	--	--	0.7	0.5	0.5	--	--	--	--	--	--	--
Lead	ug/g	120	--	--	6.6	3.3	3.5	--	--	--	5.3	37	3.4	51
Mercury	ug/g	0.27	--	--	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
Molybdenum	ug/g	6.9	--	--	<0.50	<0.50	<0.50	--	--	--	<0.50	0.51	<0.50	0.89
Nickel	ug/g	100	--	--	11	11	10	--	--	--	17	13	11	36
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	<0.20	<0.20	--	--	--	<0.20	<0.20	<0.20	<0.20
Thallium	ug/g	1	--	--	0.072	0.058	<0.050	--	--	--	0.11	0.13	0.095	0.28
Uranium	ug/g	23	--	--	0.78	0.80	0.76	--	--	--	0.97	0.76	0.66	0.84
Vanadium	ug/g	86	--	--	25	25	21	--	--	--	33	33	35	63
Zinc	ug/g	340	--	--	27	28	21	--	--	--	40	45	44	120
Semi-VOCs														
1- & 2-Methylnaphthalene	ug/g	0.99 (5)	0.019	0.034	<0.014	<0.014	<0.014	--	--	--	<0.0071	<0.0071	<0.0071	<0.0071
1-Methylnaphthalene	ug/g	0.99 (5)	0.0094	0.016	<0.0050	<0.0050	<0.0050	--	--	--	<0.0050	0.0054	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	0.99 (5)	0.0098	0.018	<0.0050	<0.0050	<0.0050	--	--	--	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	7.9	0.036	0.046	<0.0050	<0.0050	<0.0050	--	--	--	<0.0050	<0.0050	<0.0050	0.0096
Acenaphthylene	ug/g	0.15	0.021	0.029	<0.0050	<0.0050	<0.0050	--	--	--	<0.0050	0.026	<0.0050	0.035
Anthracene	ug/g	0.67	0.099	0.10	<0.0050	<0.0050	<0.0050	--	--	--	<0.0050	0.019	<0.0050	0.036
Benzo [b,j] fluoranthene	ug/g	--	0.40	0.33	0.026	<0.0050	<0.0050	--	--	--	<0.0050	0.19	<0.0050	0.22
Benzo[a]anthracene	ug/g	0.5	0.30	0.25	0.014	<0.0050	<0.0050	--	--	--	<0.0050	0.10	<0.0050	0.15
Benzo[a]pyrene	ug/g	0.3	0.29	0.24	0.016	<0.0050	<0.0050	--	--	--	<0.0050	0.12	<0.0050	0.16
Benzo[b]fluoranthene	ug/g	0.78	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	6.6	0.19	0.15	0.0088	<0.0050	<0.0050	--	--	--	<0.0050	0.082	<0.0050	0.10
Benzo[k]fluoranthene	ug/g	0.78	0.14	0.12	0.0088	<0.0050	<0.0050	--	--	--	<0.0050	0.065	<0.0050	0.080
Chrysene	ug/g	7	0.27	0.23	0.014	<0.0050	<0.0050	--	--	--	<0.0050	0.11	<0.0050	0.13
Dibenzo[a,h]anthracene	ug/g	0.1	0.051	0.042	<0.0050	<0.0050	<0.0050	--	--	--	<0.0050	0.020	<0.0050	0.027
Fluoranthene	ug/g	0.69	0.68	0.58	0.021	<0.0050	0.0071	--	--	--	<0.0050	0.23	<0.0050	0.26
Fluorene	ug/g	62	0.044	0.054	<0.0050	<0.0050	<0.0050	--	--	--	<0.0050	0.0059	<0.0050	0.0096
Indeno[1,2,3-cd]pyrene	ug/g	0.38	0.21	0.17	0.0061	<0.0050	<0.0050	--	--	--	<0.0050	0.087	<0.0050	0.11
Naphthalene	ug/g	0.6	0.013	0.027	<0.0050	<0.0050	<0.0050	--	--	--	<0.0050	<0.0050	<0.0050	0.0054
Phenanthrene	ug/g	6.2	0.43	0.43	0.0099	<0.0050	<0.0050	--	--	--	<0.0050	0.099	<0.0050	0.11
Pyrene	ug/g	78	0.50	0.44	0.018	<0.0050	<0.0050	--	--	--	<0.0050	0.19	<0.0050	0.21

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

RSC #			RSC #2										
			TP BE	TP BE	TP BE	TP BK	TP BM	TP BM	TP R	TP R	TP T	TP T	TP T
			30-Jul-2014	30-Jul-2014	30-Jul-2014	29-Jul-2014	30-Jul-2014	30-Jul-2014	30-Jul-2014	30-Jul-2014	31-Jul-2014	31-Jul-2014	31-Jul-2014
Parameter	**Unit**		BE SA2	DUP BE SA2 (Field Duplicate)	BE SA3	BK SA1	BM SA2	BM SA3	R SA2	R SA3	T SA2	DUP T SA2 (Field Duplicate)	T SA3
Layer	-	**REG153 (11) T3-R/P/I**	Debris	Debris	Debris	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill
Sample Depth	m	**SOIL COARSE** (1) (2)	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	0.35 - 0.7	0.35 - 0.7	0.7 - 0.8
General Chemistry													
Moisture, Percent	%	--	16	18	33	7.0	22	18	9.9	18	2.9	4.5	22
pH	-		--	--	--	--	--	--	--	--	--	--	--
Metals													
Antimony	ug/g	7.5	0.31	0.31	<0.20	<0.20	0.20	--	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	ug/g	18	1.8	1.7	2.9	<1.0	4.9	--	1.8	3.5	<1.0	<1.0	3.1
Barium	ug/g	390	110	120	350	26	140	--	38	110	15	19	77
Beryllium	ug/g	4	0.35	0.35	0.95	0.22	1.0	--	0.29	0.80	<0.20	0.21	0.57
Boron	ug/g	120	<5.0	<5.0	<5.0	<5.0	6.1	--	<5.0	6.3	<5.0	<5.0	<5.0
Boron, Hot Water Soluble	ug/g	1.5	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/g	1.2	0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	ug/g	160	35	38	130	18	65	--	24	59	8.9	12	49
Cobalt	ug/g	22	8.0	8.5	**29**	3.6	19	--	5.2	11	2.6	3.0	8.7
Copper	ug/g	140	19	23	59	6.8	29	--	11	35	5.1	7.1	25
Hexavalent Chromium	ug/g	8	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/g	120	20	19	8.5	2.6	10	--	5.0	9.6	2.1	3.1	6.7
Mercury	ug/g	0.27	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/g	6.9	<0.50	<0.50	<0.50	<0.50	0.52	--	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/g	100	21	23	73	11	32	--	12	29	6.8	7.1	22
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	0.14	0.16	0.44	0.069	0.20	--	0.067	0.18	<0.050	<0.050	0.12
Uranium	ug/g	23	0.59	0.61	0.78	0.88	2.8	--	0.80	1.3	0.32	0.45	0.85
Vanadium	ug/g	86	39	41	**110**	27	74	--	36	53	11	14	45
Zinc	ug/g	340	48	51	130	35	58	--	23	53	11	15	37
Semi-VOCs													
1- & 2-Methylnaphthalene	ug/g	0.99 (5)	<0.028	<0.028	<0.0071	<0.0071	<0.0071	--	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071
1-Methylnaphthalene	ug/g	0.99 (5)	<0.020	<0.020	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	0.99 (5)	0.022	0.020	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	7.9	0.031	<0.020	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	0.15	0.12	0.087	<0.0050	<0.0050	<0.0050	--	0.013	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	0.67	0.14	0.060	<0.0050	<0.0050	<0.0050	--	0.0054	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthene	ug/g	--	0.71	0.46	0.011	<0.0050	<0.0050	--	0.053	<0.0050	0.0058	0.0075	<0.0050
Benzo[a]anthracene	ug/g	0.5	**0.51**	0.32	0.0088	<0.0050	<0.0050	--	0.026	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	0.3	**0.53**	**0.35**	0.0082	<0.0050	<0.0050	--	0.032	<0.0050	<0.0050	0.0056	<0.0050
Benzo[b]fluoranthene	ug/g	0.78	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	6.6	0.37	0.26	<0.0050	<0.0050	<0.0050	--	0.026	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[k]fluoranthene	ug/g	0.78	0.25	0.17	<0.0050	<0.0050	<0.0050	--	0.020	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	7	0.41	0.24	0.0095	<0.0050	<0.0050	--	0.026	<0.0050	<0.0050	0.0056	<0.0050
Dibenzo[a,h]anthracene	ug/g	0.1	0.088	0.063	<0.0050	<0.0050	<0.0050	--	0.0064	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	0.69	**0.91**	0.49	0.019	<0.0050	<0.0050	--	0.050	<0.0050	0.0058	0.0089	<0.0050
Fluorene	ug/g	62	0.046	0.020	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrene	ug/g	0.38	**0.38**	0.26	<0.0050	<0.0050	<0.0050	--	0.027	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	0.6	0.050	0.038	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	ug/g	6.2	0.56	0.17	0.0082	<0.0050	<0.0050	--	0.018	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	78	0.76	0.43	0.016	<0.0050	<0.0050	--	0.041	<0.0050	0.0054	0.0080	<0.0050

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

RSC #			RSC #2							
			TP T	TP V	TP V	TP X	TP X	TR BN	TR BN	TR N
			31-Jul-2014	31-Jul-2014	31-Jul-2014	29-Jul-2014	29-Jul-2014	01-Aug-2014	01-Aug-2014	01-Aug-2014
Parameter	**Unit**		T SA4	V SA3	V SA5	X SA1	X SA2	BN SA1	BN SA3	N SA3
Layer	-	**REG153 (11) T3-R/P/I**	Soil Fill	Soil Fill	Soil Fill	Topsoil	Soil Fill	Debris	Debris	Soil Fill
Sample Depth	m	**SOIL COARSE** (1) (2)	0.9 - 1.1	0.55 - 0.8	1.05 - 1.25	0 - 0.5	0.5 - 0.95	0.1 - 0.4	1 - 1.5	1.3 - 1.7
General Chemistry										
Moisture, Percent	%	--	18	11	17	23	11	16	17	31
pH	-		--	--	--	--	--	--	--	--
Metals										
Antimony	ug/g	7.5	<0.20	--	<0.20	<0.20	<0.20	<0.20	<0.20	--
Arsenic	ug/g	18	1.9	--	1.3	3.5	1.0	2.1	2.6	--
Barium	ug/g	390	48	--	31	160	22	230	41	--
Beryllium	ug/g	4	0.32	--	0.20	0.61	<0.20	0.66	0.34	--
Boron	ug/g	120	<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	0.15	<0.10	<0.10	<0.10	--
Chromium	ug/g	160	31	--	18	56	16	88	31	--
Cobalt	ug/g	22	5.8	--	3.6	15	3.3	18	5.9	--
Copper	ug/g	140	20	--	8.9	26	7.3	40	16	--
Hexavalent Chromium	ug/g	8	--	--	--	--	--	--	--	--
Lead	ug/g	120	3.2	--	2.0	21	2.0	7.3	20	--
Mercury	ug/g	0.27	--	--	--	--	--	--	--	--
Molybdenum	ug/g	6.9	<0.50	--	<0.50	<0.50	<0.50	<0.50	<0.50	--
Nickel	ug/g	100	17	--	9.7	30	8.4	48	15	--
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	0.077	--	0.055	0.23	0.22	0.29	0.10	--
Uranium	ug/g	23	0.64	--	0.75	1.1	0.79	0.90	0.90	--
Vanadium	ug/g	86	29	--	26	59	19	79	43	--
Zinc	ug/g	340	27	--	20	81	16	90	35	--
Semi-VOCs										
1- & 2-Methylnaphthalene	ug/g	0.99 (5)	<0.0071	--	<0.0071	0.053	<0.0071	<0.0071	<0.0071	--
1-Methylnaphthalene	ug/g	0.99 (5)	<0.0050	--	<0.0050	0.028	<0.0050	<0.0050	<0.0050	--
2-Methylnaphthalene	ug/g	0.99 (5)	<0.0050	--	<0.0050	0.025	<0.0050	<0.0050	<0.0050	--
Acenaphthene	ug/g	7.9	<0.0050	--	<0.0050	0.066	<0.0050	<0.0050	<0.0050	--
Acenaphthylene	ug/g	0.15	<0.0050	--	<0.0050	0.035	<0.0050	0.022	<0.0050	--
Anthracene	ug/g	0.67	<0.0050	--	<0.0050	0.15	<0.0050	0.0096	<0.0050	--
Benzo [b,j] fluoranthene	ug/g	--	<0.0050	--	<0.0050	0.45	<0.0050	0.073	0.0060	--
Benzo[a]anthracene	ug/g	0.5	<0.0050	--	<0.0050	0.37	<0.0050	0.033	<0.0050	--
Benzo[a]pyrene	ug/g	0.3	<0.0050	--	<0.0050	**0.31**	<0.0050	0.053	<0.0050	--
Benzo[b]fluoranthene	ug/g	0.78	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	6.6	<0.0050	--	<0.0050	0.18	<0.0050	0.044	<0.0050	--
Benzo[k]fluoranthene	ug/g	0.78	<0.0050	--	<0.0050	0.16	<0.0050	0.026	<0.0050	--
Chrysene	ug/g	7	<0.0050	--	<0.0050	0.32	<0.0050	0.031	<0.0050	--
Dibenzo[a,h]anthracene	ug/g	0.1	<0.0050	--	<0.0050	0.049	<0.0050	0.011	<0.0050	--
Fluoranthene	ug/g	0.69	<0.0050	--	<0.0050	**0.87**	<0.0050	0.057	0.0071	--
Fluorene	ug/g	62	<0.0050	--	<0.0050	0.073	<0.0050	<0.0050	<0.0050	--
Indeno[1,2,3-cd]pyrene	ug/g	0.38	<0.0050	--	<0.0050	0.20	<0.0050	0.049	<0.0050	--
Naphthalene	ug/g	0.6	<0.0050	--	<0.0050	0.041	<0.0050	<0.0050	<0.0050	--
Phenanthrene	ug/g	6.2	<0.0050	--	<0.0050	0.65	<0.0050	0.024	<0.0050	--
Pyrene	ug/g	78	<0.0050	--	<0.0050	0.69	<0.0050	0.048	0.0060	--

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

RSC #			RSC #3											
			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
			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
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)
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
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
General Chemistry														
Moisture, Percent	%	--	27	21	21	17	23	9.9	22	23	21	22	22	21
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
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
Barium	ug/g	390	--	200	120	96	250	15	190	51	110	130	240	250
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
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
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
Chromium	ug/g	160	--	45	31	36	57	11	43	9.6	22	33	51	55
Cobalt	ug/g	22	--	16	8.8	9.0	17	3.5	14	1.9	7.3	9.5	17	14
Copper	ug/g	140	--	28	20	19	31	3.1	26	6.5	14	17	32	30
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
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
Nickel	ug/g	100	--	31	19	20	34	7.0	27	5.8	13	17	34	32
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
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	--	0.24	0.17	0.20	0.30	<0.050	0.24	0.059	0.12	0.20	0.28	0.32
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
Vanadium	ug/g	86	--	65	48	40	71	14	65	13	40	44	74	75
Zinc	ug/g	340	--	74	51	77	84	14	73	54	39	87	86	90
Semi-VOCs														
1- & 2-Methylnaphthalene	ug/g	0.99 (5)	--	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	0.047	<0.0071	0.011	<0.0071	<0.0071
1-Methylnaphthalene	ug/g	0.99 (5)	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.018	<0.0050	0.0060	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	0.99 (5)	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.028	<0.0050	0.0054	<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
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
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
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
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
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
Benzo[b]fluoranthene	ug/g	0.78	--	--	--	--	--	--	--	--	--	--	--	--
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
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
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
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
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
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
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
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
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
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

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

RSC #			RSC #3											
			BH15-107	BH15-107	BH15-107A	BH16-117	BH16-118	BH16-119	BH16-216	BH16-216	BH16-216	BH16-216	TP 14-4	TP 14-9
			18-Mar-2015	18-Mar-2015	13-May-2015	31-Oct-16	31-Oct-16	01-Nov-16	01-Nov-16	01-Nov-16	04-Nov-16	04-Nov-16	27-Mar-2014 (4)	27-Mar-2014
Parameter	**Unit**		BH15-107 SA2	BH15-107 SA6	BH15-107A	BH16-117 SA6	BH16-118 SA3	BH16-119 SA6	BH16-216 SA4	BH16-216 SA6	BH16-216 SA7	BH16-216 SA8	TP14-4 SA1	TP14-9 SA2
Layer	-	**REG153 (11) T3-R/P/I**	Soil Fill	Native Silty Clay	Native Silty Clay	Native Silty Clay	Native Silty Clay	Soil Fill	Debris	Debris	Native Silty Clay	Native Silty Clay	Debris	Debris
Sample Depth	m	**SOIL COARSE (1) (2)**	0.76 - 1.37	3.81 - 4.42	1.83 - 2.44	3 - 3.6	1.2 - 1.8	3 - 3.6	3 - 3.6	4.6 - 5.2	5.3 - 5.9	6.0 - 6.6	0.14 - 1.1	1.4 - 2
General Chemistry														
Moisture, Percent	%	--	17	22	32	--	--	--	--	--	--	--	15	30
pH	-		--	--	--	7.8	7.05	7.73	7.56	--	--	--	7.63	--
Metals														
Antimony	ug/g	7.5	<0.20	<0.20	--	--	--	--	--	--	--	--	3.5	<0.20
Arsenic	ug/g	18	1.2	<1.0	--	--	--	--	--	--	--	--	5.1	2.1
Barium	ug/g	390	35	150	--	--	--	--	--	--	--	--	210	230
Beryllium	ug/g	4	0.23	0.39	--	--	--	--	--	--	--	--	0.31	0.50
Boron	ug/g	120	<5.0	<5.0	--	--	--	--	--	--	--	--	<5.0	<5.0
Boron, Hot Water Soluble	ug/g	1.5	--	--	--	--	--	--	--	--	--	--	0.25	0.23
Cadmium	ug/g	1.2	<0.10	<0.10	--	--	--	--	--	--	--	--	0.30	<0.10
Chromium	ug/g	160	20	30	--	--	--	--	--	--	--	--	17	57
Cobalt	ug/g	22	4.8	8.2	--	--	--	--	--	--	--	--	4.7	14
Copper	ug/g	140	7.5	18	--	--	--	--	--	--	--	--	23	32
Hexavalent Chromium	ug/g	8	--	--	--	--	--	--	--	--	--	--	<0.2	<0.2
Lead	ug/g	120	4.3	4.3	--	--	--	--	--	--	--	--	**430**	5.0
Mercury	ug/g	0.27	--	--	--	--	--	--	--	--	--	--	**0.38**	<0.050
Molybdenum	ug/g	6.9	<0.50	<0.50	--	--	--	--	--	--	--	--	0.54	0.76
Nickel	ug/g	100	9.7	16	--	--	--	--	--	--	--	--	11	34
Selenium	ug/g	2.4	<0.50	<0.50	--	--	--	--	--	--	--	--	<0.50	<0.50
Silver	ug/g	20	<0.20	<0.20	--	--	--	--	--	--	--	--	0.34	<0.20
Thallium	ug/g	1	0.058	0.16	--	--	--	--	--	--	--	--	0.12	0.31
Uranium	ug/g	23	0.72	0.63	--	--	--	--	--	--	--	--	0.48	0.98
Vanadium	ug/g	86	24	45	--	--	--	--	--	--	--	--	22	68
Zinc	ug/g	340	23	50	--	--	--	--	--	--	--	--	160	84
Semi-VOCs														
1- & 2-Methylnaphthalene	ug/g	0.99 (5)	<0.0071	<0.0071	--	--	--	--	--	**3.3**	0.26	<0.0071	0.037	<0.0071
1-Methylnaphthalene	ug/g	0.99 (5)	<0.0050	<0.0050	--	--	--	--	--	**1.6**	0.11	<0.0050	0.018	<0.0050
2-Methylnaphthalene	ug/g	0.99 (5)	<0.0050	<0.0050	--	--	--	--	--	**1.8**	0.15	<0.0050	0.019	<0.0050
Acenaphthene	ug/g	7.9	<0.0050	<0.0050	--	--	--	--	--	0.64	0.061	<0.0050	0.061	0.012
Acenaphthylene	ug/g	0.15	<0.0050	<0.0050	--	--	--	--	--	**1.2**	**0.22**	0.0053	0.036	0.013
Anthracene	ug/g	0.67	<0.0050	<0.0050	--	--	--	--	--	**4**	0.36	0.011	0.13	0.0078
Benzo [b,j] fluoranthene	ug/g	--	0.011	<0.0050	--	--	--	--	--	4.8	0.29	0.0093	0.46	0.045
Benzo[a]anthracene	ug/g	0.5	0.0070	<0.0050	--	--	--	--	--	**3.3**	0.33	0.009	0.44	0.025
Benzo[a]pyrene	ug/g	0.3	0.0080	<0.0050	--	--	--	--	--	**3.8**	0.24	0.0072	**0.40**	0.036
Benzo[b]fluoranthene	ug/g	0.78	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	6.6	0.0059	<0.0050	--	--	--	--	--	1.5	0.11	<0.0050	0.24	0.024
Benzo[k]fluoranthene	ug/g	0.78	<0.0050	<0.0050	--	--	--	--	--	**1.9**	0.12	<0.0050	0.17	0.015
Chrysene	ug/g	7	0.0064	<0.0050	--	--	--	--	--	4.1	0.25	0.0085	0.36	0.020
Dibenzo[a,h]anthracene	ug/g	0.1	<0.0050	<0.0050	--	--	--	--	--	**0.43**	0.027	<0.0050	0.060	0.0052
Fluoranthene	ug/g	0.69	0.013	<0.0050	--	--	--	--	--	**7.7**	**0.95**	0.025	**0.85**	0.061
Fluorene	ug/g	62	<0.0050	<0.0050	--	--	--	--	--	3.2	0.37	0.0076	0.053	0.017
Indeno[1,2,3-cd]pyrene	ug/g	0.38	0.0064	<0.0050	--	--	--	--	--	**1.8**	0.13	<0.0050	0.26	0.027
Naphthalene	ug/g	0.6	<0.0050	<0.0050	--	--	--	--	--	**3.3**	0.22	0.007	0.037	<0.0050
Phenanthrene	ug/g	6.2	0.0064	<0.0050	--	--	--	--	--	**12**	1.4	0.032	0.59	0.0091
Pyrene	ug/g	78	0.011	<0.0050	--	--	--	--	--	6.5	0.69	0.018	0.72	0.055

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

RSC #			RSC #3										
			TP16-401	TP16-402	TP16-403	TP16-404	TP AA	TP AA	TP AA	TP AB	TP AC	TP AC	TP AE
			25-May-2016	25-May-2016	25-May-2016	25-May-2016	28-Jun-2014	28-Jun-2014	28-Jun-2014	28-Jun-2014	28-Jun-2014	28-Jun-2014	28-Jun-2014
Parameter	**Unit**		TP16-401	TP16-402	TP16-403	TP16-404	AA SA2	AA SA3	DUP AA SA3 (Field Duplicate)	AB SA1	AC SA1	AC SA3	AE SA2
Layer	-	**REG153 (11) T3-R/P/I**	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Debris	Debris	Soil Fill	Debris
Sample Depth	m	**SOIL COARSE** (1) (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	0 - 0.37	1 - 2	1.1 - 1.1
General Chemistry													
Moisture, Percent	%	--	11	12	12	11	18	18	18	12	9.8	16	13
pH	-		--	--	--	--	--	--	--	--	--	--	--
Metals													
Antimony	ug/g	7.5	--	--	--	--	--	<0.20	<0.20	0.47	0.27	<0.20	<0.20
Arsenic	ug/g	18	--	--	--	--	--	1.1	1.1	2.1	3.8	<1.0	1.7
Barium	ug/g	390	--	--	--	--	--	24	27	110	92	28	63
Beryllium	ug/g	4	--	--	--	--	--	0.22	0.24	0.24	0.40	0.22	0.30
Boron	ug/g	120	--	--	--	--	--	<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	0.11	0.18	<0.10	<0.10
Chromium	ug/g	160	--	--	--	--	--	19	20	19	26	16	24
Cobalt	ug/g	22	--	--	--	--	--	4.5	4.6	4.5	7.2	4.5	6.0
Copper	ug/g	140	--	--	--	--	--	5.4	5.1	12	16	5.6	15
Hexavalent Chromium	ug/g	8	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/g	120	--	--	--	--	--	6.2	2.3	**260**	59	2.0	7.9
Mercury	ug/g	0.27	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/g	6.9	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/g	100	--	--	--	--	--	10	11	11	15	9.1	14
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	--	--	--	--	--	0.073	0.063	0.095	0.14	0.053	0.11
Uranium	ug/g	23	--	--	--	--	--	0.34	0.38	0.54	0.72	0.55	0.78
Vanadium	ug/g	86	--	--	--	--	--	22	24	26	35	22	30
Zinc	ug/g	340	--	--	--	--	--	24	25	110	71	20	31
Semi-VOCs													
1- & 2-Methylnaphthalene	ug/g	0.99 (5)	--	--	--	--	<0.0071	<0.0071	<0.0071	<0.0071	0.13	<0.0071	<0.028
1-Methylnaphthalene	ug/g	0.99 (5)	--	--	--	--	<0.0050	<0.0050	<0.0050	<0.0050	0.061	<0.0050	<0.020
2-Methylnaphthalene	ug/g	0.99 (5)	--	--	--	--	<0.0050	<0.0050	<0.0050	0.0050	0.065	<0.0050	<0.020
Acenaphthene	ug/g	7.9	--	--	--	--	<0.0050	<0.0050	<0.0050	0.023	0.49	<0.0050	<0.020
Acenaphthylene	ug/g	0.15	--	--	--	--	<0.0050	<0.0050	<0.0050	0.028	0.040	<0.0050	**0.22**
Anthracene	ug/g	0.67	--	--	--	--	<0.0050	<0.0050	<0.0050	0.075	**1.3**	<0.0050	0.089
Benzo [b,j] fluoranthene	ug/g	--	--	--	--	--	0.0069	0.0069	<0.0050	0.40	2.6	0.016	0.80
Benzo[a]anthracene	ug/g	0.5	--	--	--	--	<0.0050	<0.0050	<0.0050	0.29	**2.6**	0.012	0.42
Benzo[a]pyrene	ug/g	0.3	--	--	--	--	<0.0050	<0.0050	<0.0050	0.27	**1.9**	0.011	**0.60**
Benzo[b]fluoranthene	ug/g	0.78	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	6.6	--	--	--	--	<0.0050	<0.0050	<0.0050	0.17	1.1	0.0069	0.44
Benzo[k]fluoranthene	ug/g	0.78	--	--	--	--	<0.0050	<0.0050	<0.0050	0.12	**1.0**	0.0063	0.30
Chrysene	ug/g	7	--	--	--	--	<0.0050	<0.0050	<0.0050	0.28	2.2	0.011	0.41
Dibenzo[a,h]anthracene	ug/g	0.1	--	--	--	--	<0.0050	<0.0050	<0.0050	0.043	**0.32**	<0.0050	**0.11**
Fluoranthene	ug/g	0.69	--	--	--	--	0.0090	0.0090	<0.0050	0.62	**5.6**	0.022	0.37
Fluorene	ug/g	62	--	--	--	--	<0.0050	<0.0050	<0.0050	0.025	0.62	<0.0050	<0.030 (6)
Indeno[1,2,3-cd]pyrene	ug/g	0.38	--	--	--	--	<0.0050	<0.0050	<0.0050	0.18	**1.1**	0.0074	**0.45**
Naphthalene	ug/g	0.6	--	--	--	--	<0.0050	<0.0050	<0.0050	0.0065	0.094	<0.0050	0.043
Phenanthrene	ug/g	6.2	--	--	--	--	0.0053	0.0053	<0.0050	0.31	4.9	0.010	0.14
Pyrene	ug/g	78	--	--	--	--	0.0074	0.0074	<0.0050	0.51	4.2	0.018	0.33

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

RSC #			RSC #3										
			TP AS	TP AS	TP BA	TP BA	TP BA	TP Y	TP Y	TP Z	TR E	TR E	TR E
			30-Jul-2014	30-Jul-2014	30-Jul-2014	30-Jul-2014	30-Jul-2014	28-Jun-2014	28-Jun-2014	28-Jun-2014	29-Jul-2014	29-Jul-2014	29-Jul-2014
Parameter	**Unit**		AS SA1	AS SA2	BA SA2	BA SA3	BA SA3 (2)	Y SA1	Y SA2	Z SA2	E SA2	E SA2 (2)	DUP E SA2 (Field Duplicate)
Layer	-	**REG153 (11) T3-R/P/I**	Debris	Debris	Soil Fill	Debris	Debris	Debris	Soil Fill	Debris	Debris	Debris	Debris
Sample Depth	m	**SOIL COARSE** (1) (2)	0.2 - 0.4	0.7 - 1.3	0.7 - 1	1.8 - 2	1.8 - 2	0.1 - 0.3	0.3 - 0.9	0.3 - 0.7	0.55 - 1	0.55 - 1	0.55 - 1
General Chemistry													
Moisture, Percent	%	--	17	21	17	20	16	15	11	15	7.3	7.0	6.5
pH	-		--	--	--	--	--	--	--	--	--	--	--
Metals													
Antimony	ug/g	7.5	<0.20	0.32	<0.20	--	0.24	0.54	0.32	<0.20	--	<0.20	--
Arsenic	ug/g	18	2.9	2.5	2.8	--	2.8	4.2	1.7	2.0	--	1.6	--
Barium	ug/g	390	180	280	160	--	160	90	36	67	--	22	--
Beryllium	ug/g	4	0.56	0.53	0.50	--	0.46	0.45	<0.20	0.39	--	0.22	--
Boron	ug/g	120	<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	0.12	<0.10	--	0.11	0.27	<0.10	<0.10	--	<0.10	--
Chromium	ug/g	160	73	72	40	--	44	28	15	29	--	15	--
Cobalt	ug/g	22	15	16	11	--	11	7.2	4.1	7.6	--	4.2	--
Copper	ug/g	140	38	39	24	--	25	18	4.1	13	--	5.2	--
Hexavalent Chromium	ug/g	8	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/g	120	39	**310**	8.6	--	45	**150**	12	27	--	10	--
Mercury	ug/g	0.27	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/g	6.9	<0.50	0.59	0.67	--	1.1	<0.50	<0.50	<0.50	--	<0.50	--
Nickel	ug/g	100	42	43	23	--	26	15	8.1	16	--	9.3	--
Selenium	ug/g	2.4	<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	--
Thallium	ug/g	1	0.24	0.28	0.22	--	0.19	0.16	<0.050	0.13	--	0.056	--
Uranium	ug/g	23	0.86	0.96	0.64	--	0.78	0.61	0.40	0.77	--	0.30	--
Vanadium	ug/g	86	68	69	54	--	49	36	19	37	--	18	--
Zinc	ug/g	340	90	100	63	--	72	150	27	52	--	24	--
Semi-VOCs													
1- & 2-Methylnaphthalene	ug/g	0.99 (5)	0.077	0.17	<0.0071	--	0.24	0.013	<0.0071	0.14	--	<0.0071	--
1-Methylnaphthalene	ug/g	0.99 (5)	0.035	0.087	<0.0050	--	0.19	0.0072	<0.0050	0.067	--	<0.0050	--
2-Methylnaphthalene	ug/g	0.99 (5)	0.042	0.087	<0.0050	--	0.046	0.0061	<0.0050	0.071	--	0.0053	--
Acenaphthene	ug/g	7.9	0.37	0.29	<0.0050	--	0.33	0.026	<0.0050	0.70	--	0.061	--
Acenaphthylene	ug/g	0.15	0.013	0.048	0.034	--	**0.46**	0.051	0.011	0.10	--	<0.0050	--
Anthracene	ug/g	0.67	**1.0**	**0.76**	0.019	--	**0.73**	0.070	0.0099	**1.9**	--	0.17	--
Benzo [b,j] fluoranthene	ug/g	--	1.3	1.5	0.14	--	1.8	0.45	0.075	3.1	--	0.38	--
Benzo[a]anthracene	ug/g	0.5	**1.6**	**1.5**	0.081	--	**1.4**	0.31	0.051	**3.1**	--	0.35	--
Benzo[a]pyrene	ug/g	0.3	**0.96**	**1.1**	0.10	--	**1.4**	0.30	0.055	**2.5**	--	0.29	--
Benzo[b]fluoranthene	ug/g	0.78	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/g	6.6	0.45	0.57	0.068	--	0.87	0.21	0.038	1.6	--	0.15	--
Benzo[k]fluoranthene	ug/g	0.78	0.49	0.55	0.045	--	0.75	0.16	0.030	**1.1**	--	0.15	--
Chrysene	ug/g	7	1.2	1.1	0.081	--	1.1	0.27	0.049	2.4	--	0.29	--
Dibenzo[a,h]anthracene	ug/g	0.1	**0.14**	**0.18**	0.018	--	**0.22**	0.051	0.0089	**0.38**	--	0.046	--
Fluoranthene	ug/g	0.69	**3.7**	**3.2**	0.12	--	**3.2**	0.60	0.10	**7.1**	--	**0.72**	--
Fluorene	ug/g	62	0.42	0.41	<0.0050	--	0.88	0.021	<0.0050	0.61	--	0.071	--
Indeno[1,2,3-cd]pyrene	ug/g	0.38	**0.49**	**0.63**	0.077	--	**0.92**	0.22	0.038	**1.6**	--	0.16	--
Naphthalene	ug/g	0.6	0.11	0.58	<0.0050	--	0.12	0.0061	<0.0050	0.13	--	<0.0050	--
Phenanthrene	ug/g	6.2	3.9	2.8	0.043	--	2.9	0.28	0.039	**6.3**	--	0.62	--
Pyrene	ug/g	78	3.0	2.3	0.11	--	2.5	0.49	0.092	5.6	--	0.52	--

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

RSC #			RSC #3		
			TR E	TR F	TR J
			25-Aug-2014	29-Jul-2014	29-Jul-2014
Parameter	Unit		TP E	F SA1	J SA2
Layer	-	REG153 (11) T3-R/P/I	Native Silty Clay	Debris	Soil Fill
Sample Depth	m	SOIL COARSE (1) (2)	1.4 - 1.7	0 - 0.6	0.65 - 0.9
General Chemistry					
Moisture, Percent	%	--	21	11	15
pH	-		--	--	--
Metals					
Antimony	ug/g	7.5	<0.20	1.2	<0.20
Arsenic	ug/g	18	3.3	7.5	1.3
Barium	ug/g	390	200	130	48
Beryllium	ug/g	4	0.69	0.59	0.30
Boron	ug/g	120	<5.0	<5.0	<5.0
Boron, Hot Water Soluble	ug/g	1.5	0.18	--	--
Cadmium	ug/g	1.2	<0.10	0.26	<0.10
Chromium	ug/g	160	42	33	19
Cobalt	ug/g	22	13	8.5	4.2
Copper	ug/g	140	24	25	5.3
Hexavalent Chromium	ug/g	8	<0.2	--	--
Lead	ug/g	120	6.1	**170**	3.2
Mercury	ug/g	0.27	<0.050	--	--
Molybdenum	ug/g	6.9	<0.50	0.64	<0.50
Nickel	ug/g	100	24	21	9.3
Selenium	ug/g	2.4	<0.50	<0.50	<0.50
Silver	ug/g	20	<0.20	<0.20	<0.20
Thallium	ug/g	1	0.23	0.22	0.087
Uranium	ug/g	23	0.84	0.68	0.63
Vanadium	ug/g	86	59	40	27
Zinc	ug/g	340	66	110	29
Semi-VOCs					
1- & 2-Methylnaphthalene	ug/g	0.99 (5)	<0.0071	0.031	<0.0071
1-Methylnaphthalene	ug/g	0.99 (5)	<0.0050	0.015	<0.0050
2-Methylnaphthalene	ug/g	0.99 (5)	<0.0050	0.015	<0.0050
Acenaphthene	ug/g	7.9	<0.0050	0.042	<0.0050
Acenaphthylene	ug/g	0.15	<0.0050	0.031	<0.0050
Anthracene	ug/g	0.67	<0.0050	0.13	<0.0050
Benzo [b,j] fluoranthene	ug/g	--	<0.0050	0.59	<0.0050
Benzo[a]anthracene	ug/g	0.5	<0.0050	0.48	<0.0050
Benzo[a]pyrene	ug/g	0.3	<0.0050	**0.45**	<0.0050
Benzo[b]fluoranthene	ug/g	0.78	--	--	--
Benzo[g,h,i]perylene	ug/g	6.6	<0.0050	0.30	<0.0050
Benzo[k]fluoranthene	ug/g	0.78	<0.0050	0.21	<0.0050
Chrysene	ug/g	7	<0.0050	0.44	<0.0050
Dibenzo[a,h]anthracene	ug/g	0.1	<0.0050	0.074	<0.0050
Fluoranthene	ug/g	0.69	<0.0050	**0.95**	0.0052
Fluorene	ug/g	62	<0.0050	0.042	<0.0050
Indeno[1,2,3-cd]pyrene	ug/g	0.38	<0.0050	0.29	<0.0050
Naphthalene	ug/g	0.6	<0.0050	0.024	<0.0050
Phenanthrene	ug/g	6.2	<0.0050	0.55	<0.0050
Pyrene	ug/g	78	<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 (3)	31-Mar-2014 (3)	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	--	No	Yes	Yes	Yes	Yes	Yes
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 V	TR N
			30-Jul-2014	31-Jul-2014	01-Aug-2014
Parameter	Unit		BM SA3	V SA3	N SA3
Layer	-	REG153 (11) T3-R/P/I	Soil Fill	Soil Fill	Soil Fill
Sample Depth	m	SOIL COARSE (1) (2)	0.65 - 1.2	0.55 - 0.8	1.3 - 1.7
Petroleum Hydrocarbons					
Benzene	ug/g	0.21	<0.020	<0.020	<0.020
Ethylbenzene	ug/g	2	<0.020	<0.020	<0.020
m,p-Xylenes	ug/g	--	<0.040	<0.040	<0.040
o-Xylene	ug/g	--	<0.020	<0.020	<0.020
Petroleum Hydrocarbons - F1 (C6-C10)	ug/g	55	<10	<10	<10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	ug/g	55	<10	<10	<10
Petroleum Hydrocarbons - F2 (C10-C16)	ug/g	98	<10	<10	<10
Petroleum Hydrocarbons - F3 (C16-C34)	ug/g	300	<50	<50	<50
Petroleum Hydrocarbons - F4 (C34-C50)	ug/g	2800	<50	<50	<50
Petroleum Hydrocarbons - F4 Gravimetric	ug/g	2800	--	--	--
Reached Baseline at C50	ug/g	--	Yes	Yes	Yes
Toluene	ug/g	2.3	<0.020	<0.020	<0.020
Xylenes, Total	ug/g	3.1	<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	BH16-117	BH16-117	BH16-118	BH16-119	BH16-120	BH16-216	BH16-216	TP 14-4	TP 14-9
			26-Mar-2014	13-May-2015	31-Oct-16	31-Oct-16	31-Oct-16	01-Nov-16	01-Nov-16	04-Nov-16	04-Nov-16	27-Mar-2014 (4)	27-Mar-2014
Parameter	**Unit**		BH14-101C SA5	BH15-107A	BH16-117 SA6	BH16-117 SA6A (field duplicate)	BH16-118 SA3	BH16-119 SA6	BH16-120 SA4	BH16-216 SA6	BH16-216 SA7	TP14-4 SA1	TP14-9 SA2
Layer	-	**REG153 (11) T3-R/P/I**	Native Silty Clay	Native Silty Clay	Native Silty Clay	Native Silty Clay	Native Silty Clay	Soil Fill	Native Silty Clay	Debris	Native Silty Clay	Debris	Debris
Sample Depth	m	**SOIL COARSE (1) (2)**	3.81 - 4.42	1.83 - 2.44	3 - 3.6	3 - 3.6	1.2 - 1.8	3 - 3.6	1.8 - 2.4	4.6 - 5.2	5.3 - 5.9	0.14 - 1.1	1.4 - 2
Petroleum Hydrocarbons													
Benzene	ug/g	0.21	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.02	<0.02
Ethylbenzene	ug/g	2	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.02	<0.02
m,p-Xylenes	ug/g	--	<0.04	<0.020	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.04	<0.04
o-Xylene	ug/g	--	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.02	<0.02
Petroleum Hydrocarbons - F1 (C6-C10)	ug/g	55	<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
Petroleum Hydrocarbons - F2 (C10-C16)	ug/g	98	<10	<10	<10	<10	<10	<10	<10	47	<10	<10	<10
Petroleum Hydrocarbons - F3 (C16-C34)	ug/g	300	<50	<50	<50	<50	<50	<50	<50	110	<50	<50	<50
Petroleum Hydrocarbons - F4 (C34-C50)	ug/g	2800	<50	<50	<50	<50	<50	<50	<50	52	<50	<50	<50
Petroleum Hydrocarbons - F4 Gravimetric	ug/g	2800	--	--	--	--	--	--	--	--	--	--	--
Reached Baseline at C50	ug/g	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Toluene	ug/g	2.3	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.02	<0.02
Xylenes, Total	ug/g	3.1	<0.04	<0.020	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.04	<0.04
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	--	--	--	--

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

RSC #			RSC #3							
			TP16-401	TP16-402	TP16-403	TP16-404	TP AC	TP BA	TR E	TR E
			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		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	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Soil Fill	Debris	Debris	Debris
Sample Depth	m	SOIL COARSE (1) (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	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	ug/g	2	<0.020	<0.020	<0.020	<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	<0.040	<0.040	<0.040
o-Xylene	ug/g	--	<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
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	ug/g	55	<10	<10	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F2 (C10-C16)	ug/g	98	<10	<10	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F3 (C16-C34)	ug/g	300	<50	<50	<50	100	<50	110	<50	<50
Petroleum Hydrocarbons - F4 (C34-C50)	ug/g	2800	<50	<50	<50	64	<50	51	<50	<50
Petroleum Hydrocarbons - F4 Gravimetric	ug/g	2800	--	--	--	--	--	--	--	--
Reached Baseline at C50	ug/g	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Toluene	ug/g	2.3	<0.020	<0.020	<0.020	<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	<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	--	<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) BTEX/F1: Both vials used for analysis, results were reported as found.
(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) Detection Limit was raised due to matrix interferences.

Orange denotes sample location off Site (RSC #1)
Green denotes sample location on 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	1800 (5)	<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	--
PCB											
Aroclor 1242	ug/l	--	--	--	--	--	--	--	--	--	--
Aroclor 1242	ug/l	--	--	--	--	--	--	--	--	--	--
Aroclor 1242	ug/l	--	--	--	--	--	--	--	--	--	--
Aroclor 1242	ug/l	--	--	--	--	--	--	--	--	--	--
Total PCB	ug/l	7.8	--	--	--	--	--	--	--	--	--

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	1800 (5)	<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	--	--
PCB								
Aroclor 1242	ug/l	--	--	--	--	--	--	--
Aroclor 1242	ug/l	--	--	--	--	--	--	--
Aroclor 1242	ug/l	--	--	--	--	--	--	--
Aroclor 1242	ug/l	--	--	--	--	--	--	--
Total PCB	ug/l	7.8	--	--	--	--	--	--

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	16-117	16-118	16-118	16-119	16-120
		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	11-Nov-16	11-Nov-16	11-Nov-16	11-Nov-16	11-Nov-16
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	16-117	16-118	DUP1	16-119	16-120
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	<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	<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	<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	<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	<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	<25	<25	<25	<25	<25
Petroleum Hydrocarbons - F2 (C10-C16)	ug/l	150	<100	<100	<100	<100	<100	<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	<200	<200	<200	<200	<200
Petroleum Hydrocarbons - F4 (C34-C50)	ug/l	500	<200	<200	<200	<200	<200	<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	<0.20	<0.20	<0.20	<0.20	<0.20
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	<0.20	<0.20	<0.20	<0.20	<0.20
Semi-VOCs																		
1- & 2-Methylnaphthalene	ug/l	1800 (5)	<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	16-117	16-118	16-118	16-119	16-120
		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	11-Nov-16	11-Nov-16	11-Nov-16	11-Nov-16	11-Nov-16
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	16-117	16-118	DUP1	16-119	16-120
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	--	--	--	--	--
PCB																		
Aroclor 1242	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05	<0.05	<0.05	<0.05
Aroclor 1242	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05	<0.05	<0.05	<0.05
Aroclor 1242	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05	<0.05	<0.05	<0.05
Aroclor 1242	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05	<0.05	<0.05	<0.05
Total PCB	ug/l	7.8	--	--	--	--	--	--	--	--	--	--	--	--	<0.05	<0.05	<0.05	<0.05

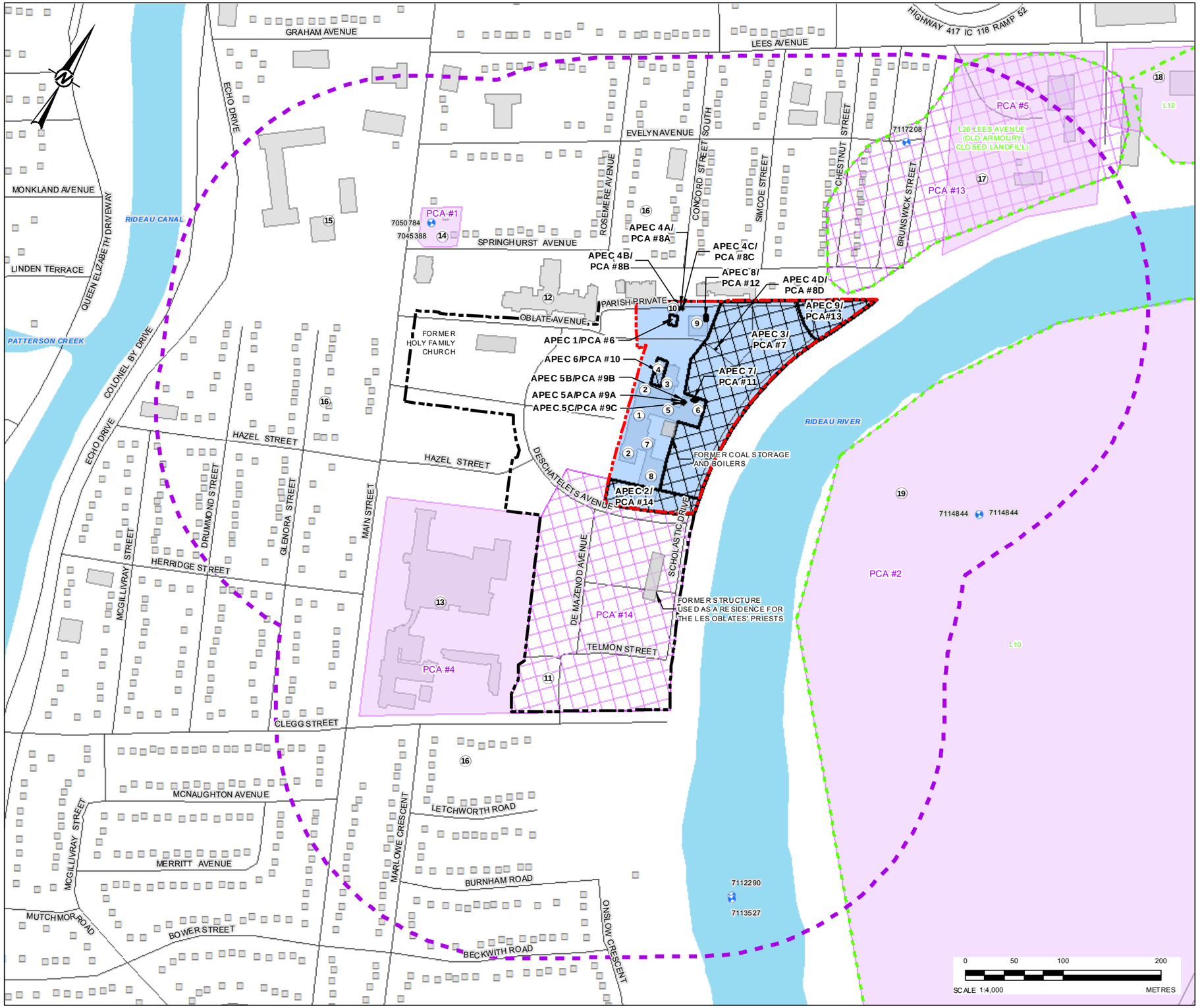
Footnotes:
Tables should be read in conjunction with the accompanying document.
< value = Indicates parameter not detected above laboratory method detection limit.
> value = Indicates parameter detected above equipment analytical range.
-- Chemical not analyzed or criteria not defined.
Grey background 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 off Site (RSC #1)
Green denotes sample location on Site (RSC #2)
Blue denotes sample location off Site (RSC #3)

Sample Location	Sample Name	Sample Collection Date	Laboratory Analysis Date
BH14-101C	BH14-101C SA5	26-Mar-2014	PHC F1 (04/05/14), PHC F2-F4 (04/07/14)
BH 14-201	G1 SA5	05-Aug-2014	Metals (08/26/14), PAH (08/25/14), PAH (08/26/14)
BH 14-206	G6 SA4	06-Aug-2014	Metals (08/26/14), PAH (08/26/14), PAH (08/26/14)
BH15-103	BH15-103 SA1	18-Mar-2015	Metals (03/25/15), PAH (03/23/15), PAH (03/25/15)
BH15-103	BH15-103 SA2	18-Mar-2015	Metals (03/25/15), PAH (03/23/15), PAH (03/25/15)
BH15-104	BH15-104 SA1	17-Mar-2015	Metals (03/25/15), PAH (03/23/15), PAH (03/25/15)
BH15-104	BH15-104 SA2	17-Mar-2015	Metals (03/25/15), PAH (03/24/15), PAH (03/26/15)
BH15-105	BH15-105 SA3	18-Mar-2015	Metals (03/24/15), PAH (03/23/15), PAH (03/25/15)
BH15-105	BH15-105 SA4	18-Mar-2015	Metals (03/25/15), PAH (03/23/15), PAH (03/25/15)
BH15-106	BH15-106 SA2	17-Mar-2015	Metals (03/25/15), PAH (03/23/15), PAH (03/25/15)
BH15-106	BH15-106 SA3	17-Mar-2015	Metals (03/25/15), PAH (03/23/15), PAH (03/25/15)
BH15-106	DUP-4 (Field Duplicate)	17-Mar-2015	Metals (03/25/15), PAH (03/23/15), PAH (03/25/15)
BH15-107	BH15-107 SA2	18-Mar-2015	Metals (03/25/15), PAH (03/23/15), PAH (03/25/15)
BH15-107	BH15-107 SA6	18-Mar-2015	Metals (03/25/15), PAH (03/23/15), PAH (03/25/15)
BH15-107A	BH15-107A	13-May-2015	PHC F1 (05/21/15), PHC F2-F4 (05/21/15), BTEX (05/21/15), BTEX (05/21/15)
TP 14-4	TP14-4 SA1	27-Mar-2014 (6)	PHC F1 (04/08/14), 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), PAH (04/04/14)
TP 14-5	TP14-5 SA2	27-Mar-2014	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), PAH (04/04/14)
TP 14-9	TP14-9 SA2	27-Mar-2014	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), PAH (04/04/14)
TP16-401	TP16-401	25-May-2016	PHC F1 (05/31/16), PHC F2-F4 (05/31/16), PCB (05/30/16)
TP16-402	TP16-402	25-May-2016	PHC F1 (05/31/16), PHC F2-F4 (05/31/16), PCB (05/30/16)
TP16-403	TP16-403	25-May-2016	PHC F1 (05/31/16), PHC F2-F4 (05/31/16), PCB (05/30/16)
TP16-404	TP16-404	25-May-2016	PHC F1 (05/31/16), PHC F2-F4 (05/31/16), PCB (05/30/16)
TP AA	AA SA2	28-Jun-2014	PAH (08/12/14), PAH (08/15/14)
TP AA	AA SA3	28-Jun-2014	Metals (08/20/14), PAH (08/12/14), PAH (08/15/14)
TP AA	DUP AA SA3 (Field Duplicate)	28-Jun-2014	Metals (08/20/14), PAH (08/12/14), PAH (08/15/14)
TP AB	AB SA1	28-Jun-2014	Metals (08/20/14), PAH (08/12/14), PAH (08/15/14)
TP AC	AC SA1	28-Jun-2014	Metals (08/20/14), PAH (08/12/14), PAH (08/15/14)
TP AC	AC SA3	28-Jun-2014	PHC F1 (08/12/14), PHC F2-F4 (08/12/14)
TP AE	AE SA2	28-Jun-2014	Metals (08/20/14), PAH (08/12/14), PAH (08/15/14)
TP AS	AS SA1	30-Jul-2014	Metals (08/19/14), PAH (08/12/14), PAH (08/15/14)
TP AS	AS SA2	30-Jul-2014	Metals (08/20/14), PAH (08/12/14), PAH (08/15/14)
TP AX	AX SA2	30-Jul-2014	Metals (08/19/14), PAH (08/12/14), PAH (08/15/14)
TP AX	AX SA3	30-Jul-2014	Metals (08/20/14), PAH (08/12/14), PAH (08/15/14)
TP BA	BA SA2	30-Jul-2014	Metals (08/20/14), PAH (08/12/14), PAH (08/15/14)
TP BA	BA SA3	30-Jul-2014	PHC F1 (08/12/14), PHC F2-F4 (08/12/14)
TP BA	BA SA3 (2)	30-Jul-2014	Metals (08/20/14), PAH (08/12/14), PAH (08/15/14)
TP Y	Y SA1	28-Jun-2014	Metals (08/20/14), PAH (08/12/14), PAH (08/15/14)
TP Y	Y SA2	28-Jun-2014	Metals (08/20/14), PAH (08/12/14), PAH (08/15/14)
TP Z	Z SA2	28-Jun-2014	Metals (08/20/14), PAH (08/12/14), PAH (08/15/14)
TR E	E SA2	29-Jul-2014	PHC F1 (08/12/14), PHC F2-F4 (08/12/14)
TR E	E SA2 (2)	29-Jul-2014	Metals (08/19/14), PAH (08/12/14), PAH (08/15/14)
TR E	DUP E SA2 (Field Duplicate)	29-Jul-2014	Metals (08/19/14), PAH (08/12/14), PAH (08/15/14)
TR E	TP E	25-Aug-2014	Boron (HWS) (09/02/14), Metals (09/03/14), Chromium (VI) (09/03/14), PAH (09/02/14), PAH (09/03/14)
TR F	F SA1	29-Jul-2014	Metals (08/20/14), PAH (08/12/14), PAH (08/15/14)
TR J	J SA2	29-Jul-2014	Metals (08/20/14), PAH (08/12/14), PAH (08/15/14)
BH16-117	BH16-117 SA6	31-Oct-16	PHC F1 (11/06/16), PHC F2-F4 (11/07/16), PCB (11/05/16), pH (11/07/16)
BH16-117	BH16-117 SA6A	31-Oct-16	PHC F1 (11/06/16), PHC F2-F4 (11/07/16)
BH16-118	BH16-118 SA3	31-Oct-16	PHC F1 (11/06/16), PHC F2-F4 (11/07/16), PCB (11/05/16), pH (11/07/16)
BH16-119	BH16-119 SA6	01-Nov-16	PHC F1 (11/06/16), PHC F2-F4 (11/07/16), PCB (11/05/16), pH (11/07/16)
BH16-120	BH16-120 SA4	01-Nov-16	PHC F1 (11/06/16), PHC F2-F4 (11/07/16), PCB (11/05/16)
BH16-216	BH16-216 SA4	01-Nov-16	pH (11/07/16)
BH16-216	BH16-216 SA6	04-Nov-16	PHC F2-F4 (11/11/16), PAH (11/12/16)
BH16-216	BH16-216 SA7	04-Nov-16	PAH (11/17/16)

Sample Location	Sample Name	Sample Collection Date	Laboratory Analysis Date
BH14-1	BH14-1	**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)
BH14-1	14-1	**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 (09/02/14), PAH (09/03/14)
BH14-101C	BH14-101C	**03-Apr-2014**	PHC F1 (04/08/14), PHC F2-F4 (04/08/14)
BH14-101C	BH14-102 (Field Duplicate)	**03-Apr-2014**	PHC F1 (04/08/14), PHC F2-F4 (04/08/14)
BH14-101C	14-101C	**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 (09/02/14), PAH (09/03/14)
BH15-103	MW15-103	**24-Mar-2015**	PHC F1 (03/30/15), PHC F2-F4 (03/30/15), Metals (03/31/15), Chromium (VI) (03/30/15), Mercury (03/31/15), BTEX (03/30/15), BTEX (03/31/15), PAH (03/30/15), PAH (03/30/15)
BH15-104	MW15-104	**24-Mar-2015**	PHC F1 (03/31/15), PHC F2-F4 (04/01/15), Metals (03/31/15), Chromium (VI) (03/30/15), Mercury (03/31/15), BTEX (03/30/15), BTEX (03/31/15), PAH (03/30/15), PAH (03/30/15)
BH15-105	MW15-105	**24-Mar-2015**	PHC F1 (03/30/15), PHC F2-F4 (03/30/15), Metals (03/31/15), Chromium (VI) (03/30/15), Mercury (03/31/15), BTEX (03/30/15), BTEX (03/31/15), PAH (03/30/15), PAH (03/30/15)
BH15-106	MW15-106	**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), BTEX (03/30/15), BTEX (03/31/15), PAH (03/30/15), PAH (03/30/15)
BH15-106	DUP-1 (Field Duplicate)	**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), BTEX (03/30/15), BTEX (03/31/15), PAH (03/30/15), PAH (03/30/15)
BH15-107	MW15-107	**24-Mar-2015**	PHC F1 (03/30/15), PHC F2-F4 (03/30/15), Metals (03/31/15), Chromium (VI) (03/30/15), Mercury (03/31/15), BTEX (03/30/15), BTEX (03/31/15), PAH (03/30/15), PAH (03/30/15)
16-117	16-117	**11-Nov-16**	PHC F1 (11/19/2016), PHC F2 (11/18/2016)
16-118	16-118	**11-Nov-16**	PHC F1 (11/19/2016), PHC F2 (11/18/2016), PCB (11/15/2016)
16-118	DUP1	**11-Nov-16**	PHC F1 (11/19/2016), PHC F2 (11/18/2016), PCB (11/15/2016)
16-119	16-119	**11-Nov-16**	PHC F1 (11/19/2016), PHC F2 (11/18/2016), PCB (11/15/2016)
16-120	16-120	**11-Nov-16**	PHC F1 (11/19/2016), PHC F2 (11/18/2016), PCB (11/15/2016)

FIGURES



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 #6: FORMER GASOLINE UST AND A PUMP
APEC 2 / PCA #14: FILL CONTAINING CONSTRUCTION DEBRIS, ASPHALT, CONCRETE AND POTENTIALLY SOME REFUSE
APEC 3 / 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
APEC 4A, 4B, 4C, 4D / PCA #8A, 8B, 8C, 8D: POLE MOUNT TRANSFORMERS
APEC 5A, 5B, 5C / PCA 9A, 9B, 9C: TRANSFORMERS
APEC 6 / PCA #10: GARAGE SINCE 1940
APEC 7 / PCA #11: DIESEL CONTAINING AST ASSOCIATED WITH BACKUP GENERATOR
APEC 8 / PCA #12: DIESEL CONTAINING AST USED TO FUEL LANDSCAPING EQUIPMENT
APEC 9 / PCA #13: LEES AVENUE CLOSED LANDFILL (L-28)
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: 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 #5: FORMER PRESENCE OF THE GROUP II INDUSTRIAL SITE – ROYAL CANADIAN ENGINEERS WORKSHOP

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. 1525113-1000-3

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 #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
SITE PLAN AND AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

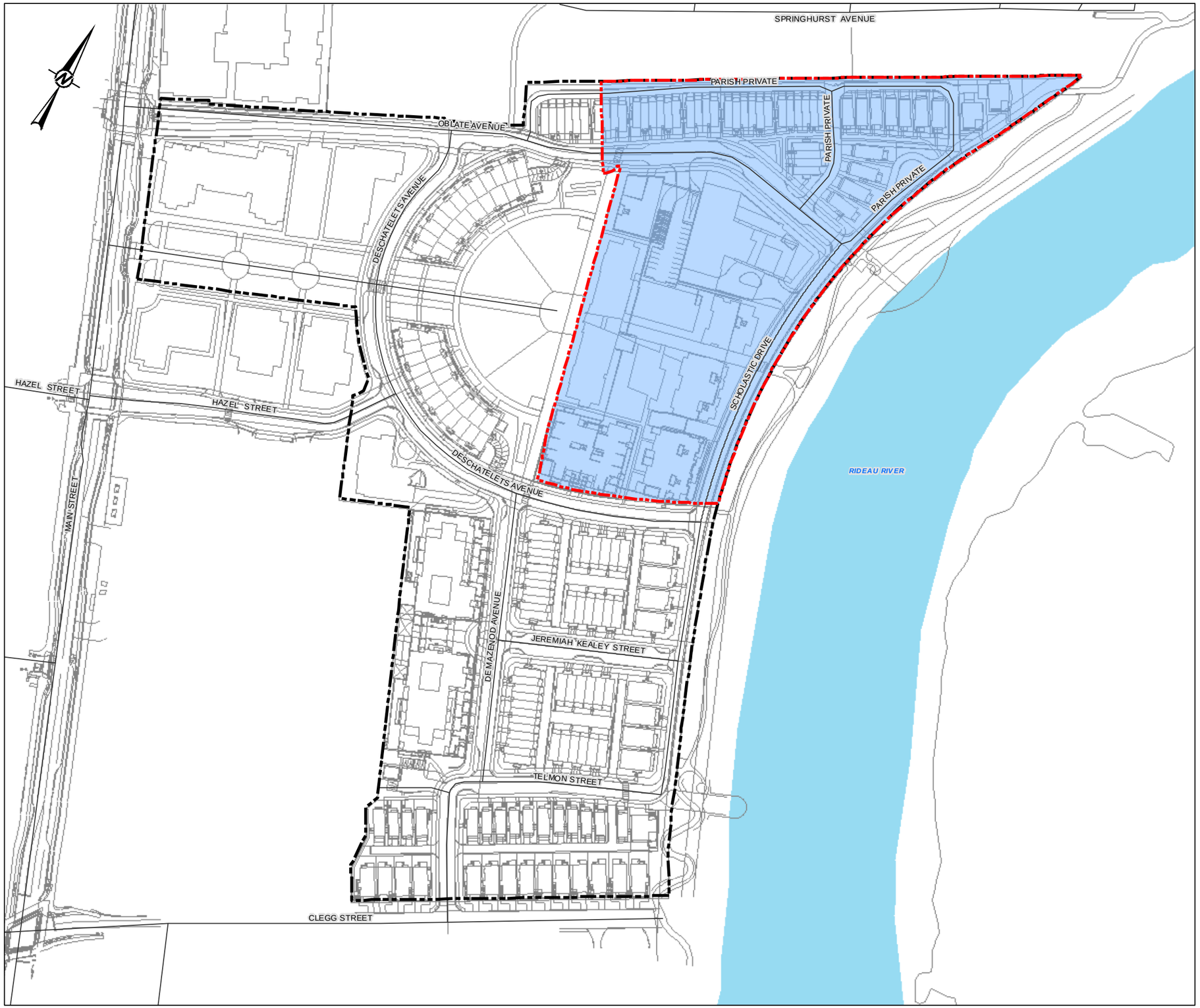
CONSULTANT
Golder Associates

YYYY-MM-DD	2017-07-24
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

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

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\Regional Group\Oblates\Proj\Ottawa\GIS\MXDs\1525113\Ph1000_Add\PhIIESA\IfReg153_04_PhIIESA\Phase3\1525113-1000-3-HS-0001A.mxd



LEGEND

- PHASE TWO PROPERTY
- PHASE ONE PROPERTY
- RSC PROPERTY

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. 1525113-1000-3

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 #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE

SITE PLAN AND FUTURE BUILDINGS

CONSULTANT

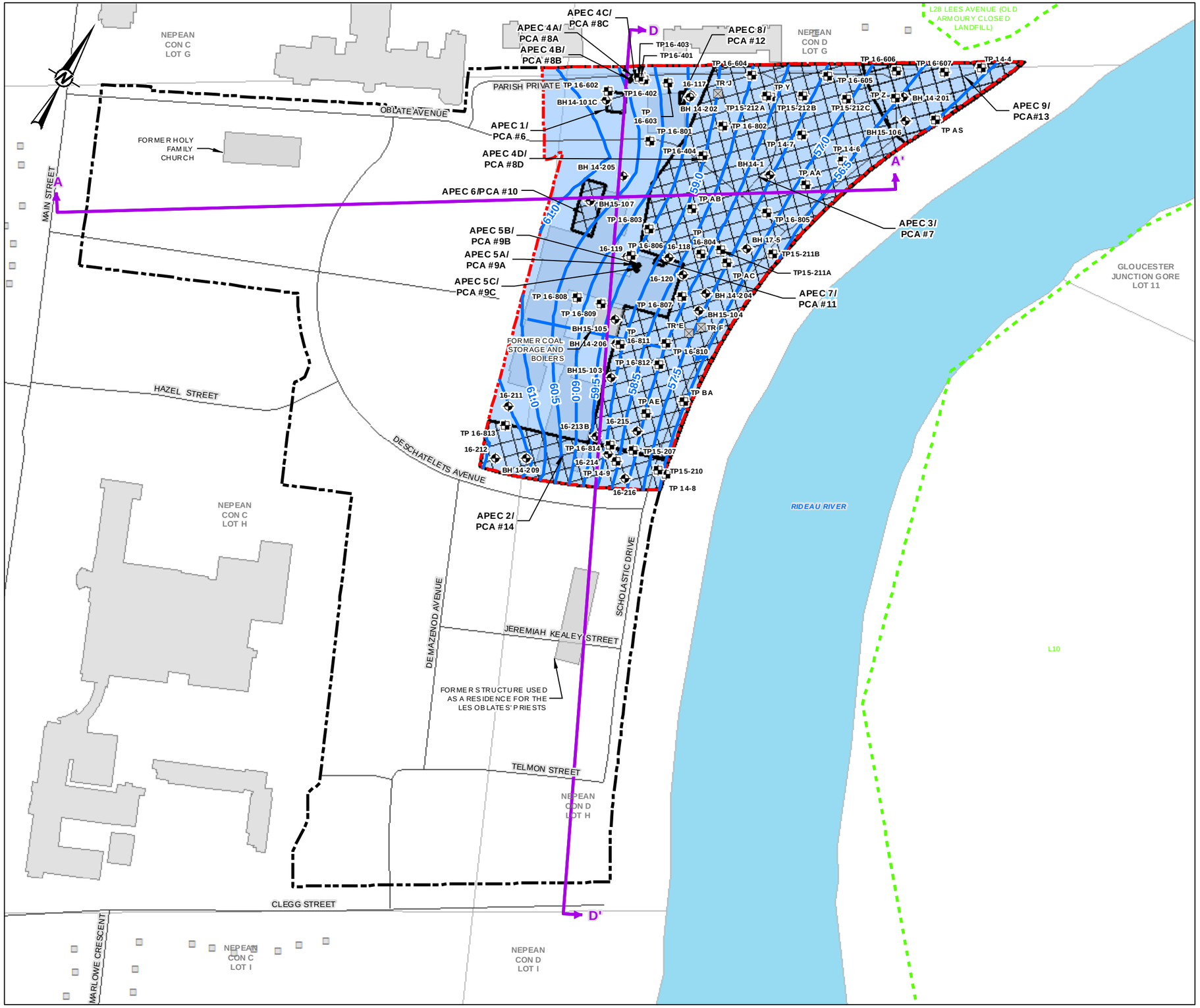
Golder Associates

YYYY-MM-DD	2017-07-24
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

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

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\RegionalGroupOntario\PropOttawa\GIS\MXDs\1152511311\Ph1000_AddPhIIESA\Reg153_OL_PhIIESA\Phase3\1525113-1000-3-HS-0001B.mxd



LEGEND

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

APEC 1: FORMER GASOLINE UST AND A PUMP
APEC 2: FILL CONTAINING CONSTRUCTION DEBRIS, ASPHALT, CONCRETE AND POTENTIALLY SOME REFUSE
APEC 3: 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
APEC 4A, 4B, 4C, 4D: POLE MOUNT TRANSFORMERS
APEC 5A, 5B, 5C: TRANSFORMERS
APEC 6: GARAGE SINCE 1940
APEC 7: DIESEL CONTAINING AST ASSOCIATED WITH BACKUP GENERATOR
APEC 8: DIESEL CONTAINING AST USED TO FUEL LANDSCAPING EQUIPMENT
APEC 9: LEES AVENUE CLOSED LANDFILL (L-28)

0 25 50 100
SCALE 1:2,000 METRES

NOTES
1. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-3

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 #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

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

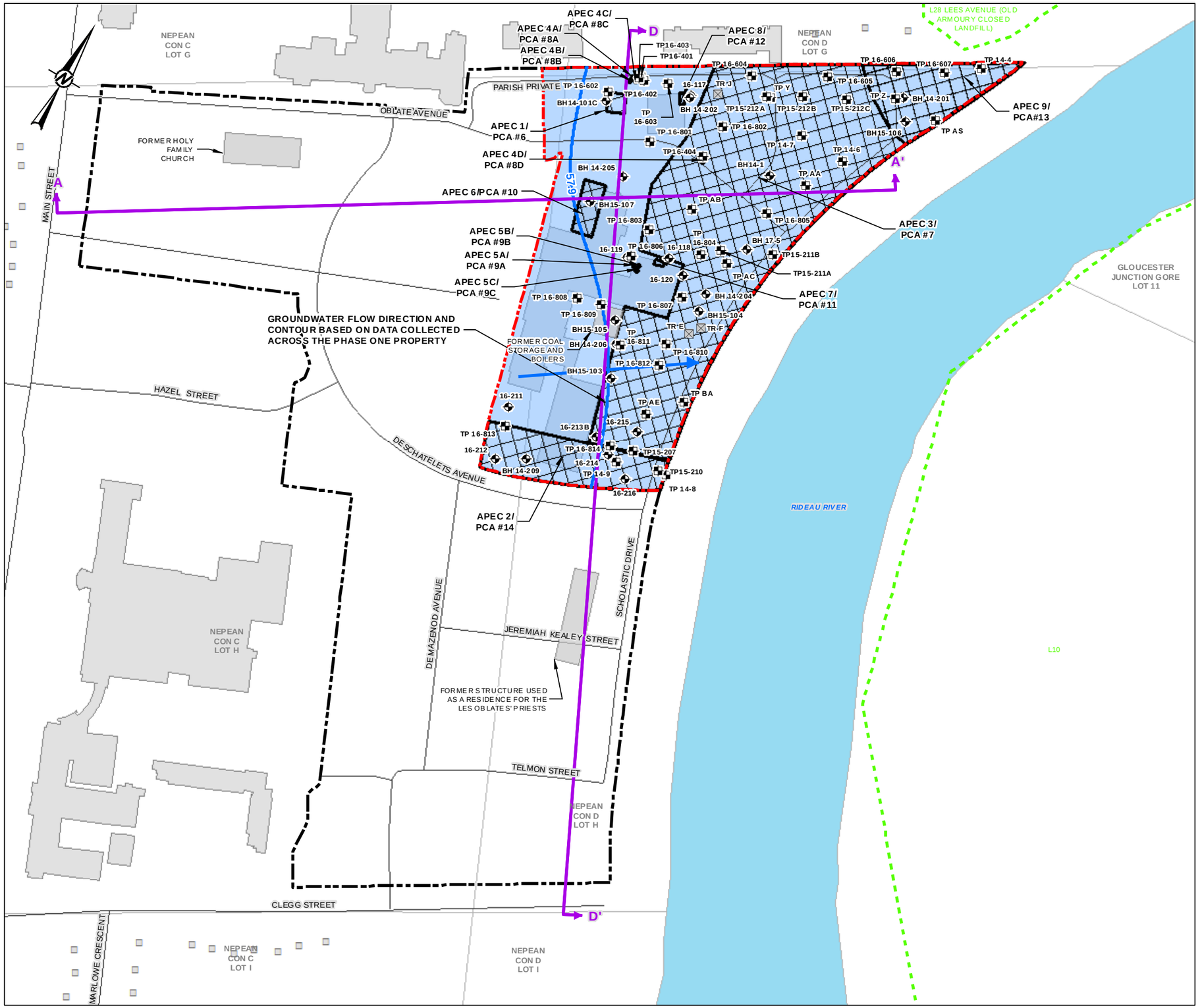
CONSULTANT
Golder Associates

YYYY-MM-DD	2017-07-24
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/3	0	2A

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\Ph1 000_AdditPhIIESA\Reg153_04_PhIIESA\Phase3\1525113-1000-3-HS-0002A.mxd



LEGEND

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

APEC 1: FORMER GASOLINE UST AND A PUMP
APEC 2: FILL CONTAINING CONSTRUCTION DEBRIS, ASPHALT, CONCRETE AND POTENTIALLY SOME REFUSE
APEC 3: 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
APEC 4A, 4B, 4C, 4D: POLE MOUNT TRANSFORMERS
APEC 5A, 5B, 5C: TRANSFORMERS
APEC 6: GARAGE SINCE 1940
APEC 7: DIESEL CONTAINING AST ASSOCIATED WITH BACKUP GENERATOR
APEC 8: DIESEL CONTAINING AST USED TO FUEL LANDSCAPING EQUIPMENT
APEC 9: LEES AVENUE CLOSED LANDFILL (L-28)

0 25 50 100
SCALE 1:2,000 METRES

NOTES
1. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-3

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 #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

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

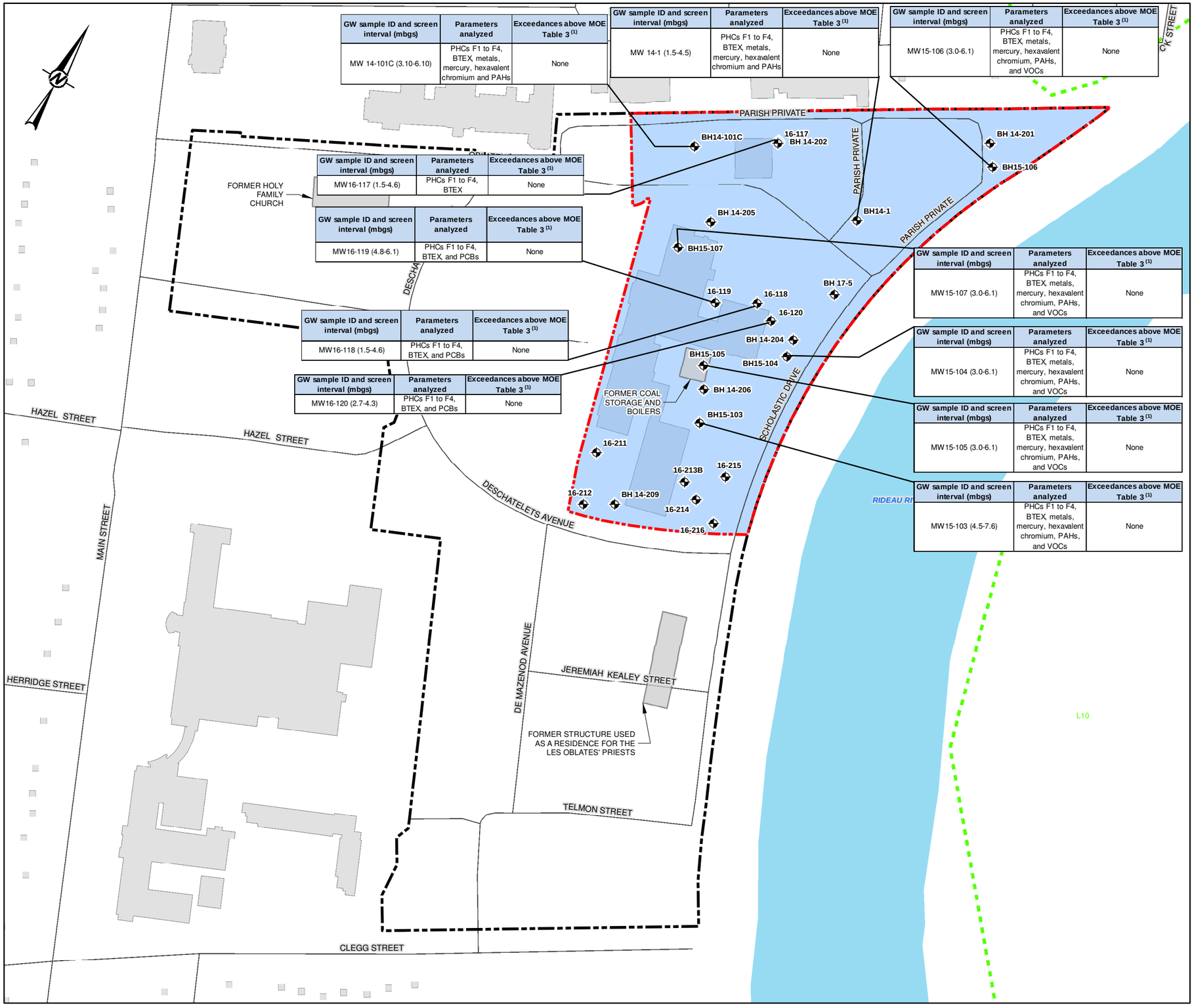
CONSULTANT
Golder Associates

YYYY-MM-DD	2017-07-24
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/3	0	2B

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\Ph1 000_AddPhIIESA\Reg153_04_PhIIESA\Phase3\1525113-1000-3-HS-0002B.mxd



GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW 14-101C (3.10-6.10)	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium and PAHs	None

GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW 14-1 (1.5-4.5)	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium and PAHs	None

GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW15-106 (3.0-6.1)	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium, PAHs, and VOCs	None

GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW16-117 (1.5-4.6)	PHCs F1 to F4, BTEX	None

GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW16-119 (4.8-6.1)	PHCs F1 to F4, BTEX, and PCBs	None

GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW16-118 (1.5-4.6)	PHCs F1 to F4, BTEX, and PCBs	None

GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW16-120 (2.7-4.3)	PHCs F1 to F4, BTEX, and PCBs	None

GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW15-107 (3.0-6.1)	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium, PAHs, and VOCs	None

GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW15-104 (3.0-6.1)	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium, PAHs, and VOCs	None

GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW15-105 (3.0-6.1)	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium, PAHs, and VOCs	None

GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW15-103 (4.5-7.6)	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium, PAHs, and VOCs	None

LEGEND

- BOREHOLE/MONITORING WELL 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. 1525113-1000-3

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 #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

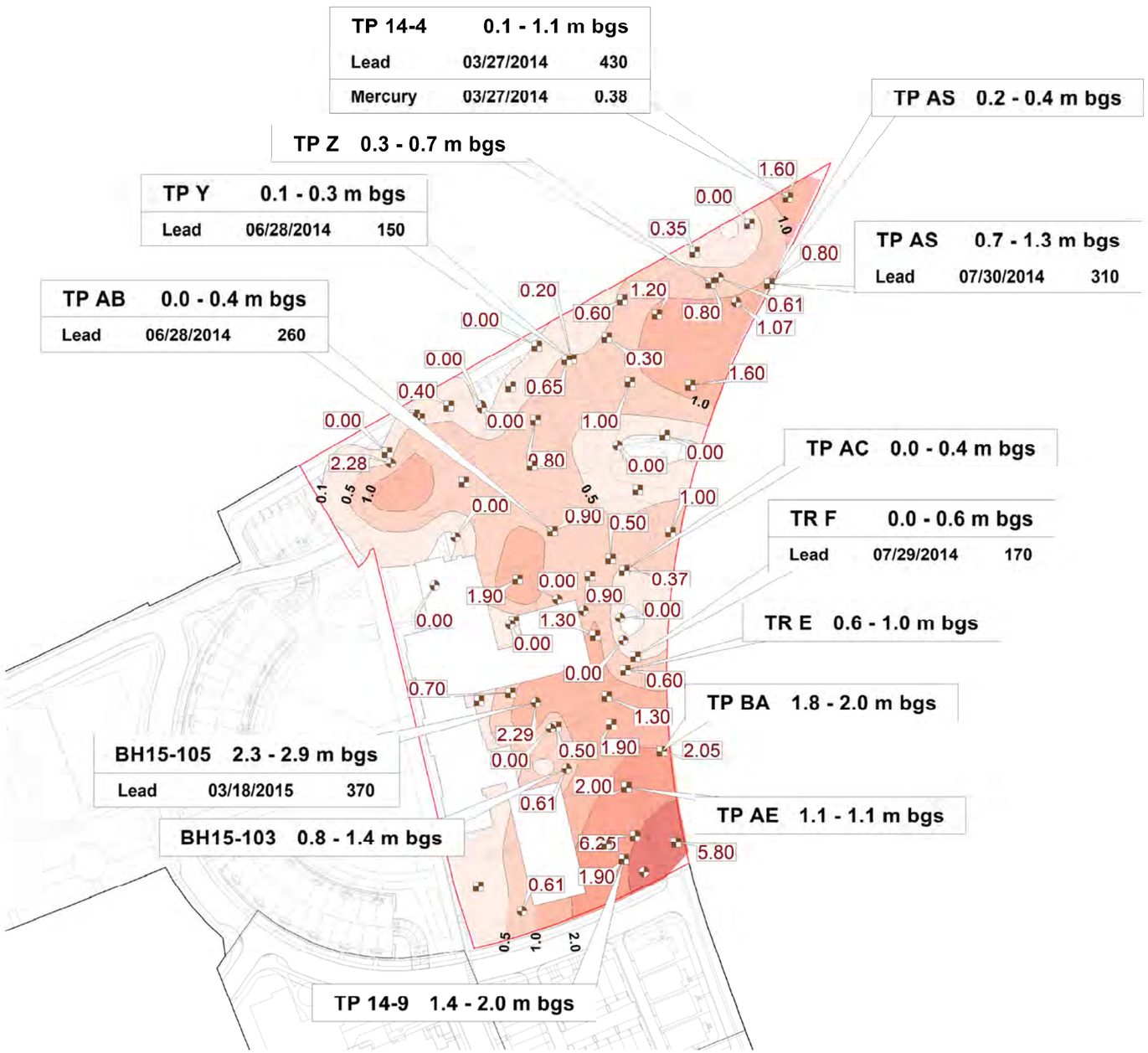
TITLE
SUMMARY OF GROUNDWATER ANALYSIS AND EXCEEDANCES

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-07-24
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

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

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



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 - 0.5
- 0.5 - 1.0
- 1.0 - 2.0
- 2.0 - 4.0
- 4.0 - 8.0

	REG153 (11) T3-R/P/I SOIL COARSE
Antimony (ug/g)	7.5
Arsenic (ug/g)	18.0
Barium (ug/g)	390.0
Beryllium (ug/g)	4.0
Boron (ug/g)	120.0
Boron, Hot Water Soluble (ug/g)	1.5
Cadmium (ug/g)	1.2
Chromium (ug/g)	160.0
Cobalt (ug/g)	22.0
Copper (ug/g)	140.0
Hexavalent Chromium (ug/g)	8.0
Lead (ug/g)	120.0
Mercury (ug/g)	0.27
Molybdenum (ug/g)	6.9
Nickel (ug/g)	100.0
Selenium (ug/g)	2.4
Silver (ug/g)	20.0
Thallium (ug/g)	1.0
Toluene (ug/g)	2.3
Uranium (ug/g)	23.0
Vanadium (ug/g)	86.0
Zinc (ug/g)	340.0

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. 1525113-1000-3

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 #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
METALS ANALYSIS AND EXCEEDENCES IN DEBRIS FILL AND TOPSOIL

CONSULTANT

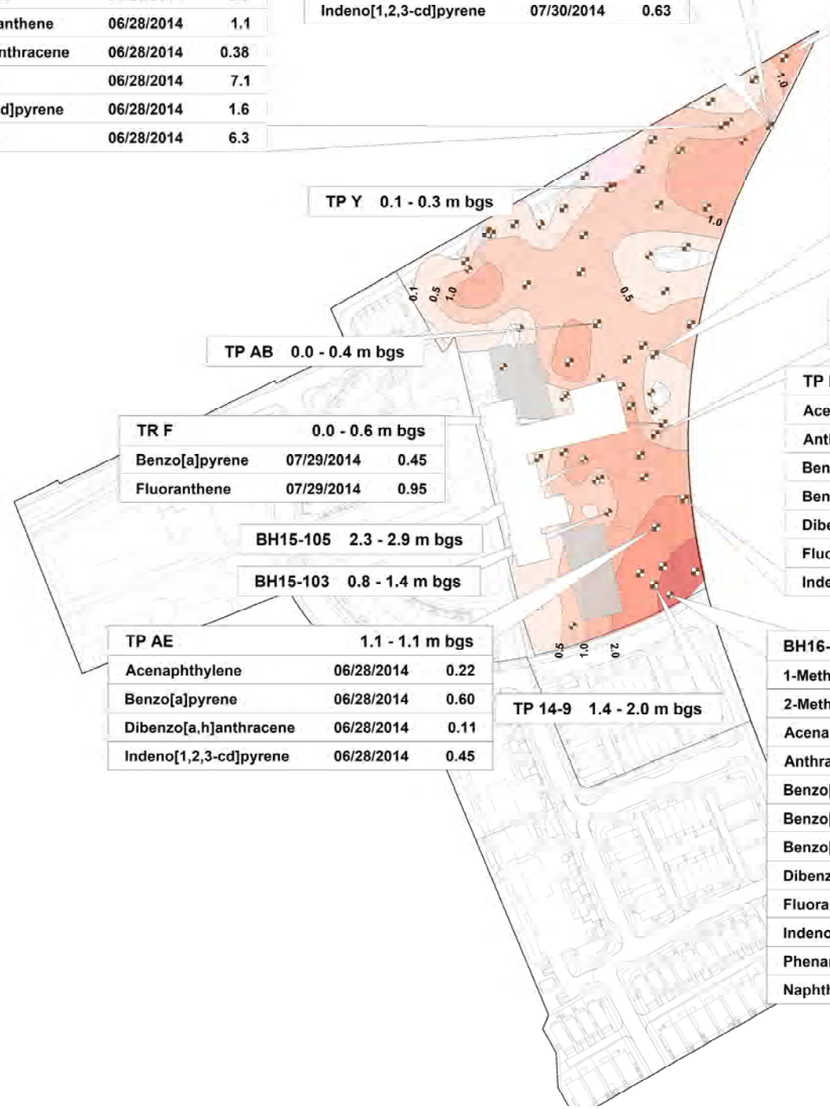
Golder Associates

YYYY-MM-DD	2017-07-24
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/3	0	4A

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

Path: N:\Active\Spatial_IM\Thp_Regional_Group\Regional\Group\Oblates\PropOttawa\GIS\MXD\1525113\Ph1000_Ad\PhIIESA\Reg153_04_PhIIESA\Phase3\1525113-1000-3-HS-0004A.mxd



TP AS	0.2 - 0.4 m bgs	
Anthracene	07/30/2014	1.0
Benzo[a]anthracene	07/30/2014	1.6
Benzo[a]pyrene	07/30/2014	0.96
Dibenzo[a,h]anthracene	07/30/2014	0.14
Fluoranthene	07/30/2014	3.7
Indeno[1,2,3-cd]pyrene	07/30/2014	0.49

TP AS	0.7 - 1.3 m bgs	
Anthracene	07/30/2014	0.76
Benzo[a]anthracene	07/30/2014	1.5
Benzo[a]pyrene	07/30/2014	1.1
Dibenzo[a,h]anthracene	07/30/2014	0.18
Fluoranthene	07/30/2014	3.2
Indeno[1,2,3-cd]pyrene	07/30/2014	0.63

TP Z	0.3 - 0.7 m bgs	
Anthracene	06/28/2014	1.9
Benzo[a]anthracene	06/28/2014	3.1
Benzo[a]pyrene	06/28/2014	2.5
Benzo[k]fluoranthene	06/28/2014	1.1
Dibenzo[a,h]anthracene	06/28/2014	0.38
Fluoranthene	06/28/2014	7.1
Indeno[1,2,3-cd]pyrene	06/28/2014	1.6
Phenanthrene	06/28/2014	6.3

TP 14-4	0.1 - 1.1 m bgs	
Benzo[a]pyrene	03/27/2014	0.40
Fluoranthene	03/27/2014	0.85

TP AC	0.0 - 0.4 m bgs	
Anthracene	06/28/2014	1.3
Benzo[a]anthracene	06/28/2014	2.6
Benzo[a]pyrene	06/28/2014	1.9
Benzo[k]fluoranthene	06/28/2014	1.0
Dibenzo[a,h]anthracene	06/28/2014	0.32
Fluoranthene	06/28/2014	5.6
Indeno[1,2,3-cd]pyrene	06/28/2014	1.1

TP Y 0.1 - 0.3 m bgs

TR E	0.6 - 1.0 m bgs	
Fluoranthene	07/29/2014	0.72

TP AB 0.0 - 0.4 m bgs

TP BA	1.8 - 2.0 m bgs	
Acenaphthylene	07/30/2014	0.46
Anthracene	07/30/2014	0.73
Benzo[a]anthracene	07/30/2014	1.4
Benzo[a]pyrene	07/30/2014	1.4
Dibenzo[a,h]anthracene	07/30/2014	0.22
Fluoranthene	07/30/2014	3.2
Indeno[1,2,3-cd]pyrene	07/30/2014	0.92

TR F	0.0 - 0.6 m bgs	
Benzo[a]pyrene	07/29/2014	0.45
Fluoranthene	07/29/2014	0.95

BH15-105 2.3 - 2.9 m bgs

BH15-103 0.8 - 1.4 m bgs

TP AE	1.1 - 1.1 m bgs	
Acenaphthylene	06/28/2014	0.22
Benzo[a]pyrene	06/28/2014	0.60
Dibenzo[a,h]anthracene	06/28/2014	0.11
Indeno[1,2,3-cd]pyrene	06/28/2014	0.45

TP 14-9 1.4 - 2.0 m bgs

BH16-216	4.6 - 5.2 m bgs	
1-Methylnaphthalene	11/02/2016	1.6
2-Methylnaphthalene	11/02/2016	1.8
Acenaphthylene	11/02/2016	1.2
Anthracene	11/02/2016	4.0
Benzo[a]anthracene	11/02/2016	3.3
Benzo[a]pyrene	11/02/2016	3.8
Benzo[k]fluoranthene	11/02/2016	1.9
Dibenzo[a,h]anthracene	11/02/2016	0.43
Fluoranthene	11/02/2016	7.7
Indeno[1,2,3-cd]pyrene	11/02/2016	1.8
Phenanthrene	11/02/2016	12
Naphthalene	11/02/2016	3.3

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 - 0.5
- 0.5 - 1.0
- 1.0 - 2.0
- 2.0 - 4.0
- 4.0 - 8.0

	REG153 (11) T3-R/P/I SOIL COARSE
1-Methylnaphthalene (ug/g)	0.99
2-Methylnaphthalene (ug/g)	0.99
Acenaphthene (ug/g)	7.9
Acenaphthylene (ug/g)	0.15
Anthracene (ug/g)	0.67
Benzo[a]anthracene (ug/g)	0.5
Benzo[a]pyrene (ug/g)	0.3
Benzo[g,h,i]perylene (ug/g)	6.6
Benzo[k]fluoranthene (ug/g)	0.78
Chrysene (ug/g)	7.0
Dibenzo[a,h]anthracene (ug/g)	0.1
Fluoranthene (ug/g)	0.69
Fluorene (ug/g)	62.0
Indeno[1,2,3-cd]pyrene (ug/g)	0.38
Phenanthrene (ug/g)	6.2
Pyrene (ug/g)	78.0
Naphthalene (ug/g)	0.6

SCALE 1:3,000 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. 1525113-1000-3

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 #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
PAH ANALYSIS AND EXCEEDENCES IN DEBRIS FILL AND TOPSOIL

CONSULTANT

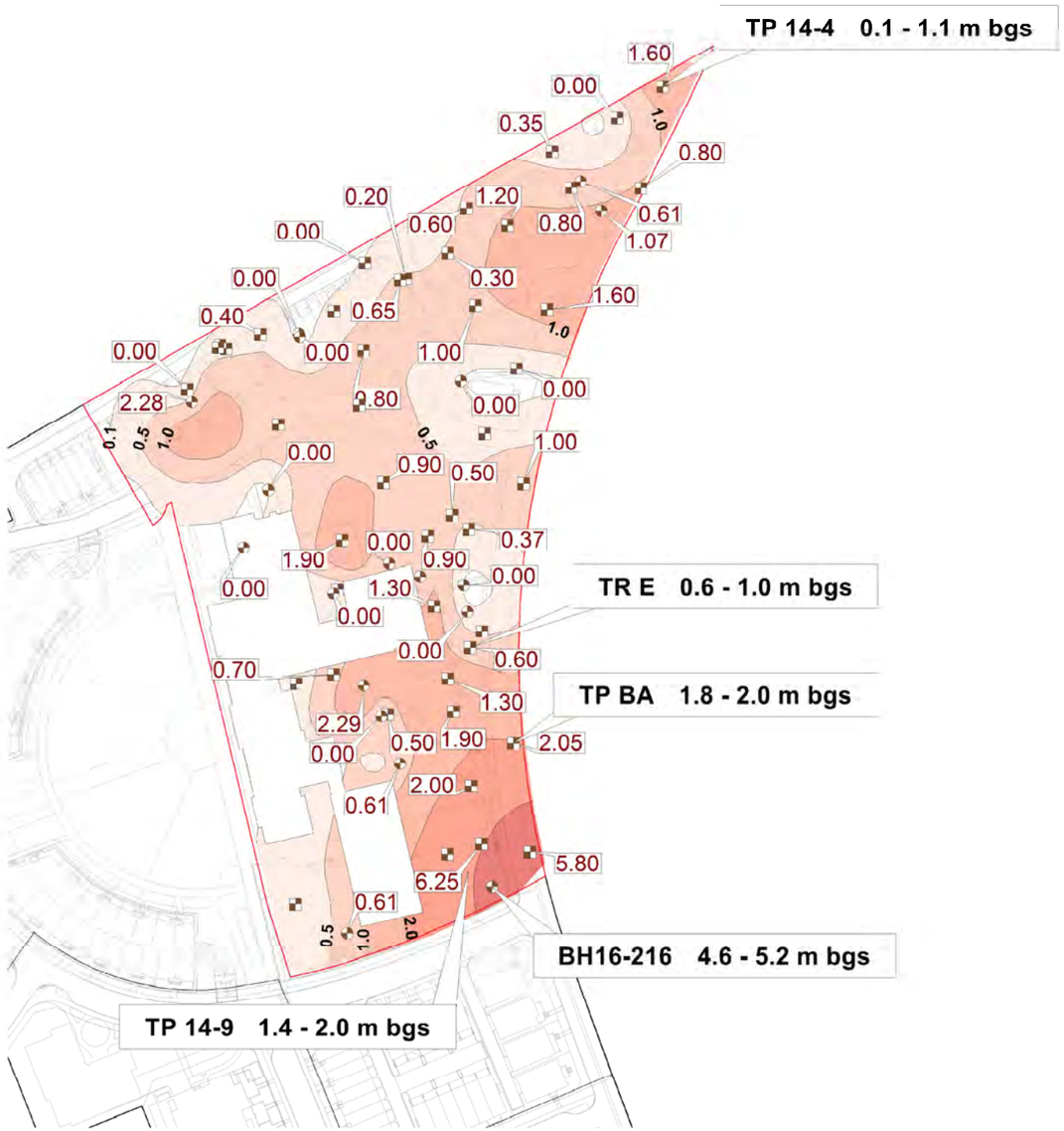
Golder Associates

YYYY-MM-DD	2017-07-24
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/3	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\Phase3\1525113-1000-3-H5-0004B.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 - 0.5
- 0.5 - 1.0
- 1.0 - 2.0
- 2.0 - 4.0
- 4.0 - 8.0

0 25 50 100

SCALE 1:2,000 METRES

	REG153 (11) T3-R/P/I SOIL COARSE
Petroleum Hydrocarbons - F1 (C6-C10) (ug/g)	55.0
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX (mg/kg)	55.0
Petroleum Hydrocarbons - F2 (C10-C16) (mg/kg)	98.0
Petroleum Hydrocarbons - F3 (C16-C34) (mg/kg)	300.0
Petroleum Hydrocarbons - F4 (C34-C50) (mg/kg)	2800.0
Benzene (ug/g)	0.21
Ethylbenzene (ug/g)	2.0
Toluene (ug/g)	2.3
Xylenes, Total (ug/g)	3.1

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. 1525113-1000-3

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 #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
PHC ANALYSIS AND EXCEEDENCES IN DEBRIS FILL AND TOPSOIL

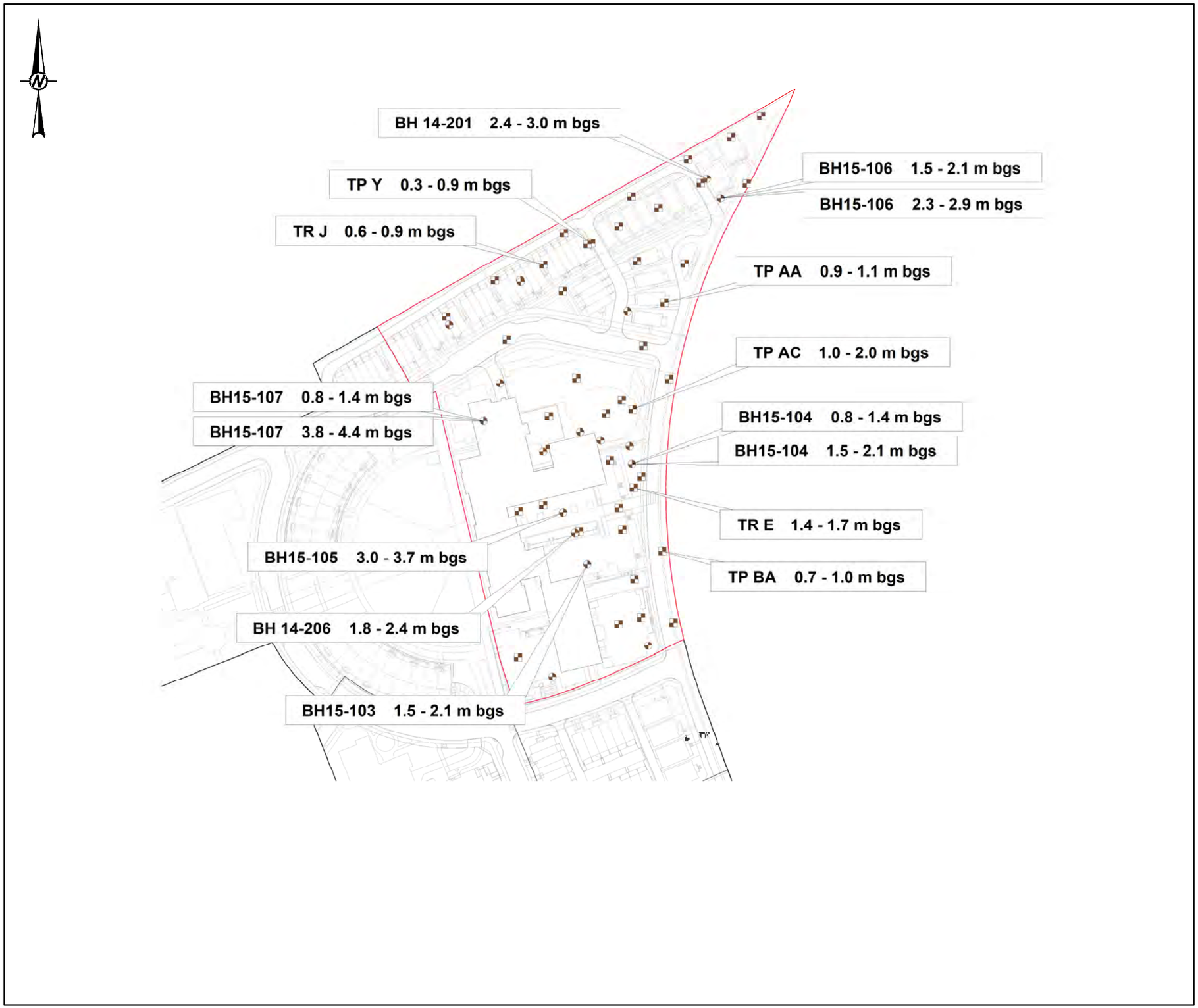
CONSULTANT

Golder Associates

YYYY-MM-DD	2017-07-24
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/3	0	4C

Path: N:\Active\Spatial_IM\The_Regional_Group\Regional\GroupOblates\PropOttawa\GIS\MXD\d1525113\Ph1000_AdjPhIIESAs\Reg153_04_PhIIESAPhase3\1525113-1000-3-HS-004C.mxd
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm



LEGEND

- PHASE ONE PROPERTY
- RSC PROPERTY
- 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	

	REG153 (11) T3-R/P/I SOIL COARSE
Antimony (ug/g)	7.5
Arsenic (ug/g)	18.0
Barium (ug/g)	390.0
Beryllium (ug/g)	4.0
Boron (ug/g)	120.0
Cadmium (ug/g)	1.2
Chromium (ug/g)	160.0
Cobalt (ug/g)	22.0
Copper (ug/g)	140.0
Lead (ug/g)	120.0
Molybdenum (ug/g)	6.9
Nickel (ug/g)	100.0
Selenium (ug/g)	2.4
Silver (ug/g)	20.0
Thallium (ug/g)	1.0
Uranium (ug/g)	23.0
Vanadium (ug/g)	86.0
Zinc (ug/g)	340.0

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. 1525113-1000-3

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 #3 OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
METALS ANALYSIS AND EXCEEDENCES IN SOIL FILL AND NATIVE CLAY

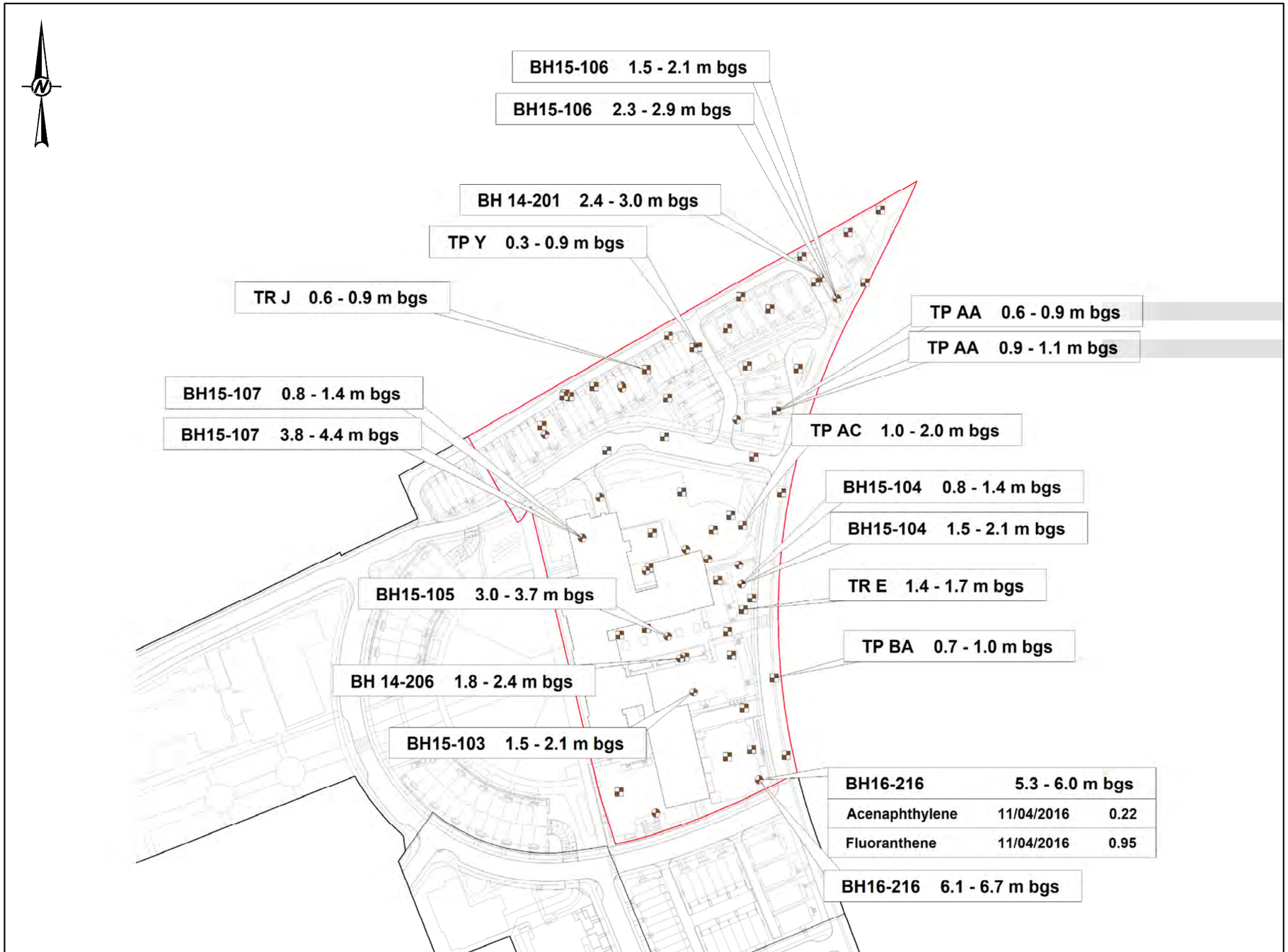
CONSULTANT

Golder Associates

YYYY-MM-DD	2017-07-24
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/3	0	5A

Path: N:\Active\Spatial_IM\The_Regional_Group\Regional\GroupOblatesProp\Ottawa\GIS\MXD\d1525113\Ph1000_Add\PhIIESA\sReg153_04_PhIESA\Phase3\1525113-1000-3-H5-0005A.mxd
25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:



LEGEND

- PHASE ONE PROPERTY
- RSC PROPERTY
- 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

	REG153 (11) T3-R/P/I SOIL COARSE
1-Methylnaphthalene (ug/g)	0.99
2-Methylnaphthalene (ug/g)	0.99
Acenaphthene (ug/g)	7.9
Acenaphthylene (ug/g)	0.15
Anthracene (ug/g)	0.67
Benzo[a]anthracene (ug/g)	0.5
Benzo[a]pyrene (ug/g)	0.3
Benzo[g,h,i]perylene (ug/g)	6.6
Benzo[k]fluoranthene (ug/g)	0.78
Chrysene (ug/g)	7.0
Dibenzo[a,h]anthracene (ug/g)	0.1
Fluoranthene (ug/g)	0.69
Fluorene (ug/g)	62.0
Indeno[1,2,3-cd]pyrene (ug/g)	0.38
Naphthalene (ug/g)	0.6
Phenanthrene (ug/g)	6.2
Pyrene (ug/g)	78.0

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. 1525113-1000-3

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 #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
PAH ANALYSIS AND EXCEEDENCES IN SOIL FILL AND NATIVE CLAY

CONSULTANT

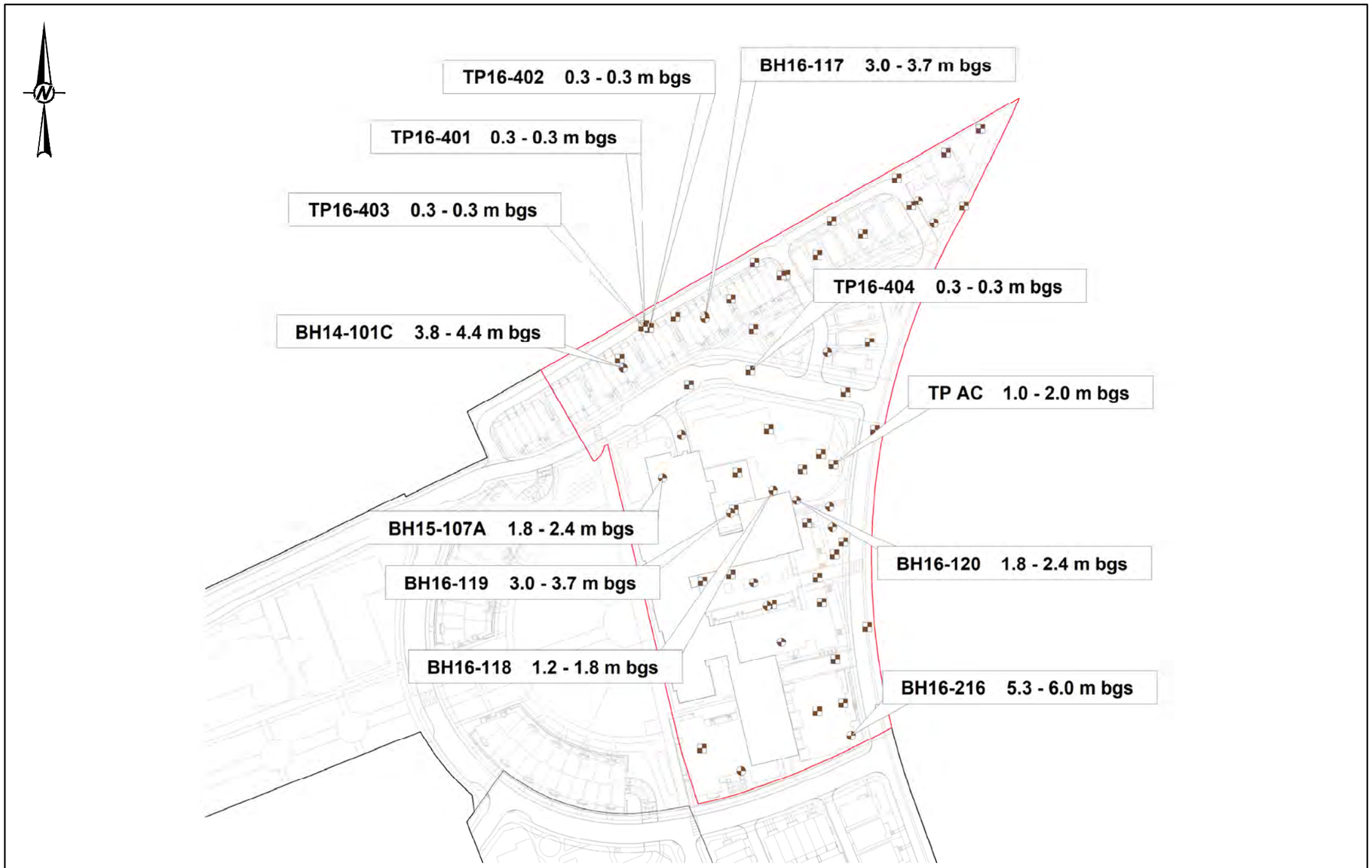
Golder Associates

YYYY-MM-DD	2017-07-24
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/3	0	5B

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\Regional\GroupOblatesPropOttawa\GIS\MXDs\1525113\Ph1000_AddPhIIESAs\Reg153_04_PhIIESA\Phase3\1525113-1000-3-H5-0005B.mxd



LEGEND

- PHASE ONE PROPERTY
- RSC PROPERTY
- 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. 1525113-1000-3

REFERENCE

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

	REG153 (11) T3-R/P/I SOIL COARSE
Petroleum Hydrocarbons - F1 (C6-C10) (ug/g)	55.00
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX (mg/kg)	55.00
Petroleum Hydrocarbons - F2 (C10-C16) (mg/kg)	98.00
Petroleum Hydrocarbons - F3 (C16-C34) (mg/kg)	300.00
Petroleum Hydrocarbons - F4 (C34-C50) (mg/kg)	2800.00
Benzene (ug/g)	0.21
Ethylbenzene (ug/g)	2.00
Toluene (ug/g)	2.30
Xylenes, Total (ug/g)	3.10

CLIENT
GREYSTONE VILLAGE INC.

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
PHC ANALYSIS AND EXCEEDENCES IN SOIL FILL AND NATIVE CLAY

CONSULTANT

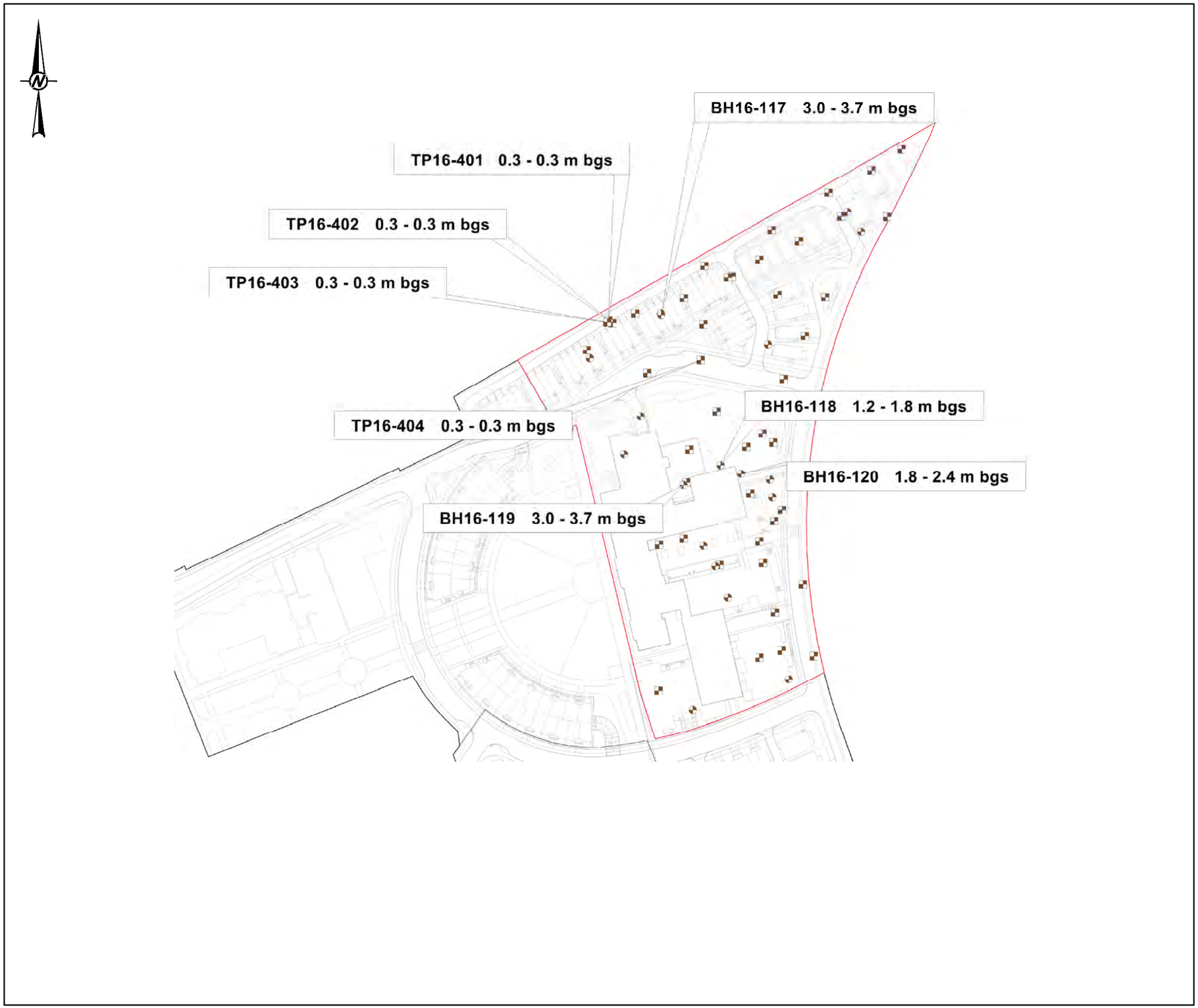
Golder Associates

YYYY-MM-DD	2017-07-24
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/3	0	5C

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

Path: N:\Active\Spatial_IM\Thie_Regional_Group\Regional\Group\Oblates\Prop\Ottawa\GIS\MXD\s1525113\Ph1000_Add\PhIIESAs\Reg153_04_PhIIESA\Phase3\1525113-1000-3-HS-0005C.mxd



LEGEND

- PHASE ONE PROPERTY
- RSC PROPERTY
- 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	

	REG153 (11) T3-R/P/I SOIL COARSE
Polychlorinated Biphenyls (ug/g)	0.35

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. 1525113-1000-3

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 #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
PCB ANALYSIS AND EXCEEDENCES IN SOIL FILL AND NATIVE CLAY

CONSULTANT

Golder Associates

YYYY-MM-DD	2017-07-24
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/3	0	5D

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\Regional\Group\Oblates\ProgOttawa\GIS\MXD\1525113\Ph1000_Add\PhIIESA\Reg153_04_PhIIESA\Phase3\1525113-1000-3-HS-005D.mxd

LEGEND

PHASE ONE PROPERTY

RSC PROPERTY

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

	REG153 (11) T3-R/P/I SOIL COARSE
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
Acetone (ug/g)	16.0
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
Dibromochloromethane (ug/g)	9.4
Dichlorodifluoromethane (ug/g)	16.0
Methyl tert-Butyl Ether (ug/g)	0.75
Methylene Chloride (ug/g)	0.1
n-Hexane (ug/g)	2.8
Tetrachloroethene (ug/g)	0.28
trans-1,2-Dichloroethene (ug/g)	0.084
Trichloroethene (ug/g)	0.061
Trichlorofluoromethane (ug/g)	4.0
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-Dichloroethene (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
4-Methyl-2-pentanone (ug/g)	1.7

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. 1525113-1000-3

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 #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
VOC ANALYSIS AND EXCEEDENCES IN SOIL FILL AND NATIVE CLAY

CONSULTANT

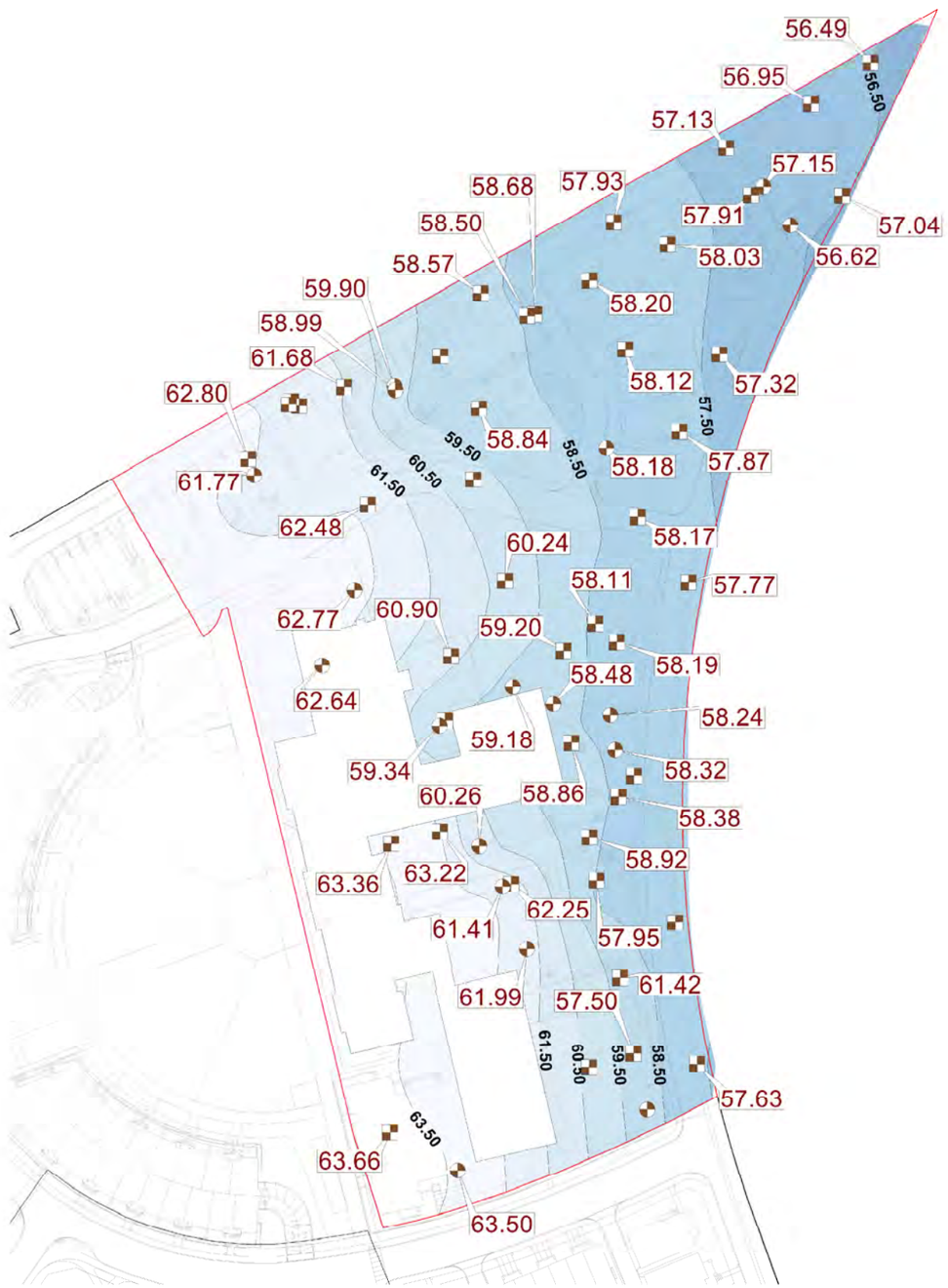
Golder Associates

YYYY-MM-DD	2017-07-24
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/3	0	5E

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

Path: N:\Active\Spatial_IM\Tre_Regional_Group\Regional\GroupOblatesProp\Ottawa\GIS\MXD\1525113\Ph1000_Add\PhIIESA\Rsc\Reg153_04_PhIIESA\Phase3\1525113-1000-3-HS-0005E.mxd



LEGEND

- PHASE ONE PROPERTY
- RSC PROPERTY
- 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 15 30 60

SCALE 1:1,500 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. 1525113-1000-3

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 #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
INTERPRETED NATIVE CLAY SURFACE ELEVATION

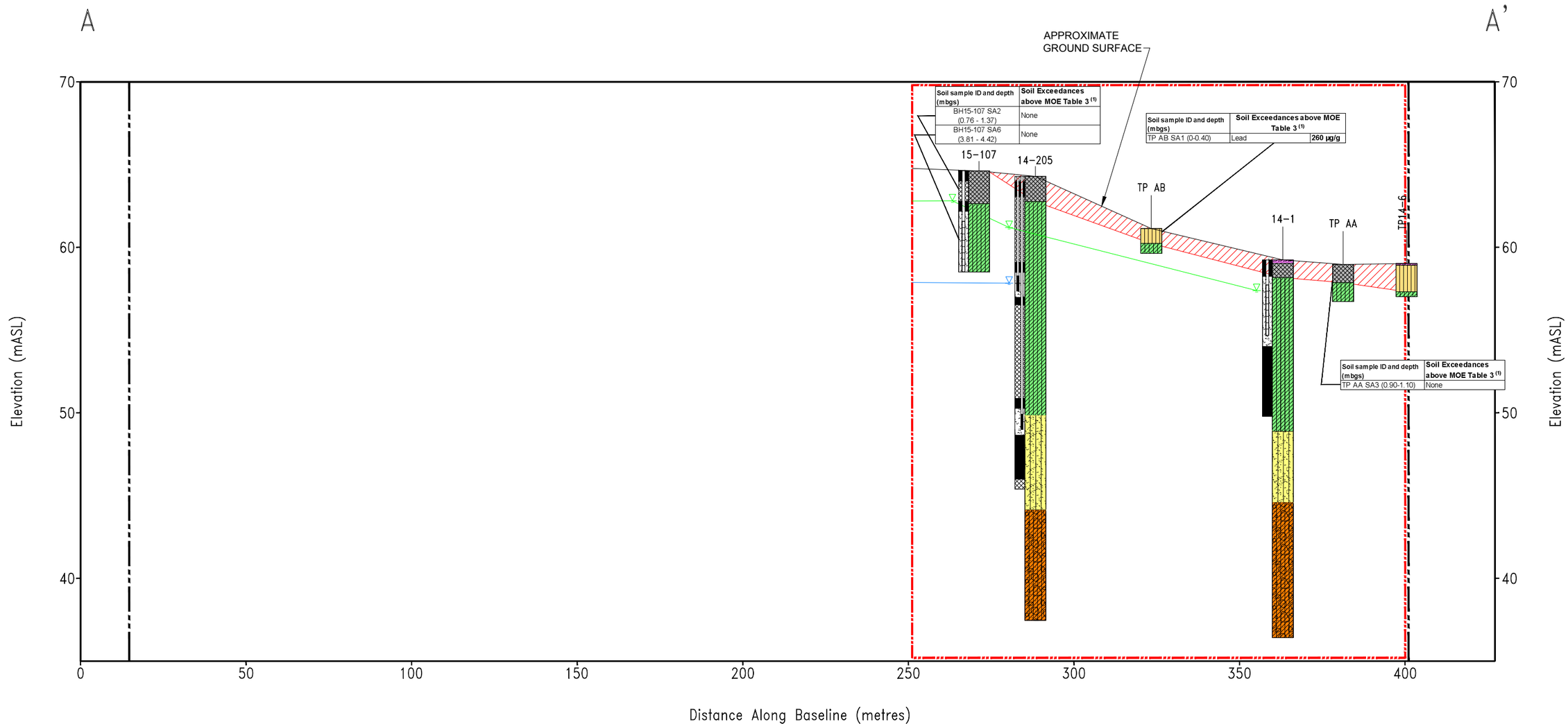
CONSULTANT

Golder Associates

YYYY-MM-DD	2017-07-24
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/3	0	6

Path: N:\Active\Spatial_IM\The_Regional_Group\Regional\GroupOblatesProp\Ottawa\GIS\MXDs\1525113\Ph1000_AddPhIIESAs\Req153_04_PhIIESA\Phase3\1525113-1000-3-H6-0006.mxd
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm



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 #3)

APPROXIMATE PROPERTY BOUNDARY

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

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 INTERPRETED ELEVATION OF THE SILTY CLAY SURFACE SHOWN ON FIGURE 6.

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 2A AND 2B FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-3.

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 #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

CONSULTANT

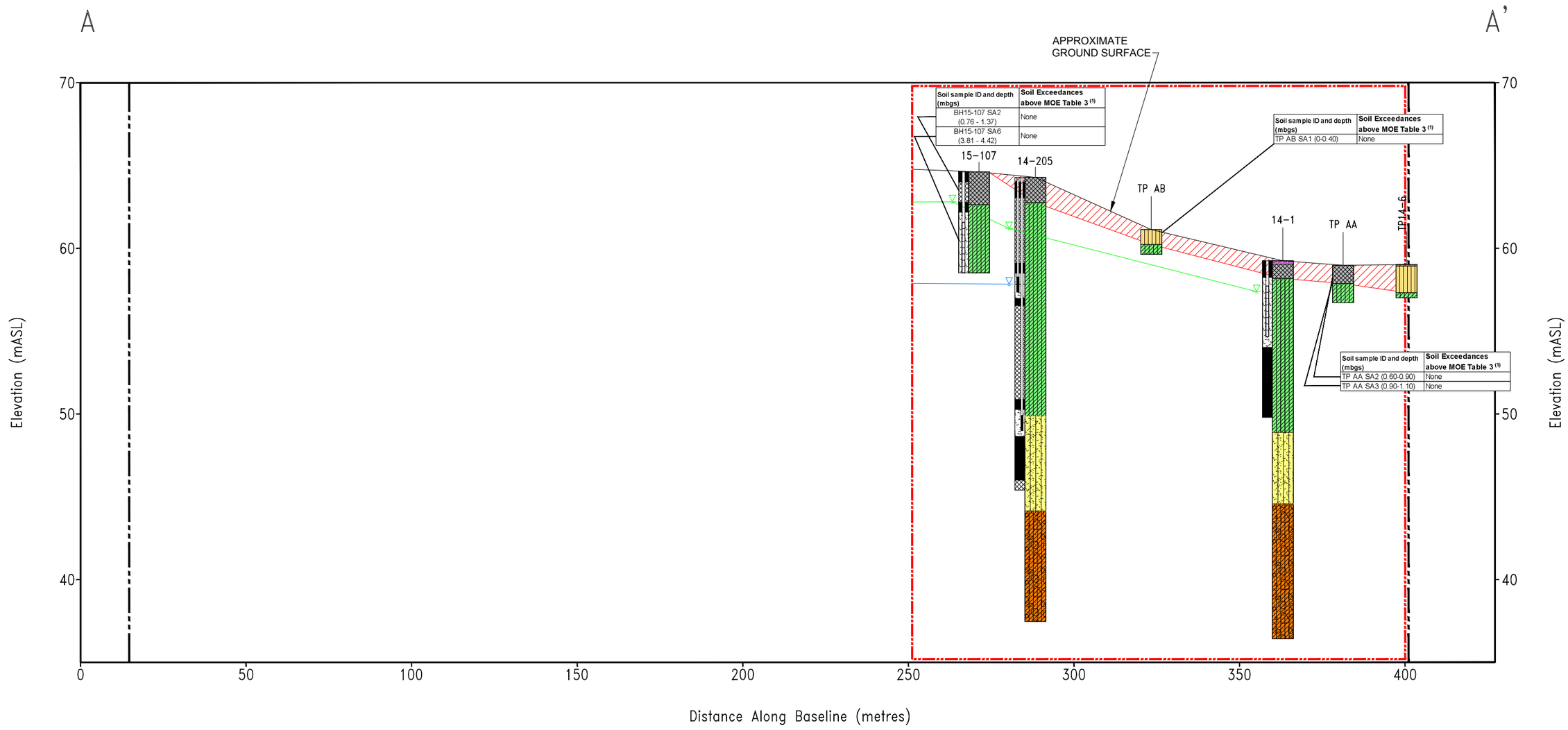
Golder Associates

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

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

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/3	0	7A

Path: \\golder.gds\gal\ottawa\Active\Spatial_IM\The_Regional_Group\RegionalGroupOblates\PropOttawa\CAD\1525113\PRODUCTION\Phase1000_Reg 153_04 Phase II ESA\ | File Name: 1525113-1000-3-HS-0007-0008.dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
25 mm



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 #3)

APPROXIMATE PROPERTY BOUNDARY

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

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 INTERPRETED ELEVATION OF THE SILTY CLAY SURFACE SHOWN ON FIGURE 6.

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 2A AND 2B FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-3.

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 #3 OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

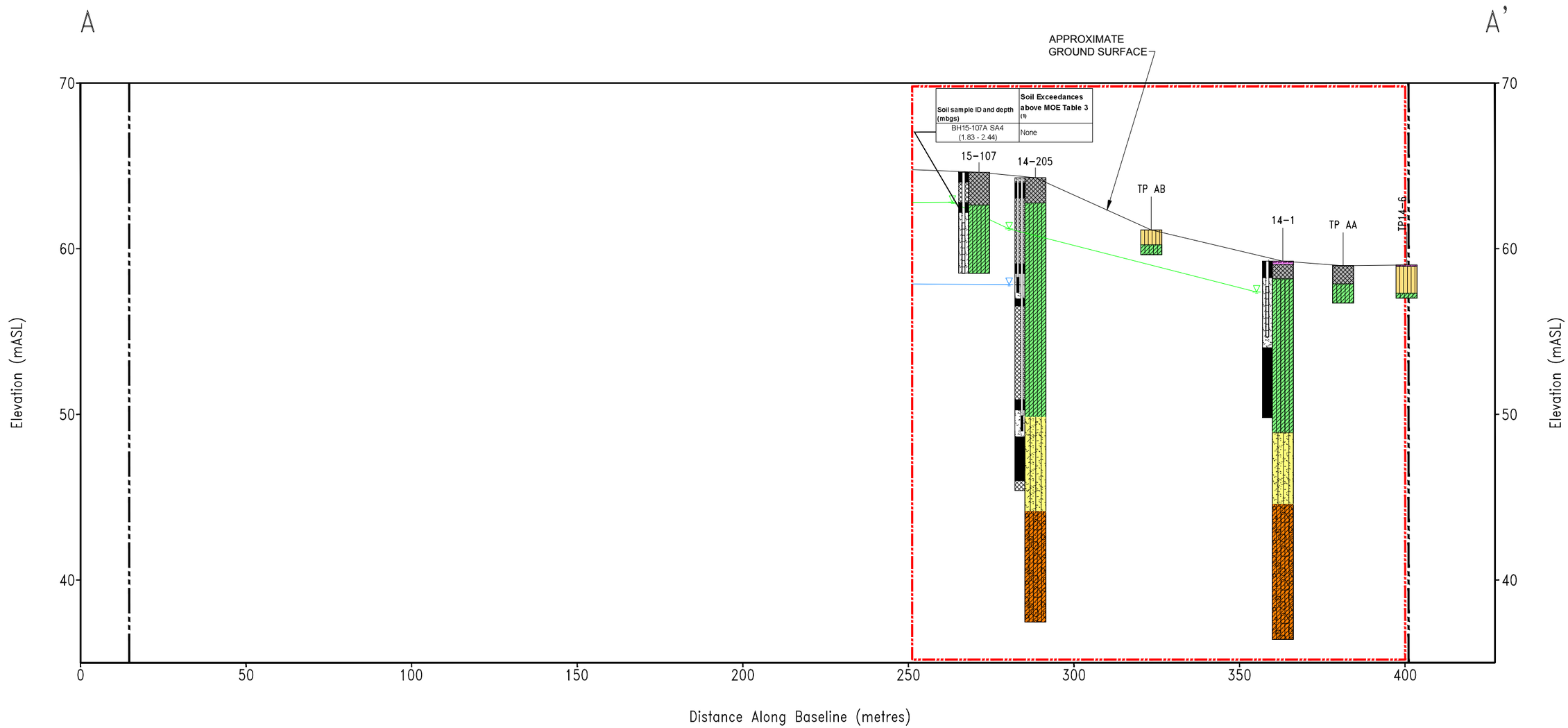
TITLE
CROSS-SECTION A-A' (INTERPRETED GEOLOGICAL AND HYDROGEOLOGICAL CONDITIONS) WITH PAH ANALYSIS AND EXCEEDANCES

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/3	0	7B

Path: \\golder.gds\gal\ottawa\Active\Spatial_IM\The_Regional_Group\Regional\Group\Oblates\Prop\Ottawa\CAD\1525113\PRODUCTION\Phase1000_Reg 153_04 Phase II ESA\ | File Name: 1525113-1000-3-HS-0007-0008.dwg

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

25 mm



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 #3)

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

WHERE NEARBY BOREHOLES AND/OR TEST PITS ARE NOT OF SUFFICIENT DEPTH, THE DEBRIS FILL HAS BEEN ASSUMED TO EXTEND TO THE INTERPRETED ELEVATION OF THE SILTY CLAY SURFACE SHOWN ON FIGURE 6.

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 2A AND 2B FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-3.

VERTICAL SCALE
0 5 10
1:250 METRES

HORIZONTAL SCALE
0 25 50
1:1,250 METRES

CLIENT
GREYSTONE VILLAGE INC.

CONSULTANT
Golder Associates

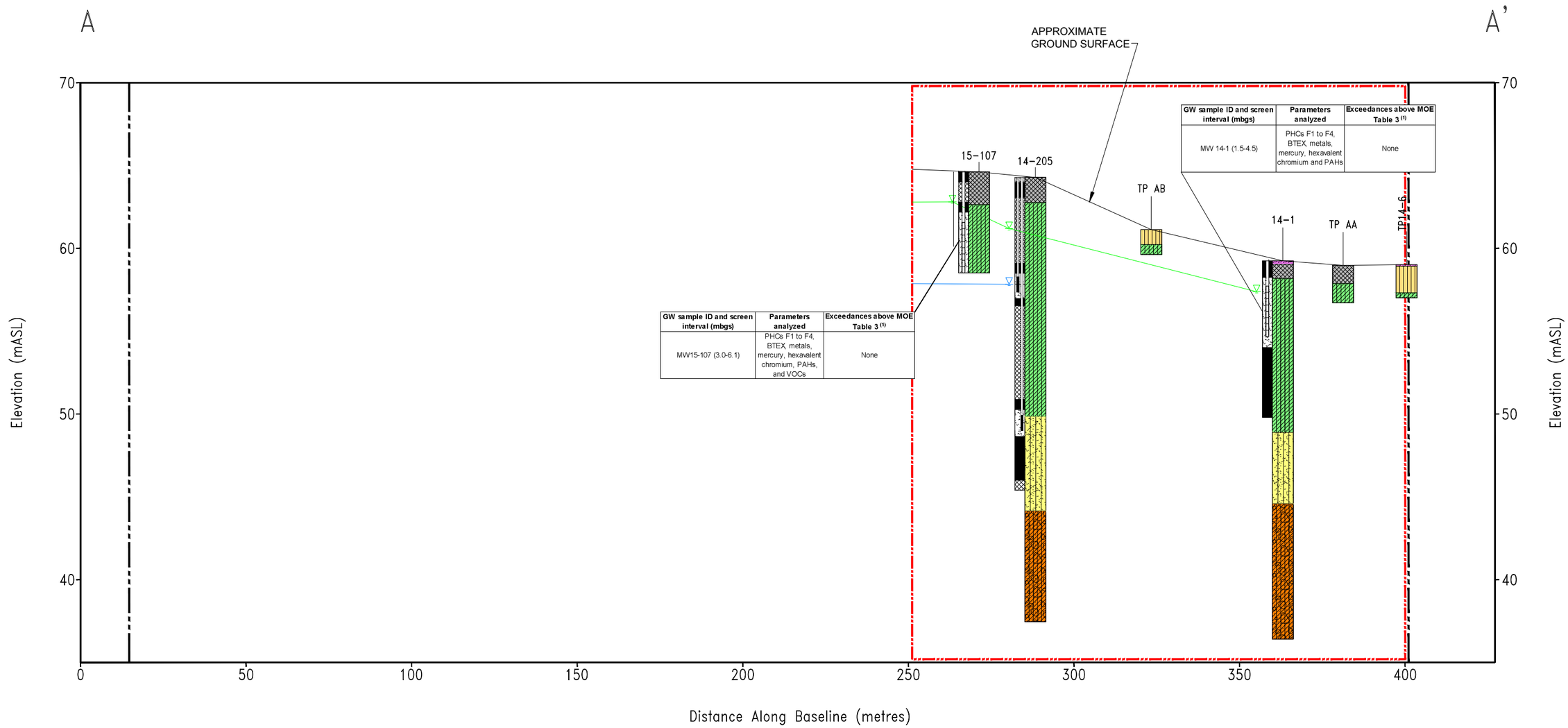
YYYY-MM-DD	2014-12-11
PREPARED	JEM
DESIGN	----
REVIEW	PH
APPROVED	PAS

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

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

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/3	0	7C

Path: \\golder.gds\gal\ottawa\Active\Spatial_IM\The_Regional_Group\RegionalGroup\Oblates\PropOttawa\CAD\1525113\PRODUCTION\Phase1000_Reg 153_04 Phase II ESA\ | File Name: 1525113-1000-3-HS-0007-0008.dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
25 mm



GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW15-107 (3.0-6.1)	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium, PAHs, and VOCs	None

GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW 14-1 (1.5-4.5)	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium and PAHs	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 #3)

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

WHERE NEARBY BOREHOLES AND/OR TEST PITS ARE NOT OF SUFFICIENT DEPTH, THE DEBRIS FILL HAS BEEN ASSUMED TO EXTEND TO THE INTERPRETED ELEVATION OF THE SILTY CLAY SURFACE SHOWN ON FIGURE 6.

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 2A AND 2B FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-3.

VERTICAL SCALE
0 5 10
1:250 METRES

HORIZONTAL SCALE
0 25 50
1:1,250 METRES

CLIENT
GREYSTONE VILLAGE INC.

CONSULTANT
Golder Associates

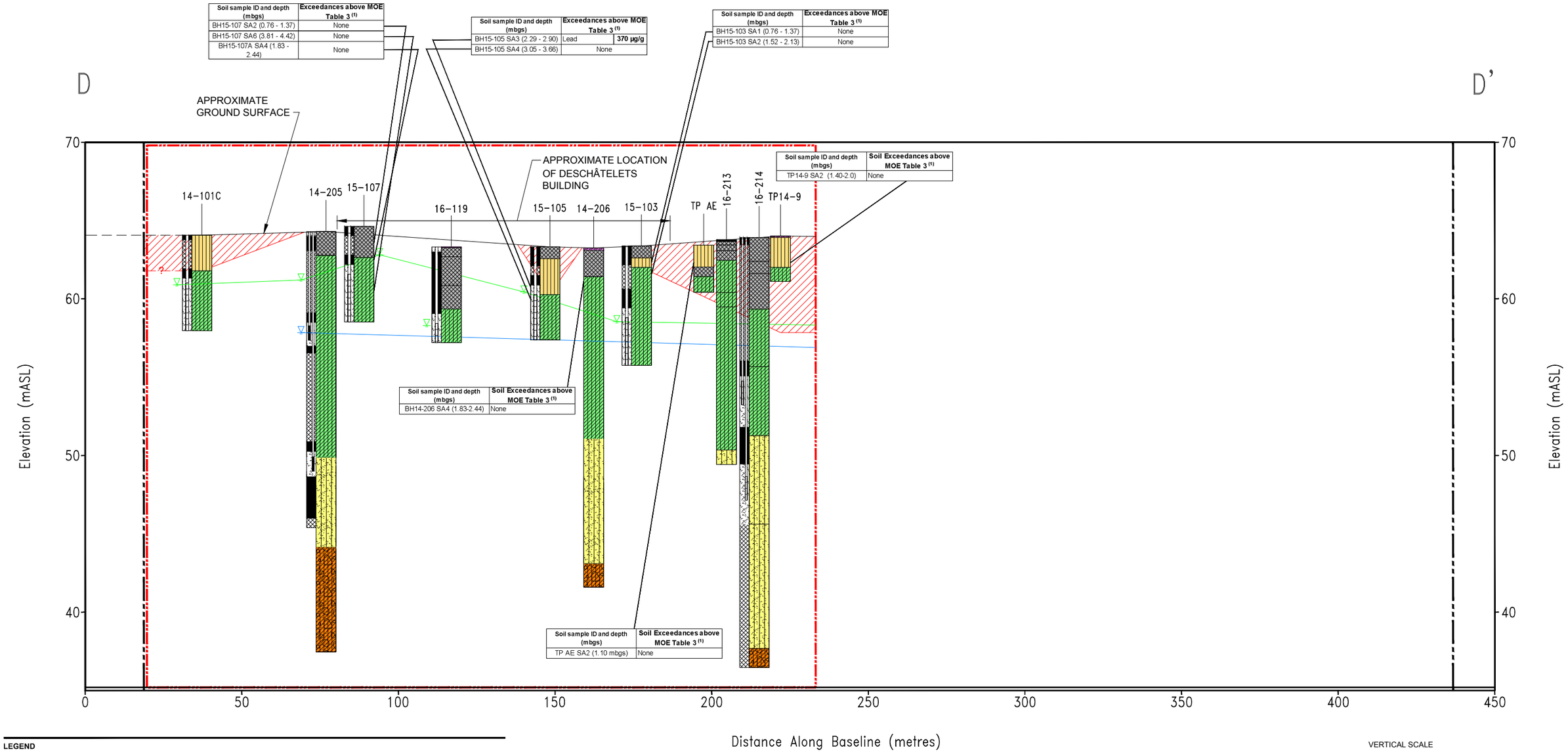
YYYY-MM-DD	2014-12-11
PREPARED	JEM
DESIGN	----
REVIEW	PH
APPROVED	PAS

PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

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

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/3	0	7D

Path: \\golder.gds\gal\ottawa\Active\Spatial_IM\The_Regional_Group\Regional Group\Oblates\PropOttawa\CAD\1525113\PRODUCTION\Phase1000_Reg 153_04 Phase II ESA | File Name: 1525113-1000-3-HS-0007-0008.dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
25 mm



Soil sample ID and depth (mbgs)	Exceedances above MOE Table 3 (1)
BH15-107 SA2 (0.76 - 1.37)	None
BH15-107 SA6 (3.81 - 4.42)	None
BH15-107A SA4 (1.83 - 2.44)	None

Soil sample ID and depth (mbgs)	Exceedances above MOE Table 3 (1)	
BH15-105 SA3 (2.29 - 2.90)	Lead	370 µg/g
BH15-105 SA4 (3.05 - 3.66)	None	

Soil sample ID and depth (mbgs)	Exceedances above MOE Table 3 (1)
BH15-103 SA1 (0.76 - 1.37)	None
BH15-103 SA2 (1.52 - 2.13)	None

Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)
TP14-9 SA2 (1.40-2.0)	None

Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)
BH14-206 SA4 (1.83-2.44)	None

Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)
TP AE SA2 (1.10 mbgs)	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 #3)

APPROXIMATE PROPERTY BOUNDARY

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

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 INTERPRETED ELEVATION OF THE SILTY CLAY SURFACE SHOWN ON FIGURE 6.

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 2A AND 2B FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-3.

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

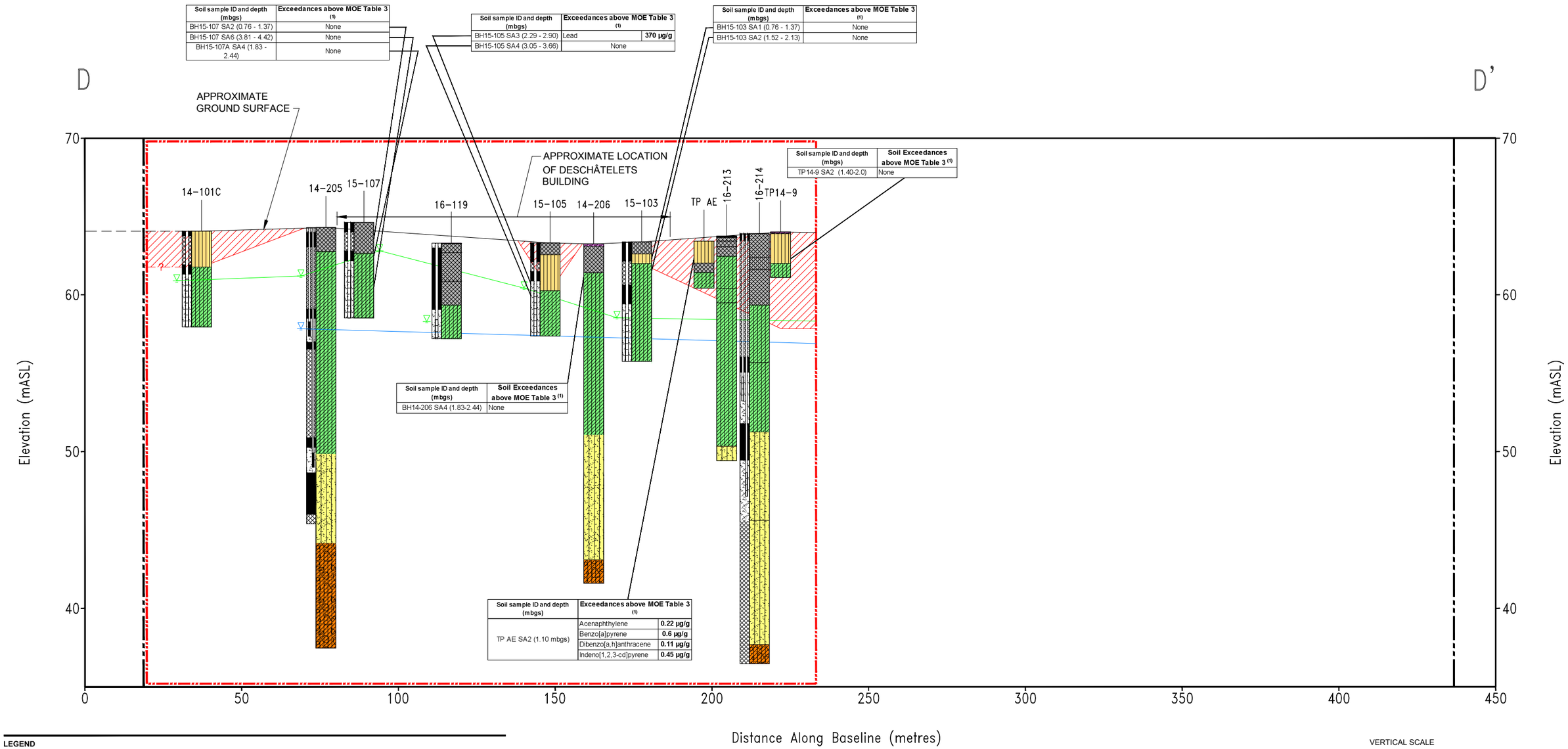
PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #3 OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

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

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/3	0	8A

Path: \\golder.gds\gal\ottawa\Active\Spatial_IM\The_Regional_Group\RegionalGroupOblatesPropOttawa\CAD\1525113\PRODUCTION\Phase1000_Reg153_04 Phase II ESA\ | File Name: 1525113-1000-3-HS-0007-0008.dwg

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



Soil sample ID and depth (mbgs)	Exceedances above MOE Table 3 (1)
BH15-107 SA2 (0.76 - 1.37)	None
BH15-107 SA6 (3.81 - 4.42)	None
BH15-107A SA4 (1.83 - 2.44)	None

Soil sample ID and depth (mbgs)	Exceedances above MOE Table 3 (1)	
BH15-105 SA3 (2.29 - 2.90)	Lead	370 µg/g
BH15-105 SA4 (3.05 - 3.66)	None	

Soil sample ID and depth (mbgs)	Exceedances above MOE Table 3 (1)
BH15-103 SA1 (0.76 - 1.37)	None
BH15-103 SA2 (1.52 - 2.13)	None

Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)
TP14-9 SA2 (1.40-2.0)	None

Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)
BH14-206 SA4 (1.83-2.44)	None

Soil sample ID and depth (mbgs)	Exceedances above MOE Table 3 (1)	
TP AE SA2 (1.10 mbgs)	Acenaphthylene	0.22 µg/g
	Benzo[a]pyrene	0.6 µg/g
	Dibenzo[a,h]anthracene	0.11 µg/g
	Indeno[1,2,3-cd]pyrene	0.45 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 #3)

APPROXIMATE PROPERTY BOUNDARY

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

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 INTERPRETED ELEVATION OF THE SILTY CLAY SURFACE SHOWN ON FIGURE 6.

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 2A AND 2B FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-3.

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

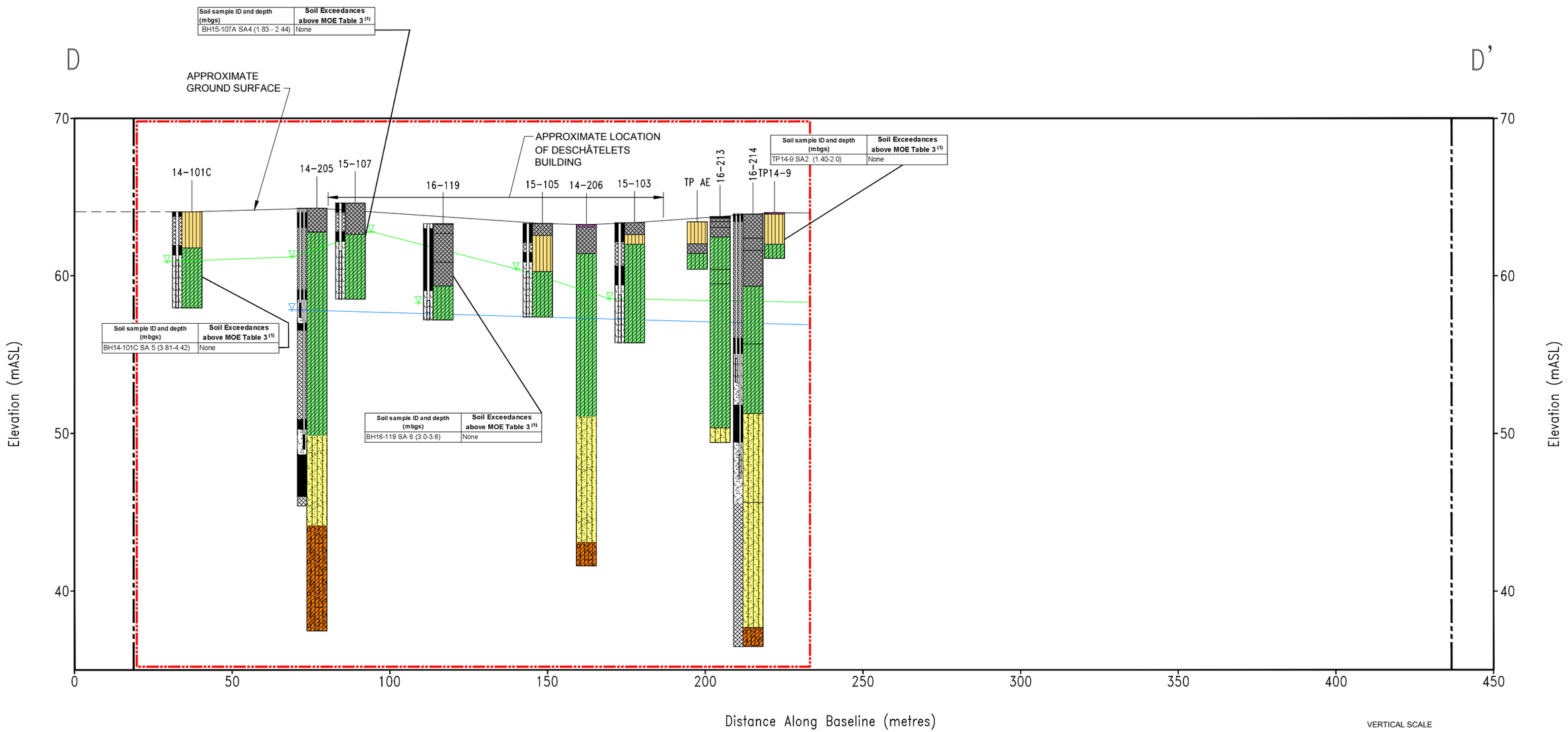
PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #3 OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

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

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/3	0	8B

Path: \\golder.gds\gal\ottawa\Active\Spatial_IM\The_Regional_Group\RegionalGroup\Oblates\PropOttawa\CAD\1525113\PRODUCTION\Phase1000_Reg 153_04 Phase II ESA\ | File Name: 1525113-1000-3-HS-0007-0008.dwg

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



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 #3)

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

WHERE NEARBY BOREHOLES AND/OR TEST PITS ARE NOT OF SUFFICIENT DEPTH, THE DEBRIS FILL HAS BEEN ASSUMED TO EXTEND TO THE INTERPRETED ELEVATION OF THE SILTY CLAY SURFACE SHOWN ON FIGURE 6.

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 2A AND 2B FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-3.

VERTICAL SCALE

0 5 10
1:250 METRES

HORIZONTAL SCALE

0 25 50
1:1,250 METRES

CLIENT
GREYSTONE VILLAGE INC.

CONSULTANT

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

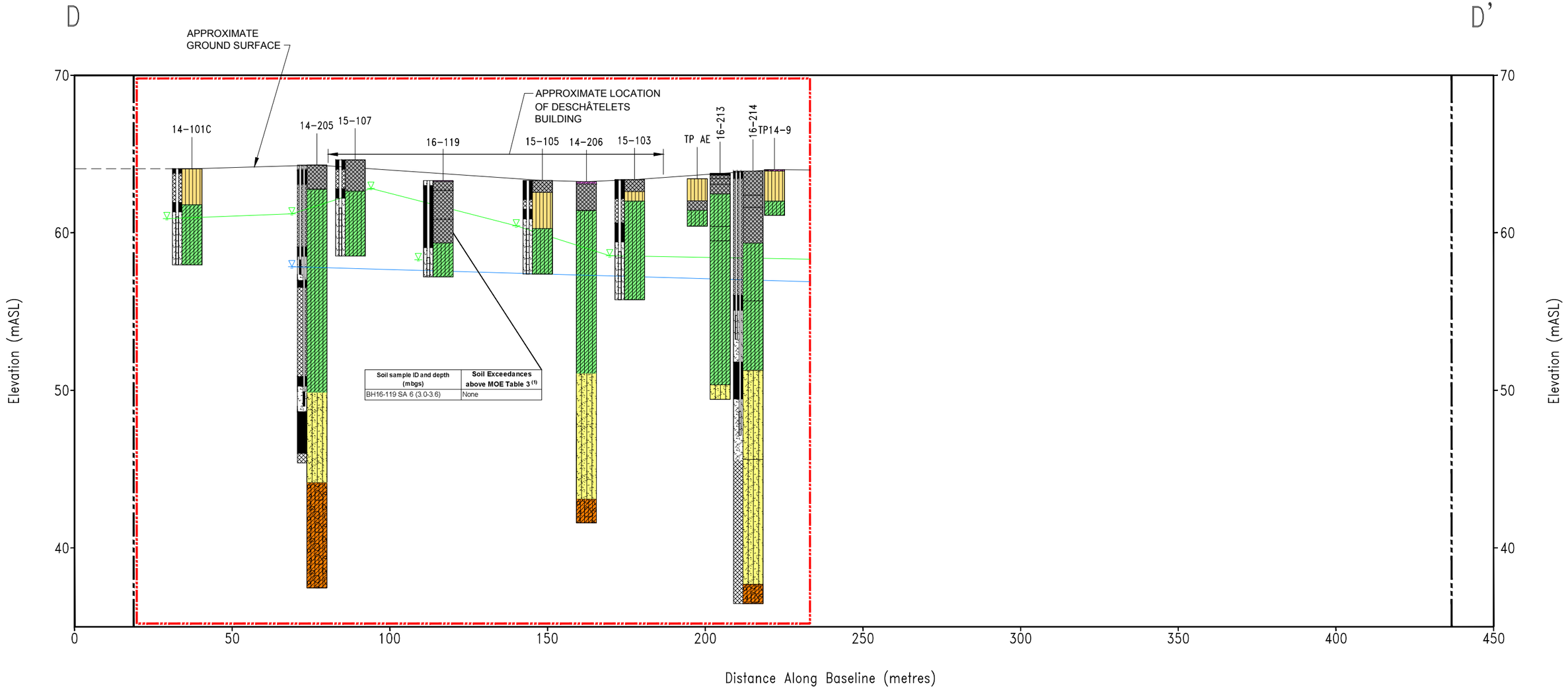
PROJECT
REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #3 OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

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

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/3	0	8C

Path: \\golder.gds\gal\ottawa\Active\Spatial_IM\The_Regional_Group\Regional\Group\Oblates\PropOttawa\CAD\1525113\PRODUCTION\Phase1000_Reg 153_04 Phase II ESA\ | File Name: 1525113-1000-3-HS-0007-0008.dwg

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



Soil sample ID and depth (mbgs)	Soil Exceedances above MOE Table 3 (1)
BH16-119 SA 6 (3.0-3.6)	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 #3)

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

WHERE NEARBY BOREHOLES AND/OR TEST PITS ARE NOT OF SUFFICIENT DEPTH, THE DEBRIS FILL HAS BEEN ASSUMED TO EXTEND TO THE INTERPRETED ELEVATION OF THE SILTY CLAY SURFACE SHOWN ON FIGURE 6.

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 2A AND 2B FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-3.

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 #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

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

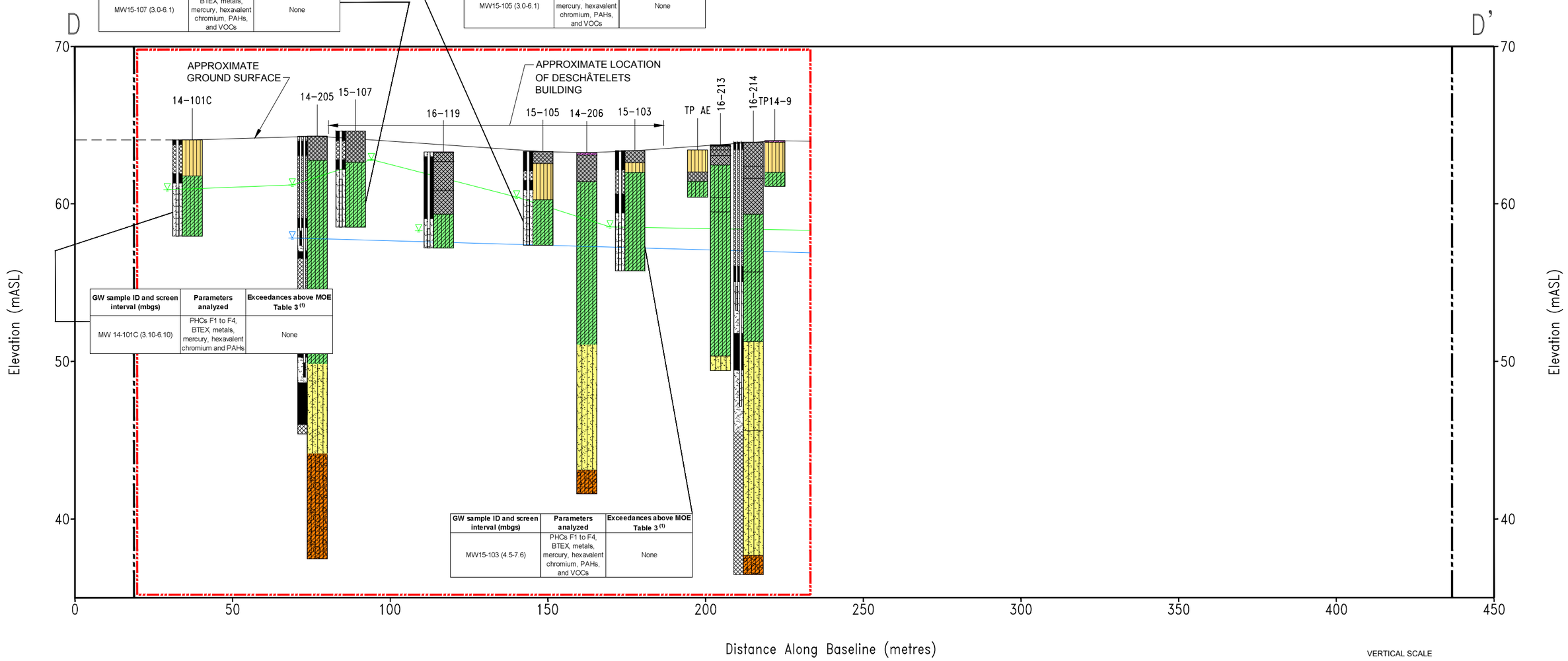
PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/3	0	8D

Path: \\golder.gds\gal\ottawa\Active\Spatial_IM\The_Regional_Group\RegionalGroupOblatesPropOttawa\CAD\1525113\PRODUCTION\Phase1000_Reg 153_04 Phase II ESA\ | File Name: 1525113-1000-3-HS-0007-0008.dwg

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

GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW15-107 (3.0-6.1)	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium, PAHs, and VOCs	None

GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW15-105 (3.0-6.1)	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium, PAHs, and VOCs	None



GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW 14-101C (3.10-6.10)	PHCs F1 to F4, BTEX, metals, mercury, hexavalent chromium and PAHs	None

GW sample ID and screen interval (mbgs)	Parameters analyzed	Exceedances above MOE Table 3 (1)
MW15-103 (4.5-7.6)	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 #3)

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

WHERE NEARBY BOREHOLES AND/OR TEST PITS ARE NOT OF SUFFICIENT DEPTH, THE DEBRIS FILL HAS BEEN ASSUMED TO EXTEND TO THE INTERPRETED ELEVATION OF THE SILTY CLAY SURFACE SHOWN ON FIGURE 6.

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 2A AND 2B FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-3.

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 #3 OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

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

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/3	0	8E

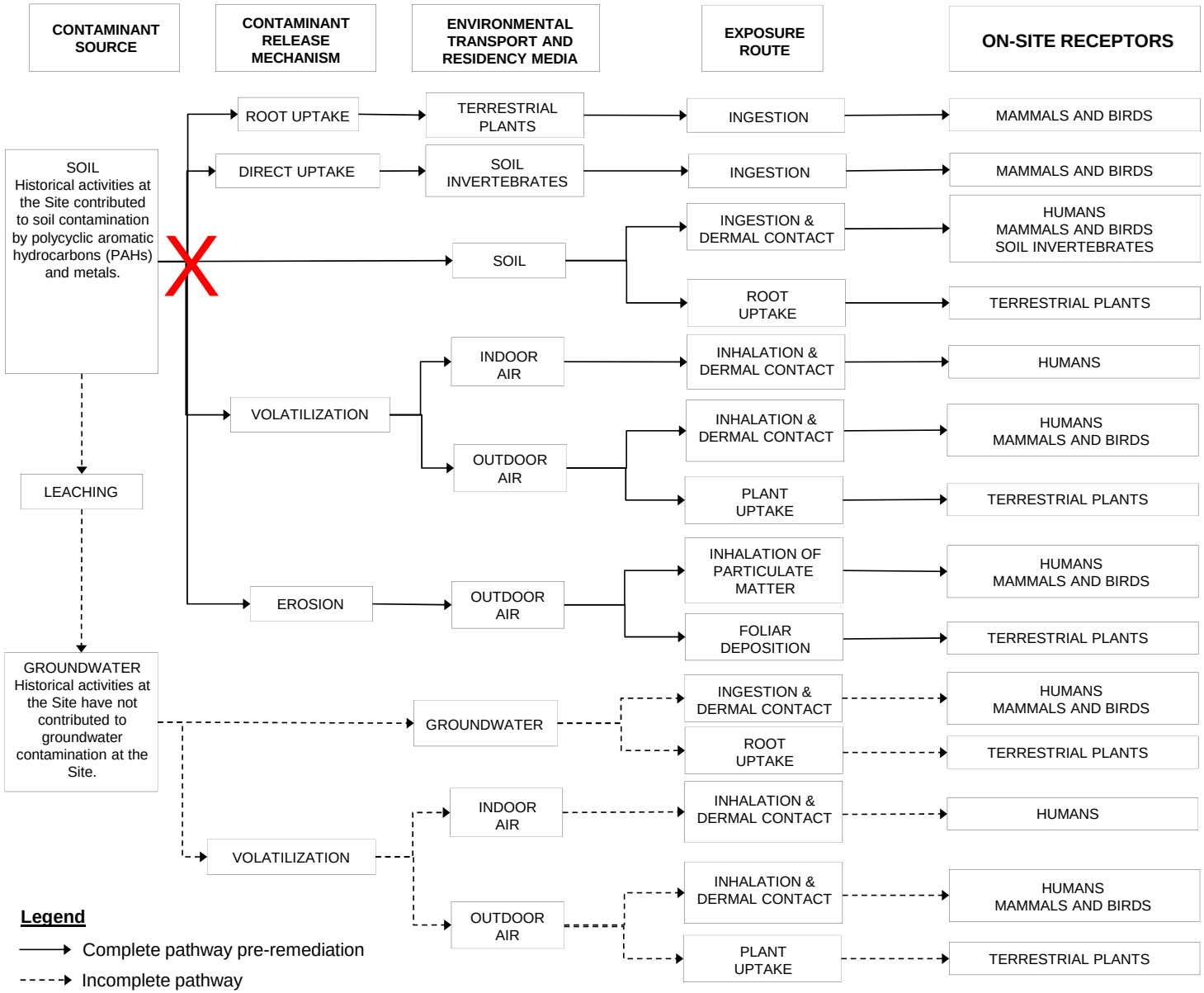
Path: \\golder.gds\ga\ottawa\Active\Spatial_IM\The_Regional_Group\RegionalGroup\Oblates\PropOttawa\CAD\1525113\PRODUCTION\Phase1000_Reg 153_04 Phase II ESA\ | File Name: 1525113-1000-3-HS-0007-0008.dwg

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

25 mm

Potential Receptor Pathways, RSC #3, 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 of contaminants by 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: September 2017

Project Number: 1525113 / 1000-3

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 1 groundwater sample per 10 samples. Collected from monitoring wells 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								

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-X	2	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 soil sample per 10 samples. Collected from locations with suspected impacts 1 groundwater sample per 10 samples. Collected from monitoring wells with suspected impacts
		TP-Y	3								
		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 To investigate the potential for subsurface impacts to soil due to unknown composition and possible presence of ash						
		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 6 - 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	BH14-205	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 and 9 - Fill of unknown composition and possible presence of ash that was reportedly spread on the Property 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								

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)
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	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
		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								
		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 6 - 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 and 9 - Fill of unknown composition and possible presence of ash that was reportedly spread on the Property 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

INTERNAL MEMORANDUM

TO: Field Staff

Project No.: 1525113/1000

FROM: Tony Lyon

RE: **Additional Phase II ESA, 175 Main Street, Oblates Property RSC #3**

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 sampling, monitoring well installation, and monitoring well development in 4 BHs:

- Four BHs to be drilled on the Site as shown on the attached figure. BH16-117 to BH16-120 to be installed with monitoring wells. Please collect soil samples almost continuously (every 2.5 ft) from each split spoon sample in accordance with the standard protocol from each of the four BHs. Please drill and sample until:
  - ~1m below water table to allow for sufficient water to collect groundwater samples
  - The fill is penetrated and the native soil (silty clay) is reached;
- 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 4 mbgs. Install a 10 foot to ensure we have water) screen within the shallow groundwater such that it **straddles (critical)** the water table. Ideally, the screen should be installed approximately 1 m below the water table.
  - Previous wells in the area had water approx 2-3 mbgs, please watch to WL during drilling
- 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 (ie. water table).
- Use calibrated field monitoring equipment (Photo ionization detector - PID);
- The soil samples (16-118, 16-119, and 16-120) including the duplicate to be analyzed for PHCs and PCBs. The soil sample (16-117) to be analyzed for PHCs – see attached Sampling and Analysis Plan

- Fill two 120 mL jars and two vials from each spoon. Prefilled labels with the job number should be provided be the lab.
- Install Waterra tubing and a foot valve in the monitoring wells and develop them by removing ~ 10 well volumes or 3 times dry;
- Please keep the soil samples in the fridge and give me (/Sarah) the field notes and BH logs with PID readings so I can submit selected soil samples for lab analyses.
- There will be testpits completed nearby to BH16-118 and BH16-119 – these should have been completed at least 3 m from the locations of the BHs, please be sure to avoid the testpits when drilling should you need to move.

PICK Ups (from GAL office):

1. Jars have been ordered, they will be under my name (Tony) at the loading bay, I ordered the GW bottles too so check the coolers before loading them.
2. Waterra, footvalves, and gloves have been ordered from Pine (in shipping bay under my name)
3. PID and field file in enviro room

Enviro work is a different job number than the geotech work, please be sure to bill time and get drillers to invoice accordingly

Handy Contact Numbers:

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

Tony 613-296-9746

Paul Hurst – 613 880 4598 if you can't reach Tony

Thank You!

Area of Potential Environmental Concern (APEC)	Investigation Outline	Borehole/ Test Pit/ ID	Aapproximate Borehole Depth (mbgs)	Location	Rationale/Purpose	Soil Approximate Sample Frequency (m)	Soil analyses	Well Installed (Y/N)	Groundwater analysis	QA/QC Samples (Analyses)
RSC #3										
APEC 4 (e,f,g) - On-Site transformers in a transformer room.	Drill two boreholes, each installed with a monitoring well. The boreholes will be drilled to a depth until the water table is reached. One soil sample (worst case) will be submitted from each of the boreholes for laboratory analysis of PHCs and PCBs.	BH/MW16-118	6 mbgs	At the central part of the Site near the transformer room.	Investigate the soil and groundwater quality in the area of the transformers	Every 2.0 ft	One soil sample (worst case) will be submitted for analysis of PHCs and PCBs.	Yes	PHCs F1 to F4, BTEX, and PCBs.	1 soil sample collected from locations with suspected impacts. 1 groundwater sample collected from monitoring wells with suspected impacts
		BH/MW16-119	4.5 mbgs	At the central part of the Site near the transformer room.		Every 2.0 ft	One soil sample (worst case) will be submitted for analysis of PHCs and PCBs.	Yes	PHCs F1 to F4, BTEX, and PCBs.	
APEC 7 - Presence of an AST, and downgradient of transformer room	Drill an exterior borehole installed with a monitoring well near the location of the AST. The borehole will be drilled to a depth of approximately 5 metres below ground surface (mbgs) or until the water table is reached.	BH/MW16-120	4.5 mbgs	At the eastern/central part of the Site near the AST.	Investigate the soil and groundwater quality in the area of the AST, and investgate soil/GW downgradient of transformer room	Every 2.0 ft	One soil sample (worst case) will be submitted for analysis of PHCs and PCBs.	Yes	PHCs F1 to F4, BTEX, and PCBs.	
APEC 8 - Presence of an AST	Drill an exterior borehole installed with a monitoring well near the location of the AST. The borehole will be drilled to a depth of approximately 5 metres below ground surface (mbgs) or until the water table is reached.	BH/MW16-117	4.5 mbgs	At the northern part of the Site near the AST.	Investigate the soil and groundwater quality in the area of the AST	Every 2.0 ft	One soil sample (worst case) will be submitted for analysis of PHCs.	Yes	PHCs F1 to F4 and BTEX.	

Notes:
PHCs = Petroleum Hydrocarbons (includes PHC F1 - F4 plus BTEX), PCB = Polychlorinated Biphenyls
Modify borehole depth in discussion with project manager if warranted by field observations
Borehole locations shown on attached figure

SUMMARY OF TYPICAL PROCEDURE

Monitoring wells will be constructed of 2 inch inner diameter (ID) Schedule 40 polyvinyl chloride (PVC) casing and 2 inch ID Schedule 40 PVC well screens (1.5 m in length, 0.01 inch slot size). The sand pack surrounding each screen will consist of silica sand extending at least 0.3 metres above the top of the well screen. A bentonite seal composed of bentonite chips or bentonite slurry will be placed above the sand pack (minimum 0.6 m length). The remainder of the borehole will be filled with bentonite ground and completed at ground surface with a flush-mount lockable protective casing set in concrete.

PURPOSE

Monitoring wells are used for measuring water levels or free product thickness and for collecting groundwater samples. Free product may be either light non-aqueous-phase liquids or dense non-aqueous-phase liquids.

LIMITATIONS

This Standard Operating Procedure (SOP) applies to the installation of groundwater monitoring wells in boreholes. Requirements for monitoring well installations are site-specific and will depend on the soil, rock, and groundwater conditions encountered in the field, the goals of the investigation program, and the availability and limitations of drilling equipment and installation materials. This SOP does not apply to vapour headspace measurement in the monitoring well.

EQUIPMENT AND MATERIAL SPECIFICATIONS

In general, monitoring wells consist of a monitoring well string (riser pipe and monitoring well screen), a filter pack, a bentonite seal, and possibly bentonite or cement grout.

Riser pipe will meet the following requirements:

- Riser pipe will be new, pre-cleaned, and wrapped in protective plastic wrap at the factory;
- Riser pipe will consist of either Schedule 40 (for total depths <30 m) or Schedule 80 (for total depths > 30 m) polyvinyl chloride (PVC) pipe with threaded joints and O-ring seals; and
- Metal riser pipe will be new, clean, and free of contaminants (e.g., oil and grease), have water-tight joints and seams, and conform with ASTM A252 or ASTM A500.

Monitoring well screens will meet the following requirements:

- Screens will be factory-slotted and will be new, pre-cleaned, and wrapped in protective plastic wrap at the factory;
- The saturated length of the monitoring-well screen length will not exceed 3.1 metres (O. Reg. 153/04);
- Screen slots should be sized to prevent 90 percent of the filter pack from entering the monitoring well. For monitoring wells where no filter pack is used, the screen slot size should be selected to retain 60 to 70 percent of the formation materials opposite the screen; and
- The bottom of the screen will be completed with a threaded or slip-fit cap. A small slot or hole may be cut or drilled into the cap to allow water to drain from the bottom of the monitoring well.

The filter pack surrounding the monitoring well screen will consist of uniformly graded silica sand composed of clean, inert, well-rounded particles with less than 2 percent flat particles and will be certified free of contaminants by the supplier.

High-solids bentonite grout will contain >30% bentonite that is hydrated with either distilled or potable water.

FIELD PROCEDURE

Monitoring well installation will consider the following (O. Reg. 153/04):

- The requirements of the Sampling and Analysis Plan;
- Access constraints;
- The position of the water table to ensure that monitoring wells at petroleum hydrocarbon and other LNAPL sites intersect the water table; and
- The depth of permeable geologic materials.

Sampling depth intervals, including the screened intervals of monitoring wells, will be positioned (O. Reg. 153/04):

- Within the geologic formation in which a contaminant may be present;
- So as to isolate the zones where contaminants may be present; and
- So as to delineate both dissolved and separate phase contaminants.

Where petroleum hydrocarbons or light non-aqueous-phase liquids may be present on, in, or under the investigated property, sampling depth intervals, including screened intervals of monitoring wells, shall be positioned to intersect the water table (O. Reg. 153/04).

Any uncertainty in the conditions encountered should be discussed with the Qualified Person and his/her advice sought about how to proceed.

The monitoring well string will be centered and suspended in the borehole such that it does not rest on the bottom of the borehole. The filter pack surrounding the well screen will extend from at least 0.15 m below the monitoring well screen to at least 0.3 m above the top of the monitoring well screen. The top of the sand pack will be sounded to verify its depth during placement and additional silica sand will be placed as required.

Once placement of the filter pack is complete, a bentonite seal consisting of bentonite solids (e.g., Holeplug™) will be placed above the filter pack to a minimum thickness of 0.6 m. Bentonite solids will be placed slowly to prevent bridging in the standing water column. If the borehole is dry, bentonite solids will be hydrated with either distilled or potable water. If the monitoring well is shallow (<9 m), this form of bentonite seal may be extended to ground surface (i.e., used as casing grout). For deeper monitoring wells, it may be more cost effective to use a high-solids bentonite grout as casing grout. The casing grout will extend from the top of the bentonite seal to ground surface. Casing grout will be placed using tremie methods with a tremie pipe set 0.3 m above the solid bentonite (e.g., Holeplug) seal. Grout pumping will continue until the consistency of grout returning to the surface is constant, indicating that grout has fully displaced water in the annular space.

For flush-mounted completions, the monitoring-well riser pipe will be cut about 10 cm below ground surface. The top of the riser pipe will be cut level and a notch cut as a reference point for depth-to-water measurements. The monitoring well will be capped with a watertight, lockable, vermin-proof cap (e.g., a J-plug). A freely draining protective casing set in concrete will be placed over the riser pipe to prevent surface water from entering the monitoring well. The top of the riser pipe will extend above the bottom of the protective casing box.

For above-ground completion, monitoring wells and protective casing will extend a minimum of 0.4 m above ground surface.

The identity of the monitoring well will be permanently marked on the protective casing lid and the monitoring well cap using, as a minimum, a permanent marker. For multiple monitoring wells within a borehole, at least one monitoring well (usually the deepest) will be marked with an MOE well tag by the driller (O. Reg. 903). Where protective casing may be subject to traffic loads, the protective casing must be constructed to match the strength of the surrounding surfaces.

REQUIRED DOCUMENTATION

All monitoring well construction details will be documented on the Golder field borehole record provided in Appendix C.

REFERENCES

ASTM A252. Standard Specification for Welded and Seamless Steel Pipe Piles.

ASTM A500. Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

Golder Associates Ltd. Procedure No. 23: Installation of Groundwater Monitoring Wells (In Overburden)

Ontario Regulation 153/04 (Records of Site Condition) (as amended) under the Environmental Protection Act (Ontario).

Ontario Regulation 903 (Wells Regulation) under the Ontario Water Resources Act.

DOCUMENT CONTROL

Version 2. **Author:** S. Bonneville

Edit 1 Editor : Margaret Shaw Edit Date: November 5, 2010

SOP1-Monitoring Well Installation-MS-5Nov10

SUMMARY OF TYPICAL PROCEDURE

At least 24 hours after monitoring well development, the water level in the monitoring well will be measured with a water level probe or an oil-water interface probe. The water depth and, if applicable, free product depth, will be recorded. The probe and tape will be decontaminated prior to moving to the next monitoring well.

PURPOSE

Water levels are measured to determine the depth of the water table below ground surface or the pressure head in a confined aquifer. This information can be used to estimate hydraulic gradients, groundwater flow direction, and changes in flow conditions over time. Free product levels are measured to aid in estimating free product quantities present at the site and because they influence groundwater levels.

LIMITATIONS

This Standard Operating Procedure (SOP) is applicable to all groundwater monitoring wells, including those installed primarily for groundwater sampling. Water levels must be measured at least 24 hours after monitoring-well development (O. Reg. 153/04).

In fractured rock, purging and sampling can cause significant drawdown in adjacent or nearby monitoring wells. Therefore, in fractured rock geologic settings, consideration should be given to measuring water levels in all monitoring wells prior to purging or sampling.

EQUIPMENT AND MATERIAL SPECIFICATIONS

Water level measurement requires a water level probe or an oil-water interface probe with a graduated tape marked in millimetres.

FIELD PROCEDURE

To measure groundwater and/or free product levels:

1) Open the monitoring well.

2) Establish or locate the reference point from which measurements will be taken (e.g., notch cut into the top of the monitoring well standpipe).

3) Take measurements using one of the following methods:

- **Method 1.** Measure depth to water using a clean electric water-level probe:

    a. Lower the probe into the monitoring well until you hear a steady tone.

    b. When the expected depth to water is reached, measure the depth to water to the nearest 0.003 m (3 mm).

    c. Take a second confirmatory reading and check that is within 0.003 m (3 mm) of the first reading. If not, take additional reading(s) until you are satisfied that the static depth to water has been found.

Note: Repeatability of the measurement ensures an accurate water-level record and that the probe is not up against a wet wall, etc.

d. Record the water levels on the form titled Static Water Level Measurement.

e. Calculate the water-level elevation by subtracting the measured depth to water from the elevation of the reference point (e.g., notch cut into the top of the pipe). Record the elevation on the form

f. Remove the probe from the monitoring well and decontaminate it in accordance with Golder SOP No. 8 (Decontamination).

- **Method 2.** Measure water and free product levels using a clean oil-water interface probe:

a. Lower the probe into the monitoring well.

Note: A steady tone will be emitted when the probe is fully immersed in the free product.

b. Slowly raise the probe until the sound stops, and then lower the probe until sound is just heard again to define the air-product interface.

c. Repeat and ensure that both readings are within 0.003 m (3 mm). If not, take additional measurements until two consecutive readings are within 0.003 m (3 mm) of each other.

d. Read the tape marking and record the depth to free product on the Static Water Level Measurement form.

e. Slowly lower the probe through the free product.

Note: An intermittent tone will be emitted when the probe reaches the base of the floating free product (oil-water interface).

f. Repeat and ensure that both readings are within 0.003 m (3 mm). If not, take additional measurements until two consecutive readings are within 0.003 m (3 mm) of each other.

g. Calculate the free product elevation by subtracting the measured depth to free product from the elevation of the reference point (notch cut into the top of the pipe), and record the free product elevation on the form.

h. Calculate the free product thickness by subtracting the measured depth to base of product from the measured depth to the air-product interface and record the free-product thickness.

i. Remove the probe from the monitoring well and decontaminate the probe and tape in accordance with Golder SOP No. 11 (Equipment Decontamination) prior to proceeding to the next monitoring well.

REQUIRED DOCUMENTATION

The static water level measurement and/or free-product level measurement(s) will be recorded on a field form (see form titled Static Water Level Measurement, Appendix C) at the time of the measurements.

REFERENCES

Golder Associates Ltd. Procedure No. 24: Water-Level Monitoring in Wells

Golder Associates Ltd. Procedure No. 23: Installation of Groundwater Monitoring Wells (In Overburden)

ASTM D 4750-87 (Reapproved 2001). Standard Test Method for Determining Subsurface Liquid Levels in a Borehole or Monitoring Well (Observation Well).

Ontario Regulation 153/04 (Records of Site Condition) (as amended) under the Environmental Protection Act (Ontario).

DOCUMENT CONTROL

Version 2. **Author** B.G. Sullivan

Edit 1 Editor : Margaret Shaw Edit Date: November 2, 2010

SOP2-Water Level Measurements-MS-5Nov10

PURPOSE

Boreholes are generally drilled when information on soil quality is required for depths greater than about 4 or 5 metres (i.e., depths greater than those easily accessible by a backhoe or excavator), and/or where information on bedrock quality is needed. A borehole may also be drilled for the purpose of installing a groundwater monitoring well. Advantages of drilling over test pitting include minimal disruption of the ground surface (e.g., paving or concrete) and subsurface soils and the ability to penetrate and sample (core) bedrock. Disadvantages include potentially greater inaccuracies when interpolating soil conditions between testing locations due to the one-dimensional perspective, potentially poor soil sample recovery (particularly in very coarse soils), and cost.

LIMITATIONS

This Standard Operating Procedure (SOP) is applicable to the drilling and sampling of all boreholes in overburden and/or in bedrock. Portions of this SOP (concerning sample collection) may not be applicable or required in situations where a borehole is being drilled solely to facilitate monitoring well installation in an area where the subsurface geologic conditions are already well known. Portions of this SOP (concerning sample collection methods) may also not be applicable where the borehole is being drilled for purely geotechnical purposes and where the presence of environmental contamination is not suspected.

EQUIPMENT AND MATERIAL SPECIFICATIONS

Boreholes may be drilled using a wide variety of drilling rigs, including sonic, hollow or solid stem auger, direct push (e.g. Geoprobe), air or mud rotary, Becker Hammer, or cable tool. Depending on the drill rig used, soil samples may be collected using a split spoon sampler or a continuous corer, or they may be carried to the surface using air or drilling mud. Each of these techniques has its distinct advantages and disadvantages and ideal situations for application. The selection of the drilling method will depend on project objectives, expected subsurface conditions, project-specific constraints such as access limitations, contractor availability, schedule, and cost.

FIELD PROCEDURE

1) Prior to starting field activities, review reasonably available documentation pertinent to the proposed borehole investigation. Such documentation should generally include:

   - Project Health & Safety Plan;
   - The Conceptual Site Model, where one exists;
   - Site plan and plan showing proposed borehole locations;
   - Project-specific sampling and analysis plan;

- Information regarding local subsurface conditions (geology, hydrogeology, and (where applicable) contaminant presence), such as regional mapping or specific project data previously obtained from the work site or from other local projects; and
- Existing information regarding the presence of subsurface or overhead utilities or other structures.

2) Mark out borehole locations at the work site.

3) Identify logistical issues with proposed locations, e.g. access restrictions, overhead clearance issues, workspace control requirements (e.g. traffic control), etc. Modify proposed borehole locations if necessary.

4) Ensure utility clearances are up to date and/or arrange for new clearances if necessary.

   Note: Public utility clearances are required. The use of private utility locators is recommended where appropriate.

5) Modify borehole locations if necessary based on utility clearances.

6) Conduct a tailgate meeting with drilling contractor as required by Golder Health & Safety protocols.

   Note: This should include review of utility clearances, as well as verification that down-hole drilling equipment is clean (decontaminated).

7) Where information regarding degree and location of subsurface contamination is available, and where doing so is practical subject to other logistical considerations, stage the investigation such that areas of least contamination are drilled first, and areas of heaviest contamination are drilled last.

8) Prepare each drilling location. This may include, as appropriate:

   - Restricting public access to work area and/or providing a safe work area for workers (e.g., providing traffic control);
   - Mitigating potential contamination of ground surface during drilling (e.g., using a plastic and/or plywood sheet to receive drill cuttings);
   - Setting up monitoring equipment for health and safety and/or environmental management purposes;
   - Removing asphalt or concrete surface pavements.

9) Start drilling the borehole. As the borehole is advanced, collect representative soil and/or rock samples using soil sampling equipment appropriate to the type of drilling rig (e.g., split spoon sampler, dual-tube sampler, core barrel, or other).

10) Examine samples in the field for stratigraphic information and evidence of contamination.

11) Collect sub-samples from retrieved soil and/or rock samples for possible further characterization. Conduct all sampling and sub-sampling as determined in the sampling and analysis plan, subject to any practical

limitations encountered (e.g., limited soil recovery in sampling device) or modifications made in the field based on observed conditions:

- As a general guide, collect soil samples at least every 1.5 m in depth. In general, use smaller vertical sampling intervals where conditions are highly variable, where the presence and/or depth of contamination is unknown, or where specific zones of limited thickness are to be targeted.
- In bedrock, collect continuous samples (cores) unless directed otherwise.

Field screening of soil samples should be conducted in accordance with Golder SOP No. 4 (Soil Headspace Vapour Screening) and SOP No. 6 (Soil Logging). If evidence of contamination is observed, it is advisable to notify the Qualified Person.

12) Decontaminate non-dedicated sampling equipment between uses in accordance with Golder SOP No. 11 (Equipment Decontamination).

13) Upon completion of the borehole, do one or more of the following:

- Install a monitoring well, if called for in the sampling and analysis plan. Refer to Golder SOP No. 1 (Monitoring Well Installation).
- If the borehole is not considered a “well” under the provisions of O. Reg. 903, and if no evidence of contamination was identified during drilling, backfill the borehole with the auger or drill cuttings. Replace cuttings generated from the bottom of the borehole in first, followed by soils from subsequently higher zones.
- If the borehole could be considered a “well” under the provisions of O. Reg. 903 and/or if evidence of contamination was identified during drilling, backfill the borehole with bentonite (e.g., Holeplug) and/or grout.
- Reinstate surface pavements or other ground treatments where appropriate.

14) For each subsequent borehole, ensure that clean down-hole drilling equipment is used.

15) Prepare a field sketch documenting actual, final borehole locations, with measurements referenced to fixed local landmarks or through the use of GPS coordinates, as appropriate.

    Note: The required level of accuracy for such measurements will depend upon the specific investigation objectives.

16) Where required based upon investigation objectives, measure the elevation of ground surface at each borehole location, referenced to a fixed local benchmark or to a geodetic benchmark, as appropriate.

    Note: The required level of accuracy for elevations will depend upon the specific investigation objectives.

REQUIRED DOCUMENTATION

Details regarding drilling methodology, subsurface conditions observed during drilling, soil/rock sample intervals, and other pertinent observations as appropriate shall be recorded on a field borehole log or field corehole log, as appropriate (see field forms titled Record of Borehole and Record of Corehole, Appendix C) at the time of drilling.

The field log must include the following:

- file identification;
- site identification;
- date and time;
- a unique (per site) borehole/corehole number;
- information regarding drilling method;
- information regarding subsurface conditions encountered; and
- information regarding samples collected

REFERENCES

Ontario Regulation 903 (Wells Regulation) under the Ontario Water Resources Act.

DOCUMENT CONTROL

Author: Ryan Smith

Edit 1	Editor: Margaret Shaw	Edit Date: November 3, 2010
Edit 2	Editor: Dave Smyth	Edit Date: January 9, 2014

SOP3- BH Drilling and Sampling.doc

PURPOSE

Soil headspace vapour screening (headspace screening) measures relative concentrations of volatile organic compounds in the headspaces of soil sample containers as an indicator of volatile contaminants in the soil sample. Headspace screening is carried out on any environmental project where soil samples are collected. After the headspace screening is done, the relative concentrations are evaluated for indications of possible impacts and to provide guidance on which soil samples are to be submitted to an analytical laboratory.

LIMITATIONS

It is important to note that the headspace concentrations measured are relative rather than absolute. The actual concentrations of volatile compounds in soil are determined through laboratory testing. Also, the headspace measurement does not identify the compound(s) that may be in the soil but represents an aggregate of all volatile compounds.

Note that some combustible gas detectors can operate in a “methane elimination” mode that substantially excludes methane from the measurement; however in some instances naturally occurring methane can interfere with the headspace reading caused by the presence of volatile contaminants.

EQUIPMENT AND MATERIAL SPECIFICATIONS

Soil headspace vapour can be measured using different instruments depending on the nature of the suspected contamination. If petroleum hydrocarbons are suspected, a combustible gas detector can be used. If volatile organic compounds are suspected, a photoionization detector can be used. Other instruments can also be considered, and the instrument used should be selected taking into account the best available information about site history and uses. Field instruments must be calibrated in accordance with the requirements of the Quality Assurance Program and Golder SOP No. 12 (Measurement of Field Parameters).

FIELD PROCEDURE

To screen soil headspace for volatile compounds:

1) Collect the soil sample and place it in a secure container so as to minimize losses of volatile components during headspace screening.

2) Immediately place the soil sample in a plastic bag (0.5 L to 1 L), filling the bag about one-quarter full.

3) Seal the bag tightly leaving a minimal headspace.

4) While the sample is secure in the bag, knead any lumps of soil by hand within the closed bag to break them up.

5) Allow the soil sample to equilibrate for a minimum of 15 minutes and until it reaches a minimum temperature of 10˚C, but complete all headspace measurements within two hours of sample collection.

6) To measure the headspace vapours, insert the instrument probe(s) into the headspace above the soil sample, taking care to minimize potential vapour loss.

7) Agitate/manipulate the sample by hand as the measurement is taken.

8) Record on the field form or log the peak reading registered by the instrument during the first 15 seconds of measurement.

REQUIRED DOCUMENTATION

Soil headspace readings should be recorded on the field form or log on which the soil sample is otherwise described, so that each headspace reading is clearly identified with the sample to which the results apply. There must be a notation on the field form or log that identifies the type of instrument used. Units of measurement must also appear with the reading. Include documentation of calibration and calibration checks in the field file.

REFERENCES

MOEE Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario, dated May 1996. Version 1

DOCUMENT CONTROL

Author: Keith Salt

Edit 1	Editor: Margaret Shaw	Edit Date: November 5, 2010
Edit 2	Editor: Dave Smyth	Edit Date: January 9, 2014

SOP4-Headspace Screening.docx

SUMMARY OF TYPICAL PROCEDURE

Following installation, each monitoring well will be developed to remove fine-grained material from the monitoring well and filter pack and to stabilize the filter pack around the monitoring well screen. Development will be achieved by surging the monitoring well screen with a solid 2-inch OD Waterra™ surge block and pumping groundwater using a Waterra™ inertial pump. During monitoring-well development, periodic field measurements of turbidity will be made using a field turbidimeter. Development will continue until the turbidity of the groundwater produced stabilizes or, if that does not happen, until a minimum of three and a maximum of ten well volumes have been removed.

PURPOSE

Monitoring wells are developed to remove fine particles from the filter pack and to remove any fluids introduced to the monitoring well during drilling. Proper monitoring-well development ensures that samples collected are representative of surrounding aquifer conditions and reduces the amount of sediment produced during sample collection.

LIMITATIONS

This Standard Operating Procedure (SOP) generally applies to all groundwater monitoring wells except those installed for the sole purpose of water level measurement. However, if free product is present in the monitoring well, avoiding well development is recommended to eliminate the potential for smearing free product in the filter pack and the surrounding formation.

EQUIPMENT AND MATERIAL SPECIFICATIONS

Monitoring well development requires a pump, a water level meter, and a turbidity meter. Other water quality meters (e.g., pH meter, specific conductivity meter) may be used as required by the Qualified Person.

The pump selected will vary depending upon the depth of the monitoring well and the transmissivity of the formation. Inertial pumps equipped with a surge block are widely applicable. However, other pumping methods may be preferred, or may be required for deep and/or high-yield monitoring wells (e.g., air-lift pumping using either compressed air or nitrogen). The selection of the pumping method is the responsibility of the Qualified Person.

FIELD PROCEDURE

To develop a monitoring well:

1) Measure the initial depth to water.

2) Use the measured depth to water and the monitoring well completion details to determine the monitoring well volume (i.e., the standing volume of groundwater inside the monitoring well screen and pipe).

   Note: monitoring well volume = $\pi r^2 h$

   Set the pump intake at the top of the monitoring well screen. Direct the pump discharge to a container for volume measurement.

3) Start pumping at the maximum rate possible without exceeding the monitoring well yield.

4) Measure the initial turbidity.

5) Progressively lower the pump intake down the monitoring well screen while periodically measuring the turbidity of the produced water. Complete at least two minutes of pumping for each 0.3 m of monitoring well screen.

6) Where possible, lower the pump to the bottom of the monitoring well to remove any accumulated fine-grained materials.

7) Continue until you have pumped at least three well volumes from the monitoring well and the turbidity of the produced groundwater stabilizes (i.e., the measured turbidity is within ±10 percent for three successive measurements), up to a maximum of ten well volumes.

8) For low-yield monitoring wells (i.e., monitoring wells with a maximum yield that is less than 0.5 L/min and that go dry during development), purge at least one monitoring well volume.

   Note: It is not necessary for turbidity to stabilize during the development of low-yield monitoring wells.

9) Contain produced groundwater appropriately and characterize it for disposal in accordance with the requirements of the Quality Assurance Program.

REQUIRED DOCUMENTATION

Monitoring well development and the rationale for its conclusion (e.g., turbidity stabilized, ten well volumes purged, or low-yield monitoring well) will be recorded on the field form titled Monitoring Well Development (Appendix C) at the time of well development (O. Reg. 153/04).

REFERENCES

Ontario Regulation 153/04 (Records of Site Condition) (as amended) under the Environmental Protection Act (Ontario).

DOCUMENT CONTROL

Version 1. **Author** E. Hood

Edit 1 Editor : Margaret Shaw Edit Date: November 5, 2010

SOP5-Monitoring Well Development-5Nov10

PURPOSE

Soil logging is conducted while drilling boreholes or excavating test pits whenever information on subsurface conditions is required or when soil samples are to be collected. Soil logging assists in developing a good understanding of the soil, groundwater, and environmental conditions at a site.

LIMITATIONS

This Standard Operating Procedure (SOP) is applicable to the collection of all soil samples. However, site-specific environmental factors and health and safety protocols may preclude the collection of some information.

EQUIPMENT AND MATERIAL SPECIFICATIONS

The sub-contractor may supply various specific soil sampling equipment (e.g., split spoon sampler, liners, augers, etc.).

Any or all of the following equipment may also be required:

- Field screening instruments to test for specific requirements (e.g., headspace screening, in situ density, etc.);
- Measuring tape;
- Sampling tools (e.g., putty knife, trowel, shovel, dredge samplers, or other specific sampling tools);
- Sampling containers (e.g., plastic bags, glass or plastic jars, or other specific sampling containers);
- Labels, markers, pens, and/or pencils for labelling the sample containers; and
- Camera to document the site and/or soil conditions.

Equipment and materials required for standard decontamination procedures of all sampling tools will also be required at sites with known or potential contamination.

FIELD PROCEDURE

When logging soil and/or collecting soil samples, record the following types of information on the standardized, task-specific log appropriate to the job (e.g., borehole log or test pit log).

Record information needed to identify the job, site, and sample location:

- Project number and site identification (e.g., street address, name of site, etc,);
- Date, time and weather conditions;
- Name of person conducting soil logging/ sampling;

- Name of contractor (if used), including type and size of equipment and methodology (e.g., type of drill rig and type and size of sampling equipment, trowel or shovel);
- Sample identification number;
- Location of sample (i.e., the horizontal distance of the testing location from a fixed feature on the site, or relative to a sampling grid, or a cell number, or GPS coordinates, etc.); and
- Measured depth of the sample below ground surface, including the top and bottom of the sample interval.

Record the characteristics of the geologic material encountered or sampled:

- Describe the consistency or compactness, moisture content, colour, grain size, indicators of contamination, and structure (optional). Refer to Golder SOP No. 14 for guidance;
- Record each stratigraphic unit and each zone of inferred contamination;
- Note the characteristics, depth, thickness, and extent of any staining, odours and/or debris. Note that the odour of soil samples should only be recorded if incidentally noticed during the course of typical soil logging activities. Field personnel shall not deliberately smell field samples.
- Describe any evidence of free phase product/sheen.
- Identify any naturally occurring organic matter (e.g., topsoil, peat).
- Identify fill materials.
- Note the type of bedrock (e.g., shale, limestone, etc.) if bedrock is encountered or inferred.

Record the following information related to field measurements and samples:

- Soil vapour headspace screening results if completed (see Golder SOP No. 4);
- Soil moisture content (e.g., dry, damp, wet);
- Wetness on the sampling device, groundwater seepage or accumulation in a borehole or test pit, or any zone of sloughing/collapse in a trench or test pit;
- Recovery of samples (if using split spoon, coring, etc.) as a proportion of the maximum possible (e.g., 22/24 inches);
- Sampling progress and/or difficulties (e.g., drilling refusal, collapsing test pit, etc.)
- Samples submitted for analysis and chemical parameters to be analyzed; and
- Factors that may affect the sample's chemical integrity.

REQUIRED DOCUMENTATION

Soil logging requires that a field record be documented on a standardized task-specific log (e.g., borehole log, test pit log), that can be incorporated into the field file. Refer to Appendix C for standardized field forms.

DOCUMENT CONTROL

Author: Tim Mullings

Edit 1	Editor: Margaret Shaw	Edit Date: November 5, 2010
Edit 2	Editor: Dave Smyth	Edit Date: January 9, 2014

SOP6-Soil Logging.docx

PURPOSE

Groundwater samples are collected to provide information about the chemical composition of the groundwater. Prior to collecting groundwater samples, monitoring wells are purged to remove stagnant water in the monitoring well so that representative groundwater samples may be obtained.

LIMITATIONS

This Standard Operating Procedure (SOP) applies to all groundwater monitoring wells except those containing free product (i.e., either LNAPL or DNAPL). This SOP applies to collection of groundwater for a wide range of analytes. Groundwater sample collection must take place at least 24 hours after monitoring well development (refer to Golder SOP No. 5). However, in high permeability geologic materials, Qualified Persons should consider using professional judgement in adhering to this specific regulatory requirement.

EQUIPMENT AND MATERIAL SPECIFICATIONS

Conventional monitoring-well purging and groundwater sampling requires the following equipment:

- Pump (e.g., dedicated inertial, bladder, centrifugal, or peristaltic) and tubing;

  Note: The pump selected will vary depending upon the depth and diameter of the monitoring well, the transmissivity of the formation and the objectives of the monitoring program;

  For a peristaltic pump, silicone or tygon tubing should be used in the drive head, while high density polyethylene (HDPE) tubing or similar material should be used for sample collection;

- Electric water-level probe;

- Graduated container (e.g., a bucket) for measuring volume of water removed;

- Water quality meter(s) (as a minimum, temperature, pH, and specific conductivity; possibly also dissolved oxygen, redox potential (ORP), and turbidity);

  Note: Water quality meters capable of simultaneously reading multiple water quality parameters, such as Horiba U-22 or YSI 556, and the use of manufactured flow-through cells are recommended;

- 250-mL plastic beaker or a flow-through cell (preferred) for measurement of field indicator parameters; and

- Detailed descriptions of the equipment and material required for most common purging and sampling methods are provided in ASTM 6634-01.

FIELD PROCEDURE

1) Measure and record the depth to water (O. Reg. 153/04).

Note: The monitoring well must be properly developed at least one day prior to groundwater sample collection. Refer to Golder SOP No. 5 (Monitoring Well Development).

2) Calculate the standing volume of water in the monitoring well screen and casing.

3) Set up pump apparatus at monitoring well. If a fuel-powered generator is used, set up generator downwind of monitoring well.

4) Carefully set the pump intake in the screened interval of the monitoring well, at whichever of the following is lower:

- The midpoint of the monitoring well screen; and
- The midpoint of the water column.

Note: Avoid stirring up any accumulated sediment at the base of the monitoring well. An intake that is too low could disturb sediment in the monitoring well, biasing results for analytes that preferentially accumulate in the sediment (e.g., petroleum hydrocarbon compounds (PHCs), semi-volatile organics, volatile organic compounds (VOCs) or metals). The intake depth should be consistent between sampling events for each monitoring well.

5) Secure the pump intake at the required depth.

6) Attach the pump discharge to the flow-through cell and the calibrated field probe(s) to the water quality meter.

7) Re-measure and record the depth to water.

8) Purge three monitoring well volumes from the monitoring well at a constant flow rate that is less than 2 litres per minute (L/min), except at low-yield monitoring wells (see Note, following).

   Note: Avoid excessive agitation of the water column by pumping at a flow rate that does not cause drawdown of the water level below the pump intake. Large drawdown can cause aeration of groundwater, dislodge sediment, and alter the geochemical conditions. If such drawdown occurs, reduce the purging flow rate or use the following alternate procedure for low-yield monitoring wells:

   a. Purge the water level down to the midpoint of the monitoring well screen or the midpoint of the water column (whichever is lower), using a constant flow rate that is less than 2 L/min. To the extent possible, minimize agitation of the water column.

      Note: Low-yield monitoring wells typically yield groundwater at maximum rates that are less than 0.5 L/min. They produce so little water that purging three complete monitoring well volumes prior to sample collection is impractical.

   b. Allow the water level to recover to the extent practical (e.g., until later in the work day).

   c. Purge the water level in the monitoring well down to the top of the monitoring well screen or the midpoint of the water column (whichever is lower) a second time.

9) Perform field measurements of water quality parameters (including, at minimum, temperature, pH, and specific conductivity) in accordance with Golder SOP No. 12 (Measurement of Field Parameters).

10) Minimizing any unnecessary agitation of the groundwater, collect the groundwater samples specified in the work plan (not necessarily the entire list shown here) into pre-cleaned, preserved sample containers in the following order:

    a. Unfiltered analytes, including VOCs, fixed hydrocarbon gases, PHCs, semi-volatiles and other organic contaminants, total organic carbon, and anions; and

    b. Field-filtered analytes, including dissolved metals, mercury, dissolved organic carbon, and alkalinity.

    Note: Samples should be collected in progression beginning with the least contaminated well and ending with the most contaminated wells (if known). For wells where multiple analytes are required, volatile and oxygen-sensitive (e.g., ferrous iron, methane, sulphide) analytes are generally collected first. The sequence in which inorganic analytes are collected is not important, unless field filtration is required (unfiltered analytes collected first, then filtered analytes). Where possible, at least 250 mL water should be processed through the filter prior to sample collection. The details of sample collection and handling requirements are summarized in Table 2 of the Quality Assurance Program.

    Note: Groundwater samples collected for PHC, semi-volatile, VOC or metals analysis should not include visible particulates. Visible particulates can exert a significant positive bias on the reported sample concentrations of these analytes. If visible particulates are present, modify the sample protocol to obtain a sediment-free sample. If collection is impractical, discuss further modification of the sample protocol with the Qualified Person.

11) Carefully pack the samples into a cooler. A trip blank must be placed in each container containing samples for volatile organic compound analysis (O. Reg. 153/04).

12) Maintain the sample temperature at less than 10°C using ice or cold packs, even if samples are to be submitted the same day as collected.

REQUIRED DOCUMENTATION

The methods and results of groundwater sample collection will be recorded on a field form at the time of sample collection (see form titled Groundwater Sample Collection, Appendix C).

REFERENCES

ASTM 6643-01. Standard Guide for the Selection of Purging and Sampling Devices for Groundwater Monitoring Wells.

Ontario Regulation 153/04 (Records of Site Condition) (as amended) under the Environmental Protection Act (Ontario).

DOCUMENT CONTROL

Author: Eric Hood

Edit 1	Editor: Margaret Shaw	Edit Date: November 19, 2010
Edit 2	Editor: Margaret Shaw	Edit Date: December 5, 2010
Edit 3	Editor: Dave Smyth	Edit Date: January 9, 2014

SOP9-Conventional Groundwater Sample Collection.docx

PURPOSE

Where dedicated field sampling equipment cannot be used, sampling equipment must be decontaminated prior to retrieving samples of soil, water or sediment (O. Reg. 153/04). Decontamination is used to reduce the likelihood of cross-contamination between sampling locations.

LIMITATIONS

This Standard Operating Procedure (SOP) applies to field equipment constructed of metallic and synthetic materials that comes in contact with samples that will be submitted for laboratory analysis. It is not intended for use at sites where PCBs, biohazards, or radioactive substances are present.

EQUIPMENT AND MATERIAL SPECIFICATIONS

Equipment decontamination requires the following materials as appropriate to the task:

- Sample containers for the laboratory analysis of rinse water.
- Mechanical cleaning device(s) (e.g., paper towels, bottle brush, broom, pressure washer) to dislodge and remove gross contamination. The cleaning device should be appropriate to the equipment being decontaminated.
- Detergent Solution - laboratory-grade non-phosphate detergent solution (e.g., AlcoNox or LiquiNox) prepared using analyte-free water as per the detergent instructions (typically 1 part detergent to 100 parts water).
- Solvent Rinse Solution - isopropanol, acetone, or methanol (pesticide grade).
- Analyte-free Rinse Water - typically distilled water. To demonstrate that the rinse water is analyte free, a sample of the source water can be submitted for laboratory analysis.
- Labelled squeeze bottles containing prepared decontamination solutions (note: decontamination solutions will be prepared for each sample event and will not be reused at more than one site to avoid cross-contamination). For the decontamination of larger equipment, larger solution containers may be necessary.
- Waste-water collection containers (barrels or pails with sealable lids).

FIELD PROCEDURE

1) Remove gross contamination using brushes or paper towel.
2) At a minimum, sample contacting equipment should be washed with a detergent solution and rinsed with analyte-free water.

3) Wash with detergent solution, using a brush made of inert material to remove any particles or surface film. For equipment that, because of internal mechanism or tubing cannot be adequately cleaned with a brush, the decontamination solutions should be circulated through the equipment.

4) Rinse thoroughly with analyte-free water.

5) If a non-aqueous phase is present, rinse with a solvent solution (may be deleted if samples will not undergo organic chemical analyses).

6) Thoroughly rinse with analyte-free water.

7) Allow equipment to air dry as much as practicable prior to next use.

8) Contain waste decontamination solutions and dispose of them using the same procedure as for other investigation-derived wastes.

9) Collect a rinsate blank for laboratory analysis (O.Reg. 153/04).

The probes of water level meters can be decontaminated using only a detergent wash and a thorough rinse using analyte-free water. If a non-aqueous phase liquid is present, a solvent rinse is required.

REQUIRED DOCUMENTATION

In addition to the documentation requirements of the Golder Quality Assurance Program, the Field Team will document the decontamination procedures, the source and types of solution(s) used for decontamination, and the handling of rinse fluids and accumulated solids, if any.

REFERENCES

ASTM D5088-02 (Reapproved 2008). Standard Practice for Decontamination of Field Equipment Used at Waste Sites.

Ontario Regulation 153/04 (Records of Site Condition) (as amended) under the Environmental Protection Act (Ontario).

DOCUMENT CONTROL

Version 1.	**Author**	BRG	Date May 26, 2010
Edit 1	Editor : Margaret Shaw		Edit Date: November 19, 2010
Edit 2	Editor : Dave Smyth		Edit Date: January 24, 2013

SOP11-Equipment Decontamination.docx

PURPOSE

The purpose of excavating test pits is to visually assess shallow soil condition and to enable the collection of soil samples for further laboratory characterization.

LIMITATIONS

This Standard Operating Procedure (SOP) is applicable to all soil investigations involving shallow excavations for the purpose of collecting subsurface data. This SOP may be used to opportunistically collect environmental data from excavations completed for construction purposes.

EQUIPMENT AND MATERIAL SPECIFICATIONS

Excavating test pits requires excavating equipment. Soil sample collection requires a trowel and decontamination solutions. Additional materials needed for measuring headspace vapour concentrations in the field are described in Golder SOP No. 4 (Soil Headspace Vapour Screening).

FIELD PROCEDURES

1) Complete utility locates.

2) If protecting the ground surface is necessary, set up plastic or wood sheeting on which to place the excavated soil.

Direct the equipment operator to excavate a test pit at the desired location and to the desired depth. For health and safety reasons, entering a test pit that is greater than four feet in depth is not permitted.

3) Direct the equipment operator where to place excavated material.

4) Document the following on the test pit log and, where noted, also on the site plan:

- The general location and orientation of the pit (also on site plan);
- The size of the excavation (length, width, depth below ground surface) (also on site plan);
- The stability of the excavation walls (e.g., stable, collapsing, sloughing, etc.);
- An accurate description of the nature, depth and thickness of each stratigraphic unit and zone of inferred contamination, including comments regarding the homogeneity or heterogeneity of the material encountered;
- The nature, depth, thickness, and extent of any staining, odours, and/or debris;
- The thickness of any natural organic matter (e.g., topsoil, peat, muskeg);
- The depth of water seepage and the depth at which sloughing occurs;

- The depth and nature of fill materials and native soils; and
- Depth and type of bedrock (where applicable) and description of bedrock surface (flat, sloping, irregular, fractured, etc.).

5) Photograph relevant information (e.g., location of test pit, soil conditions in the test pit, etc.) and record explanatory notes.

6) Collect soil samples using a clean gloved hand or sampling device (e.g., trowel) as follows:

- Collect soil samples from the wall of the open test (preferred); however, samples may also be collected from the excavator bucket or from stockpiles of excavated material, depending on the sampling objectives and parameters to be tested.
- When sampling for volatile compounds, ensure samples are collected as soon as possible following excavation of the test pit.
- Prior to collection of each sample, scrape away surface material (e.g., smeared soil) from the selected sampling interval to ensure collection of undisturbed material.
- Collect soil samples from the selected strata and depth intervals based on conditions encountered and objectives of the sampling program.

7) Screen collected samples for organic vapours, if applicable (see Golder SOP No. 4.)

8) Document in the test pit log the sample collection methodology, type of equipment used, and depth from which the samples were collected.

9) Place soil samples in a cooler with ice and a completed chain of custody form, and maintain under chain of custody until released to the analytical laboratory.

10) Upon completion of sampling, instruct the equipment operator to place excavated material back into the test pit in the reverse order to that in which it was removed (where possible) and compact material with the bucket (in lifts if necessary).

11) Measure the location of test pit in relation to a fixed reference point and record the location on the site plan and/or in the field book.

REQUIRED DOCUMENTATION

Information must be recorded on the site plan, in the field book, and on test pit logs, as described in the Field Procedures.

DOCUMENT CONTROL

Author: Sherry Eaton

Edit 1	Editor : Margaret Shaw	Edit Date: November 19, 2010
Edit 2	Editor : Dave Smyth	Edit Date: January 9, 2014

SOP13-Test Pitting.doc

PURPOSE

This procedure provides a systematic guide for general use in classifying soils and describing their characteristics. The classification scheme is suitable for both geotechnical and environmental purposes.

LIMITATIONS

This Standard Operating Procedure (SOP) requires the classification of samples of geologic materials encountered during an investigation. The Ontario Ministry of the Environment site condition standards are applicable to soil as it is defined in O. Reg 153/04, that is, as "unconsolidated naturally occurring mineral particles and other naturally occurring material resulting from the natural breakdown of rock or organic matter by physical, chemical or biological processes that are smaller than 2 millimetres in size or that pass the US #10 sieve" (O. Reg. 153/04).

For the purpose of this SOP, all types of unconsolidated geologic materials are subject to the requirements of this procedure even though some of these geologic materials (most gravel, all cobbles, and all boulders) do not meet the O. Reg. 153/04 definition of soil. For the purpose of this SOP, the term "soil" will be understood to apply to all unconsolidated geologic materials.

EQUIPMENT AND MATERIAL SPECIFICATIONS

Practitioners who have not memorized the various classifications presented in this SOP will need the classifications at hand when they classify and describe the soils. Other equipment and material are as follows:

- Hand lens;
- Grain size guide; and
- Plastic bags (optional; use if submitting samples for grain size analysis).

FIELD PROCEDURE

1.0 GENERAL

Where possible, use the following convention for the description and classification of soils encountered (terms are defined in subsequent sections):

Item/Parameter	
1) USCS Group Symbol – BLOCK LETTERS.	Based on particle size and plasticity
2) Soil Group Name; e.g., CLAYEY SILT- with the Group Name in BLOCK LETTERS.	
3) Description of Primary Components; Particle size, grading (for sands	

Item/Parameter	
and gravels containing <12% fines) and shape (optional) for coarse-grained soils. Optional for fine-grained soils as plasticity is captured in the USCS Group Symbol.	
4) Description of Secondary components; with an estimate of their percentage (optional), and giving their particle size for coarse-grained secondary constituents or plasticity for fine-grained secondary constituents.	
5) Other minor components.	
6) Colour.	General characteristics
7) Structure (if appropriate); e.g., fissuring & cementation.	
8) Contamination (if applicable), staining and odour.	
9) Additional observations; Presence of cobbles/boulders, origin or geological notes (FILL, Glacial Till, Alluvium, etc.) or mineralogy (i.e., calcareous, micaceous) if appropriate.	
10) Behaviour (non-cohesive or cohesive).	Material bulk behaviour characteristics
11) Field Moisture Condition (non-cohesive soils). Water Content (cohesive soils).	
12) Compactness (non-cohesive soils). Consistency (cohesive soils).	

- The order does not necessarily infer the relative importance of each item/parameter. The order reflects a systematic way of describing materials and an order compatible with reporting formats.
- Record the soil or sample description in the above-noted manner on the appropriate field form.
- When in doubt as to whether observations may be useful, document them.
- Collect additional sample volume, if warranted or as required by the sampling plan, to conduct grain size analysis or other physical tests.

2.0 CLASSIFYING ACCORDING TO GRAIN SIZE AND PLASTICITY

1) Observe the soil and, with reference to the following chart, classify the soil according to its predominant grain size:

Grain Size	Particle Size (in millimetres)/Identification
BOULDER	Larger than 300
COBBLE	75 to 300
GRAVEL Coarse Fine	4.75 to 75 19 to 75 4.75 to 19
SAND Coarse Medium Fine	0.075 to 4.75 2.00 to 4.75 0.425 to 2.00 0.075 to 0.425
SILT and CLAY	< 0.075 Classified on the basis of their plasticity instead of grain size SILT - (Plasticity Index and Liquid Limit plot below A-Line on Plasticity Chart below) CLAY - (Plasticity Index and Liquid Limit plot above A-Line on Plasticity Chart below)

Note: Use a hand lens and grain size guide to assist in determining the grain size fractions present in the sample.

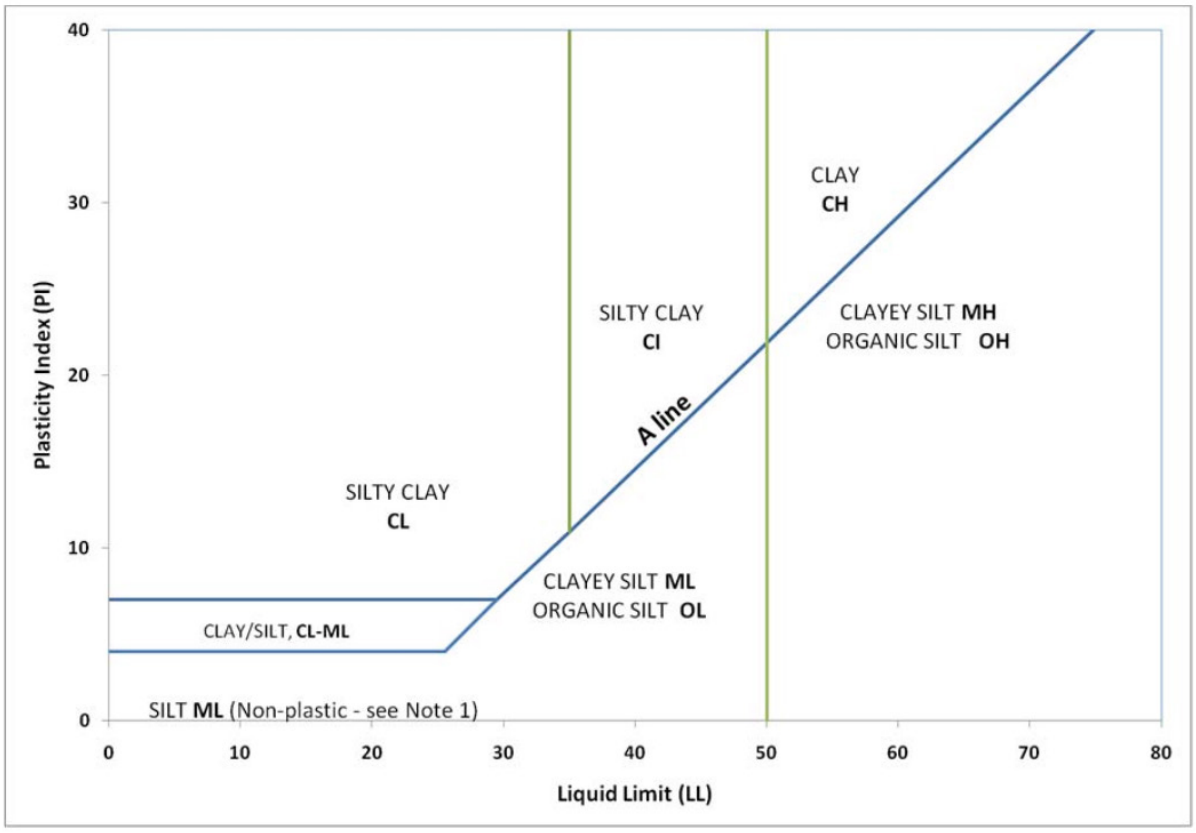


Figure: Plasticity Index vs. Liquid Limit Chart

2) Estimate the proportions of minor or secondary constituents present, and describe them using the following terms:

Modifiers for Secondary and Minor Constituents

Components	% (by mass)	Modifier
Minor	≤5	Use "trace" or omit.
	5 to 12	Use "some."
Secondary	12 to 35	Prefix primary soil name with "gravelly, sandy, SILTY or CLAYEY" as applicable. Note that the terms SILTY or CLAYEY are prescribed based on behaviour and not particle size.
	>35	Use 'and' to combine major constituents (i.e., SAND and GRAVEL, SAND and SILT, SILTY CLAY and SAND).

Note: When mixtures of grain sizes are present, the predominant particle size determines the soil type, while the relative predominance of other particle sizes modifies the description. The predominant soil type is written in block (upper case) letters (e.g., sandy GRAVEL with some silt; silty CLAY, coarse SAND with some cobbles)

3) If appropriate or if prescribed by the sampling and analysis plan, collect approximately 500 mL to 1 L of sample in a plastic bag and submit it for grain size analysis to confirm that descriptions of soil type and relative percentages are accurate.

3.0 DESCRIBING SOIL COLOUR

Colour may be an important indicator of soil properties or subsurface conditions. Organic soils are often indicated both by colour and odour. In temperate climates where chemical weathering and oxidization is not rapid, the change of soils from brown tones to grey is an indicator of the historical groundwater level.

Observe and record the colour of freshly broken sample or fresh exposure as follows:

a. In most cases, only the primary colour modified, if appropriate, by a single adjective need be used (e.g., grey, dark grey, oxidized red-brown).

b. If individual sample(s) contains layers or zones of varying colour, include this detail in the description of each individual sample, but do not necessarily repeat it in the summary description of the overall deposit.

c. Describe soil colour as "mottled" if there are localized spots, streaks, or splotches of one or more different colours or shades within a soil mass of another predominant colour.

4.0 DESCRIBING SOIL STRUCTURE (OPTIONAL)

Structure is the term applied to features or discontinuities within the overall soil mass. Structure is often an indication of the method of deposition or geologic history of the soil. Most importantly, the structure may greatly change the characteristics of the soil mass from that indicated by individual samples.

Soil structure must be noted in the field as the structure evident in soil samples is often lost during transportation. Soil structures greater in size than that visible in borehole samples can be more evident in test pit investigations, in construction excavations and in tunnels; where evident, the soil structure, size, orientation and dip direction should be noted. The following terms are used in describing soil structure:

4.1 Zoning

Zoning

Term	Description
Heterogeneous	Soil mass is of non-uniform, variable composition or structure.
Homogeneous	Soil mass is of uniform composition or structure.
Repetitive Structures	
Laminated	Closely spaced, alternating layers of differing soils and/or differing colours or shades of soils of similar gradation, usually arranged in a regular pattern. The following terms may be used: ■ Thinly laminated – mean spacing under 6 mm ■ Thickly laminated – 6 mm to 20 mm
Stratified or Layered	Differing soils or visible variations in soil constituents or colour arranged in layers, generally but not necessarily parallel to one another. The following terms may be used: ■ Very thinly bedded – 20 mm to 60 mm ■ Thinly bedded – 60 mm to 200 mm ■ Medium bedded – 200 mm to 600 mm ■ Thickly bedded – 600 mm to 2 m ■ Very thickly bedded – over 2 m
Varved	A laminated soil consisting of two distinct soils (usually clay and silt) occurring in a regularly repeating pattern resulting from seasonal variations in sediment load in a lacustrine environment.
Discrete layers or features	
Lens	An inclusion of a different soil type within surrounding soils, which thins out laterally (horizontally) and may not be continuous over any significant distance. Typically identified by test pits or correlation between boreholes.
Parting	Paper thin separation of one soil type by another. Usually applied to fine-grained soils.

Term	Description
Pocket	A different soil type of very limited thickness or lateral extent (a small lens).
Seam	A soil layer of considerable extent but with a thickness of less than about 10 mm.

4.2 Fissures

Fissured: Generally applied to dried or overconsolidated fine-grained soils (silts and clays) containing cracks or physical discontinuities which can be vertical, horizontal or inclined. Fissuring is indicated when otherwise strong soil breaks along definite or pre-existing fracture planes. The degree of fissuring may be described as:

- Highly fissured – fissures spaced 10 mm or closer over most of the interval described.
- Moderately fissured – two or more fissures occur per 150 mm length of sample or exposure.
- Slightly fissured – only random, infrequent and narrow fissures (average distance between fissures consistently greater than 75 mm).

Friable, Blocky, Platy: Otherwise cohesive soil breaks into small (friable), larger (blocky) or thin, plate like (platy) fragments with little effort.

Slickensided: Polished or striated surfaces resulting from movement of a material block relative to the adjacent block(s), often an indication of an existing failure or slip surface. If continuous slickensided shear zones are found, an estimate should be made of their angle in relation to the horizontal plane.

4.3 Cementation

Soils or defects within soils may be held together by cementing materials, often chemical precipitates or deposits within the overall soil mass.

If the cementing agent allows fracturing by hand of the particle aggregations when saturated, it is described as weakly cemented.

The nature of the cementing agent should be identified if possible from its appearance, strength, reaction to acid, etc.

4.4 Other Defects

Other defects to be noted may include:

- Roots;
- Root holes or tubes (hollow);
- Tube casts (solid material filling old tube); and

- Surface cracks.

5.0 DESCRIBING INDICATORS OF CONTAMINATION

1) If indicators of contamination are present, describe them in as much detail as possible, as these descriptions may assist in the selection of samples for laboratory analysis, in the location of potentially contaminated zones at other testing locations, or during future excavations. Specific indicators of the presence of contamination may include the following:

   - An unusual or distinctive colour (e.g., black, dark brown, red);
   - Staining or residues;
   - Diesel, oil, tar, or other non-aqueous products present in the pore spaces (may present staining or greasiness on gloves or sample containers);
   - A sheen on free water, if free water is present;
   - The results of headspace screening performed with an appropriate field instrument (e.g., combustible gas detector, photoionization detector);
   - Distinctive odour; and
   - Flakes, fragments, or pieces of foreign substances or debris such as metal, paint, brick, or wood waste. A distinction should be made between natural wood debris (e.g., twigs and branches) and man-made wood waste (e.g., wood chips and dimensional lumber);

2) Where appropriate, include the following detail:

   - Relative proportion, quantity, and size of foreign substances or debris;
   - Consistency of foreign matter (e.g., viscous, dry, powdery); and
   - Particular characteristics (e.g., quality of an odour; is it similar to something commonly encountered?)

Note: the odour of soil samples should only be recorded if incidentally noticed during the course of typical soil sampling activities. **Field personnel shall not deliberately smell field samples.** As odours are subjective, the description of any incidental odours that are noted should be kept simple.

6.0 DESCRIBING COHESIVENESS

The word cohesive usually describes a soil which has an undrained shear strength measured in an unconfined compression test.

In practical terms, cohesive soils are those which remain intact when rolled between the fingers (i.e., stick together when wet).

Non-cohesive (cohesionless or non-plastic) soils may include both coarse-grained and/or fine-grained constituents, and are soils that fall apart when not confined.

The behaviour will be obvious for some materials. For example, coarse-grained soils with less than 12% fines will always be non-cohesive, and high plasticity clay containing less than 12% coarse particles will always be cohesive. The behaviour of materials containing mixtures of constituents is often not implicit in the classification.

For materials where the behaviour is not implicit, the field logs and records of boreholes shall identify whether the soil mass (after removing cobbles and boulders) is cohesive or non-cohesive.

7.0 DESCRIBING FIELD MOISTURE CONTENT / WATER CONTENT

The following terms are used to describe the field moisture condition of non-cohesive soils.

Non-cohesive Soils - Field Moisture Condition

Term	Abbreviation	Description
Dry	D	Soil flows freely through fingers.
Moist	M	Soils are darker than in the dry condition and may feel cool.
Wet	W	As moist, but with free water forming on hands when handled.

The water content (w) of cohesive soils is described relative to the Plastic Limit (PL) using the following terms:

Cohesive Soils – Water Content

Term	Description
w<PL	Material is drier than the plastic limit (cannot be rolled to a thread of 4 mm).
w~PL	Material is close to the plastic limit (can be rolled a thread of between 2 mm and 4 mm).
w>PL	Material is wetter than the plastic limit (can be rolled to a thread of less than 2 mm).

8.0 DESCRIBING CONSISTENCY OR COMPACTNESS

There are two ways of determining consistency or compactness:

- From examination of undisturbed samples, for example, those taken from test pit excavations or Shelby tubes; or
- From the blow count obtained in standard penetration tests. A standard penetration test is conducted during drilling using a 5-cm OD split spoon sampler. It consists of repeatedly raising and dropping a 140-lb hammer (around the collar of the sampler rod) 30 cm and counting the number of blows required to advance the rod 15 cm.

8.1 Non-cohesive soils – Compactness

Compactness of Non-cohesive Soils

Description	SPT 'N' (blows/0.3m)	Field Identification of Soil Exposures
Very Loose	0 - 4	Easily penetrated with shovel handle.
Loose	4 – 10	Easily penetrated with 12 mm rebar pushed by hand. Easily excavated with hand shovel.
Compact	10 - 30	Easily penetrated with 12 mm rebar driven with 2.5 kg hammer. Difficult to excavate with hand shovel.
Dense	30 – 50	Penetrated 300 mm with driven rebar. Must be loosened with pick to excavate.
Very Dense	>50	Penetrated only a few inches with driven rebar. Very difficult to excavate even with pick.

Notes:

1) SPT 'N' in accordance with ASTM D 1586, uncorrected for overburden pressure effects or energy transfer. Different hammer weights, sampler size and sampler fall will result in a different correlation of blow counts to compactness descriptions.

2) Definition of compactness descriptions based on SPT 'N' ranges from Terzaghi and Peck (1967) – can be assumed to correspond to typical average N60 values (i.e., they are representative of tests where the average energy transferred by the hammer to the split spoon sampler is about 60% of the theoretical free-fall energy of the hammer).

3) Coarse gravel and cobbles, in particular, can result in high 'N' values that are not representative of the compactness condition and the Corresponding 'N' values should not be used to describe the compactness condition.

3) Heaving sands will result in low SPT values not representative of in-situ conditions.

8.2 Cohesive Soils – Consistency

Consistency of Cohesive Soils

Description	Field Identification	Undrained Shear Strength (kPa)	Unconfined Compressive Strength (kPa)	SPT 'N' (blows/0.3m)
Very Soft	Extrudes between fingers when squeezed	<12	<25	0 to 2
Soft	Moulded by light finger pressure	12 to 25	25 to 50	2 to 4
Firm	Moulded by strong finger pressure	25 to 50	50 to 100	4 to 8
Stiff	Indented by thumb	50 to 100	100 to 200	8 to 15
Very Stiff	Indented by thumbnail	100 to 200	200 to 400	15 to 30
Hard	Difficult to indent with thumbnail	>200	>400	>30

Notes:

1) SPT 'N' in accordance with ASTM D 1586, uncorrected for overburden pressure effects or energy transfer. Different hammer weights, sampler size and sampler fall will result in a different correlation of blow counts to consistency descriptions.

2) Undrained Shear Strength equals one-half the Unconfined Compressive Strength (UCS).

3) 'N' values should be considered ONLY an approximate guide to consistency.

REQUIRED DOCUMENTATION

Soil classification and description will be recorded on the appropriate field log (e.g., borehole log, test pit log) (see Appendix C).

REFERENCES

ASTM D1586-11 Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils

Golder Associates Ltd. Technical Procedure – GAL Soil Classification System, Rev 0, September 20, 2011.

Ontario Regulation 153/04 (Records of Site Condition) (as amended) under the Environmental Protection Act (Ontario).

Terzaghi and Peck (1967), Soil mechanics in engineering practice.

DOCUMENT CONTROL

Author: Tim Mullings

Edit 1	Editor: Margaret Shaw	Edit Date: November 24, 2010
Edit 2	Editor: Dave Smyth	Edit Date: January 9, 2014

SOP14-Soil Classification.docx

APPENDIX B

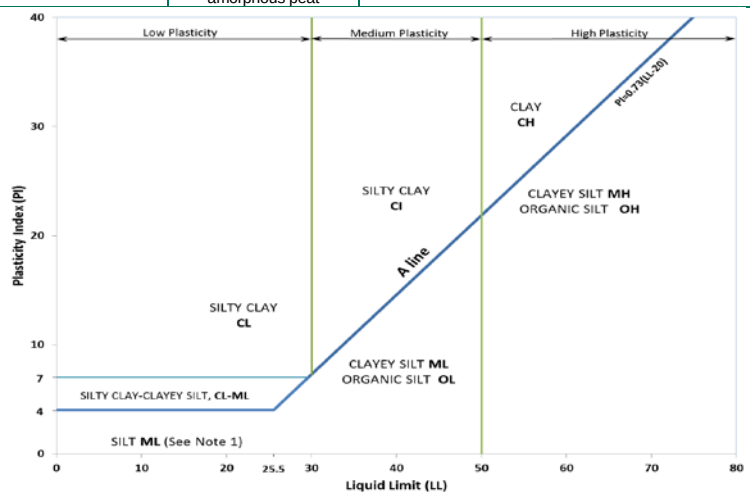
Record of Borehole and Test Pit Logs

METHOD OF SOIL CLASSIFICATION

The Golder Associates Ltd. Soil Classification System is based on the Unified Soil Classification System (USCS)

Organic or Inorganic	Soil Group	Type of Soil		Gradation or Plasticity	$Cu = \frac{D_{60}}{D_{10}}$	$Cc = \frac{(D_{30})^2}{D_{10} x D_{60}}$	Organic Content	USCS Group Symbol	Group Name
INORGANIC (Organic Content ≤30% by mass)	COARSE-GRAINED SOILS (>50% by mass is larger than 0.075 mm)	GRAVELS (>50% by mass of coarse fraction is larger than 4.75 mm)	Gravels with ≤12% fines (by mass)	Poorly Graded	<4	≤1 or ≥3	≤30%	GP	GRAVEL
				Well Graded	≥4	1 to 3		GW	GRAVEL
			Gravels with >12% fines (by mass)	Below A Line	n/a			GM	SILTY GRAVEL
				Above A Line	n/a			GC	CLAYEY GRAVEL
		SANDS (≥50% by mass of coarse fraction is smaller than 4.75 mm)	Sands with ≤12% fines (by mass)	Poorly Graded	<6	≤1 or ≥3		SP	SAND
				Well Graded	≥6	1 to 3		SW	SAND
			Sands with >12% fines (by mass)	Below A Line	n/a			SM	SILTY SAND
				Above A Line	n/a			SC	CLAYEY SAND

Organic or Inorganic	Soil Group	Type of Soil		Laboratory Tests	Field Indicators: Dilatancy	Dry Strength	Shine Test	Thread Diameter	Toughness (of 3 mm thread)	Organic Content	USCS Group Symbol	Primary Name
INORGANIC (Organic Content ≤30% by mass)	FINE-GRAINED SOILS (≥50% by mass is smaller than 0.075 mm)	SILTS (Non-Plastic or PI and LL plot below A-Line on Plasticity Chart below)		Liquid Limit <50	Rapid	None	None	>6 mm	N/A (can't roll 3 mm thread)	<5%	ML	SILT
					Slow	None to Low	Dull	3mm to 6 mm	None to low	<5%	ML	CLAYEY SILT
					Slow to very slow	Low to medium	Dull to slight	3mm to 6 mm	Low	5% to 30%	OL	ORGANIC SILT
				Liquid Limit ≥50	Slow to very slow	Low to medium	Slight	3mm to 6 mm	Low to medium	<5%	MH	CLAYEY SILT
					None	Medium to high	Dull to slight	1 mm to 3 mm	Medium to high	5% to 30%	OH	ORGANIC SILT
		CLAYS (PI and LL plot above A-Line on Plasticity Chart below)		Liquid Limit <30	None	Low to medium	Slight to shiny	~ 3 mm	Low to medium	0% to 30% (see Note 2)	CL	SILTY CLAY
				Liquid Limit 30 to 50	None	Medium to high	Slight to shiny	1 mm to 3 mm	Medium		CI	SILTY CLAY
				Liquid Limit ≥50	None	High	Shiny	<1 mm	High		CH	CLAY
HIGHLY ORGANIC SOILS (Organic Content >30% by mass)		Peat and mineral soil mixtures								30% to 75%	PT	SILTY PEAT, SANDY PEAT
		Predominantly peat, may contain some mineral soil, fibrous or amorphous peat								75% to 100%		PEAT



Note 1 – Fine grained materials with PI and LL that plot in this area are named (ML) SILT with slight plasticity. Fine-grained materials which are non-plastic (i.e. a PL cannot be measured) are named SILT.
Note 2 – For soils with <5% organic content, include the descriptor "trace organics" for soils with between 5% and 30% organic content include the prefix "organic" before the Primary name.

Dual Symbol — A dual symbol is two symbols separated by a hyphen, for example, GP-GM, SW-SC and CL-ML.
For non-cohesive soils, the dual symbols must be used when the soil has between 5% and 12% fines (i.e. to identify transitional material between "clean" and "dirty" sand or gravel.
For cohesive soils, the dual symbol must be used when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart (see Plasticity Chart at left).

Borderline Symbol — A borderline symbol is two symbols separated by a slash, for example, CL/CI, GM/SM, CL/ML.
A borderline symbol should be used to indicate that the soil has been identified as having properties that are on the transition between similar materials. In addition, a borderline symbol may be used to indicate a range of similar soil types within a stratum.

ABBREVIATIONS AND TERMS USED ON RECORDS OF BOREHOLES AND TEST PITS

PARTICLE SIZES OF CONSTITUENTS

Soil Constituent	Particle Size Description	Millimetres	Inches (US Std. Sieve Size)
BOULDERS	Not Applicable	>300	>12
COBBLES	Not Applicable	75 to 300	3 to 12
GRAVEL	Coarse Fine	19 to 75 4.75 to 19	0.75 to 3 (4) to 0.75
SAND	Coarse Medium Fine	2.00 to 4.75 0.425 to 2.00 0.075 to 0.425	(10) to (4) (40) to (10) (200) to (40)
SILT/CLAY	Classified by plasticity	<0.075	< (200)

MODIFIERS FOR SECONDARY AND MINOR CONSTITUENTS

Percentage by Mass	Modifier
>35	Use 'and' to combine major constituents (*i.e.,* SAND and GRAVEL, SAND and CLAY)
> 12 to 35	Primary soil name prefixed with "gravelly, sandy, SILTY, CLAYEY" as applicable
> 5 to 12	some
≤ 5	trace

PENETRATION RESISTANCE

Standard Penetration Resistance (SPT), N:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) required to drive a 50 mm (2 in.) split-spoon sampler for a distance of 300 mm (12 in.).

Cone Penetration Test (CPT)

An electronic cone penetrometer with a 60° conical tip and a project end area of 10 cm^2 pushed through ground at a penetration rate of 2 cm/s. Measurements of tip resistance (q_t), porewater pressure (u) and sleeve frictions are recorded electronically at 25 mm penetration intervals.

Dynamic Cone Penetration Resistance (DCPT); N_d:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive uncased a 50 mm (2 in.) diameter, 60° cone attached to "A" size drill rods for a distance of 300 mm (12 in.).

PH: Sampler advanced by hydraulic pressure
PM: Sampler advanced by manual pressure
WH: Sampler advanced by static weight of hammer
WR: Sampler advanced by weight of sampler and rod

SAMPLES

AS	Auger sample
BS	Block sample
CS	Chunk sample
DO or DP	Seamless open ended, driven or pushed tube sampler – note size
DS	Denison type sample
FS	Foil sample
GS	Grab Sample
RC	Rock core
SC	Soil core
SS	Split spoon sampler – note size
ST	Slotted tube
TO	Thin-walled, open – note size
TP	Thin-walled, piston – note size
WS	Wash sample

SOIL TESTS

w	water content
PL , w_p	plastic limit
LL , w_L	liquid limit
C	consolidation (oedometer) test
CHEM	chemical analysis (refer to text)
CID	consolidated isotropically drained triaxial test[1]
CIU	consolidated isotropically undrained triaxial test with porewater pressure measurement[1]
D_R	relative density (specific gravity, Gs)
DS	direct shear test
GS	specific gravity
M	sieve analysis for particle size
MH	combined sieve and hydrometer (H) analysis
MPC	Modified Proctor compaction test
SPC	Standard Proctor compaction test
OC	organic content test
SO_4	concentration of water-soluble sulphates
UC	unconfined compression test
UU	unconsolidated undrained triaxial test
V (FV)	field vane (LV-laboratory vane test)
γ	unit weight

1. Tests which are anisotropically consolidated prior to shear are shown as CAD, CAU.

NON-COHESIVE (COHESIONLESS) SOILS

Compactness[2]

Term	SPT 'N' (blows/0.3m)[1]
Very Loose	0 - 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	>50

1. SPT 'N' in accordance with ASTM D1586, uncorrected for overburden pressure effects.
2. Definition of compactness descriptions based on SPT 'N' ranges from Terzaghi and Peck (1967) and correspond to typical average N_{60} values.

Field Moisture Condition

Term	Description
Dry	Soil flows freely through fingers.
Moist	Soils are darker than in the dry condition and may feel cool.
Wet	As moist, but with free water forming on hands when handled.

COHESIVE SOILS

Consistency

Term	Undrained Shear Strength (kPa)	SPT 'N'[1,2] (blows/0.3m)
Very Soft	<12	0 to 2
Soft	12 to 25	2 to 4
Firm	25 to 50	4 to 8
Stiff	50 to 100	8 to 15
Very Stiff	100 to 200	15 to 30
Hard	>200	>30

1. SPT 'N' in accordance with ASTM D1586, uncorrected for overburden pressure effects; approximate only.
2. SPT 'N' values should be considered ONLY an approximate guide to consistency; for sensitive clays (e.g., Champlain Sea clays), the N-value approximation for consistency terms does NOT apply. Rely on direct measurement of undrained shear strength or other manual observations.

Water Content

Term	Description
w < PL	Material is estimated to be drier than the Plastic Limit.
w ~ PL	Material is estimated to be close to the Plastic Limit.
w > PL	Material is estimated to be wetter than the Plastic Limit.

LIST OF SYMBOLS

Unless otherwise stated, the symbols employed in the report are as follows:

I.	**GENERAL**
π	3.1416
ln x	natural logarithm of x
$\log_{10}$	x or log x, logarithm of x to base 10
g	acceleration due to gravity
t	time
II.	**STRESS AND STRAIN**
γ	shear strain
Δ	change in, e.g. in stress: $\Delta\sigma$
ε	linear strain
ε_v	volumetric strain
η	coefficient of viscosity
υ	Poisson's ratio
σ	total stress
σ'	effective stress ($\sigma' = \sigma - u$)
σ'_{vo}	initial effective overburden stress
$\sigma_1, \sigma_2, \sigma_3$	principal stress (major, intermediate, minor)
σ_{oct}	mean stress or octahedral stress $= (\sigma_1 + \sigma_2 + \sigma_3)/3$
τ	shear stress
u	porewater pressure
E	modulus of deformation
G	shear modulus of deformation
K	bulk modulus of compressibility
III.	**SOIL PROPERTIES**
(a)	**Index Properties**
$\rho(\gamma)$	bulk density (bulk unit weight)*
$\rho_d(\gamma_d)$	dry density (dry unit weight)
$\rho_w(\gamma_w)$	density (unit weight) of water
$\rho_s(\gamma_s)$	density (unit weight) of solid particles
γ'	unit weight of submerged soil ($\gamma' = \gamma - \gamma_w$)
D_R	relative density (specific gravity) of solid particles ($D_R = \rho_s / \rho_w$) (formerly G_s)
e	void ratio
n	porosity
S	degree of saturation

* Density symbol is ρ. Unit weight symbol is γ where $\gamma = \rho g$ (i.e. mass density multiplied by acceleration due to gravity)

(a)	**Index Properties (continued)**
w	water content
w_l or LL	liquid limit
w_p or PL	plastic limit
I_p or PI	plasticity index = $(w_l - w_p)$
w_s	shrinkage limit
I_L	liquidity index = $(w - w_p) / I_p$
I_C	consistency index = $(w_l - w) / I_p$
e_{max}	void ratio in loosest state
e_{min}	void ratio in densest state
I_D	density index = $(e_{max} - e) / (e_{max} - e_{min})$ (formerly relative density)
(b)	**Hydraulic Properties**
h	hydraulic head or potential
q	rate of flow
v	velocity of flow
i	hydraulic gradient
k	hydraulic conductivity (coefficient of permeability)
j	seepage force per unit volume
(c)	**Consolidation (one-dimensional)**
C_c	compression index (normally consolidated range)
C_r	recompression index (over-consolidated range)
C_s	swelling index
C_α	secondary compression index
m_v	coefficient of volume change
c_v	coefficient of consolidation (vertical direction)
c_h	coefficient of consolidation (horizontal direction)
T_v	time factor (vertical direction)
U	degree of consolidation
σ'_p	pre-consolidation stress
OCR	over-consolidation ratio = σ'_p / σ'_{vo}
(d)	**Shear Strength**
τ_p, τ_r	peak and residual shear strength
ϕ'	effective angle of internal friction
δ	angle of interface friction
μ	coefficient of friction = tan δ
c'	effective cohesion
c_u, s_u	undrained shear strength ($\phi = 0$ analysis)
p	mean total stress $(\sigma_1 + \sigma_3)/2$
p'	mean effective stress $(\sigma'_1 + \sigma'_3)/2$
q	$(\sigma_1 - \sigma_3)/2$ or $(\sigma'_1 - \sigma'_3)/2$
q_u	compressive strength $(\sigma_1 - \sigma_3)$
S_t	sensitivity

Notes: 1 $\tau = c' + \sigma' \tan \phi'$

2 shear strength = (compressive strength)/2

LITHOLOGICAL AND GEOTECHNICAL ROCK DESCRIPTION TERMINOLOGY

WEATHERINGS STATE

Fresh: no visible sign of rock material weathering.

Faintly weathered: weathering limited to the surface of major discontinuities.

Slightly weathered: penetrative weathering developed on open discontinuity surfaces but only slight weathering of rock material.

Moderately weathered: weathering extends throughout the rock mass but the rock material is not friable.

Highly weathered: weathering extends throughout rock mass and the rock material is partly friable.

Completely weathered: rock is wholly decomposed and in a friable condition but the rock and structure are preserved.

BEDDING THICKNESS

Description	Bedding Plane Spacing
Very thickly bedded	Greater than 2 m
Thickly bedded	0.6 m to 2 m
Medium bedded	0.2 m to 0.6 m
Thinly bedded	60 mm to 0.2 m
Very thinly bedded	20 mm to 60 mm
Laminated	6 mm to 20 mm
Thinly laminated	Less than 6 mm

JOINT OR FOLIATION SPACING

Description	Spacing
Very wide	Greater than 3 m
Wide	1 m to 3 m
Moderately close	0.3 m to 1 m
Close	50 mm to 300 mm
Very close	Less than 50 mm

GRAIN SIZE

Term	Size*
Very Coarse Grained	Greater than 60 mm
Coarse Grained	2 mm to 60 mm
Medium Grained	60 microns to 2 mm
Fine Grained	2 microns to 60 microns
Very Fine Grained	Less than 2 microns

Note: * Grains greater than 60 microns diameter are visible to the naked eye.

CORE CONDITION

Total Core Recovery (TCR)
The percentage of solid drill core recovered regardless of quality or length, measured relative to the length of the total core run.

Solid Core Recovery (SCR)
The percentage of solid drill core, regardless of length, recovered at full diameter, measured relative to the length of the total core run.

Rock Quality Designation (RQD)
The percentage of solid drill core, greater than 100 mm length, as measured along the centerline axis of the core, relative to the length of the total core run. RQD varies from 0% for completely broken core to 100% for core in solid segments.

DISCONTINUITY DATA

Fracture Index
A count of the number of naturally occuring discontinuities (physical separations) in the rock core. Mechanically induced breaks caused by drilling are not included.

Dip with Respect to Core Axis
The angle of the discontinuity relative to the axis (length) of the core. In a vertical borehole a discontinuity with a 90° angle is horizontal.

Description and Notes
An abbreviation description of the discontinuities, whether naturally occurring separations such as fractures, bedding planes and foliation planes and mechanically separated bedding or foliation surfaces. Additional information concerning the nature of fracture surfaces and infillings are also noted.

Abbreviations

JN	Joint	PL	Planar
FLT	Fault	CU	Curved
SH	Shear	UN	Undulating
VN	Vein	IR	Irregular
FR	Fracture	K	Slickensided
SY	Stylolite	PO	Polished
BD	Bedding	SM	Smooth
FO	Foliation	SR	Slightly Rough
CO	Contact	RO	Rough
AXJ	Axial Joint	VR	Very Rough
KV	Karstic Void		
MB	Mechanical Break		

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: __

N:\Active\2015\3 Proj\1525113 Regional Oblates Brownfields 175 Main St\04_Reporting\06 - RSC 2 Phase II ESA\Appendix B- BH and TP logs\1525113 Record of Test Pit Nov Dec 2015.doc

Test Pit Number	Ground Surface Elevation (masl)	Depth (mbgs)	Decscription	Parameters Analyzed
TP16-301	64.74	0.0 – 0.7 0.7 – 1.7 1.7 – 2.1	Dark brown silty sand with organics (top soil) Brown sand FILL Grey brown native CLAY End of Test Pit Note: Test pit dry upon completion.	Metals and PAHs (0.8 mbgs)
TP16-302	64.78	0.0 – 0.7 0.7 – 1.6 1.6 – 2.1	Dark brown silty sand with organics (top soil) Brown sand FILL Grey brown native CLAY End of Test Pit Note: Test pit dry upon completion.	Metals and PAHs (0.8 mbgs)
TP16-303	64.53	0.0 – 0.6 0.6 – 1.4 1.4 – 2.0	Dark brown silty sand with organics (top soil) Brown sand FILL Grey brown native CLAY End of Test Pit Note: Test pit dry upon completion.	Metals and PAHs (1.0 mbgs)

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

Logged by: AB

Checked by: TL

\\golder.gds\gal\Ottawa\Active\2015\3 Proj\1525113 Regional Oblates Brownfields 175 Main St\04_Reporting\09 - RSC 3 - Phase II ESA\Appendix B BH AND TP Logs\2a_1525113 Record of Test Pit TP16-300 series July 2016.doc

Test Pit Number	Ground Surface Elevation (masl)	Depth (mbgs)	Decscription	Parameters Analyzed
TP16-602	64.40	0.0 – 0.4 0.4 – 1.6 1.6 – 2.3	Dark brown silty sand, trace organics (FILL) Brown sand FILL Brown sandy CLAY End of Test Pit Note: Test pit dry upon completion.	None
TP16-603	62.28	0.0 – 0.4 0.4 – 0.6 0.6 – 1.4	Dark brown silty sand, trace organics trace bricks (FILL) Brown sand FILL Brown sandy CLAY End of Test Pit Note: Test pit dry upon completion.	None
TP16-604	59.77	0.0 – 1.0 1.0 – 1.2 1.2 – 1.4	Dark brown silty sand, trace organics (FILL) Brown sand FILL Brown sandy CLAY End of Test Pit Note: Test pit dry upon completion.	None
TP16-605	59.33	0.0 – 0.6 0.6 – 1.4 1.4 – 2.5	Dark brown silty sand, trace organics trace bricks (FILL) Brown sand FILL Grey silty CLAY	None

Test Pit Number	Ground Surface Elevation (masl)	Depth (mbgs)	Decscription	Parameters Analyzed
			End of Test Pit Note: Test pit dry upon completion.	
TP16-606	58.78	0.0 – 0.35 0.35 – 1.65 1.65 – 2.1	Dark brown silty sand with concrete, trace organics (FILL) Brown silty sand FILL Brown sandy CLAY End of Test Pit Note: Test pit dry upon completion.	None
TP16-607	58.65	0.0 – 0.35 0.35 – 1.40 1.40 –1.7 1.7 – 2.45	Dark brown silty sand, trace organics (FILL) Brown sand and gravel FILL Brown silty sand FILL Brown sandy 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: AB

Checked by: TL

\\golder.gds\gal\Ottawa\Active\2015\3 Proj\1525113 Regional Oblates Brownfields 175 Main St\04_Reporting\09 - RSC 3 - Phase II ESA\Appendix B BH AND TP Logs\2b_1525113 Record of Test Pit TP16-600 series July 2016.doc

Test Pit Number	Ground Surface Elevation (masl)	Depth (mbgs)	Decscription	Parameters Analyzed
TP16-801	63.873	0.0 – 0.5 0.5 – 1.4 1.4 – 1.7	Dark brown silty sand trace organics (top soil) Brown sand FILL Grey brown native CLAY End of Test Pit	
TP16-802	60.035	0.0 – 0.4 0.4 – 1.2 1.2 – 1.5	Dark brown silty sand trace organics (top soil) Brown silty sand FILL with brick and ash debris Grey CLAY End of Test Pit Note: Tile drain present at 1.3 m	
TP16-803	63.204	0.0 – 0.4 0.4 –2.3 2.3 – 2.5	Dark brown silty sand trace organics (top soil) Brown silty sand FILL with brick, ash, and glass Grey native CLAY End of Test Pit	
TP16-804	60.401	0.0 – 0.9 0.9 – 1.2 1.2 – 1.4	Asphalt over silty clay with brick and ash Brown sand FILL Brown native sandy CLAY End of Test Pit	
TP16-805	59.47	0.0 – 0.5	Dark brown silty sand trace organics (top soil)	

Test Pit Number	Ground Surface Elevation (masl)	Depth (mbgs)	Decscription	Parameters Analyzed
		0.5 – 1.3 1.3 – 1.5	Brown sand FILL Grey native CLAY End of Test Pit	
TP16-806	63.000	0.0 – 0.6 0.6 – 1.1	Brown sand FILL Gravel End of Test Pit Note: Encountered PVC Pipe (8”) stopped digging.	
TP16-807	60.159	0.0 – 1.3 1.3 – 1.5	Asphalt over brown silty sand with brick and ash Brown native sandy CLAY End of Test Pit	
TP16-808	64.560	0.0 – 0.4 0.4 – 1.2 1.2 – 1.6	Dark brown silty sand trace organics (top soil) Brown sand FILL Brown native sandy CLAY End of Test Pit	
TP16-809	64.320	0.0 – 0.7 0.7 – 1.1 1.1 – 1.4	Dark brown silty sand trace brick and organics Brown sand FILL Brown native sandy CLAY End of Test Pit	
TP16-810	60.221	0.0 – 1.3 1.3 – 1.5	Brown silty sand FILL with brick, ash, and wood Grey native CLAY with purple roots End of Test Pit	

Test Pit Number	Ground Surface Elevation (masl)	Depth (mbgs)	Decscription	Parameters Analyzed
TP16-811	62.846	0.0 – 0.5 0.5 – 0.6 0.6 – 1.5	Brown silty sand with brick Brown sand FILL Brown native sandy CLAY End of Test Pit	
TP16-812	61.054	0.0 – 1.2 1.2 – 3.1 3.1 – 3.4	Grey silty clay fill Brown silty sand with brick, ash, and concrete Brown native sandy CLAY End of Test Pit	
TP16-813	64.762	0.0 – 0.4 0.4 – 1.1 1.1 – 1.5	Asphalt (3”) over granular pack Brown sand FILL Brown native sandy CLAY End of Test Pit	
TP16-814	64.123	0.0 – 2.2 2.2	Brown silty sand and grey clay with brick, ash, wood, and concrete Refusal on wood and concrete End of Test Pit	

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

Logged by: AB

Checked by: AW

\\golder.gds\gal\Ottawa\Active\2015\3 Proj\1525113 Regional Oblates Brownfields 175 Main St\04_Reporting\09 - RSC 3 - Phase II ESA\Appendix B BH AND TP Logs\2c_1525113 Record of Test Pit TP16-800 series October 2016.doc

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

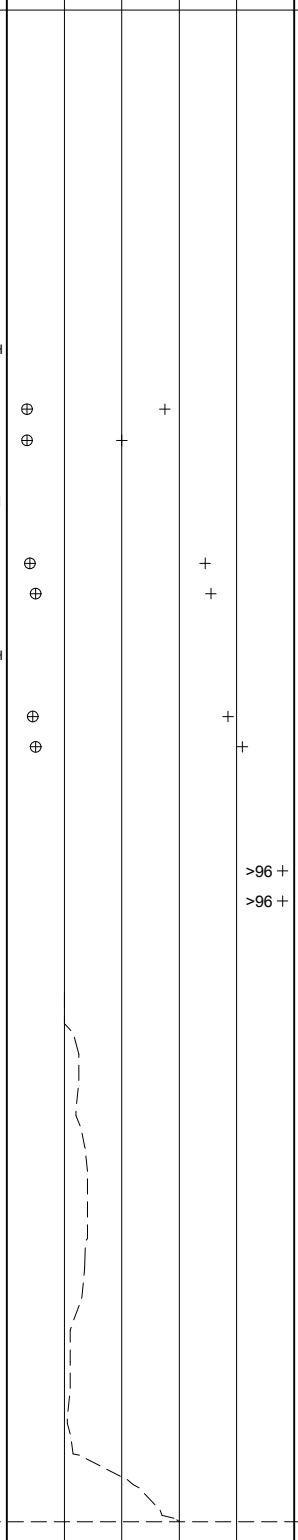
DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE – DESCRIPTION	ELEV. / DEPTH (m)	SAMPLES – NUMBER	TYPE	BLOWS/0.30m	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE	64.46					
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - TOPSOIL	0.05					
		FILL - (CI/CH) SILTY CLAY; brown, 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								

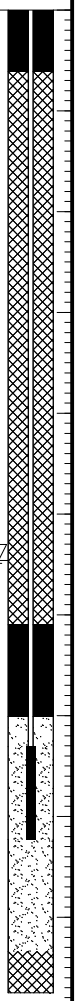
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m: 20, 40, 60, 80

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





CONTINUED NEXT PAGE

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											

CONTINUED NEXT PAGE

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											

CONTINUED NEXT PAGE

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											

CONTINUED NEXT PAGE

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	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					
1		FILL - (SM) SILTY SAND, trace medium sand; brown; non-cohesive, moist		0.61 / 63.67					
2		(CL/ML) SILTY CLAY to CLAYEY SILT, trace sand; grey brown; cohesive, w>PL, firm		1.52 / 62.14	1	SS	1	CHEM	
3		(CI/CH) SILTY CLAY to CLAY; grey; cohesive, w>PL, stiff to very stiff		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		
10				54.52					
11		(SM/SP) SILTY SAND to SAND, some silt; grey; non-cohesive, wet, loose to very dense		10.67	7	SS	WR		
12	Wash Boring, HW Casing				8	SS	14		
13									
14					9	SS	31	MH	
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

Values: >96 +; >96 +

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 ---									
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 (2 4 6 8) / 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 (2, 4, 6, 8) / 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 (2 4 6 8) / 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				56.73	8	SS	15				
		(CI/CH) SILTY CLAY; grey brown; cohesive, w>PL		6.40							
7					9	SS	10				51 mm Diam. PVC #10 Slot Screen
8					10	SS	1	ND			
				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 11/25/16 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 (2 4 6 8) ⊕ / 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 11/25/16 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 (2 4 6 8)	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
					6	SS	2						
5				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 11/25/16 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 (2 4 6 8) / 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 11/25/16 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 (2 4 6 8) / 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	ND			Native Backfill
2					2	SS	7	ND			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 11/25/16 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] ND = Not Detected (2, 4, 6, 8) / 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		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 11/25/16 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 (2 4 6 8) / 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							
		FILL - (SW) SAND, trace non-plastic fines; brown; non-cohesive, moist		0.15	1	SS	-	ND			Bentonite Seal
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
3					5	SS	-	ND			Silica Sand
					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

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 (⊕) / 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									
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 (⊕) / 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		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											

Scale: HEADSPACE ORGANIC VAPOUR CONCENTRATIONS 2, 4, 6, 8; HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS 20, 40, 60, 80; HYDRAULIC CONDUCTIVITY 10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}; WATER CONTENT PERCENT 20, 40, 60, 80

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: BM

CHECKED: TDR

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 Wl) (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 11/25/16 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: _____

PROJECT: 1525113

RECORD OF BOREHOLE: 16-117

SHEET 1 OF 1

LOCATION: N 5030468.0 ;E 369384.1

BORING DATE: October 31, 2016

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 (2 4 6 8) / 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		60.82							
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (SM) SILTY SAND; brown; non-cohesive, wet, very loose		0.00	1	SS	4				Silica Sand
1					2	SS	2	⊕			Bentonite Seal
					3	SS	4	⊕			Silica Sand
				58.99							
2		(CL/CI) SILTY CLAY; grey brown (WEATHERED CRUST); cohesive, w>PL		1.83	4	SS	3	⊕			
				58.38							
		(CL/CI) SILTY CLAY; grey; cohesive, w>PL		2.44	5	SS	2	⊕			
3					6	SS	WH	⊕			51 mm Diam. PVC #10 Slot Screen
4					7	SS	WH	⊕			
					8	SS	WH	⊕			Silica Sand
				55.94							
5		End of Borehole		4.88							W.L. in Screen at Elev. 59.52 m on November 9, 2016
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DG

CHECKED: TL

PROJECT: 1525113

RECORD OF BOREHOLE: 16-118

SHEET 1 OF 1

LOCATION: N 5030392.0 ;E 369415.7

BORING DATE: October 31, 2016

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 (2 4 6 8) ⊕ / 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		60.40							
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (CL/CI) SILTY CLAY, trace sand; brown; moist		0.00	1	SS	4				Silica Sand
				59.79							
		FILL - (SM) SILTY SAND; brown; non-cohesive, moist		0.61	2	SS	4	⊕			Bentonite Seal
1				59.18							
		(CL/CI) SILTY CLAY; grey brown (WEATHERED CRUST); cohesive, w>PL		1.22	3	SS	5	⊕			Silica Sand
2					4	SS	8	⊕			
					5	SS	3	⊕			
3				57.35							51 mm Diam. PVC #10 Slot Screen
		(CL/CI) SILTY CLAY; grey; cohesive, w>PL		3.05	6	SS	2	⊕			
4					7	SS	WH	⊕			
					8	SS	WH	⊕			
				55.52							Silica Sand
5		End of Borehole		4.88							W.L. in Screen at Elev. 58.81 m on November 9, 2016
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DG

CHECKED: TL

MIS-BHS 001 1525113-1000.GPJ GAL-MIS.GDT 11/25/16 JEM

PROJECT: 1525113

RECORD OF BOREHOLE: 16-119

SHEET 1 OF 1

LOCATION: N 5030382.0 ;E 369397.1

BORING DATE: November 1, 2016

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 (2 4 6 8) / 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		63.30							
0	Power Auger, 200 mm Diam. (Hollow Stem)	TOPSOIL - (SM) SILTY SAND; dark brown; moist		0.05							Silica Sand
		FILL - (SM) SILTY SAND, trace gravel; brown; non-cohesive, moist, loose		62.69	1	SS	5				
		FILL - (CL/CI) SILTY CLAY; grey brown; moist, compact		0.61							
1					2	SS	6	⊕			
					3	SS	9	⊕			
2					4	SS	12	⊕			Bentonite Seal
		FILL - (SM) SILTY SAND; grey brown; moist, very loose		60.86 / 2.44							
3					5	SS	1	⊕			
					6	SS	2	⊕			
4		(CL/CI) SILTY CLAY; grey; cohesive, w>PL, firm to stiff		59.34 / 3.96	7	SS	1	⊕			
					8	SS	WH	⊕			Silica Sand
5					9	SS	WH	⊕			51 mm Diam. PVC #10 Slot Screen
					10	SS	WH	⊕			
6		End of Borehole		57.20 / 6.10							W.L. in Screen at Elev. 58.29 m on November 9, 2016
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DG

CHECKED: TL

PROJECT: 1525113

RECORD OF BOREHOLE: 16-120

SHEET 1 OF 1

LOCATION: N 5030388.0 ;E 369426.3

BORING DATE: November 1, 2016

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 (2, 4, 6, 8) / 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		60.46							
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (GW) SAND and GRAVEL; grey, with ashes; non-cohesive, moist, dense		0.00	1	SS	31				Silica Sand
				59.85							
1		FILL - (SM) SILTY SAND; brown, with ashes; non-cohesive, moist, loose		0.61	2	SS	8				
				59.24							
		FILL - (SP) SAND, fine; brown; non-cohesive, moist, loose		1.22	3	SS	6				Bentonite Seal
				58.48							
2		(CL/CI) SILTY CLAY; grey brown (WEATHERED CRUST); cohesive, w>PL		1.98	4	SS	5				
					5	SS	4				Silica Sand
3											
				57.11	6	SS	2				
		(CL/CI) SILTY CLAY; grey; cohesive, w>PL		3.35							51 mm Diam. PVC #10 Slot Screen
4					7	SS	1				
				56.19							
		End of Borehole		4.27							W.L. in Screen at Elev. 58.58 m on November 9, 2016
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DG

CHECKED: TL

PROJECT: 1524337-3000

RECORD OF BOREHOLE: 16-211

SHEET 1 OF 2

LOCATION: N ;E

BORING DATE: November 14, 2016

DATUM: CGVD28

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									
0	Power Auger, 200 mm Diam. (Hollow Stem)	ASPHALTIC CONCRETE		0.00							
		FILL - (SW) gravelly SAND, angular; grey (PAVEMENT STRUCTURE); non-cohesive, moist		0.10	1	GRAB	-				
		FILL - (SM) SILTY SAND; brown; non-cohesive, moist, loose		0.30							
1					2	SS	9				
		FILL - (CL/CI) SILTY CLAY; grey brown; cohesive, w>PL		1.22							
2					3	SS	7				
		(ML-CI/CH) SILTY CLAY to CLAYEY SILT, some sand; non-cohesive, moist to wet, very dense		2.29	4	SS	5				
3					5	SS	4				
4					6	SS	WH				
		(CI/CH) SILTY CLAY to CLAY; grey with black organic mottling; cohesive, w>PL, stiff		4.34							
5					7	TP	PH	⊕ ⊕	+ +		
6					8	SS	WH				
7									+ +		
8					9	SS	WH		○		
9									+ +		
10					10	SS	WH				

CONTINUED NEXT PAGE

DRAFT

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DG

CHECKED:

PROJECT: 1524337-3000

RECORD OF BOREHOLE: 16-211

SHEET 2 OF 2

LOCATION: N ;E

BORING DATE: November 14, 2016

DATUM: CGVD28

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 ---									
10	Power Auger, 200 mm Diam. (Hollow Stem)	(CI/CH) SILTY CLAY to CLAY; grey with black organic mottling; cohesive, w>PL, stiff						⊕ ⊕ + +			
11					11	SS	WH		○		
12								>96 + >96 +			
		(SM) SILTY SAND, fine; grey; non-cohesive, wet, very loose to loose		12.47	12	SS	WH				
13					13	SS	WH		○	MH	
14					14	SS	5				
		End of Borehole		14.33							
15											
16											
17											
18											
19											
20											

DRAFT

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DG

CHECKED:

PROJECT: 1524337-3000

RECORD OF BOREHOLE: 16-212

SHEET 1 OF 2

LOCATION: N ;E

BORING DATE: November 10 & 11, 2016

DATUM: CGVD28

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									
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (SP) SAND, fine; brown; non-cohesive, moist, loose		0.00							
1		(CI/CH) SILTY CLAY to CLAY; grey brown (WEATHERED CRUST); cohesive, w>PL, stiff to very stiff		1.07	1	SS	8				
2					2	SS	9				
					3	SS	3				
3					4	SS	2				
		(CI/CH) SILTY CLAY to CLAY; grey with black organic mottling; cohesive, w>PL, stiff		3.60	5	TP	PH				
4											
5											
					6	TP	PH				
6											
7								>96 +			
8					7	SS	1				
9											
					8	SS	WH				
10		*CONTINUED NEXT PAGE*									

DRAFT

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DG

CHECKED:

PROJECT: 1524337-3000

RECORD OF BOREHOLE: 16-212

SHEET 2 OF 2

LOCATION: N ;E

BORING DATE: November 10 & 11, 2016

DATUM: CGVD28

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 ---									
10	Power Auger, 200 mm Diam. (Hollow Stem)	(CI/CH) SILTY CLAY to CLAY; grey with black organic mottling; cohesive, w>PL, stiff									
11					9	SS	2				
					10	SS	1				
12		(SM) SILTY SAND, fine; grey; non-cohesive, wet, very loose to loose		12.19							
					11	SS	2				
13					12	SS	7				
		End of Borehole		13.56							
14											
15											
16											
17											
18											
19											
20											

DRAFT

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DG

CHECKED:

PROJECT: 1524337-3000

RECORD OF BOREHOLE: 16-213

SHEET 1 OF 2

LOCATION: N ;E

BORING DATE: November 11, 2016

DATUM: CGVD28

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									
0	Power Auger, 200 mm Diam. (Hollow Stem)	ASPHALTIC CONCRETE		0.00							
		FILL - (SP) gravelly SAND, angular; grey (PAVEMENT STRUCTURE); non-cohesive, moist		0.10	1	GRAB	-				
		FILL - (GP) sandy GRAVEL, anulgar; grey (PAVMENT STRUCTURE); non-cohesive, moist		0.33							
1		FILL - (SM) SILTY SAND; brown; non-cohesive, moist, loose		0.69	2	SS	8				
		(CI/CH) SILTY CLAY to CLAY; grey brown (WEATHERED CRUST); cohesive, w>PL, stiff		1.30	3	SS	9				
2					4	SS	6				
3		(ML-CH/CH) SILTY CLAY to CLAYEY SILT, some sand; brown; cohesive, w>PL		3.35	5	SS	2				
4					6	SS	2				
		(CI/CH) SILTY CLAY to CLAY; grey with black organic mottling; cohesive, w>PL, stiff		4.27							
5					7	SS	WH				
6					8	TP	PH				
7											
8					9	SS	WH				
9											
10					10	SS	WH				

CONTINUED NEXT PAGE

DRAFT

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DG

CHECKED:

PROJECT: 1524337-3000

RECORD OF BOREHOLE: 16-213

SHEET 2 OF 2

LOCATION: N ;E

BORING DATE: November 11, 2016

DATUM: CGVD28

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 ---									
10	Power Auger, 200 mm Diam. (Hollow Stem)	(CI/CH) SILTY CLAY to CLAY; grey with black organic mottling; cohesive, w>PL, stiff									
11					11	SS	1				
12					12	SS	2				
13					13	SS	2				
					14	SS	2				
		(SM) SILTY SAND, fine; grey; non-cohesive, wet, loose to compact		13.41							
14					15	SS	10				
		End of Borehole		14.33							
15											
16											
17											
18											
19											
20											

DRAFT

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DG

CHECKED:

PROJECT: 1524337-3000

RECORD OF BOREHOLE: 16-214

SHEET 1 OF 3

LOCATION: N ;E

BORING DATE: November 7-9, 2016

DATUM: CGVD28

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							
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (ML) SILTY SAND, trace gravel; brown; non-cohesive, moist, compact		0.00					
1					1	SS	16		
		FILL - (CH/CI) SILTY CLAY, trace sand; grey; cohesive, w>PL		1.52					
2					2	SS	4		
		FILL - (SM/ML) SILTY SAND to sandy SILT, trace gravel; grey; non-cohesive, moist, very loose to loose		2.29					
3					3	SS	4		
					4	SS	3		
4					5	SS	4		Cuttings
		(CI/CH) SILTY CLAY to CLAY; grey brown (WEATHERED CRUST); cohesive, wPL, stiff to very stiff		4.57					
5					6	SS	8		
					7	SS	9		
6					8	SS	5		
7					9	SS	5		
8					10	SS	3		
		(CI/CH) SILTY CLAY to CLAY; grey; cohesive, w>PL, stiff		8.23					Bentonite Seal
					11	SS	1		
9									Silica Sand
									19 mm Diam. PVC #10 Slot Screen 'B'
					12	TP	PH		
10		*CONTINUED NEXT PAGE*							

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

DRAFT

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DG

CHECKED:

PROJECT: 1524337-3000

RECORD OF BOREHOLE: 16-214

SHEET 2 OF 3

LOCATION: N ;E

BORING DATE: November 7-9, 2016

DATUM: CGVD28

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
		--- CONTINUED FROM PREVIOUS PAGE ---									
10	Power Auger, 200 mm Diam. (Hollow Stem)	(CI/CH) SILTY CLAY to CLAY; grey; cohesive, w>PL, stiff			12	TP	PH				19 mm Diam. PVC #10 Slot Screen 'B'
11					13	SS	2				Silica Sand
12								>96			
	Wash Boring, BW Casing				14	SS	2				
		(SM/ML) SILTY SAND to sandy SILT; grey; non-cohesive, wet, compact to loose		12.65							
13					15	SS	21				Peltonite
14					16	SS	17				
					17	SS	6				Silica Sand
15					18	SS	16				
16					19	SS	28				19 mm Diam. PVC #10 Slot Screen 'A'
17					20	SS	5			MH	
											Silica Sand
18					21	SS	9				
		(SM) SILTY SAND; grey; non-cohesive, wet, dense to very dense		18.29							
					22	SS	30				
19											Native Backfill
					23	SS	51				
20					24	SS	49				
		CONTINUED NEXT PAGE									

DRAFT

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: DG
CHECKED:

PROJECT: 1524337-3000

RECORD OF BOREHOLE: 16-214

SHEET 3 OF 3

LOCATION: N ;E

BORING DATE: November 7-9, 2016

DATUM: CGVD28

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 ---									
20	Wash Boring / BW Casing	(SM) SILTY SAND; grey; non-cohesive, wet, dense to very dense			24	SS	49				
21					25	SS	42				
					26	SS	56				
22											
23					27	SS	56				Native Backfill
24					28	SS	62				
25											
26		(SM) SILTY SAND, some gravel; grey (GLACIAL TILL); non-cohesive, wet dense to very dense		26.21	29	SS	44				
27					30	SS	63				
		End of Borehole		27.43							W.L. in Screen 'A' at 8.76 m depth on Dec. 6, 2016
28											
29											
30											

DRAFT

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DG

CHECKED:

PROJECT: 1524337-3000

RECORD OF BOREHOLE: 16-215

SHEET 1 OF 2

LOCATION: N ;E

BORING DATE: November 4 & 7 2016

DATUM: CGVD28

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									
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (CL, ML & SM) Intermixed SILTY CLAY, CLAYEY SILT, SILT and SILTY SAND, trace gravel; brown, contains brick fragments and mortar; moist, loose to compact		0.00							
1					1	SS	11				
2					2	SS	10				
3					3	SS	3				
4					4	SS	4				
5					5	SS	10				
					6	SS	9				
		(CI/CH) SILTY CLAY to CLAY; grey brown (WEATHERED CRUST); cohesive, w>PL, stiff to very stiff		5.33	7	SS	10				
6					8	SS	7				
7					9	SS	6				
		(CI/CH) SILTY CLAY to CLAY; grey; cohesive, w>PL, stiff		7.62	10	TP	PH				
8								⊕	+		
9								⊕	+		
					11	SS	1				
10		*CONTINUED NEXT PAGE*									

DRAFT

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DG

CHECKED:

PROJECT: 1524337-3000

RECORD OF BOREHOLE: 16-215

SHEET 2 OF 2

LOCATION: N ;E

BORING DATE: November 4 & 7 2016

DATUM: CGVD28

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 ---									
10	Power Auger, 200 mm Diam. (Hollow Stem)	(CI/CH) SILTY CLAY to CLAY; grey; cohesive, w>PL, stiff									
11					12	SS	3				
12					13	SS	3				
13		(ML) CLAYEY SILT, trace sand and gravel; grey; non-cohesive, wet, loose		12.88	14	SS	6			MH	
14					15	SS	8				
		End of Borehole		14.33							
15											
16											
17											
18											
19											
20											

DRAFT

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DG

CHECKED:

PROJECT: 1524337-3000

RECORD OF BOREHOLE: 16-216

SHEET 1 OF 2

LOCATION: N ;E

BORING DATE: November 2-4 2016

DATUM: CGVD28

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									
0	Power Auger, 200 mm Diam. (Hollow Stem)	FILL - (CL, ML, SM & GW) Intermixed SILTY CLAY, CLAYEY SILT, SILTY SAND, some gravel; brown, contains asphalti pieces and mortar; non-cohesive, moist, very loose to loose		0.00							
1					1	SS	3				
					2	SS	5				
2		FILL - (SM/GM) SILTY SAND And GRAVEL; dark brown; non-cohesive, wet, loose		2.29	3	SS	22				
3					4	SS	8				
4					5	SS	8				
5					6	SS	6				
		(CI/CH) SILTY CLAY to CLAY; grey with black mottling; cohesive, w>PL, stiff to very stiff		5.33	7	SS	8				
6					8	SS	6		○		
7					9	SS	5				
8					10	SS	3		○		
								⊕ ⊕ + +			
9					11	SS	1				
10		*CONTINUED NEXT PAGE*									

DRAFT

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: DG
CHECKED:

PROJECT: 1524337-3000

RECORD OF BOREHOLE: 16-216

SHEET 2 OF 2

LOCATION: N ;E

BORING DATE: November 2-4 2016

DATUM: CGVD28

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 ---									
10	Power Auger, 200 mm Diam. (Hollow Stem)	(CI/CH) SILTY CLAY to CLAY; grey with black mottling; cohesive, w>PL, stiff to very stiff						+			
								>96 +			
11					12	SS	2		○		
								>96 +			
12								+			
		(SM/ML) SILTY fine SAND to sandy SILT; grey; non-cohesive, wet, loose to compact		12.19	13	SS	2				
13					14	SS	9		○	MH	
		End of Borehole		13.56							
14											
15											
16											
17											
18											
19											
20											

DRAFT

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DG

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

Success Through Science®

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

Success Through Science®

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

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

Success Through Science®

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

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

Success Through Science®

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

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

Success Through Science®

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		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

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

Success Through Science®

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		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

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

Success Through Science®

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		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

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

Success Through Science®

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		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

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

Success Through Science®

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		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

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

Success Through Science®

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		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.

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

Success Through Science®

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

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

Success Through Science®

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		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.

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

Success Through Science®

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		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

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 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

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 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

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 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

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

Success Through Science®

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		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

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 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

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

Success Through Science®

Maxxam Job #: B4E2676
Report Date: 2014/08/20

Golder Associates Ltd
Client Project #: 14-1122-0005

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
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

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

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

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

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

Success Through Science®

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Test Summary

Maxxam ID XA9644
Sample ID Y 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 XA9645
Sample ID Y 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

Maxxam ID XA9645 Dup
Sample ID Y SA2
Matrix Soil

Collected 2014/06/28
Shipped
Received 2014/08/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Moisture	BAL	3710943	N/A	2014/08/14	Valentina Kaftani

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

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

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

Test Summary

Maxxam ID XA9649
Sample ID BA SA2
Matrix Soil

Collected 2014/07/30
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	3707364	2014/08/12	2014/08/12	Darryl Tiller

Maxxam ID XA9650
Sample ID BE SA2
Matrix Soil

Collected 2014/07/30
Shipped
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
Sample ID DUP BE SA2
Matrix Soil

Collected 2014/07/30
Shipped
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 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

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

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

Test Summary

Maxxam ID XA9655
Sample ID BN SA3
Matrix Soil

Collected 2014/08/01
Shipped
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
Sample ID AH SA2
Matrix Soil

Collected 2014/06/28
Shipped
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
Sample ID AH SA3
Matrix Soil

Collected 2014/06/28
Shipped
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 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

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

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

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

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

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

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

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

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

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

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

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

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

Success Through Science®

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

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

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.

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

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	%		

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

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

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

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

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

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

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

Success Through Science®

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
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.

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

Validation Signature Page

Maxxam Job #: 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

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

Validation Signature Page

Maxxam Job #: 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.

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 IMMEDIATE TEST

6740 Campobello Road, Mississauga, Ontario L5N 2L8 www.maxxam.ca
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

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX	# OF CONT.	FIELD FILTERED (PLEASE CIRCLE) Metals / Hg / CrVI	PAH	Metals (ICPMS)	PHC F1 - F4 + BTEX
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			✓

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

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 Grenal HARRY GRENAL	2014/08/09	10:15	

8/7/1°C
9/3/3°C

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

6740 Campobello Road, Mississauga, Ontario L5N 2L8 www.maxxam.ca
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	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	Jul, 30		S	3	N			✓	
2	AJ SA1	Jul, 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 Grenal HARRY GRENAL	2014/08/04	10:15		

8/7/1°C
9/3/3°C
8/8/10°C

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam

6740 Campobello Road, Mississauga, Ontario L5N 2L8 www.maxxam.ca
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	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	X SA2	Jul, 29		S	3	N	✓	✓		
2	J SA2	Jul, 29		S	2	N	✓	✓		
3	G14/E1 SA 2	Jul, 29		S	2	N	✓	✓		
4	AK SA3	Jul, 29		S	2	N	✓	✓		
5	AK SA1	Jul, 29		S	2	N	✓	✓		
6	AA SA3	Jul, 28		S	2	N	✓	✓		REC'D IN OTTAWA
7	DUP AA SA3	Jul, 28		S	2	N	✓	✓		
8	AC SA1	Jul, 28		S	2	N	✓	✓		
9	AE SA2	Jul, 28		S	2	N	✓	✓		
10	Y SA1	Jul, 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	8/8/2014	13:00	C. Bergeron	2014/08/08	16:00		
			H. Greenal Maxxam Greenal	2014/08/09	10:15		

8/7/14
9/3/14

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam

6740 Campobello Road, Mississauga, Ontario L5N 2L8 www.maxxam.ca
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	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		

8/7/1°C
9/3/3°C

Maxxam

6740 Campobello Road, Mississauga, Ontario L5N 2L8 www.maxxam.ca
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	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	BN SA3	Aug 1		S	2	N	✓	✓											
2	AH SA2	Jul, 28		S	2	N	✓	✓											
3	AH SA3	Jul, 28		S	2	N	✓	✓											
4	AH SA4	Jul, 28		S	2	N	✓	✓											
5	AC SA3	Jul, 28		S	2	N	✓	✓											
6	AJ SA1	Jul, 30		S	2	N	✓	✓											
7	AS SA2	Jul, 30		S	2	N	✓	✓											
8	AF SA3	Jul, 28		S	2	N	✓	✓											
9	R SA2	Jul, 30		S	2	N	✓	✓											
10	R SA3	Jul, 30		S	2	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. Greenal / Harman Greenal	2014/08/09	10:15		

8/7/1°C
~~9/3/1~~ H.G. 2014/08/09 9/3/3°C

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

6740 Campobello Road, Mississauga, Ontario L5N 2L8 www.maxxam.ca
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	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	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	✓	✓		recall 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	8/8/2014	13:00	C. Bergeron	2014/08/08	16:00		
			His Grace Harrar Grewal	2014/08/09	10:15		

8/7/12
9/13/12

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam

6740 Campobello Road, Mississauga, Ontario L5N 2L8 www.maxxam.ca
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	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	July 31		S	2	N	✓	✓	
2	AX SA3	July 30		S	2	N	✓	✓	
3	E SA2	July 29		S	2	N	✓	✓	
4	AB SA1	July 25		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 Harrad Greenal	2014/08/09	10:15		

8/7/14
9/3/14

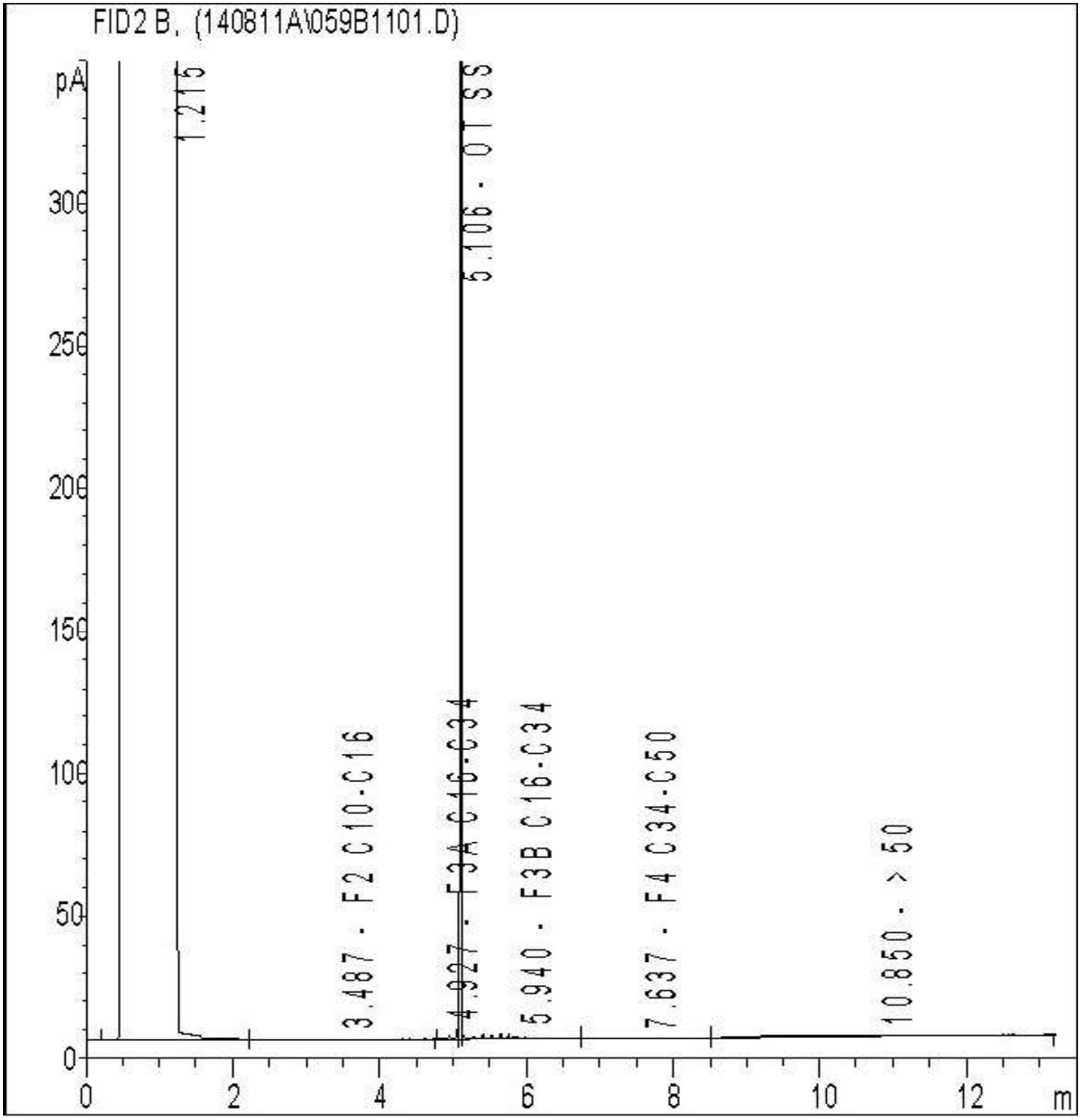
Maxxam Analytics International Corporation o/a Maxxam Analytics

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.

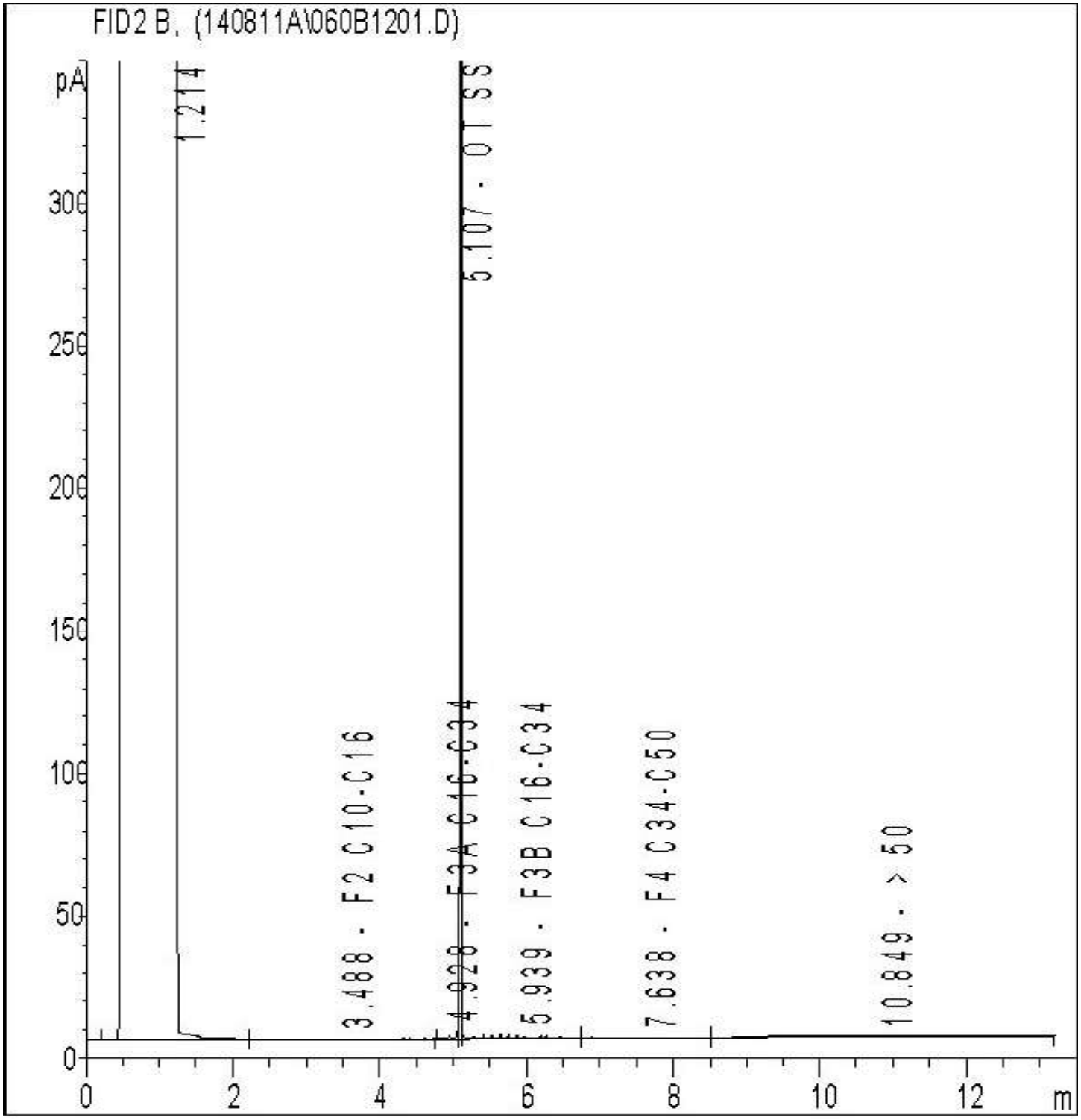
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

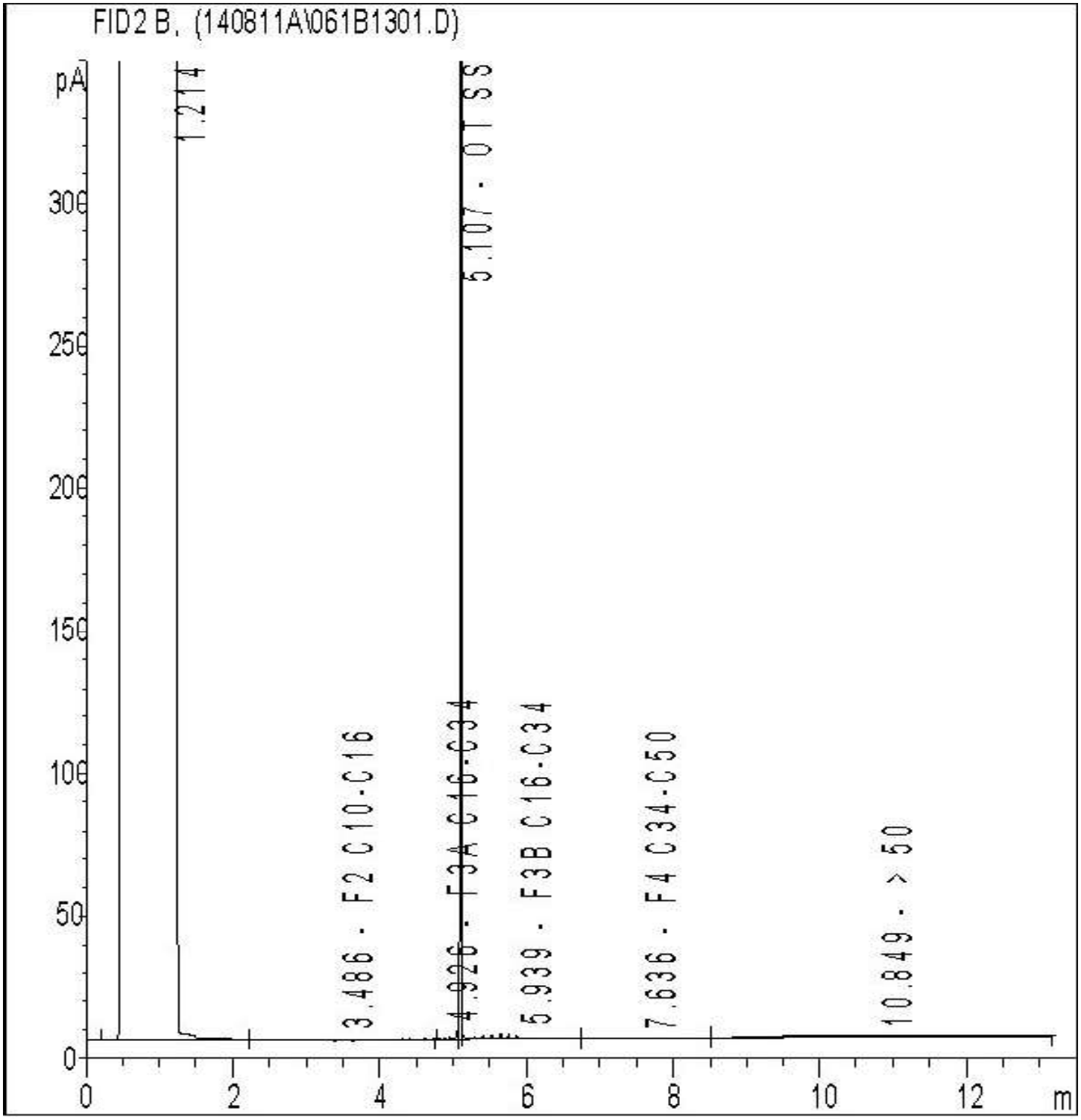
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

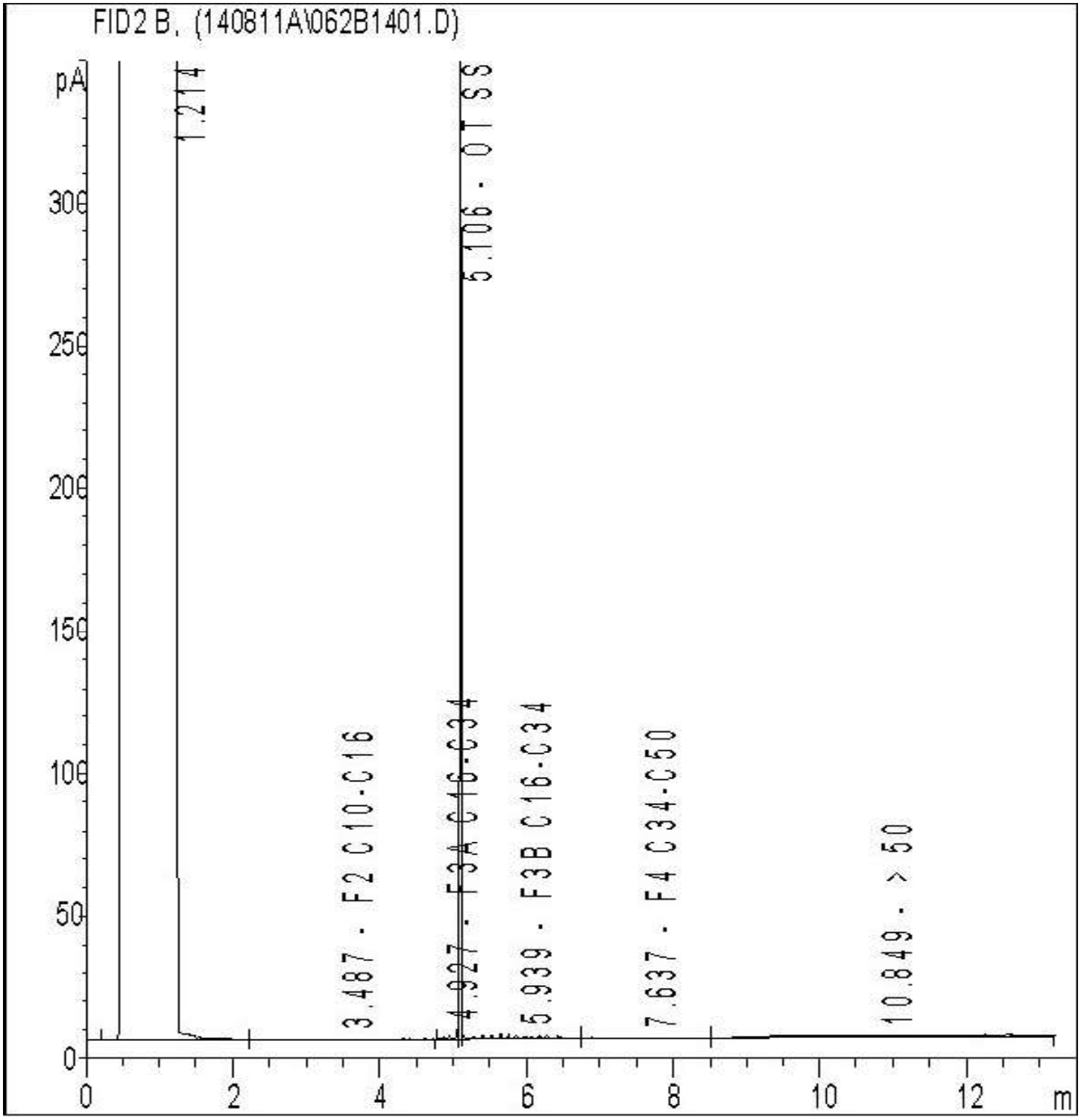
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

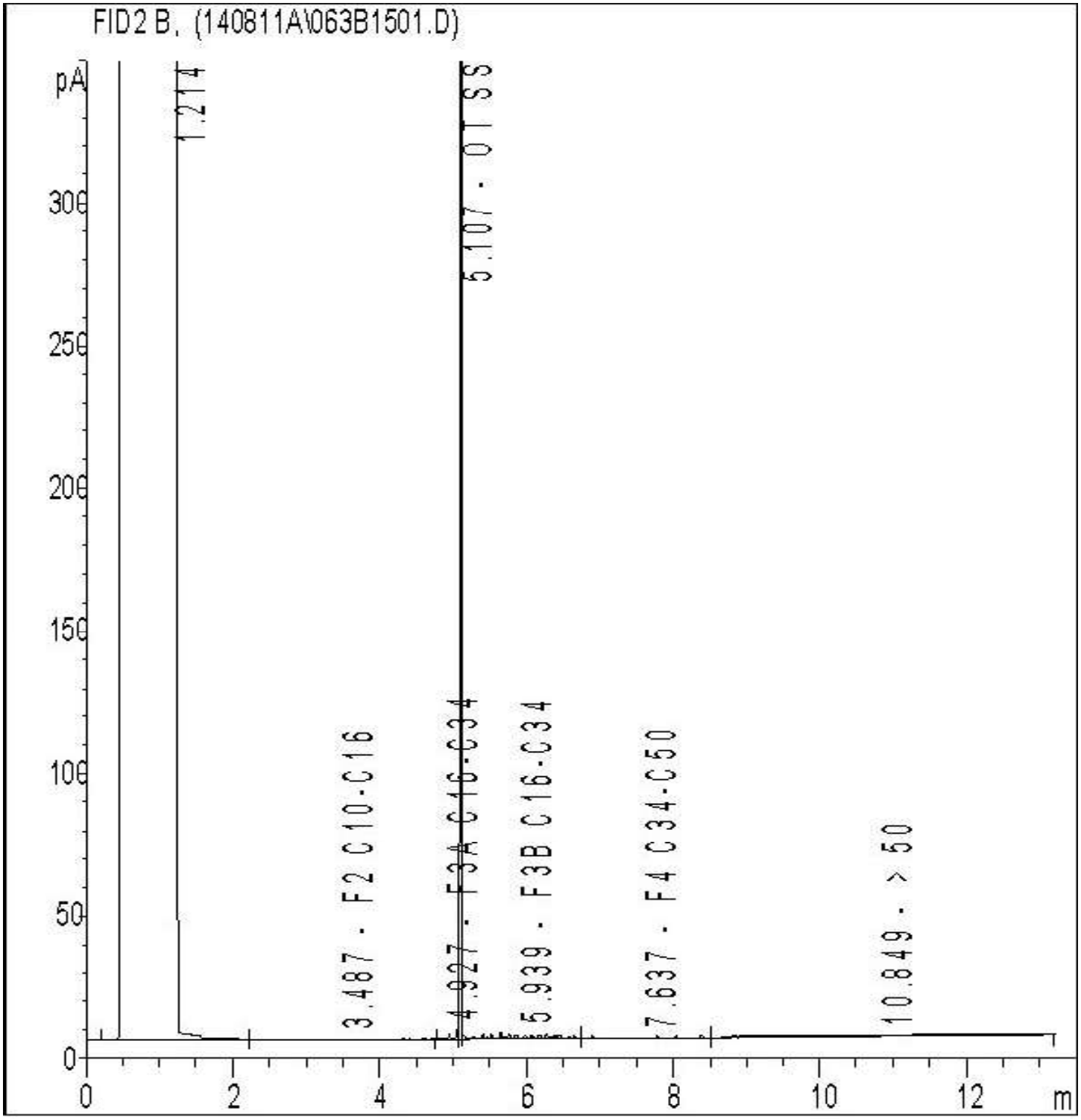
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

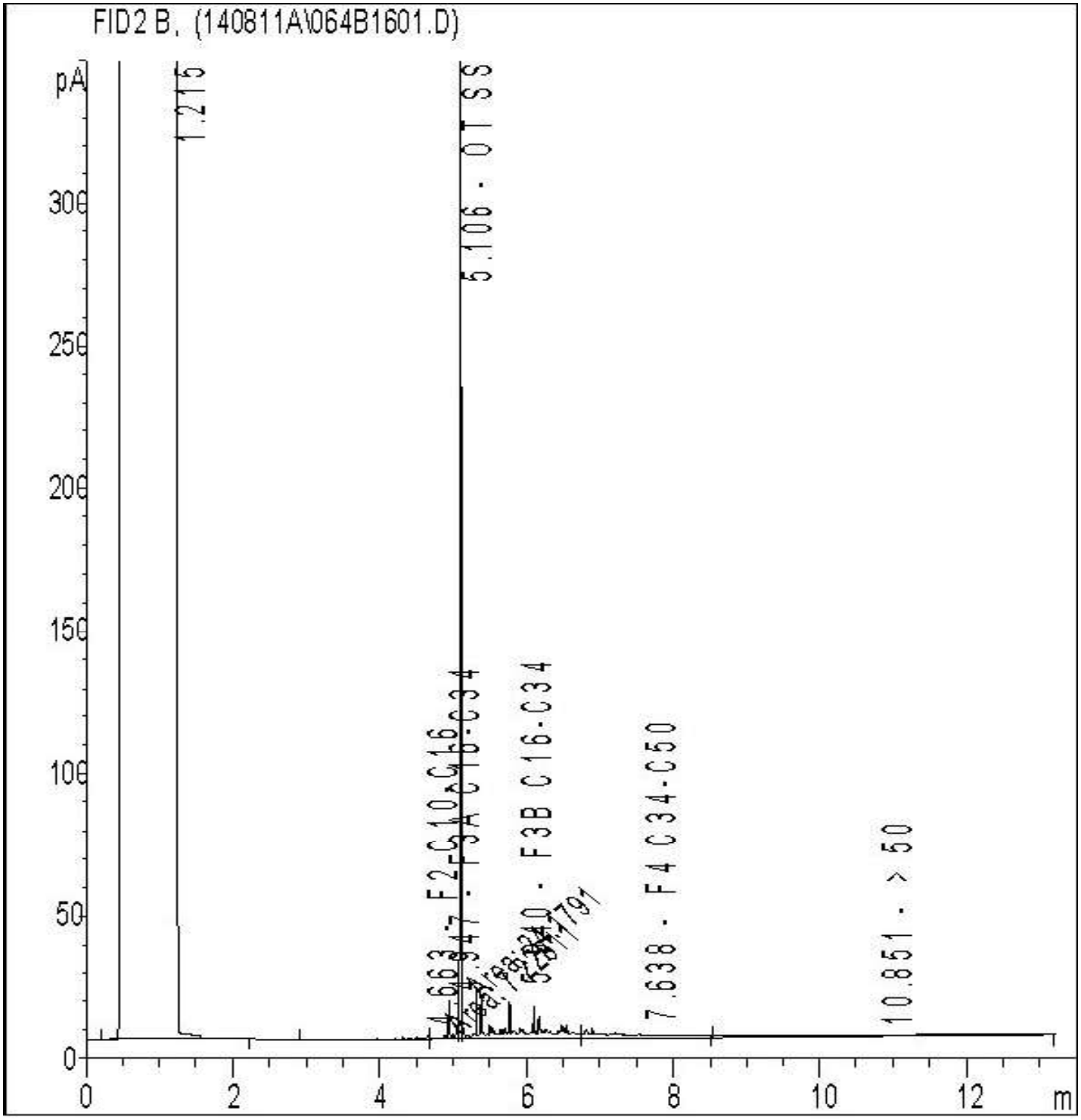
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

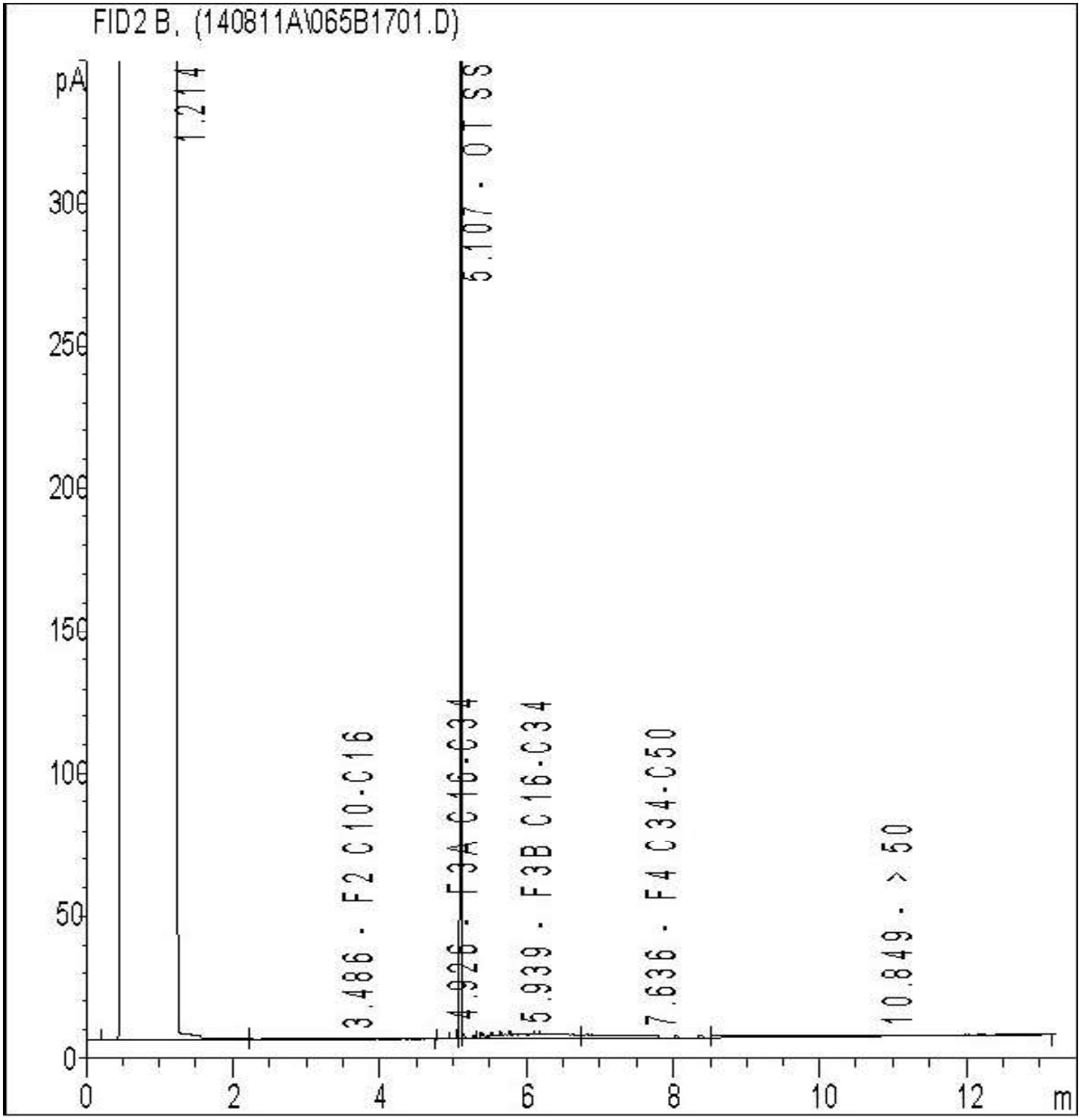
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

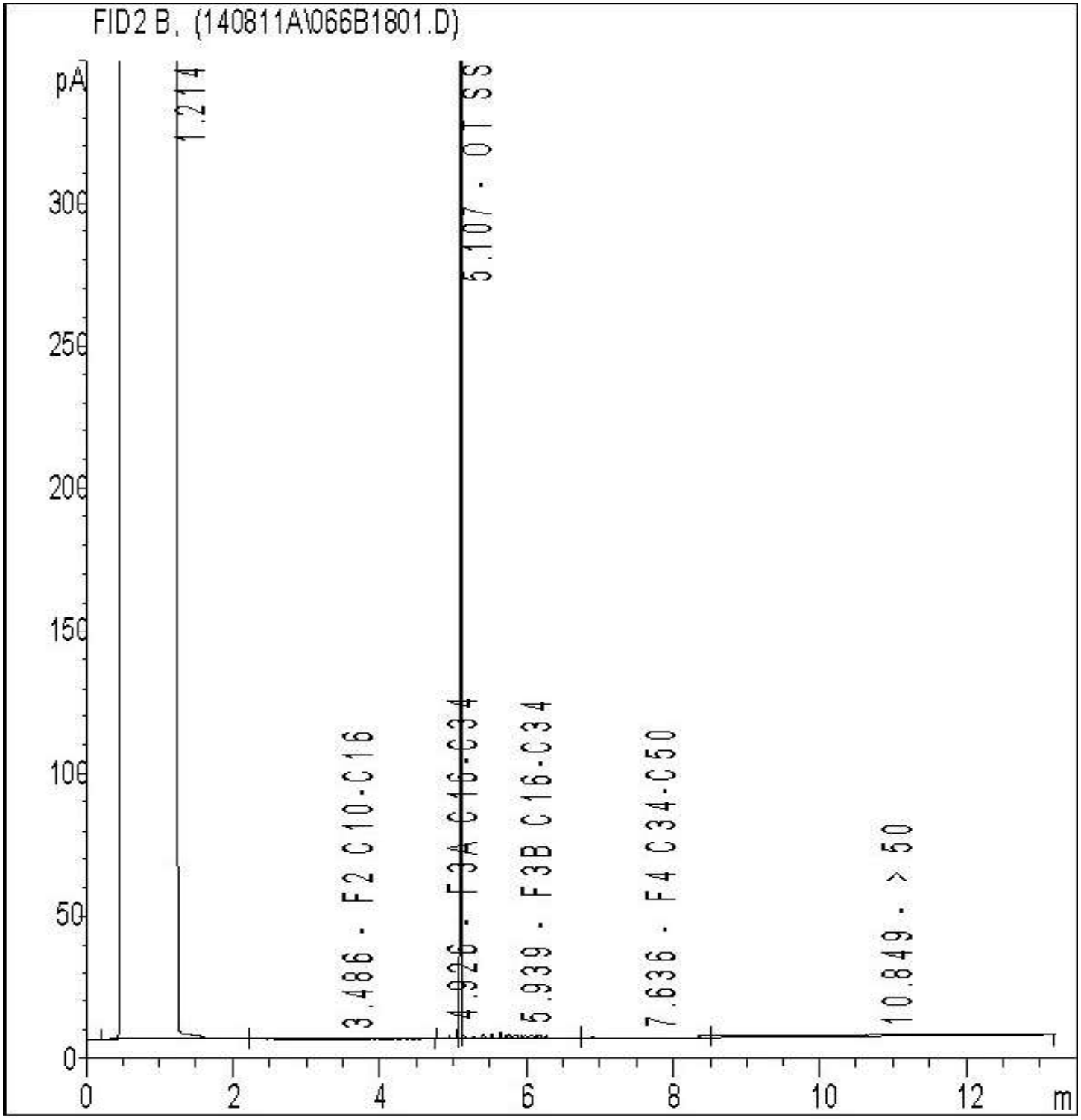
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

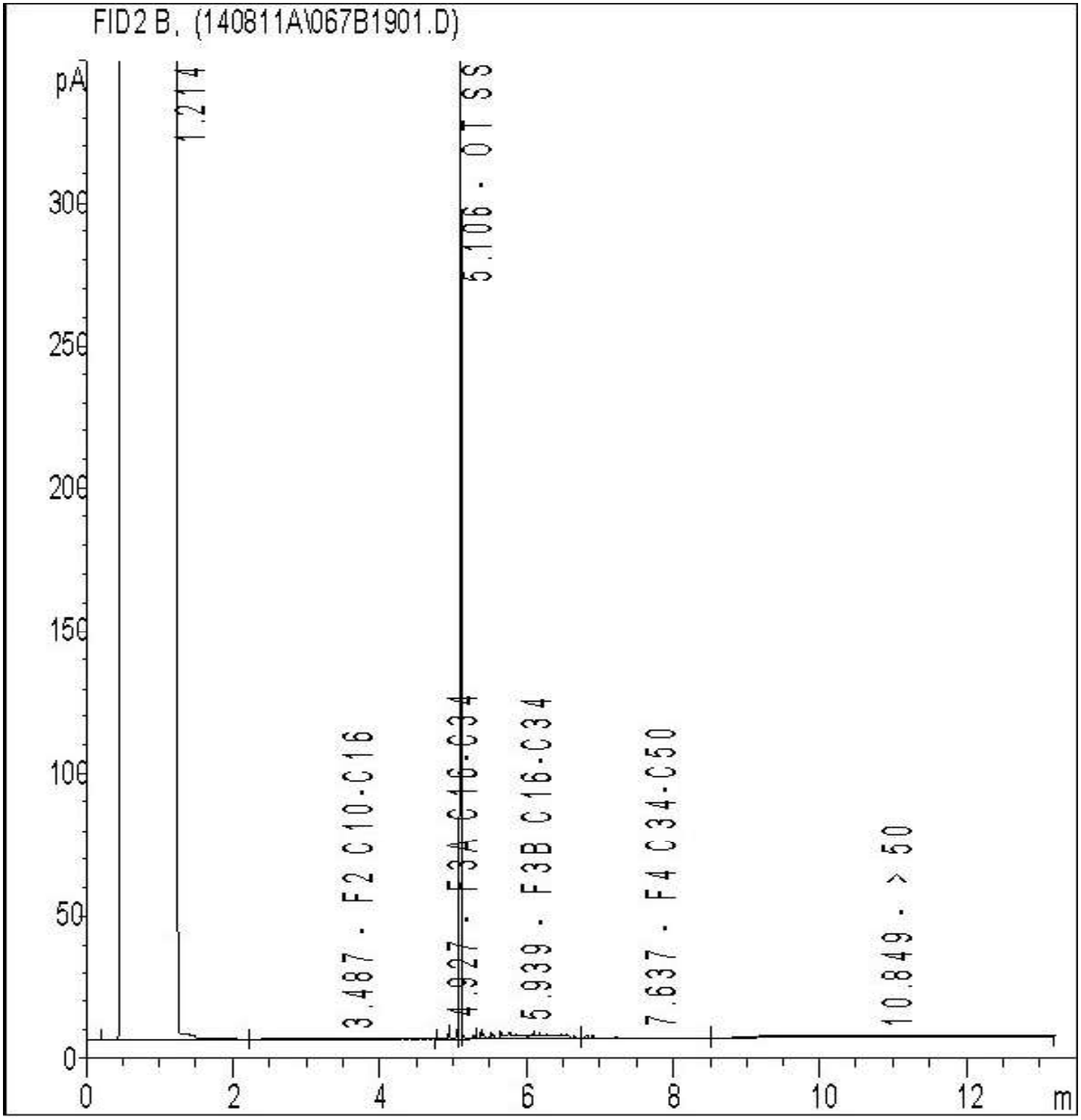
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

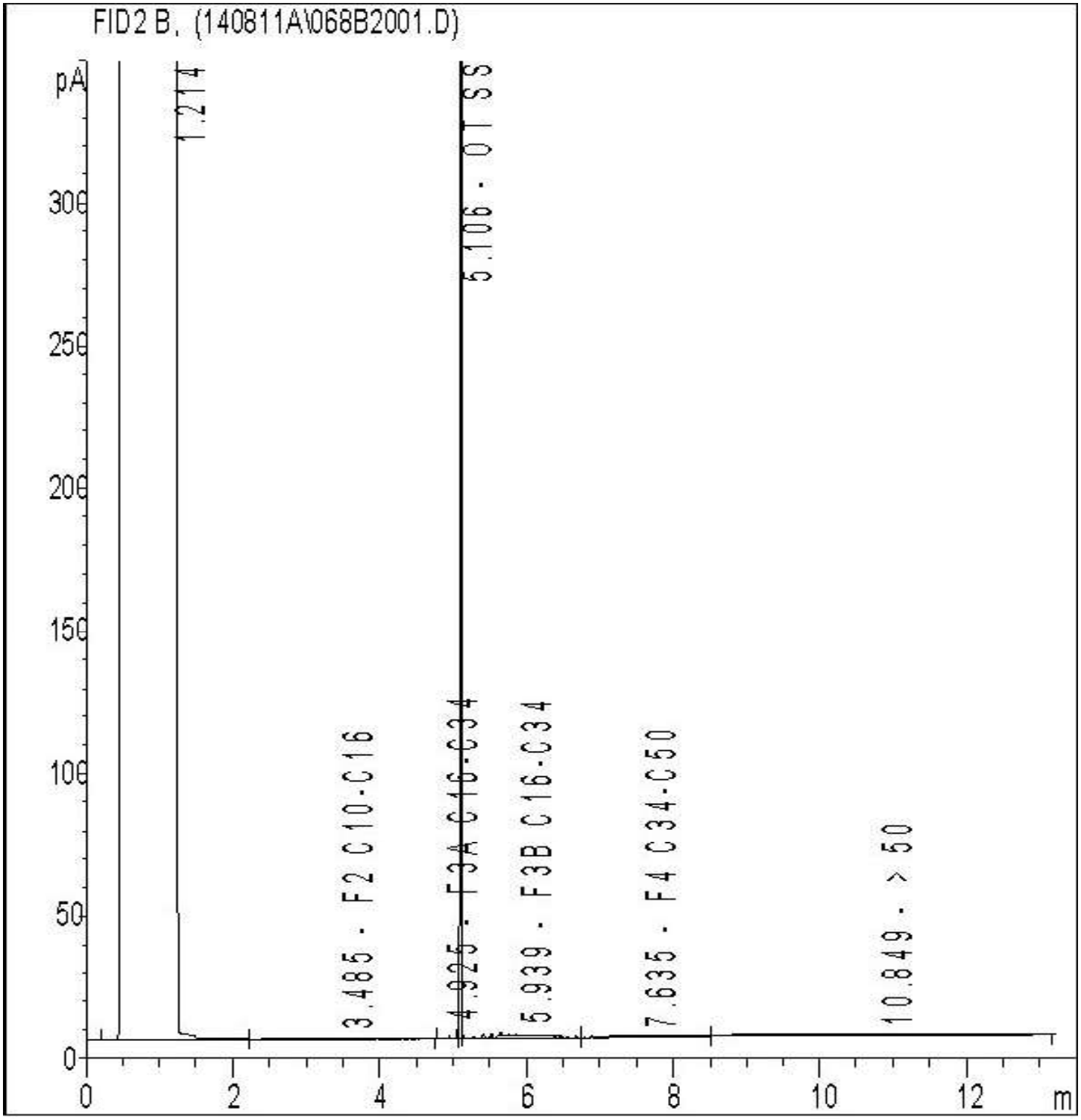
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

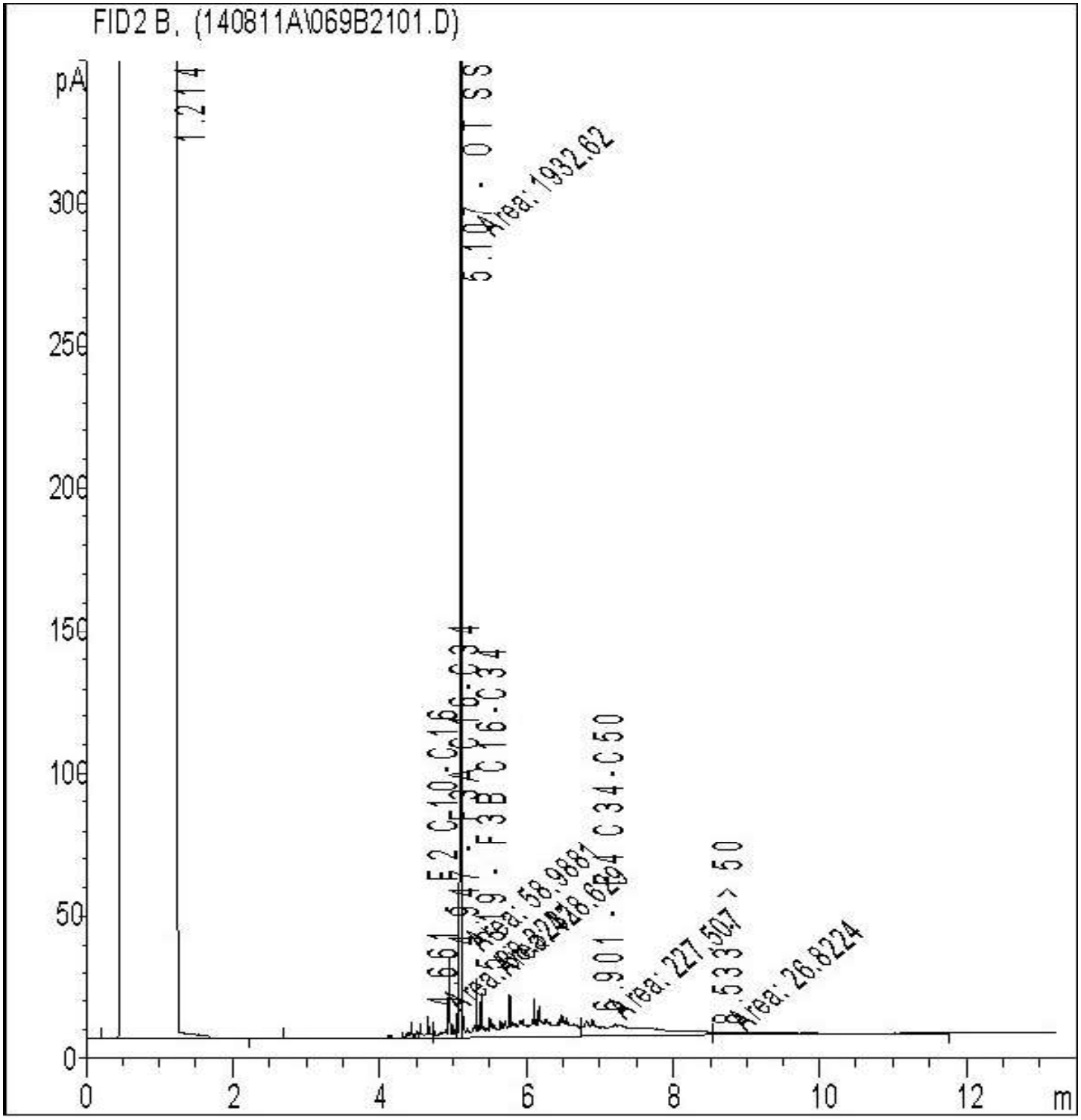
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

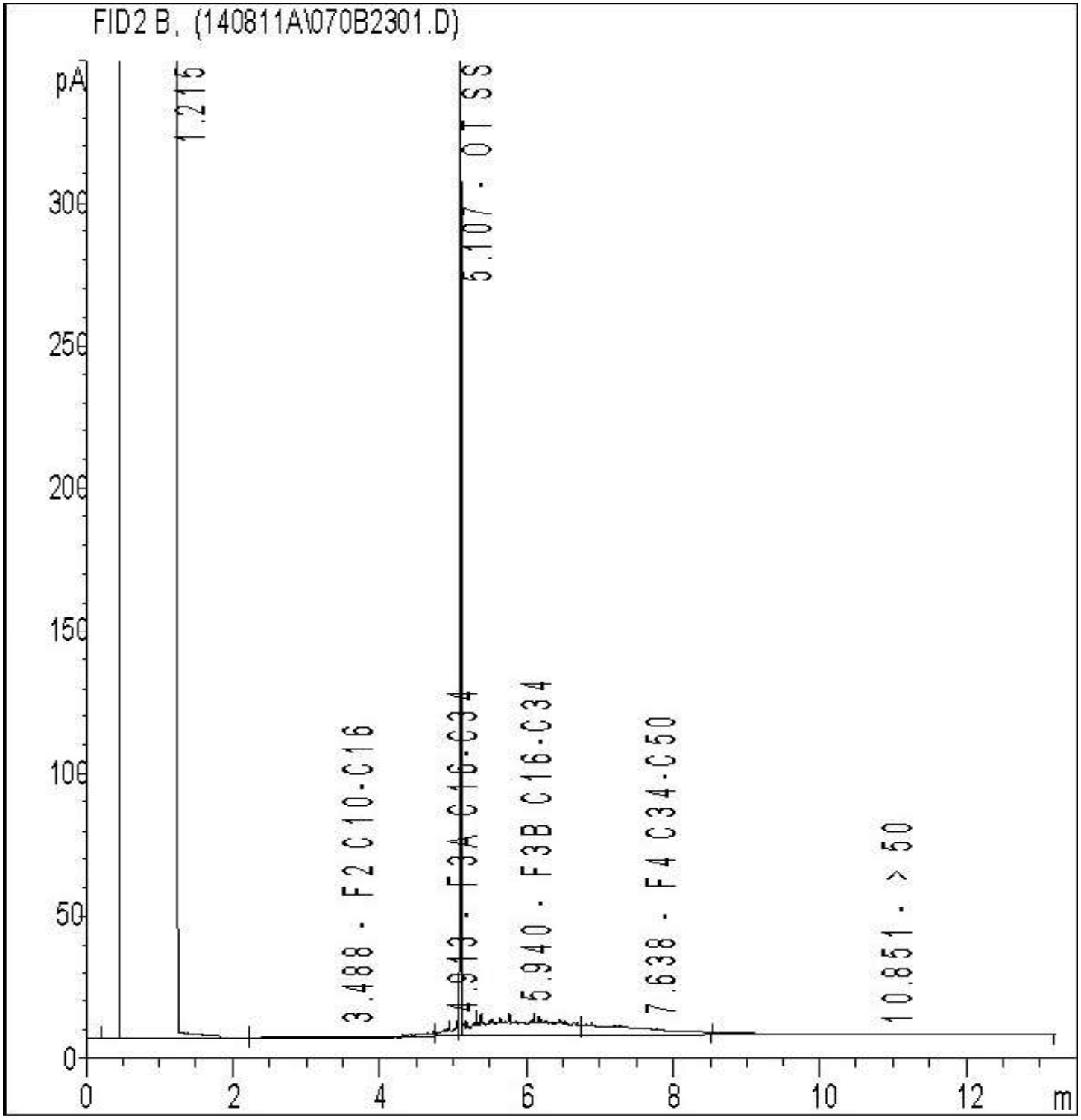
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

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
A Bureau Veritas Group Company

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.

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

Success Through Science®

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

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

Success Through Science®

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

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 #: 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

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

Success Through Science®

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

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 #: 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

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 #: B4F2927
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.

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

Success Through Science®

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

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

Success Through Science®

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).

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 #: 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.

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

6740 Campobello Road, Mississauga, Ontario L5N 2L8 www.maxxam.ca
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 #: 844309	[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:	EQUS 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	5
Intact	Y	8/9/8
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 U AND NC SUBMITT
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

Dispatcher 330 229 765 392

Maxxam
A Bureau Veritas Group Company

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: 2014/09/05
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

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 #: 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.

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

Success Through Science®

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

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

Success Through Science®

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

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 #: 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

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 #: B4F2927
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			

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

Success Through Science®

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

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 #: 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

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 #: B4F2927
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.

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

Success Through Science®

Maxxam Job #: B4F2927
Report Date: 2014/09/05

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

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

Success Through Science®

Maxxam Job #: B4F2927
Report Date: 2014/09/05

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).

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 #: B4F2927
Report Date: 2014/09/05

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.

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

6740 Campobello Road, Mississauga, Ontario L5N 2L8 www.maxxam.ca
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 #: 844309	[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:	EQUS 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	5
Intact	Y	8/9/8
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 U AND NC SUBMITT
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

Darlington 330 229 765 392

Maxxam
A Bureau Veritas Group Company

Success Through Science®

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

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 #: 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

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 #: B4F6345
Report Date: 2014/09/04

Golder Associates Ltd
Client Project #: 14-1122-0005

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

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 #: 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

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 #: B4F6345
Report Date: 2014/09/04

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

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.

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 #: 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

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 #: 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

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 #: B4F6345
Report Date: 2014/09/04

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

Test Summary

Maxxam ID XH7910
Sample ID 14-1
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 XH7910 Dup
Sample ID 14-1
Matrix Water

Collected 2014/08/26
Shipped
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
Sample ID 14-101C
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 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 #: 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

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 #: 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

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 #: 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

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 #: 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		

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 #: 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		

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®

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
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.

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

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

==========

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

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

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)	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 ___	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, CRE)	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	"	12:45	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 14-18	TP 14-18	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	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
Daniel Millson	2014/08/26	15:22	Kelsey Pilon Kelsey Pilon	14/08/26	15 22			11,12,11	Present		✓
			MARK FERREL	2014/08/27	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

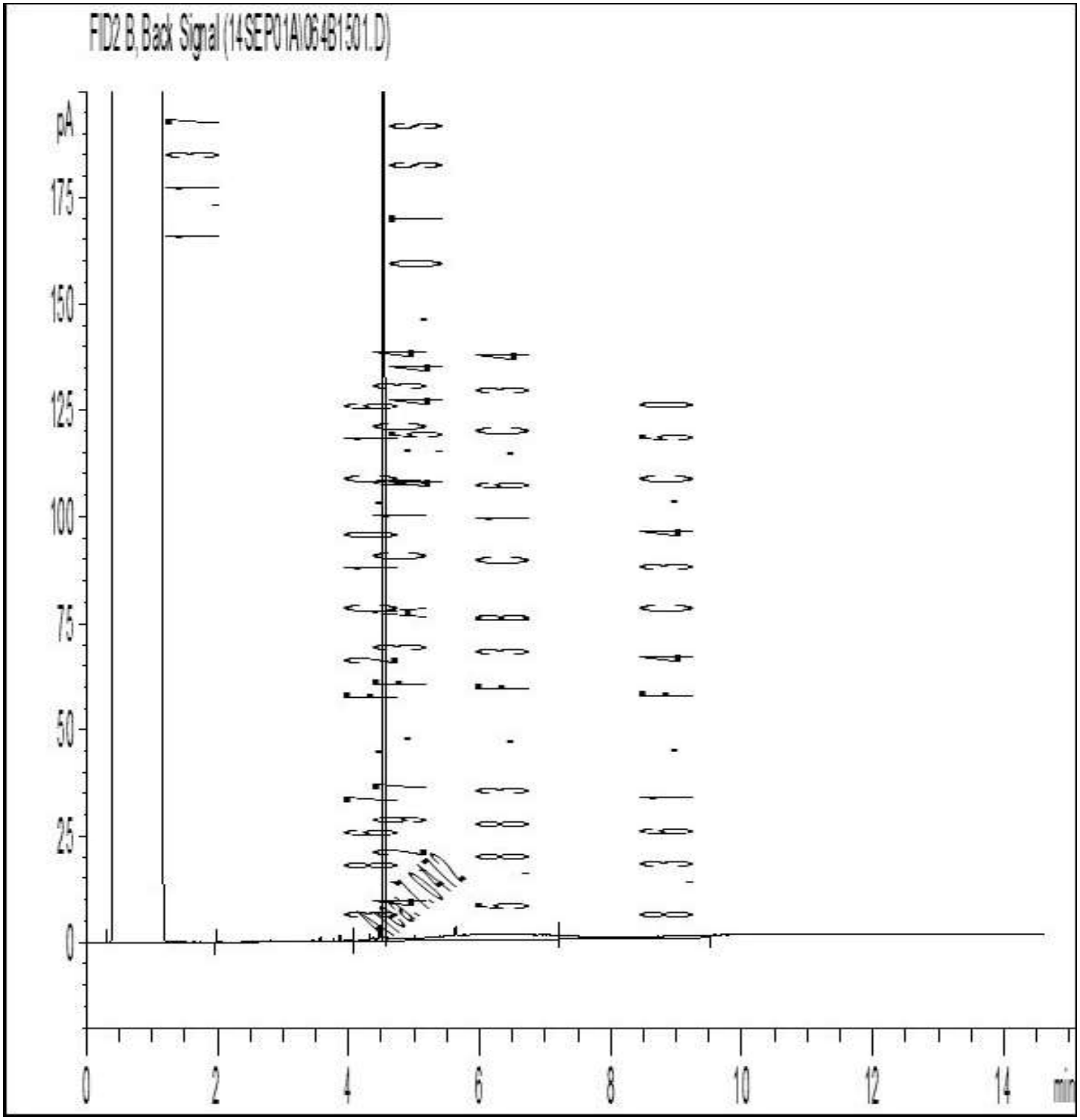
9/5/18 9/5/18

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.

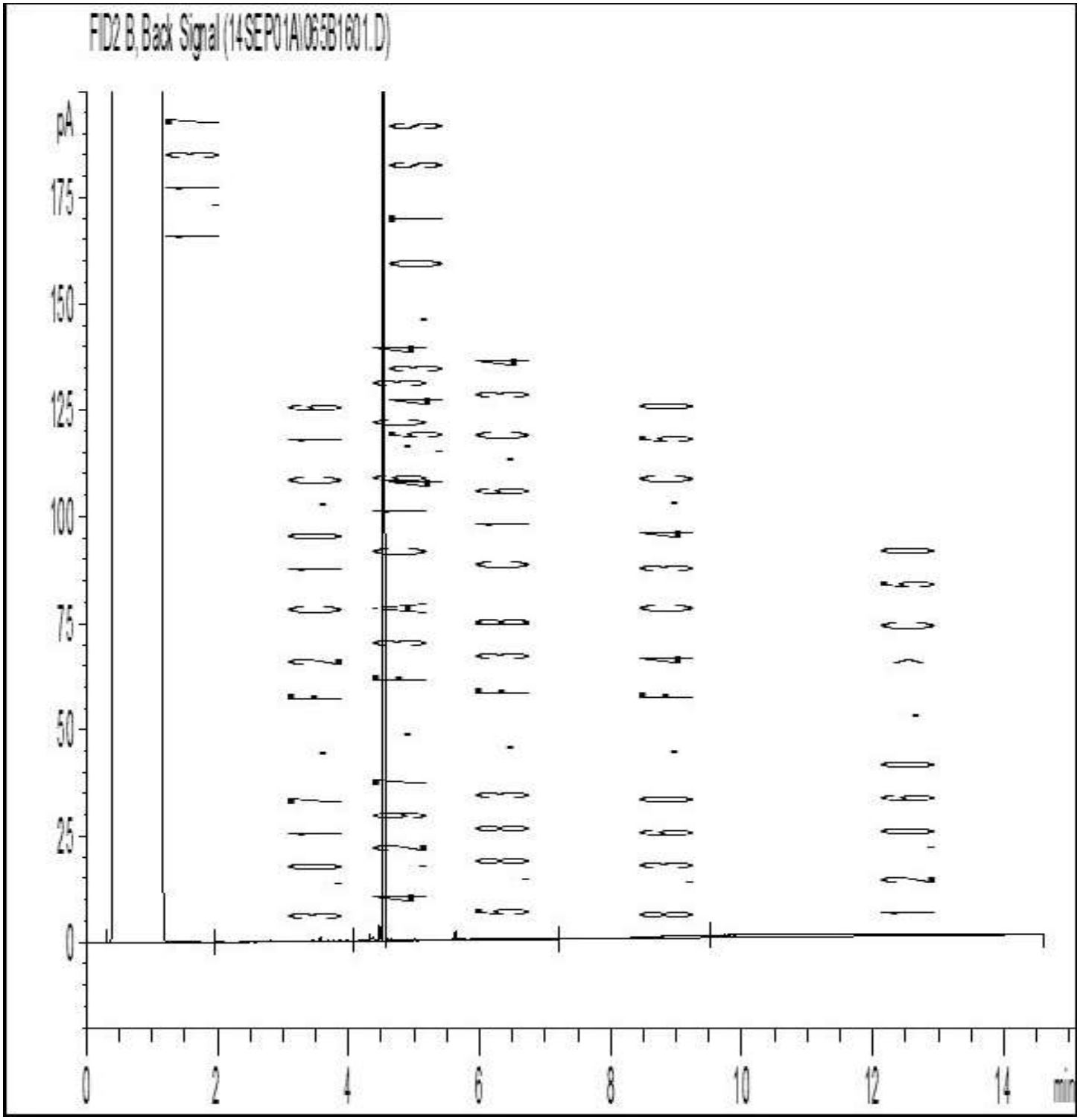
Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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.

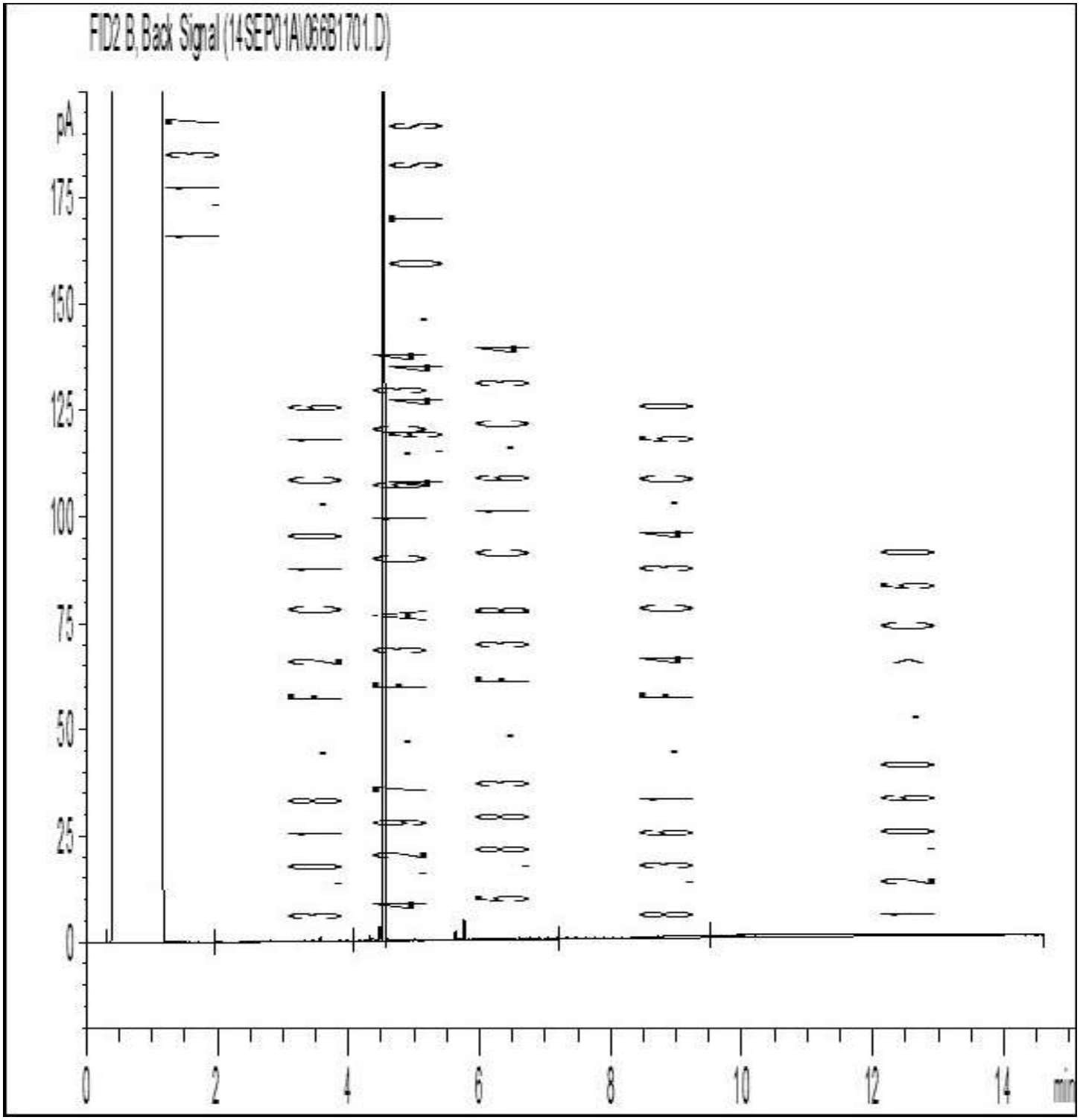
Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Report Date: 2014/09/04
Maxxam Job #: B4F6345
Maxxam Sample: 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.

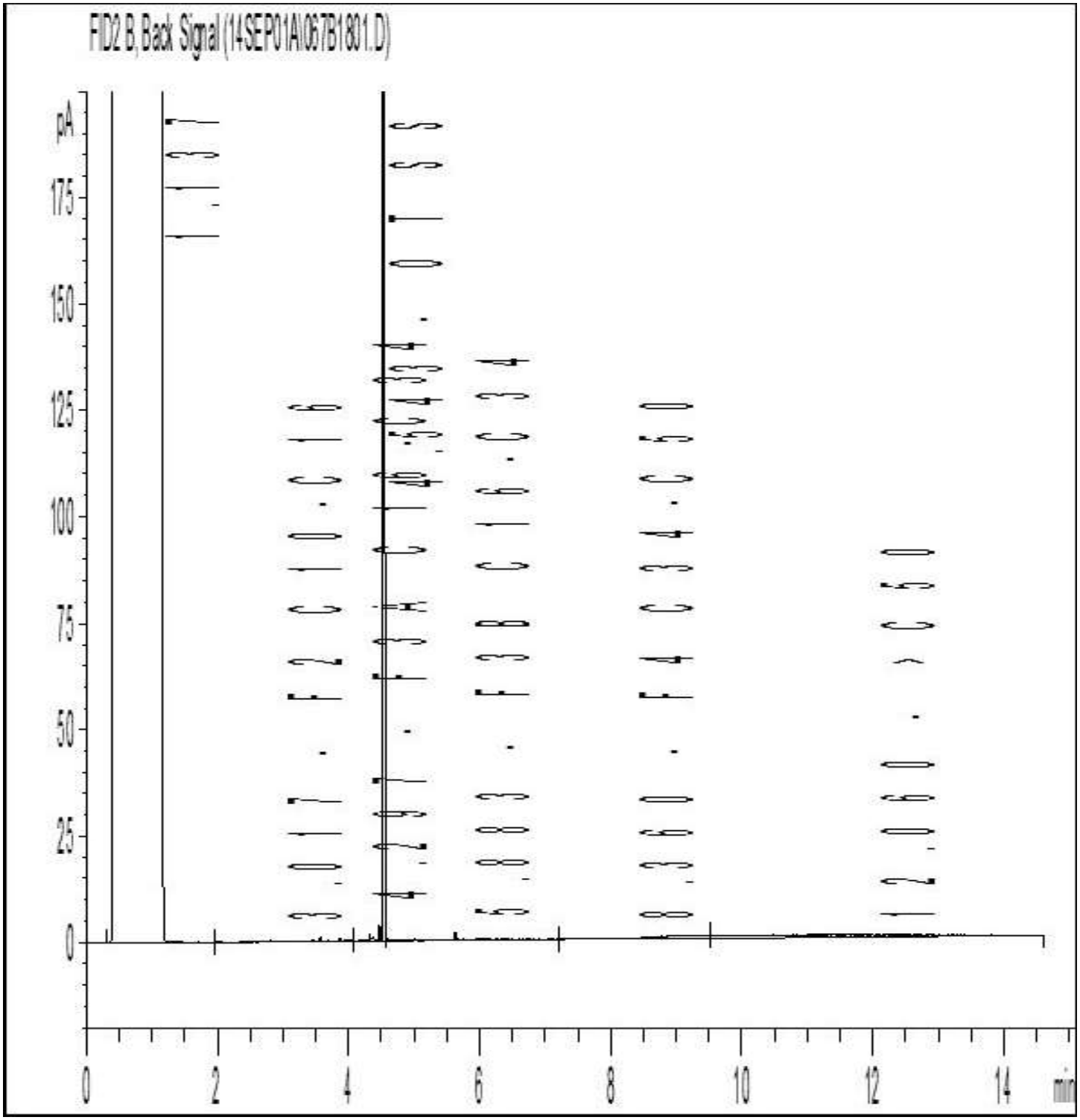
Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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.

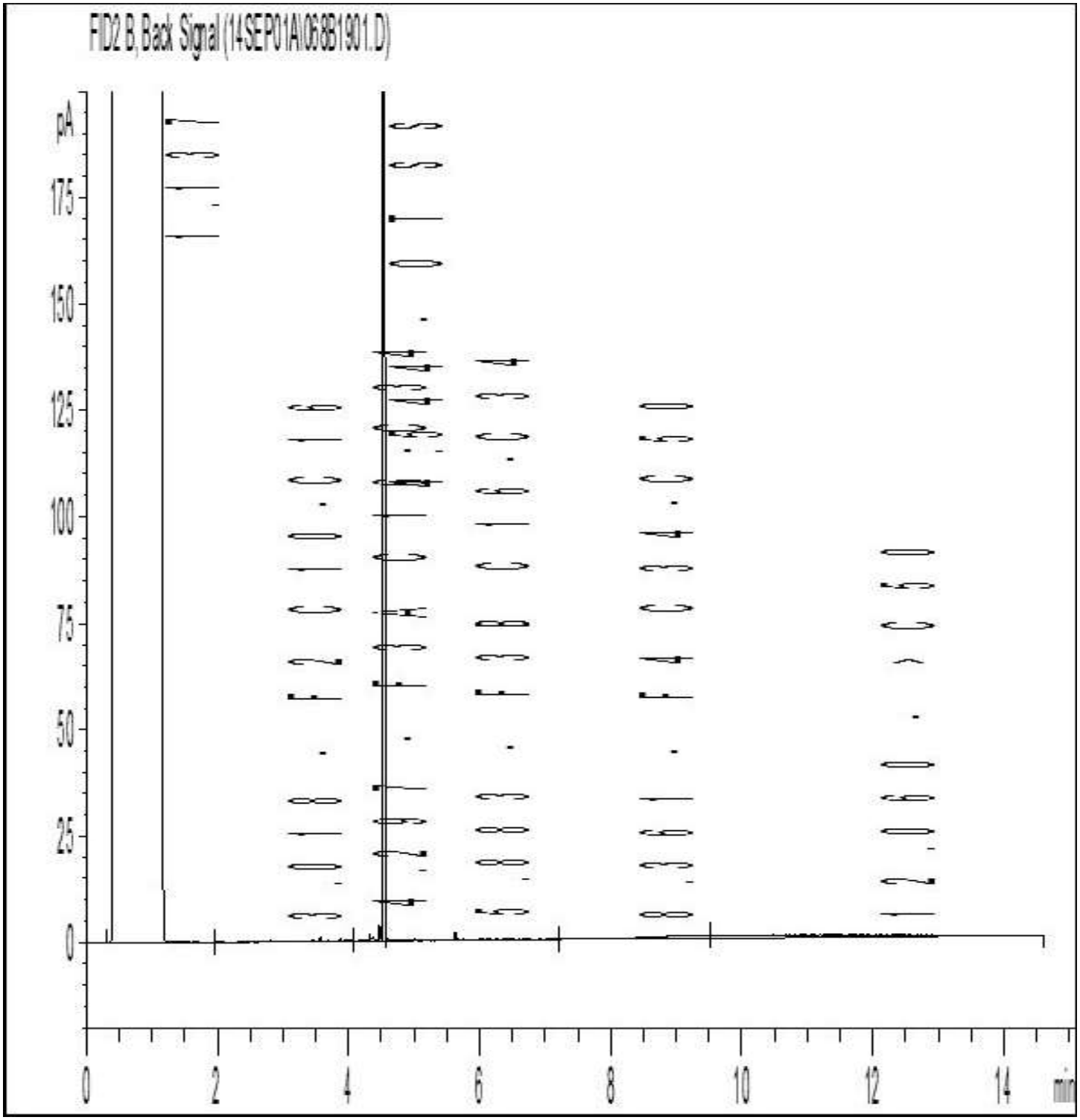
Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Report Date: 2014/09/04
Maxxam Job #: B4F6345
Maxxam Sample: 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.

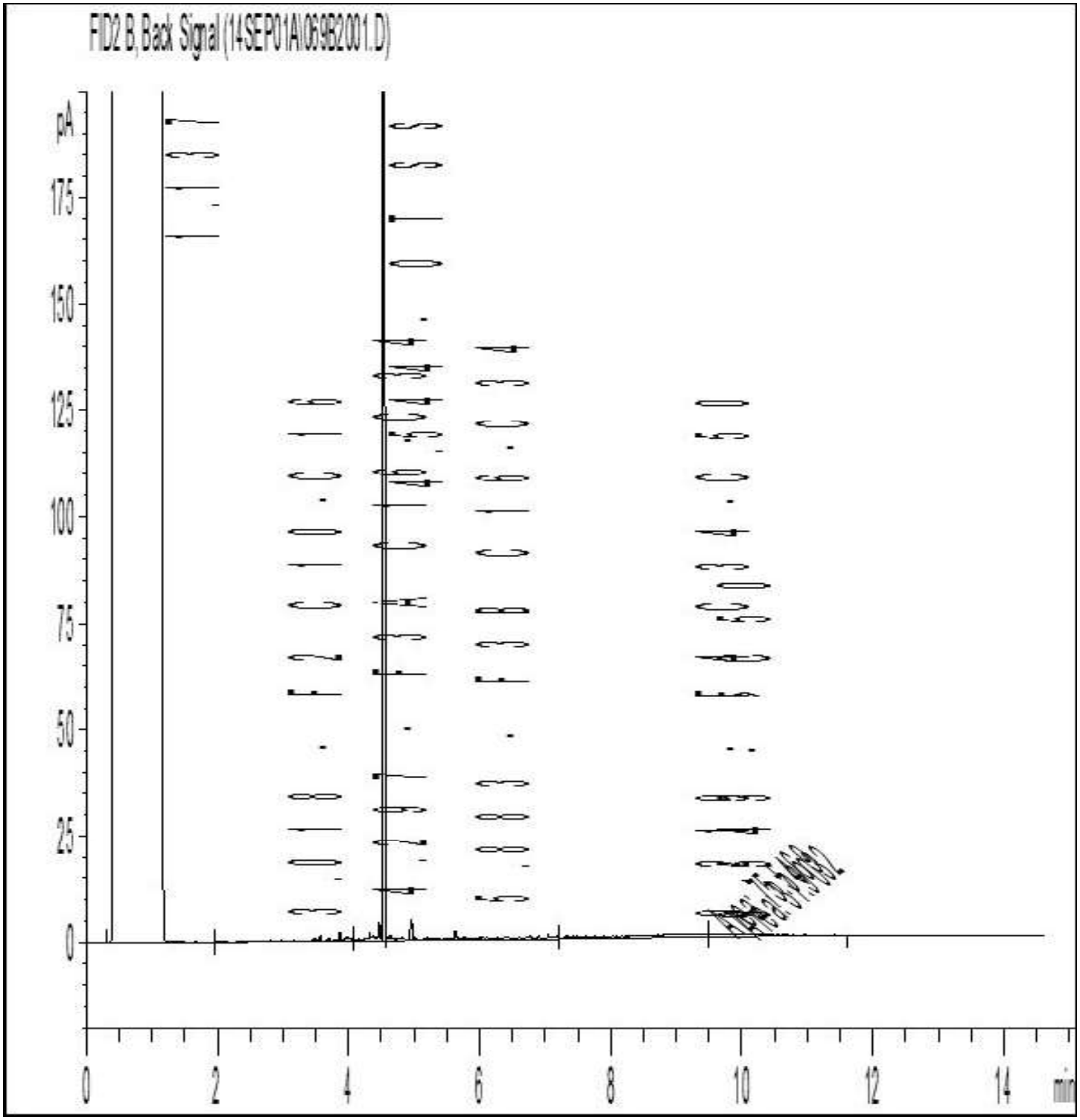
Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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.

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

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.

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

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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

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#463824-05-01	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 (< 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: ☑
(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
[illegible]	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

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 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.

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 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

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

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

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

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

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

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.

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 #: 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		

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 #: 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.

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

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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

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
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) EOD
Date Required: Tomorrow 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	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 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

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 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

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

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

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

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.

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 #: 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).

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

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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

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

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#557328-24-01
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 ☐ 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)? ___

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	O Reg 153 PAHs (Soil)	O Reg 153 ICP/MS 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	
4		TP16-404		1140				X	X	3	
5											
6											
7											
8											
9											
10											

25-May-16 15:40
Parnian Baber
B6A5806
AKP ENV-928

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	16/05/25	1430	[illegible]	2016/05/25	15:40	0
			[illegible]	2016/05/26	09:53	

Laboratory Use Only: Time Sensitive; Temperature (°C) on Receipt: 26, 27, 27; 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

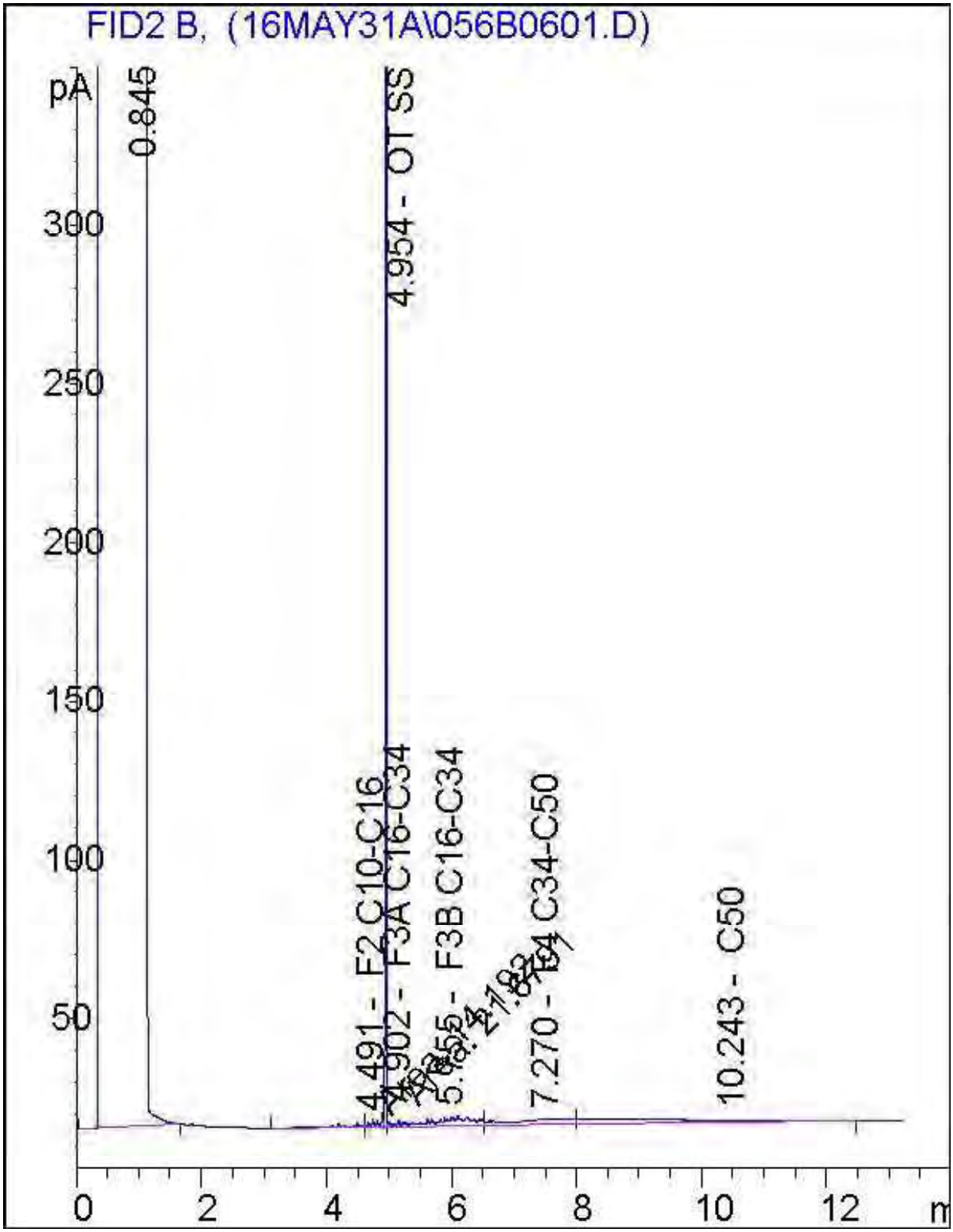
White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

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

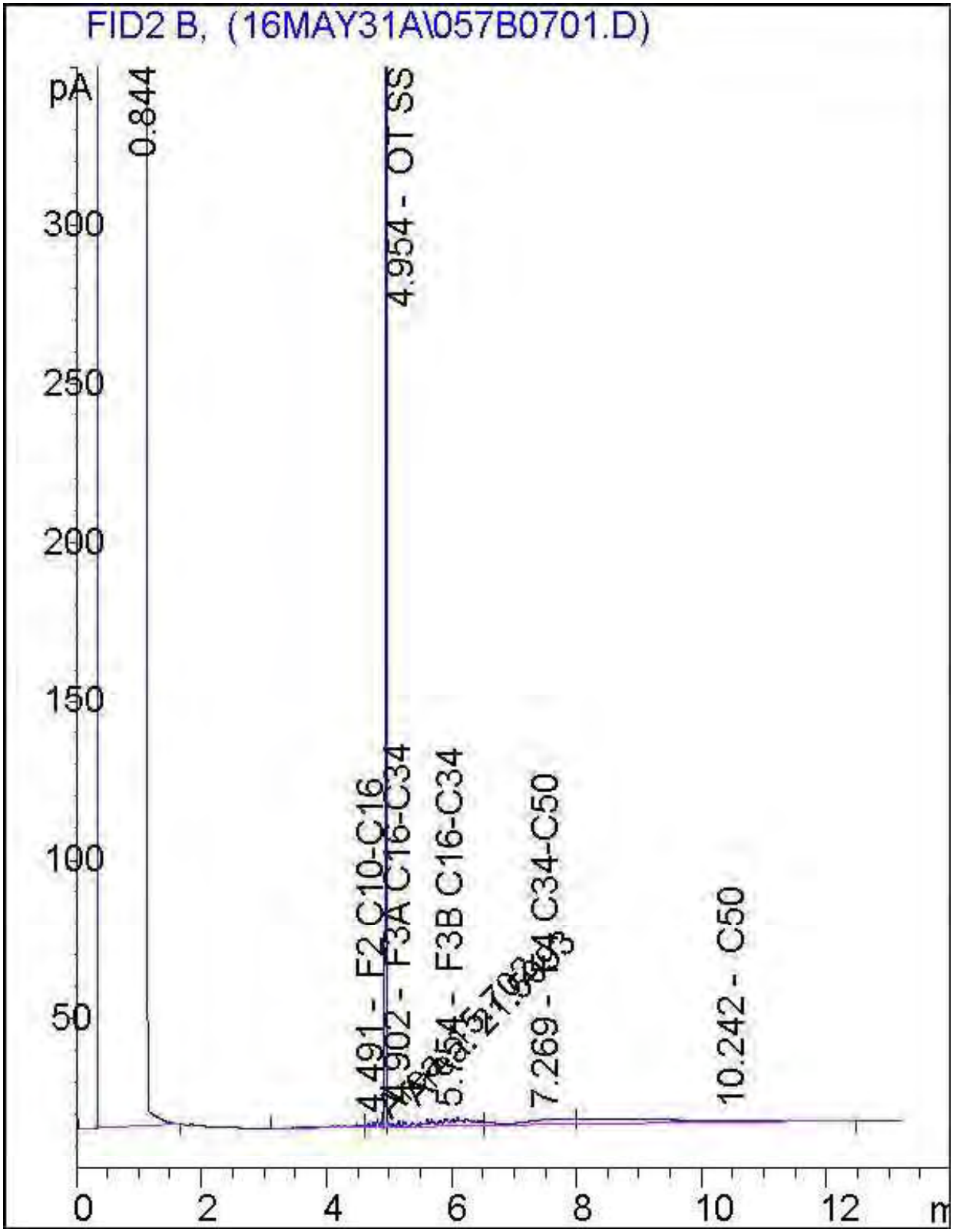


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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

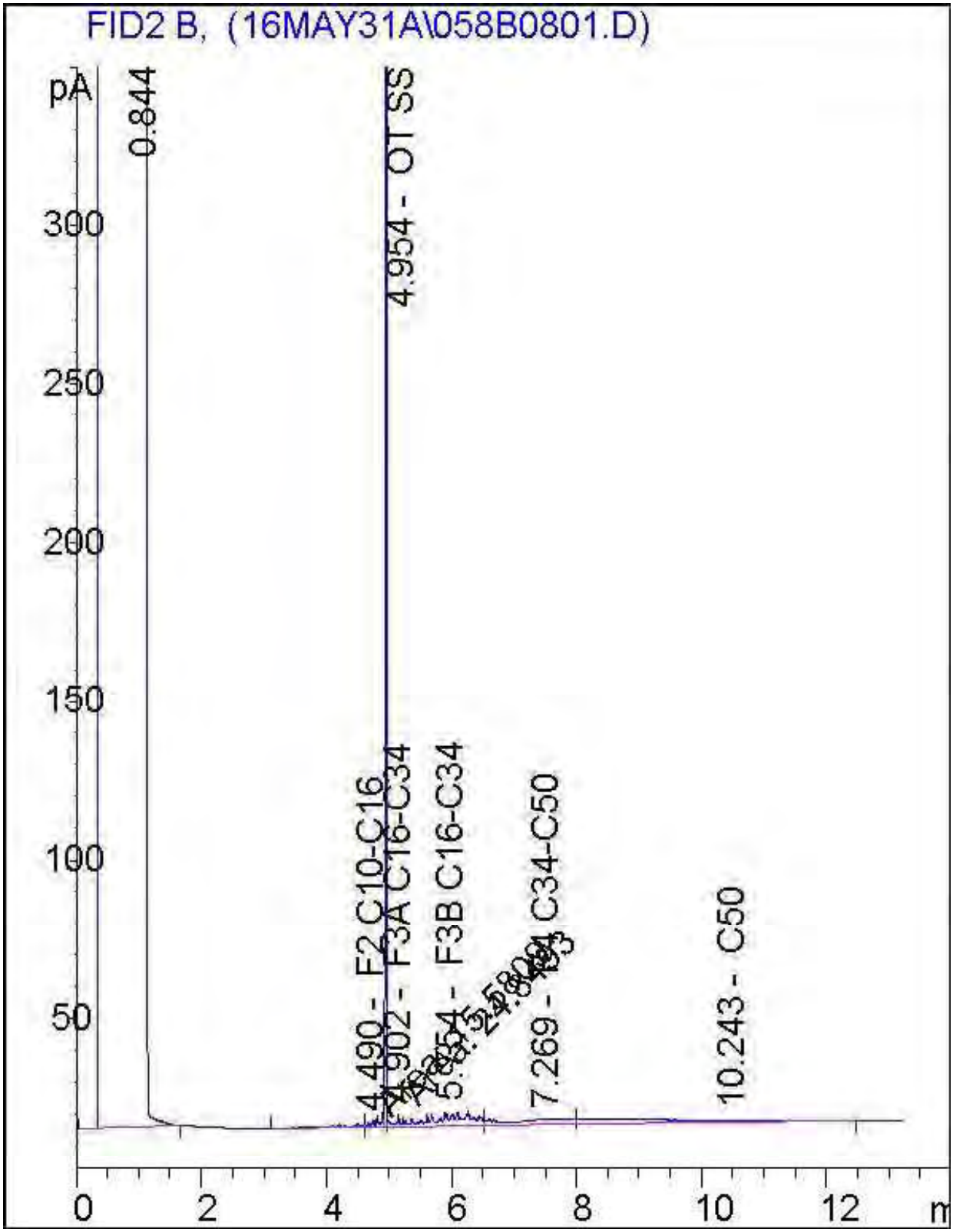


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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

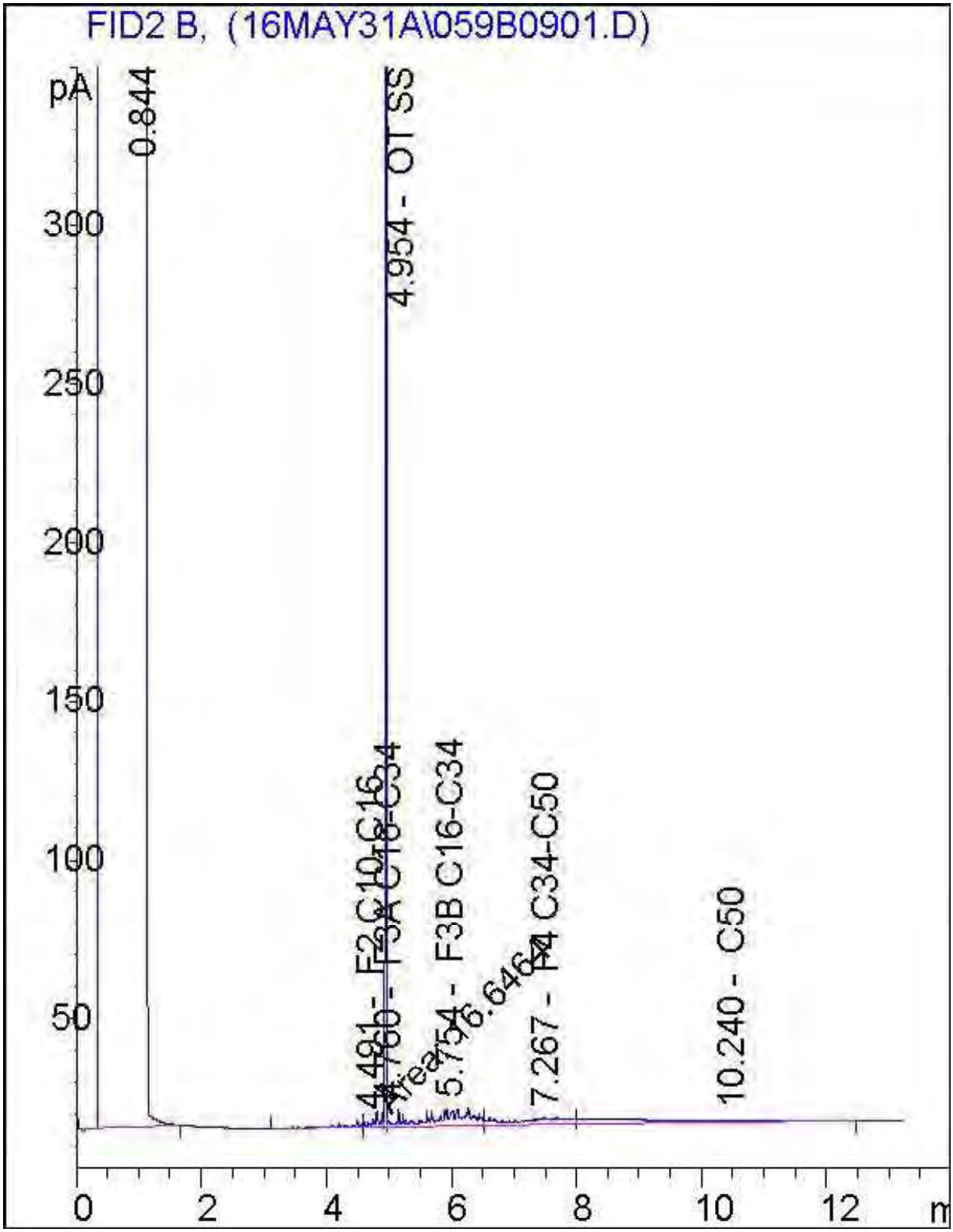


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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

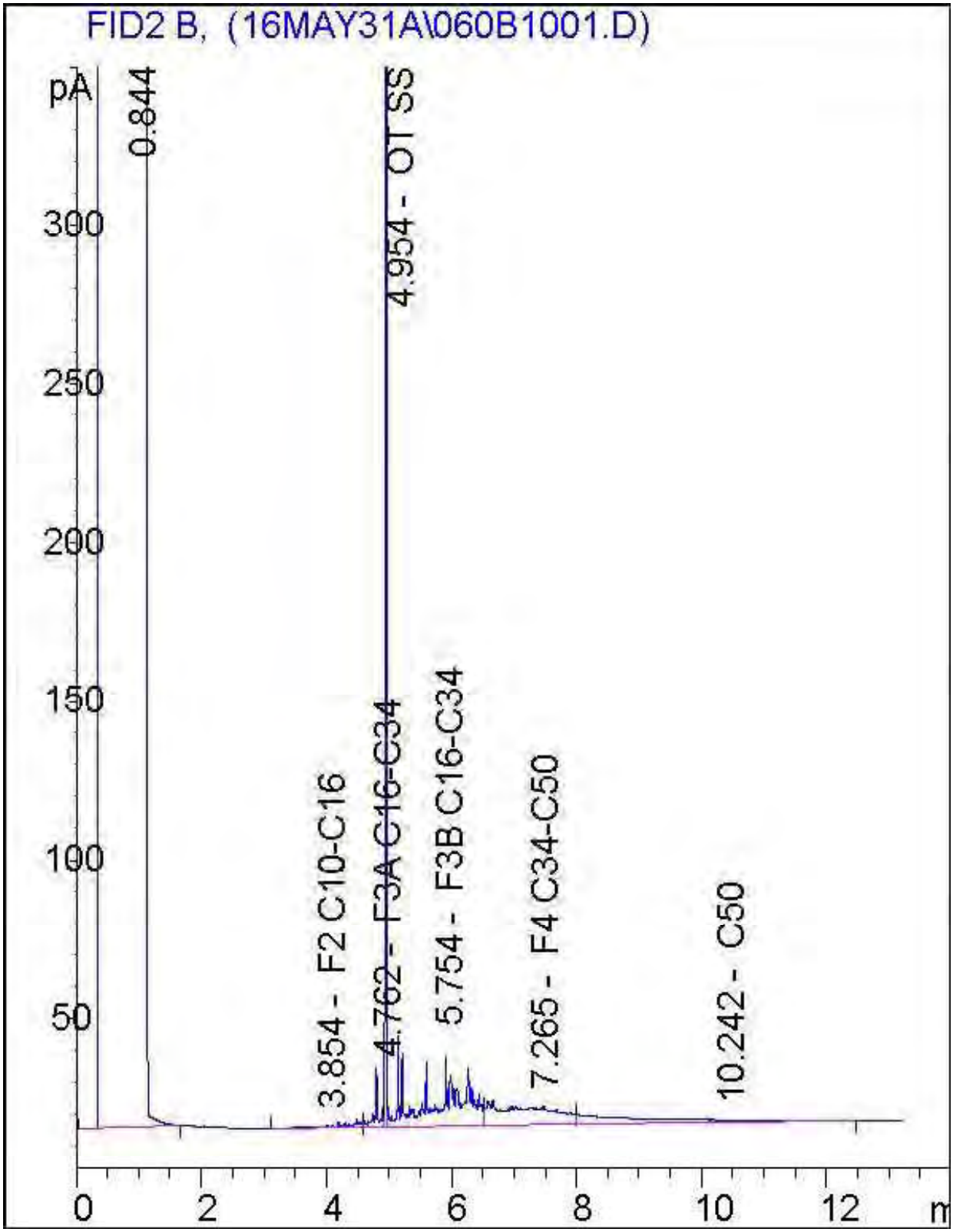


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 568264-23-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/08/11
Report #: R4105483
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B6F8508
Received: 2016/07/28, 14:50

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	9	N/A	2016/08/02	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	9	2016/07/30	2016/08/02	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	9	2016/08/02	2016/08/02	CAM SOP-00447	EPA 6020A m
MOISTURE	9	N/A	2016/07/29	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	9	2016/07/28	2016/07/29	OTT SOP-00011	EPA 8270D m
pH CaCl2 EXTRACT (1)	1	2016/08/11	2016/08/11	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.

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.
Madison Bingley, Project Manager
Email: MBingley@maxxam.ca
Phone# (613)274-3549
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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 #: B6F8508
Report Date: 2016/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CUE047	CUE048	CUE049	CUE050	CUE051		
Sampling Date			2016/07/28 11:00	2016/07/28 11:10	2016/07/28 11:20	2016/07/28 11:30	2016/07/28 11:30		
COC Number			568264-23-01	568264-23-01	568264-23-01	568264-23-01	568264-23-01		
	UNITS	**Criteria**	**TPXVS01**	**TPXVS02**	**TPXVS03**	**TPXVS04**	**TPXVSDUP**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4601878
Acid Extractable Arsenic (As)	ug/g	**18**	1.1	1.0	1.0	<1.0	<1.0	1.0	4601878
Acid Extractable Barium (Ba)	ug/g	**390**	18	48	35	27	28	0.50	4601878
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	0.40	0.30	0.22	0.25	0.20	4601878
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4601878
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	4601878
Acid Extractable Chromium (Cr)	ug/g	**160**	14	33	26	17	18	1.0	4601878
Acid Extractable Cobalt (Co)	ug/g	**22**	3.1	6.3	5.5	3.2	3.3	0.10	4601878
Acid Extractable Copper (Cu)	ug/g	**140**	6.0	5.4	6.1	6.8	7.2	0.50	4601878
Acid Extractable Lead (Pb)	ug/g	**120**	1.9	5.3	4.5	2.4	2.4	1.0	4601878
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4601878
Acid Extractable Nickel (Ni)	ug/g	**100**	7.0	15	13	8.3	8.8	0.50	4601878
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4601878
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4601878
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	0.14	0.089	0.052	0.053	0.050	4601878
Acid Extractable Uranium (U)	ug/g	**23**	0.73	0.75	0.64	0.92	0.98	0.050	4601878
Acid Extractable Vanadium (V)	ug/g	**86**	20	28	30	19	20	5.0	4601878
Acid Extractable Zinc (Zn)	ug/g	**340**	13	38	33	18	18	5.0	4601878
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4601878

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 #: B6F8508
Report Date: 2016/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			CUE052	CUE053	CUE054	CUE055		
Sampling Date			2016/07/28 11:40	2016/07/28 12:00	2016/07/28 12:10	2016/07/28 12:20		
COC Number			568264-23-01	568264-23-01	568264-23-01	568264-23-01		
	UNITS	Criteria	TPXVS05	TP16-301	TP16-302	TP16-303	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	4601878
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	1.1	1.1	1.0	1.0	4601878
Acid Extractable Barium (Ba)	ug/g	**390**	36	30	29	24	0.50	4601878
Acid Extractable Beryllium (Be)	ug/g	**4**	0.31	0.23	0.25	0.21	0.20	4601878
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.0	4601878
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	0.10	4601878
Acid Extractable Chromium (Cr)	ug/g	**160**	25	20	22	18	1.0	4601878
Acid Extractable Cobalt (Co)	ug/g	**22**	5.3	4.2	5.2	3.3	0.10	4601878
Acid Extractable Copper (Cu)	ug/g	**140**	5.3	7.5	9.2	6.4	0.50	4601878
Acid Extractable Lead (Pb)	ug/g	**120**	5.0	6.6	3.3	3.5	1.0	4601878
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	0.50	4601878
Acid Extractable Nickel (Ni)	ug/g	**100**	11	11	11	10	0.50	4601878
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	4601878
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	4601878
Acid Extractable Thallium (Tl)	ug/g	**1**	0.093	0.072	0.058	<0.050	0.050	4601878
Acid Extractable Uranium (U)	ug/g	**23**	0.82	0.78	0.80	0.76	0.050	4601878
Acid Extractable Vanadium (V)	ug/g	**86**	27	25	25	21	5.0	4601878
Acid Extractable Zinc (Zn)	ug/g	**340**	35	27	28	21	5.0	4601878
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.050	4601878

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 #: B6F8508
Report Date: 2016/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CUE047	CUE047	CUE048	CUE049	CUE050		
Sampling Date			2016/07/28 11:00	2016/07/28 11:00	2016/07/28 11:10	2016/07/28 11:20	2016/07/28 11:30		
COC Number			568264-23-01	568264-23-01	568264-23-01	568264-23-01	568264-23-01		
	UNITS	Criteria	TPXVS01	TPXVS01 Lab-Dup	TPXVS02	TPXVS03	TPXVS04	RDL	QC Batch
Inorganics									
Moisture	%	-	11		19	11	14	0.2	4598022
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	4598342
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0066	0.0053	0.0056	<0.0050	0.0050	4598345
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0066	0.0053	0.0061	<0.0050	0.0050	4598345
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.013	0.0060	0.012	<0.0050	0.0050	4598345
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
Chrysene	ug/g	**7**	<0.0050	<0.0050	0.0053	0.0061	<0.0050	0.0050	4598345
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
Fluoranthene	ug/g	**0.69**	<0.0050	0.011	0.0087	0.0089	<0.0050	0.0050	4598345
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
Phenanthrene	ug/g	**6.2**	<0.0050	0.0059	<0.0050	0.0050	<0.0050	0.0050	4598345
Pyrene	ug/g	**78**	<0.0050	0.0079	0.0073	0.0089	<0.0050	0.0050	4598345
Surrogate Recovery (%)									
D10-Anthracene	%	-	74	74	72	71	72		4598345
D14-Terphenyl (FS)	%	-	84	82	79	76	75		4598345
D8-Acenaphthylene	%	-	71	70	71	69	72		4598345

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 Job #: B6F8508
Report Date: 2016/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			CUE051	CUE052	CUE053	CUE054	CUE055		
Sampling Date			2016/07/28 11:30	2016/07/28 11:40	2016/07/28 12:00	2016/07/28 12:10	2016/07/28 12:20		
COC Number			568264-23-01	568264-23-01	568264-23-01	568264-23-01	568264-23-01		
	UNITS	Criteria	TPXVSDUP	TPXVS05	TP16-301	TP16-302	TP16-303	RDL	QC Batch
Inorganics									
Moisture	%	-	12	15	13	14	5.5	0.2	4598022
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4598342
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
Benzo(a)anthracene	ug/g	**0.5**	0.016	0.0051	0.014	<0.0050	<0.0050	0.0050	4598345
Benzo(a)pyrene	ug/g	**0.3**	0.017	0.0056	0.016	<0.0050	<0.0050	0.0050	4598345
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.022	0.010	0.026	<0.0050	<0.0050	0.0050	4598345
Benzo(g,h,i)perylene	ug/g	**6.6**	0.012	<0.0050	0.0088	<0.0050	<0.0050	0.0050	4598345
Benzo(k)fluoranthene	ug/g	**0.78**	0.0082	<0.0050	0.0088	<0.0050	<0.0050	0.0050	4598345
Chrysene	ug/g	**7**	0.014	0.0051	0.014	<0.0050	<0.0050	0.0050	4598345
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
Fluoranthene	ug/g	**0.69**	0.010	0.0077	0.021	<0.0050	0.0071	0.0050	4598345
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.0082	<0.0050	0.0061	<0.0050	<0.0050	0.0050	4598345
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4598345
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	0.0099	<0.0050	<0.0050	0.0050	4598345
Pyrene	ug/g	**78**	0.016	0.0067	0.018	<0.0050	<0.0050	0.0050	4598345
Surrogate Recovery (%)									
D10-Anthracene	%	**-**	69	74	70	73	68		4598345
D14-Terphenyl (FS)	%	**-**	73	79	72	74	72		4598345
D8-Acenaphthylene	%	**-**	70	77	75	79	75		4598345

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 #: B6F8508
Report Date: 2016/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

RESULTS OF ANALYSES OF SOIL

Maxxam ID		CUE053	CUE053	
Sampling Date		2016/07/28 12:00	2016/07/28 12:00	
COC Number		568264-23-01	568264-23-01	
	UNITS	**TP16-301**	**TP16-301 Lab-Dup**	**QC Batch**
Inorganics				
Available (CaCl2) pH	pH	7.18	7.21	4614952

QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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 #: B6F8508
Report Date: 2016/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			CUE047	CUE048	CUE049	CUE050	CUE051		
Sampling Date			2016/07/28 11:00	2016/07/28 11:10	2016/07/28 11:20	2016/07/28 11:30	2016/07/28 11:30		
COC Number			568264-23-01	568264-23-01	568264-23-01	568264-23-01	568264-23-01		
	UNITS	**Criteria**	**TPXVS01**	**TPXVS02**	**TPXVS03**	**TPXVS04**	**TPXVSDUP**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.2	<0.2	0.2	0.4	0.5	0.2	4601220

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			CUE052	CUE053	CUE053	CUE054	CUE055		
Sampling Date			2016/07/28 11:40	2016/07/28 12:00	2016/07/28 12:00	2016/07/28 12:10	2016/07/28 12:20		
COC Number			568264-23-01	568264-23-01	568264-23-01	568264-23-01	568264-23-01		
	UNITS	**Criteria**	**TPXVS05**	**TP16-301**	**TP16-301 Lab-Dup**	**TP16-302**	**TP16-303**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.2	0.7	<0.2	0.5	0.5	0.2	4601220

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 Job #: B6F8508
Report Date: 2016/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CUE047
Sample ID: TPXVS01
Matrix: Soil

Collected: 2016/07/28
Shipped:
Received: 2016/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4598342	N/A	2016/08/02	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4601220	2016/07/30	2016/08/02	Manoj Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4601878	2016/08/02	2016/08/02	John Bowman
MOISTURE	BAL	4598022	N/A	2016/07/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4598345	2016/07/28	2016/07/29	Arezoo Habibagahi

Maxxam ID: CUE047 Dup
Sample ID: TPXVS01
Matrix: Soil

Collected: 2016/07/28
Shipped:
Received: 2016/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4598345	2016/07/28	2016/07/29	Arezoo Habibagahi

Maxxam ID: CUE048
Sample ID: TPXVS02
Matrix: Soil

Collected: 2016/07/28
Shipped:
Received: 2016/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4598342	N/A	2016/08/02	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4601220	2016/07/30	2016/08/02	Manoj Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4601878	2016/08/02	2016/08/02	John Bowman
MOISTURE	BAL	4598022	N/A	2016/07/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4598345	2016/07/28	2016/07/29	Arezoo Habibagahi

Maxxam ID: CUE049
Sample ID: TPXVS03
Matrix: Soil

Collected: 2016/07/28
Shipped:
Received: 2016/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4598342	N/A	2016/08/02	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4601220	2016/07/30	2016/08/02	Manoj Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4601878	2016/08/02	2016/08/02	John Bowman
MOISTURE	BAL	4598022	N/A	2016/07/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4598345	2016/07/28	2016/07/29	Arezoo Habibagahi

Maxxam ID: CUE050
Sample ID: TPXVS04
Matrix: Soil

Collected: 2016/07/28
Shipped:
Received: 2016/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4598342	N/A	2016/08/02	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4601220	2016/07/30	2016/08/02	Manoj Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4601878	2016/08/02	2016/08/02	John Bowman
MOISTURE	BAL	4598022	N/A	2016/07/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4598345	2016/07/28	2016/07/29	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 #: B6F8508
Report Date: 2016/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CUE051
Sample ID: TPXVSDUP
Matrix: Soil

Collected: 2016/07/28
Shipped:
Received: 2016/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4598342	N/A	2016/08/02	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4601220	2016/07/30	2016/08/02	Manoj Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4601878	2016/08/02	2016/08/02	John Bowman
MOISTURE	BAL	4598022	N/A	2016/07/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4598345	2016/07/28	2016/07/29	Arezoo Habibagahi

Maxxam ID: CUE052
Sample ID: TPXVS05
Matrix: Soil

Collected: 2016/07/28
Shipped:
Received: 2016/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4598342	N/A	2016/08/02	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4601220	2016/07/30	2016/08/02	Manoj Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4601878	2016/08/02	2016/08/02	John Bowman
MOISTURE	BAL	4598022	N/A	2016/07/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4598345	2016/07/28	2016/07/29	Arezoo Habibagahi

Maxxam ID: CUE053
Sample ID: TP16-301
Matrix: Soil

Collected: 2016/07/28
Shipped:
Received: 2016/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4598342	N/A	2016/08/02	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4601220	2016/07/30	2016/08/02	Manoj Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4601878	2016/08/02	2016/08/02	John Bowman
MOISTURE	BAL	4598022	N/A	2016/07/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4598345	2016/07/28	2016/07/29	Arezoo Habibagahi
pH CaCl2 EXTRACT	AT	4614952	2016/08/11	2016/08/11	Neil Dassanayake

Maxxam ID: CUE053 Dup
Sample ID: TP16-301
Matrix: Soil

Collected: 2016/07/28
Shipped:
Received: 2016/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4601220	2016/07/30	2016/08/02	Manoj Gera
pH CaCl2 EXTRACT	AT	4614952	2016/08/11	2016/08/11	Neil Dassanayake

Maxxam ID: CUE054
Sample ID: TP16-302
Matrix: Soil

Collected: 2016/07/28
Shipped:
Received: 2016/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4598342	N/A	2016/08/02	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4601220	2016/07/30	2016/08/02	Manoj Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4601878	2016/08/02	2016/08/02	John Bowman
MOISTURE	BAL	4598022	N/A	2016/07/29	Liliana Gaburici

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 #: B6F8508
Report Date: 2016/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CUE054
Sample ID: TP16-302
Matrix: Soil

Collected: 2016/07/28
Shipped:
Received: 2016/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4598345	2016/07/28	2016/07/29	Arezoo Habibagahi

Maxxam ID: CUE055
Sample ID: TP16-303
Matrix: Soil

Collected: 2016/07/28
Shipped:
Received: 2016/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4598342	N/A	2016/08/02	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4601220	2016/07/30	2016/08/02	Manoj Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4601878	2016/08/02	2016/08/02	John Bowman
MOISTURE	BAL	4598022	N/A	2016/07/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4598345	2016/07/28	2016/07/29	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 #: B6F8508
Report Date: 2016/08/11

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	27.3°C

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 #: B6F8508
Report Date: 2016/08/11

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
4598345	D10-Anthracene	2016/07/29	72	50 - 130	76	50 - 130	77	%		
4598345	D14-Terphenyl (FS)	2016/07/29	79	50 - 130	83	50 - 130	84	%		
4598345	D8-Acenaphthylene	2016/07/29	66	50 - 130	71	50 - 130	72	%		
4598022	Moisture	2016/07/29							19	50
4598345	1-Methylnaphthalene	2016/07/29	93	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
4598345	2-Methylnaphthalene	2016/07/29	90	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
4598345	Acenaphthene	2016/07/29	83	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4598345	Acenaphthylene	2016/07/29	76	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
4598345	Anthracene	2016/07/29	92	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4598345	Benzo(a)anthracene	2016/07/29	128	50 - 130	128	50 - 130	<0.0050	ug/g	NC	40
4598345	Benzo(a)pyrene	2016/07/29	119	50 - 130	129	50 - 130	<0.0050	ug/g	NC	40
4598345	Benzo(b/j)fluoranthene	2016/07/29	124	50 - 130	126	50 - 130	<0.0050	ug/g	NC	40
4598345	Benzo(g,h,i)perylene	2016/07/29	112	50 - 130	122	50 - 130	<0.0050	ug/g	NC	40
4598345	Benzo(k)fluoranthene	2016/07/29	117	50 - 130	121	50 - 130	<0.0050	ug/g	NC	40
4598345	Chrysene	2016/07/29	129	50 - 130	129	50 - 130	<0.0050	ug/g	NC	40
4598345	Dibenz(a,h)anthracene	2016/07/29	122	50 - 130	129	50 - 130	<0.0050	ug/g	NC	40
4598345	Fluoranthene	2016/07/29	101	50 - 130	107	50 - 130	<0.0050	ug/g	NC	40
4598345	Fluorene	2016/07/29	83	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4598345	Indeno(1,2,3-cd)pyrene	2016/07/29	129	50 - 130	128	50 - 130	<0.0050	ug/g	NC	40
4598345	Naphthalene	2016/07/29	94	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
4598345	Phenanthrene	2016/07/29	93	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
4598345	Pyrene	2016/07/29	100	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40
4601220	Chromium (VI)	2016/08/02	0.034 (1)	75 - 125	80	80 - 120	<0.2	ug/g	NC	35
4601878	Acid Extractable Antimony (Sb)	2016/08/02	95	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
4601878	Acid Extractable Arsenic (As)	2016/08/02	96	75 - 125	99	80 - 120	<1.0	ug/g	NC	30
4601878	Acid Extractable Barium (Ba)	2016/08/02	NC	75 - 125	99	80 - 120	<0.50	ug/g	6.3	30
4601878	Acid Extractable Beryllium (Be)	2016/08/02	102	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
4601878	Acid Extractable Boron (B)	2016/08/02	97	75 - 125	106	80 - 120	<5.0	ug/g	NC	30
4601878	Acid Extractable Cadmium (Cd)	2016/08/02	96	75 - 125	99	80 - 120	<0.10	ug/g	NC	30
4601878	Acid Extractable Chromium (Cr)	2016/08/02	97	75 - 125	100	80 - 120	<1.0	ug/g	6.2	30
4601878	Acid Extractable Cobalt (Co)	2016/08/02	95	75 - 125	100	80 - 120	<0.10	ug/g	4.9	30

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 #: B6F8508
Report Date: 2016/08/11

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
4601878	Acid Extractable Copper (Cu)	2016/08/02	NC	75 - 125	103	80 - 120	<0.50	ug/g	2.0	30
4601878	Acid Extractable Lead (Pb)	2016/08/02	93	75 - 125	101	80 - 120	<1.0	ug/g	NC	30
4601878	Acid Extractable Mercury (Hg)	2016/08/02	101	75 - 125	104	80 - 120	<0.050	ug/g	NC	30
4601878	Acid Extractable Molybdenum (Mo)	2016/08/02	98	75 - 125	101	80 - 120	<0.50	ug/g	1.1	30
4601878	Acid Extractable Nickel (Ni)	2016/08/02	97	75 - 125	99	80 - 120	<0.50	ug/g	3.5	30
4601878	Acid Extractable Selenium (Se)	2016/08/02	99	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4601878	Acid Extractable Silver (Ag)	2016/08/02	102	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
4601878	Acid Extractable Thallium (Tl)	2016/08/02	93	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
4601878	Acid Extractable Uranium (U)	2016/08/02	92	75 - 125	99	80 - 120	<0.050	ug/g	5.0	30
4601878	Acid Extractable Vanadium (V)	2016/08/02	NC	75 - 125	101	80 - 120	<5.0	ug/g	NC	30
4601878	Acid Extractable Zinc (Zn)	2016/08/02	NC	75 - 125	101	80 - 120	<5.0	ug/g	NC	30
4614952	Available (CaCl2) pH	2016/08/11			98	97 - 103			0.38	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).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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 #: B6F8508
Report Date: 2016/08/11

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

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.

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 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 #: 568264
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#568264-23-01	Madison Bingley
				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		TPX VS01	16/07/28	1100	Soil		X	X							1	
2		TPX VS02		1110			X	X							1	
3		TPX VS03		1120			X	X							1	
4		TPX VS04		1130			X	X							1	
5		TPX VS DUP		1130			X	X							1	
6		TPX VS05		1140			X	X							1	
7		TP16-301		1200			X	X							1	
8		TP16-302		1210			X	X							1	RECEIVED IN OTTAWA
9		TP16-303		1220			X	X							1	
10																ON ICE PACK

28-Jul-16 15:09
Madison Bingley
B6F8508

* 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	16/07/28	1430	S. Habib / Fatemeh Habib	2016/07/28	14:50	0		27, 27, 28	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 #: B6F8508
Report Date: 2016/08/11

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

Your Project #: 1525113
Your C.O.C. #: 572155-25-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/08/12
Report #: R4107449
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6G9533
Received: 2016/08/11, 14:55

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
pH CaCl2 EXTRACT (1)	3	2016/08/12	2016/08/12	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.

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.
Madison Bingley, Project Manager
Email: MBingley@maxxam.ca
Phone# (613)274-3549
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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 #: B6G9533
Report Date: 2016/08/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

RESULTS OF ANALYSES OF SOIL

Maxxam ID		CWG093	CWG094	CWG095	CWG095	
Sampling Date		2016/08/11 12:20	2016/08/11 12:30	2016/08/11 12:40	2016/08/11 12:40	
COC Number		572155-25-01	572155-25-01	572155-25-01	572155-25-01	
	UNITS	**TP16-701**	**TP16-702**	**TP16-703**	**TP16-703 Lab-Dup**	**QC Batch**
Inorganics						
Available (CaCl2) pH	pH	7.34	7.32	7.17	7.22	4617147

QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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 #: B6G9533
Report Date: 2016/08/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: CWG093
Sample ID: TP16-701
Matrix: Soil

Collected: 2016/08/11
Shipped:
Received: 2016/08/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	4617147	2016/08/12	2016/08/12	Neil Dassanayake

Maxxam ID: CWG094
Sample ID: TP16-702
Matrix: Soil

Collected: 2016/08/11
Shipped:
Received: 2016/08/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	4617147	2016/08/12	2016/08/12	Neil Dassanayake

Maxxam ID: CWG095
Sample ID: TP16-703
Matrix: Soil

Collected: 2016/08/11
Shipped:
Received: 2016/08/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	4617147	2016/08/12	2016/08/12	Neil Dassanayake

Maxxam ID: CWG095 Dup
Sample ID: TP16-703
Matrix: Soil

Collected: 2016/08/11
Shipped:
Received: 2016/08/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	4617147	2016/08/12	2016/08/12	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 #: B6G9533
Report Date: 2016/08/12

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	31.3°C

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 Job #: B6G9533
Report Date: 2016/08/12

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

			SPIKED BLANK		RPD	
QC Batch	**Parameter**	**Date**	**% Recovery**	**QC Limits**	**Value (%)**	**QC Limits**
4617147	Available (CaCl2) pH	2016/08/12	99	97 - 103	0.66	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.

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 #: B6G9533
Report Date: 2016/08/12

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).

Brad Newman, 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.

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 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 #:
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			572155
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#572155-25-01	Madison Bingley
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

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	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	pH	# of Bottles	Comments
1		TP16-701	16/08/11	1220	Soil			X	1	
2		TP16-702	↓	1230	↓			X	1	
3		TP16-703	↓	1240	↓			X	1	
4										
5										
6										
7										
8										
9										
10										

11-Aug-16 14:55
Madison Bingley
B6G9533
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	16/08/11	1430	Fatemeh Habib	2016/08/11	14:55	0		32, 30, 32	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 #: B6G9533
Report Date: 2016/08/12

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
Site Location: 175 MAIN ST.
Your C.O.C. #: Page 1 / 1

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/11/14
Report #: R4246353
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B6N7973
Received: 2016/11/02, 14:55

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	1	N/A	2016/11/04	CAM SOP-00301	EPA 8270D m
Petroleum Hydro. CCME F1 & BTEX in Soil (2)	1	N/A	2016/11/03	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (3)	1	2016/11/03	2016/11/03	OTT SOP-00001	CCME CWS
MOISTURE	1	N/A	2016/11/04	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Leachate by GC/MS (SIM) (1)	1	2016/11/11	2016/11/12	CAM SOP-00318	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	1	2016/11/03	2016/11/03	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Site Location: 175 MAIN ST.
Your C.O.C. #: Page 1 / 1

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/11/14
Report #: R4246353
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B6N7973
Received: 2016/11/02, 14:55

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager
Email: MBingley@maxxam.ca
Phone# (613)274-3549
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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 #: B6N7973
Report Date: 2016/11/14

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST.
Sampler Initials: DG

O.REG 153 PAHS (SOIL)

Maxxam ID			DJK256		
Sampling Date			2016/11/02 11:15		
COC Number			Page 1 / 1		
	UNITS	Criteria	BH16-216 SA6	RDL	QC Batch
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	**3.3**	0.014	4730606
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	0.64	0.0050	4731657
Acenaphthylene	ug/g	**0.15**	**1.2**	0.0050	4731657
Anthracene	ug/g	**0.67**	**4.0**	0.0050	4731657
Benzo(a)anthracene	ug/g	**0.5**	**3.3**	0.0050	4731657
Benzo(a)pyrene	ug/g	**0.3**	**3.8**	0.0050	4731657
Benzo(b/j)fluoranthene	ug/g	**0.78**	**4.8**	0.0050	4731657
Benzo(g,h,i)perylene	ug/g	**6.6**	1.5	0.0050	4731657
Benzo(k)fluoranthene	ug/g	**0.78**	**1.9**	0.0050	4731657
Chrysene	ug/g	**7**	4.1	0.0050	4731657
Dibenz(a,h)anthracene	ug/g	**0.1**	**0.43**	0.0050	4731657
Fluoranthene	ug/g	**0.69**	**7.7**	0.0050	4731657
Fluorene	ug/g	**62**	3.2	0.0050	4731657
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	**1.8**	0.0050	4731657
1-Methylnaphthalene	ug/g	**0.99**	**1.6**	0.0050	4731657
2-Methylnaphthalene	ug/g	**0.99**	**1.8**	0.0050	4731657
Naphthalene	ug/g	**0.6**	**3.3**	0.0050	4731657
Phenanthrene	ug/g	**6.2**	**12**	0.0050	4731657
Pyrene	ug/g	**78**	6.5	0.0050	4731657
Surrogate Recovery (%)					
D10-Anthracene	%	-	81		4731657
D14-Terphenyl (FS)	%	-	78		4731657
D8-Acenaphthylene	%	-	72		4731657

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 #: B6N7973
Report Date: 2016/11/14

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST.
Sampler Initials: DG

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID			DJK256	DJK256		
Sampling Date			2016/11/02 11:15	2016/11/02 11:15		
COC Number			Page 1 / 1	Page 1 / 1		
	UNITS	**Criteria**	**BH16-216 SA6**	**BH16-216 SA6 Lab-Dup**	**RDL**	**QC Batch**
Inorganics						
Moisture	%	-	22	23	0.2	4731652
BTEX & F1 Hydrocarbons						
Benzene	ug/g	**0.21**	<0.02		0.02	4731728
Toluene	ug/g	**2.3**	<0.02		0.02	4731728
Ethylbenzene	ug/g	**2**	<0.02		0.02	4731728
o-Xylene	ug/g	**-**	<0.02		0.02	4731728
p+m-Xylene	ug/g	**-**	<0.04		0.04	4731728
Total Xylenes	ug/g	**3.1**	<0.04		0.04	4731728
F1 (C6-C10)	ug/g	**55**	<10		10	4731728
F1 (C6-C10) - BTEX	ug/g	**55**	<10		10	4731728
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/g	**98**	47		10	4731656
F3 (C16-C34 Hydrocarbons)	ug/g	**300**	110		50	4731656
F4 (C34-C50 Hydrocarbons)	ug/g	**2800**	52		50	4731656
Reached Baseline at C50	ug/g	**-**	Yes			4731656
Surrogate Recovery (%)						
1,4-Difluorobenzene	%	**-**	102			4731728
4-Bromofluorobenzene	%	**-**	86			4731728
D10-Ethylbenzene	%	**-**	120			4731728
D4-1,2-Dichloroethane	%	**-**	99			4731728
o-Terphenyl	%	**-**	99			4731656

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 Job #: B6N7973
Report Date: 2016/11/14

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST.
Sampler Initials: DG

O.REG 558 TCLP BENZO(A)PYRENE

Maxxam ID		DJK256		
Sampling Date		2016/11/02 11:15		
COC Number		Page 1 / 1		
	UNITS	**BH16-216 SA6**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons				
Leachable Benzo(a)pyrene	ug/L	<0.10	0.10	4745018
Surrogate Recovery (%)				
Leachable D10-Anthracene	%	108		4745018
Leachable D14-Terphenyl (FS)	%	99		4745018
Leachable D8-Acenaphthylene	%	110		4745018

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.maxxam.ca

Maxxam Job #: B6N7973
Report Date: 2016/11/14

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST.
Sampler Initials: DG

TEST SUMMARY

Maxxam ID: DJK256
Sample ID: BH16-216 SA6
Matrix: Soil

Collected: 2016/11/02
Shipped:
Received: 2016/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4730606	N/A	2016/11/04	Paul Rubinato
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4731728	N/A	2016/11/03	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4731656	2016/11/03	2016/11/03	Liliana Gaburici
MOISTURE	BAL	4731652	N/A	2016/11/04	Liliana Gaburici
PAH Compounds in Leachate by GC/MS (SIM)	GC/MS	4745018	2016/11/11	2016/11/12	Mitesh Raj
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4731657	2016/11/03	2016/11/03	Arezoo Habibagahi

Maxxam ID: DJK256 Dup
Sample ID: BH16-216 SA6
Matrix: Soil

Collected: 2016/11/02
Shipped:
Received: 2016/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4731652	N/A	2016/11/04	Liliana Gaburici

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 #: B6N7973
Report Date: 2016/11/14

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST.
Sampler Initials: DG

GENERAL COMMENTS

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

Package 1	3.0°C

O.REG 153 PAHS (SOIL)

PAH Compounds in Soil by GC/MS (SIM): PAH Analysis: Matrix spiked recoveries were not calculated (NC) because of high concentration of target compounds in the parent sample.

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Petroleum Hydro. CCME F1 & BTEX in Soil: Matrix spiked recoveries were not calculated (NC) due to high concentration of target compounds in the parent sample.

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 #: B6N7973
Report Date: 2016/11/14

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST.
Sampler Initials: DG

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4731656	o-Terphenyl	2016/11/03	101	30 - 130	92	30 - 130	89	%		
4731657	D10-Anthracene	2016/11/03	81	50 - 130	96	50 - 130	104	%		
4731657	D14-Terphenyl (FS)	2016/11/03	81	50 - 130	85	50 - 130	75	%		
4731657	D8-Acenaphthylene	2016/11/03	74	50 - 130	78	50 - 130	70	%		
4731728	1,4-Difluorobenzene	2016/11/03	89	60 - 140	107	60 - 140	104	%		
4731728	4-Bromofluorobenzene	2016/11/03	125	60 - 140	94	60 - 140	87	%		
4731728	D10-Ethylbenzene	2016/11/03	119	30 - 130	128	30 - 130	123	%		
4731728	D4-1,2-Dichloroethane	2016/11/03	93	60 - 140	108	60 - 140	99	%		
4745018	Leachable D10-Anthracene	2016/11/11	111	50 - 130	106	50 - 130	104	%		
4745018	Leachable D14-Terphenyl (FS)	2016/11/11	107	50 - 130	103	50 - 130	101	%		
4745018	Leachable D8-Acenaphthylene	2016/11/11	113	50 - 130	108	50 - 130	107	%		
4731652	Moisture	2016/11/04							7.5	50
4731656	F2 (C10-C16 Hydrocarbons)	2016/11/03	87	50 - 130	87	80 - 120	<10	ug/g	4.7	50
4731656	F3 (C16-C34 Hydrocarbons)	2016/11/03	87	50 - 130	87	80 - 120	<50	ug/g	4.7	50
4731656	F4 (C34-C50 Hydrocarbons)	2016/11/03	87	50 - 130	87	80 - 120	<50	ug/g	4.7	50
4731657	1-Methylnaphthalene	2016/11/03	NC	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
4731657	2-Methylnaphthalene	2016/11/03	NC	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4731657	Acenaphthene	2016/11/03	100	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
4731657	Acenaphthylene	2016/11/03	NC	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
4731657	Anthracene	2016/11/03	NC	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
4731657	Benzo(a)anthracene	2016/11/03	NC	50 - 130	113	50 - 130	<0.0050	ug/g	NC	40
4731657	Benzo(a)pyrene	2016/11/03	NC	50 - 130	123	50 - 130	<0.0050	ug/g	NC	40
4731657	Benzo(b/j)fluoranthene	2016/11/03	NC	50 - 130	119	50 - 130	<0.0050	ug/g	NC	40
4731657	Benzo(g,h,i)perylene	2016/11/03	NC	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
4731657	Benzo(k)fluoranthene	2016/11/03	NC	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
4731657	Chrysene	2016/11/03	NC	50 - 130	117	50 - 130	<0.0050	ug/g	NC	40
4731657	Dibenz(a,h)anthracene	2016/11/03	NC	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
4731657	Fluoranthene	2016/11/03	NC	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
4731657	Fluorene	2016/11/03	NC	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
4731657	Indeno(1,2,3-cd)pyrene	2016/11/03	NC	50 - 130	124	50 - 130	<0.0050	ug/g	NC	40
4731657	Naphthalene	2016/11/03	NC	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40

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 #: B6N7973
Report Date: 2016/11/14

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST.
Sampler Initials: DG

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4731657	Phenanthrene	2016/11/03	NC	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
4731657	Pyrene	2016/11/03	NC	50 - 130	111	50 - 130	<0.0050	ug/g	NC	40
4731728	Benzene	2016/11/04	86	60 - 140	102	60 - 140	<0.02	ug/g	NC	50
4731728	Ethylbenzene	2016/11/04	NC	60 - 140	102	60 - 140	<0.02	ug/g	5.4	50
4731728	F1 (C6-C10) - BTEX	2016/11/04					<10	ug/g	11	50
4731728	F1 (C6-C10)	2016/11/04	122	60 - 140	112	80 - 120	<10	ug/g	10	50
4731728	o-Xylene	2016/11/04	116	60 - 140	110	60 - 140	<0.02	ug/g	2.0	50
4731728	p+m-Xylene	2016/11/04	109	60 - 140	105	60 - 140	<0.04	ug/g	2.3	50
4731728	Toluene	2016/11/04	87	60 - 140	107	60 - 140	<0.02	ug/g	NC	50
4731728	Total Xylenes	2016/11/04					<0.04	ug/g	2.2	50
4745018	Leachable Benzo(a)pyrene	2016/11/11	110	50 - 130	106	50 - 130	<0.10	ug/L	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).

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 #: B6N7973
Report Date: 2016/11/14

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST.
Sampler Initials: DG

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.

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

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/2

CHAIN OF CUSTODY RECORD

Page 1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information (where applicable)		Turnaround Time (TAT) Required
Company Name:	Golder	Company Name:		Quotation #:		☐ Regular TAT (5-7 days) Most analyses
Contact Name:	Tony Lyon	Contact Name:		P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:		Address:		Project #:	1525113	Rush TAT (Surcharges will be applied)
				Site Location:	175 Main St.	☑ 1 Day ☑ 2 Days ☐ 3-4 Days
Phone:	613-592-9600 Fax:	Phone:	Fax:	Site #:		
Email:	tlyon@golder.com	Email:		Sampled By:	Doug Grylls	Date Required:

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Rush Confirmation #:

Regulation 153: ☐ Table 1 ☑ Res/Park ☐ Med/ Fine; ☐ Table 2 ☐ Ind/Comm ☑ Coarse; ☑ Table 3 ☐ Agri/ Other; ☐ Table ____

FOR RSC (PLEASE CIRCLE) (Y)/ N

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw; ☐ MISA ☐ Storm Sewer Bylaw; ☐ PWQO Region ____; ☐ Other (Specify) ____; ☐ REG 558 (MIN. 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 (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 CPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	PAH								HOLD- DO NOT ANALYZE
										REFER TO BACK OF COC											
1	BH16-16 SA6	16/11/02	11:15	S	3		✓	✓					✓								
2	BH16-16 SA5	16/11/02	11:00	S	1																
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

02-Nov-16 14:55
Madison Bingley
B6N7973
FHB OTT-002

LABORATORY USE ONLY

CUSTODY SEAL (Y)/ N		COOLER TEMPERATURES
Present	Intact	
Y	Y	0,1,8

COOLING MEDIA PRESENT: (Y)/ N

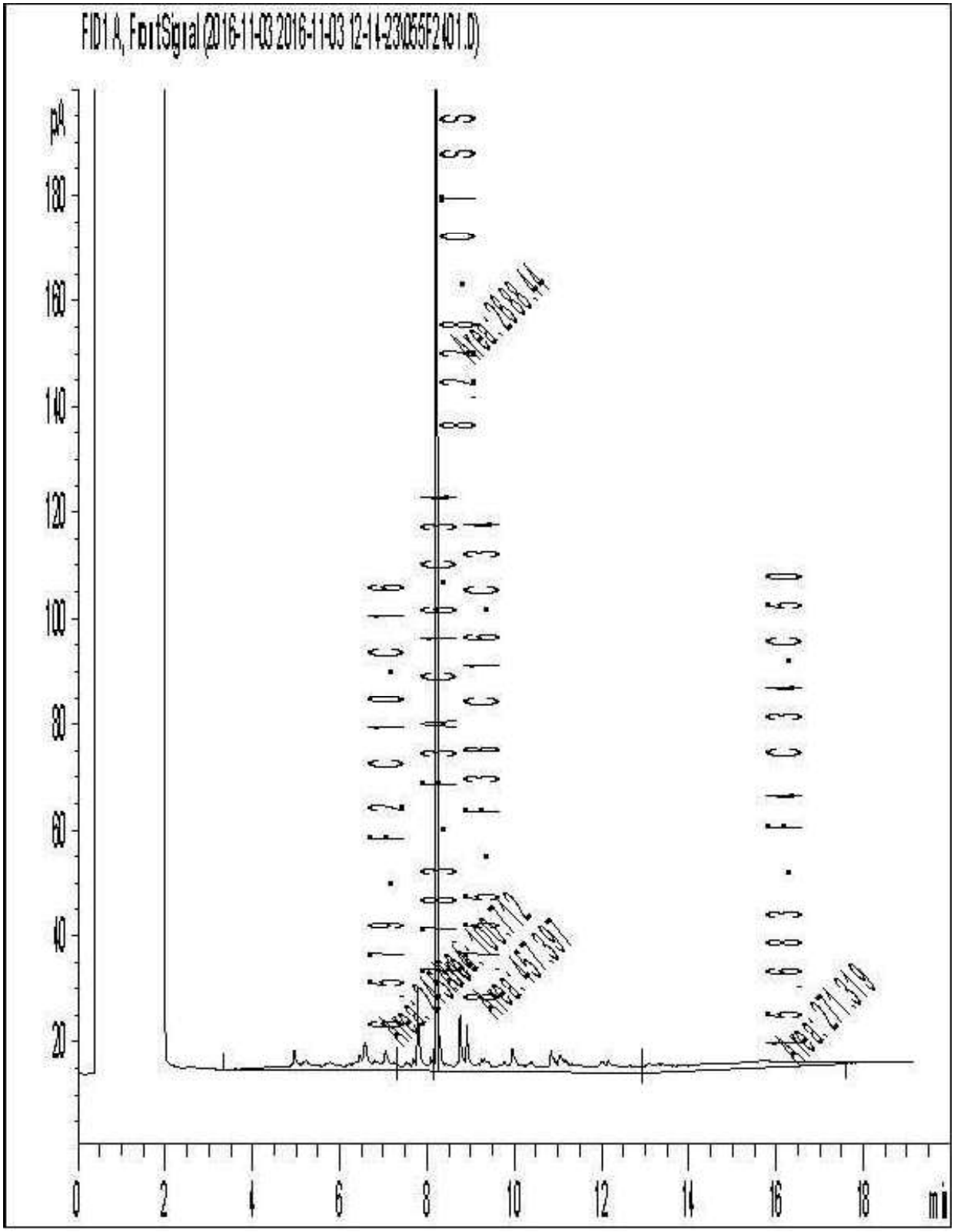
COMMENTS
pls report as...
"BH16-116 SA6"
- use if insufficient volume for BH16-16 SA6

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
Tony Lyon	2016/11/02	14:30	Fateneh Habib	2016/11/02	14:55	RECEIVED IN OTTAWA

Maxxam Job #: B6N7973
Report Date: 2016/11/14
Maxxam Sample: DJK256

Golder Associates Ltd
Client Project #: 1525113
Project name: 175 MAIN ST.
Client ID: BH16-216 SA6

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 #: B6N7973
Report Date: 2016/11/14

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST.
Sampler Initials: DG

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
BH16-216 SA6	DJK256-01	1-Methylnaphthalene	0.99	1.6	0.0050	ug/g
BH16-216 SA6	DJK256-01	2-Methylnaphthalene	0.99	1.8	0.0050	ug/g
BH16-216 SA6	DJK256-01	Acenaphthylene	0.15	1.2	0.0050	ug/g
BH16-216 SA6	DJK256-01	Anthracene	0.67	4.0	0.0050	ug/g
BH16-216 SA6	DJK256-01	Benzo(a)anthracene	0.5	3.3	0.0050	ug/g
BH16-216 SA6	DJK256-01	Benzo(a)pyrene	0.3	3.8	0.0050	ug/g
BH16-216 SA6	DJK256-01	Benzo(b/j)fluoranthene	0.78	4.8	0.0050	ug/g
BH16-216 SA6	DJK256-01	Benzo(k)fluoranthene	0.78	1.9	0.0050	ug/g
BH16-216 SA6	DJK256-01	Dibenz(a,h)anthracene	0.1	0.43	0.0050	ug/g
BH16-216 SA6	DJK256-01	Fluoranthene	0.69	7.7	0.0050	ug/g
BH16-216 SA6	DJK256-01	Indeno(1,2,3-cd)pyrene	0.38	1.8	0.0050	ug/g
BH16-216 SA6	DJK256-01	Methylnaphthalene, 2-(1-)	0.99	3.3	0.014	ug/g
BH16-216 SA6	DJK256-01	Naphthalene	0.6	3.3	0.0050	ug/g
BH16-216 SA6	DJK256-01	Phenanthrene	6.2	12	0.0050	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
Site Location: 175 MAIN ST
Your C.O.C. #: na

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/11/10
Report #: R4242126
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B6N8518
Received: 2016/11/02, 14:55

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Petroleum Hydro. CCME F1 & BTEX in Soil (1, 2)	5	N/A	2016/11/06	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 3)	5	2016/11/06	2016/11/07	CAM SOP-00316	CCME CWS m
Moisture (1)	5	N/A	2016/11/05	CAM SOP-00445	Carter 2nd ed 51.2 m
Polychlorinated Biphenyl in Soil (1)	4	2016/11/05	2016/11/05	CAM SOP-00309	EPA 8082A m
pH CaCl2 EXTRACT (1)	4	2016/11/07	2016/11/07	CAM SOP-00413	EPA 9045 D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Site Location: 175 MAIN ST
Your C.O.C. #: na

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/11/10
Report #: R4242126
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B6N8518
Received: 2016/11/02, 14:55

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager
Email: MBingley@maxxam.ca
Phone# (613)274-3549
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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 #: B6N8518
Report Date: 2016/11/10

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

O.REG 153 PCBS (SOIL)

Maxxam ID			DJM979	DJM980	DJM981	DJM982		
Sampling Date			2016/11/01 11:00	2016/11/01 09:00	2016/10/31 09:00	2016/10/31		
COC Number			na	na	na	na		
	UNITS	**Criteria**	**BH16-120 SA4**	**BH16-119 SA6**	**BH16-118 SA3**	**BH16-117 SA6**	**RDL**	**QC Batch**
PCBs								
Aroclor 1242	ug/g	-	<0.010	<0.010	<0.010	<0.010	0.010	4735504
Aroclor 1248	ug/g	-	<0.010	<0.010	<0.010	<0.010	0.010	4735504
Aroclor 1254	ug/g	-	<0.010	<0.010	<0.010	<0.010	0.010	4735504
Aroclor 1260	ug/g	-	<0.010	<0.010	<0.010	<0.010	0.010	4735504
Total PCB	ug/g	**1.1**	<0.010	<0.010	<0.010	<0.010	0.010	4735504
Surrogate Recovery (%)								
Decachlorobiphenyl	%	**-**	110	100	109	110		4735504

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 Job #: B6N8518
Report Date: 2016/11/10

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID			DJM979	DJM980	DJM981	DJM982	DJM982		
Sampling Date			2016/11/01 11:00	2016/11/01 09:00	2016/10/31 09:00	2016/10/31	2016/10/31		
COC Number			na	na	na	na	na		
	UNITS	**Criteria**	**BH16-120 SA4**	**BH16-119 SA6**	**BH16-118 SA3**	**BH16-117 SA6**	**BH16-117 SA6 Lab-Dup**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	22	22	18	27		1.0	4735794
BTEX & F1 Hydrocarbons									
Benzene	ug/g	**0.32**	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4735743
Toluene	ug/g	**68**	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4735743
Ethylbenzene	ug/g	**9.5**	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4735743
o-Xylene	ug/g	**-**	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4735743
p+m-Xylene	ug/g	**-**	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	4735743
Total Xylenes	ug/g	**26**	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	4735743
F1 (C6-C10)	ug/g	**55**	<10	<10	<10	<10	<10	10	4735743
F1 (C6-C10) - BTEX	ug/g	**55**	<10	<10	<10	<10	<10	10	4735743
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	**230**	<10	<10	<10	<10		10	4736038
F3 (C16-C34 Hydrocarbons)	ug/g	**1700**	<50	<50	<50	<50		50	4736038
F4 (C34-C50 Hydrocarbons)	ug/g	**3300**	<50	<50	<50	<50		50	4736038
Reached Baseline at C50	ug/g	**-**	Yes	Yes	Yes	Yes			4736038
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	**-**	99	99	100	99	100		4735743
4-Bromofluorobenzene	%	**-**	100	102	101	101	101		4735743
D10-Ethylbenzene	%	**-**	104	96	86	100	92		4735743
D4-1,2-Dichloroethane	%	**-**	92	93	93	92	92		4735743
o-Terphenyl	%	**-**	98	101	101	98			4736038

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 Job #: B6N8518
Report Date: 2016/11/10

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID			DJM983		
Sampling Date			2016/10/31 09:00		
COC Number			na		
	UNITS	**Criteria**	**BH16-117 SA6A**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	-	25	1.0	4735794
BTEX & F1 Hydrocarbons					
Benzene	ug/g	**0.32**	<0.020	0.020	4735743
Toluene	ug/g	**68**	<0.020	0.020	4735743
Ethylbenzene	ug/g	**9.5**	<0.020	0.020	4735743
o-Xylene	ug/g	**-**	<0.020	0.020	4735743
p+m-Xylene	ug/g	**-**	<0.040	0.040	4735743
Total Xylenes	ug/g	**26**	<0.040	0.040	4735743
F1 (C6-C10)	ug/g	**55**	<10	10	4735743
F1 (C6-C10) - BTEX	ug/g	**55**	<10	10	4735743
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/g	**230**	<10	10	4736038
F3 (C16-C34 Hydrocarbons)	ug/g	**1700**	<50	50	4736038
F4 (C34-C50 Hydrocarbons)	ug/g	**3300**	<50	50	4736038
Reached Baseline at C50	ug/g	**-**	Yes		4736038
Surrogate Recovery (%)					
1,4-Difluorobenzene	%	**-**	100		4735743
4-Bromofluorobenzene	%	**-**	102		4735743
D10-Ethylbenzene	%	**-**	97		4735743
D4-1,2-Dichloroethane	%	**-**	93		4735743
o-Terphenyl	%	**-**	97		4736038

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 Job #: B6N8518
Report Date: 2016/11/10

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DJM980	DJM981	DJM982	DJM984	
Sampling Date		2016/11/01 09:00	2016/10/31 09:00	2016/10/31	2016/11/01 13:00	
COC Number		na	na	na	na	
	UNITS	**BH16-119 SA6**	**BH16-118 SA3**	**BH16-117 SA6**	**BH16-216 SA4**	**QC Batch**
Inorganics						
Available (CaCl2) pH	pH	7.73	7.05	7.80	7.56	4737073
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 #: B6N8518
Report Date: 2016/11/10

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

TEST SUMMARY

Maxxam ID: DJM979
Sample ID: BH16-120 SA4
Matrix: Soil

Collected: 2016/11/01
Shipped:
Received: 2016/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4735743	N/A	2016/11/06	Jiaxuan (Simon) Xi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4736038	2016/11/06	2016/11/07	Zhiyue (Frank) Zhu
Moisture	BAL	4735794	N/A	2016/11/05	Min Yang
Polychlorinated Biphenyl in Soil	GC/ECD	4735504	2016/11/05	2016/11/05	Dawn Alarie

Maxxam ID: DJM980
Sample ID: BH16-119 SA6
Matrix: Soil

Collected: 2016/11/01
Shipped:
Received: 2016/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4735743	N/A	2016/11/06	Jiaxuan (Simon) Xi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4736038	2016/11/06	2016/11/07	Zhiyue (Frank) Zhu
Moisture	BAL	4735794	N/A	2016/11/05	Min Yang
Polychlorinated Biphenyl in Soil	GC/ECD	4735504	2016/11/05	2016/11/05	Dawn Alarie
pH CaCl2 EXTRACT	AT	4737073	2016/11/07	2016/11/07	Neil Dassanayake

Maxxam ID: DJM981
Sample ID: BH16-118 SA3
Matrix: Soil

Collected: 2016/10/31
Shipped:
Received: 2016/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4735743	N/A	2016/11/06	Jiaxuan (Simon) Xi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4736038	2016/11/06	2016/11/07	Zhiyue (Frank) Zhu
Moisture	BAL	4735794	N/A	2016/11/05	Min Yang
Polychlorinated Biphenyl in Soil	GC/ECD	4735504	2016/11/05	2016/11/05	Dawn Alarie
pH CaCl2 EXTRACT	AT	4737073	2016/11/07	2016/11/07	Neil Dassanayake

Maxxam ID: DJM982
Sample ID: BH16-117 SA6
Matrix: Soil

Collected: 2016/10/31
Shipped:
Received: 2016/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4735743	N/A	2016/11/06	Jiaxuan (Simon) Xi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4736038	2016/11/06	2016/11/07	Zhiyue (Frank) Zhu
Moisture	BAL	4735794	N/A	2016/11/05	Min Yang
Polychlorinated Biphenyl in Soil	GC/ECD	4735504	2016/11/05	2016/11/05	Dawn Alarie
pH CaCl2 EXTRACT	AT	4737073	2016/11/07	2016/11/07	Neil Dassanayake

Maxxam ID: DJM982 Dup
Sample ID: BH16-117 SA6
Matrix: Soil

Collected: 2016/10/31
Shipped:
Received: 2016/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4735743	N/A	2016/11/06	Jiaxuan (Simon) Xi

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 #: B6N8518
Report Date: 2016/11/10

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

TEST SUMMARY

Maxxam ID: DJM983
Sample ID: BH16-117 SA6A
Matrix: Soil

Collected: 2016/10/31
Shipped:
Received: 2016/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4735743	N/A	2016/11/06	Jiaxuan (Simon) Xi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4736038	2016/11/06	2016/11/07	Zhiyue (Frank) Zhu
Moisture	BAL	4735794	N/A	2016/11/05	Min Yang

Maxxam ID: DJM984
Sample ID: BH16-216 SA4
Matrix: Soil

Collected: 2016/11/01
Shipped:
Received: 2016/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	4737073	2016/11/07	2016/11/07	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 #: B6N8518
Report Date: 2016/11/10

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

GENERAL COMMENTS

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

Package 1	3.0°C

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 #: B6N8518
Report Date: 2016/11/10

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4735504	Decachlorobiphenyl	2016/11/05	106	60 - 130	101	60 - 130	94	%		
4735743	1,4-Difluorobenzene	2016/11/06	99	60 - 140	100	60 - 140	101	%		
4735743	4-Bromofluorobenzene	2016/11/06	103	60 - 140	101	60 - 140	101	%		
4735743	D10-Ethylbenzene	2016/11/06	100	60 - 140	95	60 - 140	84	%		
4735743	D4-1,2-Dichloroethane	2016/11/06	91	60 - 140	95	60 - 140	92	%		
4736038	o-Terphenyl	2016/11/07	97	60 - 130	102	60 - 130	100	%		
4735504	Aroclor 1242	2016/11/05					<0.010	ug/g	NC	50
4735504	Aroclor 1248	2016/11/05					<0.010	ug/g	NC	50
4735504	Aroclor 1254	2016/11/05					<0.010	ug/g	NC	50
4735504	Aroclor 1260	2016/11/05	108	60 - 130	107	60 - 130	<0.010	ug/g	NC	50
4735504	Total PCB	2016/11/05	108	60 - 130	107	60 - 130	<0.010	ug/g	NC	50
4735743	Benzene	2016/11/06	83	60 - 140	91	60 - 140	<0.020	ug/g	NC	50
4735743	Ethylbenzene	2016/11/06	85	60 - 140	95	60 - 140	<0.020	ug/g	NC	50
4735743	F1 (C6-C10) - BTEX	2016/11/06					<10	ug/g	NC	30
4735743	F1 (C6-C10)	2016/11/06	93	60 - 140	86	80 - 120	<10	ug/g	NC	30
4735743	o-Xylene	2016/11/06	87	60 - 140	98	60 - 140	<0.020	ug/g	NC	50
4735743	p+m-Xylene	2016/11/06	81	60 - 140	90	60 - 140	<0.040	ug/g	NC	50
4735743	Toluene	2016/11/06	79	60 - 140	88	60 - 140	<0.020	ug/g	NC	50
4735743	Total Xylenes	2016/11/06					<0.040	ug/g	NC	50
4735794	Moisture	2016/11/05							2.8	20
4736038	F2 (C10-C16 Hydrocarbons)	2016/11/07	99	50 - 130	93	80 - 120	<10	ug/g	NC	30
4736038	F3 (C16-C34 Hydrocarbons)	2016/11/07	92	50 - 130	98	80 - 120	<50	ug/g	NC	30
4736038	F4 (C34-C50 Hydrocarbons)	2016/11/07	97	50 - 130	95	80 - 120	<50	ug/g	NC	30

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 #: B6N8518
Report Date: 2016/11/10

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4737073	Available (CaCl2) pH	2016/11/07			99	97 - 103			0.73	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 (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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B6N8518
Report Date: 2016/11/10

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

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.

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

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/2

02-Nov-16 14:55
Madison Bingley
B6N8518
SEL ENV-600

CHAIN OF CUSTODY RECORD

Page 1 of 1

Invoice Information

Company Name: Golder
Contact Name: Tony Lyon
Address:
Phone: 613-592-9600 Fax:
Email: tlyon@golder.com

Phone: Fax:
Email:

Project Information (where applicable)

Quotation #:
P.O. #/ AFE#:
Project #: 1525113
Site Location: 175 Main St.
Site #:
Sampled By: Doug Grillier

Turnaround Time (TAT) Required

☑ Regular TAT (5-7 days) Most analyses

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Rush TAT (Surcharges will be applied)
☐ 1 Day ☑ 2 Days ☐ 3-4 Days

Date Required:
Rush Confirmation #:

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153
☐ Table 1 ☑ Res/Park ☐ Med/ Fine
☐ Table 2 ☐ Ind/Comm ☑ Coarse
☑ Table 3 ☐ Agri/ Other
☐ Table ____
FOR RSC (PLEASE CIRCLE) (Y) / N

Other Regulations
☐ CCME ☐ Sanitary Sewer Bylaw
☐ MISA ☐ Storm Sewer Bylaw
☐ PWQO Region
☐ Other (Specify)
☐ REG 558 (MIN. 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 (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE): Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS (REFER TO BACK OF COC)	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HVS - B)	PCBs	pH - please combine	Top if insufficient volume for pH					HOLD- DO NOT ANALYZE	COMMENTS
1	BH16-104 SA4	2016/11/01	11:00	Soil	4	N	✓	✓					✓								Please report as "BH16-120 SA4"
2	BH16-103 SA6	16/11/01	9:00		4	N	✓	✓					✓	(✓)							"BH16-119 SA6"
3	BH16-102 SA3	16/10/31	9:00		4	N	✓	✓					✓	(✓)							"BH16-118 SA3"
4	BH16-101 SA6				3	N	✓	✓					✓	(✓)							"BH16-117 SA"
5	~~BH16-101 SA6A~~																				
6	BH16-101 SA6A	16/10/31	9:00		3	N	✓	✓													"BH16-117 SA6A"
7	BH16-16 SA4	16/11/01	13:00		1	N								✓							"BH16-116 SA4"
8																					
9																					
10																					

LABORATORY USE ONLY

CUSTODY SEAL (Y) / N Present	Intact	COOLER TEMPERATURES *
Y	Y	0.1, 8
		4.5, 5
		10.1, 11 (only dry samples)

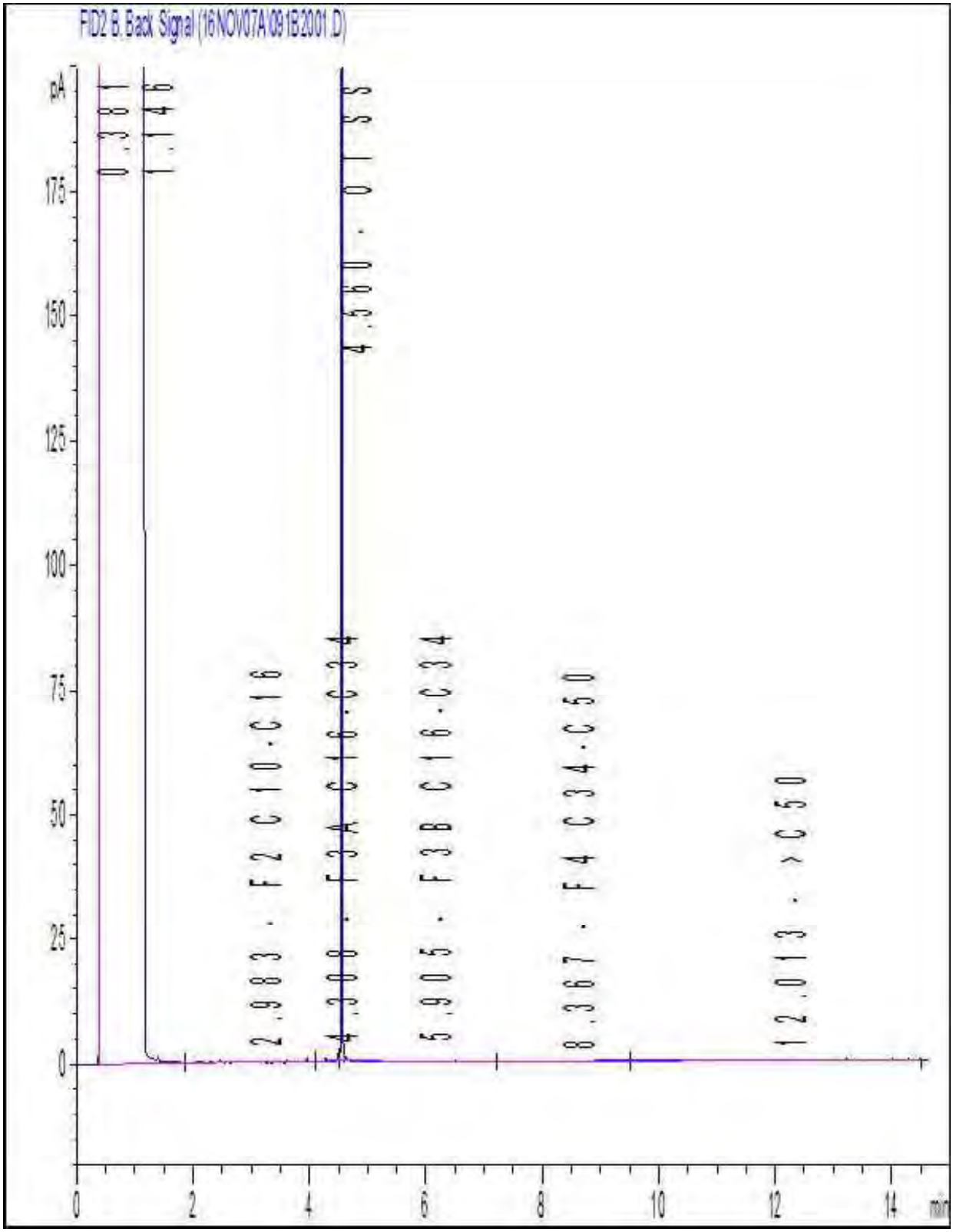
COOLING MEDIA PRESENT: (Y) / N

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
Tony Lyon	2016/11/02	14:30	Fatemeh Habibi	2016/11/02	14:55	RECEIVED IN OTTAWA
			HARWIN GRIEWAL	2016/11/03	08:58	

Maxxam Job #: B6N8518
Report Date: 2016/11/10
Maxxam Sample: DJM979

Golder Associates Ltd
Client Project #: 1525113
Project name: 175 MAIN ST
Client ID: BH16-120 SA4

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

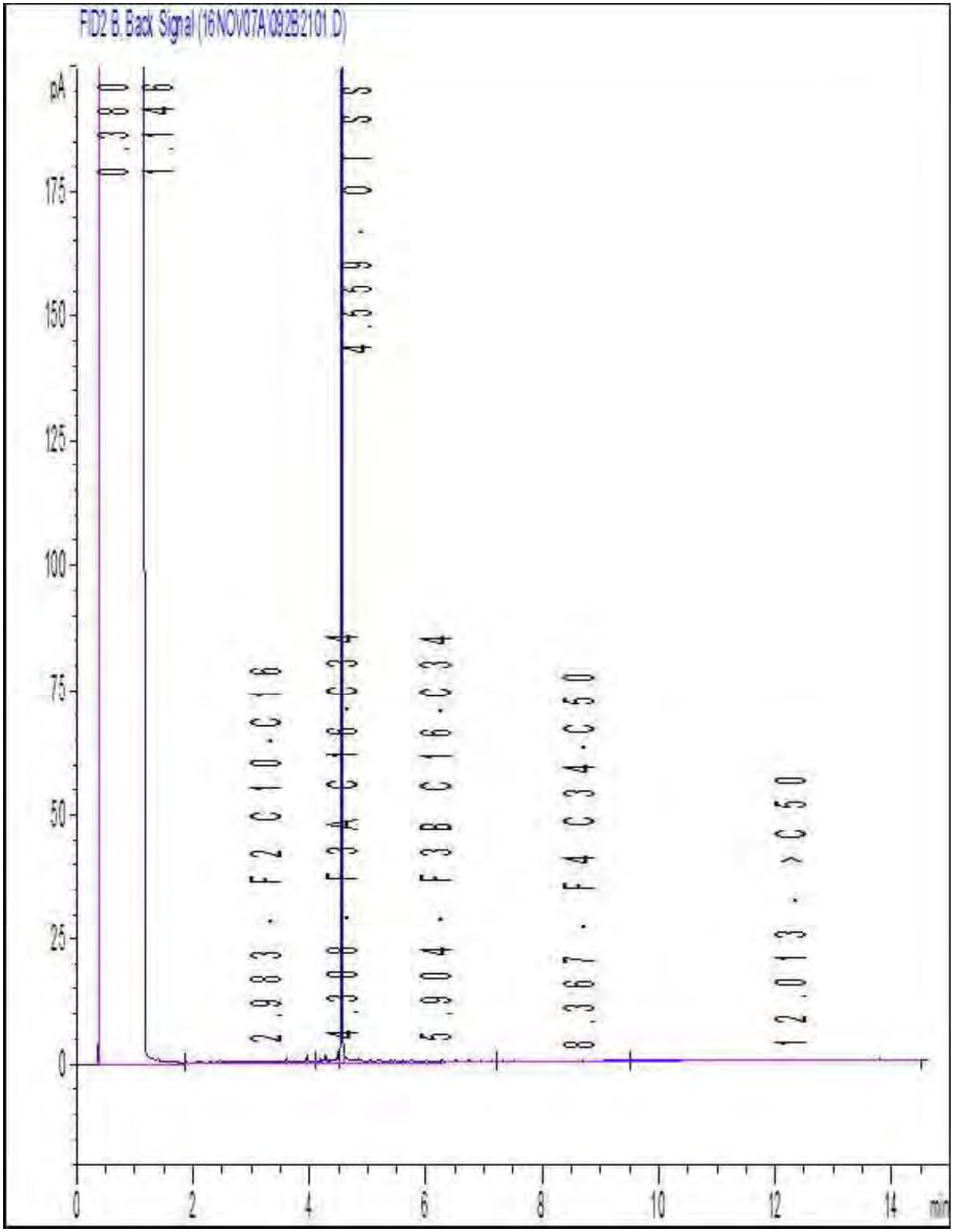


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B6N8518
Report Date: 2016/11/10
Maxxam Sample: DJM980

Golder Associates Ltd
Client Project #: 1525113
Project name: 175 MAIN ST
Client ID: BH16-119 SA6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

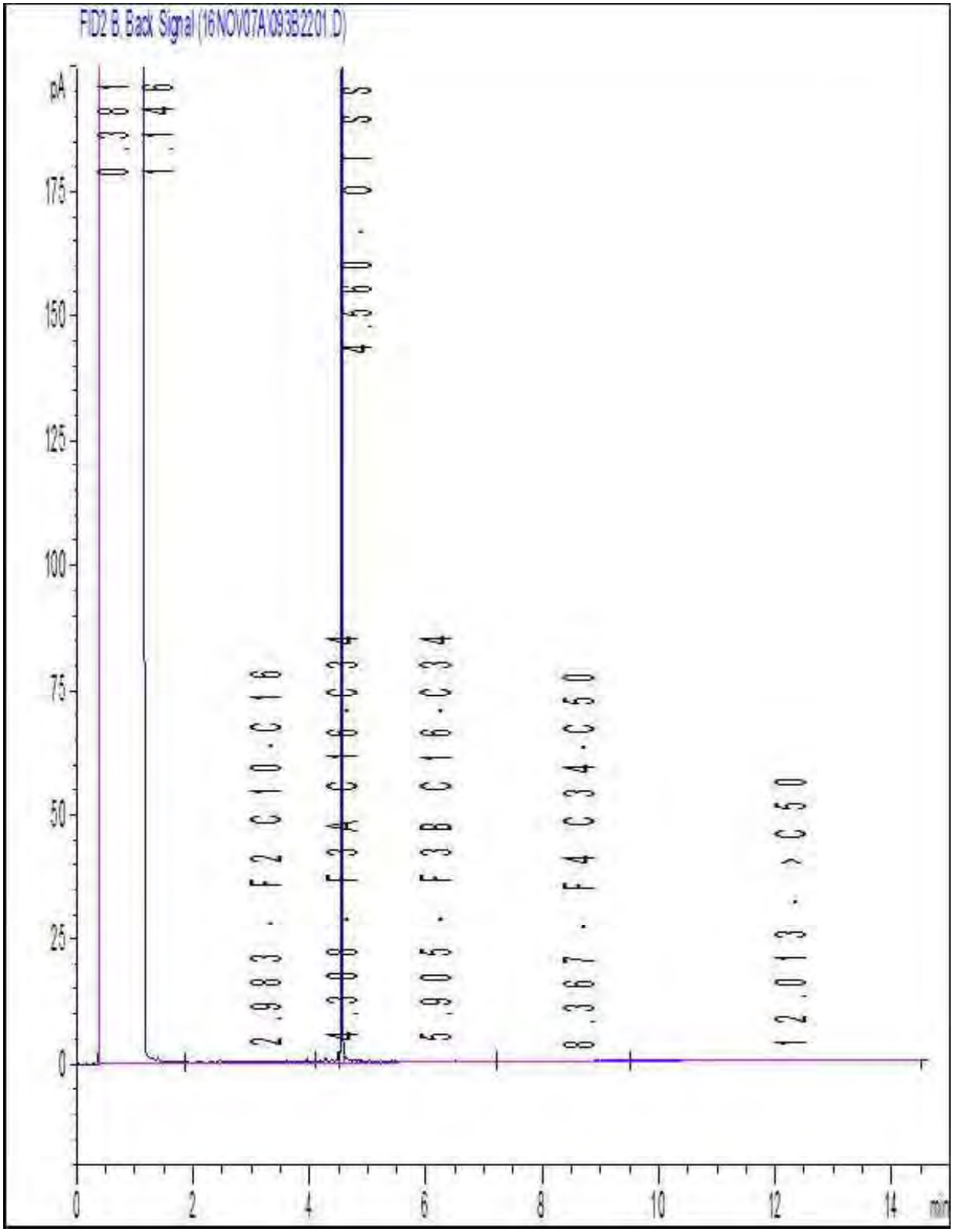


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B6N8518
Report Date: 2016/11/10
Maxxam Sample: DJM981

Golder Associates Ltd
Client Project #: 1525113
Project name: 175 MAIN ST
Client ID: BH16-118 SA3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

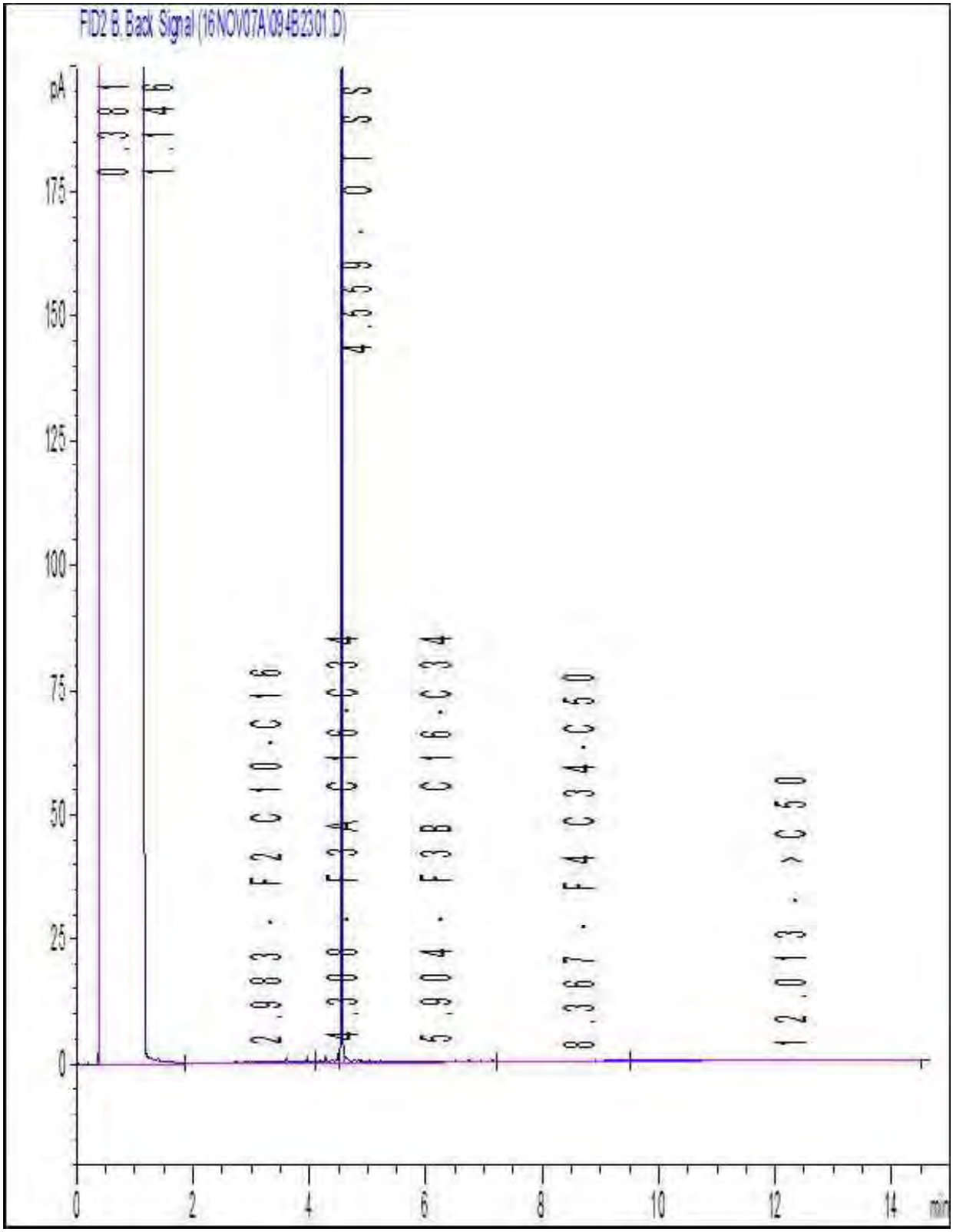


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B6N8518
Report Date: 2016/11/10
Maxxam Sample: DJM982

Golder Associates Ltd
Client Project #: 1525113
Project name: 175 MAIN ST
Client ID: BH16-117 SA6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

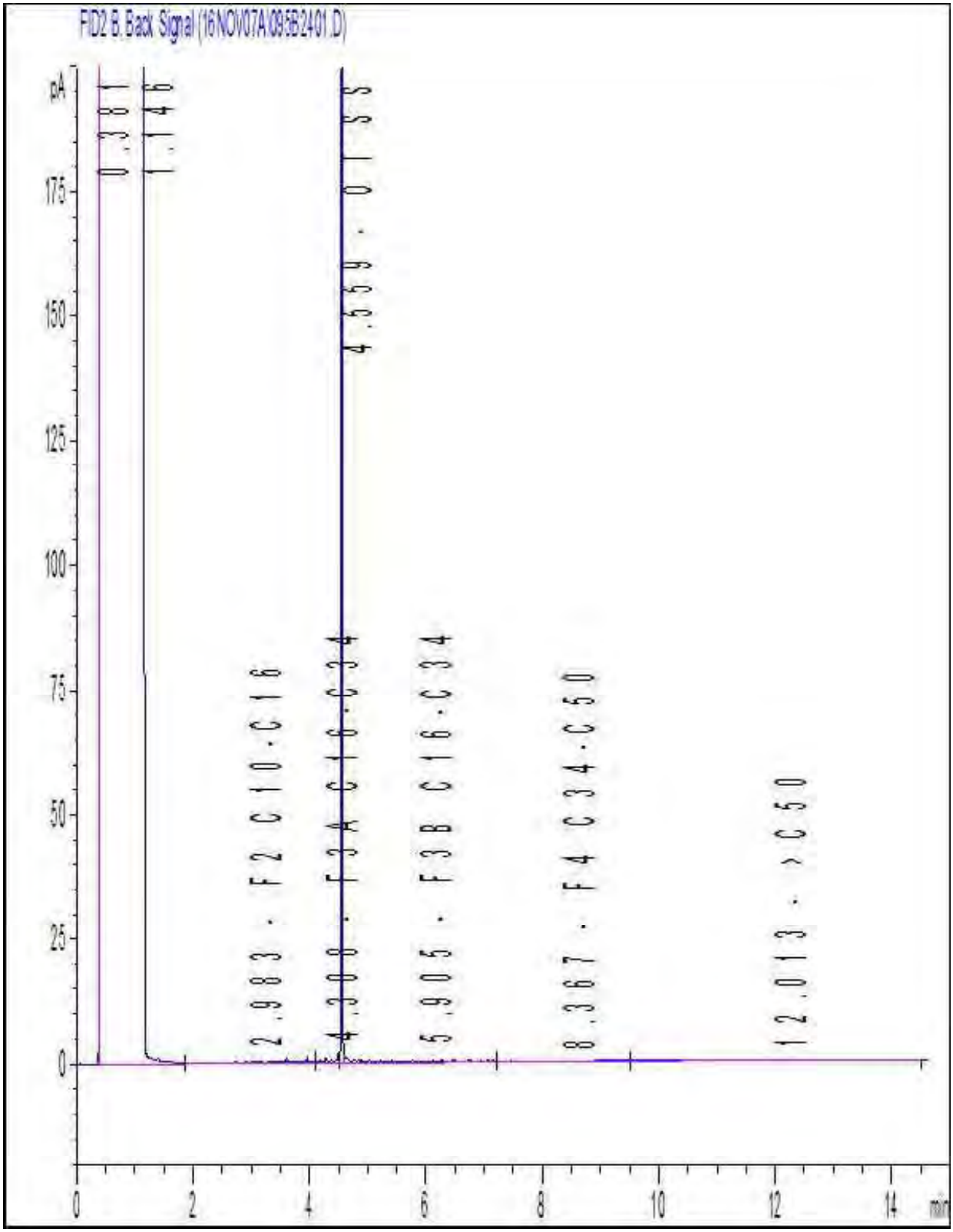


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B6N8518
Report Date: 2016/11/10
Maxxam Sample: DJM983

Golder Associates Ltd
Client Project #: 1525113
Project name: 175 MAIN ST
Client ID: BH16-117 SA6A

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 #: B6N8518
Report Date: 2016/11/10

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

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
Site Location: 175 MAIN ST
Your C.O.C. #: na

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/11/14
Report #: R4246695
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6O3115
Received: 2016/11/08, 14:50

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	1	N/A	2016/11/12	CAM SOP-00301	EPA 8270D m
Petroleum Hydro. CCME F1 & BTEX in Soil (1, 2)	1	N/A	2016/11/11	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 3)	1	2016/11/12	2016/11/14	CAM SOP-00316	CCME CWS m
Moisture (1)	1	N/A	2016/11/11	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	1	2016/11/11	2016/11/12	CAM SOP-00318	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Site Location: 175 MAIN ST
Your C.O.C. #: na

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/11/14
Report #: R4246695
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6O3115
Received: 2016/11/08, 14:50

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager
Email: MBingley@maxxam.ca
Phone# (613)274-3549
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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 #: B6O3115
Report Date: 2016/11/14

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

O.REG 153 PAHS (SOIL)

Maxxam ID			DKK673		
Sampling Date			2016/11/04 09:00		
COC Number			na		
	UNITS	**Criteria**	**BH16-216 SA7**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	-	21	1.0	4744462
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**76**	0.26	0.0071	4740376
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**96**	0.061	0.0050	4744933
Acenaphthylene	ug/g	**0.15**	**0.22**	0.0050	4744933
Anthracene	ug/g	**0.67**	0.36	0.0050	4744933
Benzo(a)anthracene	ug/g	**0.96**	0.33	0.0050	4744933
Benzo(a)pyrene	ug/g	**0.3**	0.24	0.0050	4744933
Benzo(b/j)fluoranthene	ug/g	**0.96**	0.29	0.0050	4744933
Benzo(g,h,i)perylene	ug/g	**9.6**	0.11	0.0050	4744933
Benzo(k)fluoranthene	ug/g	**0.96**	0.12	0.0050	4744933
Chrysene	ug/g	**9.6**	0.25	0.0050	4744933
Dibenz(a,h)anthracene	ug/g	**0.1**	0.027	0.0050	4744933
Fluoranthene	ug/g	**9.6**	0.95	0.0050	4744933
Fluorene	ug/g	**62**	0.37	0.0050	4744933
Indeno(1,2,3-cd)pyrene	ug/g	**0.76**	0.13	0.0050	4744933
1-Methylnaphthalene	ug/g	**76**	0.11	0.0050	4744933
2-Methylnaphthalene	ug/g	**76**	0.15	0.0050	4744933
Naphthalene	ug/g	**9.6**	0.22	0.0050	4744933
Phenanthrene	ug/g	**12**	1.4	0.0050	4744933
Pyrene	ug/g	**96**	0.69	0.0050	4744933
Surrogate Recovery (%)					
D10-Anthracene	%	**-**	98		4744933
D14-Terphenyl (FS)	%	**-**	97		4744933
D8-Acenaphthylene	%	**-**	98		4744933

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 Job #: B6O3115
Report Date: 2016/11/14

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID			DKK673		
Sampling Date			2016/11/04 09:00		
COC Number			na		
	UNITS	**Criteria**	**BH16-216 SA7**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons					
Benzene	ug/g	**0.32**	<0.020	0.020	4744932
Toluene	ug/g	**68**	<0.020	0.020	4744932
Ethylbenzene	ug/g	**9.5**	<0.020	0.020	4744932
o-Xylene	ug/g	**-**	<0.020	0.020	4744932
p+m-Xylene	ug/g	**-**	<0.040	0.040	4744932
Total Xylenes	ug/g	**26**	<0.040	0.040	4744932
F1 (C6-C10)	ug/g	**55**	<10	10	4744932
F1 (C6-C10) - BTEX	ug/g	**55**	<10	10	4744932
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/g	**230**	<10	10	4745688
F3 (C16-C34 Hydrocarbons)	ug/g	**1700**	<50	50	4745688
F4 (C34-C50 Hydrocarbons)	ug/g	**3300**	<50	50	4745688
Reached Baseline at C50	ug/g	**-**	Yes		4745688
Surrogate Recovery (%)					
1,4-Difluorobenzene	%	**-**	102		4744932
4-Bromofluorobenzene	%	**-**	100		4744932
D10-Ethylbenzene	%	**-**	108		4744932
D4-1,2-Dichloroethane	%	**-**	93		4744932
o-Terphenyl	%	**-**	102		4745688

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 Job #: B6O3115
Report Date: 2016/11/14

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

TEST SUMMARY

Maxxam ID: DKK673
Sample ID: BH16-216 SA7
Matrix: Soil

Collected: 2016/11/04
Shipped:
Received: 2016/11/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4740376	N/A	2016/11/12	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4744932	N/A	2016/11/11	Lincoln Ramdahin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4745688	2016/11/12	2016/11/14	(Kent) Maolin Li
Moisture	BAL	4744462	N/A	2016/11/11	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4744933	2016/11/11	2016/11/12	Mitesh Raj

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 #: B6O3115
Report Date: 2016/11/14

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

GENERAL COMMENTS

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

Package 1	1.0°C

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 #: B6O3115
Report Date: 2016/11/14

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4744932	1,4-Difluorobenzene	2016/11/11	101	60 - 140	102	60 - 140	101	%		
4744932	4-Bromofluorobenzene	2016/11/11	101	60 - 140	101	60 - 140	100	%		
4744932	D10-Ethylbenzene	2016/11/11	103	60 - 140	99	60 - 140	95	%		
4744932	D4-1,2-Dichloroethane	2016/11/11	93	60 - 140	92	60 - 140	92	%		
4744933	D10-Anthracene	2016/11/12	94	50 - 130	92	50 - 130	95	%		
4744933	D14-Terphenyl (FS)	2016/11/12	96	50 - 130	96	50 - 130	96	%		
4744933	D8-Acenaphthylene	2016/11/12	96	50 - 130	90	50 - 130	91	%		
4745688	o-Terphenyl	2016/11/14	106	60 - 130	103	60 - 130	104	%		
4744462	Moisture	2016/11/11							4.1	20
4744932	Benzene	2016/11/11	91	60 - 140	93	60 - 140	<0.020	ug/g	NC	50
4744932	Ethylbenzene	2016/11/11	102	60 - 140	101	60 - 140	<0.020	ug/g	NC	50
4744932	F1 (C6-C10) - BTEX	2016/11/11					<10	ug/g	NC	30
4744932	F1 (C6-C10)	2016/11/11	76	60 - 140	103	80 - 120	<10	ug/g	NC	30
4744932	o-Xylene	2016/11/11	109	60 - 140	107	60 - 140	<0.020	ug/g	NC	50
4744932	p+m-Xylene	2016/11/11	91	60 - 140	90	60 - 140	<0.040	ug/g	NC	50
4744932	Toluene	2016/11/11	97	60 - 140	97	60 - 140	<0.020	ug/g	NC	50
4744932	Total Xylenes	2016/11/11					<0.040	ug/g	NC	50
4744933	1-Methylnaphthalene	2016/11/12	88	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4744933	2-Methylnaphthalene	2016/11/12	86	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
4744933	Acenaphthene	2016/11/12	90	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4744933	Acenaphthylene	2016/11/12	93	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
4744933	Anthracene	2016/11/12	85	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
4744933	Benzo(a)anthracene	2016/11/12	92	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
4744933	Benzo(a)pyrene	2016/11/12	92	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4744933	Benzo(b/j)fluoranthene	2016/11/12	92	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
4744933	Benzo(g,h,i)perylene	2016/11/12	93	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4744933	Benzo(k)fluoranthene	2016/11/12	95	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
4744933	Chrysene	2016/11/12	94	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
4744933	Dibenz(a,h)anthracene	2016/11/12	92	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4744933	Fluoranthene	2016/11/12	93	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
4744933	Fluorene	2016/11/12	93	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40

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 #: B6O3115
Report Date: 2016/11/14

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4744933	Indeno(1,2,3-cd)pyrene	2016/11/12	99	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
4744933	Naphthalene	2016/11/12	78	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4744933	Phenanthrene	2016/11/12	88	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
4744933	Pyrene	2016/11/12	95	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4745688	F2 (C10-C16 Hydrocarbons)	2016/11/14	102	50 - 130	99	80 - 120	<10	ug/g	NC	30
4745688	F3 (C16-C34 Hydrocarbons)	2016/11/14	101	50 - 130	96	80 - 120	<50	ug/g	NC	30
4745688	F4 (C34-C50 Hydrocarbons)	2016/11/14	97	50 - 130	92	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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B6O3115
Report Date: 2016/11/14

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

IMMEDIATE TEST

HT

08-Nov-16 14:50
Madison Bingley
B6O3115

Maxxam
A Bureau Veritas Group Company

6740 Campobello Road, Mississauga, Ontario
Phone: 905-817-5700 Fax: 905-817-5779
CAM ECD-01191/2

CHAIN OF J_L ENV-809 Page 1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information (where applicable)		Turnaround Time (TAT) Required
Company Name:	GOLDER	Company Name:		Quotation #:		✓ Regular TAT (5-7 days) Most analyses
Contact Name:	TONY LYON	Contact Name:		P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address:		Address:		Project #:	1525113	Rush TAT (Surcharges will be applied)
				Site Location:	175 Main St.	1 Day / 2 Days / 3-4 Days
Phone:	613-592-9600 Fax:	Phone:	Fax:	Site #:		
Email:	tlyon@golder.com	Email:		Sampled By:	Doug Grylls	Date Required:

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Rush Confirmation #:

Regulation 153: ☐ Table 1 ☑ Res/Park ☐ Med/ Fine; ☐ Table 2 ☐ Ind/Comm ☐ Coarse; ☑ Table 3 ☐ Agri/ Other; ☐ Table ____

FOR RSC (PLEASE CIRCLE) (Y) N

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw; ☐ MISA ☐ Storm Sewer Bylaw; ☐ PWQO Region ____; ☐ Other (Specify) ____; ☐ REG 558 (MIN. 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

LABORATORY USE ONLY

CUSTODY SEAL (Y)/ N		COOLER TEMPERATURES
Present	Intact	
Y	Y	1.1.1
		5/6/5

COOLING MEDIA PRESENT: (Y)/ N

Analysis Requested

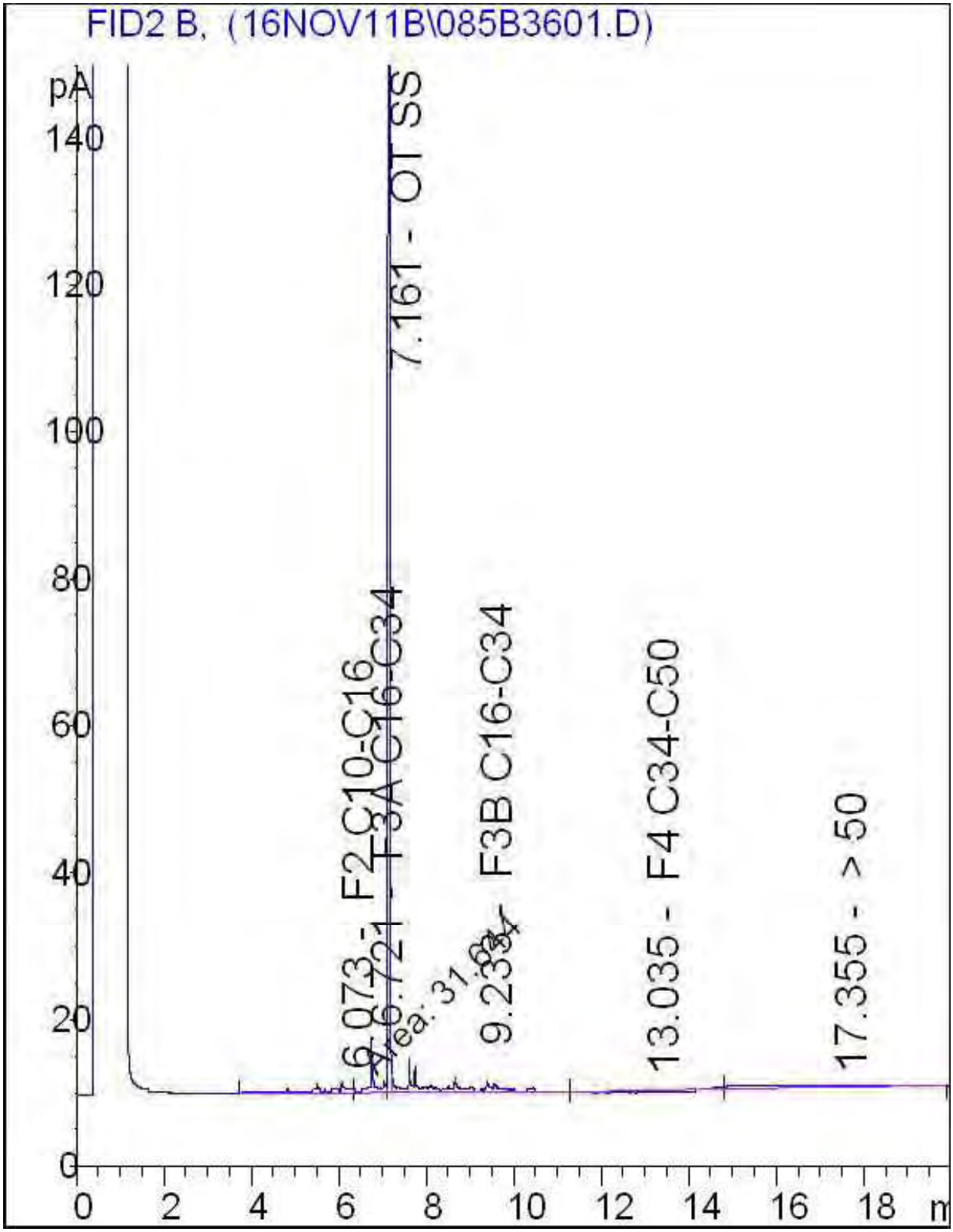
	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS (REFER TO BACK OF COC)	REG 153 ICPMS METALS (REFER TO BACK OF COC)	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B) (REFER TO BACK OF COC)	PAH	TCLP Benzo(a)pyrene							HOLD- DO NOT ANALYZE	COMMENTS
1	BH16-216 SA7	16/11/04	9:00	S	4	N	✓	✓					✓									[redacted]
2	BH16-216 SA8	16/11/04	9:15	S	4	N	X	X					X								✓	[redacted]
3																						
4	BH16-16 SA5	16/11/02	11:00	S	(1)	N								✓								← Report as BH16-216 ~~SA6~~ SA5 sample was previously submitted
5	[redacted]																					
6																						
7																						~~ADD TO~~ JOB
8																						# B6N7973
9																						
10																						

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
Tony Lyon	2016/11/08		Tedeneh Habib	2016/11/08	14:50	RECEIVED IN OTTAWA
			Ashish Rukkumar Shah / Sukumar	2016/11/09	08:55	

Maxxam Job #: B6O3115
Report Date: 2016/11/14
Maxxam Sample: DKK673

Golder Associates Ltd
Client Project #: 1525113
Project name: 175 MAIN ST
Client ID: BH16-216 SA7

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 #: B6O3115
Report Date: 2016/11/14

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN ST
Sampler Initials: DG

Exceedence Summary Table – Reg153/04 T3-Soil/Ind-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
BH16-216 SA7	DKK673-01	Acenaphthylene	0.15	0.22	0.0050	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

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

Success Through Science®

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.

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

Success Through Science®

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

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

Success Through Science®

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

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

Success Through Science®

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

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

Success Through Science®

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

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

Success Through Science®

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

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

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

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

Success Through Science®

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

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

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

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

Success Through Science®

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

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

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

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

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.

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

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		

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

Success Through Science®

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.

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

Validation Signature Page

Maxxam Job #: 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.

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

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	Address:		Project #:	14-1122-0005		
	Kanata ON K2K 2A9			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 (< 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: ☐
(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) + ~~VOCs~~	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

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

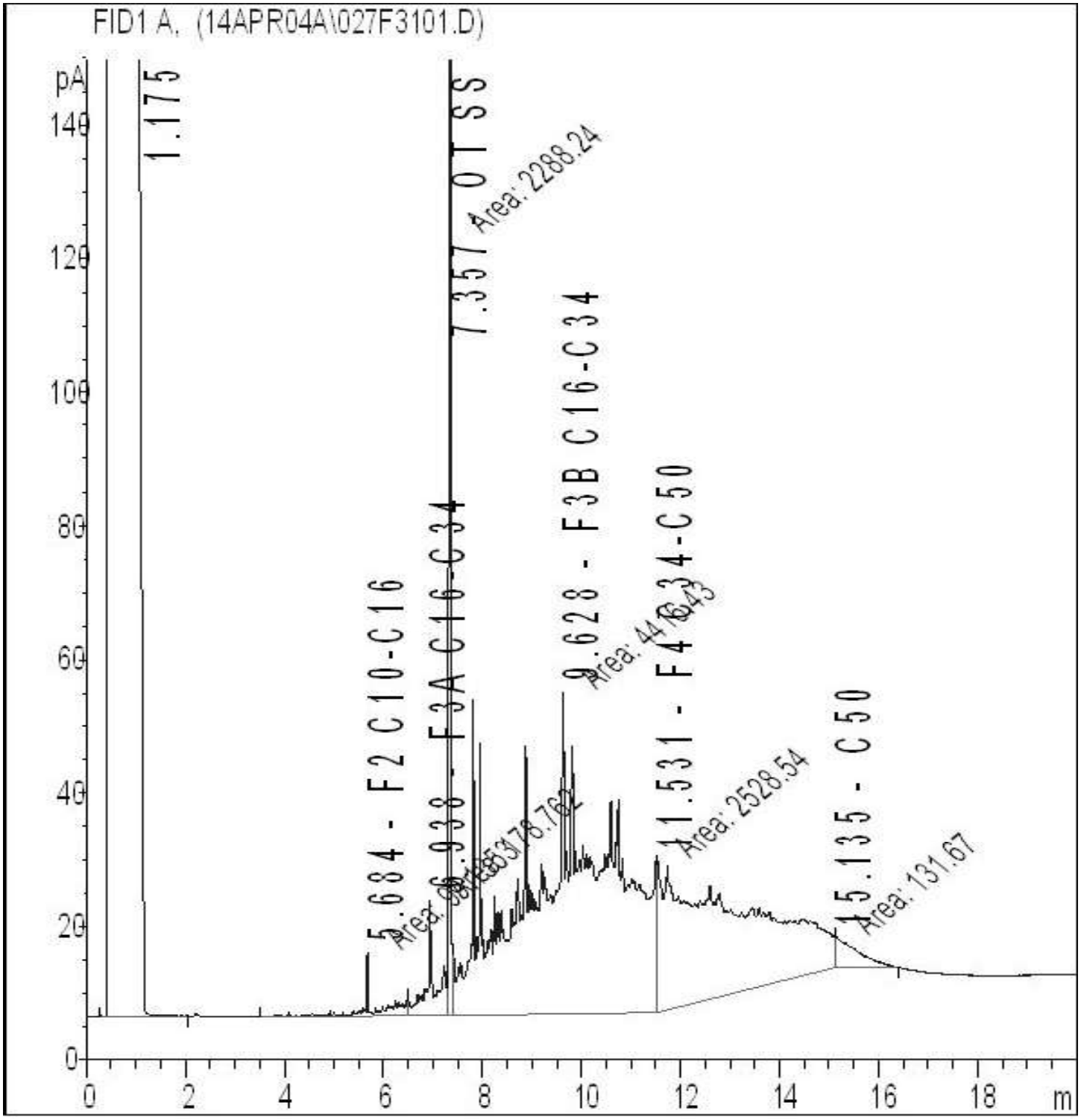
Success Through Science®

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.

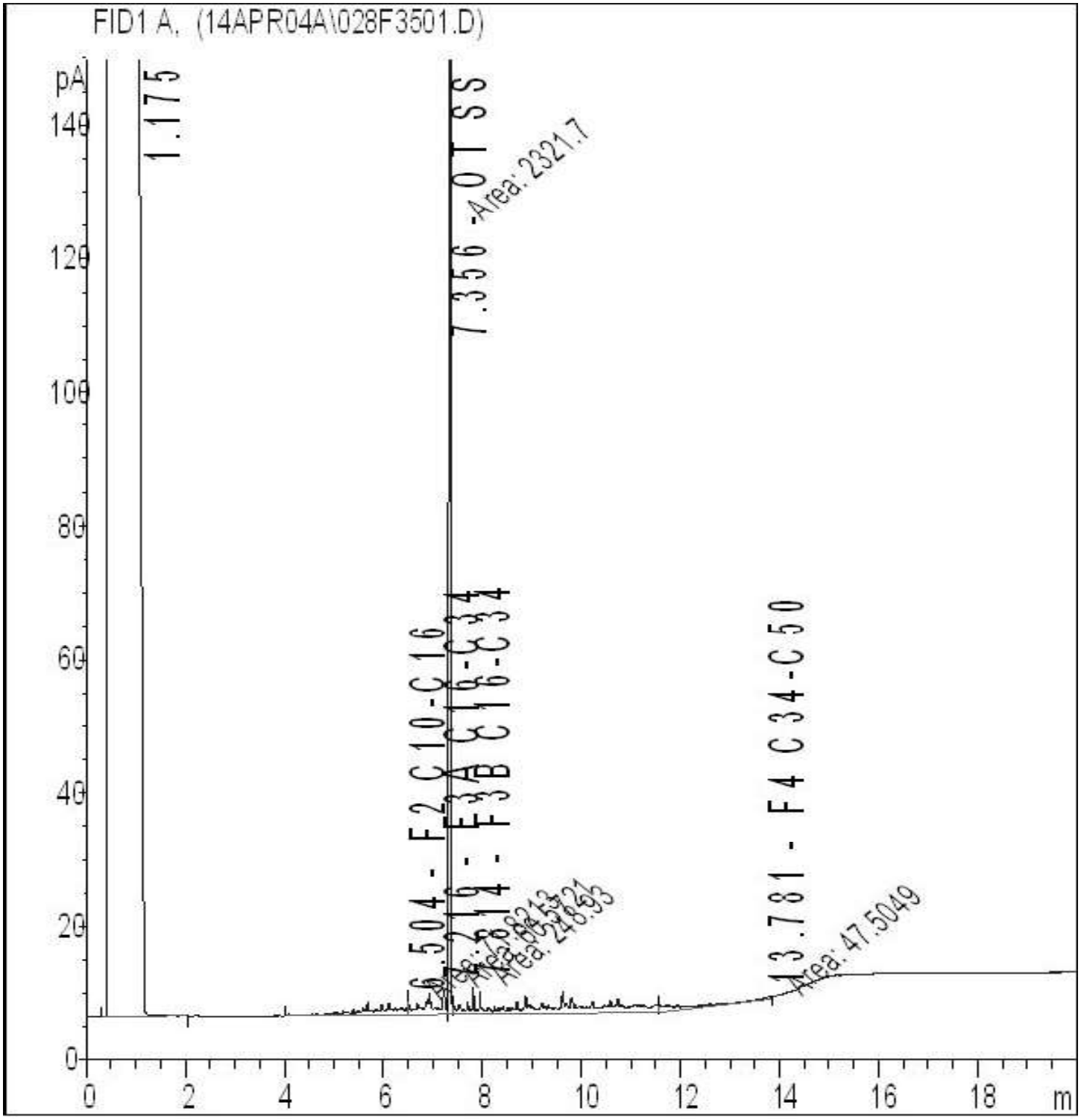
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

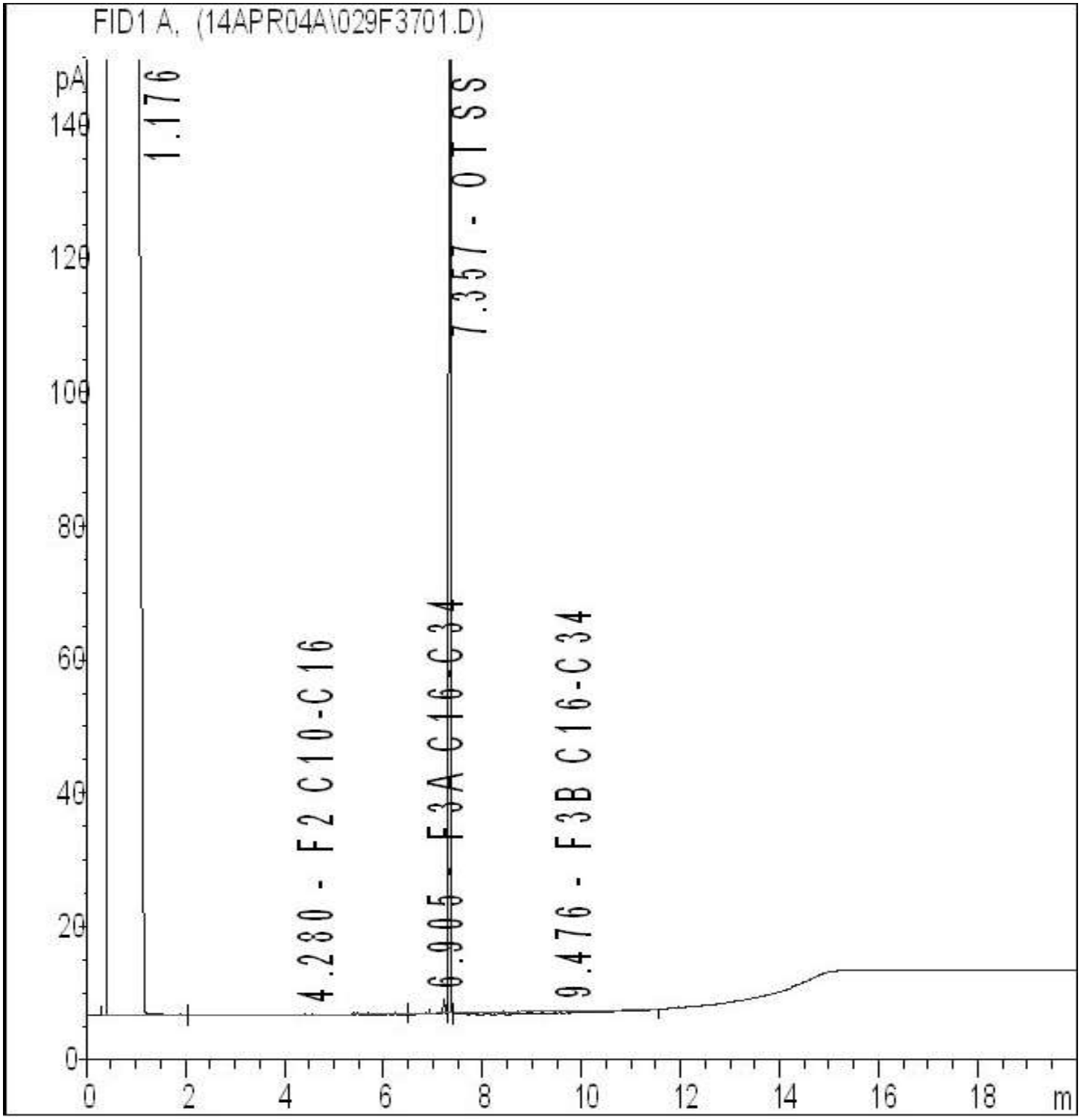
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

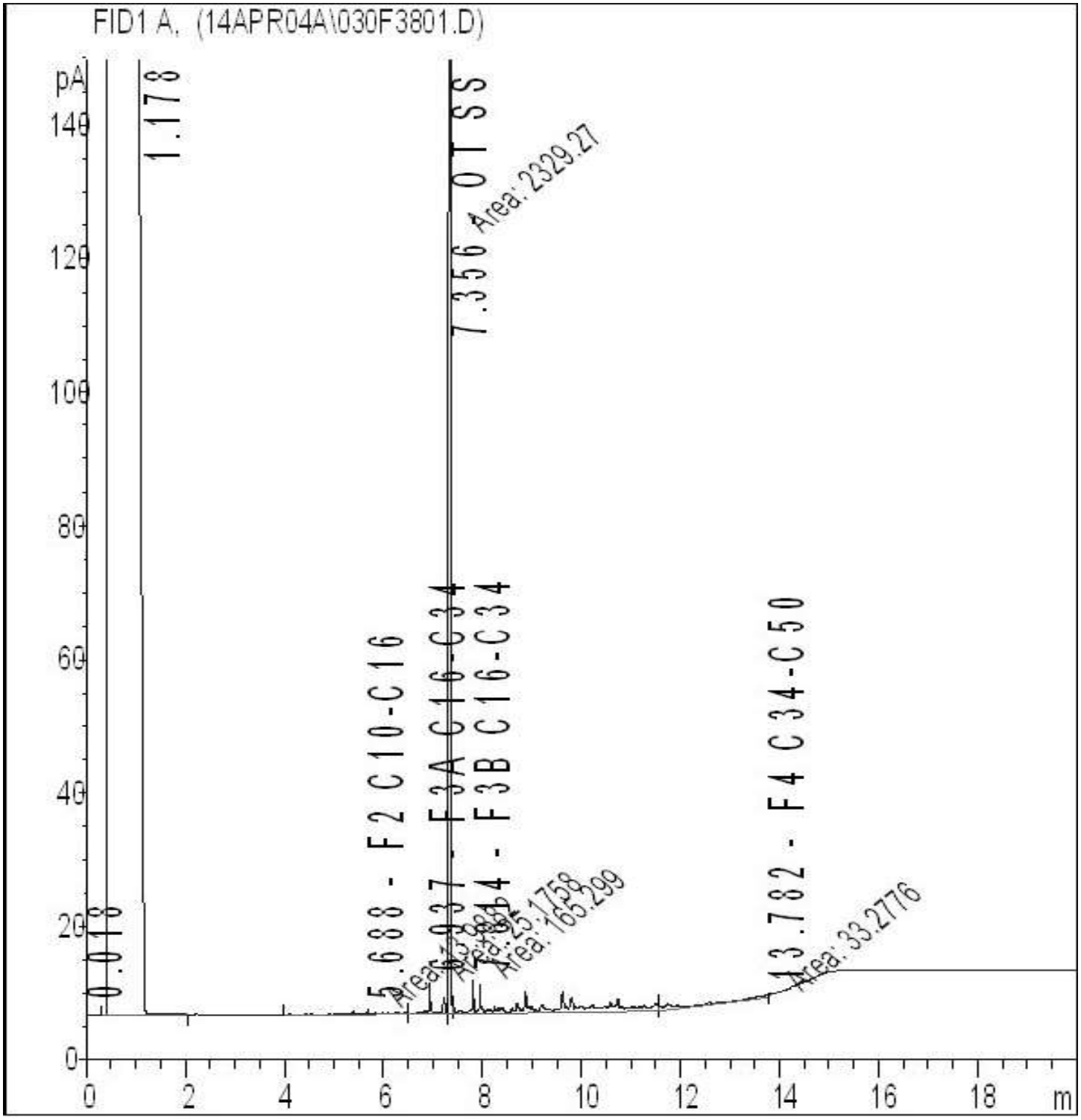
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

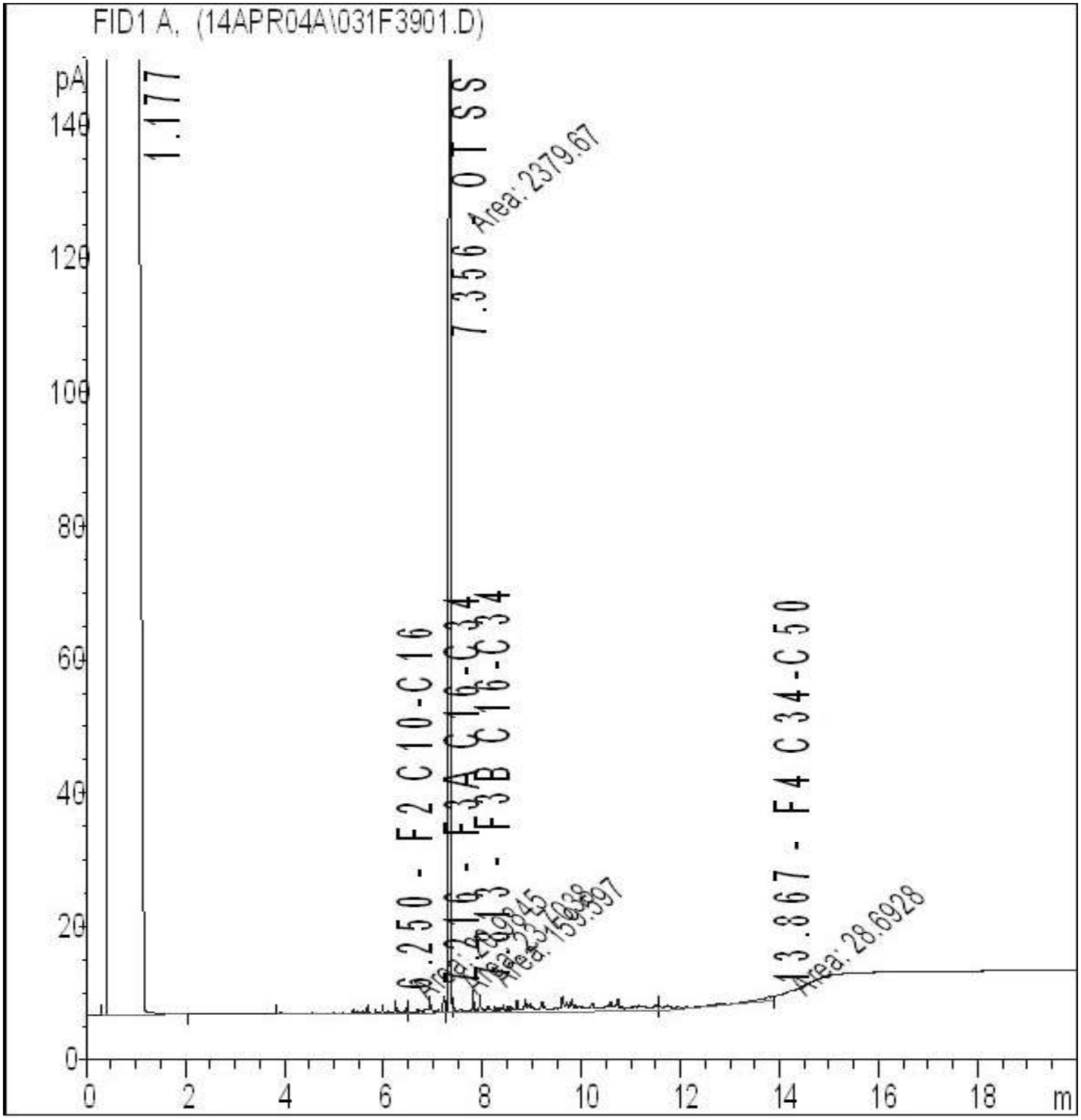
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

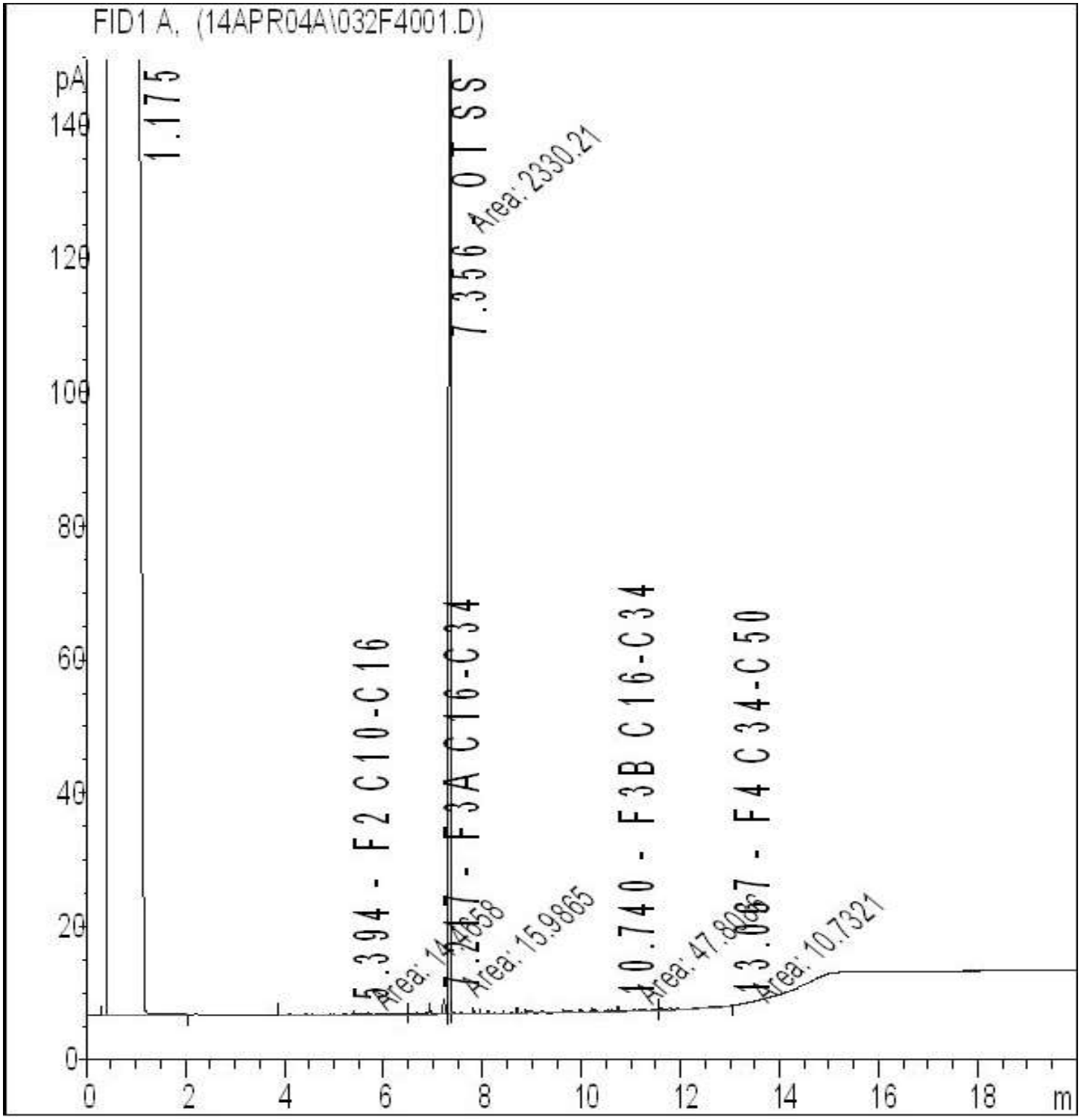
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

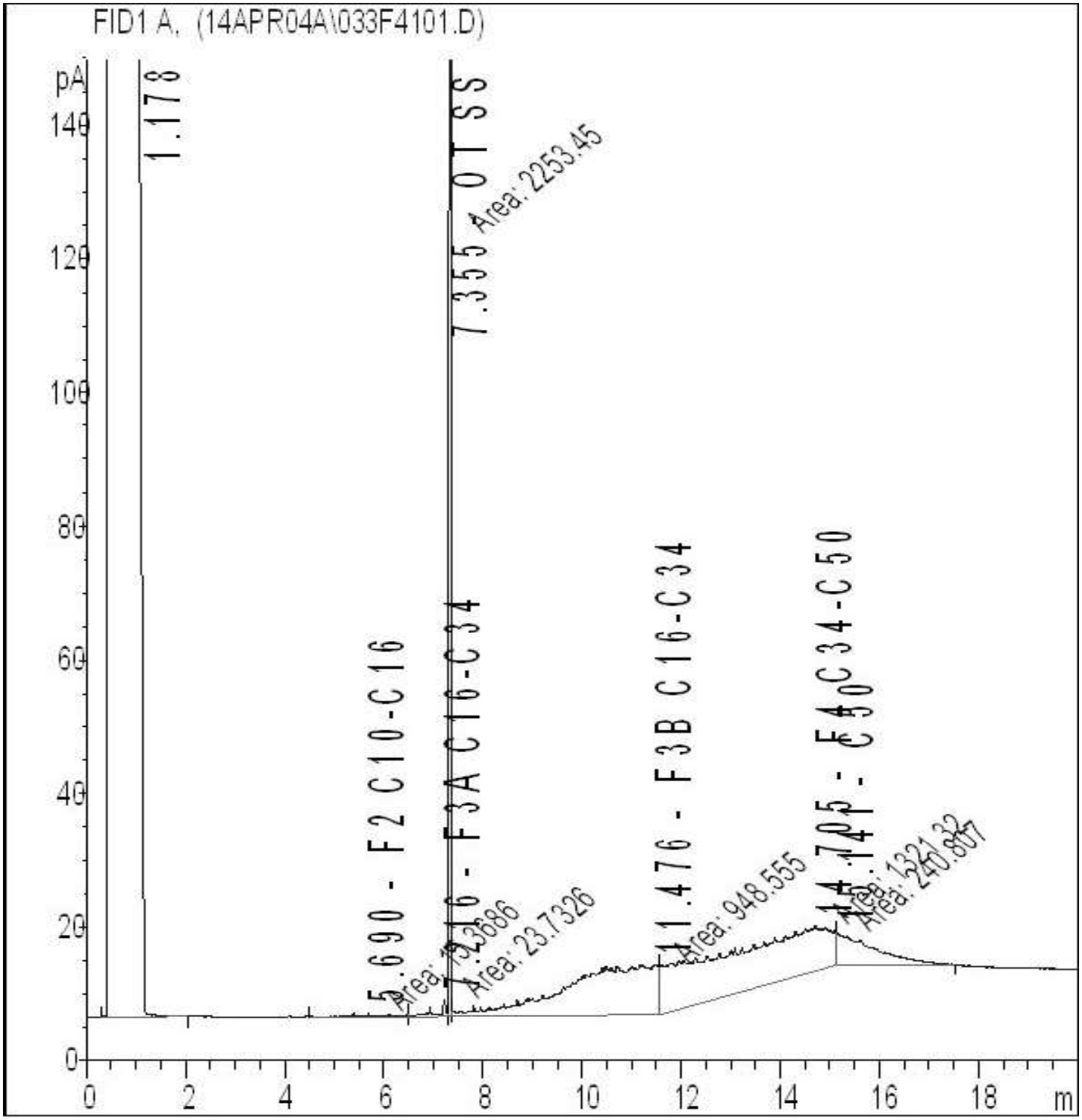
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

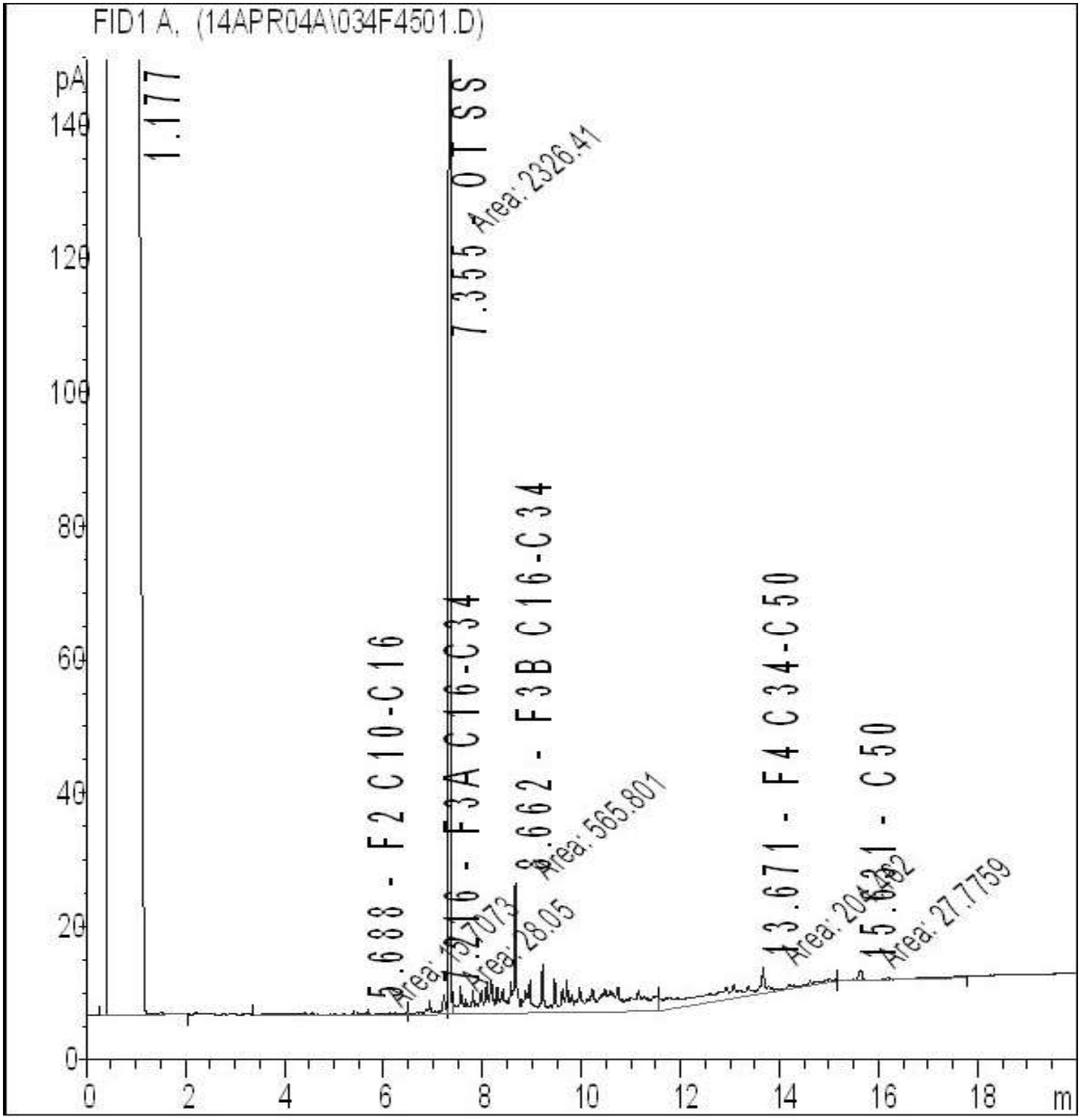
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

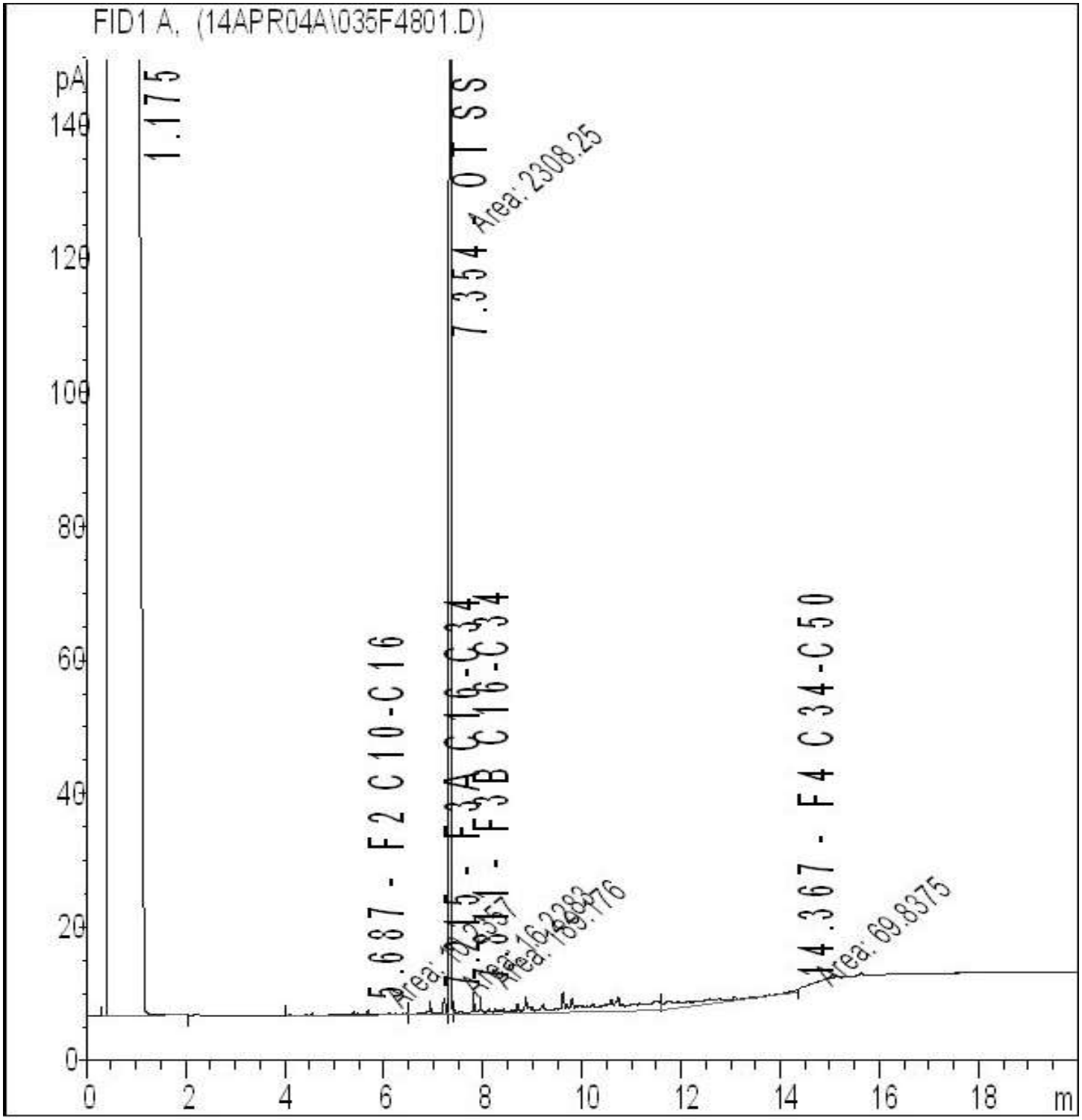
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

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
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
==========
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 #: 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

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 #: 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

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 #: 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

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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 #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
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

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.maxxam.ca

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		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

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.maxxam.ca

Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
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

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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 #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
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

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.maxxam.ca

Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

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

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.maxxam.ca

Maxxam Job #: B549828
Report Date: 2015/03/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: BM

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

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 #: 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

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 #: 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

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 #: 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

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 #: 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

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 #: 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

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 #: 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

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 #: 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

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 #: 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.

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

Success Through Science®

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

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

Success Through Science®

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

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

Success Through Science®

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.

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 #: 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.

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 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

20-Mar-15 14:59
Parnian Baber
B549828
HG1 ENV-602

Page 1 of 3

Only:
Bottle Order #: 505210
Project Manager: Parnian Baber
C#505210-01-01

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	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.

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)? ____

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 Organics/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 CPMS 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	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 / B. McParlan	15/03/20	14:30	Kelsey Pilon Kelsey Pilon	15/03/20	14:59			8,7,8	Preserved	✓	
			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

Maxxam Analytics International Corporation o/a Maxxam Analytics

2/2/3

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 Stanova
Address:
Tel: Fax:
Email: mstanova@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#505797-01-01
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)? ___

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 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	

RECEIVED IN OTTAWA
Onic

* 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
B. McParlan / B. McParlan	15/03/20	14:30	Kelsey Pilon / Kelsey Pilon	15/03/20	14:59			8, 7, 8	Present	✓	
			G. MAGDALENA / COP	2015/03/21	09:55				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

2/2/3

Maxxam Analytics International Corporation o/a Maxxam Analytics

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

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 #: BH0279
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: Pamien 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)? ___

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 (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		BH15-109 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

* 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	
			for MAGDALENA AP	2015/03/21	09:55	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	3,7,8	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
A Bureau Veritas Group Company

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
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

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.

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

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

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

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

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

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

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

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

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

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.

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®

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

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®

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

Page 1 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 #: 505928
Attention:	Central Accounting	Attention:	Maria Staneva	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	~~1529113~~ 14-1122-0005	13000	
	Ottawa ON K2H 5B7			Project Name:		COC #:	Project Manager:
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:	Oblates	C#505928-07-01	Parnian Baber
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)? ____

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 (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)~~ 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		Fatemeh H-A	15/05/14	15:50	
			Fanwang	2015/05/15	10:00	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	9.5.12	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

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:		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:			
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:	Oblates	C#505928-06-01	Parnian Baher
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)

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 (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 LCC

* 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	✓	
			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

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 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:	~~1525443~~ 14-1122-0005	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#505928-05-01	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 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)? _____

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 (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		TP15-5SA1	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	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
[signature]	14/05/2015		SHA Fatemeh A-A	15/05/14	15:50			9, 8, 12	Present	✓	
			ZB 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

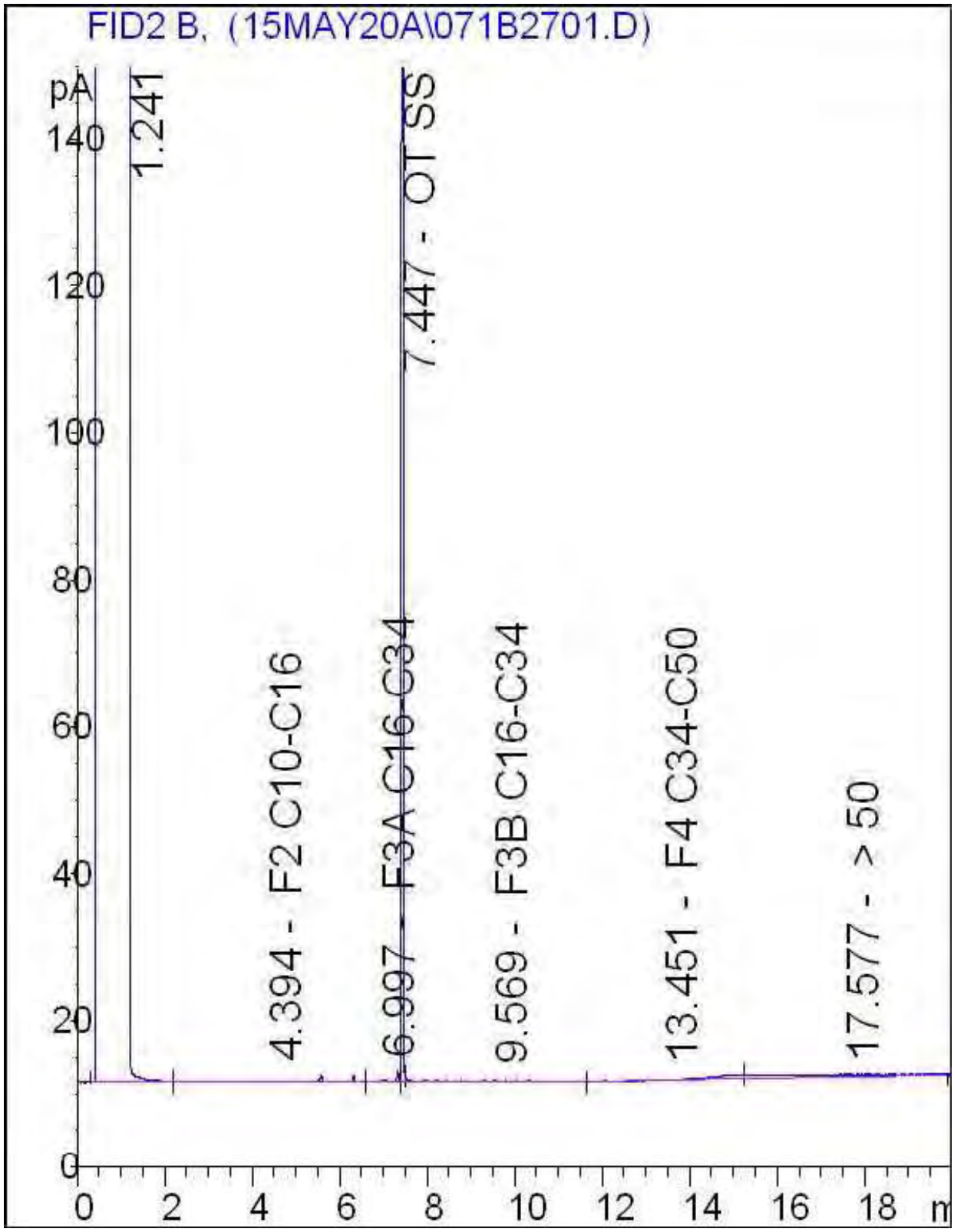
Maxxam Analytics International Corporation o/a Maxxam Analytics

7/8/8, 5/6/7

Maxxam 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

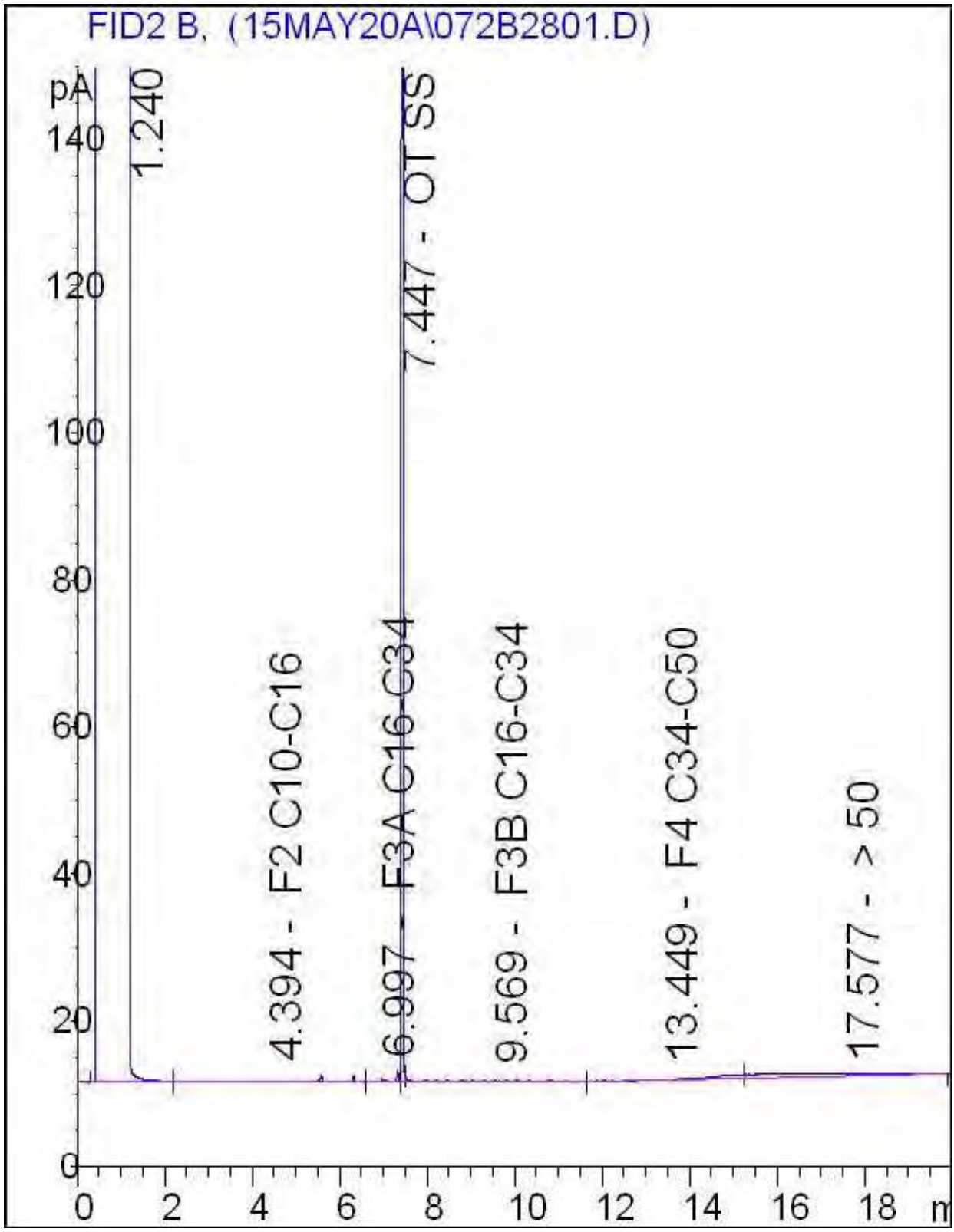


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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
A Bureau Veritas Group Company

Your Project #: 1525113
Site Location: 175 MAIN STREET
Your C.O.C. #: 584300-01-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/11/21
Report #: R4254149
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6O6551
Received: 2016/11/11, 15:20

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Petroleum Hydro. CCME F1 & BTEX in Water (1)	5	N/A	2016/11/19	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	5	2016/11/17	2016/11/18	CAM SOP-00316	CCME PHC-CWS m
Polychlorinated Biphenyl in Water (1)	4	2016/11/14	2016/11/15	CAM SOP-00309	EPA 8082A m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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) 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.

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
Site Location: 175 MAIN STREET
Your C.O.C. #: 584300-01-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2016/11/21
Report #: R4254149
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6O6551
Received: 2016/11/11, 15:20

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager
Email: MBingley@maxxam.ca
Phone# (613)274-3549
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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 #: B6O6551
Report Date: 2016/11/21

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN STREET
Sampler Initials: JB

O.REG 153 PCBS (WATER)

Maxxam ID		DLC179	DLC180	DLC181	DLC182		
Sampling Date		2016/11/11 12:07	2016/11/11 11:35	2016/11/11 13:02	2016/11/11		
COC Number		584300-01-01	584300-01-01	584300-01-01	584300-01-01		
	UNITS	**16-118**	**16-119**	**16-120**	**DUP1**	**RDL**	**QC Batch**
PCBs							
Aroclor 1242	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	4747567
Aroclor 1248	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	4747567
Aroclor 1254	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	4747567
Aroclor 1260	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	4747567
Total PCB	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	4747567
Surrogate Recovery (%)							
Decachlorobiphenyl	%	86	89	84	86		4747567

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.maxxam.ca

Maxxam Job #: B6O6551
Report Date: 2016/11/21

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN STREET
Sampler Initials: JB

O.REG 153 PETROLEUM HYDROCARBONS (WATER)

Maxxam ID		DLC178	DLC179	DLC179	DLC180	DLC181	DLC182		
Sampling Date		2016/11/11 12:45	2016/11/11 12:07	2016/11/11 12:07	2016/11/11 11:35	2016/11/11 13:02	2016/11/11		
COC Number		584300-01-01	584300-01-01	584300-01-01	584300-01-01	584300-01-01	584300-01-01		
	UNITS	**16-117**	**16-118**	**16-118 Lab-Dup**	**16-119**	**16-120**	**DUP1**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons									
Benzene	ug/L	<0.20	<0.20		<0.20	<0.20	<0.20	0.20	4753413
Toluene	ug/L	<0.20	<0.20		<0.20	<0.20	<0.20	0.20	4753413
Ethylbenzene	ug/L	<0.20	<0.20		<0.20	<0.20	<0.20	0.20	4753413
o-Xylene	ug/L	<0.20	<0.20		<0.20	<0.20	<0.20	0.20	4753413
p+m-Xylene	ug/L	<0.40	<0.40		<0.40	<0.40	<0.40	0.40	4753413
Total Xylenes	ug/L	<0.40	<0.40		<0.40	<0.40	<0.40	0.40	4753413
F1 (C6-C10)	ug/L	<25	<25		<25	<25	<25	25	4753413
F1 (C6-C10) - BTEX	ug/L	<25	<25		<25	<25	<25	25	4753413
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	<100	<100	<100	100	4752882
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	<200	<200	<200	200	4752882
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	<200	<200	<200	200	4752882
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes	Yes	Yes		4752882
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	100	99		100	101	95		4753413
4-Bromofluorobenzene	%	92	98		91	102	98		4753413
D10-Ethylbenzene	%	96	89		97	103	96		4753413
D4-1,2-Dichloroethane	%	98	100		98	98	98		4753413
o-Terphenyl	%	99	99	100	99	98	100		4752882

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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 #: B6O6551
Report Date: 2016/11/21

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN STREET
Sampler Initials: JB

TEST SUMMARY

Maxxam ID: DLC178
Sample ID: 16-117
Matrix: Water

Collected: 2016/11/11
Shipped:
Received: 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4753413	N/A	2016/11/19	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4752882	2016/11/17	2016/11/18	Margaret Kulczyk-Stanko

Maxxam ID: DLC179
Sample ID: 16-118
Matrix: Water

Collected: 2016/11/11
Shipped:
Received: 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4753413	N/A	2016/11/19	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4752882	2016/11/17	2016/11/18	Margaret Kulczyk-Stanko
Polychlorinated Biphenyl in Water	GC/ECD	4747567	2016/11/14	2016/11/15	Li Peng

Maxxam ID: DLC179 Dup
Sample ID: 16-118
Matrix: Water

Collected: 2016/11/11
Shipped:
Received: 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4752882	2016/11/17	2016/11/18	Margaret Kulczyk-Stanko

Maxxam ID: DLC180
Sample ID: 16-119
Matrix: Water

Collected: 2016/11/11
Shipped:
Received: 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4753413	N/A	2016/11/19	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4752882	2016/11/17	2016/11/18	Margaret Kulczyk-Stanko
Polychlorinated Biphenyl in Water	GC/ECD	4747567	2016/11/14	2016/11/15	Li Peng

Maxxam ID: DLC181
Sample ID: 16-120
Matrix: Water

Collected: 2016/11/11
Shipped:
Received: 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4753413	N/A	2016/11/19	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4752882	2016/11/17	2016/11/18	Margaret Kulczyk-Stanko
Polychlorinated Biphenyl in Water	GC/ECD	4747567	2016/11/14	2016/11/15	Li Peng

Maxxam ID: DLC182
Sample ID: DUP1
Matrix: Water

Collected: 2016/11/11
Shipped:
Received: 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4753413	N/A	2016/11/19	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4752882	2016/11/17	2016/11/18	Margaret Kulczyk-Stanko
Polychlorinated Biphenyl in Water	GC/ECD	4747567	2016/11/14	2016/11/15	Li Peng

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 #: B6O6551
Report Date: 2016/11/21

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN STREET
Sampler Initials: JB

GENERAL COMMENTS

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

Package 1	11.0°C

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 #: B6O6551
Report Date: 2016/11/21

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN STREET
Sampler Initials: JB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4747567	Decachlorobiphenyl	2016/11/15	72	60 - 130	81	60 - 130	92	%		
4752882	o-Terphenyl	2016/11/17	102	60 - 130	103	60 - 130	99	%		
4753413	1,4-Difluorobenzene	2016/11/19	96	70 - 130	97	70 - 130	99	%		
4753413	4-Bromofluorobenzene	2016/11/19	98	70 - 130	99	70 - 130	89	%		
4753413	D10-Ethylbenzene	2016/11/19	91	70 - 130	86	70 - 130	94	%		
4753413	D4-1,2-Dichloroethane	2016/11/19	99	70 - 130	95	70 - 130	99	%		
4747567	Aroclor 1242	2016/11/15					<0.05	ug/L		
4747567	Aroclor 1248	2016/11/15					<0.05	ug/L		
4747567	Aroclor 1254	2016/11/15					<0.05	ug/L		
4747567	Aroclor 1260	2016/11/15	60	60 - 130	77	60 - 130	<0.05	ug/L		
4747567	Total PCB	2016/11/15	60	60 - 130	77	60 - 130	<0.05	ug/L	NC	40
4752882	F2 (C10-C16 Hydrocarbons)	2016/11/18	108	50 - 130	110	60 - 130	<100	ug/L	NC	30
4752882	F3 (C16-C34 Hydrocarbons)	2016/11/18	102	50 - 130	111	60 - 130	<200	ug/L	NC	30
4752882	F4 (C34-C50 Hydrocarbons)	2016/11/18	105	50 - 130	107	60 - 130	<200	ug/L	NC	30
4753413	Benzene	2016/11/19	82	70 - 130	90	70 - 130	<0.20	ug/L	NC	30
4753413	Ethylbenzene	2016/11/19	96	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
4753413	F1 (C6-C10) - BTEX	2016/11/19					<25	ug/L	NC	30
4753413	F1 (C6-C10)	2016/11/19	71	70 - 130	85	70 - 130	<25	ug/L	NC	30
4753413	o-Xylene	2016/11/19	101	70 - 130	104	70 - 130	<0.20	ug/L	NC	30
4753413	p+m-Xylene	2016/11/19	87	70 - 130	89	70 - 130	<0.40	ug/L	NC	30
4753413	Toluene	2016/11/19	88	70 - 130	89	70 - 130	<0.20	ug/L	18	30
4753413	Total Xylenes	2016/11/19					<0.40	ug/L	15	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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B6O6551
Report Date: 2016/11/21

Golder Associates Ltd
Client Project #: 1525113
Site Location: 175 MAIN STREET
Sampler Initials: JB

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.

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
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

11-Nov-16 15:20
Madison Bingley
B6O6551
J L ENV-597

Page 1 of 1
ly:
Bottle Order #: 584300
Project Manager: Madison Bingley
C#564300-01-01

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:

REPORT TO:
Company Name: Golder
Attention: Tony Lyon
Address:
Tel: Fax:
Email: Tony_Lyon@golder.com

PROJECT INFORMATION:
Quotation #: B57625
P.O. #:
Project: 1525113
Project Name:
Site #: 175 Main Street
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: 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 PCBs (Water)	O Reg 153 Petroleum Hydrocarbons (Water) + BTEX							# of Bottles	Comments
1	16-117		Nov 11/16	12:45	GW			✓							4	
2	16-118		↓	12:07	↓		✓	↓							5	only 1 PCB bottle filled
3	16-119		↓	11:35	↓		✓	↓							5	↓
4	16-120		↓	13:02	↓		✓	↓							5	↓
5	DUP1		↓	00:00	↓		✓	↓							5	↓
6	Extra bottles														2	
7																
8																
9																RECEIVED IN OTTAWA
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
James Doyle	16/11/11	15:19	Fatemeh Habib	2016/11/11	15:20	
			Tanvir Singh	2016/11/12	09:29	

Laboratory Use Only: Time Sensitive; Temperature (°C) on Receipt: 11, 11, 11; 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

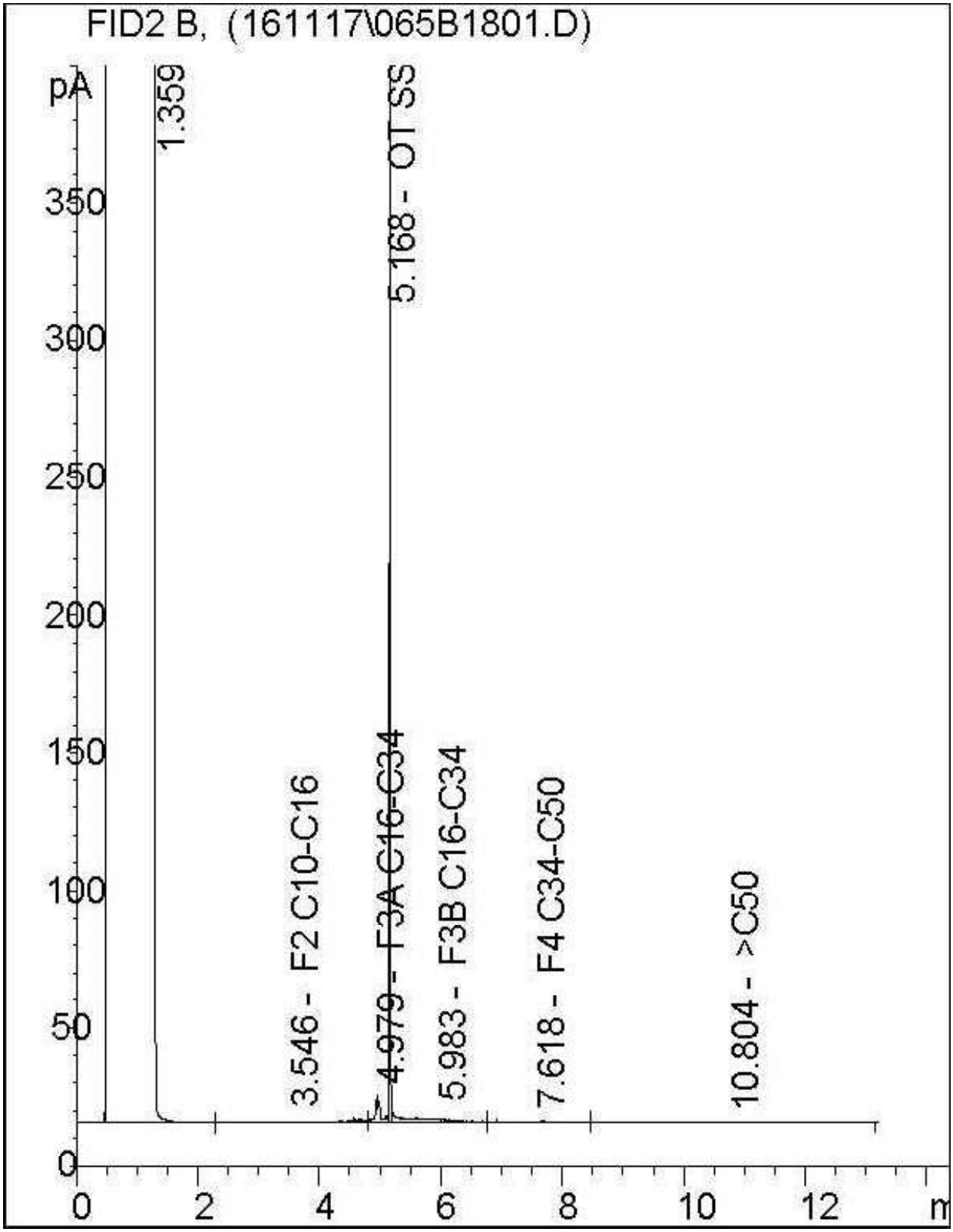
SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

5/3/5

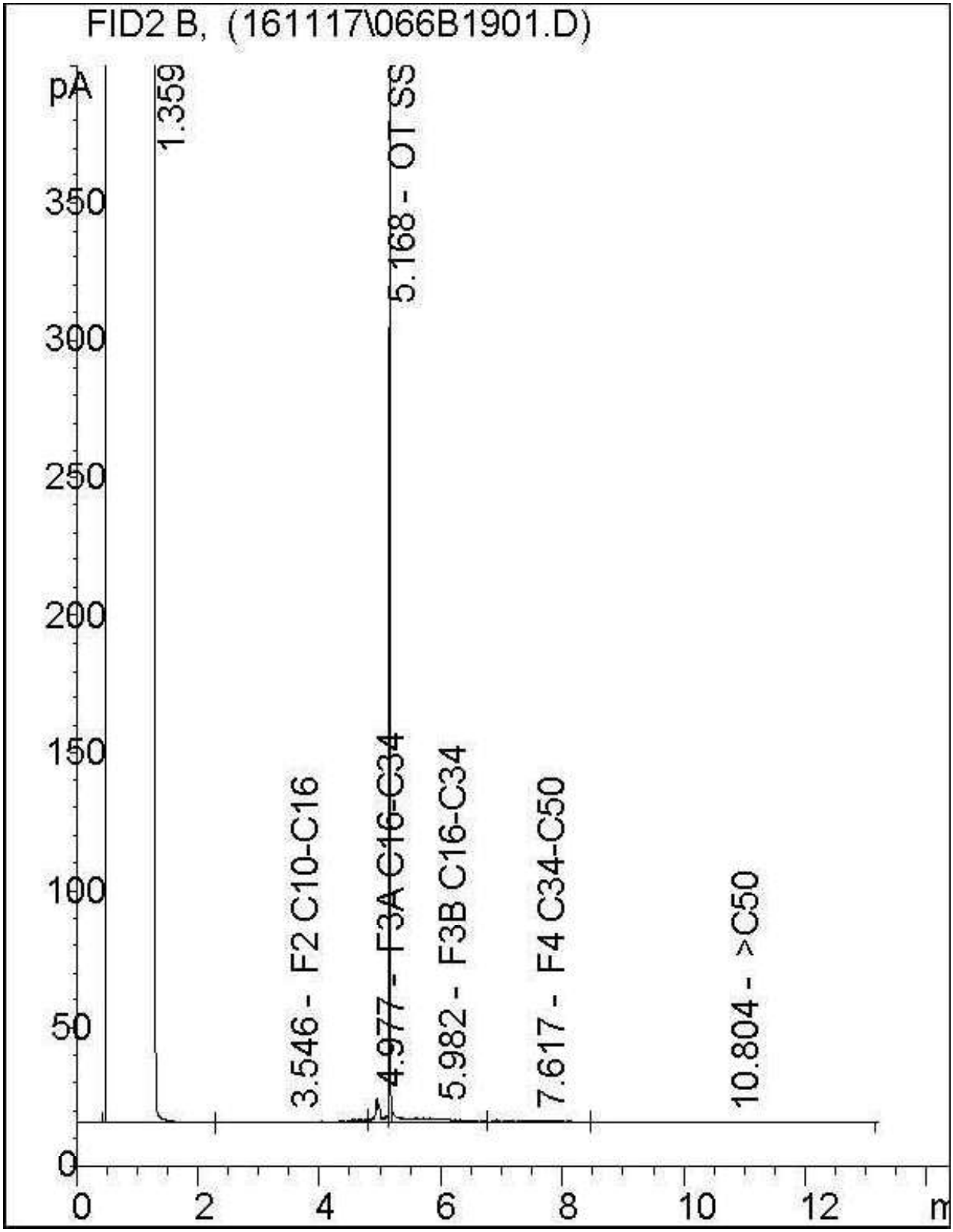
Maxxam Analytics International Corporation o/a Maxxam Analytics

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.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

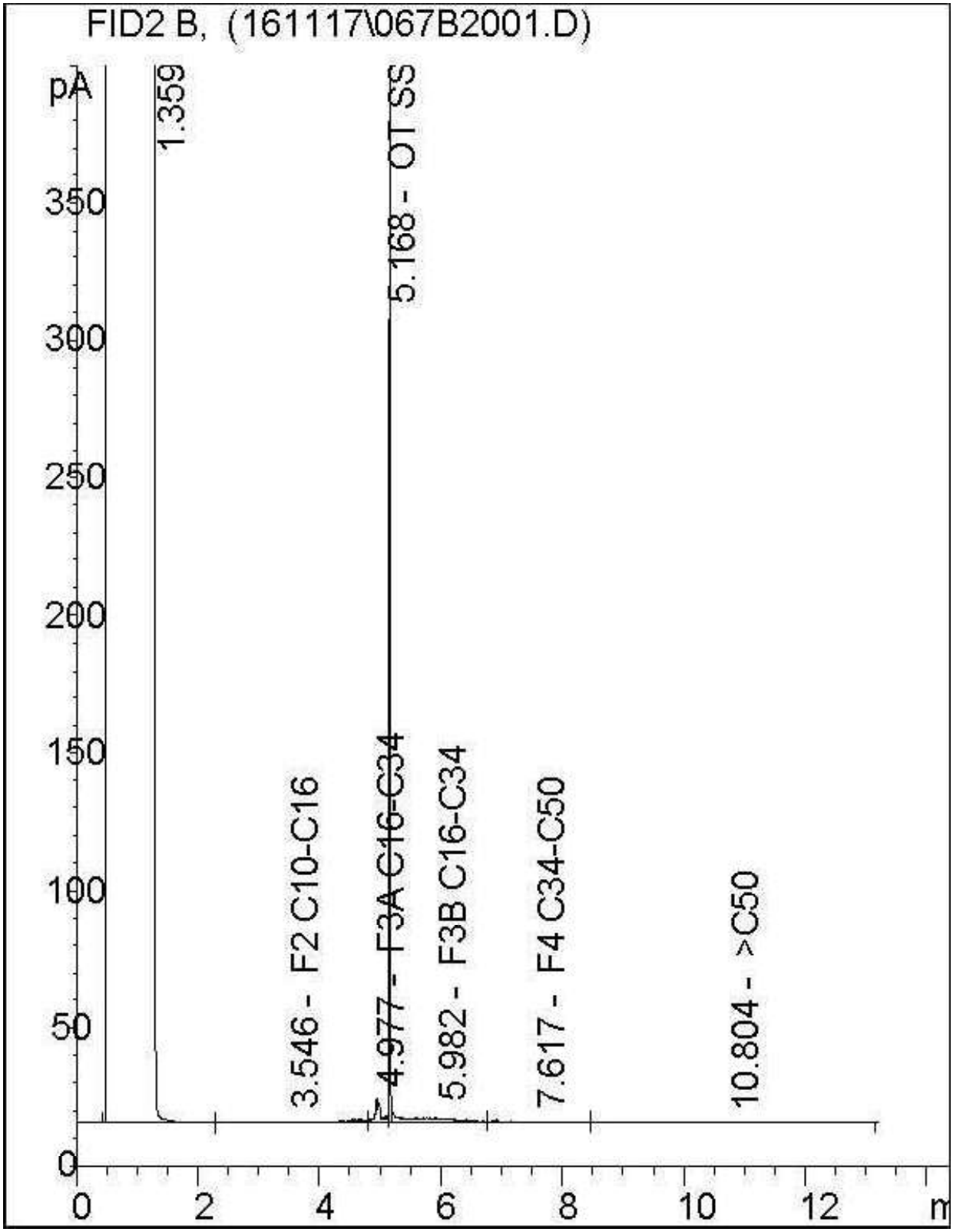


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B6O6551
Report Date: 2016/11/21
Maxxam Sample: DLC179 Lab-Dup

Golder Associates Ltd
Client Project #: 1525113
Project name: 175 MAIN STREET
Client ID: 16-118

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

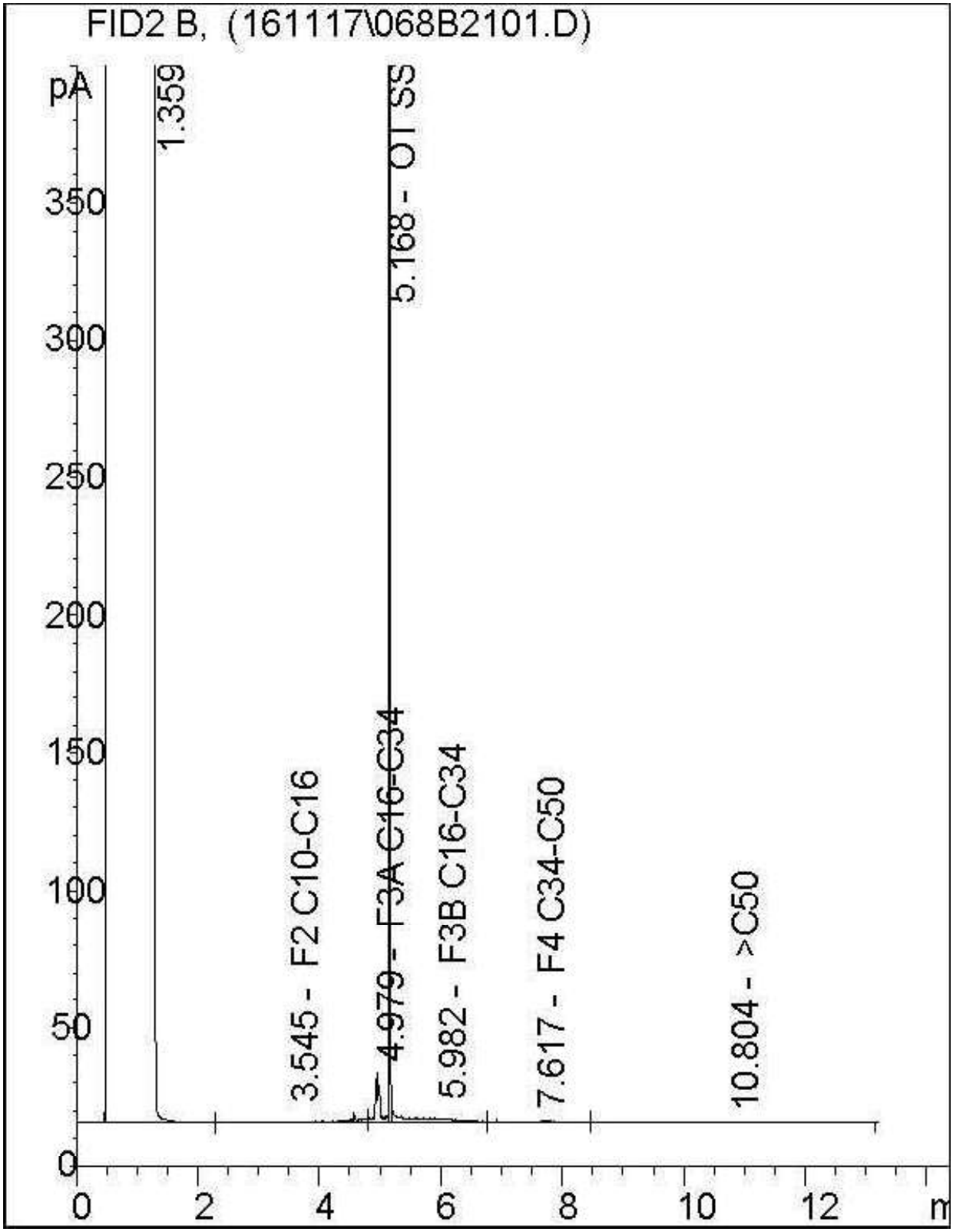


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B6O6551
Report Date: 2016/11/21
Maxxam Sample: DLC180

Golder Associates Ltd
Client Project #: 1525113
Project name: 175 MAIN STREET
Client ID: 16-119

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

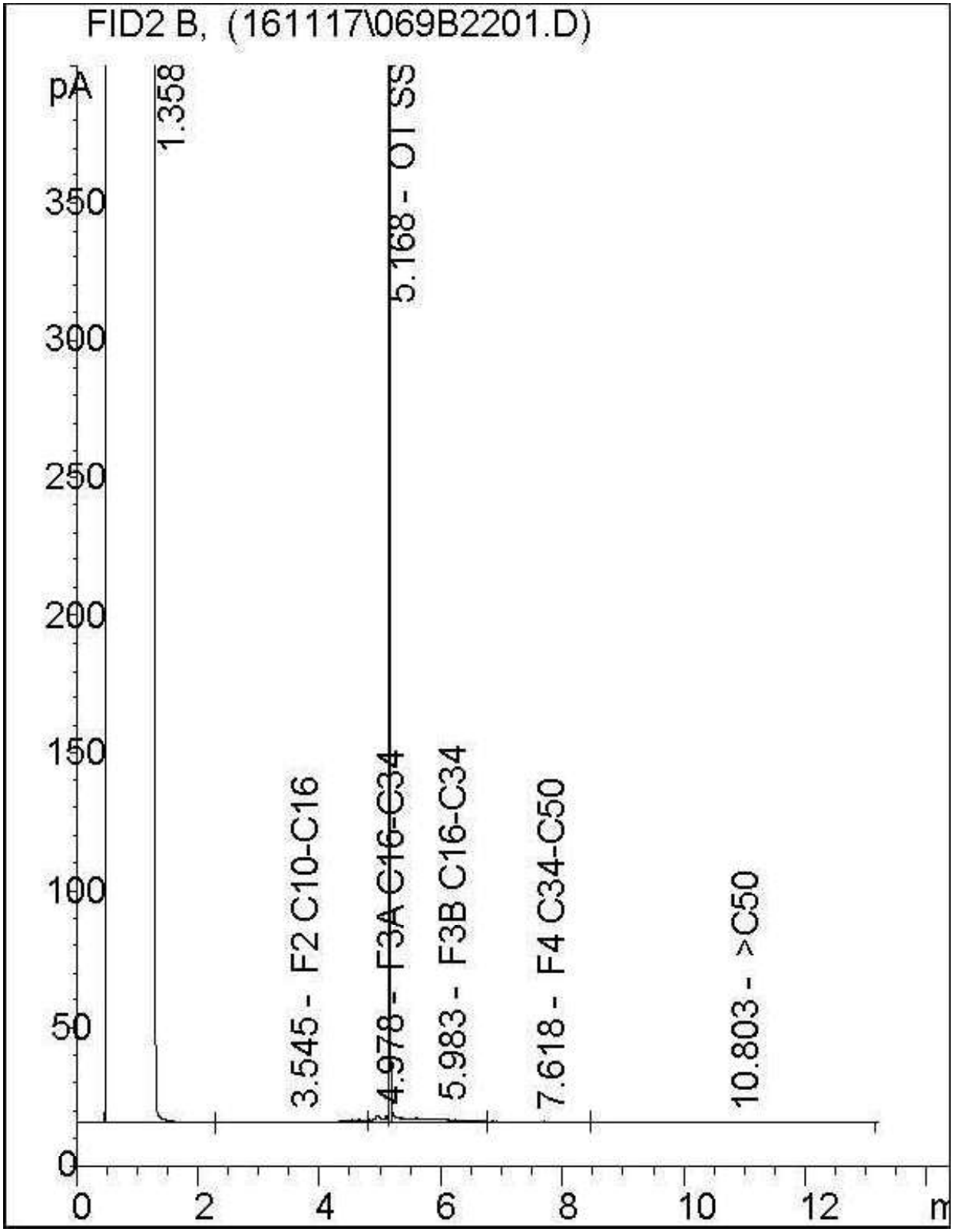


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B6O6551
Report Date: 2016/11/21
Maxxam Sample: DLC181

Golder Associates Ltd
Client Project #: 1525113
Project name: 175 MAIN STREET
Client ID: 16-120

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

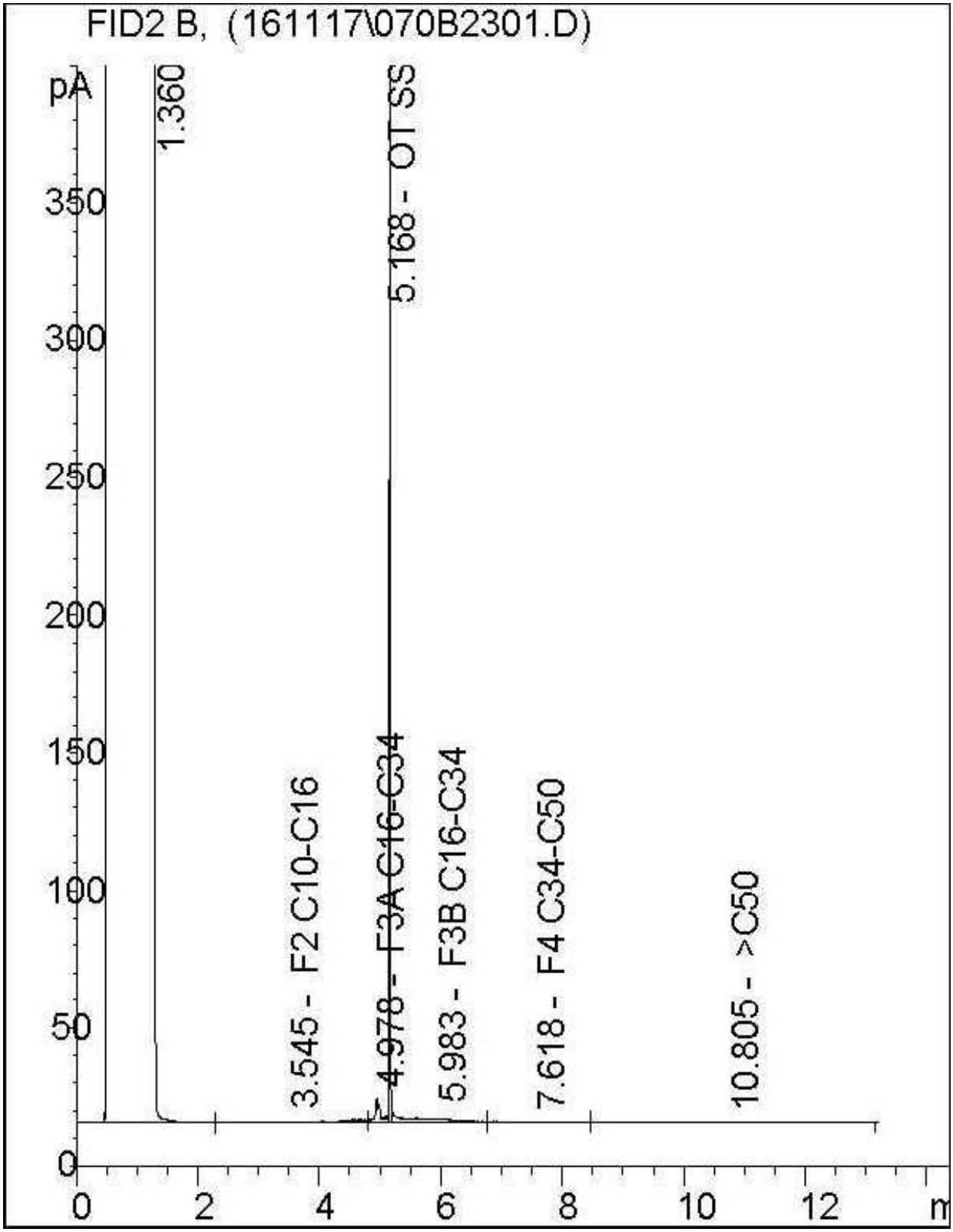


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B6O6551
Report Date: 2016/11/21
Maxxam Sample: DLC182

Golder Associates Ltd
Client Project #: 1525113
Project name: 175 MAIN STREET
Client ID: DUP1

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

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

Success Through Science®

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

Success Through Science®

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

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

Success Through Science®

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

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

Success Through Science®

Maxxam Job #: B453269
Report Date: 2014/04/09

Golder Associates Ltd
Client Project #: 14-1122-0005

Sampler Initials: DM

Test Summary

Maxxam ID VK7349
Sample ID BH14-101C
Matrix Water

Collected test 2 2014/04/03
Shipped
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
Sample ID BH14-102
Matrix Water

Collected test 2 2014/04/03
Shipped
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
Sample ID BH14-1
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

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

Success Through Science®

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

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

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

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

Success Through Science®

Maxxam Job #: B453269
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

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

Success Through Science®

Maxxam Job #: B453269
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.

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

Validation Signature Page

Maxxam Job #: 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.

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

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 (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

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

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
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

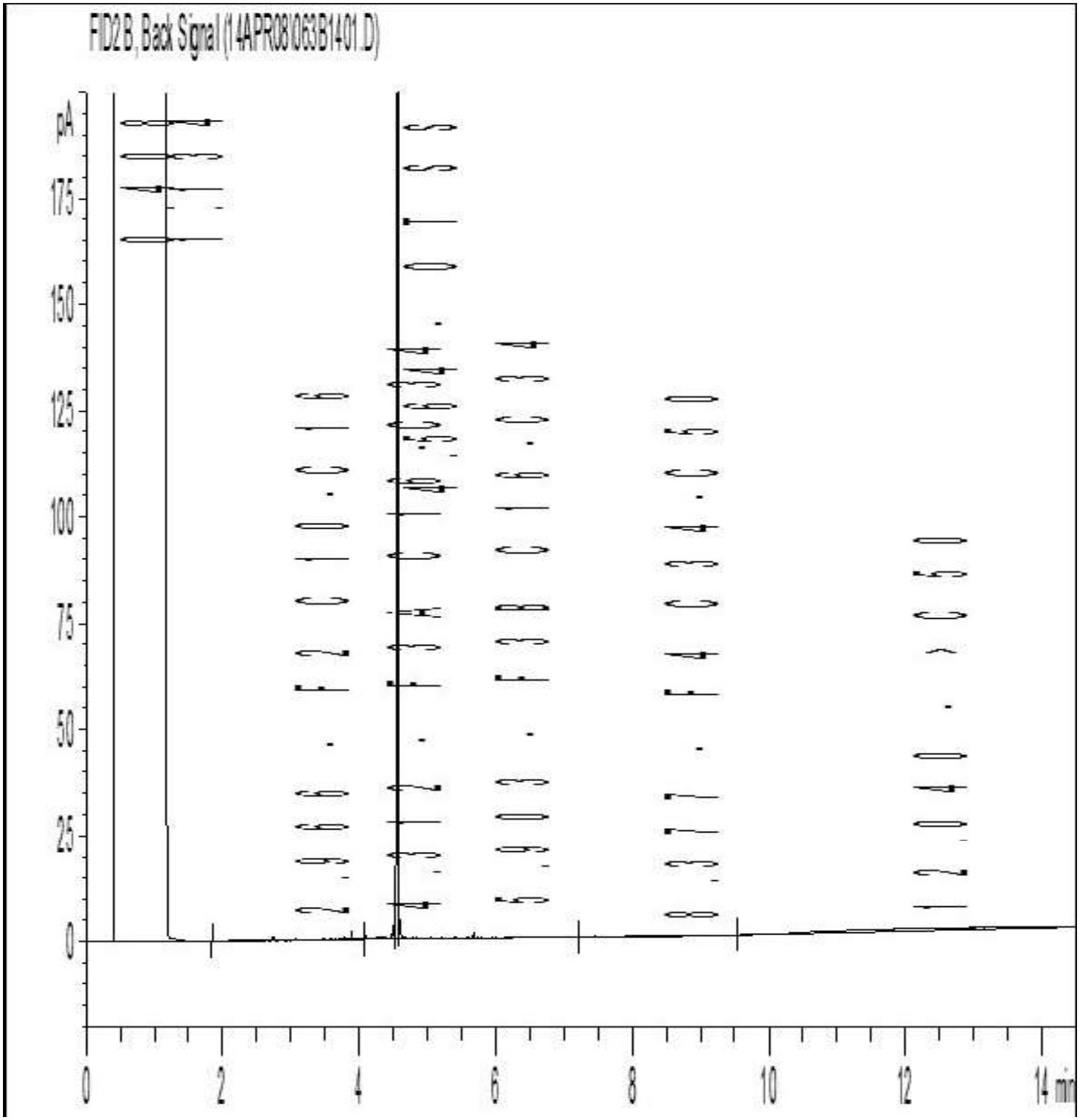
Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxamanalytics.com

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.

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

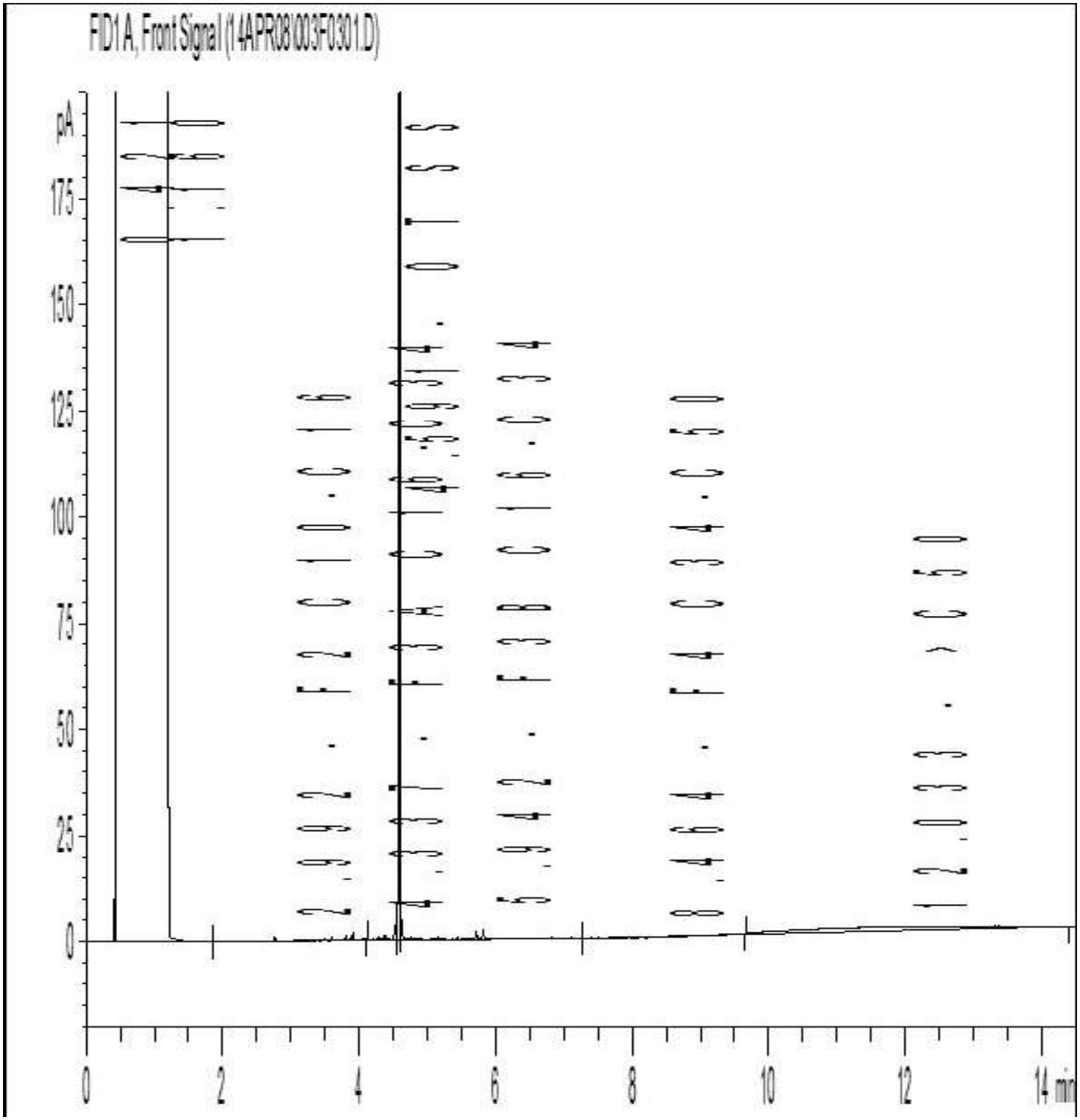
Success Through Science®

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.

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

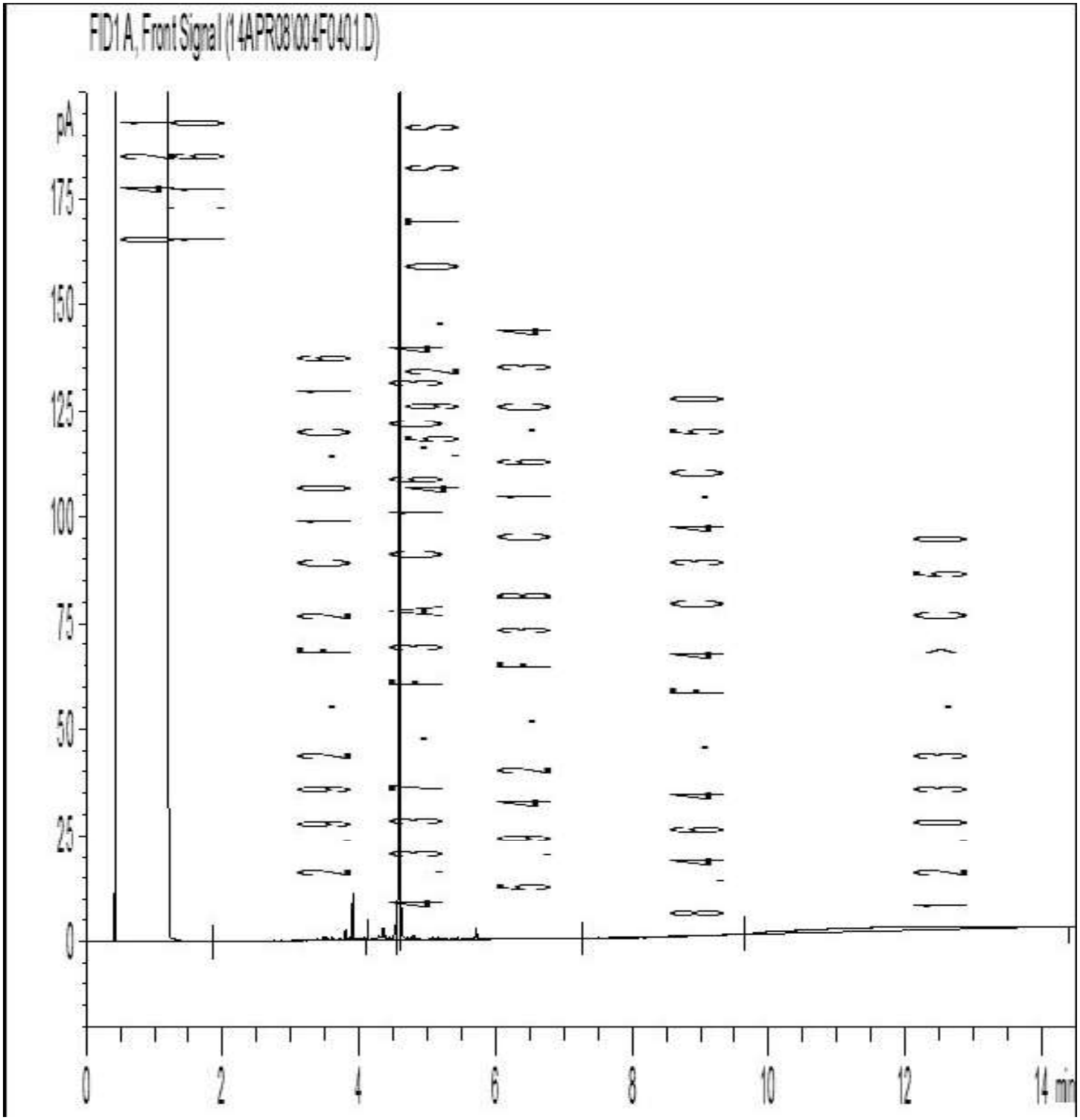
Success Through Science®

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.

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

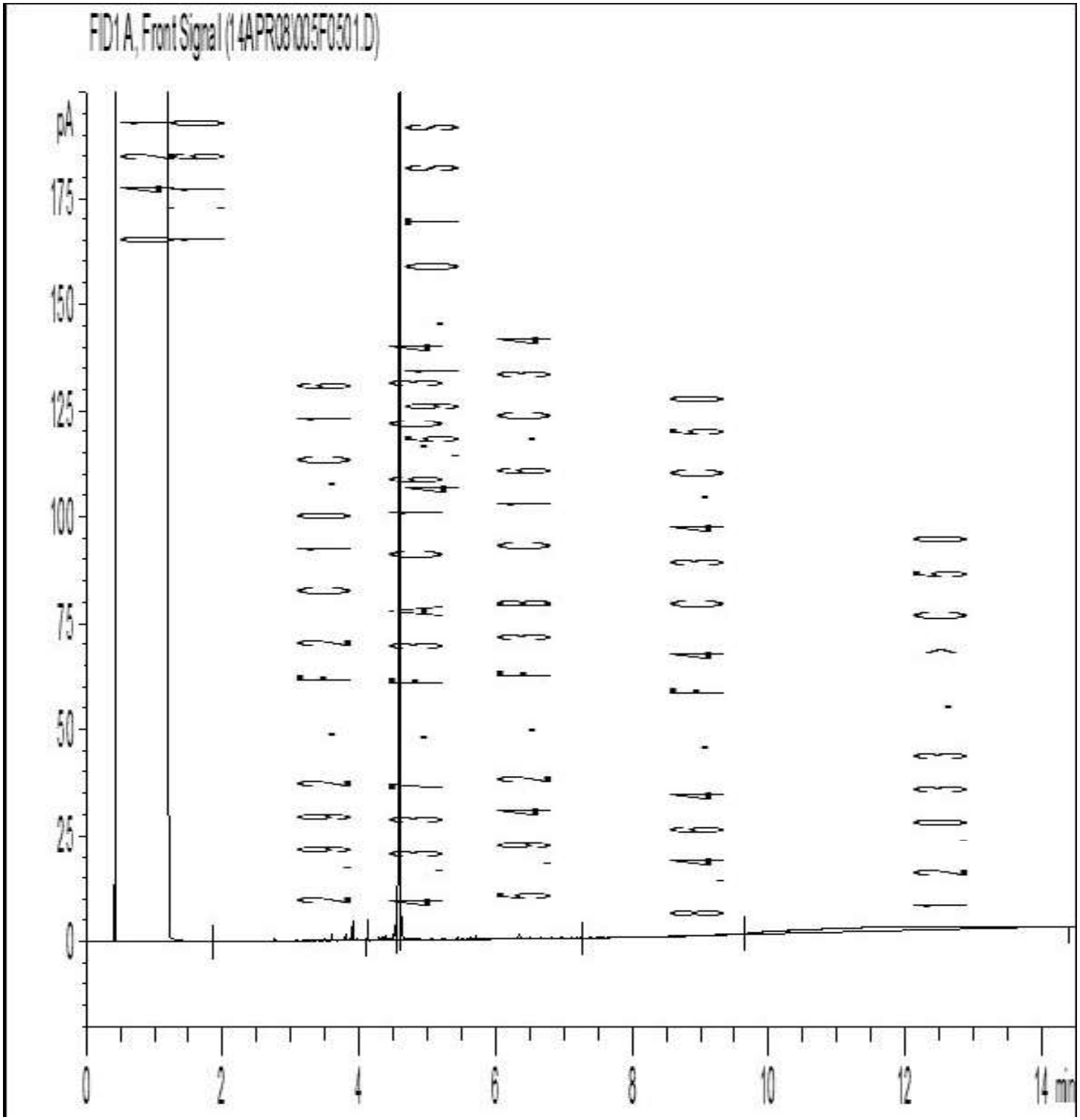
Success Through Science®

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.

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
A Bureau Veritas Group Company

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

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
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.

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 #: 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

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 #: 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

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 #: 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

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

Success Through Science®

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

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 #: 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

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

Success Through Science®

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

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 #: 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

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 #: B553092
Report Date: 2015/03/31

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	8.0°C

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

Success Through Science®

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

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

Success Through Science®

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

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 #: 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

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 #: 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).

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 #: 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.

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 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
C#505928-01-01

Page 1 of 1

Use Only:
Bottle Order #: 505928
Project Manager: Parnian Baber

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): [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)

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 #)*

#	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																		Omit

* 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

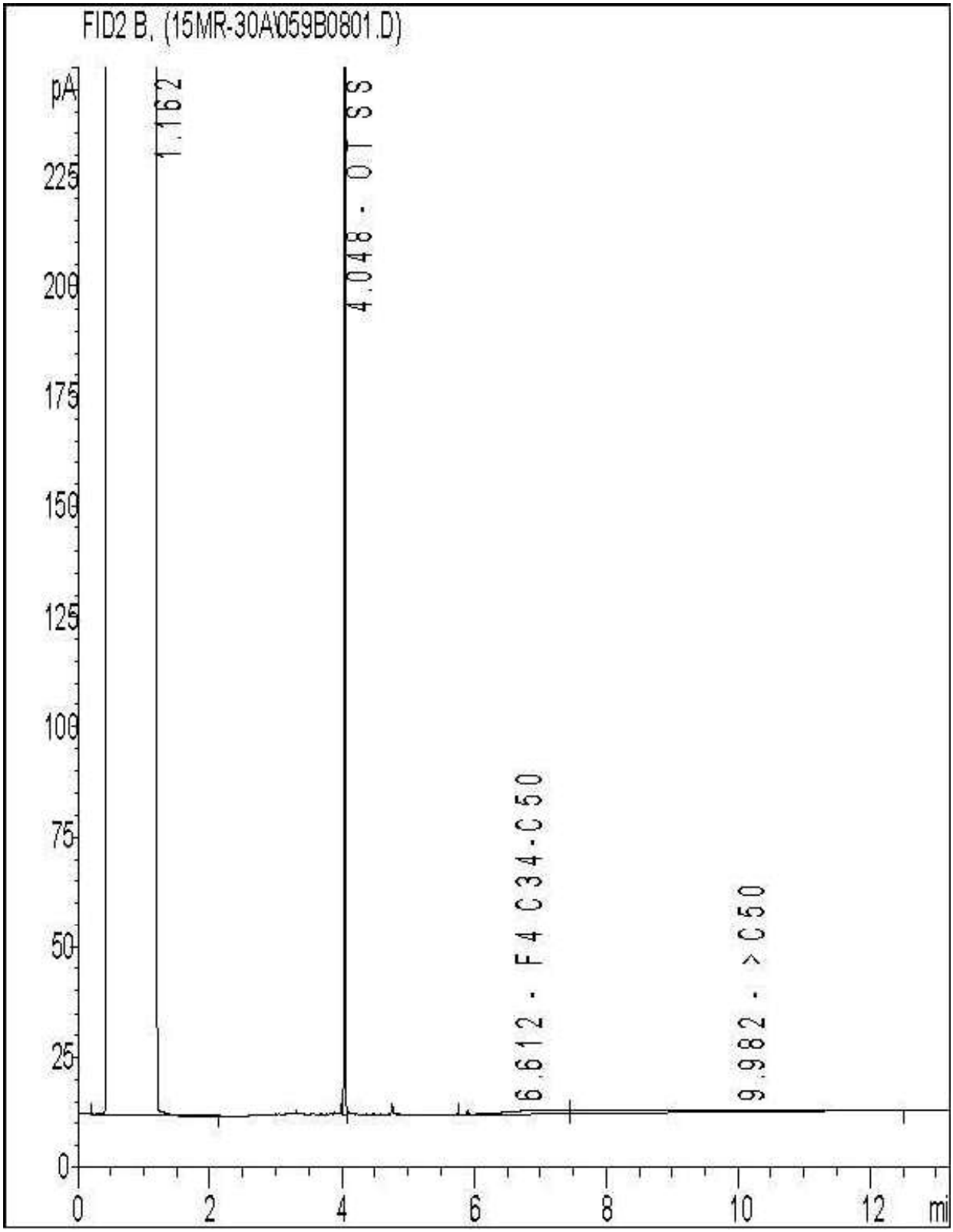
White: Maxxam Yellow: Client

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

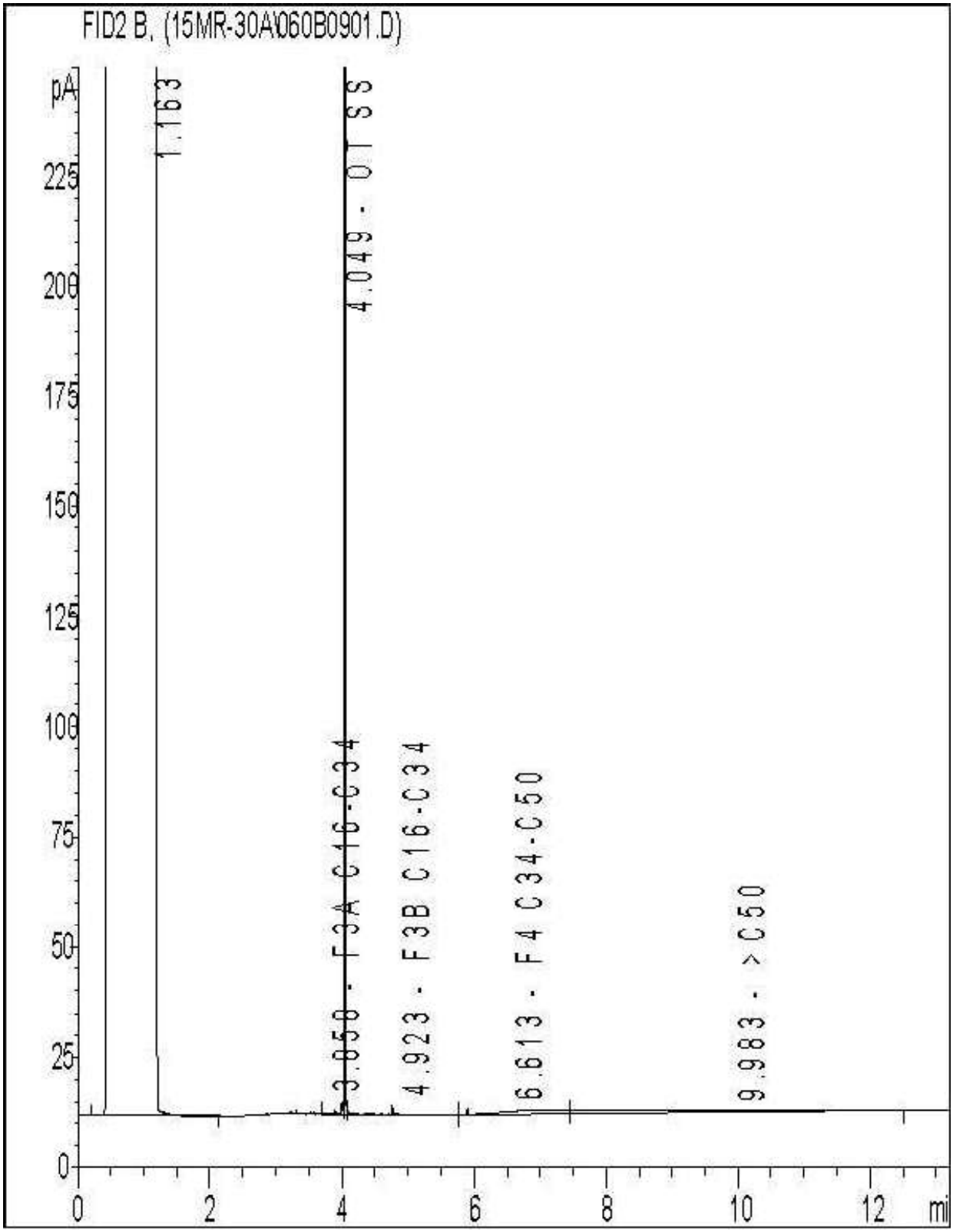


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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

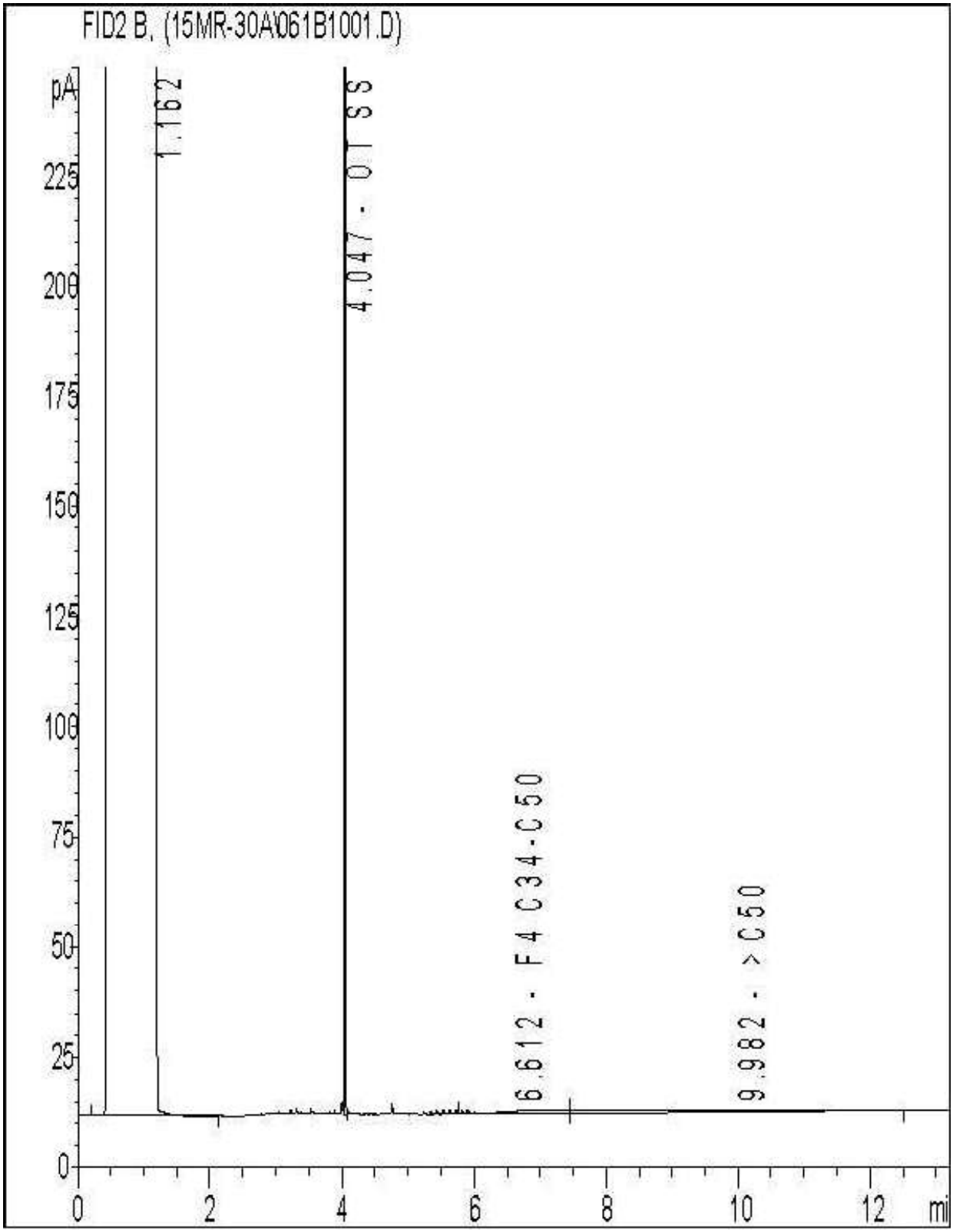


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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.

Maxxam
A Bureau Veritas Group Company

Success Through Science®

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

-2-

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

==========
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 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 #: 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

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 #: 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

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 #: 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

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 #: 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

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 #: 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

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®

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

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 #: 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

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 (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	

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 (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

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 (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

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 (Continued)

Maxxam Job Number: TB553170

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

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 (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

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 (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

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 (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

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 (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.

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

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).

Eva 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.

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 IMMEDIATE TEST

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

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
☒ 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)? ___

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																		RECEIVED IN OTTAWA
9																		
10																		mice

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
B.McParlan	15/03/25	14:30	Kelsey Pilon	15/03/25	15:47			9, 8, 6	Present	✓	
			Jenny Li	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

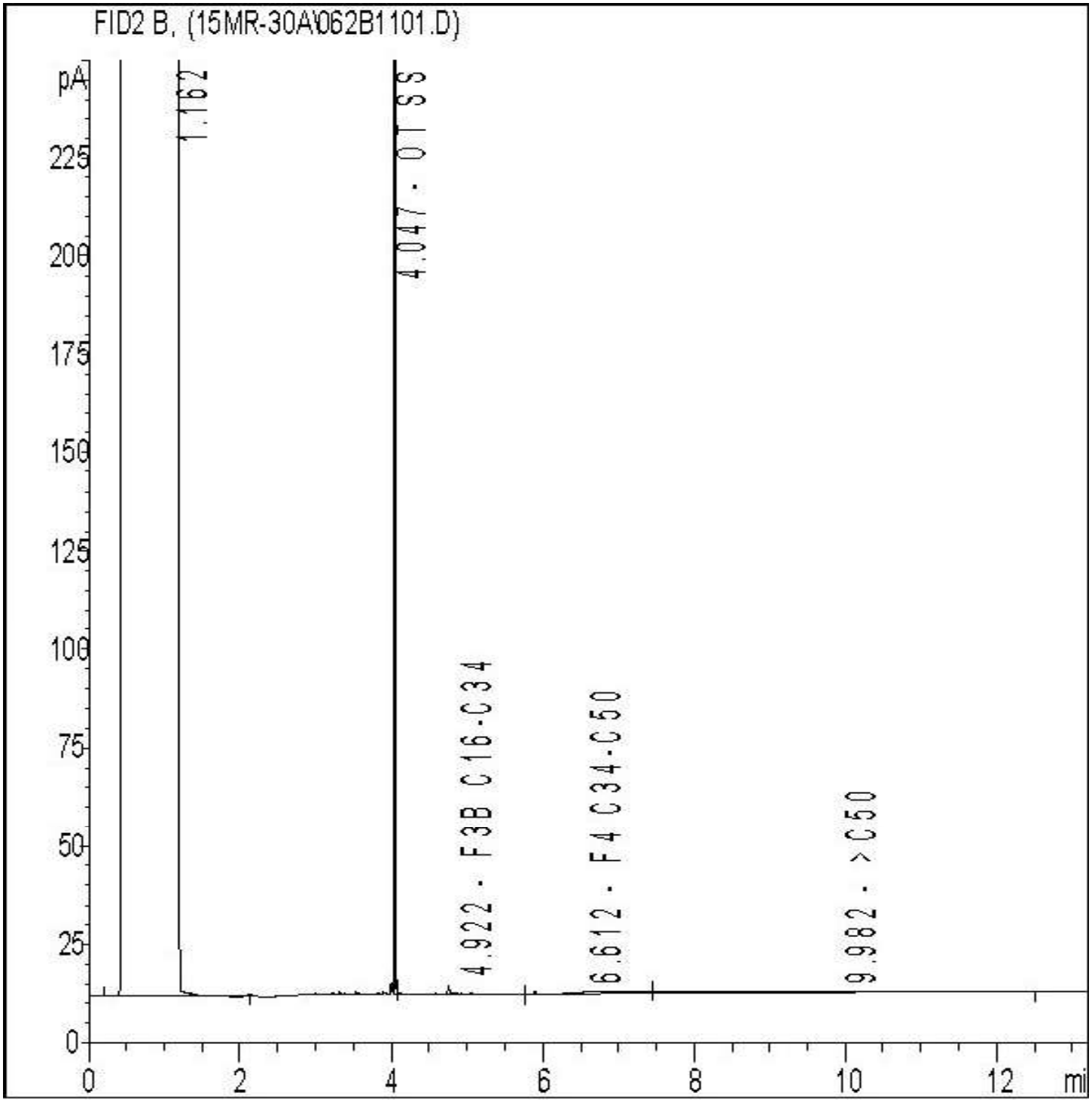
6/6/6°C

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.

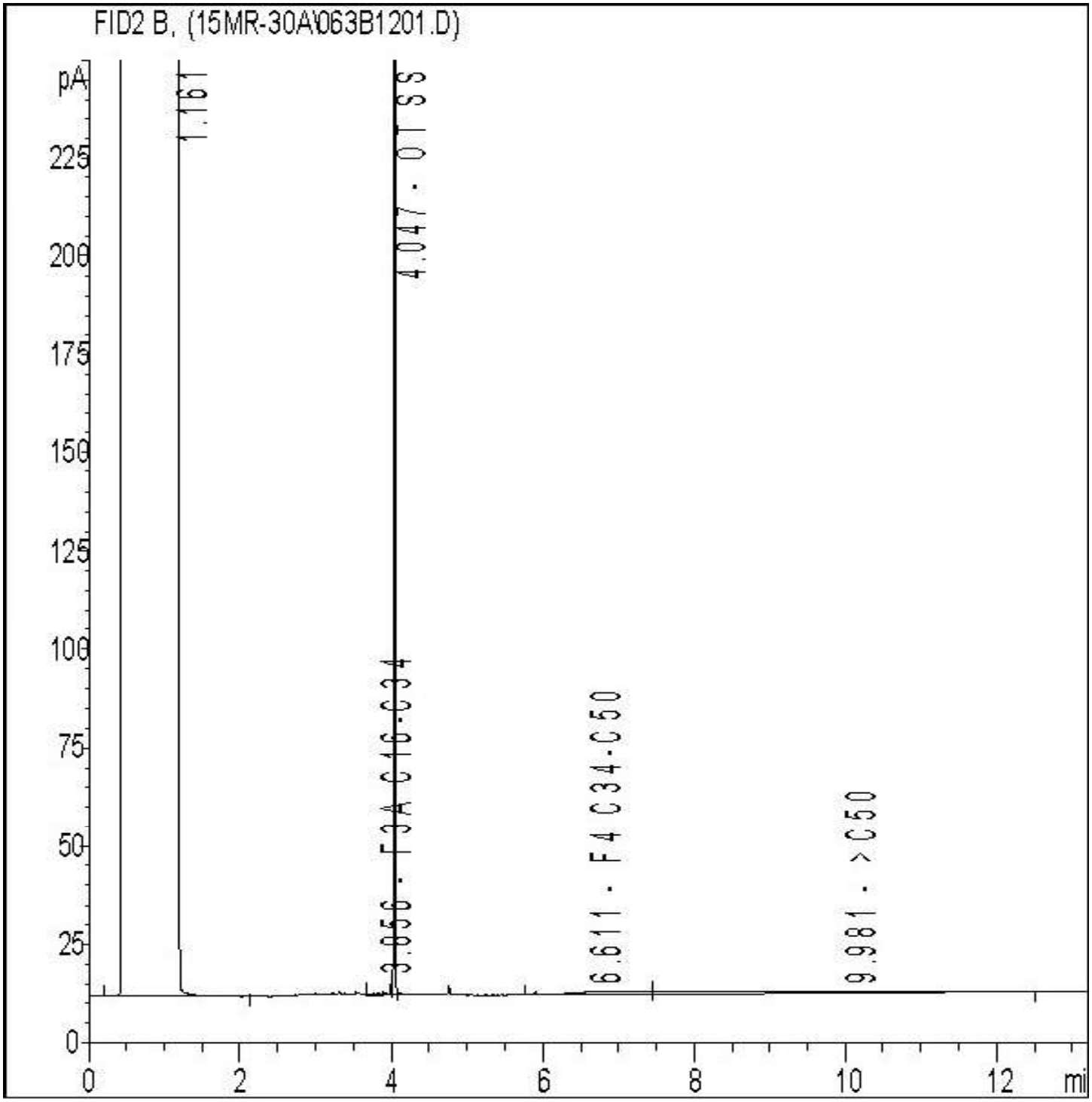
Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Report Date: 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.

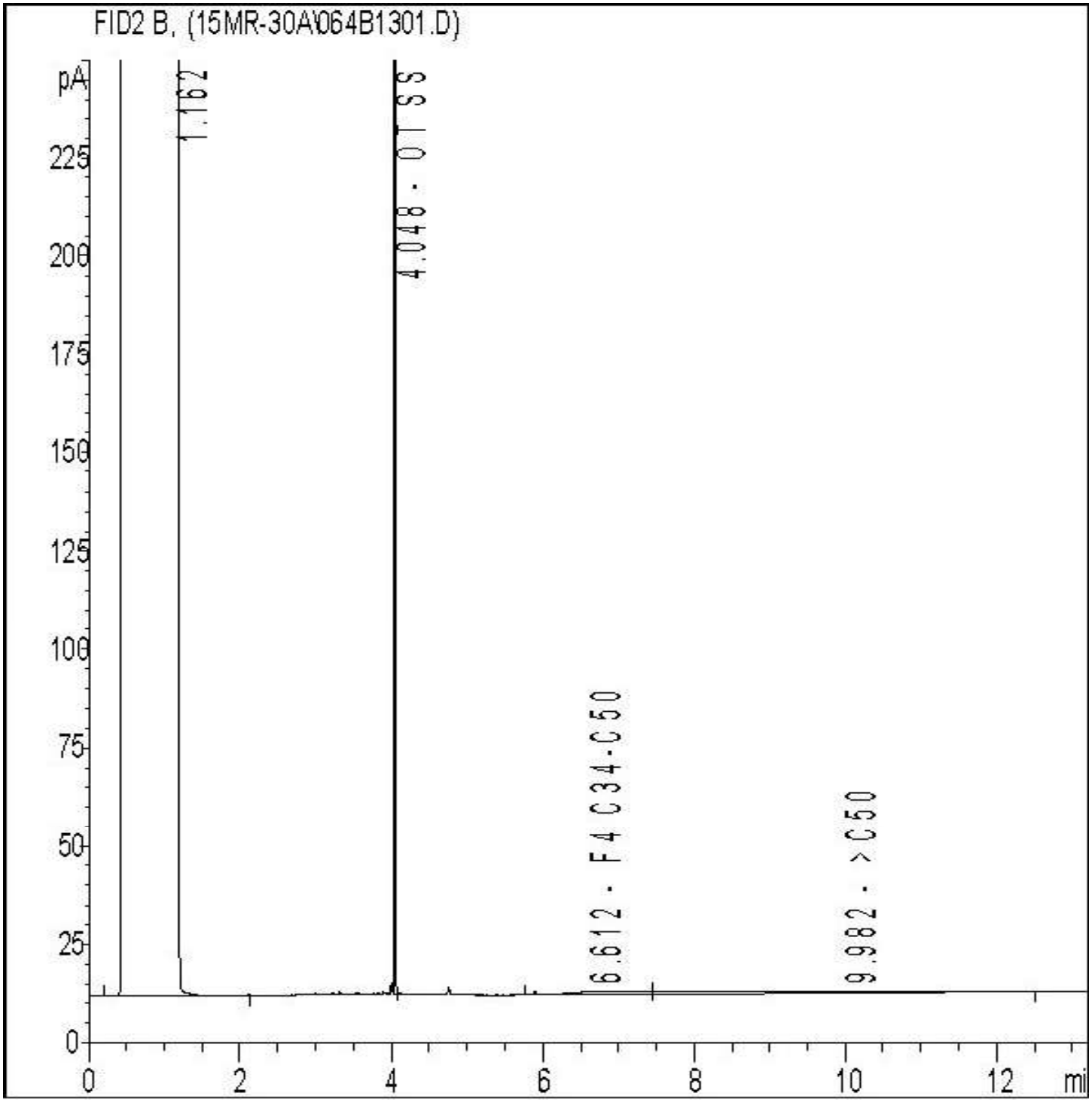
Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Report Date: 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.

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 #: 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

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

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 #: 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

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 #: 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

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 #: B553219
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

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 #: 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

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 #: 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**
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

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

Success Through Science®

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

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 #: 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.

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

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

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

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

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

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
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

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

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
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).

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 #: 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.

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

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:
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: 1525113
Project Name:
Site #: Oblates
Sampled By: B. McPartlan

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 505928
COC #: C#505928-03-01
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 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. McPartlan	2015/03/25	14:30	Kelsey Pilon Kelsey Pilon	15/03/25	15:47	
				2015/03/26	09:30	

Laboratory Use Only: Time Sensitive: Temperature (°C) on Receipt: 9.7, 6 | 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

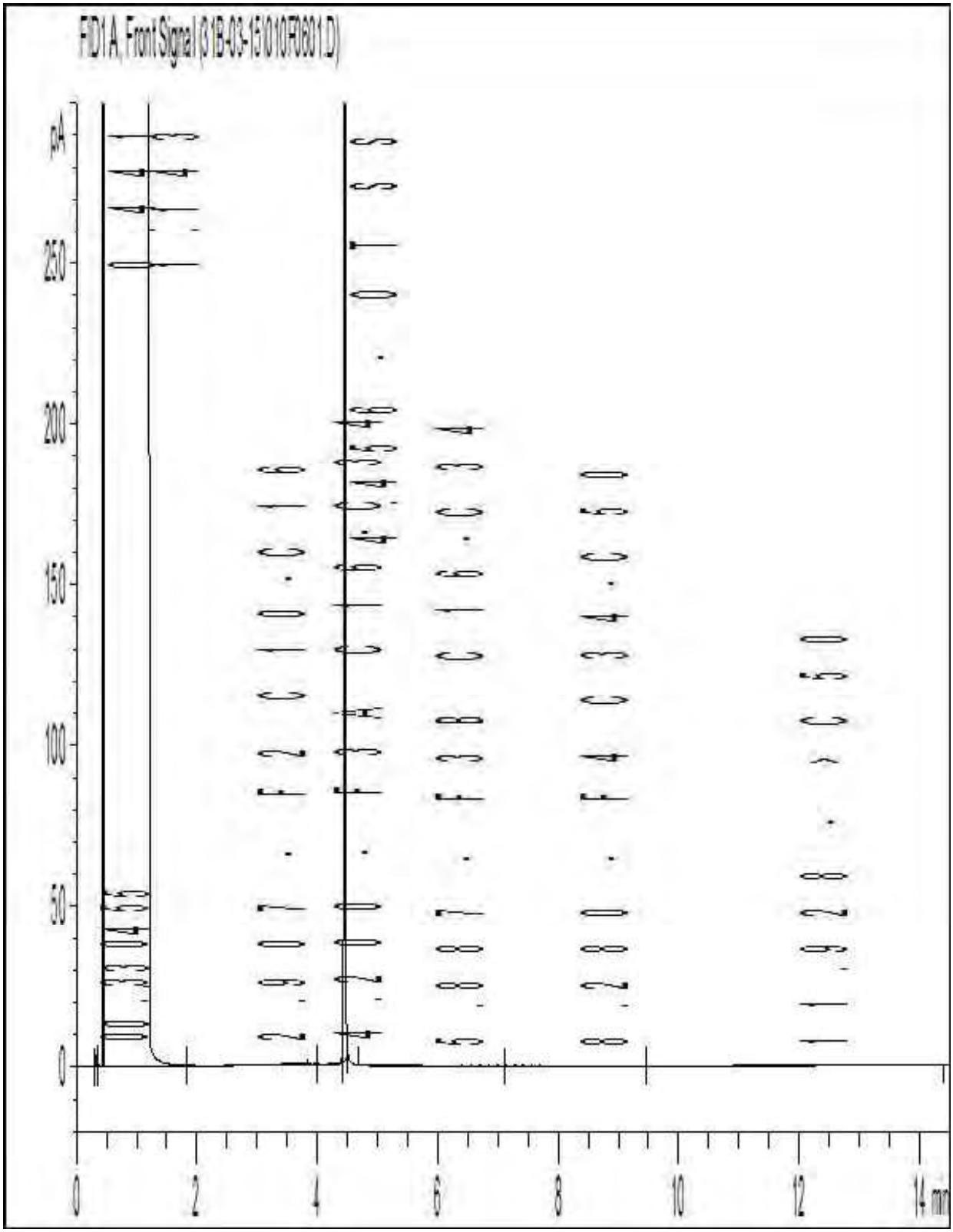
White: Maxxam Yellow: Client

4/4/4°C

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

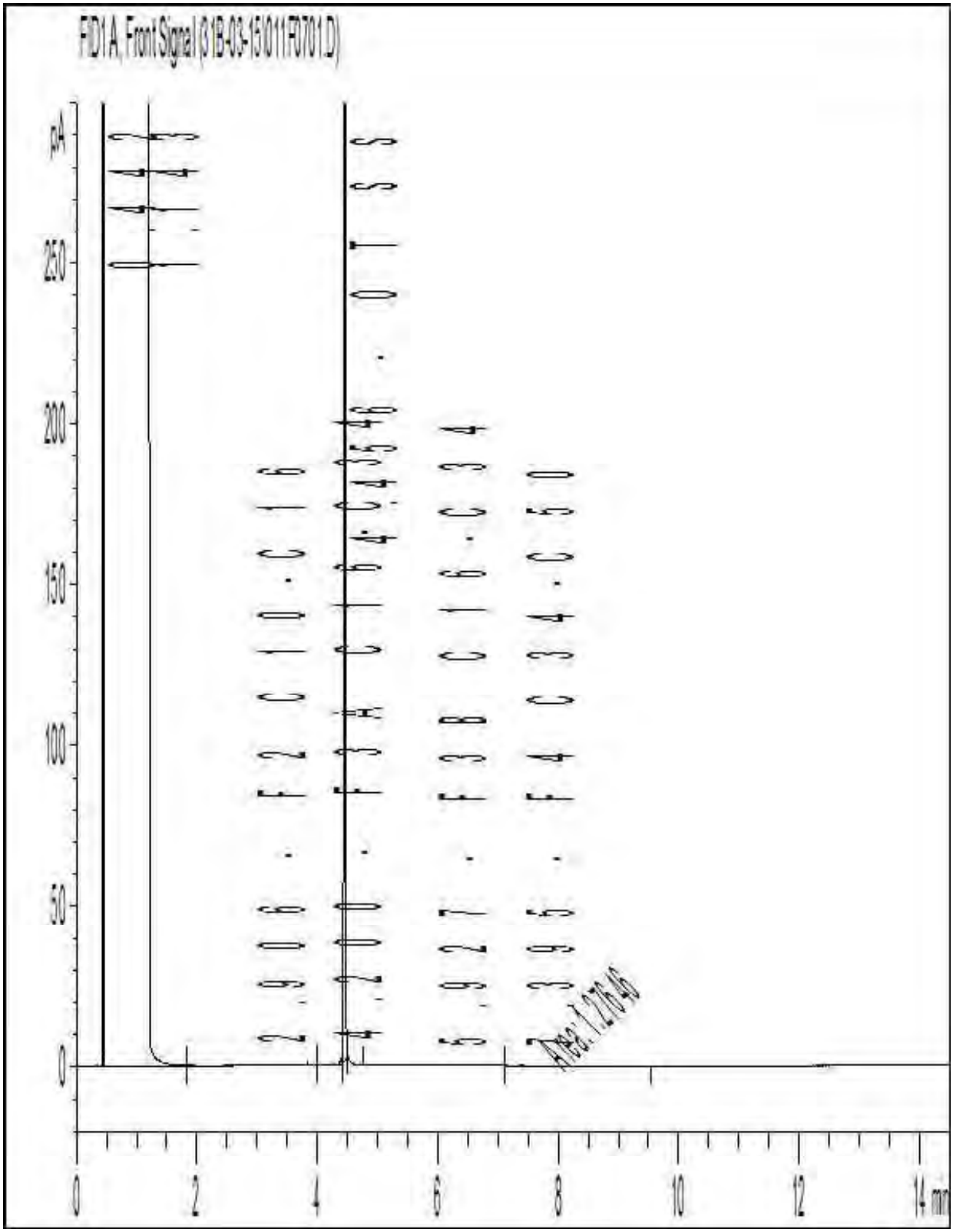


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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

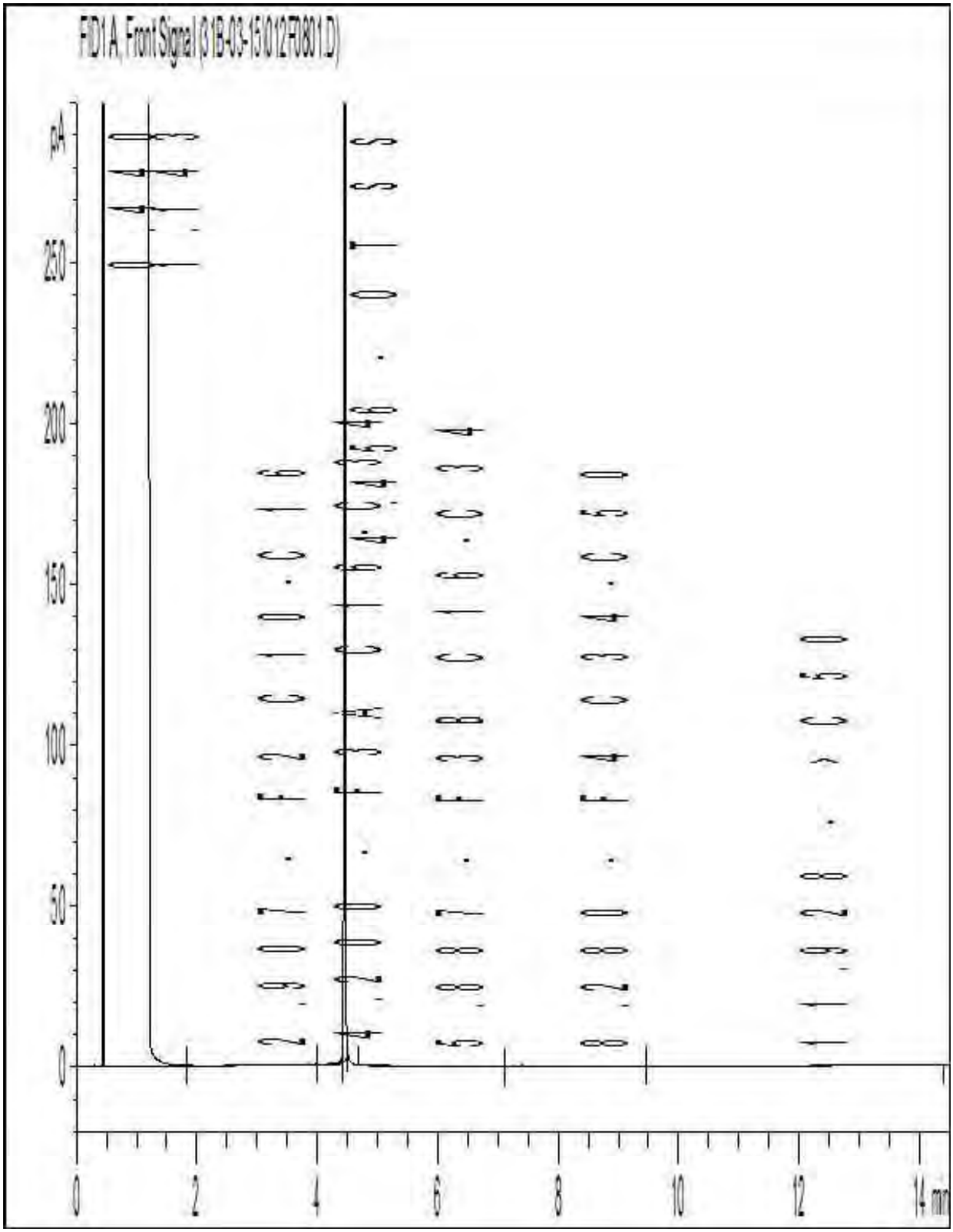


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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

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			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

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(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).

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

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.

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 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 Ottawa ON K2H 5B7	Address:		Project:	1525113		
				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	~~Sieve, pH, Percent moisture, Chlorides, pH~~	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.

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
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.

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 #: 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

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 #: 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

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 #: 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

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 #: 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.

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 #: 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

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 #: 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.

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 #: 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.

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 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)? ___

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: This 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 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																	26-Feb-16 14:50
6																	Parnian Baber
7																	B639774
8																	KP2 OTT 001
9																	RECEIVED IN OTTAWA
10																	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	16/02/26		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.

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

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)

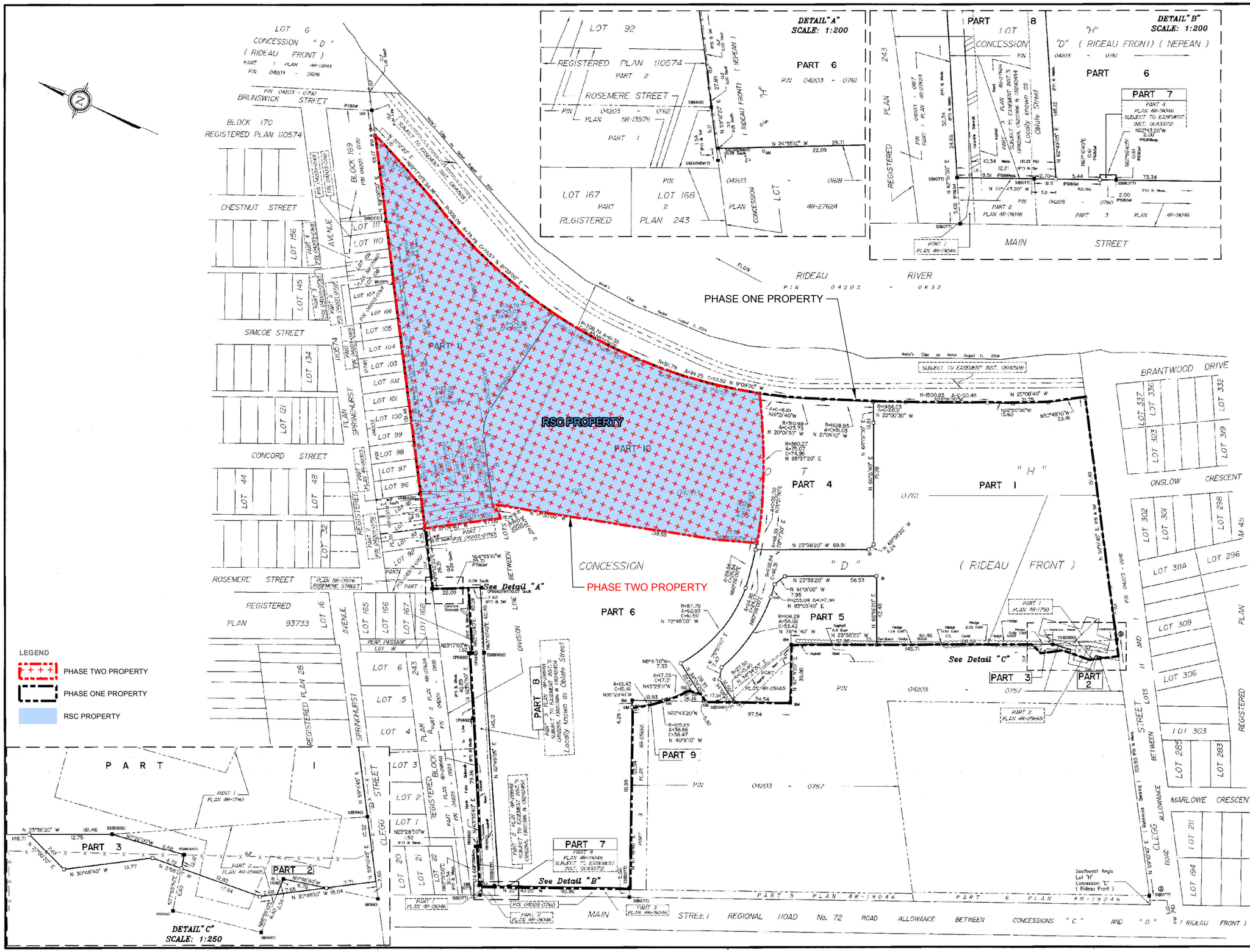
PRINT NAME

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-29136
RECEIVED AND DEPOSITED
DATE: Nov 18/2015

Annie M. McNicol
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

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
IBØ	•	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)	•	(1992) Plan January 17, 2008
(P4)	•	Plan 5R-13578
(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	373571.65
. Point A	Northing	5020941.70	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.

Southwest Angle
Lot "H"
Concession "D"
(Rideau Front)

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S8
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com
Ontario Land Surveyors
Job No. 15-746-15 Regional PL L1 H C D DE MP R DR

63

APPENDIX F

City of Ottawa Response to Use of Non Potable Groundwater Standards

23 August 2017

Mr. Anthony Lyon, P.Eng.
Environmental Engineer
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 July 12, 2017 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
Asset Management

Hydrogéologue principal
Gestion des actifs

City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 22872
ottawa.ca/planning / ottawa.ca/urbanisme

APPENDIX G

RSC #3 Remediation Report

REMEDIATION REPORT

This report describes the methods and results of remediation of a portion (RSC #3, hereafter referred to as the "Site") of the property located at 175 Main Street in Ottawa, Ontario (hereafter referred to as the "Property").

The Property has been split into three (3) separate parcels, each of which will have an individual remediation report. The three parcels have been identified as RSC #1, RSC #2, and RSC #3 as shown in Appendix H in the Phase Two ESA report (*Phase Two Environmental Site Assessment, Oblates Property RSC #3, 175 Main Street, Ottawa, Ontario*). This remediation report is for the parcel identified as RSC #3 (the "Site").

1.0 REMEDIAL ACTIONS

The remedial actions described below occurred between December 2016 and August 2017. During the remediation of RSC #2 a small section of the RSC #3 area was remediated to allow sloping of backfill to be placed in RSC #2. The quantities of soil removed were accounted for in RSC #2, and the verification samples that were collected were presented in RSC #2, and are presented again as part of RSC #3.

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 smooth buckets.

Topsoil removal was included in the debris remediation, with the exception of the northwestern section of the Site where topsoil was stripped prior to removal of debris. Due to previously identified exceedances identified at the Property, the topsoil was sampled prior to stripping. Contaminants of Concern (COCs) in the topsoil are polycyclic aromatic hydrocarbons (PAHs).

The COCs in the debris fill are 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.

Is areas where the debris extended past the boundary of the Site, the remediation was completed by excavating at a 1 H:1 V slope with the toe of the slope being at or beyond the Site limit. This was done on the eastern boundary, and a large portion of the northern boundary. No special excavation methods were required on the western or southern side of the remedial excavation.

Excavated overburden was hauled to the Trail Road 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 in the areas of the debris fill impacts 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

95,781.48 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

No groundwater was removed as part of the remediation. Surface water was removed for temporary construction dewatering purposes to validate the removal of overburden along the eastern section of the Site and areas where pooling occurred on the Site when precipitation events occurred.

1.3.2 Groundwater Treatment

No treatment of groundwater was completed. Surface water treatment was conducted according to Ontario Provincial Standard Specification (OPSS) 518 and 805.

1.3.3 Location of Remedial Action

No remedial actions for groundwater were completed.

1.3.4 Quantities of Groundwater Removed from the Property

1,358,770 L of surface water was pumped through filter cloth for removal of suspended material and 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 in 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, Sections 4.1 and 5.6), 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 in the native upper weathered clay, 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 exceedances (where found) occur in the brown weathered silty clay that occurs at a higher geodetic elevation along the western portion of the remedial excavation.

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 three hundred and thirty seven (337) confirmatory soil samples were collected during the remediation of the debris across the Site. 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 and PAHs. 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 G1 was 25,220 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).

To characterize the topsoil where it was stripped prior to removal of debris, (northwest section of the Site), eight (8) samples were analysed for PAHs. Samples were collected from test pits advanced using a hand shovel following the procedure outlined above.

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.

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, south, and majority of the north boundaries where excavation extended to the Site limits or along the west were the debris terminated at the Deschâtelets building), or there was no distinct sidewall (i.e., along the western portion of the debris remediation where the excavation terminated as a long "ramp" rather than a sidewall). Given this, Golder used a minimum sampling frequency of one sample per 100 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:

- The debris fill remediation included 300 normal and 33 field duplicate (11% duplicate ratio) soil verification samples collected and submitted for analysis of metals and PAHs.

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 (excluding duplicates)
Debris Fill Remediation				
Metals, PAHs	337	5*	33	299*
Topsoil Characterization				
PAHs	8	1	0	7

* Fifty eight (58) - including seven (7) duplicate - samples were submitted that did not meet MOECC Table 3 criteria, but were naturally occurring metals, as discussed in Section 3.1

Based on the remedial extent of the debris fill remediation across the Site being approximately 25,220 m^2, the soil verification sampling frequency was one sample per 84.3 m^2. The sample frequency meets the minimum soil sampling frequency target for the remediation.

3.3.3 Sampling Locations and Depths

Topsoil was removed with the debris fill layer in the area of the debris fill with the exception of the northwest section of the Site as previously discussed. Topsoil and debris fill were 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 4a, 4b from the Phase II ESA) and the locations of final soil verification samples submitted for analysis of metals and PAHs are shown on Figure G1.

Based on previous investigations conducted for the Site, the construction of the main Deschâtelets building, which was constructed in 1885, was believed to predate the backfilling, which reportedly occurred from 1902 to 1922, and thus no debris was anticipated to be present under the main building. During the remediation, debris in the area surrounding the original building was found to terminate at depths shallower than the basement. Based on these findings, the debris layer did not extend under the main building.

Based on the understood dates when debris fill was placed, the Phase I ESA identified the potential for debris to be present beneath the laundry building (approximately 55 metres north of main building), the garage structure including basement (attached to north part of main building) and the archive building (attached to the south end of main building), which could require removal. During the remediation this was confirmed and, as such, the depth of remediation to achieve MOECC Table 3 Standards was deeper than initially presented in the Phase II ESA at these locations. The remediation confirmed through visual observation and sampling that the debris fill did not extend beneath the main building.

A summary of all verification samples, sample depths and analytical results compared to the MOECC Table 3 Standards is provided Table G2. 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 approximately 25,220 m^2. The original interpreted extent of debris fill is shown on Figures 4a/b in the Phase II ESA. Figure G1 summarizes the final remediation excavation extent and verification samples collected. The total fill thickness, i.e., the original interpreted debris fill thickness shown on Figure 4a/b was found to vary slightly during the remediation. The final elevation of the excavation bottom is contoured on Figure G1.

Cross sections from the Phase II ESA were updated to reflect post-remediation conditions and show typical cross sections of the remedial excavation. Figures G2 and G3 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 exceedances 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 four groundwater sampling events completed between April 2014 and August 2017.

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 33 duplicate soil samples from samples and submission for analyses of PAHs, and metals, detailed as follows:

Field duplicate ID	Original soil sample ID	Parameters analyzed
VS1325	TP325	Metals, PAH
VS1346	VS346	Metals, PAH
VS1351	VS351	Metals, PAH
VS1364	VS364	Metals, PAH
VS1371	VS371	Metals, PAH
VS1382	VS382	Metals, PAH
VS1392	VS392	Metals, PAH
VS1401	VS401	Metals, PAH
VS1411	VS411	Metals, PAH
VS1422	VS422	Metals, PAH
VS1434	VS434	Metals, PAH
VS1446	VS446	Metals, PAH
VS1447	VS447	Metals, PAH
VS1453	VS453	Metals, PAH
VS1463	VS463	Metals, PAH
VS1471	VS471	Metals, PAH
VS1480	VS480	Metals, PAH
VS1484	VS484	Metals, PAH
VS1486	VS486	Metals, PAH
VS1496	VS496	Metals, PAH
VS1500	VS500	Metals, PAH
VS1507	VS507	Metals, PAH
VS1514	VS514	Metals, PAH
VS1526	VS526	Metals, PAH
VS1535	VS535	Metals, PAH
VS1542	VS542	Metals, PAH
VS1555	VS555	Metals, PAH

Field duplicate ID	Original soil sample ID	Parameters analyzed
VS1565	VS565	Metals, PAH
VS1575	VS575	Metals, PAH
VS1585	VS585	Metals, PAH
VS1595	VS595	Metals, PAH
VS1605	VS605	Metals, PAH
VS1615	VS615	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 PAHs, and 30% for metals.

Soil RPD

The calculated RPDs for the original and duplicate soil samples for metals and PAHs were in general within the acceptable RPD percentages (30% and 40% respectively) 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 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 – Sample Date Versus Laboratory Analysis Date

Attachment D – Supporting Figures

- Figure G1 – Final Bottom Elevation and Extent of Debris Remedial Excavation
- Figure G2 – Cross Section A-A'(RSC #3 Remediation)
- Figure G3 – Cross Section D-D'(RSC #3 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 7, 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

Golder, Golder Associates and the GA globe design are trademarks of Golder Associates Corporation.

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.

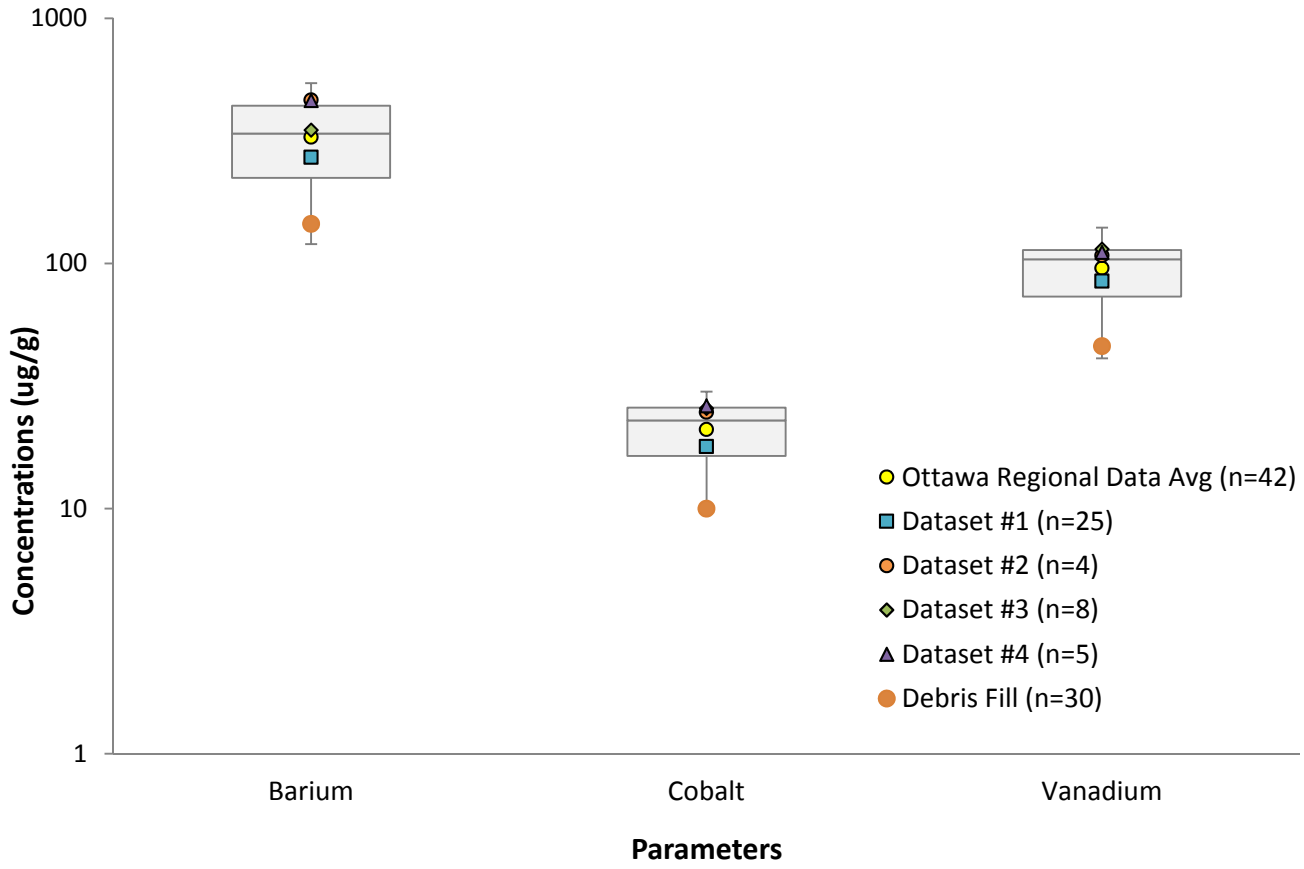


Figure A: Ottawa Regional Data versus 175 Main Street Debris Fill

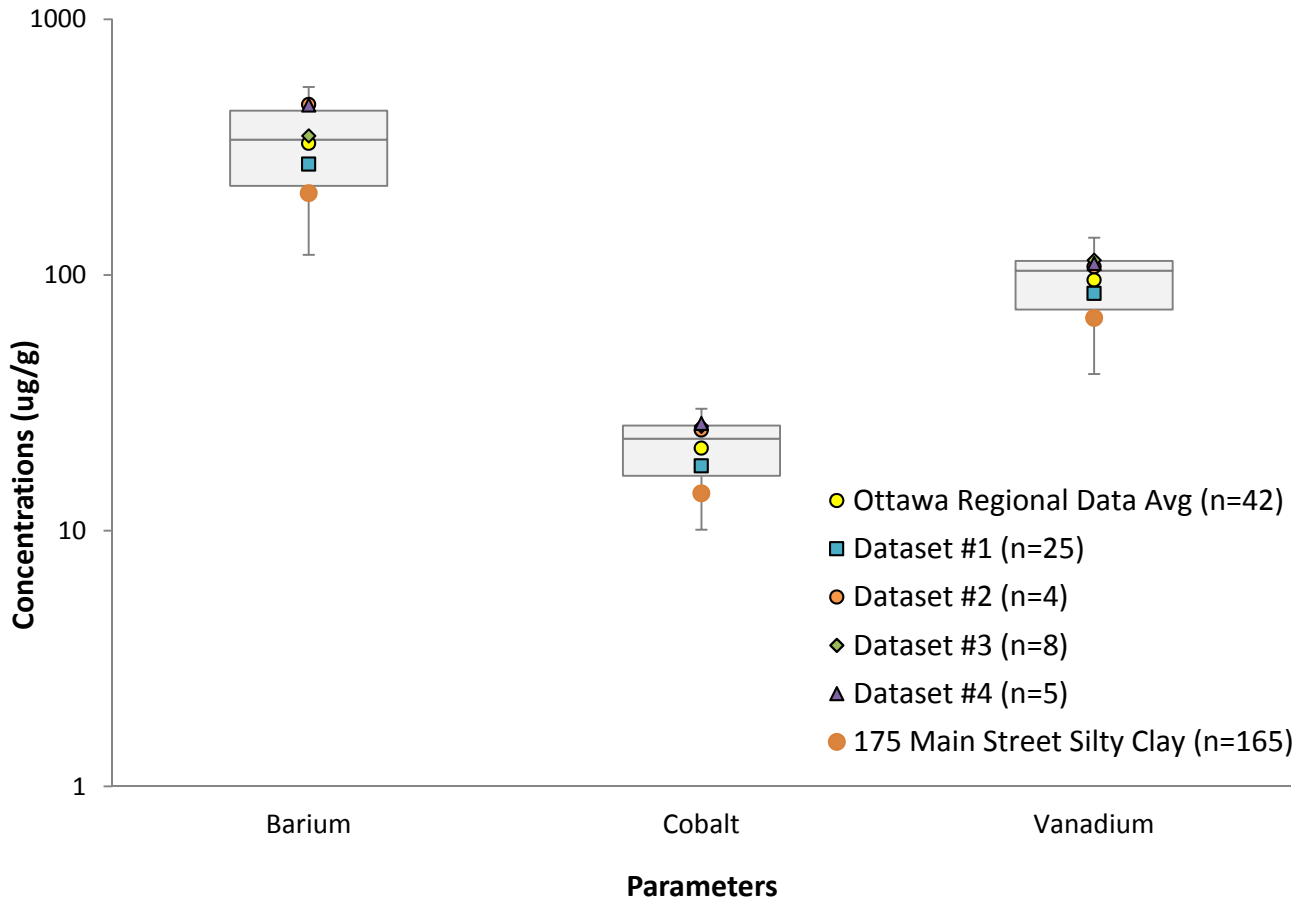


Figure B: Ottawa Regional Data versus 175 Main Street Silty Clay (Upper Weathered Brown Silty Clay and Grey Silty Clay Combined)

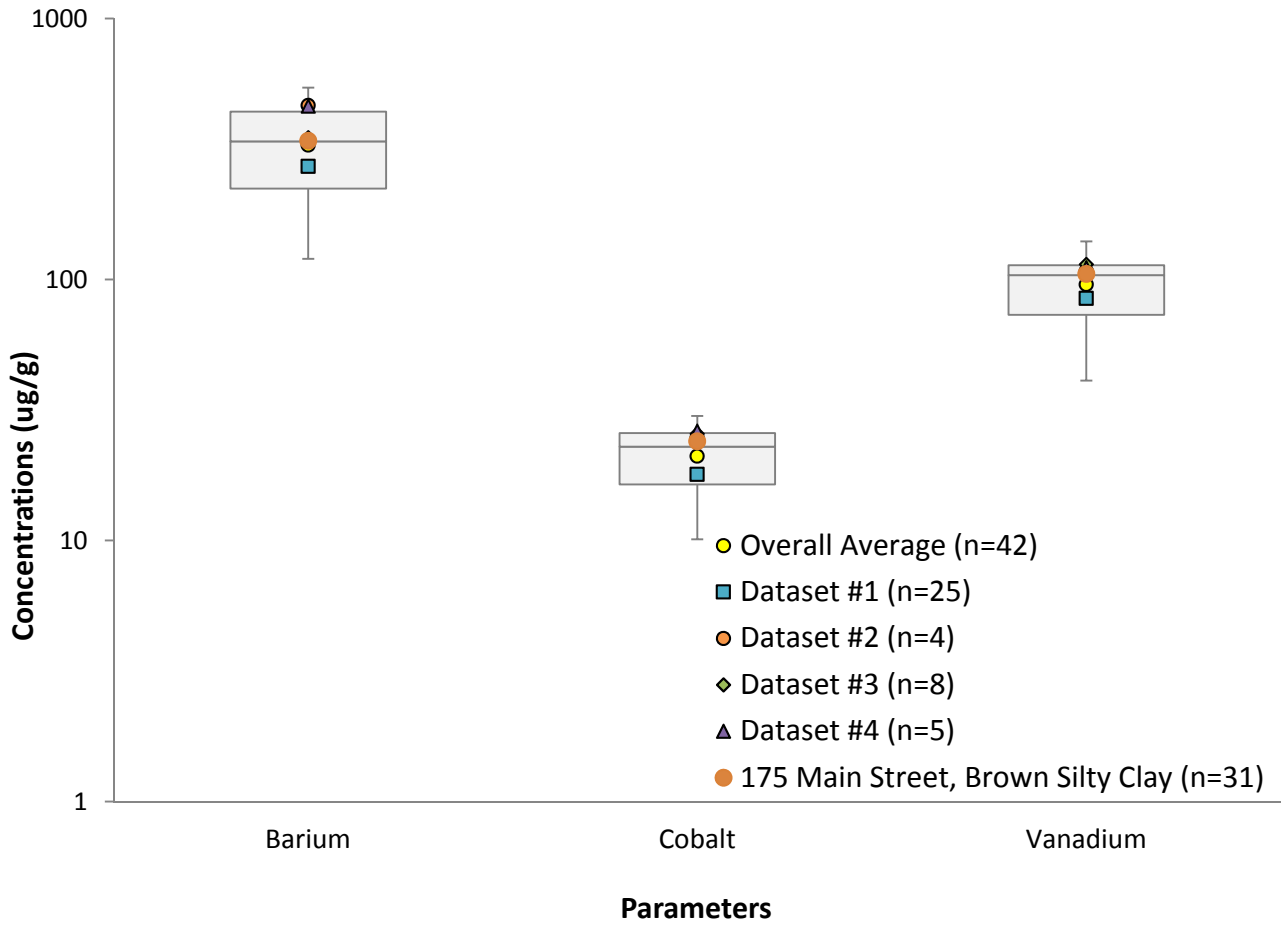


Figure C: Ottawa Regional Data versus 175 Main Street Upper Weathered Brown Silty Clay

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

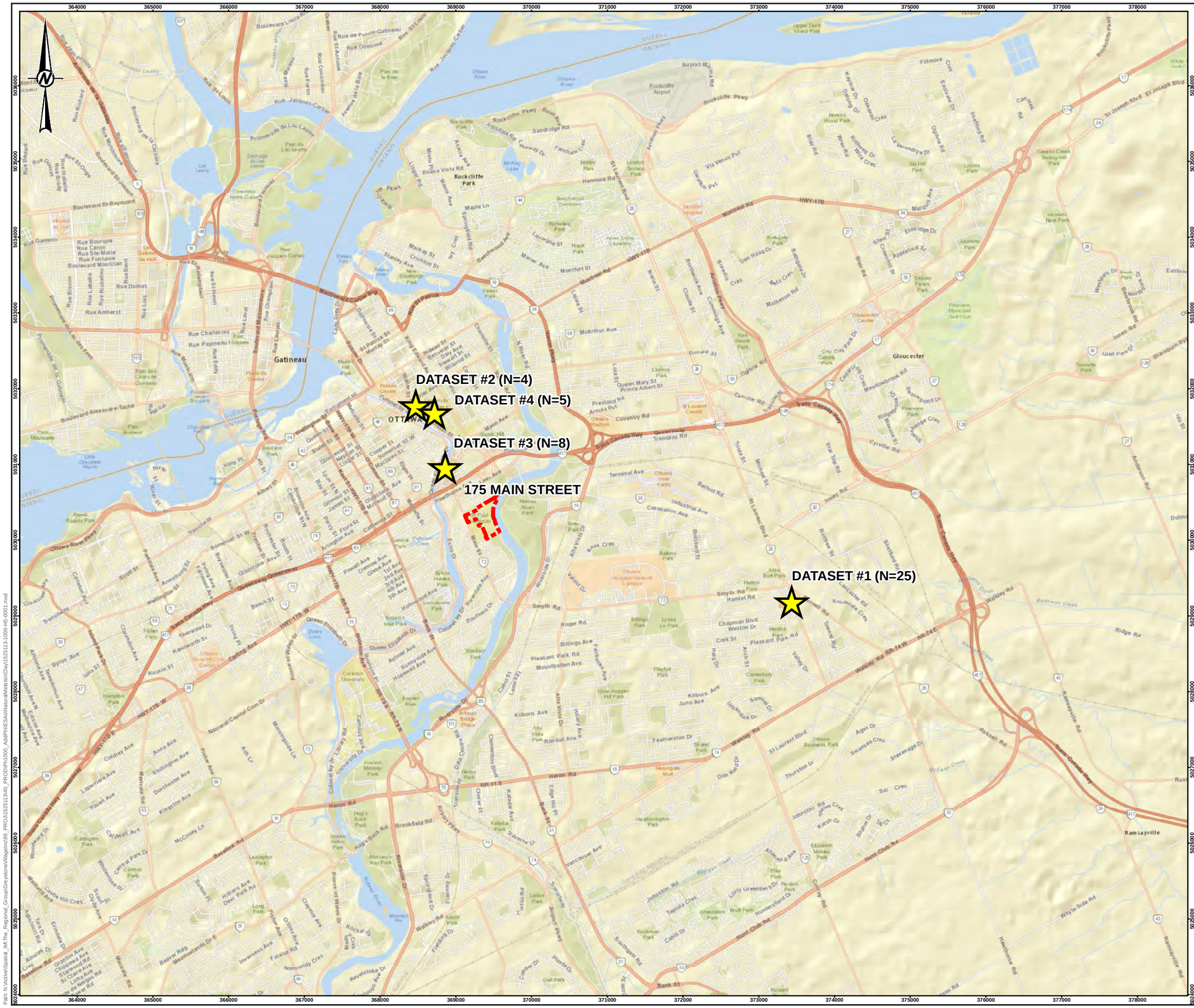
PH/PAS/hw
\\golder.gds\gal\ottawa\active\2015\3 proj\1525113 regional oblates brownfields 175 main st\04_reporting\03 - june 2016 natural metal in clay letter\ltr re natural metals in clay_2016july4.docx

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\ro99_PROJ\1525113\40_PROD\Ph1000_Add\PhilESA\NaturalMetalsinClay\1525113-1000-HS-0001.mxd

ATTACHMENT C
Supporting Tables

Sample Name	Sample Type	Sample Collection Date	Analysis	Sample Description	Sample Elevation (masl)	Excavated?
VS285	floor	09-Aug-2016	Metals, PAH	Native grey silty clay	57.51	Final
VS286	floor	09-Aug-2016	Metals, PAH	Native grey silty clay	57.50	Final
VS292	floor	11-Aug-2016	Metals, PAH	Native grey silty clay	57.70	Final
VS293	floor	11-Aug-2016	Metals, PAH	Native grey silty clay	59.75	Final
VS320	floor	08-Feb-2017	Metals, PAH	Native brown weathered silty clay	63.17	Final
VS321	floor	08-Feb-2017	Metals, PAH	Native brown weathered silty clay	63.18	Final
VS322	floor	08-Feb-2017	Metals, PAH	Native brown weathered silty clay	63.14	Final
VS323	floor	08-Feb-2017	Metals, PAH	Native brown weathered silty clay	62.73	Final
VS324	floor	08-Feb-2017	Metals, PAH	Native brown weathered silty clay	NA	Excavated
VS324B	floor	16-Feb-2017	Metals, PAH	Native brown weathered silty clay	62.88	Final
VS325	floor	08-Feb-2017	Metals, PAH	Native brown weathered silty clay	63.13	Final
VS1325 (Field Duplicate)	floor	08-Feb-2017	Metals, PAH	Native brown weathered silty clay	63.13	Final
VS326	floor	08-Feb-2017	Metals, PAH	Native brown weathered silty clay	62.86	Final
VS327	floor	27-Mar-2017	Metals, PAH	Brown sand (Fill)	58.03	Final
VS328	floor	27-Mar-2017	Metals, PAH	Brown sand (Fill)	58.33	Final
VS329	floor	27-Mar-2017	Metals, PAH	Brown sand (Fill)	58.13	Final
VS330	floor	27-Mar-2017	Metals, PAH	Native brown weathered silty clay some sand	57.60	Final
VS331	floor	27-Mar-2017	Metals, PAH	Brown sand (Fill)	58.04	Final
VS332	floor	27-Mar-2017	Metals, PAH	Native brown weathered silty clay some sand	57.61	Final
VS333	floor	27-Mar-2017	Metals, PAH	Native brown weathered silty clay some sand	57.75	Final
VS334	floor	27-Mar-2017	Metals, PAH	Native brown weathered silty clay some sand	57.48	Final
VS335	floor	28-Mar-2017	Metals, PAH	Native brown weathered silty clay some sand	57.38	Final
VS336	floor	28-Mar-2017	Metals, PAH	Native grey silty clay	57.30	Final
VS337	floor	28-Mar-2017	Metals, PAH	Native grey silty clay	57.13	Final
VS338	floor	28-Mar-2017	Metals, PAH	Native grey silty clay	57.08	Final
VS339	floor	28-Mar-2017	Metals, PAH	Native brown weathered silty clay some sand	57.03	Final
VS340	floor	28-Mar-2017	Metals, PAH	Native brown weathered silty clay some sand	57.23	Final
VS341	floor	29-Mar-2017	Metals, PAH	Native brown weathered silty clay some sand	57.25	Final
VS342	floor	29-Mar-2017	Metals, PAH	Native brown weathered silty clay some sand	NA	Excavated
VS342B	floor	18-May-2017	Metals, PAH	Native brown weathered silty clay some sand	57.27	Final
VS343	floor	29-Mar-2017	Metals, PAH	Native brown weathered silty clay some sand	57.17	Final
VS344	floor	29-Mar-2017	Metals, PAH	Native brown weathered silty clay some sand	57.07	Final
VS345	floor	29-Mar-2017	Metals, PAH	Native brown weathered silty clay some sand	56.89	Final
VS346	floor	29-Mar-2017	Metals, PAH	Native brown weathered silty clay some sand	57.14	Final
VS1346 (Field Duplicate)	floor	29-Mar-2017	Metals, PAH	Native brown weathered silty clay some sand	57.14	Final
VS347	floor	29-Mar-2017	Metals, PAH	Native brown weathered silty clay some sand	57.40	Final
VS348	floor	29-Mar-2017	Metals, PAH	Native brown weathered silty clay some sand	NA	Excavated
VS348B	floor	30-May-2017	Metals, PAH	Native brown weathered silty clay some sand	57.18	Final
VS349	floor	29-Mar-2017	Metals, PAH	Native grey silty clay	57.24	Final
VS350	floor	30-Mar-2017	Metals, PAH	Brown sand (Fill)	57.48	Final
VS351	floor	30-Mar-17	Metals, PAH	Brown sand (Fill)	58.01	Final
VS1351 (Field Duplicate)	floor	30-Mar-2017	Metals, PAH	Brown sand (Fill)	58.01	Final
VS352	floor	30-Mar-2017	Metals, PAH	Brown sand (Fill)	58.01	Final
VS353	floor	30-Mar-2017	Metals, PAH	Brown sand (Fill)	58.36	Final
VS354	floor	30-Mar-2017	Metals, PAH	Brown sand (Fill)	58.61	Final
VS355	floor	30-Mar-2017	Metals, PAH	Brown sand (Fill)	58.78	Final
VS356	floor	30-Mar-2017	Metals, PAH	Brown sand (Fill)	58.89	Final
VS357	floor	30-Mar-2017	Metals, PAH	Brown sand (Fill)	59.04	Final
VS358	floor	30-Mar-2017	Metals, PAH	Native grey silty clay some sand	59.26	Final
VS359	wall	30-Mar-2017	Metals, PAH	Brown sand (Fill)	58.60	Final
VS360	wall	30-Mar-2017	Metals, PAH	Brown sand (Fill)	58.66	Final
VS361	floor	30-Mar-2017	Metals, PAH	Brown sand (Fill)	58.76	Final
VS362	wall	30-Mar-2017	Metals, PAH	Brown sand (Fill)	58.48	Final
VS363	wall	30-Mar-2017	Metals, PAH	Brown sand (Fill)	59.16	Final
VS364	wall	30-Mar-2017	Metals, PAH	Brown sand (Fill)	58.98	Final
VS1364 (Field Duplicate)	wall	30-Mar-2017	Metals, PAH	Brown sand (Fill)	58.98	Final
VS365	wall	30-Mar-2017	Metals, PAH	Brown sand (Fill)	59.36	Final
VS366	floor	30-Mar-2017	Metals, PAH	Brown sand (Fill)	58.99	Final
VS367	wall	30-Mar-2017	Metals, PAH	Brown sand (Fill)	59.29	Final
VS368	wall	30-Mar-2017	Metals, PAH	Brown sand (Fill)	58.98	Final
VS369	floor	30-Mar-17	Metals, PAH	Brown sand (Fill)	59.01	Final
VS370	floor	18-Apr-2017	Metals, PAH	Brown sand (Fill)	63.22	Final
VS371	floor	18-Apr-2017	Metals, PAH	Brown sand (Fill)	63.31	Final
VS1371 (Field Duplicate)	floor	18-Apr-2017	Metals, PAH	Brown sand (Fill)	63.31	Final
VS372	wall	18-Apr-2017	Metals, PAH	Native brown weathered silty clay some sand	63.50	Final
VS373	wall	18-Apr-2017	Metals, PAH	Brown sand (Fill)	NA	Excavated
VS373B	wall	20-Apr-2017	Metals, PAH	Brown sand (Fill)	63.48	Final
VS374	floor	19-Apr-2017	Metals, PAH	Native brown weathered silty clay some sand	63.43	Final
VS375	floor	19-Apr-2017	Metals, PAH	Native brown weathered silty clay some sand	63.45	Final
VS376	floor	19-Apr-2017	Metals, PAH	Native brown weathered silty clay some sand	63.31	Final
VS377	floor	19-Apr-2017	Metals, PAH	Brown sand (Fill)	64.38	Final
VS378	floor	19-Apr-2017	Metals, PAH	Native brown weathered silty clay some sand	63.64	Final
VS379	floor	19-Apr-2017	Metals, PAH	Native brown weathered silty clay some sand	63.66	Final
VS380	wall	27-Apr-2017	Metals, PAH	Brown sand (Fill)	59.45	Final

Sample Name	Sample Type	Sample Collection Date	Analysis	Sample Description	Sample Elevation (masl)	Excavated?
VS381	wall	27-Apr-2017	Metals, PAH	Brown sand (Fill)	59.57	Final
VS382	wall	27-Apr-2017	Metals, PAH	Native brown weathered silty clay some sand	59.77	Final
VS1382 (Field Duplicate)	wall	27-Apr-2017	Metals, PAH	Native brown weathered silty clay some sand	59.77	Final
VS383	wall	27-Apr-2017	Metals, PAH	Native brown weathered silty clay some sand	60.17	Final
VS384	floor	27-Apr-2017	Metals, PAH	Native brown weathered silty clay some sand	58.66	Final
VS385	floor	27-Apr-2017	Metals, PAH	Brown sand (Fill)	58.65	Final
VS386	floor	27-Apr-2017	Metals, PAH	Brown sand (Fill)	58.75	Final
VS387	floor	27-Apr-2017	Metals, PAH	Brown sand (Fill)	58.70	Final
VS388	floor	27-Apr-2017	Metals, PAH	Brown sand (Fill)	58.83	Final
VS389	floor	27-Apr-2017	Metals, PAH	Brown sand (Fill)	58.65	Final
VS390	floor	27-Apr-2017	Metals, PAH	Native brown weathered silty clay some sand	59.22	Final
VS391	floor	27-Apr-2017	Metals, PAH	Native brown weathered silty clay some sand	59.19	Final
VS392	floor	27-Apr-2017	Metals, PAH	Brown sand (Fill)	58.74	Final
VS1392 (Field Duplicate)	floor	27-Apr-2017	Metals, PAH	Brown sand (Fill)	58.74	Final
VS393	floor	27-Apr-2017	Metals, PAH	Brown sand (Fill)	58.69	Final
VS396	floor	16-May-17	Metals, PAH	Brown sand (Fill)	58.83	Final
VS397	floor	16-May-2017	Metals, PAH	Native grey brown weathered clay	58.53	Final
VS399	floor	16-May-2017	Metals, PAH	Brown sand (Fill)	58.45	Final
VS400	floor	16-May-2017	Metals, PAH	Brown sand (Fill)	58.32	Final
VS401	floor	18-May-2017	Metals, PAH	Native grey silty clay	56.62	Final
VS1401 (Field Duplicate)	floor	18-May-2017	Metals, PAH	Native grey silty clay	56.62	Final
VS402	floor	18-May-2017	Metals, PAH	Native grey brown weathered clay	56.57	Final
VS403	floor	18-May-2017	Metals, PAH	Native grey brown weathered clay	56.51	Final
VS404	floor	19-May-2017	Metals, PAH	Native grey silty clay	56.46	Final
VS405	wall	23-May-2017	Metals, PAH	Brown sand (Fill)	59.44	Final
VS406	floor	23-May-2017	Metals, PAH	Native grey silty clay	56.73	Final
VS407	floor	23-May-2017	Metals, PAH	Native grey silty clay	56.71	Final
VS408	floor	24-May-2017	Metals, PAH	Native grey brown weathered clay	56.72	Final
VS409	floor	24-May-2017	Metals, PAH	Native grey silty clay	56.69	Final
VS410	floor	25-May-2017	Metals, PAH	Native grey silty clay	56.74	Final
VS411	floor	26-May-2017	Metals, PAH	Native grey silty clay	57.50	Final
VS1411 (Field Duplicate)	floor	26-May-2017	Metals, PAH	Native grey silty clay	57.50	Final
VS412	floor	26-May-2017	Metals, PAH	Brown sand (Fill)	57.98	Final
VS413	floor	26-May-2017	Metals, PAH	Brown sand (Fill)	58.17	Final
VS414	floor	30-May-2017	Metals, PAH	Native grey silty clay	56.95	Final
VS415	floor	30-May-2017	Metals, PAH	Native grey silty clay	56.85	Final
VS416	wall	30-May-2017	Metals, PAH	Brown sand (Fill)	57.85	Final
VS417	floor	31-May-2017	Metals, PAH	Native grey silty clay	57.38	Final
VS418	floor	31-May-2017	Metals, PAH	Native grey silty clay	57.57	Final
VS419	floor	31-May-2017	Metals, PAH	Brown sand (Fill)	58.05	Final
VS420	floor	31-May-2017	Metals, PAH	Brown sand (Fill)	58.59	Final
VS421	floor	31-May-2017	Metals, PAH	Brown sand (Fill)	58.37	Final
VS422	floor	01-Jun-2017	Metals, PAH	Brown sand (Fill)	58.64	Final
VS1422 (Field Duplicate)	floor	01-Jun-2017	Metals, PAH	Brown sand (Fill)	58.64	Final
VS423	floor	01-Jun-2017	Metals, PAH	Brown sand (Fill)	58.38	Final
VS424	floor	01-Jun-2017	Metals, PAH	Brown sand (Fill)	58.89	Final
VS425	floor	01-Jun-2017	Metals, PAH	Brown sand (Fill)	58.74	Final
VS426	floor	01-Jun-2017	Metals, PAH	Brown sand (Fill)	58.82	Final
VS427	floor	02-Jun-2017	Metals, PAH	Brown sand (Fill)	57.59	Final
VS428	floor	02-Jun-2017	Metals, PAH	Native grey silty clay	57.31	Final
VS429	floor	02-Jun-2017	Metals, PAH	Native grey silty clay	57.37	Final
VS430	floor	02-Jun-2017	Metals, PAH	Native grey silty clay	57.36	Final
VS431	floor	02-Jun-2017	Metals, PAH	Native grey silty clay	56.99	Final
VS432	floor	05-Jun-2017	Metals, PAH	Native grey silty clay	57.34	Final
VS433	floor	05-Jun-2017	Metals, PAH	Native grey silty clay	57.24	Final
VS434	floor	09-Jun-2017	Metals, PAH	Brown sand (Fill)	58.65	Final
VS1434 (Field Duplicate)	floor	09-Jun-2017	Metals, PAH	Brown sand (Fill)	58.65	Final
VS435	floor	09-Jun-2017	Metals, PAH	Brown sand (Fill)	58.83	Final
VS436	floor	09-Jun-2017	Metals, PAH	Brown sand (Fill)	58.75	Final
VS437	floor	09-Jun-2017	Metals, PAH	Brown sand (Fill)	58.82	Final
VS438	floor	09-Jun-2017	Metals, PAH	Brown sand (Fill)	58.90	Final
VS439	floor	12-Jun-2017	Metals, PAH	Native grey silty clay	58.67	Final
VS440	wall	12-Jun-2017	Metals, PAH	Native grey silty clay	61.27	Final
VS441	wall	12-Jun-2017	Metals, PAH	Native grey silty clay	60.65	Final
VS442	floor	12-Jun-2017	Metals, PAH	Native grey silty clay	60.12	Final
VS443	wall	12-Jun-2017	Metals, PAH	Brown sand (Fill)	60.02	Final
VS444	wall	12-Jun-2017	Metals, PAH	Brown sand (Fill)	60.03	Final
VS445	wall	12-Jun-2017	Metals, PAH	Brown sand (Fill)	59.36	Final
VS446	floor	12-Jun-2017	Metals, PAH	Native grey silty clay	59.57	Final
VS1446 (Field Duplicate)	floor	12-Jun-2017	Metals, PAH	Native grey silty clay	59.57	Final
VS447	floor	13-Jun-2017	Metals, PAH	Native grey silty clay	59.72	Final
VS1447 (Field Duplicate)	floor	13-Jun-2017	Metals, PAH	Native grey silty clay	59.72	Final
VS448	floor	13-Jun-2017	Metals, PAH	Native grey silty clay	59.17	Final
VS449	floor	13-Jun-2017	Metals, PAH	Native grey silty clay	59.18	Final

Sample Name	Sample Type	Sample Collection Date	Analysis	Sample Description	Sample Elevation (masl)	Excavated?
VS450	wall	13-Jun-2017	Metals, PAH	Debris Sample	NA	Excavated
VS450B	wall	19-Jul-2017	Metals, PAH	Native brown weathered silty clay	60.04	Final
VS451	wall	13-Jun-2017	Metals, PAH	Debris Sample	NA	Excavated
VS451B	wall	19-Jul-2017	Metals, PAH	Native brown weathered silty clay	61.44	Final
VS452	floor	13-Jun-2017	Metals, PAH	Native grey silty clay	59.13	Final
VS453	floor	14-Jun-2017	Metals, PAH	Brown sand (Fill)	58.83	Final
VS1453 (Field Duplicate)	floor	14-Jun-2017	Metals, PAH	Brown sand (Fill)	58.83	Final
VS454	floor	14-Jun-2017	Metals, PAH	Brown sand (Fill)	58.90	Final
VS455	floor	14-Jun-2017	Metals, PAH	Brown sand (Fill)	63.75	Final
VS456	floor	14-Jun-2017	Metals, PAH	Native brown weathered silty clay	62.83	Final
VS457	floor	14-Jun-2017	Metals, PAH	Native brown weathered silty clay	62.83	Final
VS458	floor	14-Jun-2017	Metals, PAH	Native grey silty clay	59.40	Final
VS459	floor	14-Jun-2017	Metals, PAH	Native grey silty clay	58.70	Final
VS460	floor	14-Jun-2017	Metals, PAH	Native grey silty clay	58.65	Final
VS461	floor	14-Jun-2017	Metals, PAH	Native grey silty clay	59.02	Final
VS462	floor	15-Jun-2017	Metals, PAH	Native grey silty clay	59.96	Final
VS463	floor	15-Jun-2017	Metals, PAH	Native brown weathered silty clay	63.25	Final
VS1463 (Field Duplicate)	floor	15-Jun-2017	Metals, PAH	Native brown weathered silty clay	63.25	Final
VS464	floor	15-Jun-2017	Metals, PAH	Grey sand fill	63.56	Final
VS465	floor	20-Jun-2017	Metals, PAH	Native grey silty clay	58.81	Final
VS466	floor	20-Jun-2017	Metals, PAH	Brown sand (Fill)	63.22	Final
VS467	floor	20-Jun-2017	Metals, PAH	Brown sand (Fill)	63.68	Final
VS468	floor	20-Jun-2017	Metals, PAH	Brown sand (Fill)	63.78	Final
VS469	floor	20-Jun-2017	Metals, PAH	Brown sand (Fill)	63.33	Final
VS470	wall	22-Jun-2017	Metals, PAH	Native brown weathered silty clay	64.01	Final
VS471	floor	22-Jun-2017	Metals, PAH	Native brown weathered silty clay	63.19	Final
VS1471 (Field Duplicate)	floor	22-Jun-2017	Metals, PAH	Native brown weathered silty clay	63.19	Final
VS472	floor	22-Jun-2017	Metals, PAH	Brown sand (Fill)	63.28	Final
VS473	floor	22-Jun-2017	Metals, PAH	Native grey silty clay	60.99	Final
VS474	floor	22-Jun-2017	Metals, PAH	Native grey silty clay	62.53	Final
VS475	floor	22-Jun-2017	Metals, PAH	Brown sand (Fill)	58.05	Final
VS476	floor	22-Jun-2017	Metals, PAH	Native grey silty clay	58.05	Final
VS477	floor	22-Jun-2017	Metals, PAH	Brown sand (Fill)	58.72	Final
VS478	floor	22-Jun-2017	Metals, PAH	Brown sand (Fill)	58.90	Final
VS479	floor	23-Jun-2017	Metals, PAH	Brown sand (Fill)	63.49	Final
VS480	floor	23-Jun-2017	Metals, PAH	Native brown weathered silty clay	63.19	Final
VS1480 (Field Duplicate)	floor	23-Jun-2017	Metals, PAH	Native brown weathered silty clay	63.19	Final
VS481	floor	23-Jun-2017	Metals, PAH	Native brown weathered silty clay	63.18	Final
VS482	floor	27-Jun-2017	Metals, PAH	Brown sand (fill)	58.13	Final
VS483	floor	27-Jun-17	Metals, PAH	Sand fill	58.29	Final
VS484	floor	27-Jun-2017	Metals, PAH	Brown sand (Fill)	58.32	Final
VS1484 (Field Duplicate)	floor	27-Jun-2017	Metals, PAH	Brown sand (Fill)	58.32	Final
VS485	floor	28-Jun-2017	Metals, PAH	Native grey sandy clay	57.98	Final
VS486	floor	28-Jun-2017	Metals, PAH	Brown sand (Fill)	58.31	Final
VS1486 (Field Duplicate)	floor	28-Jun-2017	Metals, PAH	Brown sand (Fill)	58.31	Final
VS487	floor	28-Jun-2017	Metals, PAH	Brown sand (Fill)	58.40	Final
VS488	floor	04-Jul-2017	Metals, PAH	Brown sand (Fill)	58.69	Final
VS489	floor	04-Jul-17	Metals, PAH	Brown sand (Fill)	58.22	Final
VS490	floor	04-Jul-2017	Metals, PAH	Brown sand (Fill)	58.75	Final
VS491	floor	04-Jul-2017	Metals, PAH	Brown sand (Fill)	58.98	Final
VS492	floor	04-Jul-2017	Metals, PAH	Brown sand (Fill)	58.62	Final
VS493	floor	04-Jul-2017	Metals, PAH	Native brown weathered silty clay	63.02	Final
VS494	floor	04-Jul-2017	Metals, PAH	Native brown weathered silty clay	63.27	Final
VS495	floor	04-Jul-2017	Metals, PAH	Brown sand (Fill)	61.67	Final
VS496	floor	06-Jul-2017	Metals, PAH	Brown sand (Fill)	59.17	Final
VS1496 (Field Duplicate)	floor	06-Jul-2017	Metals, PAH	Brown sand (Fill)	59.17	Final
VS497	floor	06-Jul-2017	Metals, PAH	Native brown weathered silty clay	61.05	Final
VS498	floor	06-Jul-2017	Metals, PAH	Brown sand (Fill)	59.98	Final
VS499	floor	10-Jul-2017	Metals, PAH	Brown sand (Fill)	58.59	Final
VS500	floor	10-Jul-2017	Metals, PAH	Brown sand (Fill)	58.47	Final
VS1500 (Field Duplicate)	floor	10-Jul-2017	Metals, PAH	Brown sand (Fill)	58.47	Final
VS501	floor	10-Jul-2017	Metals, PAH	Brown sand (Fill)	59.66	Final
VS502	floor	10-Jul-2017	Metals, PAH	Native brown weathered silty clay	60.82	Final
VS503	floor	10-Jul-2017	Metals, PAH	Native brown weathered silty clay	60.70	Final
VS504	floor	10-Jul-2017	Metals, PAH	Native brown weathered silty clay	60.55	Final
VS505	floor	11-Jul-2017	Metals, PAH	Brown sand (Fill)	59.36	Final
VS506	floor	11-Jul-2017	Metals, PAH	Brown sand (Fill)	58.57	Final
VS507	floor	13-Jul-2017	Metals, PAH	Brown sand (Fill)	58.23	Final
VS1507 (Field Duplicate)	floor	13-Jul-2017	Metals, PAH	Brown sand (Fill)	58.23	Final
VS508	floor	13-Jul-2017	Metals, PAH	Brown sand (Fill)	58.24	Final
VS509	floor	13-Jul-2017	Metals, PAH	Brown sand (Fill)	58.40	Final
VS510	floor	13-Jul-2017	Metals, PAH	Brown sand (Fill)	58.60	Final
VS511	floor	13-Jul-2017	Metals, PAH	Native grey silty clay	58.08	Final
VS512	floor	13-Jul-2017	Metals, PAH	Brown sand (Fill)	58.10	Final

Sample Name	Sample Type	Sample Collection Date	Analysis	Sample Description	Sample Elevation (masl)	Excavated?
VS513	floor	13-Jul-2017	Metals, PAH	Native grey silty clay	57.88	Final
VS514	floor	17-Jul-2017	Metals, PAH	Brown sand (Fill)	57.94	Final
VS1514 (Field Duplicate)	floor	17-Jul-2017	Metals, PAH	Brown sand (Fill)	57.94	Final
VS515	floor	17-Jul-2017	Metals, PAH	Brown sand (Fill)	57.93	Final
VS516	floor	17-Jul-2017	Metals, PAH	Native grey silty clay	57.60	Final
VS517	floor	19-Jul-2017	Metals, PAH	Brown sand (Fill)	58.78	Final
VS518	floor	19-Jul-2017	Metals, PAH	Brown sand (Fill)	58.66	Final
VS519	wall	19-Jul-2017	Metals, PAH	Native brown weathered silty clay	61.98	Final
VS520	floor	19-Jul-2017	Metals, PAH	Brown sand (Fill)	62.91	Final
VS521	floor	19-Jul-2017	Metals, PAH	Native brown weathered silty clay	62.87	Final
VS522	floor	19-Jul-2017	Metals, PAH	Native brown weathered silty clay	62.38	Final
VS523	floor	21-Jul-2017	Metals, PAH	Native grey silty clay	57.35	Final
VS524	floor	21-Jul-2017	Metals, PAH	Native brown weathered silty clay	61.99	Final
VS525	floor	21-Jul-2017	Metals, PAH	Native brown weathered silty clay	60.67	Final
VS526	floor	27-Jul-2017	Metals, PAH	Brown sand (Fill)	63.91	Final
VS1526 (Field Duplicate)	floor	27-Jul-2017	Metals, PAH	Brown sand (Fill)	63.91	Final
VS527	floor	27-Jul-2017	Metals, PAH	Brown sand (Fill)	64.02	Final
VS528	floor	27-Jul-2017	Metals, PAH	Native brown weathered silty clay	63.72	Final
VS529	floor	27-Jul-2017	Metals, PAH	Native brown weathered silty clay	63.20	Final
VS530	floor	27-Jul-2017	Metals, PAH	Native brown weathered silty clay	62.01	Final
VS531	floor	27-Jul-2017	Metals, PAH	Native brown weathered silty clay	63.10	Final
VS532	floor	27-Jul-2017	Metals, PAH	Native brown weathered silty clay	63.32	Final
VS533	floor	01-Aug-2017	Metals, PAH	Native grey silty clay	60.12	Final
VS534	floor	01-Aug-2017	Metals, PAH	Native grey silty clay	59.74	Final
VS535	floor	01-Aug-2017	Metals, PAH	Native grey silty clay	57.69	Final
VS1535 (Field Duplicate)	floor	01-Aug-2017	Metals, PAH	Native grey silty clay	57.69	Final
VS536	floor	01-Aug-2017	Metals, PAH	Native grey silty clay	57.32	Final
VS537	floor	01-Aug-2017	Metals, PAH	Native grey silty clay	57.51	Final
VS538	floor	01-Aug-2017	Metals, PAH	Native grey silty clay	57.98	Final
VS539	floor	01-Aug-2017	Metals, PAH	Native grey silty clay	58.31	Final
VS540	floor	02-Aug-2017	Metals, PAH	Native grey silty clay	57.69	Final
VS541	floor	02-Aug-2017	Metals, PAH	Native grey silty clay	57.89	Final
VS542	floor	02-Aug-2017	Metals, PAH	Native grey silty clay	57.58	Final
VS1542 (Field Duplicate)	floor	02-Aug-2017	Metals, PAH	Native grey silty clay	57.58	Final
VS543	floor	02-Aug-2017	Metals, PAH	Native grey silty clay	57.92	Final
VS544	floor	02-Aug-2017	Metals, PAH	Brown sand (Fill)	59.01	Final
VS545	floor	02-Aug-2017	Metals, PAH	Native grey silty clay	57.84	Final
VS546	floor	02-Aug-2017	Metals, PAH	Native grey silty clay	57.68	Final
VS547	floor	03-Aug-2017	Metals, PAH	Native grey silty clay	58.00	Final
VS548	floor	03-Aug-2017	Metals, PAH	Native grey silty clay	58.19	Final
VS549	floor	03-Aug-2017	Metals, PAH	Native brown weathered silty clay	60.22	Final
VS550	floor	03-Aug-2017	Metals, PAH	Brown sand (Fill)	60.12	Final
VS551	floor	03-Aug-2017	Metals, PAH	Brown sand (Fill)	58.91	Final
VS552	floor	04-Aug-2017	Metals, PAH	Brown sand (Fill)	58.79	Final
VS553	floor	04-Aug-2017	Metals, PAH	Brown sand (Fill)	58.73	Final
VS554	floor	04-Aug-2017	Metals, PAH	Brown sand (Fill)	58.80	Final
VS555	floor	04-Aug-2017	Metals, PAH	Brown sand (Fill)	58.87	Final
VS1555 (Field Duplicate)	floor	04-Aug-2017	Metals, PAH	Brown sand (Fill)	58.87	Final
VS556	floor	04-Aug-2017	Metals, PAH	Brown sand (Fill)	58.63	Final
VS557	floor	08-Aug-2017	Metals, PAH	Native grey silty clay	60.60	Final
VS558	floor	08-Aug-2017	Metals, PAH	Brown sand (Fill)	59.98	Final
VS559	floor	08-Aug-2017	Metals, PAH	Brown sand (Fill)	58.48	Final
VS560	floor	08-Aug-2017	Metals, PAH	Native grey silty clay	58.06	Final
VS561	floor	08-Aug-2017	Metals, PAH	Native grey silty clay	58.35	Final
VS562	floor	09-Aug-2017	Metals, PAH	Native brown weathered silty clay	61.34	Final
VS563	floor	09-Aug-2017	Metals, PAH	Native grey silty clay	59.72	Final
VS564	floor	09-Aug-2017	Metals, PAH	Native grey silty clay	58.36	Final
VS565	floor	09-Aug-2017	Metals, PAH	Native grey silty clay	59.72	Final
VS1565 (Field Duplicate)	floor	09-Aug-2017	Metals, PAH	Native grey silty clay	59.72	Final
VS566	floor	09-Aug-2017	Metals, PAH	Native grey silty clay	61.22	Final
VS567	floor	09-Aug-2017	Metals, PAH	Native brown weathered silty clay	62.77	Final
VS568	floor	09-Aug-2017	Metals, PAH	Native grey silty clay	59.25	Final
VS569	floor	09-Aug-2017	Metals, PAH	Native grey silty clay	61.66	Final
VS570	floor	10-Aug-2017	Metals, PAH	Native grey silty clay	63.06	Final
VS571	floor	10-Aug-2017	Metals, PAH	Native grey silty clay	61.83	Final
VS572	floor	10-Aug-2017	Metals, PAH	Native grey silty clay	62.04	Final
VS573	floor	10-Aug-2017	Metals, PAH	Native grey silty clay	63.46	Final
VS574	floor	10-Aug-2017	Metals, PAH	Brown sand (Fill)	62.33	Final
VS575	wall	10-Aug-2017	Metals, PAH	Native grey silty clay	63.83	Final
VS1575 (Field Duplicate)	wall	10-Aug-2017	Metals, PAH	Native grey silty clay	63.83	Final
VS576	floor	10-Aug-2017	Metals, PAH	Brown sand (Fill)	63.94	Final
VS577	floor	10-Aug-2017	Metals, PAH	Native grey silty clay	63.20	Final
VS578	floor	10-Aug-2017	Metals, PAH	Brown sand (Fill)	63.77	Final
VS579	wall	10-Aug-2017	Metals, PAH	Brown sand (Fill)	64.00	Final

Sample Name	Sample Type	Sample Collection Date	Analysis	Sample Description	Sample Elevation (masl)	Excavated?
VS580	floor	10-Aug-2017	Metals, PAH	Native grey silty clay	62.79	Final
VS581	floor	10-Aug-2017	Metals, PAH	Brown sand (Fill)	63.17	Final
VS582	floor	10-Aug-2017	Metals, PAH	Native grey silty clay	60.62	Final
VS583	floor	11-Aug-2017	Metals, PAH	Native grey silty clay	61.30	Final
VS584	floor	11-Aug-2017	Metals, PAH	Native grey silty clay	61.56	Final
VS585	floor	11-Aug-2017	Metals, PAH	Native grey silty clay	62.43	Final
VS1585 (Field Duplicate)	floor	11-Aug-2017	Metals, PAH	Native grey silty clay	62.43	Final
VS587	floor	11-Aug-2017	Metals, PAH	Native grey silty clay	60.84	Final
VS588	floor	11-Aug-2017	Metals, PAH	Native grey silty clay	62.05	Final
VS589	floor	12-Aug-2017	Metals, PAH	Native grey silty clay	57.96	Final
VS590	floor	12-Aug-2017	Metals, PAH	Native grey silty clay	58.50	Final
VS591	floor	12-Aug-2017	Metals, PAH	Native grey silty clay	59.98	Final
VS592	floor	14-Aug-2017	Metals, PAH	Brown sand (Fill)	64.74	Final
VS593	wall	14-Aug-2017	Metals, PAH	Brown sand (Fill)	64.37	Final
VS594	wall	14-Aug-2017	Metals, PAH	Brown sand (Fill)	64.26	Final
VS595	wall	14-Aug-2017	Metals, PAH	Brown sand (Fill)	64.07	Final
VS1595 (Field Duplicate)	wall	14-Aug-2017	Metals, PAH	Brown sand (Fill)	64.07	Final
VS596	wall	14-Aug-2017	Metals, PAH	Brown sand (Fill)	63.66	Final
VS597	wall	14-Aug-2017	Metals, PAH	Brown sand (Fill)	63.64	Final
VS598	floor	14-Aug-2017	Metals, PAH	Native grey silty clay	60.67	Final
VS599	floor	14-Aug-2017	Metals, PAH	Native grey silty clay	61.14	Final
VS600	floor	16-Aug-2017	Metals, PAH	Native grey silty clay	62.38	Final
VS601	floor	16-Aug-2017	Metals, PAH	Native grey silty clay	60.79	Final
VS602	floor	16-Aug-2017	Metals, PAH	Native grey silty clay	61.24	Final
VS603	floor	17-Aug-2017	Metals, PAH	Native grey silty clay	62.47	Final
VS604	floor	17-Aug-2017	Metals, PAH	Brown sand (Fill)	63.01	Final
VS605	floor	17-Aug-2017	Metals, PAH	Native grey silty clay	62.57	Final
VS1605 (Field Duplicate)	floor	17-Aug-2017	Metals, PAH	Native grey silty clay	62.57	Final
VS606	floor	17-Aug-2017	Metals, PAH	Native grey silty clay	61.83	Final
VS607	floor	17-Aug-2017	Metals, PAH	Native grey silty clay	59.97	Final
VS608	floor	17-Aug-2017	Metals, PAH	Native grey silty clay	57.12	Final
VS609	floor	17-Aug-2017	Metals, PAH	Native grey silty clay	56.59	Final
VS610	floor	17-Aug-2017	Metals, PAH	Native brown weathered silty clay	62.09	Final
VS611	floor	17-Aug-2017	Metals, PAH	Native grey silty clay	57.44	Final
VS612	floor	23-Aug-2017	Metals, PAH	Brown sand (Fill)	63.19	Final
VS613	wall	23-Aug-2017	Metals, PAH	Brown sand (Fill)	63.47	Final
VS614	wall	23-Aug-2017	Metals, PAH	Brown sand (Fill)	63.08	Final
VS615	floor	23-Aug-2017	Metals, PAH	Native grey silty clay	62.20	Final
VS1615 (Field Duplicate)	floor	23-Aug-2017	Metals, PAH	Native grey silty clay	62.20	Final
VS616	floor	23-Aug-2017	Metals, PAH	Native grey silty clay	63.23	Final
VS617	wall	23-Aug-2017	Metals, PAH	Brown sand (Fill)	63.62	Final

NA - The elevation was not measured from locations of failed samples prior to excavation.

Parameter	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS285	VS286	VS292	VS293	VS320	VS321	VS322	VS323	VS324	VS324B	VS325	VS325	VS326	VS327	VS328	VS329	VS330	VS331
		09-Aug-2016	09-Aug-2016	11-Aug-2016	11-Aug-2016	08-Feb-2017	08-Feb-2017	08-Feb-2017	08-Feb-2017	08-Feb-2017	16-Feb-2017	08-Feb-2017	08-Feb-2017	08-Feb-2017	27-Mar-2017	27-Mar-2017	27-Mar-2017	27-Mar-2017	27-Mar-2017
		VS285	VS286	VS292	VS293	VS 320	VS 321	VS 322	VS 323	VS 324	VS324 B	VS 325	VS1 325 (Field Duplicate)	VS 326	VS 327	VS 328	VS 329	VS 330	VS 331
Sample Status		Final	Final	Final	Final	Final [3]	Final [3]	Final [3]	Final [3]	Excavated	Final [3]	Final [3]	Final [3]	Final [3]	Final	Final	Final	Final	Final
Sample Depth		5.95 - 6.05	6.21 - 6.31	6.19 - 6.29	4.29 - 4.39	1.58 - 1.68	1.75 - 1.85	1.71 - 1.81	1.81 - 1.91	NA [5]	1.76 - 1.86	1.64 - 1.74	1.64 - 1.74	1.84 - 1.94	1.02 - 1.12	0.82 - 0.92	0.84 - 0.94	1.22 - 1.32	0.97 - 1.07
Metals																			
Antimony	7.5	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	2	1	1	1	<1.0	1.1	1.4	1.2	1.1	1.0	1.4	2.0	1.4	<1.0	<1.0	<1.0	1.7	<1.0
Barium	390	200	180	170	180	**410**	**420**	**430**	**460**	380	390	**420**	**400**	390	26	23	27	160	38
Beryllium	4	0.8	0.6	0.7	0.7	0.90	1.1	1.3	0.95	0.93	0.90	1.1	1.2	1.1	0.30	0.21	0.28	0.57	0.29
Boron	120	6	<5	<5	5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	1.2	<0.1	<0.1	0.1	<0.1	<0.10	<0.10	0.14	<0.10	0.30	0.12	<0.10	<0.10	0.12	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	160	48	39	42	46	120	110	120	120	110	120	110	110	110	21	17	21	36	21
Cobalt	22	15	12	12	12	**27**	**28**	**28**	**29**	**26**	**26**	**27**	**25**	**26**	6.5	5.9	5.3	9.3	5.7
Copper	140	23	16	15	23	61	56	64	68	59	60	57	57	60	5.6	5.2	5.5	14	5.9
Hexavalent Chromium	8	<0.2	0.4	<0.2	<0.2	0.7	0.8	0.6	0.7	0.7	0.5	0.6	0.7	0.7	0.2	<0.2	0.2	0.6	<0.2
Lead	120	7	6	6	6	6.8	7.8	9.3	7.2	7.3	7.1	8.2	8.4	10	2.3	1.9	2.3	5.0	2.3
Mercury	0.27	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	6.9	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	0.58	<0.50	<0.50	<0.50	<0.50	0.53	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	100	27	22	22	25	69	66	69	71	61	66	59	60	63	11	9.7	12	19	13
Selenium	2.4	<0.5	0.6	<0.5	<0.5	<0.50	<0.50	<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	20	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.27	0.23	0.22	0.23	0.51	0.54	0.56	0.54	0.51	0.50	0.54	0.52	0.54	0.068	0.053	0.077	0.20	0.075
Uranium	23	0.75	0.79	1.0	1.0	1.5	2.6	2.7	2.1	1.4	1.8	2.4	2.7	1.9	0.47	0.44	0.45	0.58	0.40
Vanadium	86	66	54	57	61	**120**	**110**	**120**	**120**	**110**	**110**	**110**	**120**	**110**	28	25	27	49	28
Zinc	340	70	60	70	70	140	140	150	140	**360**	150	130	130	140	23	19	25	56	27
Semi-VOCs																			
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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] fluoranthene	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.69	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS332	VS333	VS334	VS335	VS336	VS337	VS338	VS339	VS340	VS341	VS342	VS342B	VS343	VS344	VS345	VS346	VS346	VS347
		27-Mar-2017	27-Mar-2017	27-Mar-2017	28-Mar-2017	28-Mar-2017	28-Mar-2017	28-Mar-2017	28-Mar-2017	28-Mar-2017	29-Mar-2017	29-Mar-2017	18-May-2017	29-Mar-2017	29-Mar-2017	29-Mar-2017	29-Mar-2017	29-Mar-2017	29-Mar-2017
		VS 332	VS 333	VS 334	VS335	VS336	VS337	VS338	VS339	VS340	VS341	VS342	VS342B	VS343	VS344	VS345	VS346	VS1346 (Field Duplicate)	VS347
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Excavated	Final	Final	Final	Final	Final	Final	Final
Sample Depth		1.21 - 1.31	1.01 - 1.11	1.36 - 1.46	1.41 - 1.51	1.57 - 1.67	1.75 - 1.85	1.8 - 1.9	1.82 - 1.92	1.65 - 1.75	1.62 - 1.72	NA [5]	1.51 - 1.61	1.6 - 1.7	1.58 - 1.68	1.86 - 1.96	1.74 - 1.84	1.74 - 1.84	1.6 - 1.7
Metals																			
Antimony	7.5	<0.20	<0.20	<0.20	0.27	<0.20	<0.20	<0.20	0.21	0.26	<0.20	0.68	<0.20	0.64	<0.20	0.31	0.47	0.48	<0.20
Arsenic	18	2.3	1.8	1.9	3.0	2.2	3.2	2.1	2.8	2.6	2.7	2.8	1.8	3.1	1.7	2.5	2.1	2.1	1.5
Barium	390	160	98	130	90	98	140	110	140	130	120	65	170	140	120	120	110	110	130
Beryllium	4	0.65	0.43	0.55	0.40	0.46	0.57	0.54	0.62	0.60	0.46	0.33	0.64	0.54	0.41	0.50	0.47	0.47	0.53
Boron	120	<5.0	<5.0	<5.0	<5.0	<5.0	5.2	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	1.2	<0.10	<0.10	<0.10	0.13	0.13	0.19	<0.10	0.21	0.22	0.18	0.28	<0.10	0.26	0.10	0.17	0.21	0.18	0.21
Chromium	160	38	28	33	25	27	32	36	34	34	29	22	42	35	48	32	30	30	49
Cobalt	22	11	8.4	9.9	8.0	9.5	9.7	11	12	11	9.9	6.5	14	9.2	11	8.6	8.1	7.6	13
Copper	140	18	8.6	13	9.5	10	14	7.5	13	14	13	12	14	17	24	13	13	13	30
Hexavalent Chromium	8	0.5	0.3	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.9	<0.2	<0.2	<0.2	<0.2	<0.2	0.7
Lead	120	6.7	12	5.1	23	19	20	7.1	20	33	21	100	6.5	60	29	23	22	22	28
Mercury	0.27	<0.050	<0.050	<0.050	0.10	0.057	0.088	<0.050	0.074	<0.050	<0.050	0.11	0.064	0.056	0.070	<0.050	0.073	0.060	0.058
Molybdenum	6.9	<0.50	<0.50	<0.50	0.66	<0.50	0.63	<0.50	0.70	0.52	0.72	0.72	<0.50	0.86	<0.50	0.79	0.89	0.73	<0.50
Nickel	100	21	13	17	12	14	15	16	16	16	16	13	20	19	28	16	16	16	25
Selenium	2.4	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.76	<0.50	0.50	0.64	0.67	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.23	0.17	0.19	0.14	0.14	0.20	0.15	0.20	0.20	0.20	0.12	0.21	0.21	0.20	0.20	0.17	0.17	0.19
Uranium	23	0.70	0.59	0.64	0.62	0.65	0.81	0.87	1.0	0.96	0.84	0.75	0.90	0.74	0.80	1.1	0.87	0.82	1.2
Vanadium	86	57	40	48	41	45	50	60	52	52	41	28	59	43	48	39	37	37	52
Zinc	340	63	48	49	58	54	74	81	80	86	71	130	76	98	68	84	75	77	150
Semi-VOCs																			
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.018	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	0.99 [4]	<0.0050	<0.0050	<0.0050	0.0060	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0083	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	7.9	<0.0050	<0.0050	<0.0050	0.011	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.054	<0.0050	0.010	0.018	0.0050	<0.0050	<0.0050	0.0067
Acenaphthylene	0.15	<0.0050	<0.0050	<0.0050	0.021	0.018	0.021	<0.0050	0.016	0.017	0.018	0.024	<0.0050	0.013	0.0074	0.014	0.015	0.016	0.0054
Anthracene	0.67	<0.0050	<0.0050	<0.0050	0.031	0.020	0.015	<0.0050	0.013	0.016	0.014	0.16	<0.0050	0.027	0.052	0.017	0.012	0.014	0.025
Benzo [b,j] fluoranthene	--	<0.0050	0.013	<0.0050	0.18	0.17	0.15	<0.0050	0.11	0.13	0.14	0.49	<0.0050	0.15	0.15	0.13	0.11	0.12	0.15
Benzo[a]anthracene	0.5	<0.0050	0.0070	<0.0050	0.12	0.12	0.088	<0.0050	0.067	0.081	0.082	0.47	<0.0050	0.10	0.13	0.081	0.068	0.077	0.12
Benzo[a]pyrene	0.3	<0.0050	0.0079	<0.0050	0.12	0.12	0.094	<0.0050	0.072	0.082	0.092	**0.39**	<0.0050	0.11	0.10	0.088	0.078	0.084	0.12
Benzo[g,h,i]perylene	6.6	<0.0050	0.0065	<0.0050	0.070	0.070	0.067	<0.0050	0.050	0.050	0.061	0.25	<0.0050	0.073	0.056	0.060	0.053	0.058	0.075
Benzo[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	0.063	0.058	0.051	<0.0050	0.039	0.046	0.052	0.17	<0.0050	0.058	0.055	0.049	0.044	0.047	0.062
Chrysene	7	<0.0050	0.0075	<0.0050	0.12	0.12	0.091	<0.0050	0.074	0.088	0.089	0.37	<0.0050	0.10	0.12	0.083	0.074	0.080	0.11
Dibenzo[a,h]anthracene	0.1	<0.0050	<0.0050	<0.0050	0.019	0.021	0.017	<0.0050	0.011	0.012	0.016	0.066	<0.0050	0.019	0.019	0.018	0.017	0.019	0.023
Fluoranthene	0.69	<0.0050	0.013	<0.0050	0.27	0.26	0.20	0.0074	0.17	0.20	0.19	**0.97**	<0.0050	0.26	0.30	0.19	0.16	0.18	0.24
Fluorene	62	<0.0050	<0.0050	<0.0050	0.014	0.0065	0.0066	<0.0050	0.0078	0.0086	0.0083	0.056	<0.0050	0.011	0.021	0.0075	0.0073	0.0072	0.0085
Indeno[1,2,3-cd]pyrene	0.38	<0.0050	0.0070	<0.0050	0.082	0.092	0.083	<0.0050	0.064	0.062	0.066	0.26	<0.0050	0.082	0.062	0.068	0.066	0.068	0.080
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.011	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	0.0051	<0.0050	0.15	0.099	0.083	<0.0050	0.087	0.10	0.098	0.59	<0.0050	0.16	0.22	0.11	0.083	0.090	0.11
Pyrene	78	<0.0050	0.011	<0.0050	0.20	0.20	0.15	0.0057	0.12	0.14	0.15	0.84	<0.0050	0.19	0.24	0.15	0.12	0.13	0.19

Parameter	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS348	VS348B	VS349	VS350	VS351	VS351	VS352	VS353	VS354	VS355	VS356	VS357	VS358	VS359	VS360	VS361	VS362	VS363
		29-Mar-2017	30-May-2017	29-Mar-2017	30-Mar-2017	30-Mar-2017 [2]	30-Mar-2017	30-Mar-2017	30-Mar-2017	30-Mar-2017	30-Mar-2017	30-Mar-2017	30-Mar-2017	30-Mar-2017	30-Mar-2017	30-Mar-2017	30-Mar-2017	30-Mar-2017	30-Mar-2017
		VS348	VS 348B	VS349	VS350	VS351	VS1351 (Field Duplicate)	VS352	VS353	VS354	VS355	VS356	VS357	VS358	VS359	VS360	VS361	VS362	VS363
Sample Status		Excavated	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth		NA [5]	1.87 - 1.97	1.7 - 1.8	1.49 - 1.59	0.94 - 1.04	0.94 - 1.04	0.94 - 1.04	0.69 - 0.79	0.64 - 0.74	0.61 - 0.71	0.89 - 0.99	1.04 - 1.14	1.58 - 1.68	0.69 - 0.79	0.67 - 0.77	0.59 - 0.69	0.92 - 1.02	0.29 - 0.39
Metals																			
Antimony	7.5	0.22	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	3.1	2.0	2.3	1.2	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.4	1.1	<1.0	<1.0	<1.0
Barium	390	120	210	130	25	28	31	17	20	30	29	30	47	51	27	14	21	12	17
Beryllium	4	0.56	0.71	0.61	0.21	0.23	0.23	0.21	<0.20	0.21	0.22	0.24	0.26	0.35	0.22	<0.20	<0.20	<0.20	<0.20
Boron	120	<5.0	5.1	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	1.2	0.15	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	160	31	47	36	15	17	16	15	14	20	20	17	20	25	15	15	14	13	16
Cobalt	22	11	11	12	4.1	4.6	4.8	4.0	3.9	4.8	5.0	4.2	4.4	6.5	4.1	3.7	3.1	2.6	3.9
Copper	140	11	24	12	5.0	5.3	5.2	3.7	4.7	6.0	5.7	6.0	8.0	9.1	5.4	6.6	4.1	3.3	4.4
Hexavalent Chromium	8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2
Lead	120	21	6.7	7.9	23	16	9.7	3.1	1.5	2.0	2.0	2.0	2.5	4.4	18	1.8	2.1	1.7	2.2
Mercury	0.27	**0.50**	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.089	<0.050	<0.050	<0.050	<0.050
Molybdenum	6.9	0.67	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	100	15	26	18	9.2	9.8	9.7	8.8	8.9	9.9	11	11	11	13	9.1	8.5	7.5	6.8	9.6
Selenium	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	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.18	0.24	0.23	0.065	0.10	0.072	<0.050	0.058	<0.050	0.070	0.063	0.055	0.11	0.060	0.054	<0.050	<0.050	0.053
Uranium	23	0.96	0.80	0.79	0.49	0.39	0.36	0.27	0.33	0.70	0.76	0.45	1.0	1.3	0.32	0.42	0.43	0.42	0.30
Vanadium	86	51	57	58	18	20	19	17	19	31	27	18	23	39	19	19	22	20	18
Zinc	340	72	75	64	28	29	25	22	17	18	23	22	25	32	28	17	15	13	21
Semi-VOCs																			
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7.9	0.0065	<0.0050	<0.0050	0.0075	<0.0050	<0.0050	<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	0.15	0.019	<0.0050	<0.0050	<0.0050	0.0071	<0.0050	<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	0.67	0.018	<0.0050	<0.0050	0.014	0.0082	<0.0050	<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] fluoranthene	--	0.16	<0.0050	0.016	0.043	0.054	0.029	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.042	<0.0050	0.017	<0.0050	0.024
Benzo[a]anthracene	0.5	0.099	<0.0050	0.010	0.034	0.034	0.020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.028	<0.0050	0.011	<0.0050	0.019
Benzo[a]pyrene	0.3	0.11	<0.0050	0.011	0.031	0.035	0.019	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.030	<0.0050	0.013	<0.0050	0.019
Benzo[g,h,i]perylene	6.6	0.073	<0.0050	0.0097	0.020	0.025	0.014	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.020	<0.0050	0.0096	<0.0050	0.013
Benzo[k]fluoranthene	0.78	0.061	<0.0050	0.0063	0.017	0.020	0.0098	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.017	<0.0050	0.0066	<0.0050	0.010
Chrysene	7	0.10	<0.0050	0.011	0.032	0.032	0.020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.027	<0.0050	0.011	<0.0050	0.016
Dibenzo[a,h]anthracene	0.1	0.023	<0.0050	<0.0050	0.0063	0.0076	0.0063	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0067	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	0.69	0.23	<0.0050	0.023	0.074	0.069	0.041	0.0069	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.058	<0.0050	0.023	<0.0050	0.034
Fluorene	62	0.0098	<0.0050	<0.0050	0.0063	<0.0050	<0.0050	<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]pyrene	0.38	0.086	<0.0050	0.010	0.020	0.026	0.018	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.021	<0.0050	0.0090	<0.0050	0.013
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	0.12	<0.0050	0.017	0.057	0.037	0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.027	<0.0050	0.0078	<0.0050	0.013
Pyrene	78	0.17	<0.0050	0.018	0.056	0.054	0.034	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.045	<0.0050	0.017	<0.0050	0.029

Parameter	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS364	VS364	VS365	VS366	VS367	VS368	VS369	VS370	VS371	VS371	VS372	VS373	VS373B	VS374	VS375	VS376	VS377	VS378
		30-Mar-2017	30-Mar-2017	30-Mar-2017	30-Mar-2017	30-Mar-2017	30-Mar-2017	30-Mar-2017 [2]	18-Apr-2017	18-Apr-2017	18-Apr-2017	18-Apr-2017	18-Apr-2017	20-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017
		VS364	VS1364 (Field Duplicate)	VS365	VS366	VS367	VS368	VS369	VS 370	VS 371	VS 1371 (Field Duplicate)	VS 372	VS 373	VS373B	VS 374	VS 375	VS 376	VS 377	VS 378
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Excavated	Final	Final	Final	Final	Final	Final [3]
Sample Depth		0.51 - 0.61	0.51 - 0.61	0.13 - 0.23	0.44 - 0.54	0.2 - 0.3	0.51 - 0.61	0.48 - 0.58	0.96 - 1.06	0.94 - 1.04	0.94 - 1.04	0.49 - 0.59	NA [5]	0.54 - 0.64	1.01 - 1.11	0.65 - 0.75	0.95 - 1.05	0 - 0.10	0.65 - 0.75
Metals																			
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	3.9	2.8	<1.0	1.8	1.5	1.4	1.4	4.1
Barium	390	16	17	22	22	37	26	45	24	24	22	100	88	29	73	78	46	33	120
Beryllium	4	0.20	<0.20	<0.20	0.22	0.24	<0.20	0.26	0.26	0.21	<0.20	0.55	0.58	0.24	0.55	0.48	0.28	0.30	0.69
Boron	120	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	6.6	7.8	<5.0	<5.0	<5.0	<5.0	<5.0	6.1
Cadmium	1.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10
Chromium	160	18	14	14	15	19	14	19	16	21	18	64	68	18	42	43	37	24	74
Cobalt	22	4.3	4.1	4.7	3.6	5.7	4.3	6.3	3.1	3.7	3.0	18	**23**	2.9	8.6	8.2	7.6	5.8	**29**
Copper	140	3.3	3.2	5.1	4.7	4.5	4.0	5.1	5.7	6.2	5.4	23	14	5.9	21	17	9.3	10	22
Hexavalent Chromium	8	0.2	<0.2	<0.2	0.3	<0.2	0.3	<0.2	0.3	0.2	<0.2	0.6	<0.2	<0.2	0.3	0.4	0.2	0.2	0.4
Lead	120	2.1	1.8	4.0	2.1	4.5	2.2	4.4	3.4	3.0	2.7	11	13	2.3	5.5	5.1	4.6	2.6	12
Mercury	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	6.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.85	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.67
Nickel	100	7.8	8.1	9.1	8.4	11	8.0	13	8.9	9.2	7.7	30	31	7.9	22	19	16	13	32
Selenium	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	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	<0.050	<0.050	0.057	0.058	0.092	0.050	0.089	<0.050	0.069	0.064	0.22	0.31	0.077	0.13	0.11	0.11	0.094	0.26
Uranium	23	0.63	0.51	0.26	0.32	0.32	0.44	0.35	0.68	0.56	0.59	2.0	1.8	0.66	2.1	1.9	0.69	0.67	1.8
Vanadium	86	33	21	18	18	19	19	25	22	25	24	65	66	22	42	41	38	28	71
Zinc	340	15	14	23	19	38	17	23	24	26	21	88	92	19	44	50	50	29	100
Semi-VOCs																			
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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] fluoranthene	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.012	0.014	<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	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0074	0.0094	<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	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0090	0.0094	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0072	0.0058	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0069	0.0083	<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]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.69	<0.0050	<0.0050	<0.0050	0.0062	<0.0050	0.015	0.017	0.0058	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0072	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0058	0.0061	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	78	<0.0050	<0.0050	<0.0050	0.0051	<0.0050	0.012	0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS379	VS380	VS381	VS382	VS382	VS383	VS384	VS385	VS386	VS387	VS388	VS389	VS390	VS391	VS392	VS392	VS393	VS394
		19-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	5-May-2017
		VS 379	VS 380	VS 381	VS 382	VS 1382 (Field Duplicate)	VS 383	VS 384	VS 385	VS 386	VS 387	VS 388	VS 389	VS 390	VS 391	VS 392	VS 1392 (Field Duplicate)	VS 393	VS 394
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth		0.76 - 0.86	0.05 - 0.15	0.16 - 0.26	0.24 - 0.34	0.24 - 0.34	0.06 - 0.16	1.23 - 1.33	1.05 - 1.15	0.58 - 0.68	0.72 - 0.82	0.79 - 0.89	1.18 - 1.28	0.87 - 0.97	0.98 - 1.08	1.11 - 1.21	1.11 - 1.21	0.46 - 0.56	0.99 - 1.09
Metals																			
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	2.8	<1.0	<1.0	<1.0	1.1	1.2	2.1	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	1.7	<1.0	<1.0	<1.0	<1.0
Barium	390	96	18	20	130	140	120	130	24	41	42	14	21	66	91	27	27	25	25
Beryllium	4	0.56	<0.20	<0.20	0.50	0.50	0.48	0.50	<0.20	0.28	0.26	<0.20	0.20	0.32	0.45	0.21	0.23	0.20	0.27
Boron	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	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	1.2	0.11	<0.10	<0.10	0.17	0.19	<0.10	0.18	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	160	59	11	13	32	33	32	34	13	19	22	8.2	9.4	22	28	14	16	16	20
Cobalt	22	12	2.5	3.4	7.4	8.6	7.8	9.4	3.5	5.7	5.4	1.8	2.9	5.1	6.8	3.7	4.1	4.7	5.3
Copper	140	15	2.2	5.2	16	15	16	17	4.5	8.6	12	2.5	4.1	6.1	13	6.1	6.0	5.4	5.3
Hexavalent Chromium	8	0.5	<0.2	<0.2	0.2	0.3	0.4	0.4	<0.2	<0.2	0.3	<0.2	<0.2	0.5	0.4	<0.2	<0.2	<0.2	0.3
Lead	120	10	2.5	4.5	4.8	6.0	4.0	5.3	2.3	2.1	2.1	1.2	1.3	3.6	3.9	1.8	2.0	1.8	2.6
Mercury	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	6.9	0.57	<0.50	<0.50	<0.50	<0.50	<0.50	0.74	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	100	25	6.9	7.8	17	19	18	22	7.8	13	16	5.6	6.4	12	15	8.4	9.1	9.4	12
Selenium	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	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.20	0.058	0.063	0.13	0.13	0.15	0.15	0.056	0.074	0.081	<0.050	<0.050	0.093	0.12	0.052	0.061	0.059	0.092
Uranium	23	1.5	0.31	0.59	0.91	0.99	1.0	0.79	0.33	0.36	0.46	0.22	0.45	1.0	0.82	0.63	0.70	0.36	0.37
Vanadium	86	60	12	19	45	47	41	48	12	23	28	8.5	16	35	43	19	20	21	24
Zinc	340	70	34	34	56	59	50	57	21	26	28	18	18	28	39	22	26	18	29
Semi-VOCs																			
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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] fluoranthene	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.69	0.0086	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	0.0055	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	78	0.0074	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS395	VS396	VS397	VS399	VS400	VS401	VS401	VS402	VS403	VS404	VS405	VS406	VS407	VS408	VS409	VS410	VS411
		5-May-2017	16-May-2017 [2]	16-May-2017	16-May-2017	16-May-2017	18-May-2017	18-May-2017	18-May-2017	18-May-2017	19-May-2017	23-May-2017	23-May-2017	23-May-2017	24-May-2017	24-May-2017	25-May-2017	26-May-2017
		VS 395	VS 396	VS 397	VS 399	VS 400	VS401	VS1401 (Field Duplicate)	VS402	VS403	VS404	VS 405	VS 406	VS 407	VS 408	VS 409	VS410	VS411
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth		0.76 - 0.86	0.78 - 0.88	0.87 - 0.97	0.8 - 0.9	0.98 - 1.08	1.65 - 1.75	1.65 - 1.75	1.74 - 1.84	2.01 - 2.11	1.44 - 1.54	0.09 - 0.19	1.51 - 1.61	1.88 - 1.98	1.95 - 2.05	1.7 - 1.8	2.01 - 2.11	1.72 - 1.82
Metals																		
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.81	0.24	<0.20	<0.20
Arsenic	18	<1.0	<1.0	3.4	<1.0	<1.0	3.0	2.5	2.3	2.4	2.2	<1.0	2.5	2.6	2.2	3.0	2.1	2.0
Barium	390	30	28	66	25	11	200	180	230	210	180	17	190	190	210	170	190	130
Beryllium	4	0.29	<0.20	0.29	0.26	<0.20	0.71	0.67	0.78	0.74	0.69	<0.20	0.70	0.69	0.67	0.63	0.74	0.47
Boron	120	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.1	<5.0	5.5	5.1	5.1	<5.0	<5.0	<5.0
Cadmium	1.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.14	<0.10	<0.10	0.11	0.11	0.13	0.20	0.16	<0.10
Chromium	160	23	14	23	17	12	45	45	46	49	46	9.8	44	42	44	42	45	31
Cobalt	22	5.5	2.9	5.6	5.7	2.3	14	13	13	14	13	2.6	12	12	13	17	12	9.1
Copper	140	8.4	4.5	13	6.4	2.1	26	26	28	24	20	2.7	22	18	25	22	20	12
Hexavalent Chromium	8	0.3	0.2	0.4	0.3	<0.2	0.6	0.8	0.5	0.8	0.7	<0.2	0.4	0.7	0.3	<0.2	1.0	0.5
Lead	120	2.2	8.4	3.1	3.3	4.8	6.7	6.9	6.0	6.6	11	2.9	5.9	6.3	66	15	6.1	4.8
Mercury	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.074	<0.050	<0.050	<0.050
Molybdenum	6.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.60	<0.50	<0.50
Nickel	100	13	7.5	13	9.8	5.0	28	27	29	28	25	7.3	26	23	26	24	23	16
Selenium	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	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.083	0.058	0.093	0.068	<0.050	0.26	0.26	0.24	0.27	0.29	<0.050	0.24	0.28	0.25	0.25	0.24	0.18
Uranium	23	0.50	0.40	0.54	0.39	0.41	0.71	0.72	0.69	0.76	0.79	0.31	0.76	0.72	0.65	0.82	0.95	0.48
Vanadium	86	29	15	32	21	20	64	61	64	66	58	13	59	59	58	58	58	43
Zinc	340	28	26	30	24	11	79	78	83	83	97	48	71	73	100	180	79	46
Semi-VOCs																		
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0064	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0070	<0.0050	<0.0050	<0.0050
Acenaphthene	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.015	<0.0050	<0.0050	<0.0050
Acenaphthylene	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.010	<0.0050	<0.0050	<0.0050	0.041	0.0053	<0.0050	<0.0050
Anthracene	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0058	<0.0050	<0.0050	<0.0050	0.055	0.0053	<0.0050	<0.0050
Benzo [b,j] fluoranthene	--	<0.0050	0.016	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.055	0.0081	<0.0050	<0.0050	0.29	0.028	<0.0050	<0.0050
Benzo[a]anthracene	0.5	<0.0050	0.011	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.030	<0.0050	<0.0050	<0.0050	0.19	0.018	<0.0050	<0.0050
Benzo[a]pyrene	0.3	<0.0050	0.0099	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.033	<0.0050	<0.0050	<0.0050	0.18	0.020	<0.0050	<0.0050
Benzo[g,h,i]perylene	6.6	<0.0050	0.0094	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.029	<0.0050	<0.0050	<0.0050	0.15	0.017	<0.0050	<0.0050
Benzo[k]fluoranthene	0.78	<0.0050	0.0058	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.018	<0.0050	<0.0050	<0.0050	0.11	0.013	<0.0050	<0.0050
Chrysene	7	<0.0050	0.011	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.037	<0.0050	<0.0050	<0.0050	0.21	0.020	<0.0050	<0.0050
Dibenzo[a,h]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.033	<0.0050	<0.0050	<0.0050
Fluoranthene	0.69	<0.0050	0.021	<0.0050	0.0074	<0.0050	0.0052	0.0073	<0.0050	<0.0050	0.058	0.012	<0.0050	<0.0050	0.42	0.049	<0.0050	<0.0050
Fluorene	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.017	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrene	0.38	<0.0050	0.0076	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.022	<0.0050	<0.0050	<0.0050	0.16	0.011	<0.0050	<0.0050
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.020	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	0.0088	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.016	<0.0050	<0.0050	<0.0050	0.19	0.023	<0.0050	<0.0050
Pyrene	78	<0.0050	0.019	<0.0050	0.0058	<0.0050	<0.0050	0.0054	<0.0050	<0.0050	0.050	0.0092	<0.0050	<0.0050	0.34	0.038	<0.0050	<0.0050

Parameter	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS411	VS412	VS413	VS414	VS415	VS416	VS417	VS418	VS419	VS420	VS421	VS422	VS422	VS423	VS424	VS425	VS426
		26-May-2017	26-May-2017	26-May-2017	30-May-2017	30-May-2017	30-May-2017	31-May-2017	31-May-2017	31-May-2017	31-May-2017	31-May-2017	01-Jun-2017	01-Jun-2017	01-Jun-2017	01-Jun-2017	01-Jun-2017	01-Jun-2017
		VS1411 (Field Duplicate)	VS412	VS413	VS 414	VS 415	VS 416	VS 417	VS 418	VS 419	VS 420	VS 421	VS 422	VS 1422 (Field Duplicate)	VS 423	VS 424	VS 425	VS 426
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth		1.72 - 1.82	1.23 - 1.33	1.01 - 1.11	1.82 - 1.92	1.89 - 1.99	1.35 - 1.45	1.65 - 1.75	1.46 - 1.56	1.05 - 1.15	0.66 - 0.76	0.83 - 0.93	0.57 - 0.67	0.57 - 0.67	0.9 - 1	0.56 - 0.66	0.79 - 0.89	0.98 - 1.08
Metals																		
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	1.7	<1.0	<1.0	1.4	2.1	<1.0	1.8	2.1	<1.0	<1.0	<1.0	<1.0	<1.0	1.6	<1.0	<1.0	<1.0
Barium	390	120	22	30	110	200	33	170	170	24	25	32	21	22	47	15	28	25
Beryllium	4	0.40	0.28	0.27	0.43	0.68	0.27	0.57	0.66	0.27	0.24	0.23	<0.20	<0.20	0.31	<0.20	0.22	<0.20
Boron	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	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	1.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	160	28	22	22	32	45	21	39	38	20	17	17	17	19	25	10	18	13
Cobalt	22	8.5	5.3	6.2	9.8	12	3.9	13	12	5.7	4.5	4.7	3.7	3.8	5.0	2.4	4.3	3.0
Copper	140	11	5.8	8.0	6.9	26	4.7	15	17	5.8	6.7	5.8	4.2	4.0	12	2.5	8.8	4.5
Hexavalent Chromium	8	0.5	0.5	<0.2	0.3	0.3	0.5	<0.2	0.6	0.4	0.3	0.2	0.6	0.5	0.2	0.3	<0.2	<0.2
Lead	120	4.7	2.3	2.2	5.0	6.3	3.9	6.1	5.5	1.8	1.9	2.0	1.5	1.5	2.4	1.1	1.9	1.9
Mercury	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	6.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	100	15	13	12	14	27	10	20	22	10	9.1	10	7.5	7.9	15	6.0	9.3	7.1
Selenium	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	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.15	0.078	0.070	0.15	0.21	<0.050	0.24	0.21	0.079	<0.050	0.052	<0.050	<0.050	0.075	<0.050	0.057	0.055
Uranium	23	0.46	0.37	0.51	0.71	0.73	0.51	0.60	0.69	0.60	0.47	0.80	0.62	0.58	0.56	0.36	0.49	0.41
Vanadium	86	38	28	29	42	55	25	53	53	23	25	23	23	26	29	14	25	15
Zinc	340	44	29	26	66	80	26	61	61	21	19	19	13	14	28	13	23	22
Semi-VOCs																		
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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] fluoranthene	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0061	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	0.69	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0061	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0055	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS427	VS428	VS429	VS430	VS431	VS432	VS433	VS434	VS434	VS435	VS436	VS437	VS438	VS439	VS440	VS441	VS442	VS443
		02-Jun-2017	02-Jun-2017	02-Jun-2017	02-Jun-2017	02-Jun-2017	05-Jun-2017	05-Jun-2017	09-Jun-2017	09-Jun-2017	09-Jun-2017	09-Jun-2017	09-Jun-2017	09-Jun-2017	12-Jun-2017	12-Jun-2017	12-Jun-2017	12-Jun-2017	12-Jun-2017
		VS 427	VS 428	VS 429	VS 430	VS 431	VS 432	VS 433	VS434	VS1434 (Field Duplicate)	VS435	VS436	VS437	VS438	VS 439	VS 440	VS 441	VS 442	VS 443
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth		1.53 - 1.63	1.81 - 1.91	1.72 - 1.82	1.64 - 1.74	1.75 - 1.85	1.72 - 1.82	1.7 - 1.8	0.49 - 0.59	0.49 - 0.59	0.4 - 0.5	0.56 - 0.66	0.72 - 0.82	0.78 - 0.88	2.46 - 2.56	0.33 - 0.43	0.53 - 0.63	0.55 - 0.65	0.4 - 0.5
Metals																			
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	0.24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	<1.0	2.1	2.0	1.9	2.5	2.0	2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	1.1	1.1	1.0	<1.0
Barium	390	26	170	150	140	200	180	200	25	24	37	26	24	23	150	110	110	50	29
Beryllium	4	0.28	0.68	0.47	0.56	0.66	0.66	0.66	<0.20	<0.20	0.26	0.20	<0.20	<0.20	0.42	0.43	0.48	0.34	0.28
Boron	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	<5.0	5.3	<5.0	<5.0	<5.0	<5.0
Cadmium	1.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	160	22	41	30	33	43	41	47	15	15	21	16	13	11	30	28	31	28	24
Cobalt	22	4.5	9.8	11	11	11	13	13	3.2	3.0	6.8	4.7	3.3	2.5	9.1	7.0	7.5	5.7	5.6
Copper	140	4.6	18	8.8	16	23	23	26	6.5	3.3	6.7	4.5	3.4	2.9	17	18	20	10	5.6
Hexavalent Chromium	8	0.5	0.7	0.4	0.4	0.5	0.5	0.5	0.7	1.0	1.8	1.2	0.5	1.7	<0.2	0.3	0.3	0.5	0.3
Lead	120	2.2	5.7	5.7	6.3	5.8	6.3	6.1	1.4	1.3	2.5	1.9	1.5	2.3	4.0	3.8	5.5	12	3.8
Mercury	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	6.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	100	11	23	15	18	26	24	26	9.4	8.4	12	7.9	8.9	7.0	17	17	19	15	13
Selenium	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	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.075	0.23	0.17	0.19	0.25	0.22	0.25	<0.050	0.059	0.089	<0.050	0.071	<0.050	0.16	0.15	0.16	0.10	0.077
Uranium	23	0.40	0.65	0.61	0.72	0.70	0.68	0.63	0.43	0.36	0.49	0.66	0.29	0.34	0.57	0.79	1.2	0.94	0.52
Vanadium	86	28	55	54	49	59	55	58	17	17	27	25	14	11	44	44	43	31	27
Zinc	340	33	63	44	59	81	68	78	19	17	25	16	24	28	52	45	48	38	30
Semi-VOCs																			
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<0.0071	<0.0071	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0099	<0.0050
Benzo [b,j] fluoranthene	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.062	0.0094
Benzo[a]anthracene	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.027	0.0052
Benzo[a]pyrene	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.038	<0.0050
Benzo[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.040	<0.0050
Benzo[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.016	<0.0050
Chrysene	7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.034	<0.0050
Dibenzo[a,h]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.69	<0.0050	<0.0050	<0.0050	<0.0050	0.0080	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0061	0.062	0.011
Fluorene	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.032	<0.0050
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.047	0.0063
Pyrene	78	<0.0050	<0.0050	<0.0050	<0.0050	0.0064	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0079	<0.0050	<0.0050	0.051	0.0078

Parameter	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS444	VS445	VS446	VS446	VS447	VS447	VS448	VS449	VS450	VS450B	VS451	VS451B	VS452	VS453	VS453	VS454	VS455
		12-Jun-2017	12-Jun-2017	12-Jun-2017	12-Jun-2017	13-Jun-2017	13-Jun-2017	13-Jun-2017	13-Jun-2017	13-Jun-2017	19-Jul-2017	13-Jun-2017	19-Jul-2017	13-Jun-2017	14-Jun-2017	14-Jun-2017	14-Jun-2017	14-Jun-2017
		VS 444	VS 445	VS 446	VS 1446 (Field Duplicate)	VS 447	VS 1447 (Field Duplicate)	VS 448	VS 449	VS 450	VS 450B	VS 451	VS 451B	VS 452	VS453	VS1453 (Field Duplicate)	VS454	VS455
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Excavated	Final	Excavated	Final	Final	Final	Final	Final	Final
Sample Depth		0.22 - 0.32	0.74 - 0.84	1.04 - 1.14	1.04 - 1.14	2.91 - 3.01	2.91 - 3.01	3.31 - 3.41	2.22 - 2.32	NA [5]	0.11 - 0.21	NA [5]	0.63 - 0.73	1.47 - 1.57	1.05 - 1.15	1.05 - 1.15	1.09 - 1.19	1.11 - 1.21
Metals																		
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	1.9	<0.20	0.67	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	<1.0	1.2	1.4	1.6	1.3	1.2	2.0	2.0	**34**	1.3	11	1.8	1.6	<1.0	<1.0	<1.0	<1.0
Barium	390	27	62	92	96	130	120	150	140	130	110	140	120	110	27	28	27	20
Beryllium	4	0.24	0.35	0.42	0.42	0.35	0.32	0.39	0.43	0.69	0.47	0.53	0.49	0.44	<0.20	<0.20	<0.20	<0.20
Boron	120	<5.0	<5.0	<5.0	<5.0	5.1	<5.0	5.4	5.3	7.7	<5.0	16	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	1.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.25	<0.10	0.23	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	160	21	21	27	29	26	23	28	28	20	30	29	31	27	14	15	15	14
Cobalt	22	5.3	6.7	7.2	7.5	7.8	7.0	8.9	9.2	7.8	7.3	9.8	7.6	8.0	3.4	3.7	2.8	3.8
Copper	140	4.8	5.8	20	20	15	14	17	19	30	20	24	22	20	4.7	5.4	3.6	6.2
Hexavalent Chromium	8	0.3	0.4	0.3	0.4	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	0.3	0.4	0.3	0.3	0.3	0.2
Lead	120	3.3	3.8	3.7	3.7	3.8	3.6	4.6	7.3	96	4.4	**210**	4.5	4.1	2.1	2.6	1.7	2.9
Mercury	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.13	<0.050	0.085	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	6.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**12**	<0.50	1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	100	11	9.9	17	17	15	14	17	19	21	18	19	17	17	7.4	8.2	7.9	8.3
Selenium	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.0	<0.50	0.99	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.058	0.091	0.12	0.13	0.14	0.14	0.17	0.18	0.53	0.17	0.35	0.16	0.16	0.058	0.065	<0.050	<0.050
Uranium	23	0.48	0.64	1.1	1.1	0.58	0.52	0.62	0.53	0.74	1.0	0.81	1.1	1.0	0.52	0.55	0.48	0.54
Vanadium	86	25	37	46	46	38	37	40	44	46	50	38	54	44	19	21	13	19
Zinc	340	24	32	42	42	42	40	51	54	280	50	110	48	46	23	27	24	16
Semi-VOCs																		
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.019	<0.014	0.027	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.010	<0.0050	0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0084	<0.0050	0.014	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.012	<0.0050	0.023	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.071	<0.0050	0.022	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.066	<0.0050	0.051	<0.0050	<0.0050	0.0052	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthene	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.55	<0.0050	0.24	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0051	<0.0050	0.38	<0.0050	0.18	<0.0050	<0.0050	0.0073	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.39**	<0.0050	0.18	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.23	<0.0050	0.11	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.21	<0.0050	0.092	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0086	<0.0050	0.35	<0.0050	0.16	<0.0050	<0.0050	0.0068	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.074	<0.0050	0.035	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	0.69	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0057	<0.0050	**0.85**	<0.0050	0.39	<0.0050	<0.0050	0.020	<0.0050	<0.0050	0.0070
Fluorene	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.017	<0.0050	0.028	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.28	<0.0050	0.14	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0059	<0.0050	0.022	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.35	<0.0050	0.24	<0.0050	<0.0050	0.015	<0.0050	<0.0050	<0.0050
Pyrene	78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.010	<0.0050	0.75	<0.0050	0.31	<0.0050	<0.0050	0.016	<0.0050	<0.0050	0.0057

Parameter	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS456	VS457	VS458	VS459	VS460	VS461	VS462	VS463	VS463	VS464	VS465	VS466	VS467	VS468	VS469	VS470	VS471	VS471
		14-Jun-2017	14-Jun-2017	14-Jun-2017	14-Jun-2017	14-Jun-2017	14-Jun-2017	15-Jun-2017	15-Jun-2017	15-Jun-2017	15-Jun-2017	20-Jun-2017	20-Jun-2017	20-Jun-2017	20-Jun-2017	20-Jun-2017	22-Jun-2017	22-Jun-2017	22-Jun-2017
		VS456	VS457	VS458	VS459	VS460	VS461	VS462	VS463	VS1463 (Field Duplicate)	VS464	VS465	VS466	VS467	VS468	VS469	VS 470	VS 471	VS 1471 (Field Duplicate)
Sample Status		Final [3]	Final [3]	Final	Final	Final	Final	Final	Final [3]	Final [3]	Final	Final	Final	Final	Final	Final	Final [3]	Final [3]	Final [3]
Sample Depth		2 - 2.1	1.49 - 1.59	1.27 - 1.37	1.47 - 1.57	2.02 - 2.12	2.35 - 2.45	2.05 - 2.15	1.26 - 1.36	1.26 - 1.36	1.09 - 1.19	2.73 - 2.83	1.28 - 1.38	0.8 - 0.9	0.95 - 1.05	1.42 - 1.52	0.02 - 0.12	1.2 - 1.3	1.2 - 1.3
Metals																			
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	1.7	<1.0	1.9	<1.0	2.0	1.7	1.6	1.4	1.3	1.0	1.2	2.2	<1.0	<1.0	1.0	2.6	<1.0	1.1
Barium	390	370	380	140	140	150	110	130	**400**	370	29	97	86	33	12	39	81	**430**	**410**
Beryllium	4	1.0	0.85	0.52	0.48	0.52	0.38	0.41	0.94	0.93	0.28	0.42	0.39	0.24	<0.20	0.25	0.48	0.92	0.84
Boron	120	5.4	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	1.2	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	0.26	0.33	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.16	0.13
Chromium	160	120	120	37	37	34	27	31	110	100	22	27	41	24	13	22	65	130	110
Cobalt	22	**26**	**27**	8.5	7.8	11	7.3	9.5	**28**	**26**	5.1	6.7	11	3.7	2.8	4.4	**28**	**31**	**27**
Copper	140	60	64	21	21	24	19	18	55	52	9.9	18	13	3.9	5.4	9.8	22	63	58
Hexavalent Chromium	8	0.6	0.4	0.6	0.5	0.4	0.4	<0.2	1.0	0.9	0.3	<0.2	0.3	0.3	0.2	0.4	0.5	0.7	0.5
Lead	120	9.9	7.0	4.2	4.3	4.6	3.8	4.1	7.3	6.9	2.2	3.7	6.2	5.8	2.1	2.3	8.5	6.8	6.8
Mercury	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	6.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	0.56	<0.50	<0.50	0.55	<0.50	<0.50	<0.50	0.67	<0.50	<0.50
Nickel	100	66	70	22	22	22	16	19	65	61	11	16	17	9.9	6.8	11	27	71	67
Selenium	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	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.53	0.51	0.18	0.16	0.19	0.15	0.14	0.49	0.46	0.064	0.13	0.15	0.10	<0.050	0.082	0.18	0.50	0.48
Uranium	23	1.9	1.5	0.86	1.4	0.70	0.69	0.57	2.4	2.3	0.86	0.97	2.3	0.80	0.80	1.2	1.4	1.6	1.5
Vanadium	86	**120**	**120**	50	46	55	44	47	**120**	**110**	31	40	45	20	19	27	56	**130**	**120**
Zinc	340	140	140	56	62	60	45	51	140	130	22	42	47	45	17	25	91	160	150
Semi-VOCs																			
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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] fluoranthene	--	0.0054	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.020	0.015	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.014	0.0075	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.017	0.0075	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0091	0.0085	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0084	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.014	0.0070	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.69	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.032	0.012	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0078	0.0080	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.017	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.025	0.011	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS472	VS473	VS474	VS475	VS476	VS477	VS478	VS479	VS480	VS480	VS481	VS482	VS483	VS484	VS484	VS485	VS486
		22-Jun-2017	22-Jun-2017	22-Jun-2017	22-Jun-2017	22-Jun-2017	22-Jun-2017	22-Jun-2017	23-Jun-2017	23-Jun-2017	23-Jun-2017	23-Jun-2017	27-Jun-2017	27-Jun-2017 [2]	27-Jun-2017	27-Jun-2017	28-Jun-2017	28-Jun-2017
		VS 472	VS 473	VS 474	VS 475	VS 476	VS 477	VS 478	VS479	VS480	VS1480 (Field Duplicate)	VS481	VS 482	VS 483	VS 484	VS 1484 (Field Duplicate)	VS 485	VS 486
Sample Status		Final	Final [3]	Final [3]	Final	Final	Final	Final	Final	Final [3]	Final [3]	Final [3]	Final	Final	Final	Final	Final	Final
Sample Depth		1.24 - 1.34	2.19 - 2.29	1.53 - 1.63	1.6 - 1.7	1.2 - 1.3	0.54 - 0.64	1.26 - 1.36	1.29 - 1.39	1.35 - 1.45	1.35 - 1.45	1.25 - 1.35	2 - 2.1	1.95 - 2.05	1.93 - 2.03	1.93 - 2.03	1.76 - 1.86	1.26 - 1.36
Metals																		
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.22	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	<1.0	1.4	1.6	<1.0	2.1	<1.0	<1.0	<1.0	1.4	1.3	2.0	<1.0	3.3	<1.0	<1.0	1.7	<1.0
Barium	390	27	390	**580**	25	180	23	22	20	**450**	**450**	**650**	19	32	26	31	110	38
Beryllium	4	0.22	1.1	1.1	0.29	0.64	<0.20	<0.20	<0.20	1.1	1.0	1.1	0.20	0.21	0.21	0.22	0.50	0.27
Boron	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	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	1.2	<0.10	0.10	0.14	<0.10	<0.10	0.16	<0.10	<0.10	0.17	0.15	0.12	<0.10	0.12	<0.10	<0.10	<0.10	<0.10
Chromium	160	20	110	110	20	37	13	13	12	130	120	120	16	15	17	18	34	22
Cobalt	22	3.6	**24**	**41**	5.5	9.9	2.9	3.3	3.6	**34**	**35**	**31**	3.7	3.6	5.3	5.9	9.4	5.3
Copper	140	6.1	53	47	4.6	20	5.3	3.3	3.6	71	71	37	4.1	6.2	5.4	6.6	18	8.2
Hexavalent Chromium	8	<0.2	0.9	0.9	0.4	0.5	<0.2	<0.2	<0.2	0.8	0.9	0.4	0.4	<0.2	<0.2	<0.2	0.4	0.3
Lead	120	3.2	8.0	10	2.6	5.4	1.8	6.1	2.1	7.7	7.6	9.8	1.7	19	1.7	1.7	7.2	2.6
Mercury	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.079	<0.050	<0.050	<0.050	<0.050
Molybdenum	6.9	<0.50	<0.50	0.71	<0.50	<0.50	<0.50	<0.50	<0.50	0.74	0.79	0.57	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	100	10	61	62	11	21	7.2	7.7	7.1	75	74	68	8.2	8.3	10	12	19	11
Selenium	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	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.078	0.53	0.57	0.066	0.22	0.053	<0.050	<0.050	0.56	0.53	0.46	<0.050	0.081	0.056	0.071	0.16	0.065
Uranium	23	0.73	1.7	1.4	0.47	0.83	0.43	0.42	0.41	2.3	2.2	1.4	0.45	0.30	0.40	0.34	0.65	0.59
Vanadium	86	24	**120**	**120**	26	53	14	17	17	**130**	**130**	**110**	21	19	24	24	47	29
Zinc	340	24	140	170	27	62	29	35	16	150	150	210	17	32	19	23	50	25
Semi-VOCs																		
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.018	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0095	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0084	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.047	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.034	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.079	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthene	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.33	<0.0050	<0.0050	0.0080	<0.0050
Benzo[a]anthracene	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.21	<0.0050	<0.0050	0.0055	<0.0050
Benzo[a]pyrene	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.18	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.15	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.11	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.21	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.038	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	0.69	<0.0050	0.0090	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.51	<0.0050	<0.0050	0.0098	<0.0050
Fluorene	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.040	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.17	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.015	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.33	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	78	<0.0050	0.0064	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.39	<0.0050	<0.0050	0.0092	<0.0050

Parameter	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS486	VS487	VS488	VS489	VS490	VS491	VS492	VS493	VS494	VS495	VS496	VS496	VS497	VS498	VS499	VS500	VS500	VS501
		28-Jun-2017	28-Jun-2017	04-Jul-2017	04-Jul-2017 [2]	04-Jul-2017	04-Jul-2017	04-Jul-2017	04-Jul-2017	04-Jul-2017	04-Jul-2017	06-Jul-2017	06-Jul-2017	06-Jul-2017	06-Jul-2017	10-Jul-2017	10-Jul-2017	10-Jul-2017	10-Jul-2017
		VS 1486 (Field Duplicate)	VS 487	VS 488	VS 489	VS 490	VS 491	VS 492	VS 493	VS 494	VS 495	VS 496	VS 1496 (Field Duplicate)	VS 497	VS 498	VS 499	VS 500	VS 1500 (Field Duplicate)	VS 501
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final [3]	Final	Final	Final	Final	Final [3]	Final	Final	Final	Final	Final
Sample Depth		1.26 - 1.36	1.16 - 1.26	1.64 - 1.74	2.04 - 2.14	0.89 - 0.99	0.57 - 0.67	1.55 - 1.65	1.35 - 1.45	1.23 - 1.33	2.6 - 2.7	2.27 - 2.37	2.27 - 2.37	2.6 - 2.7	2.64 - 2.74	1.61 - 1.71	1.62 - 1.72	1.62 - 1.72	2.09 - 2.19
Metals																			
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	<1.0	<1.0	1.1	1.7	<1.0	<1.0	<1.0	<1.0	<1.0
Barium	390	34	28	22	22	31	23	27	**760**	29	30	110	120	**440**	42	27	38	37	56
Beryllium	4	0.25	0.23	<0.20	0.23	0.23	<0.20	<0.20	1.2	0.26	0.23	0.44	0.46	0.99	0.29	<0.20	0.21	0.24	0.33
Boron	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	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	1.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.15	<0.10	<0.10	<0.10	<0.10	0.14	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	160	20	16	13	13	15	14	12	130	22	19	33	34	110	25	13	16	19	21
Cobalt	22	4.3	4.1	2.6	3.6	5.0	2.5	2.5	**88**	6.7	4.3	6.9	7.8	**33**	4.8	4.3	4.9	5.7	4.1
Copper	140	7.0	4.8	3.1	4.4	5.4	3.0	4.1	52	6.0	7.0	16	16	54	9.1	4.2	5.8	6.8	8.0
Hexavalent Chromium	8	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	0.4	0.4	0.4	0.4	<0.2	<0.2	0.2	<0.2
Lead	120	2.2	1.7	1.6	1.4	7.0	1.4	1.5	15	3.0	2.5	4.2	4.3	10	3.8	1.5	1.7	1.9	3.2
Mercury	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.056	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	6.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.73	<0.50	<0.50	<0.50	<0.50	0.91	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	100	9.6	8.9	6.4	8.3	9.4	6.3	7.2	68	9.5	10	15	17	57	12	8.4	10	11	9.8
Selenium	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	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.057	<0.050	<0.050	<0.050	0.054	<0.050	<0.050	0.55	0.081	0.058	0.16	0.17	0.48	0.093	<0.050	0.066	0.069	0.12
Uranium	23	0.52	0.49	0.48	0.39	0.48	0.50	0.36	1.9	0.68	0.55	0.91	0.97	1.3	0.60	0.40	0.39	0.46	0.78
Vanadium	86	23	24	20	16	22	23	15	**130**	29	21	40	40	**120**	26	18	21	27	32
Zinc	340	23	19	15	14	22	11	17	160	42	31	48	49	140	26	16	22	23	29
Semi-VOCs																			
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0057	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.011	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthene	--	<0.0050	<0.0050	<0.0050	<0.0050	0.0075	<0.0050	<0.0050	0.016	<0.0050	0.024	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.011	<0.0050	0.021	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	0.3	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	<0.0050	<0.0050	0.0072	<0.0050	0.015	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0072	<0.0050	0.0094	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0083	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0099	<0.0050	0.021	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0059	<0.0050	0.0068	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	0.69	<0.0050	<0.0050	<0.0050	<0.0050	0.0096	<0.0050	<0.0050	0.024	<0.0050	0.053	<0.0050	<0.0050	0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0052	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0085	<0.0050	0.0088	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.011	<0.0050	0.029	<0.0050	<0.0050	0.0060	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	78	<0.0050	<0.0050	<0.0050	<0.0050	0.0069	<0.0050	<0.0050	0.017	<0.0050	0.035	<0.0050	<0.0050	0.0078	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS502	VS503	VS504	VS505	VS506	VS507	VS507	VS508	VS509	VS510	VS511	VS512	VS513	VS514	VS514	VS515	VS516	VS517	VS518
		10-Jul-2017	10-Jul-2017	10-Jul-2017	11-Jul-2017	11-Jul-2017	13-Jul-2017	13-Jul-2017	13-Jul-2017	13-Jul-2017	13-Jul-2017	13-Jul-2017	13-Jul-2017	13-Jul-2017	17-Jul-2017	17-Jul-2017	17-Jul-2017	17-Jul-2017	19-Jul-2017	19-Jul-2017
		VS 502	VS 503	VS 504	VS 505	VS 506	VS 507	VS 1507 (Field Duplicate)	VS 508	VS 509	VS 510	VS 511	VS 512	VS 513	VS 514	VS 1514 (Field Duplicate)	VS 515	VS 516	VS 517	VS 518
Sample Status		Final [3]	Final [3]	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth		3 - 3.1	1.49 - 1.59	0.44 - 0.54	1.08 - 1.18	1.17 - 1.27	1.59 - 1.69	1.59 - 1.69	1.41 - 1.51	1.41 - 1.51	1.5 - 1.6	2.53 - 2.63	1.73 - 1.83	3.52 - 3.62	4.35 - 4.45	4.35 - 4.45	5.02 - 5.12	5.91 - 6.01	1.26 - 1.36	1.77 - 1.87
Metals																				
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	1.4	1.3	1.6	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.9	<1.0	2.0	<1.0	<1.0	<1.0	2.4	<1.0	<1.0
Barium	390	340	280	150	97	32	33	43	36	18	22	190	28	180	30	29	29	170	27	16
Beryllium	4	0.87	0.92	0.60	0.48	0.20	0.22	0.27	0.31	<0.20	<0.20	0.73	0.21	0.65	0.26	0.24	0.23	0.66	0.26	<0.20
Boron	120	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.3	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	<5.0	<5.0
Cadmium	1.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	160	79	89	37	30	17	19	20	23	13	11	44	20	41	19	19	18	41	16	7.7
Cobalt	22	22	20	11	7.3	4.4	5.0	5.3	5.5	2.6	2.3	14	4.9	13	4.0	4.2	4.9	11	4.7	2.1
Copper	140	38	32	22	15	7.0	5.9	7.7	7.3	2.7	3.0	27	5.6	25	6.8	7.4	4.9	24	5.5	1.4
Hexavalent Chromium	8	0.2	<0.2	0.3	0.4	<0.2	0.3	<0.2	<0.2	0.4	<0.2	<0.2	0.2	<0.2	0.3	0.2	<0.2	<0.2	0.2	<0.2
Lead	120	7.4	7.8	5.5	4.0	1.6	2.3	2.5	2.4	1.9	1.5	8.2	2.3	7.6	1.6	1.6	1.8	5.4	2.3	1.2
Mercury	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	6.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	100	42	43	22	15	10	10	12	12	6.6	6.5	27	10	25	10	11	10	24	9.1	4.9
Selenium	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	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.41	0.43	0.19	0.14	<0.050	0.070	0.077	0.096	<0.050	<0.050	0.29	0.065	0.24	0.065	0.081	0.057	0.22	0.087	<0.050
Uranium	23	0.97	1.2	0.81	0.79	0.42	0.57	0.55	0.66	0.40	0.33	0.85	0.50	0.82	0.34	0.36	0.44	0.86	0.73	0.35
Vanadium	86	**90**	**90**	54	46	23	27	27	27	17	11	65	25	58	22	23	23	58	23	9.4
Zinc	340	100	100	62	44	20	21	26	29	16	24	75	21	71	24	25	21	63	25	18
Semi-VOCs																				
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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] fluoranthene	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.69	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS519	VS520	VS521	VS522	VS523	VS524	VS525	VS526	VS526	VS527	VS528	VS529	VS530	VS531	VS532	VS533	VS534	VS535
		19-Jul-2017	19-Jul-2017	19-Jul-2017	19-Jul-2017	21-Jul-2017	21-Jul-2017	21-Jul-2017	27-Jul-2017	27-Jul-2017	27-Jul-2017	27-Jul-2017	27-Jul-2017	27-Jul-2017	27-Jul-2017	27-Jul-2017	01-Aug-2017	01-Aug-2017	01-Aug-2017
		VS 519	VS 520	VS 521	VS 522	VS 523	VS 524	VS 525	VS 526	VS 1526 (Field Duplicate)	VS 527	VS 528	VS 529	VS 530	VS 531	VS 532	VS 533	VS 534	VS 535
Sample Status		Final	Final	Final	Final [3]	Final	Final	Final	Final	Final	Final	Final [3]	Final [3]	Final [3]	Final [3]	Final [3]	Final	Final	Final
Sample Depth		0.65 - 0.75	1 - 1.1	1.34 - 1.44	#N/A	6.13 - 6.23	1.54 - 1.64	3.04 - 3.14	0.59 - 0.69	0.59 - 0.69	0.59 - 0.69	0.76 - 0.86	1.06 - 1.16	2.09 - 2.19	0.91 - 1.01	1.42 - 1.52	3.83 - 3.93	4.35 - 4.45	6.2 - 6.3
Metals																			
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	1.6	<1.0	<1.0	2.0	2.4	1.2	1.6	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	1.0	1.1	2.0	2.3
Barium	390	59	21	270	**680**	220	160	130	26	29	14	290	380	360	**440**	**400**	160	190	200
Beryllium	4	0.47	<0.20	0.64	1.2	0.78	0.55	0.57	0.22	0.23	<0.20	0.75	0.87	0.94	1.0	1.1	0.55	0.74	0.67
Boron	120	<5.0	<5.0	<5.0	7.5	5.2	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.3
Cadmium	1.2	<0.10	<0.10	<0.10	0.15	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	<0.10	0.13	<0.10	<0.10	<0.10	<0.10
Chromium	160	42	19	69	130	48	40	36	16	18	9.8	78	110	100	130	120	36	41	45
Cobalt	22	9.2	3.7	20	**48**	16	9.7	7.6	4.4	4.8	3.2	19	**27**	**23**	**30**	**32**	9.5	13	13
Copper	140	17	6.9	31	42	28	23	22	6.7	7.4	4.2	49	59	54	66	59	23	25	26
Hexavalent Chromium	8	0.5	<0.2	0.8	0.3	<0.2	0.4	0.2	0.2	0.2	<0.2	0.6	0.5	0.5	0.6	0.9	0.5	0.6	0.2
Lead	120	8.5	2.1	5.9	11	6.9	4.7	5.2	2.2	2.2	1.5	5.8	6.9	7.4	7.8	8.0	4.6	6.1	6.1
Mercury	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	6.9	<0.50	<0.50	<0.50	0.93	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.54	<0.50	<0.50	<0.50
Nickel	100	22	9.6	34	75	30	23	20	8.7	9.2	6.2	48	67	56	73	64	21	24	28
Selenium	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	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.15	0.072	0.37	0.57	0.28	0.21	0.17	0.063	0.081	<0.050	0.35	0.49	0.48	0.50	0.48	0.19	0.26	0.27
Uranium	23	1.6	0.49	1.4	1.7	0.85	0.94	1.1	0.62	0.55	0.33	1.5	1.1	1.4	2.2	2.9	0.82	0.84	0.63
Vanadium	86	42	21	68	**110**	66	55	51	20	22	12	**88**	**120**	**110**	**130**	**110**	47	59	62
Zinc	340	50	26	86	230	82	59	54	17	21	10	95	140	130	140	130	60	69	80
Semi-VOCs																			
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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] fluoranthene	--	0.0087	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7	0.0071	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.69	0.0087	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	0.0065	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	78	0.0076	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS535	VS536	VS537	VS538	VS539	VS540	VS541	VS542	VS542	VS543	VS544	VS545	VS546	VS547	VS548	VS549	VS550
		01-Aug-2017	01-Aug-2017	01-Aug-2017	01-Aug-2017	01-Aug-2017	02-Aug-2017	02-Aug-2017	02-Aug-2017	02-Aug-2017	02-Aug-2017	02-Aug-2017	02-Aug-2017	02-Aug-2017	03-Aug-2017	03-Aug-2017	03-Aug-2017	03-Aug-2017
		VS 1535 (Field Duplicate)	VS 536	VS 537	VS 538	VS 539	VS 540	VS 541	VS 542	VS 1542 (Field Duplicate)	VS 543	VS 544	VS 545	VS 546	VS 547	VS 548	VS 549	VS 550
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Sample Depth		6.2 - 6.3	6.42 - 6.52	6.26 - 6.36	5.91 - 6.01	5.44 - 5.54	5.68 - 5.78	5.8 - 5.9	5.38 - 5.48	5.38 - 5.48	5.18 - 5.28	4.24 - 4.34	4.45 - 4.55	4.13 - 4.23	3.05 - 3.15	1.82 - 1.92	2.02 - 2.12	2.45 - 2.55
Metals																		
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	1.7	2.2	2.2	2.0	2.0	2.5	1.1	1.0	1.1	2.2	1.1	1.9	2.8	2.6	1.8	1.4	1.2
Barium	390	190	210	190	190	210	210	170	140	130	200	30	210	210	200	180	130	96
Beryllium	4	0.61	0.73	0.62	0.59	0.68	0.71	0.62	0.49	0.49	0.68	0.31	0.64	0.66	0.73	0.70	0.54	0.44
Boron	120	<5.0	5.3	<5.0	<5.0	5.3	<5.0	<5.0	<5.0	<5.0	5.4	<5.0	5.2	5.1	6.3	<5.0	<5.0	<5.0
Cadmium	1.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.13	<0.10	0.11	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	160	44	50	44	42	51	48	45	31	30	48	24	46	47	44	41	35	30
Cobalt	22	12	14	12	12	14	14	9.7	9.8	10	14	5.3	16	15	13	12	10	8.0
Copper	140	24	28	27	26	24	27	22	13	13	27	7.6	27	26	28	22	24	14
Hexavalent Chromium	8	0.4	0.4	0.3	<0.2	0.7	0.4	0.4	0.3	0.2	0.2	0.4	0.6	0.4	0.4	0.5	0.4	0.4
Lead	120	5.7	6.9	5.8	5.9	6.9	6.4	5.8	4.6	4.3	7.0	3.5	6.2	6.1	7.8	5.8	5.1	4.3
Mercury	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--	--	--	--
Molybdenum	6.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	100	27	30	27	26	29	28	24	17	16	30	12	30	31	27	26	22	16
Selenium	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	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.27	0.33	0.25	0.26	0.27	0.29	0.22	0.19	0.18	0.27	0.098	0.25	0.24	0.28	0.20	0.18	0.15
Uranium	23	0.59	0.78	0.83	0.56	0.72	0.69	1.3	0.86	0.75	0.77	0.56	0.64	0.66	0.94	0.86	1.0	0.79
Vanadium	86	59	67	61	58	66	64	49	42	42	64	38	63	65	63	57	57	44
Zinc	340	76	85	74	70	85	82	79	51	50	82	61	79	82	74	69	56	41
Semi-VOCs																		
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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] fluoranthene	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.028	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.018	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.020	<0.0050	<0.0050	<0.0050
Benzo[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.010	<0.0050	<0.0050	<0.0050
Benzo[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0096	<0.0050	<0.0050	<0.0050
Chrysene	7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.015	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0051	<0.0050	<0.0050	<0.0050
Fluoranthene	0.69	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.022	<0.0050	<0.0050	<0.0050
Fluorene	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.012	<0.0050	<0.0050	<0.0050
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.019	<0.0050	<0.0050	<0.0050

Parameter	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS551	VS552	VS553	VS554	VS555	VS555	VS556	VS557	VS558	VS559	VS560	VS561	VS562	VS563	VS564	VS565	VS565
		03-Aug-2017	04-Aug-2017	04-Aug-2017	04-Aug-2017	04-Aug-2017	04-Aug-2017	04-Aug-2017	08-Aug-2017	08-Aug-2017	08-Aug-2017	08-Aug-2017	08-Aug-2017	09-Aug-2017	09-Aug-2017	09-Aug-2017	09-Aug-2017	09-Aug-2017
		VS 551	VS 552	VS 553	VS 554	VS 555	VS1555 (Field Duplicate)	VS 556	VS 557	VS 558	VS 559	VS 560	VS 561	VS 562	VS 563	VS 564	VS 565	VS 1565 (Field Duplicate)
Sample Status		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final[3]	Final	Final	Final	Final
Sample Depth		2.21 - 2.31	1.8 - 1.9	2.21 - 2.31	1.59 - 1.69	1.38 - 1.48	1.38 - 1.48	1.6 - 1.7	2.76 - 2.86	1.61 - 1.71	1.71 - 1.81	2.3 - 2.4	2.3 - 2.4	1.76 - 1.86	1.77 - 1.87	3.15 - 3.25	2.15 - 2.25	2.15 - 2.25
Metals																		
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	1.1	1.0	1.7	1.3	<1.0	<1.0	<1.0	1.7	1.9	<1.0	2.5	2.5	1.4	1.1	1.9	2.1	1.6
Barium	390	150	49	160	160	25	26	78	140	120	26	190	110	250	66	68	150	140
Beryllium	4	0.51	0.28	0.48	0.53	<0.20	<0.20	0.32	0.43	0.56	<0.20	0.60	0.48	0.78	0.35	0.44	0.58	0.53
Boron	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	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	1.2	<0.10	<0.10	<0.10	0.16	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.16	<0.10	<0.10	0.12	<0.10	<0.10
Chromium	160	37	23	36	38	15	15	23	29	37	13	40	33	69	25	29	39	35
Cobalt	22	9.2	6.5	10	11	3.2	3.3	5.6	9.1	9.4	3.3	13	9.9	16	6.0	8.1	9.7	8.5
Copper	140	18	6.8	18	14	2.9	2.9	8.3	17	20	3.7	24	13	32	9.7	5.7	20	19
Hexavalent Chromium	8	0.6	0.5	0.5	0.7	<0.2	<0.2	0.3	<0.2	0.3	<0.2	0.3	<0.2	0.8	0.7	<0.2	0.7	0.5
Lead	120	4.4	2.9	4.4	4.9	1.6	1.7	3.0	4.6	5.1	1.3	5.2	6.6	6.4	8.3	6.8	5.3	4.7
Mercury	0.27	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--
Molybdenum	6.9	<0.50	<0.50	0.66	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.53	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	100	21	11	21	19	8.6	8.6	12	17	20	8.0	26	18	36	12	14	22	19
Selenium	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.52	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.18	0.085	0.17	0.20	0.052	0.063	0.10	0.16	0.17	0.053	0.23	0.16	0.36	0.13	0.12	0.20	0.17
Uranium	23	0.92	0.62	0.74	0.88	0.39	0.36	0.68	0.55	0.95	0.36	0.60	1.4	1.4	0.63	1.1	0.93	0.79
Vanadium	86	49	25	47	45	17	16	32	48	57	17	60	46	**87**	35	43	51	47
Zinc	340	58	36	64	67	27	29	34	51	51	21	71	60	95	36	68	54	52
Semi-VOCs																		
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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] fluoranthene	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.010	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.019	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0073	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0088	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0055	<0.0050	<0.0050	<0.0050
Benzo[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0099	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.029	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0067	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.69	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.012	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.013	<0.0050	<0.0050	<0.0050
Fluorene	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.080	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.012	<0.0050	<0.0050	<0.0050

Parameter	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS566	VS567	VS568	VS569	VS570	VS571	VS572	VS573	VS574	VS575	VS575	VS576	VS577	VS578	VS579	VS580	VS581	VS582
		09-Aug-2017	09-Aug-2017	09-Aug-2017	09-Aug-2017	10-Aug-2017	10-Aug-2017	10-Aug-2017	10-Aug-2017	10-Aug-2017	10-Aug-2017	10-Aug-2017	10-Aug-2017	10-Aug-2017	10-Aug-2017	10-Aug-2017	10-Aug-2017	10-Aug-2017	10-Aug-2017
		VS 566	VS 567	VS 568	VS 569	VS 570	VS 571	VS 572	VS 573	VS 574	VS 575	VS 1575 (Field Duplicate)	VS 576	VS 577	VS 578	VS 759	VS 580	VS 581	VS 582
Sample Status		Final	Final [3]	Final	Final	Final [3]	Final	Final [3]	Final [3]	Final	Final	Final	Final	Final [3]	Final	Final	Final [3]	Final	Final [3]
Sample Depth		2.24 - 2.34	1.76 - 1.86	3.09 - 3.19	1.67 - 1.77	1.42 - 1.52	2.46 - 2.56	2.53 - 2.63	1.14 - 1.24	2.38 - 2.48	0.84 - 0.94	0.84 - 0.94	0.91 - 1.01	1.58 - 1.68	1.08 - 1.18	0.75 - 0.85	1.58 - 1.68	1.1 - 1.2	3.69 - 3.79
Metals																			
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	<1.0	1.1	2.8	1.6	1.2	1.2	1.2	1.3	1.5	<1.0	<1.0	<1.0	1.3	1.1	<1.0	1.3	1.1	1.1
Barium	390	310	380	220	120	370	280	340	**470**	40	29	28	31	**410**	29	22	**420**	140	330
Beryllium	4	0.73	0.99	0.74	0.46	1.0	0.72	0.87	1.4	0.22	<0.20	<0.20	0.24	1.2	0.26	0.21	1.4	0.53	0.73
Boron	120	<5.0	<5.0	5.8	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	1.2	<0.10	0.12	<0.10	<0.10	<0.10	<0.10	<0.10	0.14	<0.10	<0.10	<0.10	<0.10	0.14	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	160	68	110	47	30	110	66	100	120	15	17	18	17	120	17	13	130	42	78
Cobalt	22	18	**27**	16	7.1	**23**	17	21	**36**	3.5	3.7	3.8	4.2	**31**	4.8	3.8	**29**	11	20
Copper	140	37	62	28	18	59	35	57	59	6.1	5.4	5.3	7.3	58	7.5	4.7	65	26	43
Hexavalent Chromium	8	0.5	0.5	0.7	0.5	0.8	0.5	0.4	0.6	0.3	0.2	0.3	0.4	0.5	0.3	0.2	0.4	0.5	0.8
Lead	120	5.9	7.4	6.6	4.2	8.6	5.7	6.3	9.0	30	2.2	2.2	3.5	8.3	4.0	3.0	7.8	4.3	5.6
Mercury	0.27	--	--	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	6.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.67	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	100	41	62	30	18	60	39	57	65	8.9	8.7	8.3	9.7	65	11	7.2	73	31	47
Selenium	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	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.41	0.46	0.26	0.18	0.45	0.34	0.44	0.54	0.064	<0.050	0.052	<0.050	0.51	0.072	<0.050	0.49	0.21	0.42
Uranium	23	1.0	1.5	0.94	0.68	2.3	1.3	2.0	2.5	0.41	0.87	0.89	0.71	1.9	0.63	0.54	2.8	2.0	0.79
Vanadium	86	85	**120**	67	46	**110**	80	**100**	**120**	18	22	23	22	**110**	21	16	**120**	55	**92**
Zinc	340	110	140	82	50	130	96	130	150	40	18	18	20	140	21	13	140	50	110
Semi-VOCs																			
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0082	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.012	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.029	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthene	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.24	<0.0050	<0.0050	<0.0050	0.014	0.010	0.0075	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.18	<0.0050	<0.0050	<0.0050	0.0075	<0.0050	0.0052	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.15	<0.0050	<0.0050	<0.0050	0.0075	0.0058	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.087	<0.0050	<0.0050	<0.0050	0.0067	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.082	<0.0050	<0.0050	<0.0050	0.0067	<0.0050	0.0052	<0.0050	<0.0050	<0.0050
Chrysene	7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.15	<0.0050	<0.0050	<0.0050	0.0060	0.0064	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.026	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	0.69	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.34	<0.0050	<0.0050	0.0059	0.014	0.013	0.0085	<0.0050	<0.0050	<0.0050
Fluorene	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.011	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.11	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.12	<0.0050	<0.0050	<0.0050	0.0067	0.0069	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.31	<0.0050	<0.0050	<0.0050	0.013	0.0096	0.0075	<0.0050	<0.0050	<0.0050

Parameter	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS583	VS584	VS585	VS585	VS587	VS588	VS589	VS590	VS591	VS592	VS593	VS594	VS595	VS595	VS596	VS597	VS598
		11-Aug-2017	11-Aug-2017	11-Aug-2017	11-Aug-2017	11-Aug-2017	11-Aug-2017	12-Aug-2017	12-Aug-2017	12-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017
		VS 583	VS 584	VS 585	VS 1585 (Field Duplicate)	VS 587	VS 588	VS 589	VS 590	VS 591	VS 592	VS 593	VS 594	VS 595	VS 1595 (Field Duplicate)	VS 596	VS 597	VS 598
Sample Status		Final [3]	Final [3]	Final [3]	Final [3]	Final	Final [3]	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final [3]
Sample Depth		2.79 - 2.89	2.06 - 2.16	1.34 - 1.44	1.34 - 1.44	3.32 - 3.42	1.12 - 1.22	2.05 - 2.15	1.61 - 1.71	3.01 - 3.11	0.16 - 0.26	0.4 - 0.5	0.48 - 0.58	0.6 - 0.7	0.6 - 0.7	1.09 - 1.19	1.12 - 1.22	3.73 - 3.83
Metals																		
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	<1.0	<1.0	<1.0	1.2	1.4	1.0	2.2	1.9	2.1	1.3	<1.0	<1.0	<1.0	1.0	2.0	<1.0	1.1
Barium	390	390	360	**400**	**400**	140	360	210	190	160	27	28	30	18	20	230	120	300
Beryllium	4	0.76	0.87	0.90	0.84	0.41	0.86	0.73	0.62	0.50	0.22	0.23	<0.20	<0.20	<0.20	0.59	0.34	0.65
Boron	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	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	1.2	<0.10	<0.10	0.12	0.12	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.11
Chromium	160	96	100	120	120	30	110	49	42	35	16	17	15	10	11	66	38	70
Cobalt	22	**25**	**26**	**27**	**29**	9.2	**24**	17	14	11	4.6	4.3	4.3	3.0	3.6	16	11	19
Copper	140	50	57	60	59	18	59	29	25	22	6.4	6.7	5.9	3.7	4.1	25	12	39
Hexavalent Chromium	8	0.4	0.5	0.5	0.5	0.2	0.4	0.3	0.3	0.2	<0.2	0.3	0.3	<0.2	0.2	0.3	<0.2	0.3
Lead	120	6.5	7.0	7.0	7.0	4.4	7.4	6.8	6.1	5.1	9.6	3.3	2.3	4.5	5.6	9.5	4.6	6.1
Mercury	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	6.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.61	0.50	<0.50
Nickel	100	59	60	68	66	20	62	31	28	22	9.4	9.2	8.6	6.3	6.5	35	20	45
Selenium	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	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.54	0.47	0.56	0.55	0.19	0.45	0.28	0.23	0.21	0.064	0.050	0.060	<0.050	0.051	0.26	0.13	0.38
Uranium	23	0.94	1.3	1.7	1.6	0.61	1.7	0.85	0.75	0.66	0.62	0.94	0.62	0.54	0.58	1.4	0.97	1.0
Vanadium	86	**110**	**110**	**120**	**120**	48	**110**	67	59	53	19	22	15	14	15	68	57	**90**
Zinc	340	140	130	150	140	53	130	84	79	62	24	19	13	16	18	90	45	110
Semi-VOCs																		
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.012	<0.0050	<0.0050
Acenaphthylene	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.028	<0.0050	<0.0050
Benzo [b,j] fluoranthene	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0061	<0.0050	<0.0050	<0.0050	<0.0050	0.047	<0.0050	<0.0050
Benzo[a]anthracene	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.050	0.0050	<0.0050
Benzo[a]pyrene	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.031	<0.0050	<0.0050
Benzo[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.014	<0.0050	<0.0050
Benzo[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.016	<0.0050	<0.0050
Chrysene	7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.039	0.0050	<0.0050
Dibenzo[a,h]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0054	<0.0050	<0.0050
Fluoranthene	0.69	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.14	0.010	<0.0050
Fluorene	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.014	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.019	<0.0050	<0.0050
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.11	<0.0050	<0.0050
Pyrene	78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.10	0.0075	<0.0050

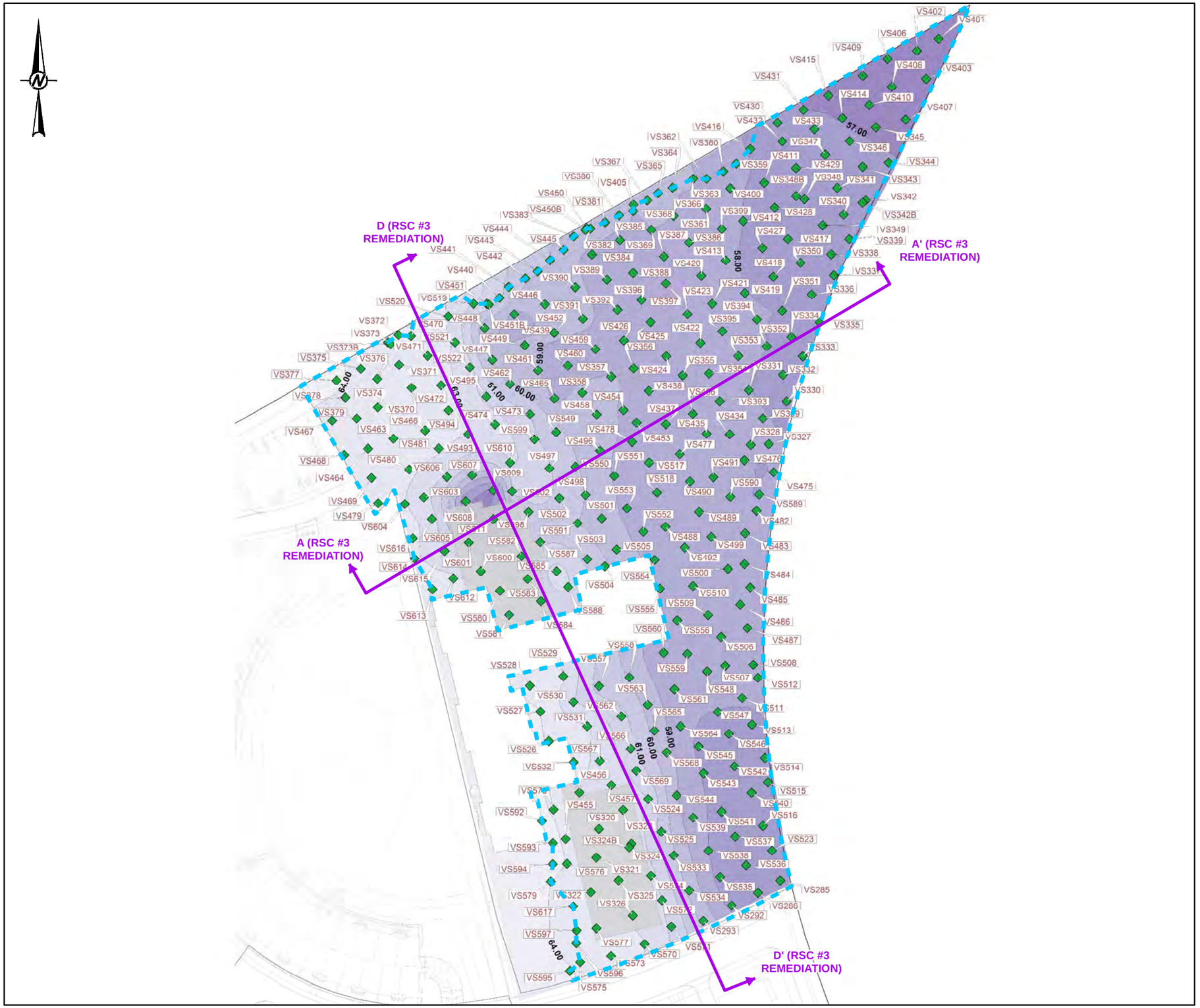
Parameter	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS599	VS600	VS601	VS602	VS603	VS604	VS605	VS605	VS606	VS607	VS608	VS609	VS610	VS611	VS612	VS613	VS614	VS615
		14-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	23-Aug-2017	23-Aug-2017	23-Aug-2017	23-Aug-2017
		VS 599	VS 600	VS 601	VS 602	VS 603	VS 604	VS 605	VS 1605 (Field Duplicate)	VS 606	VS 607	VS 608	VS 609	VS 610	VS 611	VS 612	VS 613	VS 614	VS 615
Sample Status		Final [3]	Final [3]	Final [3]	Final [3]	Final [3]	Final	Final [3]	Final [3]	Final [3]	Final	Final	Final	Final [3]	Final	Final	Final	Final [3]	Final [3]
Sample Depth		2.34 - 2.44	2.36 - 2.46	3.96 - 4.06	2.99 - 3.09	2.11 - 2.21	1.73 - 1.83	2.12 - 2.22	2.12 - 2.22	2.63 - 2.73	4.38 - 4.48	7.38 - 7.48	7.79 - 7.89	1.91 - 2.01	7.08 - 7.18	1.62 - 1.72	1.39 - 1.49	1.67 - 1.77	2.54 - 2.64
Metals																			
Antimony	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	18	<1.0	<1.0	<1.0	1.4	<1.0	<1.0	1.4	1.4	1.0	1.8	1.9	2.4	<1.0	2.7	<1.0	<1.0	1.0	<1.0
Barium	390	330	350	360	**400**	**400**	28	**420**	**410**	390	140	140	180	380	180	58	26	330	320
Beryllium	4	0.88	0.79	0.79	1.2	0.94	0.21	0.98	1.1	0.87	0.40	0.39	0.54	1.1	0.64	0.32	<0.20	0.85	0.79
Boron	120	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	7.7	<5.0	8.3	<5.0	<5.0	<5.0	<5.0
Cadmium	1.2	0.11	<0.10	0.10	0.14	0.14	<0.10	0.30	0.21	0.13	<0.10	<0.10	<0.10	0.18	<0.10	<0.10	<0.10	0.10	<0.10
Chromium	160	86	100	110	120	120	15	110	110	110	27	27	39	110	42	27	13	97	90
Cobalt	22	**23**	**26**	**25**	**41**	**26**	3.5	**27**	**24**	**27**	8.6	8.9	12	**33**	13	5.3	3.1	**24**	**26**
Copper	140	43	59	64	52	59	5.6	43	45	58	17	18	23	58	25	12	6.1	50	51
Hexavalent Chromium	8	0.6	0.4	0.6	0.5	0.3	0.2	0.5	0.5	0.4	<0.2	<0.2	<0.2	0.3	<0.2	0.4	0.3	0.4	0.3
Lead	120	6.8	6.8	6.5	10	7.2	2.1	7.9	7.6	6.5	3.8	3.9	5.4	7.4	5.7	3.0	2.0	8.4	6.5
Mercury	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Molybdenum	6.9	<0.50	<0.50	<0.50	0.60	<0.50	<0.50	<0.50	<0.50	<0.50	0.71	0.76	0.86	<0.50	0.75	<0.50	<0.50	<0.50	<0.50
Nickel	100	47	64	65	64	67	7.5	61	57	67	16	17	25	65	27	14	7.4	57	55
Selenium	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	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	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	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	1	0.49	0.44	0.44	0.52	0.47	<0.050	0.51	0.49	0.54	0.15	0.15	0.21	0.50	0.23	0.12	<0.050	0.41	0.41
Uranium	23	1.7	1.3	1.5	1.5	1.9	0.81	1.7	1.7	1.1	0.90	0.80	0.88	1.2	0.89	1.1	0.64	1.6	1.1
Vanadium	86	**110**	**110**	**120**	**120**	**110**	21	**110**	**110**	**120**	42	44	57	**110**	62	26	19	**95**	**100**
Zinc	340	130	140	140	150	140	21	150	150	150	48	49	70	140	74	31	18	120	120
Semi-VOCs																			
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0071	<0.0050
Benzo [b,j] fluoranthene	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.021	<0.0050
Benzo[a]anthracene	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.018	<0.0050
Benzo[a]pyrene	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.013	<0.0050
Benzo[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.014	<0.0050
Benzo[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0065	<0.0050
Chrysene	7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.016	<0.0050
Dibenzo[a,h]anthracene	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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	0.69	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.044	<0.0050
Fluorene	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<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]pyrene	0.38	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.010	<0.0050
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	6.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.027	<0.0050
Pyrene	78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.036	<0.0050

Parameter	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS615	VS616	VS617	TP17-101	TP17-102	TP17-103	TP17-104	TP17-105	TP17-106	TP17-107	TP17-108
		23-Aug-2017	23-Aug-2017	23-Aug-2017	7-Apr-2017	7-Apr-2017	7-Apr-2017	7-Apr-2017	7-Apr-2017	7-Apr-2017	7-Apr-2017	7-Apr-2017
		VS 1615 (Field Duplicate)	VS 616	VS 617	TP17-101	TP17-102	TP17-103	TP17-104	TP17-105	TP17-106	TP17-107	TP17-108
Sample Status		Final [3]	Final [3]	Final	Excavated	Excavated	Excavated	Excavated	Excavated	Excavated	Excavated	Excavated
Sample Depth		2.54 - 2.64	1.52 - 1.62	1.17 - 1.27	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15
Metals												
Antimony	7.5	<0.20	<0.20	<0.20	--	--	--	--	--	--	--	--
Arsenic	18	<1.0	1.0	<1.0	--	--	--	--	--	--	--	--
Barium	390	350	**420**	23	--	--	--	--	--	--	--	--
Beryllium	4	0.82	1.0	<0.20	--	--	--	--	--	--	--	--
Boron	120	<5.0	<5.0	<5.0	--	--	--	--	--	--	--	--
Cadmium	1.2	<0.10	0.16	<0.10	--	--	--	--	--	--	--	--
Chromium	160	98	130	14	--	--	--	--	--	--	--	--
Cobalt	22	**28**	**30**	3.3	--	--	--	--	--	--	--	--
Copper	140	58	62	5.2	--	--	--	--	--	--	--	--
Hexavalent Chromium	8	0.4	0.6	<0.2	--	--	--	--	--	--	--	--
Lead	120	6.1	7.7	2.5	--	--	--	--	--	--	--	--
Mercury	0.27	<0.050	<0.050	<0.050	--	--	--	--	--	--	--	--
Molybdenum	6.9	<0.50	0.54	<0.50	--	--	--	--	--	--	--	--
Nickel	100	58	71	7.3	--	--	--	--	--	--	--	--
Selenium	2.4	<0.50	<0.50	<0.50	--	--	--	--	--	--	--	--
Silver	20	<0.20	<0.20	<0.20	--	--	--	--	--	--	--	--
Thallium	1	0.45	0.52	<0.050	--	--	--	--	--	--	--	--
Uranium	23	1.2	1.7	0.62	--	--	--	--	--	--	--	--
Vanadium	86	**110**	**120**	19	--	--	--	--	--	--	--	--
Zinc	340	130	140	16	--	--	--	--	--	--	--	--
Semi-VOCs												
1- & 2-Methylnaphthalene	0.99 [4]	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.016	0.082	<0.014
1-Methylnaphthalene	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.007	<0.0050	0.0087	0.038	<0.0050
2-Methylnaphthalene	0.99 [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0072	0.044	<0.0050
Acenaphthene	7.9	<0.0050	<0.0050	<0.0050	0.018	0.024	0.012	0.013	0.018	0.033	0.23	0.0091
Acenaphthylene	0.15	<0.0050	<0.0050	<0.0050	0.012	0.012	0.013	0.023	0.0054	0.02	0.042	0.036
Anthracene	0.67	<0.0050	<0.0050	<0.0050	0.044	0.041	0.03	0.033	0.037	0.083	0.44	0.036
Benzo [b,j] fluoranthene	--	<0.0050	<0.0050	<0.0050	0.24	0.18	0.19	0.24	0.12	0.32	1.1	0.38
Benzo[a]anthracene	0.5	<0.0050	<0.0050	<0.0050	0.19	0.16	0.14	0.17	0.11	0.27	**0.99**	0.27
Benzo[a]pyrene	0.3	<0.0050	<0.0050	<0.0050	0.16	0.13	0.12	0.16	0.079	0.23	**0.74**	0.26
Benzo[g,h,i]perylene	6.6	<0.0050	<0.0050	<0.0050	0.085	0.073	0.08	0.099	0.047	0.14	0.46	0.17
Benzo[k]fluoranthene	0.78	<0.0050	<0.0050	<0.0050	0.09	0.067	0.07	0.092	0.045	0.12	0.38	0.14
Chrysene	7	<0.0050	<0.0050	<0.0050	0.17	0.15	0.13	0.17	0.097	0.24	0.89	0.26
Dibenzo[a,h]anthracene	0.1	<0.0050	<0.0050	<0.0050	0.027	0.023	0.027	0.037	0.015	0.048	**0.13**	0.045
Fluoranthene	0.69	<0.0050	<0.0050	<0.0050	0.36	0.37	0.26	0.37	0.19	0.46	**1.9**	0.4
Fluorene	62	<0.0050	<0.0050	<0.0050	0.024	0.03	0.016	0.021	0.025	0.053	0.32	0.011
Indeno[1,2,3-cd]pyrene	0.38	<0.0050	<0.0050	<0.0050	0.11	0.093	0.096	0.12	0.057	0.16	**0.52**	0.2
Naphthalene	0.6	<0.0050	<0.0050	<0.0050	0.0051	<0.0050	<0.0050	<0.0050	<0.0050	0.0079	0.083	<0.0050
Phenanthrene	6.2	<0.0050	<0.0050	<0.0050	0.23	0.24	0.17	0.19	0.19	0.41	2.2	0.17
Pyrene	78	<0.0050	<0.0050	<0.0050	0.31	0.28	0.23	0.29	0.17	0.43	1.7	0.43

Sample Name	Sample Collection Date	Laboratory Analysis Date
VS285	09-Aug-2016	Chromium (VI) (10/08/2016), Metals (10/08/2016), MOISTURE (10/08/2016), PAH (10/08/2016), PAH (10/08/2016)
VS286	09-Aug-2016	Chromium (VI) (10/08/2016), Metals (10/08/2016), MOISTURE (10/08/2016), PAH (10/08/2016), PAH (10/08/2016)
VS292	11-Aug-2016	Chromium (VI) (12/08/2016), Metals (12/08/2016), MOISTURE (12/08/2016), PAH (11/08/2016), PAH (12/08/2016)
VS293	11-Aug-2016	Chromium (VI) (12/08/2016), Metals (12/08/2016), MOISTURE (12/08/2016), PAH (11/08/2016), PAH (12/08/2016)
VS320	08-Feb-2017	Chromium (VI) (10/02/2017), Metals (10/02/2017), MOISTURE (10/02/2017), PAH (09/02/2017), PAH (10/02/2017)
VS321	08-Feb-2017	Chromium (VI) (10/02/2017), Metals (10/02/2017), MOISTURE (10/02/2017), PAH (09/02/2017), PAH (10/02/2017)
VS322	08-Feb-2017	Chromium (VI) (10/02/2017), Metals (10/02/2017), MOISTURE (10/02/2017), PAH (09/02/2017), PAH (10/02/2017)
VS323	08-Feb-2017	Chromium (VI) (10/02/2017), Metals (10/02/2017), MOISTURE (10/02/2017), PAH (09/02/2017), PAH (10/02/2017)
VS324	08-Feb-2017	Chromium (VI) (10/02/2017), Metals (10/02/2017), MOISTURE (10/02/2017), PAH (09/02/2017), PAH (10/02/2017)
VS324B	16-Feb-2017	Chromium (VI) (17/02/2017), Metals (17/02/2017), MOISTURE (16/02/2017), PAH (16/02/2017), PAH (16/02/2017)
VS325	08-Feb-2017	Chromium (VI) (10/02/2017), Metals (10/02/2017), MOISTURE (10/02/2017), PAH (09/02/2017), PAH (10/02/2017)
VS1325 (Field Duplicate)	08-Feb-2017	Chromium (VI) (10/02/2017), Metals (10/02/2017), MOISTURE (10/02/2017), PAH (09/02/2017), PAH (10/02/2017)
VS326	08-Feb-2017	Chromium (VI) (10/02/2017), Metals (10/02/2017), MOISTURE (10/02/2017), PAH (09/02/2017), PAH (10/02/2017)
VS327	27-Mar-2017	Chromium (VI) (28/03/2017), Metals (28/03/2017), MOISTURE (28/03/2017), PAH (27/03/2017), PAH (28/03/2017)
VS328	27-Mar-2017	Chromium (VI) (28/03/2017), Metals (28/03/2017), MOISTURE (28/03/2017), PAH (27/03/2017), PAH (28/03/2017)
VS329	27-Mar-2017	Chromium (VI) (28/03/2017), Metals (28/03/2017), MOISTURE (28/03/2017), PAH (27/03/2017), PAH (28/03/2017)
VS330	27-Mar-2017	Chromium (VI) (28/03/2017), Metals (28/03/2017), MOISTURE (28/03/2017), PAH (27/03/2017), PAH (28/03/2017)
VS331	27-Mar-2017	Chromium (VI) (28/03/2017), Metals (28/03/2017), MOISTURE (28/03/2017), PAH (27/03/2017), PAH (28/03/2017)
VS332	27-Mar-2017	Chromium (VI) (28/03/2017), Metals (28/03/2017), MOISTURE (28/03/2017), PAH (27/03/2017), PAH (28/03/2017)
VS333	27-Mar-2017	Chromium (VI) (28/03/2017), Metals (28/03/2017), MOISTURE (28/03/2017), PAH (27/03/2017), PAH (28/03/2017)
VS334	27-Mar-2017	Chromium (VI) (28/03/2017), Metals (28/03/2017), MOISTURE (28/03/2017), PAH (27/03/2017), PAH (28/03/2017)
VS335	28-Mar-2017	Chromium (VI) (29/03/2017), Metals (29/03/2017), MOISTURE (29/03/2017), PAH (28/03/2017), PAH (29/03/2017)
VS336	28-Mar-2017	Chromium (VI) (29/03/2017), Metals (29/03/2017), MOISTURE (29/03/2017), PAH (28/03/2017), PAH (29/03/2017)
VS337	28-Mar-2017	Chromium (VI) (29/03/2017), Metals (29/03/2017), MOISTURE (29/03/2017), PAH (28/03/2017), PAH (29/03/2017)
VS338	28-Mar-2017	Chromium (VI) (29/03/2017), Metals (29/03/2017), MOISTURE (29/03/2017), PAH (28/03/2017), PAH (29/03/2017)
VS339	28-Mar-2017	Chromium (VI) (29/03/2017), Metals (29/03/2017), MOISTURE (29/03/2017), PAH (28/03/2017), PAH (29/03/2017)
VS340	28-Mar-2017	Chromium (VI) (29/03/2017), Metals (29/03/2017), MOISTURE (29/03/2017), PAH (28/03/2017), PAH (29/03/2017)
VS341	29-Mar-2017	Chromium (VI) (30/03/2017), Metals (30/03/2017), MOISTURE (30/03/2017), PAH (30/03/2017), PAH (30/03/2017)
VS342	29-Mar-2017	Chromium (VI) (30/03/2017), Metals (30/03/2017), MOISTURE (30/03/2017), PAH (30/03/2017), PAH (30/03/2017)
VS342B	18-May-2017	Chromium (VI) (19/05/2017), Metals (19/05/2017), MOISTURE (19/05/2017), PAH (18/05/2017), PAH (19/05/2017)
VS343	29-Mar-2017	Chromium (VI) (30/03/2017), Metals (30/03/2017), MOISTURE (30/03/2017), PAH (30/03/2017), PAH (30/03/2017)
VS344	29-Mar-2017	Chromium (VI) (30/03/2017), Metals (30/03/2017), MOISTURE (30/03/2017), PAH (30/03/2017), PAH (30/03/2017)
VS345	29-Mar-2017	Chromium (VI) (30/03/2017), Metals (30/03/2017), MOISTURE (30/03/2017), PAH (30/03/2017), PAH (30/03/2017)
VS346	29-Mar-2017	Chromium (VI) (30/03/2017), Metals (30/03/2017), MOISTURE (30/03/2017), PAH (30/03/2017), PAH (30/03/2017)
VS1346 (Field Duplicate)	29-Mar-2017	Chromium (VI) (30/03/2017), Metals (30/03/2017), MOISTURE (30/03/2017), PAH (30/03/2017), PAH (30/03/2017)
VS347	29-Mar-2017	Chromium (VI) (30/03/2017), Metals (30/03/2017), MOISTURE (30/03/2017), PAH (30/03/2017), PAH (30/03/2017)
VS348	29-Mar-2017	Chromium (VI) (30/03/2017), Metals (30/03/2017), MOISTURE (30/03/2017), PAH (30/03/2017), PAH (30/03/2017)
VS348B	30-May-2017	Chromium (VI) (31/05/2017), Metals (31/05/2017), MOISTURE (31/05/2017), PAH (31/05/2017), PAH (31/05/2017)
VS349	29-Mar-2017	Chromium (VI) (30/03/2017), Metals (30/03/2017), MOISTURE (30/03/2017), PAH (30/03/2017), PAH (30/03/2017)
VS350	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS351	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS1351 (Field Duplicate)	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS352	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS353	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS354	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS355	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS356	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS357	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS358	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS359	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS360	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS361	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS362	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS363	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS364	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS1364 (Field Duplicate)	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS365	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS366	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS367	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (30/03/2017), PAH (31/03/2017)
VS368	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (31/03/2017), PAH (31/03/2017)
VS369	30-Mar-2017	Chromium (VI) (31/03/2017), Metals (31/03/2017), MOISTURE (31/03/2017), PAH (31/03/2017), PAH (31/03/2017)
VS370	18-Apr-2017	Chromium (VI) (19/04/2017), Metals (19/04/2017), MOISTURE (19/04/2017), PAH (18/04/2017), PAH (19/04/2017)
VS371	18-Apr-2017	Chromium (VI) (19/04/2017), Metals (19/04/2017), MOISTURE (19/04/2017), PAH (18/04/2017), PAH (19/04/2017)
VS1371 (Field Duplicate)	18-Apr-2017	Chromium (VI) (19/04/2017), Metals (19/04/2017), MOISTURE (19/04/2017), PAH (18/04/2017), PAH (19/04/2017)
VS372	18-Apr-2017	Chromium (VI) (19/04/2017), Metals (19/04/2017), MOISTURE (19/04/2017), PAH (18/04/2017), PAH (19/04/2017)
VS373	18-Apr-2017	Chromium (VI) (19/04/2017), Metals (19/04/2017), MOISTURE (19/04/2017), PAH (18/04/2017), PAH (19/04/2017)
VS373B	20-Apr-2017	Chromium (VI) (21/04/2017), Metals (21/04/2017), MOISTURE (21/04/2017), PAH (21/04/2017), PAH (21/04/2017)

Sample Name	Sample Collection Date	Laboratory Analysis Date
VS374	19-Apr-2017	Chromium (VI) (20/04/2017), Metals (20/04/2017), MOISTURE (20/04/2017), PAH (19/04/2017), PAH (20/04/2017)
VS375	19-Apr-2017	Chromium (VI) (20/04/2017), Metals (20/04/2017), MOISTURE (20/04/2017), PAH (19/04/2017), PAH (20/04/2017)
VS376	19-Apr-2017	Chromium (VI) (20/04/2017), Metals (20/04/2017), MOISTURE (20/04/2017), PAH (19/04/2017), PAH (20/04/2017)
VS377	19-Apr-2017	Chromium (VI) (20/04/2017), Metals (20/04/2017), MOISTURE (20/04/2017), PAH (19/04/2017), PAH (20/04/2017)
VS378	19-Apr-2017	Chromium (VI) (20/04/2017), Metals (20/04/2017), MOISTURE (20/04/2017), PAH (19/04/2017), PAH (20/04/2017)
VS379	19-Apr-2017	Chromium (VI) (20/04/2017), Metals (20/04/2017), MOISTURE (20/04/2017), PAH (19/04/2017), PAH (20/04/2017)
VS380	27-Apr-2017	Chromium (VI) (28/04/2017), Metals (28/04/2017), MOISTURE (28/04/2017), PAH (27/04/2017), PAH (28/04/2017)
VS381	27-Apr-2017	Chromium (VI) (28/04/2017), Metals (28/04/2017), MOISTURE (28/04/2017), PAH (27/04/2017), PAH (28/04/2017)
VS382	27-Apr-2017	Chromium (VI) (28/04/2017), Metals (28/04/2017), MOISTURE (28/04/2017), PAH (27/04/2017), PAH (28/04/2017)
VS1382 (Field Duplicate)	27-Apr-2017	Chromium (VI) (28/04/2017), Metals (28/04/2017), MOISTURE (28/04/2017), PAH (27/04/2017), PAH (28/04/2017)
VS383	27-Apr-2017	Chromium (VI) (28/04/2017), Metals (28/04/2017), MOISTURE (28/04/2017), PAH (27/04/2017), PAH (28/04/2017)
VS384	27-Apr-2017	Chromium (VI) (28/04/2017), Metals (28/04/2017), MOISTURE (28/04/2017), PAH (27/04/2017), PAH (28/04/2017)
VS385	27-Apr-2017	Chromium (VI) (28/04/2017), Metals (28/04/2017), MOISTURE (28/04/2017), PAH (27/04/2017), PAH (28/04/2017)
VS386	27-Apr-2017	Chromium (VI) (28/04/2017), Metals (28/04/2017), MOISTURE (28/04/2017), PAH (27/04/2017), PAH (28/04/2017)
VS387	27-Apr-2017	Chromium (VI) (28/04/2017), Metals (28/04/2017), MOISTURE (28/04/2017), PAH (27/04/2017), PAH (28/04/2017)
VS388	27-Apr-2017	Chromium (VI) (28/04/2017), Metals (28/04/2017), MOISTURE (28/04/2017), PAH (27/04/2017), PAH (28/04/2017)
VS389	27-Apr-2017	Chromium (VI) (28/04/2017), Metals (28/04/2017), MOISTURE (28/04/2017), PAH (27/04/2017), PAH (28/04/2017)
VS390	27-Apr-2017	Chromium (VI) (28/04/2017), Metals (28/04/2017), MOISTURE (28/04/2017), PAH (27/04/2017), PAH (28/04/2017)
VS391	27-Apr-2017	Chromium (VI) (28/04/2017), Metals (28/04/2017), MOISTURE (28/04/2017), PAH (27/04/2017), PAH (28/04/2017)

ATTACHMENT D
Supporting Figures



LEGEND

- PHASE ONE PROPERTY
- RSC PROPERTY
- FORMER BUILDING FOOTPRINT
- APPROXIMATE EXTENT OF REMEDIAL EXCAVATION
- EXCAVATION VERIFICATION SAMPLE

Final Bottom Elevation of Remedial Excavation (masl)

- 55.00 - 56.00
- 56.00 - 57.00
- 57.00 - 58.00
- 58.00 - 59.00
- 59.00 - 60.00
- 60.00 - 61.00
- 61.00 - 62.00
- 62.00 - 63.00
- 63.00 - 64.00
- 64.00 - 65.00
- 65.00 - 66.00

0 12.5 25 50

SCALE 1:1,250 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. 1525113-1000-3

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 #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
FINAL BOTTOM ELEVATION AND EXTENT OF DEBRIS REMEDIAL EXCAVATION

CONSULTANT

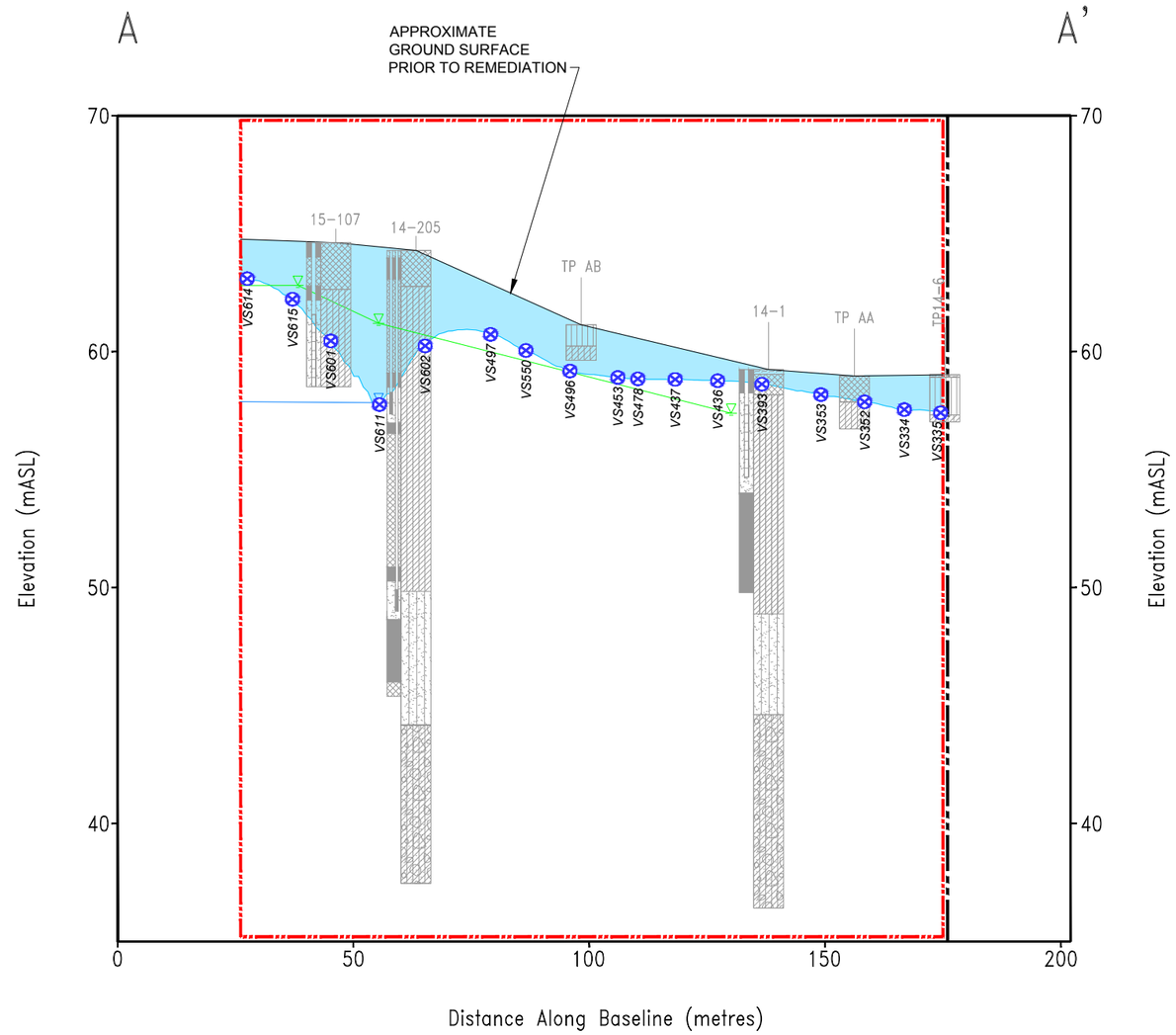
Golder Associates

YYYY-MM-DD	2017-09-05
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/3	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\Regions\GroupOblatesProp\Ottawa\GIS\MXDs\1525113\Ph1000_AddPhIIESA\RSC_RemediationReport\Phase3\1525113-1000-3-HS-0001.mxd



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 #3)

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

FINAL REMEDIAL EXCAVATION EXTENT FOR RSC #3

EXCAVATED LOCATION

EXCAVATION VERIFICATION SAMPLE

NOTES

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

SEE FIGURE G1 FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-3.

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	2017-09-05
PREPARED	JEM
DESIGN	----
REVIEW	PH
APPROVED	PAS

PROJECT

REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE

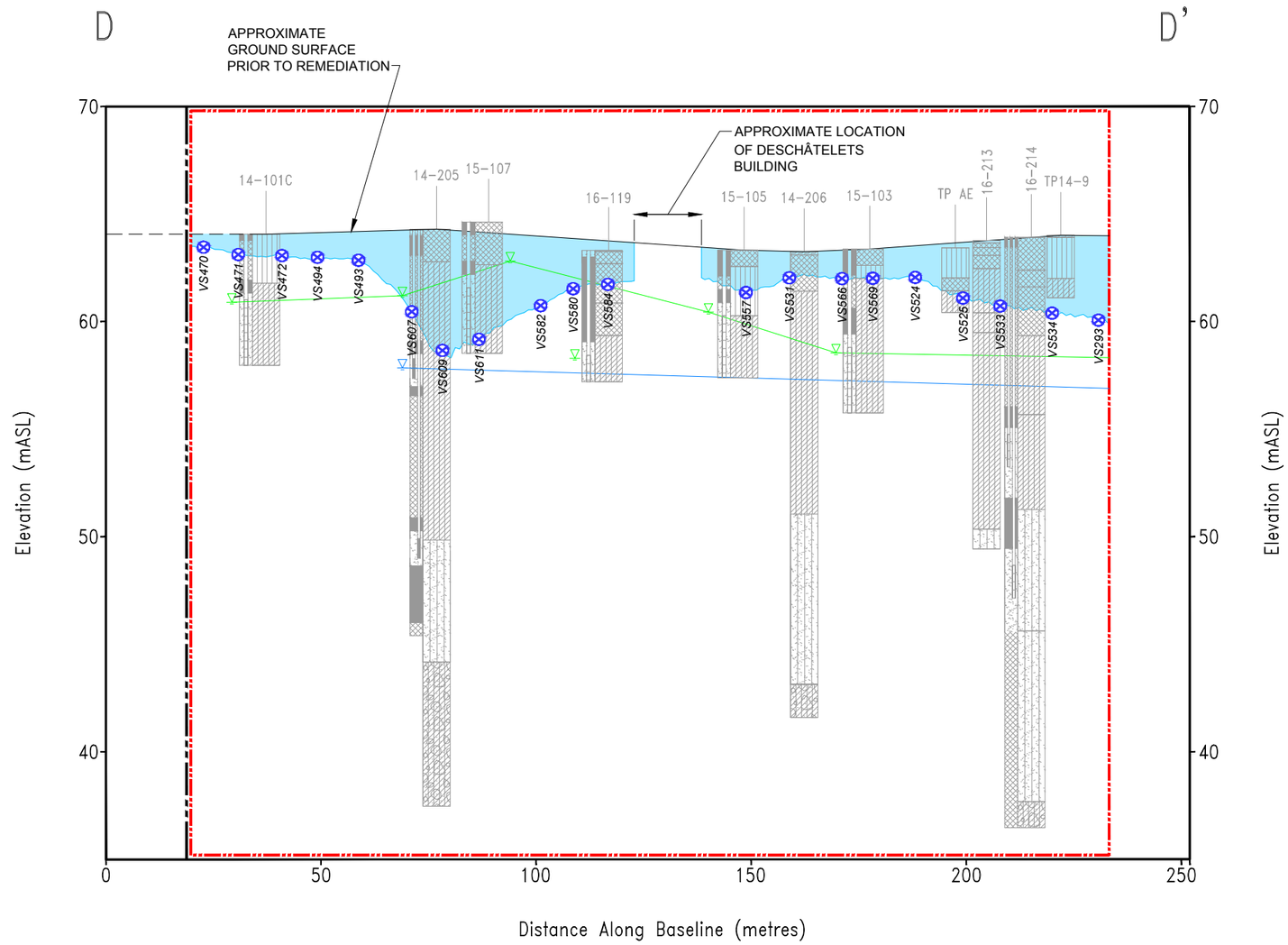
CROSS-SECTION A-A' (RSC #3 REMEDATION)

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/3	0	G2

Path: \\golder.gds\gal\ottawa\Active\Spatial_IM\The_Regional_Group\Regional\Group\Oblates\PropOttawa\CAD\1525113\PRODUCTION\Phase1000_Reg 153_04 Phase II ESA\ | File Name: 1525113-1000-3-HS-00G2-00G3.dwg

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

25 mm



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 #3)

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

FINAL REMEDIAL EXCAVATION EXTENT FOR RSC #3

EXCAVATED LOCATION

EXCAVATION VERIFICATION SAMPLE

NOTES

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

SEE FIGURE G1 FOR CROSS-SECTION LOCATIONS

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-3.

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	2017-09-05
PREPARED	JEM
DESIGN	----
REVIEW	PH
APPROVED	PAS

PROJECT

REG. 153/04 PHASE II ENVIRONMENTAL SITE ASSESSMENT, RSC #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE

CROSS-SECTION D-D' (RSC #3 REMEDATION)

PROJECT No.	PHASE	Rev.	FIGURE
1525113	1000/3	0	G3

Path: \\golder.gds\gal\ottawa\Active\Spatial_IM\The_Regional_Group\Regional\Group\Oblates\Prop\Ottawa\CAD\1525113\PRODUCTION\Phase1000_Reg 153_04 Phase II ESA\ | File Name: 1525113-1000-3-HS-00G2-00G3.dwg

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 #3)

Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 572155-11-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/04/10
Report #: R4420791
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B769351
Received: 2017/04/07, 11:00

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	8	N/A	2017/04/10	CAM SOP-00301	EPA 8270D m
Moisture	8	N/A	2017/04/10	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	8	2017/04/07	2017/04/08	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
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.
Alison Cameron, Project Manager
Email: ACameron@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 #: B769351
Report Date: 2017/04/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EEH235	EEH236	EEH236	EEH237	EEH237		
Sampling Date			2017/04/07 07:15	2017/04/07 07:30	2017/04/07 07:30	2017/04/07 07:45	2017/04/07 07:45		
COC Number			572155-11-01	572155-11-01	572155-11-01	572155-11-01	572155-11-01		
	UNITS	**Criteria**	**TP17-101**	**TP17-102**	**TP17-102 Lab-Dup**	**TP17-103**	**TP17-103 Lab-Dup**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	21	24	24	23		0.2	4931411
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014		0.014	4931174
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	0.018	0.024		0.012	0.035 (1)	0.0050	4931413
Acenaphthylene	ug/g	**0.15**	0.012	0.012		0.013	0.014	0.0050	4931413
Anthracene	ug/g	**0.67**	0.044	0.041		0.030	0.071 (1)	0.0050	4931413
Benzo(a)anthracene	ug/g	**0.5**	0.19	0.16		0.14	0.23 (1)	0.0050	4931413
Benzo(a)pyrene	ug/g	**0.3**	0.16	0.13		0.12	0.19	0.0050	4931413
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.24	0.18		0.19	0.27	0.0050	4931413
Benzo(g,h,i)perylene	ug/g	**6.6**	0.085	0.073		0.080	0.11	0.0050	4931413
Benzo(k)fluoranthene	ug/g	**0.78**	0.090	0.067		0.070	0.10	0.0050	4931413
Chrysene	ug/g	**7**	0.17	0.15		0.13	0.20 (1)	0.0050	4931413
Dibenz(a,h)anthracene	ug/g	**0.1**	0.027	0.023		0.027	0.034	0.0050	4931413
Fluoranthene	ug/g	**0.69**	0.36	0.37		0.26	0.44 (1)	0.0050	4931413
Fluorene	ug/g	**62**	0.024	0.030		0.016	0.043 (1)	0.0050	4931413
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.11	0.093		0.096	0.13	0.0050	4931413
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050		<0.0050	0.0069	0.0050	4931413
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050		<0.0050	0.0075	0.0050	4931413
Naphthalene	ug/g	**0.6**	0.0051	<0.0050		<0.0050	0.0075	0.0050	4931413
Phenanthrene	ug/g	**6.2**	0.23	0.24		0.17	0.36 (1)	0.0050	4931413
Pyrene	ug/g	**78**	0.31	0.28		0.23	0.37 (1)	0.0050	4931413
Surrogate Recovery (%)									
D10-Anthracene	%	-	76	83		81	81		4931413
D14-Terphenyl (FS)	%	-	80	80		83	85		4931413
D8-Acenaphthylene	%	-	77	81		80	87		4931413

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.

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 #: B769351
Report Date: 2017/04/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EEH238	EEH239	EEH240	EEH241	EEH242		
Sampling Date			2017/04/07 08:00	2017/04/07 08:15	2017/04/07 08:40	2017/04/07 09:00	2017/04/07 09:15		
COC Number			572155-11-01	572155-11-01	572155-11-01	572155-11-01	572155-11-01		
	UNITS	**Criteria**	**TP17-104**	**TP17-105**	**TP17-106**	**TP17-107**	**TP17-108**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	23	20	31	26	27	0.2	4931411
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	0.016	0.082	<0.014	0.014	4931174
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	0.013	0.018	0.033	0.23	0.0091	0.0050	4931413
Acenaphthylene	ug/g	**0.15**	0.023	0.0054	0.020	0.042	0.036	0.0050	4931413
Anthracene	ug/g	**0.67**	0.033	0.037	0.083	0.44	0.036	0.0050	4931413
Benzo(a)anthracene	ug/g	**0.5**	0.17	0.11	0.27	**0.99**	0.27	0.0050	4931413
Benzo(a)pyrene	ug/g	**0.3**	0.16	0.079	0.23	**0.74**	0.26	0.0050	4931413
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.24	0.12	0.32	**1.1**	0.38	0.0050	4931413
Benzo(g,h,i)perylene	ug/g	**6.6**	0.099	0.047	0.14	0.46	0.17	0.0050	4931413
Benzo(k)fluoranthene	ug/g	**0.78**	0.092	0.045	0.12	0.38	0.14	0.0050	4931413
Chrysene	ug/g	**7**	0.17	0.097	0.24	0.89	0.26	0.0050	4931413
Dibenz(a,h)anthracene	ug/g	**0.1**	0.037	0.015	0.048	**0.13**	0.045	0.0050	4931413
Fluoranthene	ug/g	**0.69**	0.37	0.19	0.46	**1.9**	0.40	0.0050	4931413
Fluorene	ug/g	**62**	0.021	0.025	0.053	0.32	0.011	0.0050	4931413
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.12	0.057	0.16	**0.52**	0.20	0.0050	4931413
1-Methylnaphthalene	ug/g	**0.99**	0.0070	<0.0050	0.0087	0.038	<0.0050	0.0050	4931413
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0072	0.044	<0.0050	0.0050	4931413
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	0.0079	0.083	<0.0050	0.0050	4931413
Phenanthrene	ug/g	**6.2**	0.19	0.19	0.41	2.2	0.17	0.0050	4931413
Pyrene	ug/g	**78**	0.29	0.17	0.43	1.7	0.43	0.0050	4931413
Surrogate Recovery (%)									
D10-Anthracene	%	-	76	75	83	76	82		4931413
D14-Terphenyl (FS)	%	-	79	76	87	82	87		4931413
D8-Acenaphthylene	%	-	82	80	90	82	90		4931413

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 #: B769351
Report Date: 2017/04/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EEH235
Sample ID: TP17-101
Matrix: Soil

Collected: 2017/04/07
Shipped:
Received: 2017/04/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4931174	N/A	2017/04/10	Steve Roberts
Moisture	BAL	4931411	N/A	2017/04/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4931413	2017/04/07	2017/04/08	Arezoo Habibagahi

Maxxam ID: EEH236
Sample ID: TP17-102
Matrix: Soil

Collected: 2017/04/07
Shipped:
Received: 2017/04/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4931174	N/A	2017/04/10	Steve Roberts
Moisture	BAL	4931411	N/A	2017/04/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4931413	2017/04/07	2017/04/08	Arezoo Habibagahi

Maxxam ID: EEH236 Dup
Sample ID: TP17-102
Matrix: Soil

Collected: 2017/04/07
Shipped:
Received: 2017/04/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4931411	N/A	2017/04/10	Arezoo Habibagahi

Maxxam ID: EEH237
Sample ID: TP17-103
Matrix: Soil

Collected: 2017/04/07
Shipped:
Received: 2017/04/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4931174	N/A	2017/04/10	Steve Roberts
Moisture	BAL	4931411	N/A	2017/04/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4931413	2017/04/07	2017/04/08	Arezoo Habibagahi

Maxxam ID: EEH237 Dup
Sample ID: TP17-103
Matrix: Soil

Collected: 2017/04/07
Shipped:
Received: 2017/04/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4931413	2017/04/07	2017/04/08	Arezoo Habibagahi

Maxxam ID: EEH238
Sample ID: TP17-104
Matrix: Soil

Collected: 2017/04/07
Shipped:
Received: 2017/04/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4931174	N/A	2017/04/10	Steve Roberts
Moisture	BAL	4931411	N/A	2017/04/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4931413	2017/04/07	2017/04/08	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 #: B769351
Report Date: 2017/04/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EEH239
Sample ID: TP17-105
Matrix: Soil

Collected: 2017/04/07
Shipped:
Received: 2017/04/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4931174	N/A	2017/04/10	Steve Roberts
Moisture	BAL	4931411	N/A	2017/04/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4931413	2017/04/07	2017/04/08	Arezoo Habibagahi

Maxxam ID: EEH240
Sample ID: TP17-106
Matrix: Soil

Collected: 2017/04/07
Shipped:
Received: 2017/04/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4931174	N/A	2017/04/10	Steve Roberts
Moisture	BAL	4931411	N/A	2017/04/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4931413	2017/04/07	2017/04/08	Arezoo Habibagahi

Maxxam ID: EEH241
Sample ID: TP17-107
Matrix: Soil

Collected: 2017/04/07
Shipped:
Received: 2017/04/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4931174	N/A	2017/04/10	Steve Roberts
Moisture	BAL	4931411	N/A	2017/04/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4931413	2017/04/07	2017/04/08	Arezoo Habibagahi

Maxxam ID: EEH242
Sample ID: TP17-108
Matrix: Soil

Collected: 2017/04/07
Shipped:
Received: 2017/04/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4931174	N/A	2017/04/10	Steve Roberts
Moisture	BAL	4931411	N/A	2017/04/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4931413	2017/04/07	2017/04/08	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 #: B769351
Report Date: 2017/04/10

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	10.3°C

Sample EEH237 [TP17-103] : PAH Analysis: Duplicate results exceeded RPD acceptance criteria for flagged analytes. This is likely due to sample heterogeneity.

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 #: B769351
Report Date: 2017/04/10

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
4931413	D10-Anthracene	2017/04/08	76	50 - 130	85	50 - 130	88	%		
4931413	D14-Terphenyl (FS)	2017/04/08	80	50 - 130	88	50 - 130	84	%		
4931413	D8-Acenaphthylene	2017/04/08	77	50 - 130	89	50 - 130	86	%		
4931411	Moisture	2017/04/10							2.1	50
4931413	1-Methylnaphthalene	2017/04/08	79	50 - 130	85	50 - 130	<0.0050	ug/g	32	40
4931413	2-Methylnaphthalene	2017/04/08	77	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
4931413	Acenaphthene	2017/04/08	88	50 - 130	87	50 - 130	<0.0050	ug/g	100 (1)	40
4931413	Acenaphthylene	2017/04/08	82	50 - 130	89	50 - 130	<0.0050	ug/g	8.7	40
4931413	Anthracene	2017/04/08	92	50 - 130	81	50 - 130	<0.0050	ug/g	82 (1)	40
4931413	Benzo(a)anthracene	2017/04/08	117	50 - 130	88	50 - 130	<0.0050	ug/g	47 (1)	40
4931413	Benzo(a)pyrene	2017/04/08	89	50 - 130	78	50 - 130	<0.0050	ug/g	39	40
4931413	Benzo(b/j)fluoranthene	2017/04/08	84	50 - 130	80	50 - 130	<0.0050	ug/g	36	40
4931413	Benzo(g,h,i)perylene	2017/04/08	79	50 - 130	80	50 - 130	<0.0050	ug/g	30	40
4931413	Benzo(k)fluoranthene	2017/04/08	87	50 - 130	80	50 - 130	<0.0050	ug/g	37	40
4931413	Chrysene	2017/04/08	107	50 - 130	75	50 - 130	<0.0050	ug/g	40	40
4931413	Dibenz(a,h)anthracene	2017/04/08	50	50 - 130	52	50 - 130	<0.0050	ug/g	23	40
4931413	Fluoranthene	2017/04/08	128	50 - 130	70	50 - 130	<0.0050	ug/g	54 (1)	40
4931413	Fluorene	2017/04/08	111	50 - 130	108	50 - 130	<0.0050	ug/g	92 (1)	40
4931413	Indeno(1,2,3-cd)pyrene	2017/04/08	91	50 - 130	86	50 - 130	<0.0050	ug/g	30	40
4931413	Naphthalene	2017/04/08	66	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40
4931413	Phenanthrene	2017/04/08	124	50 - 130	83	50 - 130	<0.0050	ug/g	73 (1)	40
4931413	Pyrene	2017/04/08	127	50 - 130	80	50 - 130	<0.0050	ug/g	46 (1)	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 (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 (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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 #: B769351
Report Date: 2017/04/10

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).

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.

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 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 #: 572155
COC #: C#572155-11-01
Project Manager: Madison Bingley

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: ___ Time Required: 24hr ☒
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		TP17-101	17/04/07	7:15	Soil		X								1	
2		TP17-102		7:30			X								1	
3		TP17-103		7:45			X								1	
4		TP17-104		8:00			X								1	
5		TP17-105		815			X								1	
6		TP17-106		840			X								1	
7		TP17-107		9:00			X								1	
8		TP17-108		9:15			X								1	
9																On ice
10																

07-Apr-17 11:00
Alison Cameron
B769351
KJY 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
A. Bradshaw / Aaron Bradshaw	17/04/07	11:08	Mariana Vascon / Vascon	2017/04/07	11:00	0

Laboratory Use Only
Time Sensitive
Temperature (°C) on Receipt: 10, 11, 10
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

Maxxam Job #: B769351
Report Date: 2017/04/10

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
TP17-107	EEH241-01	Benzo(a)anthracene	0.5	0.99	0.0050	ug/g
TP17-107	EEH241-01	Benzo(a)pyrene	0.3	0.74	0.0050	ug/g
TP17-107	EEH241-01	Benzo(b/j)fluoranthene	0.78	1.1	0.0050	ug/g
TP17-107	EEH241-01	Dibenz(a,h)anthracene	0.1	0.13	0.0050	ug/g
TP17-107	EEH241-01	Fluoranthene	0.69	1.9	0.0050	ug/g
TP17-107	EEH241-01	Indeno(1,2,3-cd)pyrene	0.38	0.52	0.0050	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. #: 572155-04-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/17
Report #: R4464413
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B799367
Received: 2017/05/16, 15:05

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	5	N/A	2017/05/17	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	5	2017/05/17	2017/05/17	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	5	2017/05/17	2017/05/17	CAM SOP-00447	EPA 6020B m
Moisture	5	N/A	2017/05/17	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	5	2017/05/16	2017/05/16	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-04-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/17
Report #: R4464413
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B799367
Received: 2017/05/16, 15:05

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B799367
Report Date: 2017/05/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EJS402	EJS403	EJS404	EJS405	EJS406		
Sampling Date			2017/05/16 10:00	2017/05/16 10:10	2017/05/16 10:20	2017/05/16 10:30	2017/05/16 10:40		
COC Number			572155-04-01	572155-04-01	572155-04-01	572155-04-01	572155-04-01		
	UNITS	**Criteria**	**VS 396**	**VS 397**	**VS 398**	**VS 399**	**VS 400**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4987108
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	3.4	<1.0	<1.0	<1.0	1.0	4987108
Acid Extractable Barium (Ba)	ug/g	**390**	28	66	32	25	11	0.50	4987108
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	0.29	0.25	0.26	<0.20	0.20	4987108
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4987108
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	4987108
Acid Extractable Chromium (Cr)	ug/g	**160**	14	23	19	17	12	1.0	4987108
Acid Extractable Cobalt (Co)	ug/g	**22**	2.9	5.6	5.0	5.7	2.3	0.10	4987108
Acid Extractable Copper (Cu)	ug/g	**140**	4.5	13	7.7	6.4	2.1	0.50	4987108
Acid Extractable Lead (Pb)	ug/g	**120**	8.4	3.1	4.1	3.3	4.8	1.0	4987108
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4987108
Acid Extractable Nickel (Ni)	ug/g	**100**	7.5	13	11	9.8	5.0	0.50	4987108
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4987108
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4987108
Acid Extractable Thallium (Tl)	ug/g	**1**	0.058	0.093	0.068	0.068	<0.050	0.050	4987108
Acid Extractable Uranium (U)	ug/g	**23**	0.40	0.54	0.47	0.39	0.41	0.050	4987108
Acid Extractable Vanadium (V)	ug/g	**86**	15	32	24	21	20	5.0	4987108
Acid Extractable Zinc (Zn)	ug/g	**340**	26	30	27	24	11	5.0	4987108
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4987108

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 #: B799367
Report Date: 2017/05/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EJS406		
Sampling Date			2017/05/16 10:40		
COC Number			572155-04-01		
	UNITS	**Criteria**	**VS 400 Lab-Dup**	**RDL**	**QC Batch**
Metals					
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	0.20	4987108
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	1.0	4987108
Acid Extractable Barium (Ba)	ug/g	**390**	11	0.50	4987108
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	0.20	4987108
Acid Extractable Boron (B)	ug/g	**120**	<5.0	5.0	4987108
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.10	4987108
Acid Extractable Chromium (Cr)	ug/g	**160**	12	1.0	4987108
Acid Extractable Cobalt (Co)	ug/g	**22**	2.1	0.10	4987108
Acid Extractable Copper (Cu)	ug/g	**140**	2.0	0.50	4987108
Acid Extractable Lead (Pb)	ug/g	**120**	3.5	1.0	4987108
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.50	4987108
Acid Extractable Nickel (Ni)	ug/g	**100**	4.7	0.50	4987108
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	0.50	4987108
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	0.20	4987108
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	0.050	4987108
Acid Extractable Uranium (U)	ug/g	**23**	0.41	0.050	4987108
Acid Extractable Vanadium (V)	ug/g	**86**	22	5.0	4987108
Acid Extractable Zinc (Zn)	ug/g	**340**	11	5.0	4987108
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	0.050	4987108

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 Job #: B799367
Report Date: 2017/05/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			EJS402	EJS402	EJS403	EJS403	EJS404		
Sampling Date			2017/05/16 10:00	2017/05/16 10:00	2017/05/16 10:10	2017/05/16 10:10	2017/05/16 10:20		
COC Number			572155-04-01	572155-04-01	572155-04-01	572155-04-01	572155-04-01		
	UNITS	Criteria	VS 396	VS 396 Lab-Dup	VS 397	VS 397 Lab-Dup	VS 398	RDL	QC Batch
Inorganics									
Moisture	%	-	23		20	20	18	0.2	4985773
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014		<0.014	0.014	4985770
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050		<0.0050	0.0050	4985661
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050		<0.0050	0.0050	4985661
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050		<0.0050	0.0050	4985661
Benzo(a)anthracene	ug/g	**0.5**	0.011	0.017	<0.0050		0.0064	0.0050	4985661
Benzo(a)pyrene	ug/g	**0.3**	0.0099	0.017	<0.0050		0.0070	0.0050	4985661
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.016	0.025	<0.0050		0.0096	0.0050	4985661
Benzo(g,h,i)perylene	ug/g	**6.6**	0.0094	0.012	<0.0050		0.0070	0.0050	4985661
Benzo(k)fluoranthene	ug/g	**0.78**	0.0058	0.0093	<0.0050		<0.0050	0.0050	4985661
Chrysene	ug/g	**7**	0.011	0.017	<0.0050		0.0075	0.0050	4985661
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050		<0.0050	0.0050	4985661
Fluoranthene	ug/g	**0.69**	0.021	0.036 (1)	<0.0050		0.014	0.0050	4985661
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050		<0.0050	0.0050	4985661
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.0076	0.0099	<0.0050		0.0059	0.0050	4985661
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050		<0.0050	0.0050	4985661
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050		<0.0050	0.0050	4985661
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050		<0.0050	0.0050	4985661
Phenanthrene	ug/g	**6.2**	0.0088	0.014	<0.0050		0.0070	0.0050	4985661
Pyrene	ug/g	**78**	0.019	0.029 (1)	<0.0050		0.011	0.0050	4985661
Surrogate Recovery (%)									
D10-Anthracene	%	-	57	85	86		87		4985661
D14-Terphenyl (FS)	%	-	57	89	87		90		4985661
D8-Acenaphthylene	%	-	54	80	77		78		4985661

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.

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 #: B799367
Report Date: 2017/05/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			EJS405	EJS406		
Sampling Date			2017/05/16 10:30	2017/05/16 10:40		
COC Number			572155-04-01	572155-04-01		
	UNITS	Criteria	VS 399	VS 400	RDL	QC Batch
Inorganics						
Moisture	%	-	17	9.1	0.2	4985773
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	0.014	4985770
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	0.0050	4985661
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	0.0050	4985661
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	0.0050	4985661
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	0.0050	4985661
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0050	4985661
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	4985661
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	0.0050	4985661
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	4985661
Chrysene	ug/g	**7**	<0.0050	<0.0050	0.0050	4985661
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	0.0050	4985661
Fluoranthene	ug/g	**0.69**	0.0074	<0.0050	0.0050	4985661
Fluorene	ug/g	**62**	<0.0050	<0.0050	0.0050	4985661
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	0.0050	4985661
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	4985661
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	4985661
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	0.0050	4985661
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	0.0050	4985661
Pyrene	ug/g	**78**	0.0058	<0.0050	0.0050	4985661
Surrogate Recovery (%)						
D10-Anthracene	%	-	85	81		4985661
D14-Terphenyl (FS)	%	-	82	77		4985661
D8-Acenaphthylene	%	-	74	69		4985661

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 #: B799367
Report Date: 2017/05/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EJS402	EJS403	EJS403	EJS404	EJS405		
Sampling Date			2017/05/16 10:00	2017/05/16 10:10	2017/05/16 10:10	2017/05/16 10:20	2017/05/16 10:30		
COC Number			572155-04-01	572155-04-01	572155-04-01	572155-04-01	572155-04-01		
	UNITS	**Criteria**	**VS 396**	**VS 397**	**VS 397 Lab-Dup**	**VS 398**	**VS 399**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.2	0.4	0.4	0.2	0.3	0.2	4986670

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			EJS406		
Sampling Date			2017/05/16 10:40		
COC Number			572155-04-01		
	UNITS	**Criteria**	**VS 400**	**RDL**	**QC Batch**
Inorganics					
Chromium (VI)	ug/g	**8**	<0.2	0.2	4986670

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 #: B799367
Report Date: 2017/05/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: EJS402
Sample ID: VS 396
Matrix: Soil

Collected: 2017/05/16
Shipped:
Received: 2017/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4985770	N/A	2017/05/17	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4986670	2017/05/17	2017/05/17	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4987108	2017/05/17	2017/05/17	Daniel Teclu
Moisture	BAL	4985773	N/A	2017/05/17	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4985661	2017/05/16	2017/05/16	Arezoo Habibagahi

Maxxam ID: EJS402 Dup
Sample ID: VS 396
Matrix: Soil

Collected: 2017/05/16
Shipped:
Received: 2017/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4985661	2017/05/16	2017/05/16	Arezoo Habibagahi

Maxxam ID: EJS403
Sample ID: VS 397
Matrix: Soil

Collected: 2017/05/16
Shipped:
Received: 2017/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4985770	N/A	2017/05/17	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4986670	2017/05/17	2017/05/17	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4987108	2017/05/17	2017/05/17	Daniel Teclu
Moisture	BAL	4985773	N/A	2017/05/17	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4985661	2017/05/16	2017/05/16	Arezoo Habibagahi

Maxxam ID: EJS403 Dup
Sample ID: VS 397
Matrix: Soil

Collected: 2017/05/16
Shipped:
Received: 2017/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4986670	2017/05/17	2017/05/17	Sally Coughlin
Moisture	BAL	4985773	N/A	2017/05/17	Liliana Gaburici

Maxxam ID: EJS404
Sample ID: VS 398
Matrix: Soil

Collected: 2017/05/16
Shipped:
Received: 2017/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4985770	N/A	2017/05/17	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4986670	2017/05/17	2017/05/17	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4987108	2017/05/17	2017/05/17	Daniel Teclu
Moisture	BAL	4985773	N/A	2017/05/17	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4985661	2017/05/16	2017/05/16	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 #: B799367
Report Date: 2017/05/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: EJS405
Sample ID: VS 399
Matrix: Soil

Collected: 2017/05/16
Shipped:
Received: 2017/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4985770	N/A	2017/05/17	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4986670	2017/05/17	2017/05/17	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4987108	2017/05/17	2017/05/17	Daniel Teclu
Moisture	BAL	4985773	N/A	2017/05/17	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4985661	2017/05/16	2017/05/16	Arezoo Habibagahi

Maxxam ID: EJS406
Sample ID: VS 400
Matrix: Soil

Collected: 2017/05/16
Shipped:
Received: 2017/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4985770	N/A	2017/05/17	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4986670	2017/05/17	2017/05/17	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4987108	2017/05/17	2017/05/17	Daniel Teclu
Moisture	BAL	4985773	N/A	2017/05/17	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4985661	2017/05/16	2017/05/16	Arezoo Habibagahi

Maxxam ID: EJS406 Dup
Sample ID: VS 400
Matrix: Soil

Collected: 2017/05/16
Shipped:
Received: 2017/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4987108	2017/05/17	2017/05/17	Daniel Teclu

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 #: B799367
Report Date: 2017/05/17

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	12.3°C
Package 2	5.0°C

Sample EJS402 [VS 396] : PAH Analysis: Duplicate results exceeded RPD acceptance criteria for flagged analytes. This is likely due to sample heterogeneity.

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 #: B799367
Report Date: 2017/05/17

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4985661	D10-Anthracene	2017/05/16	99	50 - 130	109	50 - 130	59	%		
4985661	D14-Terphenyl (FS)	2017/05/16	108	50 - 130	108	50 - 130	56	%		
4985661	D8-Acenaphthylene	2017/05/16	97	50 - 130	91	50 - 130	55	%		
4985661	1-Methylnaphthalene	2017/05/16	90	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4985661	2-Methylnaphthalene	2017/05/16	91	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4985661	Acenaphthene	2017/05/16	91	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4985661	Acenaphthylene	2017/05/16	83	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4985661	Anthracene	2017/05/16	83	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4985661	Benzo(a)anthracene	2017/05/16	89	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4985661	Benzo(a)pyrene	2017/05/16	81	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
4985661	Benzo(b/j)fluoranthene	2017/05/16	82	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4985661	Benzo(g,h,i)perylene	2017/05/16	82	50 - 130	95	50 - 130	<0.0050	ug/g	23	40
4985661	Benzo(k)fluoranthene	2017/05/16	95	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
4985661	Chrysene	2017/05/16	88	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4985661	Dibenz(a,h)anthracene	2017/05/16	78	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
4985661	Fluoranthene	2017/05/16	90	50 - 130	95	50 - 130	<0.0050	ug/g	52 (1)	40
4985661	Fluorene	2017/05/16	92	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
4985661	Indeno(1,2,3-cd)pyrene	2017/05/16	79	50 - 130	98	50 - 130	<0.0050	ug/g	26	40
4985661	Naphthalene	2017/05/16	81	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4985661	Phenanthrene	2017/05/16	82	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4985661	Pyrene	2017/05/16	85	50 - 130	91	50 - 130	<0.0050	ug/g	43 (1)	40
4985773	Moisture	2017/05/17							3.0	50
4986670	Chromium (VI)	2017/05/17	91	75 - 125	92	80 - 120	<0.2	ug/g	3.4	35
4987108	Acid Extractable Antimony (Sb)	2017/05/17	102	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
4987108	Acid Extractable Arsenic (As)	2017/05/17	98	75 - 125	99	80 - 120	<1.0	ug/g	NC	30
4987108	Acid Extractable Barium (Ba)	2017/05/17	97	75 - 125	98	80 - 120	<0.50	ug/g	0.91	30
4987108	Acid Extractable Beryllium (Be)	2017/05/17	100	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
4987108	Acid Extractable Boron (B)	2017/05/17	97	75 - 125	96	80 - 120	<5.0	ug/g	NC	30
4987108	Acid Extractable Cadmium (Cd)	2017/05/17	99	75 - 125	100	80 - 120	<0.10	ug/g	NC	30
4987108	Acid Extractable Chromium (Cr)	2017/05/17	93	75 - 125	96	80 - 120	<1.0	ug/g	0.65	30
4987108	Acid Extractable Cobalt (Co)	2017/05/17	95	75 - 125	96	80 - 120	<0.10	ug/g	6.4	30

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 #: B799367
Report Date: 2017/05/17

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4987108	Acid Extractable Copper (Cu)	2017/05/17	92	75 - 125	95	80 - 120	<0.50	ug/g	4.5	30
4987108	Acid Extractable Lead (Pb)	2017/05/17	95	75 - 125	102	80 - 120	<1.0	ug/g	29	30
4987108	Acid Extractable Mercury (Hg)	2017/05/17	101	75 - 125	102	80 - 120	<0.050	ug/g	NC	30
4987108	Acid Extractable Molybdenum (Mo)	2017/05/17	96	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
4987108	Acid Extractable Nickel (Ni)	2017/05/17	95	75 - 125	97	80 - 120	<0.50	ug/g	5.0	30
4987108	Acid Extractable Selenium (Se)	2017/05/17	99	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
4987108	Acid Extractable Silver (Ag)	2017/05/17	99	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
4987108	Acid Extractable Thallium (Tl)	2017/05/17	100	75 - 125	101	80 - 120	<0.050	ug/g	NC	30
4987108	Acid Extractable Uranium (U)	2017/05/17	100	75 - 125	101	80 - 120	<0.050	ug/g	0.17	30
4987108	Acid Extractable Vanadium (V)	2017/05/17	93	75 - 125	95	80 - 120	<5.0	ug/g	7.7	30
4987108	Acid Extractable Zinc (Zn)	2017/05/17	98	75 - 125	93	80 - 120	<5.0	ug/g	4.9	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 (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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 #: B799367
Report Date: 2017/05/17

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).

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.

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 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 #: 572155
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#572155-04-01	Madison Bingley
				Sampled By:	T.L.		

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								# of Bottles	Comments
1		VS396	May 16, 17	10:00	Soil	NA	✓	✓								1	
2		VS397	↓	10:10	↓	↓	✓	✓								1	
3		VS398	↓	10:20	↓	↓	✓	✓								1	
4		VS399	↓	10:30	↓	↓	✓	✓								1	
5		VS900	↓	10:40	↓	↓	✓	✓								1	
6																	
7																	
8																	
9																	
10																	

16-May-17 15:05
Alison Cameron
B799367
OTT 001

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
Tony Lyon	17/05/16	12:30	[illegible]	2017/05/16	15:05	0		10, 15, 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 #: B799367
Report Date: 2017/05/17

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
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. #: 572155-06-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/04
Report #: R4449431
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B789052
Received: 2017/05/03, 15:00

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	2	N/A	2017/05/04	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	2	2017/05/04	2017/05/04	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	2	2017/05/04	2017/05/04	CAM SOP-00447	EPA 6020B m
Moisture	2	N/A	2017/05/04	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	2	2017/05/03	2017/05/03	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-06-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/04
Report #: R4449431
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B789052
Received: 2017/05/03, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B789052
Report Date: 2017/05/04

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EHX879	EHX880	EHX880		
Sampling Date			2017/05/03 14:00	2017/05/03 14:10	2017/05/03 14:10		
COC Number			572155-06-01	572155-06-01	572155-06-01		
	UNITS	Criteria	VS394	VS395	VS395 Lab-Dup	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	0.20	4968393
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	1.0	4968393
Acid Extractable Barium (Ba)	ug/g	**390**	25	30	30	0.50	4968393
Acid Extractable Beryllium (Be)	ug/g	**4**	0.27	0.29	0.27	0.20	4968393
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	5.0	4968393
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.10	4968393
Acid Extractable Chromium (Cr)	ug/g	**160**	20	23	23	1.0	4968393
Acid Extractable Cobalt (Co)	ug/g	**22**	5.3	5.5	5.4	0.10	4968393
Acid Extractable Copper (Cu)	ug/g	**140**	5.3	8.4	7.7	0.50	4968393
Acid Extractable Lead (Pb)	ug/g	**120**	2.6	2.2	2.1	1.0	4968393
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	0.50	4968393
Acid Extractable Nickel (Ni)	ug/g	**100**	12	13	12	0.50	4968393
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	0.50	4968393
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	0.20	4968393
Acid Extractable Thallium (Tl)	ug/g	**1**	0.092	0.083	0.077	0.050	4968393
Acid Extractable Uranium (U)	ug/g	**23**	0.37	0.50	0.50	0.050	4968393
Acid Extractable Vanadium (V)	ug/g	**86**	24	29	29	5.0	4968393
Acid Extractable Zinc (Zn)	ug/g	**340**	29	28	28	5.0	4968393
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	0.050	4968393

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 Job #: B789052
Report Date: 2017/05/04

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EHX879	EHX880		
Sampling Date			2017/05/03 14:00	2017/05/03 14:10		
COC Number			572155-06-01	572155-06-01		
	UNITS	Criteria	VS394	VS395	RDL	QC Batch
Inorganics						
Moisture	%	-	23	21	0.2	4966430
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	0.014	4966459
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	0.0050	4966431
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	0.0050	4966431
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	0.0050	4966431
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	0.0050	4966431
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0050	4966431
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	4966431
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	0.0050	4966431
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	4966431
Chrysene	ug/g	**7**	<0.0050	<0.0050	0.0050	4966431
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	0.0050	4966431
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	0.0050	4966431
Fluorene	ug/g	**62**	<0.0050	<0.0050	0.0050	4966431
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	0.0050	4966431
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	4966431
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	4966431
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	0.0050	4966431
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	0.0050	4966431
Pyrene	ug/g	**78**	<0.0050	<0.0050	0.0050	4966431
Surrogate Recovery (%)						
D10-Anthracene	%	-	84	89		4966431
D14-Terphenyl (FS)	%	-	69	69		4966431
D8-Acenaphthylene	%	-	65	66		4966431

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 #: B789052
Report Date: 2017/05/04

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EHX879	EHX879	EHX880		
Sampling Date			2017/05/03 14:00	2017/05/03 14:00	2017/05/03 14:10		
COC Number			572155-06-01	572155-06-01	572155-06-01		
	UNITS	**Criteria**	**VS394**	**VS394 Lab-Dup**	**VS395**	**RDL**	**QC Batch**
Inorganics							
Chromium (VI)	ug/g	**8**	0.3	0.4	0.3	0.2	4967780

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 Job #: B789052
Report Date: 2017/05/04

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EHX879
Sample ID: VS394
Matrix: Soil

Collected: 2017/05/03
Shipped:
Received: 2017/05/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4966459	N/A	2017/05/04	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4967780	2017/05/04	2017/05/04	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4968393	2017/05/04	2017/05/04	Daniel Teclu
Moisture	BAL	4966430	N/A	2017/05/04	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4966431	2017/05/03	2017/05/03	Arezoo Habibagahi

Maxxam ID: EHX879 Dup
Sample ID: VS394
Matrix: Soil

Collected: 2017/05/03
Shipped:
Received: 2017/05/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4967780	2017/05/04	2017/05/04	Manoj Kumar Gera

Maxxam ID: EHX880
Sample ID: VS395
Matrix: Soil

Collected: 2017/05/03
Shipped:
Received: 2017/05/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4966459	N/A	2017/05/04	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4967780	2017/05/04	2017/05/04	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4968393	2017/05/04	2017/05/04	Daniel Teclu
Moisture	BAL	4966430	N/A	2017/05/04	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4966431	2017/05/03	2017/05/03	Arezoo Habibagahi

Maxxam ID: EHX880 Dup
Sample ID: VS395
Matrix: Soil

Collected: 2017/05/03
Shipped:
Received: 2017/05/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4968393	2017/05/04	2017/05/04	Daniel Teclu

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 #: B789052
Report Date: 2017/05/04

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	15.0°C
Package 2	5.0°C

Revised report (2017/05/04): Includes Reg 153 criteria.

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 #: B789052
Report Date: 2017/05/04

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
4966431	D10-Anthracene	2017/05/03	62	50 - 130	81	50 - 130	97	%		
4966431	D14-Terphenyl (FS)	2017/05/03	54	50 - 130	74	50 - 130	76	%		
4966431	D8-Acenaphthylene	2017/05/03	52	50 - 130	70	50 - 130	70	%		
4966430	Moisture	2017/05/04							42	50
4966431	1-Methylnaphthalene	2017/05/03	71	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
4966431	2-Methylnaphthalene	2017/05/03	92	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4966431	Acenaphthene	2017/05/03	87	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
4966431	Acenaphthylene	2017/05/03	68	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40
4966431	Anthracene	2017/05/03	80	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
4966431	Benzo(a)anthracene	2017/05/03	81	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
4966431	Benzo(a)pyrene	2017/05/03	84	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
4966431	Benzo(b/j)fluoranthene	2017/05/03	92	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
4966431	Benzo(g,h,i)perylene	2017/05/03	58	50 - 130	56	50 - 130	<0.0050	ug/g	NC	40
4966431	Benzo(k)fluoranthene	2017/05/03	87	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
4966431	Chrysene	2017/05/03	74	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40
4966431	Dibenz(a,h)anthracene	2017/05/03	54	50 - 130	51	50 - 130	<0.0050	ug/g	NC	40
4966431	Fluoranthene	2017/05/03	77	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
4966431	Fluorene	2017/05/03	100	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
4966431	Indeno(1,2,3-cd)pyrene	2017/05/03	69	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40
4966431	Naphthalene	2017/05/03	81	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
4966431	Phenanthrene	2017/05/03	78	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
4966431	Pyrene	2017/05/03	77	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40
4967780	Chromium (VI)	2017/05/04	85	75 - 125	100	80 - 120	<0.2	ug/g	22	35
4968393	Acid Extractable Antimony (Sb)	2017/05/04	87	75 - 125	97	80 - 120	<0.20	ug/g	NC	30
4968393	Acid Extractable Arsenic (As)	2017/05/04	97	75 - 125	97	80 - 120	<1.0	ug/g	NC	30
4968393	Acid Extractable Barium (Ba)	2017/05/04	NC	75 - 125	97	80 - 120	<0.50	ug/g	0.33	30
4968393	Acid Extractable Beryllium (Be)	2017/05/04	98	75 - 125	98	80 - 120	<0.20	ug/g	7.4	30
4968393	Acid Extractable Boron (B)	2017/05/04	95	75 - 125	97	80 - 120	<5.0	ug/g	NC	30
4968393	Acid Extractable Cadmium (Cd)	2017/05/04	99	75 - 125	98	80 - 120	<0.10	ug/g	NC	30
4968393	Acid Extractable Chromium (Cr)	2017/05/04	98	75 - 125	102	80 - 120	<1.0	ug/g	1.2	30
4968393	Acid Extractable Cobalt (Co)	2017/05/04	97	75 - 125	102	80 - 120	<0.10	ug/g	2.2	30

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 #: B789052
Report Date: 2017/05/04

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
4968393	Acid Extractable Copper (Cu)	2017/05/04	98	75 - 125	100	80 - 120	<0.50	ug/g	8.2	30
4968393	Acid Extractable Lead (Pb)	2017/05/04	98	75 - 125	100	80 - 120	<1.0	ug/g	4.4	30
4968393	Acid Extractable Mercury (Hg)	2017/05/04	97	75 - 125	102	80 - 120	<0.050	ug/g	NC	30
4968393	Acid Extractable Molybdenum (Mo)	2017/05/04	102	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
4968393	Acid Extractable Nickel (Ni)	2017/05/04	98	75 - 125	102	80 - 120	<0.50	ug/g	7.1	30
4968393	Acid Extractable Selenium (Se)	2017/05/04	100	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
4968393	Acid Extractable Silver (Ag)	2017/05/04	100	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
4968393	Acid Extractable Thallium (Tl)	2017/05/04	100	75 - 125	99	80 - 120	<0.050	ug/g	7.5	30
4968393	Acid Extractable Uranium (U)	2017/05/04	99	75 - 125	98	80 - 120	<0.050	ug/g	0.67	30
4968393	Acid Extractable Vanadium (V)	2017/05/04	NC	75 - 125	101	80 - 120	<5.0	ug/g	0.0036	30
4968393	Acid Extractable Zinc (Zn)	2017/05/04	NC	75 - 125	100	80 - 120	<5.0	ug/g	1.1	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B789052
Report Date: 2017/05/04

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.

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 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 #:
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			572155
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#572155-06-01	Madison Bingley
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)? ___

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: 24hrs ☒
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		VS394	17/05/03	14:00	Soil		X	X								1	
2		VS395	17/05/03	14:10	Soil		X	X								1	
3																	
4																	
5																	ON ICE
6																	
7																	
8																	
9																	
10																	

RECEIVED IN OTTAWA

03-May-17 15:00
Alison Cameron
B789052
MVA OTT-001

* 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	17/05/03	14:20	Paul / Paul Rudzinski	2017/05/03	15:00	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

Maxxam Job #: B789052
Report Date: 2017/05/04

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. #: 572155-21-01, 572155-22-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/04/28
Report #: R4442194
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B784291
Received: 2017/04/27, 15:00

Sample Matrix: Soil
Samples Received: 16

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	16	N/A	2017/04/28	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	16	2017/04/28	2017/04/28	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	16	2017/04/28	2017/04/28	CAM SOP-00447	EPA 6020B m
Moisture	16	N/A	2017/04/28	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	16	2017/04/27	2017/04/27	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
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.

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
Your C.O.C. #: 572155-21-01, 572155-22-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/04/28
Report #: R4442194
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B784291
Received: 2017/04/27, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B784291
Report Date: 2017/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EHA355	EHA356	EHA357	EHA358	EHA359		
Sampling Date			2017/04/27 11:00	2017/04/27 11:15	2017/04/27 11:30	2017/04/27 11:45	2017/04/27 12:00		
COC Number			572155-21-01	572155-21-01	572155-21-01	572155-21-01	572155-21-01		
	UNITS	**Criteria**	**VS 380**	**VS 381**	**VS 382**	**VS 1382**	**VS 383**	**RDL**	**QC Batch**
Metals									
Acid Extractable Aluminum (Al)	ug/g	-	4900	4900	14000	15000	14000	50	4960066
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4960066
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	1.1	1.2	1.0	4960066
Acid Extractable Barium (Ba)	ug/g	**390**	18	20	130	140	120	0.50	4960066
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	<0.20	0.50	0.50	0.48	0.20	4960066
Acid Extractable Bismuth (Bi)	ug/g	**-**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4960066
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4960066
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	0.17	0.19	<0.10	0.10	4960066
Acid Extractable Calcium (Ca)	ug/g	**-**	2000	1600	5100	5400	5600	50	4960066
Acid Extractable Chromium (Cr)	ug/g	**160**	11	13	32	33	32	1.0	4960066
Acid Extractable Cobalt (Co)	ug/g	**22**	2.5	3.4	7.4	8.6	7.8	0.10	4960066
Acid Extractable Copper (Cu)	ug/g	**140**	2.2	5.2	16	15	16	0.50	4960066
Acid Extractable Iron (Fe)	ug/g	**-**	6500	8400	21000	22000	22000	50	4960066
Acid Extractable Lead (Pb)	ug/g	**120**	2.5	4.5	4.8	6.0	4.0	1.0	4960066
Acid Extractable Magnesium (Mg)	ug/g	**-**	2700	2900	4800	5000	5800	50	4960066
Acid Extractable Manganese (Mn)	ug/g	**-**	72	97	230	250	300	1.0	4960066
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4960066
Acid Extractable Nickel (Ni)	ug/g	**100**	6.9	7.8	17	19	18	0.50	4960066
Acid Extractable Phosphorus (P)	ug/g	**-**	720	480	1100	1100	1200	50	4960066
Acid Extractable Potassium (K)	ug/g	**-**	1100	1100	3200	3400	3700	200	4960066
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4960066
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4960066
Acid Extractable Sodium (Na)	ug/g	**-**	61	76	190	210	300	50	4960066
Acid Extractable Strontium (Sr)	ug/g	**-**	8.2	7.4	24	25	24	1.0	4960066
Acid Extractable Thallium (Tl)	ug/g	**1**	0.058	0.063	0.13	0.13	0.15	0.050	4960066
Acid Extractable Tin (Sn)	ug/g	**-**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4960066
Acid Extractable Uranium (U)	ug/g	**23**	0.31	0.59	0.91	0.99	1.0	0.050	4960066
Acid Extractable Vanadium (V)	ug/g	**86**	12	19	45	47	41	5.0	4960066
Acid Extractable Zinc (Zn)	ug/g	**340**	34	34	56	59	50	5.0	4960066
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4960066

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 #: B784291
Report Date: 2017/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EHA360	EHA361	EHA362	EHA362	EHA363		
Sampling Date			2017/04/27 12:15	2017/04/27 12:30	2017/04/27 12:45	2017/04/27 12:45	2017/04/27 13:00		
COC Number			572155-21-01	572155-21-01	572155-21-01	572155-21-01	572155-21-01		
	UNITS	Criteria	VS 384	VS 385	VS 386	VS 386 Lab-Dup	VS 387	RDL	QC Batch
Metals									
Acid Extractable Aluminum (Al)	ug/g	-	15000	4600	6700	7000	6600	50	4960066
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4960066
Acid Extractable Arsenic (As)	ug/g	**18**	2.1	<1.0	<1.0	<1.0	<1.0	1.0	4960066
Acid Extractable Barium (Ba)	ug/g	**390**	130	24	41	45	42	0.50	4960066
Acid Extractable Beryllium (Be)	ug/g	**4**	0.50	<0.20	0.28	0.27	0.26	0.20	4960066
Acid Extractable Bismuth (Bi)	ug/g	**-**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4960066
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4960066
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.18	<0.10	<0.10	<0.10	<0.10	0.10	4960066
Acid Extractable Calcium (Ca)	ug/g	**-**	5900	1200	3000	3100	3700	50	4960066
Acid Extractable Chromium (Cr)	ug/g	**160**	34	13	19	21	22	1.0	4960066
Acid Extractable Cobalt (Co)	ug/g	**22**	9.4	3.5	5.7	6.1	5.4	0.10	4960066
Acid Extractable Copper (Cu)	ug/g	**140**	17	4.5	8.6	8.9	12	0.50	4960066
Acid Extractable Iron (Fe)	ug/g	**-**	25000	6200	12000	13000	14000	50	4960066
Acid Extractable Lead (Pb)	ug/g	**120**	5.3	2.3	2.1	2.1	2.1	1.0	4960066
Acid Extractable Magnesium (Mg)	ug/g	**-**	6200	2700	3900	4200	4300	50	4960066
Acid Extractable Manganese (Mn)	ug/g	**-**	430	79	210	220	690	1.0	4960066
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.74	<0.50	<0.50	<0.50	<0.50	0.50	4960066
Acid Extractable Nickel (Ni)	ug/g	**100**	22	7.8	13	14	16	0.50	4960066
Acid Extractable Phosphorus (P)	ug/g	**-**	1300	280	700	700	950	50	4960066
Acid Extractable Potassium (K)	ug/g	**-**	4000	900	1600	1600	1600	200	4960066
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4960066
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4960066
Acid Extractable Sodium (Na)	ug/g	**-**	350	53	150	150	130	50	4960066
Acid Extractable Strontium (Sr)	ug/g	**-**	27	6.4	12	13	17	1.0	4960066
Acid Extractable Thallium (Tl)	ug/g	**1**	0.15	0.056	0.074	0.074	0.081	0.050	4960066
Acid Extractable Tin (Sn)	ug/g	**-**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4960066
Acid Extractable Uranium (U)	ug/g	**23**	0.79	0.33	0.36	0.37	0.46	0.050	4960066
Acid Extractable Vanadium (V)	ug/g	**86**	48	12	23	24	28	5.0	4960066
Acid Extractable Zinc (Zn)	ug/g	**340**	57	21	26	26	28	5.0	4960066

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 Job #: B784291
Report Date: 2017/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EHA360	EHA361	EHA362	EHA362	EHA363		
Sampling Date			2017/04/27 12:15	2017/04/27 12:30	2017/04/27 12:45	2017/04/27 12:45	2017/04/27 13:00		
COC Number			572155-21-01	572155-21-01	572155-21-01	572155-21-01	572155-21-01		
	UNITS	**Criteria**	**VS 384**	**VS 385**	**VS 386**	**VS 386 Lab-Dup**	**VS 387**	**RDL**	**QC Batch**
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4960066

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 Job #: B784291
Report Date: 2017/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EHA364	EHA392	EHA393	EHA394	EHA395		
Sampling Date			2017/04/27 13:15	2017/04/27 13:30	2017/04/27 13:45	2017/04/27 14:00	2017/04/27 14:15		
COC Number			572155-21-01	572155-22-01	572155-22-01	572155-22-01	572155-22-01		
	UNITS	**Criteria**	**VS 388**	**VS 389**	**VS 390**	**VS 391**	**VS 392**	**RDL**	**QC Batch**
Metals									
Acid Extractable Aluminum (Al)	ug/g	-	3500	3800	8800	12000	5400	50	4960066
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4960066
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	1.1	1.7	<1.0	1.0	4960066
Acid Extractable Barium (Ba)	ug/g	**390**	14	21	66	91	27	0.50	4960066
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	0.20	0.32	0.45	0.21	0.20	4960066
Acid Extractable Bismuth (Bi)	ug/g	**-**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4960066
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4960066
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	4960066
Acid Extractable Calcium (Ca)	ug/g	**-**	1800	1300	4600	4500	2200	50	4960066
Acid Extractable Chromium (Cr)	ug/g	**160**	8.2	9.4	22	28	14	1.0	4960066
Acid Extractable Cobalt (Co)	ug/g	**22**	1.8	2.9	5.1	6.8	3.7	0.10	4960066
Acid Extractable Copper (Cu)	ug/g	**140**	2.5	4.1	6.1	13	6.1	0.50	4960066
Acid Extractable Iron (Fe)	ug/g	**-**	4300	7400	16000	21000	8500	50	4960066
Acid Extractable Lead (Pb)	ug/g	**120**	1.2	1.3	3.6	3.9	1.8	1.0	4960066
Acid Extractable Magnesium (Mg)	ug/g	**-**	2000	1900	3800	4500	2500	50	4960066
Acid Extractable Manganese (Mn)	ug/g	**-**	64	86	140	150	120	1.0	4960066
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4960066
Acid Extractable Nickel (Ni)	ug/g	**100**	5.6	6.4	12	15	8.4	0.50	4960066
Acid Extractable Phosphorus (P)	ug/g	**-**	570	420	1200	1100	670	50	4960066
Acid Extractable Potassium (K)	ug/g	**-**	540	500	1800	2500	860	200	4960066
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4960066
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4960066
Acid Extractable Sodium (Na)	ug/g	**-**	64	92	330	300	120	50	4960066
Acid Extractable Strontium (Sr)	ug/g	**-**	7.1	7.9	22	21	9.7	1.0	4960066
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	<0.050	0.093	0.12	0.052	0.050	4960066
Acid Extractable Tin (Sn)	ug/g	**-**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4960066
Acid Extractable Uranium (U)	ug/g	**23**	0.22	0.45	1.0	0.82	0.63	0.050	4960066
Acid Extractable Vanadium (V)	ug/g	**86**	8.5	16	35	43	19	5.0	4960066
Acid Extractable Zinc (Zn)	ug/g	**340**	18	18	28	39	22	5.0	4960066
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4960066

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 #: B784291
Report Date: 2017/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EHA396	EHA397		
Sampling Date			2017/04/27 14:15	2017/04/27 14:30		
COC Number			572155-22-01	572155-22-01		
	UNITS	Criteria	VS 1392	VS 393	RDL	QC Batch
Metals						
Acid Extractable Aluminum (Al)	ug/g	-	5600	5400	50	4960066
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	0.20	4960066
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	1.0	4960066
Acid Extractable Barium (Ba)	ug/g	**390**	27	25	0.50	4960066
Acid Extractable Beryllium (Be)	ug/g	**4**	0.23	0.20	0.20	4960066
Acid Extractable Bismuth (Bi)	ug/g	**-**	<1.0	<1.0	1.0	4960066
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	5.0	4960066
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	0.10	4960066
Acid Extractable Calcium (Ca)	ug/g	**-**	2700	2400	50	4960066
Acid Extractable Chromium (Cr)	ug/g	**160**	16	16	1.0	4960066
Acid Extractable Cobalt (Co)	ug/g	**22**	4.1	4.7	0.10	4960066
Acid Extractable Copper (Cu)	ug/g	**140**	6.0	5.4	0.50	4960066
Acid Extractable Iron (Fe)	ug/g	**-**	9100	11000	50	4960066
Acid Extractable Lead (Pb)	ug/g	**120**	2.0	1.8	1.0	4960066
Acid Extractable Magnesium (Mg)	ug/g	**-**	2900	3300	50	4960066
Acid Extractable Manganese (Mn)	ug/g	**-**	130	170	1.0	4960066
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	0.50	4960066
Acid Extractable Nickel (Ni)	ug/g	**100**	9.1	9.4	0.50	4960066
Acid Extractable Phosphorus (P)	ug/g	**-**	880	740	50	4960066
Acid Extractable Potassium (K)	ug/g	**-**	900	1000	200	4960066
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	0.50	4960066
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	0.20	4960066
Acid Extractable Sodium (Na)	ug/g	**-**	130	87	50	4960066
Acid Extractable Strontium (Sr)	ug/g	**-**	10	11	1.0	4960066
Acid Extractable Thallium (Tl)	ug/g	**1**	0.061	0.059	0.050	4960066
Acid Extractable Tin (Sn)	ug/g	**-**	<1.0	<1.0	1.0	4960066
Acid Extractable Uranium (U)	ug/g	**23**	0.70	0.36	0.050	4960066
Acid Extractable Vanadium (V)	ug/g	**86**	20	21	5.0	4960066
Acid Extractable Zinc (Zn)	ug/g	**340**	26	18	5.0	4960066
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	0.050	4960066

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 #: B784291
Report Date: 2017/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EHA355	EHA356	EHA356	EHA357	EHA358		
Sampling Date			2017/04/27 11:00	2017/04/27 11:15	2017/04/27 11:15	2017/04/27 11:30	2017/04/27 11:45		
COC Number			572155-21-01	572155-21-01	572155-21-01	572155-21-01	572155-21-01		
	UNITS	**Criteria**	**VS 380**	**VS 381**	**VS 381 Lab-Dup**	**VS 382**	**VS 1382**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	11	17	17	17	17	0.2	4958365
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	4958392
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Surrogate Recovery (%)									
D10-Anthracene	%	-	86	89	94	88	87		4958406
D14-Terphenyl (FS)	%	-	76	81	82	75	75		4958406
D8-Acenaphthylene	%	-	74	76	74	72	71		4958406

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 Job #: B784291
Report Date: 2017/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EHA359	EHA360	EHA361	EHA362	EHA363		
Sampling Date			2017/04/27 12:00	2017/04/27 12:15	2017/04/27 12:30	2017/04/27 12:45	2017/04/27 13:00		
COC Number			572155-21-01	572155-21-01	572155-21-01	572155-21-01	572155-21-01		
	UNITS	**Criteria**	**VS 383**	**VS 384**	**VS 385**	**VS 386**	**VS 387**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	21	20	17	17	15	0.2	4958365
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4958392
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Surrogate Recovery (%)									
D10-Anthracene	%	-	86	89	92	96	94		4958406
D14-Terphenyl (FS)	%	-	75	68	71	70	74		4958406
D8-Acenaphthylene	%	-	73	69	69	69	71		4958406

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 #: B784291
Report Date: 2017/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EHA364	EHA392	EHA393	EHA394	EHA395		
Sampling Date			2017/04/27 13:15	2017/04/27 13:30	2017/04/27 13:45	2017/04/27 14:00	2017/04/27 14:15		
COC Number			572155-21-01	572155-22-01	572155-22-01	572155-22-01	572155-22-01		
	UNITS	**Criteria**	**VS 388**	**VS 389**	**VS 390**	**VS 391**	**VS 392**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	15	14	16	17	18	0.2	4958365
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4958392
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4958406
Surrogate Recovery (%)									
D10-Anthracene	%	-	80	84	85	87	87		4958406
D14-Terphenyl (FS)	%	-	74	62	75	70	64		4958406
D8-Acenaphthylene	%	-	68	67	66	65	65		4958406

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 #: B784291
Report Date: 2017/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EHA396	EHA397		
Sampling Date			2017/04/27 14:15	2017/04/27 14:30		
COC Number			572155-22-01	572155-22-01		
	UNITS	Criteria	VS 1392	VS 393	RDL	QC Batch
Inorganics						
Moisture	%	-	19	21	0.2	4958365
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	0.014	4958392
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	0.0050	4958406
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	0.0050	4958406
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	0.0050	4958406
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	0.0050	4958406
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0050	4958406
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	4958406
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	0.0050	4958406
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	4958406
Chrysene	ug/g	**7**	<0.0050	<0.0050	0.0050	4958406
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	0.0050	4958406
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	0.0050	4958406
Fluorene	ug/g	**62**	<0.0050	<0.0050	0.0050	4958406
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	0.0050	4958406
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	4958406
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	4958406
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	0.0050	4958406
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	0.0050	4958406
Pyrene	ug/g	**78**	<0.0050	<0.0050	0.0050	4958406
Surrogate Recovery (%)						
D10-Anthracene	%	-	85	83		4958406
D14-Terphenyl (FS)	%	-	67	71		4958406
D8-Acenaphthylene	%	-	65	65		4958406

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 #: B784291
Report Date: 2017/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EHA355	EHA356	EHA357	EHA358	EHA359		
Sampling Date			2017/04/27 11:00	2017/04/27 11:15	2017/04/27 11:30	2017/04/27 11:45	2017/04/27 12:00		
COC Number			572155-21-01	572155-21-01	572155-21-01	572155-21-01	572155-21-01		
	UNITS	**Criteria**	**VS 380**	**VS 381**	**VS 382**	**VS 1382**	**VS 383**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	<0.2	0.2	0.3	0.4	0.2	4959632

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			EHA360	EHA361	EHA361	EHA362	EHA363		
Sampling Date			2017/04/27 12:15	2017/04/27 12:30	2017/04/27 12:30	2017/04/27 12:45	2017/04/27 13:00		
COC Number			572155-21-01	572155-21-01	572155-21-01	572155-21-01	572155-21-01		
	UNITS	**Criteria**	**VS 384**	**VS 385**	**VS 385 Lab-Dup**	**VS 386**	**VS 387**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.4	<0.2	<0.2	<0.2	0.3	0.2	4959632

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			EHA364	EHA392	EHA393	EHA394	EHA395		
Sampling Date			2017/04/27 13:15	2017/04/27 13:30	2017/04/27 13:45	2017/04/27 14:00	2017/04/27 14:15		
COC Number			572155-21-01	572155-22-01	572155-22-01	572155-22-01	572155-22-01		
	UNITS	**Criteria**	**VS 388**	**VS 389**	**VS 390**	**VS 391**	**VS 392**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	<0.2	0.5	0.4	<0.2	0.2	4959632

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 #: B784291
Report Date: 2017/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EHA396	EHA397		
Sampling Date			2017/04/27 14:15	2017/04/27 14:30		
COC Number			572155-22-01	572155-22-01		
	UNITS	**Criteria**	**VS 1392**	**VS 393**	**RDL**	**QC Batch**
Inorganics						
Chromium (VI)	ug/g	**8**	<0.2	<0.2	0.2	4959632

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 #: B784291
Report Date: 2017/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EHA355
Sample ID: VS 380
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4958392	N/A	2017/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	Arezoo Habibagahi

Maxxam ID: EHA356
Sample ID: VS 381
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4958392	N/A	2017/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	Arezoo Habibagahi

Maxxam ID: EHA356 Dup
Sample ID: VS 381
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	Arezoo Habibagahi

Maxxam ID: EHA357
Sample ID: VS 382
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4958392	N/A	2017/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	Arezoo Habibagahi

Maxxam ID: EHA358
Sample ID: VS 1382
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4958392	N/A	2017/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	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 #: B784291
Report Date: 2017/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EHA359
Sample ID: VS 383
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4958392	N/A	2017/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	Arezoo Habibagahi

Maxxam ID: EHA360
Sample ID: VS 384
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4958392	N/A	2017/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	Arezoo Habibagahi

Maxxam ID: EHA361
Sample ID: VS 385
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4958392	N/A	2017/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	Arezoo Habibagahi

Maxxam ID: EHA361 Dup
Sample ID: VS 385
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le

Maxxam ID: EHA362
Sample ID: VS 386
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4958392	N/A	2017/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	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 #: B784291
Report Date: 2017/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EHA362 Dup
Sample ID: VS 386
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri

Maxxam ID: EHA363
Sample ID: VS 387
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4958392	N/A	2017/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	Arezoo Habibagahi

Maxxam ID: EHA364
Sample ID: VS 388
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4958392	N/A	2017/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	Arezoo Habibagahi

Maxxam ID: EHA392
Sample ID: VS 389
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4958392	N/A	2017/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	Arezoo Habibagahi

Maxxam ID: EHA393
Sample ID: VS 390
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4958392	N/A	2017/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	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 #: B784291
Report Date: 2017/04/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EHA394
Sample ID: VS 391
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4958392	N/A	2017/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	Arezoo Habibagahi

Maxxam ID: EHA395
Sample ID: VS 392
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4958392	N/A	2017/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	Arezoo Habibagahi

Maxxam ID: EHA396
Sample ID: VS 1392
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4958392	N/A	2017/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	Arezoo Habibagahi

Maxxam ID: EHA397
Sample ID: VS 393
Matrix: Soil

Collected: 2017/04/27
Shipped:
Received: 2017/04/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4958392	N/A	2017/04/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4959632	2017/04/28	2017/04/28	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	4960066	2017/04/28	2017/04/28	Viviana Canzonieri
Moisture	BAL	4958365	N/A	2017/04/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4958406	2017/04/27	2017/04/27	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 #: B784291
Report Date: 2017/04/28

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	16.0°C

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 #: B784291
Report Date: 2017/04/28

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
4958406	D10-Anthracene	2017/04/27	84	50 - 130	82	50 - 130	89	%		
4958406	D14-Terphenyl (FS)	2017/04/27	77	50 - 130	80	50 - 130	78	%		
4958406	D8-Acenaphthylene	2017/04/27	77	50 - 130	79	50 - 130	76	%		
4958365	Moisture	2017/04/28							2.9	50
4958406	1-Methylnaphthalene	2017/04/27	78	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
4958406	2-Methylnaphthalene	2017/04/27	90	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
4958406	Acenaphthene	2017/04/27	84	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
4958406	Acenaphthylene	2017/04/27	77	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
4958406	Anthracene	2017/04/27	81	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
4958406	Benzo(a)anthracene	2017/04/27	84	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4958406	Benzo(a)pyrene	2017/04/27	76	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
4958406	Benzo(b/j)fluoranthene	2017/04/27	88	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
4958406	Benzo(g,h,i)perylene	2017/04/27	50	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40
4958406	Benzo(k)fluoranthene	2017/04/27	74	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
4958406	Chrysene	2017/04/27	63	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40
4958406	Dibenz(a,h)anthracene	2017/04/27	52	50 - 130	51	50 - 130	<0.0050	ug/g	NC	40
4958406	Fluoranthene	2017/04/27	81	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
4958406	Fluorene	2017/04/27	87	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
4958406	Indeno(1,2,3-cd)pyrene	2017/04/27	63	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
4958406	Naphthalene	2017/04/27	79	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
4958406	Phenanthrene	2017/04/27	71	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
4958406	Pyrene	2017/04/27	83	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
4959632	Chromium (VI)	2017/04/28	84	75 - 125	90	80 - 120	<0.2	ug/g	NC	35
4960066	Acid Extractable Aluminum (Al)	2017/04/28	NC	75 - 125	106	80 - 120	<50	ug/g	3.7	30
4960066	Acid Extractable Antimony (Sb)	2017/04/28	93	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
4960066	Acid Extractable Arsenic (As)	2017/04/28	100	75 - 125	104	80 - 120	<1.0	ug/g	NC	30
4960066	Acid Extractable Barium (Ba)	2017/04/28	NC	75 - 125	103	80 - 120	<0.50	ug/g	9.7	30
4960066	Acid Extractable Beryllium (Be)	2017/04/28	101	75 - 125	98	80 - 120	<0.20	ug/g	3.7	30
4960066	Acid Extractable Bismuth (Bi)	2017/04/28	99	75 - 125	100	80 - 120	<1.0	ug/g	NC	30
4960066	Acid Extractable Boron (B)	2017/04/28	101	75 - 125	98	80 - 120	<5.0	ug/g	NC	30
4960066	Acid Extractable Cadmium (Cd)	2017/04/28	102	75 - 125	99	80 - 120	<0.10	ug/g	NC	30

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 #: B784291
Report Date: 2017/04/28

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
4960066	Acid Extractable Calcium (Ca)	2017/04/28	NC	75 - 125	105	80 - 120	<50	ug/g	1.3	30
4960066	Acid Extractable Chromium (Cr)	2017/04/28	106	75 - 125	101	80 - 120	<1.0	ug/g	8.1	30
4960066	Acid Extractable Cobalt (Co)	2017/04/28	102	75 - 125	100	80 - 120	<0.10	ug/g	7.6	30
4960066	Acid Extractable Copper (Cu)	2017/04/28	102	75 - 125	104	80 - 120	<0.50	ug/g	2.6	30
4960066	Acid Extractable Iron (Fe)	2017/04/28	NC	75 - 125	102	80 - 120	<50	ug/g	6.8	30
4960066	Acid Extractable Lead (Pb)	2017/04/28	98	75 - 125	100	80 - 120	<1.0	ug/g	0.51	30
4960066	Acid Extractable Magnesium (Mg)	2017/04/28	NC	75 - 125	110	80 - 120	<50	ug/g	6.6	30
4960066	Acid Extractable Manganese (Mn)	2017/04/28	NC	75 - 125	100	80 - 120	<1.0	ug/g	5.5	30
4960066	Acid Extractable Mercury (Hg)	2017/04/28	99	75 - 125	99	80 - 120	<0.050	ug/g	NC	30
4960066	Acid Extractable Molybdenum (Mo)	2017/04/28	103	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4960066	Acid Extractable Nickel (Ni)	2017/04/28	104	75 - 125	101	80 - 120	<0.50	ug/g	9.1	30
4960066	Acid Extractable Phosphorus (P)	2017/04/28	NC	75 - 125	105	80 - 120	<50	ug/g	0.94	30
4960066	Acid Extractable Potassium (K)	2017/04/28	NC	75 - 125	110	80 - 120	<200	ug/g	4.1	30
4960066	Acid Extractable Selenium (Se)	2017/04/28	105	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
4960066	Acid Extractable Silver (Ag)	2017/04/28	104	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
4960066	Acid Extractable Sodium (Na)	2017/04/28	113	75 - 125	108	80 - 120	<50	ug/g	2.8	30
4960066	Acid Extractable Strontium (Sr)	2017/04/28	112	75 - 125	100	80 - 120	<1.0	ug/g	9.4	30
4960066	Acid Extractable Thallium (Tl)	2017/04/28	99	75 - 125	97	80 - 120	<0.050	ug/g	0.31	30
4960066	Acid Extractable Tin (Sn)	2017/04/28	106	75 - 125	102	80 - 120	<1.0	ug/g	NC	30
4960066	Acid Extractable Uranium (U)	2017/04/28	98	75 - 125	100	80 - 120	<0.050	ug/g	1.9	30
4960066	Acid Extractable Vanadium (V)	2017/04/28	103	75 - 125	102	80 - 120	<5.0	ug/g	4.0	30
4960066	Acid Extractable Zinc (Zn)	2017/04/28	NC	75 - 125	100	80 - 120	<5.0	ug/g	1.5	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B784291
Report Date: 2017/04/28

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, 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.

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 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 x Fax: (613) 592-9601 x
Email: AccountsPayable_Maxxam@golder.com, OttawaAccou

REPORT TO:
Company Name:
Attention: Paul, Tony, Aaron, Equis
Address:
jecormier@golder.com
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: J.Cormier (A.Bradshaw)

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 572155
COC #: C#572155-22-01
Project Manager: Madison Bingley

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)

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: 24hr ☒
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 ICPMS Metals including Hg and CRVI								# of Bottles	Comments
1		VS 389	17/04/27	13:30	Soil		X	X								1	
2		VS 390	↓	13:45	↓		X	X								1	
3		VS 391		1400			X	X								1	
4		VS 392		14:15			X	X								1	
5		VS 1392		14:15			X	X								1	RECEIVED IN OTTAWA
6		VS 393	↓	14:30	↓		X	X								1	
7																	
8																	
9																	On ice
10																	

27-Apr-17 15:00
Alison Cameron
B784291
MVA OTT-001

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Jen Cormier / Jen Cormier	17/04/27	1435	Mariana Vancon / Vancon	2017/04/27	15:00	0

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	16, 16, 16	Present	✓	
		Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:		Project Name:		C#572155-21-01	Madison Bingley
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	jecormier@golder.com Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	J.Cormier/A.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)? ___

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: 24hr ☒
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		VS380	17/04/27	11:00	Soil		X	X								1	
2		VS381		11:15			X	X								1	
3		VS382		11:30			X	X								1	
4		VS1382		11:45			X	X								1	
5		VS383		12:00			X	X								1	
6		VS384		12:15			X	X								1	RECEIVED IN OTTAWA
7		VS385		12:30			X	X								1	
8		VS386		12:45			X	X								1	
9		VS387		13:00			X	X								1	Onice
10		VS388		13:15			X	X								1	

27-Apr-17 15:00
Alison Cameron
B784291
MVA OTT-001

* 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 Recei	Custody Seal	Yes	No
J.Cormier	17/04/27	1435	Mariana Vascon / Vascon	2017/04/27	15:00	0		16, 16, 16	Present Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B784291
Report Date: 2017/04/28

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.

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. #: 572155-07-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/04/21
Report #: R4434138
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B778782
Received: 2017/04/20, 14:55

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	1	N/A	2017/04/21	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	1	2017/04/21	2017/04/21	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	1	2017/04/21	2017/04/21	CAM SOP-00447	EPA 6020B m
Moisture	1	N/A	2017/04/21	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	1	2017/04/20	2017/04/21	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-07-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/04/21
Report #: R4434138
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B778782
Received: 2017/04/20, 14:55

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B778782
Report Date: 2017/04/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EFZ736	EFZ736		
Sampling Date			2017/04/20 10:30	2017/04/20 10:30		
COC Number			572155-07-01	572155-07-01		
	UNITS	Criteria	VS373B	VS373B Lab-Dup	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	0.20	4949686
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	1.0	4949686
Acid Extractable Barium (Ba)	ug/g	**390**	29	30	0.50	4949686
Acid Extractable Beryllium (Be)	ug/g	**4**	0.24	0.26	0.20	4949686
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	5.0	4949686
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	0.10	4949686
Acid Extractable Chromium (Cr)	ug/g	**160**	18	18	1.0	4949686
Acid Extractable Cobalt (Co)	ug/g	**22**	2.9	2.9	0.10	4949686
Acid Extractable Copper (Cu)	ug/g	**140**	5.9	6.1	0.50	4949686
Acid Extractable Lead (Pb)	ug/g	**120**	2.3	2.5	1.0	4949686
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	0.50	4949686
Acid Extractable Nickel (Ni)	ug/g	**100**	7.9	8.1	0.50	4949686
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	0.50	4949686
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	0.20	4949686
Acid Extractable Thallium (Tl)	ug/g	**1**	0.077	0.087	0.050	4949686
Acid Extractable Uranium (U)	ug/g	**23**	0.66	0.75	0.050	4949686
Acid Extractable Vanadium (V)	ug/g	**86**	22	23	5.0	4949686
Acid Extractable Zinc (Zn)	ug/g	**340**	19	20	5.0	4949686
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	0.050	4949686

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 Job #: B778782
Report Date: 2017/04/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EFZ736	EFZ736		
Sampling Date			2017/04/20 10:30	2017/04/20 10:30		
COC Number			572155-07-01	572155-07-01		
	UNITS	Criteria	VS373B	VS373B Lab-Dup	RDL	QC Batch
Inorganics						
Moisture	%	-	13	14	0.2	4948046
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		0.014	4948076
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**7.9**	<0.0050		0.0050	4948082
Acenaphthylene	ug/g	**0.15**	<0.0050		0.0050	4948082
Anthracene	ug/g	**0.67**	<0.0050		0.0050	4948082
Benzo(a)anthracene	ug/g	**0.5**	<0.0050		0.0050	4948082
Benzo(a)pyrene	ug/g	**0.3**	<0.0050		0.0050	4948082
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050		0.0050	4948082
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050		0.0050	4948082
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050		0.0050	4948082
Chrysene	ug/g	**7**	<0.0050		0.0050	4948082
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050		0.0050	4948082
Fluoranthene	ug/g	**0.69**	<0.0050		0.0050	4948082
Fluorene	ug/g	**62**	<0.0050		0.0050	4948082
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050		0.0050	4948082
1-Methylnaphthalene	ug/g	**0.99**	<0.0050		0.0050	4948082
2-Methylnaphthalene	ug/g	**0.99**	<0.0050		0.0050	4948082
Naphthalene	ug/g	**0.6**	<0.0050		0.0050	4948082
Phenanthrene	ug/g	**6.2**	<0.0050		0.0050	4948082
Pyrene	ug/g	**78**	<0.0050		0.0050	4948082
Surrogate Recovery (%)						
D10-Anthracene	%	-	118			4948082
D14-Terphenyl (FS)	%	-	85			4948082
D8-Acenaphthylene	%	-	73			4948082

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 Job #: B778782
Report Date: 2017/04/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EFZ736	EFZ736		
Sampling Date			2017/04/20 10:30	2017/04/20 10:30		
COC Number			572155-07-01	572155-07-01		
	UNITS	**Criteria**	**VS373B**	**VS373B Lab-Dup**	**RDL**	**QC Batch**
Inorganics						
Chromium (VI)	ug/g	**8**	<0.2	<0.2	0.2	4949139

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 Job #: B778782
Report Date: 2017/04/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EFZ736
Sample ID: VS373B
Matrix: Soil

Collected: 2017/04/20
Shipped:
Received: 2017/04/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4948076	N/A	2017/04/21	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	4949139	2017/04/21	2017/04/21	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4949686	2017/04/21	2017/04/21	Daniel Teclu
Moisture	BAL	4948046	N/A	2017/04/21	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4948082	2017/04/20	2017/04/21	Arezoo Habibagahi

Maxxam ID: EFZ736 Dup
Sample ID: VS373B
Matrix: Soil

Collected: 2017/04/20
Shipped:
Received: 2017/04/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4949139	2017/04/21	2017/04/21	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4949686	2017/04/21	2017/04/21	Daniel Teclu
Moisture	BAL	4948046	N/A	2017/04/21	Liliana Gaburici

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 #: B778782
Report Date: 2017/04/21

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	11.7°C

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 #: B778782
Report Date: 2017/04/21

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
4948082	D10-Anthracene	2017/04/21	107	50 - 130	100	50 - 130	117	%		
4948082	D14-Terphenyl (FS)	2017/04/21	61	50 - 130	62	50 - 130	80	%		
4948082	D8-Acenaphthylene	2017/04/21	79	50 - 130	78	50 - 130	75	%		
4948046	Moisture	2017/04/21							5.9	50
4948082	1-Methylnaphthalene	2017/04/21	93	50 - 130	90	50 - 130	<0.0050	ug/g	0.89	40
4948082	2-Methylnaphthalene	2017/04/21	89	50 - 130	82	50 - 130	<0.0050	ug/g	5.0	40
4948082	Acenaphthene	2017/04/21	93	50 - 130	91	50 - 130	<0.0050	ug/g	0.11	40
4948082	Acenaphthylene	2017/04/21	77	50 - 130	76	50 - 130	<0.0050	ug/g	1.1	40
4948082	Anthracene	2017/04/21	100	50 - 130	94	50 - 130	<0.0050	ug/g	5.4	40
4948082	Benzo(a)anthracene	2017/04/21	97	50 - 130	100	50 - 130	<0.0050	ug/g	3.4	40
4948082	Benzo(a)pyrene	2017/04/21	81	50 - 130	81	50 - 130	<0.0050	ug/g	5.6	40
4948082	Benzo(b/j)fluoranthene	2017/04/21	96	50 - 130	92	50 - 130	<0.0050	ug/g	2.0	40
4948082	Benzo(g,h,i)perylene	2017/04/21	70	50 - 130	63	50 - 130	<0.0050	ug/g	36	40
4948082	Benzo(k)fluoranthene	2017/04/21	72	50 - 130	68	50 - 130	<0.0050	ug/g	0.29	40
4948082	Chrysene	2017/04/21	92	50 - 130	89	50 - 130	<0.0050	ug/g	9.6	40
4948082	Dibenz(a,h)anthracene	2017/04/21	50	50 - 130	51	50 - 130	<0.0050	ug/g	2.9	40
4948082	Fluoranthene	2017/04/21	96	50 - 130	93	50 - 130	<0.0050	ug/g	4.9	40
4948082	Fluorene	2017/04/21	96	50 - 130	91	50 - 130	<0.0050	ug/g	3.0	40
4948082	Indeno(1,2,3-cd)pyrene	2017/04/21	79	50 - 130	79	50 - 130	<0.0050	ug/g	6.9	40
4948082	Naphthalene	2017/04/21	88	50 - 130	82	50 - 130	<0.0050	ug/g	1.4	40
4948082	Phenanthrene	2017/04/21	86	50 - 130	84	50 - 130	<0.0050	ug/g	8.4	40
4948082	Pyrene	2017/04/21	91	50 - 130	95	50 - 130	<0.0050	ug/g	6.2	40
4949139	Chromium (VI)	2017/04/21	87	75 - 125	91	80 - 120	<0.2	ug/g	NC	35
4949686	Acid Extractable Antimony (Sb)	2017/04/21	96	75 - 125	104	80 - 120	<0.20	ug/g	NC	30
4949686	Acid Extractable Arsenic (As)	2017/04/21	96	75 - 125	99	80 - 120	<1.0	ug/g	NC	30
4949686	Acid Extractable Barium (Ba)	2017/04/21	NC	75 - 125	105	80 - 120	<0.50	ug/g	3.4	30
4949686	Acid Extractable Beryllium (Be)	2017/04/21	102	75 - 125	100	80 - 120	<0.20	ug/g	7.1	30
4949686	Acid Extractable Boron (B)	2017/04/21	98	75 - 125	97	80 - 120	<5.0	ug/g	NC	30
4949686	Acid Extractable Cadmium (Cd)	2017/04/21	105	75 - 125	103	80 - 120	<0.10	ug/g	NC	30
4949686	Acid Extractable Chromium (Cr)	2017/04/21	95	75 - 125	96	80 - 120	<1.0	ug/g	0.91	30
4949686	Acid Extractable Cobalt (Co)	2017/04/21	97	75 - 125	97	80 - 120	<0.10	ug/g	0.27	30

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 #: B778782
Report Date: 2017/04/21

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
4949686	Acid Extractable Copper (Cu)	2017/04/21	96	75 - 125	98	80 - 120	<0.50	ug/g	3.1	30
4949686	Acid Extractable Lead (Pb)	2017/04/21	105	75 - 125	104	80 - 120	<1.0	ug/g	8.4	30
4949686	Acid Extractable Mercury (Hg)	2017/04/21	104	75 - 125	105	80 - 120	<0.050	ug/g	NC	30
4949686	Acid Extractable Molybdenum (Mo)	2017/04/21	103	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
4949686	Acid Extractable Nickel (Ni)	2017/04/21	96	75 - 125	97	80 - 120	<0.50	ug/g	2.8	30
4949686	Acid Extractable Selenium (Se)	2017/04/21	100	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4949686	Acid Extractable Silver (Ag)	2017/04/21	102	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
4949686	Acid Extractable Thallium (Tl)	2017/04/21	104	75 - 125	103	80 - 120	<0.050	ug/g	12	30
4949686	Acid Extractable Uranium (U)	2017/04/21	108	75 - 125	106	80 - 120	<0.050	ug/g	13	30
4949686	Acid Extractable Vanadium (V)	2017/04/21	99	75 - 125	95	80 - 120	<5.0	ug/g	4.6	30
4949686	Acid Extractable Zinc (Zn)	2017/04/21	100	75 - 125	96	80 - 120	<5.0	ug/g	1.9	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B778782
Report Date: 2017/04/21

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).

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.

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 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 #: 572155
COC #: C#572155-07-01
Project Manager: Madison Bingley

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: ___ Time Required: 24hr ☒
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		VS373B	17/04/20	1030	Soil		X	X								1	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	ON The Ice Pack

20-Apr-17 14:55
Alison Cameron
B778782
KIV 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	17/04/20	1400	[illegible]	2017/04/20	14:55	0		10, 12, 13	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.

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 #: B778782
Report Date: 2017/04/21

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.

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. #: 572155-09-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/04/20
Report #: R4432888
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B777499
Received: 2017/04/19, 14:45

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	6	N/A	2017/04/20	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	6	2017/04/20	2017/04/20	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	6	2017/04/20	2017/04/20	CAM SOP-00447	EPA 6020B m
Moisture	6	N/A	2017/04/20	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	6	2017/04/19	2017/04/19	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
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.

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
Your C.O.C. #: 572155-09-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/04/20
Report #: R4432888
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B777499
Received: 2017/04/19, 14:45

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B777499
Report Date: 2017/04/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EFU001	EFU002	EFU003	EFU004	EFU004		
Sampling Date			2017/04/19 10:00	2017/04/19 10:30	2017/04/19 11:00	2017/04/19 12:00	2017/04/19 12:00		
COC Number			572155-09-01	572155-09-01	572155-09-01	572155-09-01	572155-09-01		
	UNITS	Criteria	VS 374	VS 375	VS 376	VS 377	VS 377 Lab-Dup	RDL	QC Batch
Metals									
Acid Extractable Aluminum (Al)	ug/g	-	15000	15000	13000	7600	7300	50	4947438
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4947438
Acid Extractable Arsenic (As)	ug/g	**18**	1.8	1.5	1.4	1.4	1.1	1.0	4947438
Acid Extractable Barium (Ba)	ug/g	**390**	73	78	46	33	33	0.50	4947438
Acid Extractable Beryllium (Be)	ug/g	**4**	0.55	0.48	0.28	0.30	0.28	0.20	4947438
Acid Extractable Bismuth (Bi)	ug/g	**-**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4947438
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4947438
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.10	<0.10	<0.10	<0.10	0.10	4947438
Acid Extractable Calcium (Ca)	ug/g	**-**	4200	3400	3200	2600	2700	50	4947438
Acid Extractable Chromium (Cr)	ug/g	**160**	42	43	37	24	24	1.0	4947438
Acid Extractable Cobalt (Co)	ug/g	**22**	8.6	8.2	7.6	5.8	5.6	0.10	4947438
Acid Extractable Copper (Cu)	ug/g	**140**	21	17	9.3	10	9.5	0.50	4947438
Acid Extractable Iron (Fe)	ug/g	**-**	19000	19000	17000	14000	13000	50	4947438
Acid Extractable Lead (Pb)	ug/g	**120**	5.5	5.1	4.6	2.6	2.5	1.0	4947438
Acid Extractable Magnesium (Mg)	ug/g	**-**	5800	5500	4700	3600	3600	50	4947438
Acid Extractable Manganese (Mn)	ug/g	**-**	190	270	380	190	190	1.0	4947438
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4947438
Acid Extractable Nickel (Ni)	ug/g	**100**	22	19	16	13	12	0.50	4947438
Acid Extractable Phosphorus (P)	ug/g	**-**	970	850	1100	1000	1000	50	4947438
Acid Extractable Potassium (K)	ug/g	**-**	1500	1300	1100	1200	1200	200	4947438
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4947438
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4947438
Acid Extractable Sodium (Na)	ug/g	**-**	560	210	260	88	91	50	4947438
Acid Extractable Strontium (Sr)	ug/g	**-**	19	20	13	10	11	1.0	4947438
Acid Extractable Thallium (Tl)	ug/g	**1**	0.13	0.11	0.11	0.094	0.10	0.050	4947438
Acid Extractable Tin (Sn)	ug/g	**-**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4947438
Acid Extractable Uranium (U)	ug/g	**23**	2.1	1.9	0.69	0.67	0.71	0.050	4947438
Acid Extractable Vanadium (V)	ug/g	**86**	42	41	38	28	28	5.0	4947438
Acid Extractable Zinc (Zn)	ug/g	**340**	44	50	50	29	28	5.0	4947438

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 Job #: B777499
Report Date: 2017/04/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EFU001	EFU002	EFU003	EFU004	EFU004		
Sampling Date			2017/04/19 10:00	2017/04/19 10:30	2017/04/19 11:00	2017/04/19 12:00	2017/04/19 12:00		
COC Number			572155-09-01	572155-09-01	572155-09-01	572155-09-01	572155-09-01		
	UNITS	**Criteria**	**VS 374**	**VS 375**	**VS 376**	**VS 377**	**VS 377 Lab-Dup**	**RDL**	**QC Batch**
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4947438

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 Job #: B777499
Report Date: 2017/04/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EFU005	EFU006		
Sampling Date			2017/04/19 13:00	2017/04/19 13:40		
COC Number			572155-09-01	572155-09-01		
	UNITS	Criteria	VS 378	VS 379	RDL	QC Batch
Metals						
Acid Extractable Aluminum (Al)	ug/g	-	32000	24000	50	4947438
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	0.20	4947438
Acid Extractable Arsenic (As)	ug/g	**18**	4.1	2.8	1.0	4947438
Acid Extractable Barium (Ba)	ug/g	**390**	120	96	0.50	4947438
Acid Extractable Beryllium (Be)	ug/g	**4**	0.69	0.56	0.20	4947438
Acid Extractable Bismuth (Bi)	ug/g	**-**	<1.0	<1.0	1.0	4947438
Acid Extractable Boron (B)	ug/g	**120**	6.1	<5.0	5.0	4947438
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.11	0.10	4947438
Acid Extractable Calcium (Ca)	ug/g	**-**	3200	4200	50	4947438
Acid Extractable Chromium (Cr)	ug/g	**160**	74	59	1.0	4947438
Acid Extractable Cobalt (Co)	ug/g	**22**	**29**	12	0.10	4947438
Acid Extractable Copper (Cu)	ug/g	**140**	22	15	0.50	4947438
Acid Extractable Iron (Fe)	ug/g	**-**	35000	27000	50	4947438
Acid Extractable Lead (Pb)	ug/g	**120**	12	10	1.0	4947438
Acid Extractable Magnesium (Mg)	ug/g	**-**	8600	7400	50	4947438
Acid Extractable Manganese (Mn)	ug/g	**-**	940	340	1.0	4947438
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.67	0.57	0.50	4947438
Acid Extractable Nickel (Ni)	ug/g	**100**	32	25	0.50	4947438
Acid Extractable Phosphorus (P)	ug/g	**-**	1000	710	50	4947438
Acid Extractable Potassium (K)	ug/g	**-**	2400	1700	200	4947438
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	0.50	4947438
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	0.20	4947438
Acid Extractable Sodium (Na)	ug/g	**-**	180	480	50	4947438
Acid Extractable Strontium (Sr)	ug/g	**-**	22	26	1.0	4947438
Acid Extractable Thallium (Tl)	ug/g	**1**	0.26	0.20	0.050	4947438
Acid Extractable Tin (Sn)	ug/g	**-**	<1.0	<1.0	1.0	4947438
Acid Extractable Uranium (U)	ug/g	**23**	1.8	1.5	0.050	4947438
Acid Extractable Vanadium (V)	ug/g	**86**	71	60	5.0	4947438
Acid Extractable Zinc (Zn)	ug/g	**340**	100	70	5.0	4947438
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	0.050	4947438

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 #: B777499
Report Date: 2017/04/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EFU001	EFU002	EFU002	EFU003	EFU004		
Sampling Date			2017/04/19 10:00	2017/04/19 10:30	2017/04/19 10:30	2017/04/19 11:00	2017/04/19 12:00		
COC Number			572155-09-01	572155-09-01	572155-09-01	572155-09-01	572155-09-01		
	UNITS	Criteria	VS 374	VS 375	VS 375 Lab-Dup	VS 376	VS 377	RDL	QC Batch
Inorganics									
Moisture	%	-	21	18	18	20	20	0.2	4945792
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	4945816
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4945823
Surrogate Recovery (%)									
D10-Anthracene	%	-	117	96	111	92	123		4945823
D14-Terphenyl (FS)	%	-	60	72	73	71	72		4945823
D8-Acenaphthylene	%	-	68	72	76	67	77		4945823

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 Job #: B777499
Report Date: 2017/04/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EFU005	EFU006		
Sampling Date			2017/04/19 13:00	2017/04/19 13:40		
COC Number			572155-09-01	572155-09-01		
	UNITS	Criteria	VS 378	VS 379	RDL	QC Batch
Inorganics						
Moisture	%	-	25	22	0.2	4945792
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	0.014	4945816
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	0.0050	4945823
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	0.0050	4945823
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	0.0050	4945823
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	0.0050	4945823
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0050	4945823
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	4945823
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	0.0050	4945823
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	4945823
Chrysene	ug/g	**7**	<0.0050	<0.0050	0.0050	4945823
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	0.0050	4945823
Fluoranthene	ug/g	**0.69**	<0.0050	0.0086	0.0050	4945823
Fluorene	ug/g	**62**	<0.0050	<0.0050	0.0050	4945823
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	0.0050	4945823
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	4945823
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	4945823
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	0.0050	4945823
Phenanthrene	ug/g	**6.2**	<0.0050	0.0055	0.0050	4945823
Pyrene	ug/g	**78**	<0.0050	0.0074	0.0050	4945823
Surrogate Recovery (%)						
D10-Anthracene	%	-	98	91		4945823
D14-Terphenyl (FS)	%	-	57	58		4945823
D8-Acenaphthylene	%	-	72	64		4945823

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 #: B777499
Report Date: 2017/04/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EFU001	EFU002	EFU003	EFU004	EFU004		
Sampling Date			2017/04/19 10:00	2017/04/19 10:30	2017/04/19 11:00	2017/04/19 12:00	2017/04/19 12:00		
COC Number			572155-09-01	572155-09-01	572155-09-01	572155-09-01	572155-09-01		
	UNITS	**Criteria**	**VS 374**	**VS 375**	**VS 376**	**VS 377**	**VS 377 Lab-Dup**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.3	0.4	0.2	0.2	0.2	0.2	4946936

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			EFU005	EFU006		
Sampling Date			2017/04/19 13:00	2017/04/19 13:40		
COC Number			572155-09-01	572155-09-01		
	UNITS	**Criteria**	**VS 378**	**VS 379**	**RDL**	**QC Batch**
Inorganics						
Chromium (VI)	ug/g	**8**	0.4	0.5	0.2	4946936

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 #: B777499
Report Date: 2017/04/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EFU001 **Collected:** 2017/04/19
Sample ID: VS 374 **Shipped:**
Matrix: Soil **Received:** 2017/04/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4945816	N/A	2017/04/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4946936	2017/04/20	2017/04/20	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4947438	2017/04/20	2017/04/20	Viviana Canzonieri
Moisture	BAL	4945792	N/A	2017/04/20	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4945823	2017/04/19	2017/04/19	Arezoo Habibagahi

Maxxam ID: EFU002 **Collected:** 2017/04/19
Sample ID: VS 375 **Shipped:**
Matrix: Soil **Received:** 2017/04/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4945816	N/A	2017/04/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4946936	2017/04/20	2017/04/20	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4947438	2017/04/20	2017/04/20	Viviana Canzonieri
Moisture	BAL	4945792	N/A	2017/04/20	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4945823	2017/04/19	2017/04/19	Arezoo Habibagahi

Maxxam ID: EFU002 Dup **Collected:** 2017/04/19
Sample ID: VS 375 **Shipped:**
Matrix: Soil **Received:** 2017/04/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4945792	N/A	2017/04/20	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4945823	2017/04/19	2017/04/19	Arezoo Habibagahi

Maxxam ID: EFU003 **Collected:** 2017/04/19
Sample ID: VS 376 **Shipped:**
Matrix: Soil **Received:** 2017/04/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4945816	N/A	2017/04/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4946936	2017/04/20	2017/04/20	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4947438	2017/04/20	2017/04/20	Viviana Canzonieri
Moisture	BAL	4945792	N/A	2017/04/20	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4945823	2017/04/19	2017/04/19	Arezoo Habibagahi

Maxxam ID: EFU004 **Collected:** 2017/04/19
Sample ID: VS 377 **Shipped:**
Matrix: Soil **Received:** 2017/04/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4945816	N/A	2017/04/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4946936	2017/04/20	2017/04/20	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4947438	2017/04/20	2017/04/20	Viviana Canzonieri
Moisture	BAL	4945792	N/A	2017/04/20	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4945823	2017/04/19	2017/04/19	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 #: B777499
Report Date: 2017/04/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EFU004 Dup
Sample ID: VS 377
Matrix: Soil

Collected: 2017/04/19
Shipped:
Received: 2017/04/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4946936	2017/04/20	2017/04/20	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4947438	2017/04/20	2017/04/20	Viviana Canzonieri

Maxxam ID: EFU005
Sample ID: VS 378
Matrix: Soil

Collected: 2017/04/19
Shipped:
Received: 2017/04/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4945816	N/A	2017/04/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4946936	2017/04/20	2017/04/20	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4947438	2017/04/20	2017/04/20	Viviana Canzonieri
Moisture	BAL	4945792	N/A	2017/04/20	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4945823	2017/04/19	2017/04/19	Arezoo Habibagahi

Maxxam ID: EFU006
Sample ID: VS 379
Matrix: Soil

Collected: 2017/04/19
Shipped:
Received: 2017/04/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4945816	N/A	2017/04/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4946936	2017/04/20	2017/04/20	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4947438	2017/04/20	2017/04/20	Viviana Canzonieri
Moisture	BAL	4945792	N/A	2017/04/20	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4945823	2017/04/19	2017/04/19	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 #: B777499
Report Date: 2017/04/20

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	10.7°C

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 #: B777499
Report Date: 2017/04/20

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
4945823	D10-Anthracene	2017/04/19	108	50 - 130	114	50 - 130	120	%		
4945823	D14-Terphenyl (FS)	2017/04/19	68	50 - 130	71	50 - 130	70	%		
4945823	D8-Acenaphthylene	2017/04/19	76	50 - 130	79	50 - 130	77	%		
4945792	Moisture	2017/04/20							0.55	50
4945823	1-Methylnaphthalene	2017/04/19	81	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4945823	2-Methylnaphthalene	2017/04/19	73	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
4945823	Acenaphthene	2017/04/19	78	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
4945823	Acenaphthylene	2017/04/19	75	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
4945823	Anthracene	2017/04/19	85	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
4945823	Benzo(a)anthracene	2017/04/19	75	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4945823	Benzo(a)pyrene	2017/04/19	72	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
4945823	Benzo(b/j)fluoranthene	2017/04/19	78	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
4945823	Benzo(g,h,i)perylene	2017/04/19	68	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
4945823	Benzo(k)fluoranthene	2017/04/19	65	50 - 130	56	50 - 130	<0.0050	ug/g	NC	40
4945823	Chrysene	2017/04/19	74	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
4945823	Dibenz(a,h)anthracene	2017/04/19	51	50 - 130	51	50 - 130	<0.0050	ug/g	NC	40
4945823	Fluoranthene	2017/04/19	85	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
4945823	Fluorene	2017/04/19	81	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
4945823	Indeno(1,2,3-cd)pyrene	2017/04/19	54	50 - 130	63	50 - 130	<0.0050	ug/g	NC	40
4945823	Naphthalene	2017/04/19	69	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
4945823	Phenanthrene	2017/04/19	73	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
4945823	Pyrene	2017/04/19	84	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
4946936	Chromium (VI)	2017/04/20	81	75 - 125	89	80 - 120	<0.2	ug/g	2.9	35
4947438	Acid Extractable Aluminum (Al)	2017/04/20	NC	75 - 125	104	80 - 120	<50	ug/g	4.4	30
4947438	Acid Extractable Antimony (Sb)	2017/04/20	89	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
4947438	Acid Extractable Arsenic (As)	2017/04/20	93	75 - 125	101	80 - 120	<1.0	ug/g	23	30
4947438	Acid Extractable Barium (Ba)	2017/04/20	NC	75 - 125	99	80 - 120	<0.50	ug/g	2.6	30
4947438	Acid Extractable Beryllium (Be)	2017/04/20	100	75 - 125	100	80 - 120	<0.20	ug/g	6.7	30
4947438	Acid Extractable Bismuth (Bi)	2017/04/20	95	75 - 125	98	80 - 120	<1.0	ug/g	NC	30
4947438	Acid Extractable Boron (B)	2017/04/20	96	75 - 125	102	80 - 120	<5.0	ug/g	NC	30
4947438	Acid Extractable Cadmium (Cd)	2017/04/20	96	75 - 125	100	80 - 120	<0.10	ug/g	NC	30

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 #: B777499
Report Date: 2017/04/20

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
4947438	Acid Extractable Calcium (Ca)	2017/04/20	NC	75 - 125	98	80 - 120	<50	ug/g	2.2	30
4947438	Acid Extractable Chromium (Cr)	2017/04/20	98	75 - 125	98	80 - 120	<1.0	ug/g	0.19	30
4947438	Acid Extractable Cobalt (Co)	2017/04/20	96	75 - 125	101	80 - 120	<0.10	ug/g	3.3	30
4947438	Acid Extractable Copper (Cu)	2017/04/20	99	75 - 125	105	80 - 120	<0.50	ug/g	6.7	30
4947438	Acid Extractable Iron (Fe)	2017/04/20	NC	75 - 125	102	80 - 120	<50	ug/g	3.6	30
4947438	Acid Extractable Lead (Pb)	2017/04/20	95	75 - 125	98	80 - 120	<1.0	ug/g	4.6	30
4947438	Acid Extractable Magnesium (Mg)	2017/04/20	NC	75 - 125	92	80 - 120	<50	ug/g	1.9	30
4947438	Acid Extractable Manganese (Mn)	2017/04/20	NC	75 - 125	102	80 - 120	<1.0	ug/g	0.25	30
4947438	Acid Extractable Mercury (Hg)	2017/04/20	99	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
4947438	Acid Extractable Molybdenum (Mo)	2017/04/20	98	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4947438	Acid Extractable Nickel (Ni)	2017/04/20	101	75 - 125	100	80 - 120	<0.50	ug/g	0.80	30
4947438	Acid Extractable Phosphorus (P)	2017/04/20	NC	75 - 125	107	80 - 120	<50	ug/g	2.5	30
4947438	Acid Extractable Potassium (K)	2017/04/20	NC	75 - 125	92	80 - 120	<200	ug/g	1.7	30
4947438	Acid Extractable Selenium (Se)	2017/04/20	98	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4947438	Acid Extractable Silver (Ag)	2017/04/20	98	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
4947438	Acid Extractable Sodium (Na)	2017/04/20	98	75 - 125	100	80 - 120	<50	ug/g	3.8	30
4947438	Acid Extractable Strontium (Sr)	2017/04/20	99	75 - 125	102	80 - 120	<1.0	ug/g	7.9	30
4947438	Acid Extractable Thallium (Tl)	2017/04/20	95	75 - 125	95	80 - 120	<0.050	ug/g	10	30
4947438	Acid Extractable Tin (Sn)	2017/04/20	98	75 - 125	102	80 - 120	<1.0	ug/g	NC	30
4947438	Acid Extractable Uranium (U)	2017/04/20	94	75 - 125	95	80 - 120	<0.050	ug/g	5.5	30
4947438	Acid Extractable Vanadium (V)	2017/04/20	NC	75 - 125	96	80 - 120	<5.0	ug/g	2.0	30
4947438	Acid Extractable Zinc (Zn)	2017/04/20	NC	75 - 125	96	80 - 120	<5.0	ug/g	4.4	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.

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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B777499
Report Date: 2017/04/20

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).

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.

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 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:

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 572155
COC #: C#572155-09-01
Project Manager: Madison Bingley

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: ___ Time Required: 24hr ☒
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		VS374	17/04/19	1000	Soil		X	X							1	
2		VS375	↓	1030	↓		X	X							1	
3		VS376		1100			X	X							1	
4		VS377		1200			X	X							1	
5		VS378		1300			X	X							1	RECEIVED IN OTTAWA
6		VS379	↓	1340	↓		X	X							1	
7																
8																No Ice
9																
10																

19-Apr-17 14:45
Alison Cameron
B777499
KIV OTT-001

* 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	17/04/	1400	KW Jayson Ir	2017/04/19	14:45	0

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	11, 10, 11	Present	Y	
		Intact	Y	

* 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 #: B777499
Report Date: 2017/04/20

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
VS 378	EFU005-02	Acid Extractable Cobalt (Co)	22	29	0.10	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. #: 572155-10-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/04/19
Report #: R4431422
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B776335
Received: 2017/04/18, 14:55

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	5	N/A	2017/04/19	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	5	2017/04/19	2017/04/19	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	5	2017/04/19	2017/04/19	CAM SOP-00447	EPA 6020B m
Moisture	5	N/A	2017/04/19	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	5	2017/04/18	2017/04/18	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-10-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/04/19
Report #: R4431422
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B776335
Received: 2017/04/18, 14:55

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B776335
Report Date: 2017/04/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EFO549	EFO550	EFO551	EFO552	EFO552		
Sampling Date			2017/04/18 12:00	2017/04/18 13:00	2017/04/18 13:00	2017/04/18 13:30	2017/04/18 13:30		
COC Number			572155-10-01	572155-10-01	572155-10-01	572155-10-01	572155-10-01		
	UNITS	**Criteria**	**VS 370**	**VS 371**	**VS 1371**	**VS 372**	**VS 372 Lab-Dup**	**RDL**	**QC Batch**
Metals									
Acid Extractable Aluminum (Al)	ug/g	-	5500	7600	6500	29000	30000	50	4945041
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4945041
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	1.0	3.9	4.0	1.0	4945041
Acid Extractable Barium (Ba)	ug/g	**390**	24	24	22	100	100	0.50	4945041
Acid Extractable Beryllium (Be)	ug/g	**4**	0.26	0.21	<0.20	0.55	0.56	0.20	4945041
Acid Extractable Bismuth (Bi)	ug/g	**-**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4945041
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	6.6	6.4	5.0	4945041
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.10	0.11	0.10	4945041
Acid Extractable Calcium (Ca)	ug/g	**-**	2800	3100	3100	2700	2700	50	4945041
Acid Extractable Chromium (Cr)	ug/g	**160**	16	21	18	64	64	1.0	4945041
Acid Extractable Cobalt (Co)	ug/g	**22**	3.1	3.7	3.0	18	18	0.10	4945041
Acid Extractable Copper (Cu)	ug/g	**140**	5.7	6.2	5.4	23	23	0.50	4945041
Acid Extractable Iron (Fe)	ug/g	**-**	8900	11000	9400	30000	30000	50	4945041
Acid Extractable Lead (Pb)	ug/g	**120**	3.4	3.0	2.7	11	11	1.0	4945041
Acid Extractable Magnesium (Mg)	ug/g	**-**	2600	3100	2600	7900	7900	50	4945041
Acid Extractable Manganese (Mn)	ug/g	**-**	93	100	89	500	500	1.0	4945041
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	0.85	0.70	0.50	4945041
Acid Extractable Nickel (Ni)	ug/g	**100**	8.9	9.2	7.7	30	30	0.50	4945041
Acid Extractable Phosphorus (P)	ug/g	**-**	900	970	1000	740	750	50	4945041
Acid Extractable Potassium (K)	ug/g	**-**	490	740	650	2500	2400	200	4945041
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4945041
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4945041
Acid Extractable Sodium (Na)	ug/g	**-**	150	78	74	170	160	50	4945041
Acid Extractable Strontium (Sr)	ug/g	**-**	11	11	11	18	18	1.0	4945041
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	0.069	0.064	0.22	0.23	0.050	4945041
Acid Extractable Tin (Sn)	ug/g	**-**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4945041
Acid Extractable Uranium (U)	ug/g	**23**	0.68	0.56	0.59	2.0	1.9	0.050	4945041
Acid Extractable Vanadium (V)	ug/g	**86**	22	25	24	65	66	5.0	4945041
Acid Extractable Zinc (Zn)	ug/g	**340**	24	26	21	88	88	5.0	4945041

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 Job #: B776335
Report Date: 2017/04/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EFO549	EFO550	EFO551	EFO552	EFO552		
Sampling Date			2017/04/18 12:00	2017/04/18 13:00	2017/04/18 13:00	2017/04/18 13:30	2017/04/18 13:30		
COC Number			572155-10-01	572155-10-01	572155-10-01	572155-10-01	572155-10-01		
	UNITS	**Criteria**	**VS 370**	**VS 371**	**VS 1371**	**VS 372**	**VS 372 Lab-Dup**	**RDL**	**QC Batch**
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4945041

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 Job #: B776335
Report Date: 2017/04/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EFO553		
Sampling Date			2017/04/18 14:00		
COC Number			572155-10-01		
	UNITS	Criteria	VS 373	RDL	QC Batch
Metals					
Acid Extractable Aluminum (Al)	ug/g	-	26000	50	4945041
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	0.20	4945041
Acid Extractable Arsenic (As)	ug/g	**18**	2.8	1.0	4945041
Acid Extractable Barium (Ba)	ug/g	**390**	88	0.50	4945041
Acid Extractable Beryllium (Be)	ug/g	**4**	0.58	0.20	4945041
Acid Extractable Bismuth (Bi)	ug/g	**-**	<1.0	1.0	4945041
Acid Extractable Boron (B)	ug/g	**120**	7.8	5.0	4945041
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.10	4945041
Acid Extractable Calcium (Ca)	ug/g	**-**	3400	50	4945041
Acid Extractable Chromium (Cr)	ug/g	**160**	68	1.0	4945041
Acid Extractable Cobalt (Co)	ug/g	**22**	**23**	0.10	4945041
Acid Extractable Copper (Cu)	ug/g	**140**	14	0.50	4945041
Acid Extractable Iron (Fe)	ug/g	**-**	40000	50	4945041
Acid Extractable Lead (Pb)	ug/g	**120**	13	1.0	4945041
Acid Extractable Magnesium (Mg)	ug/g	**-**	8500	50	4945041
Acid Extractable Manganese (Mn)	ug/g	**-**	1100	1.0	4945041
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.50	4945041
Acid Extractable Nickel (Ni)	ug/g	**100**	31	0.50	4945041
Acid Extractable Phosphorus (P)	ug/g	**-**	1600	50	4945041
Acid Extractable Potassium (K)	ug/g	**-**	3000	200	4945041
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	0.50	4945041
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	0.20	4945041
Acid Extractable Sodium (Na)	ug/g	**-**	420	50	4945041
Acid Extractable Strontium (Sr)	ug/g	**-**	20	1.0	4945041
Acid Extractable Thallium (Tl)	ug/g	**1**	0.31	0.050	4945041
Acid Extractable Tin (Sn)	ug/g	**-**	<1.0	1.0	4945041
Acid Extractable Uranium (U)	ug/g	**23**	1.8	0.050	4945041
Acid Extractable Vanadium (V)	ug/g	**86**	66	5.0	4945041
Acid Extractable Zinc (Zn)	ug/g	**340**	92	5.0	4945041

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 #: B776335
Report Date: 2017/04/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EFO553		
Sampling Date			2017/04/18 14:00		
COC Number			572155-10-01		
	UNITS	**Criteria**	**VS 373**	**RDL**	**QC Batch**
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	0.050	4945041

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 #: B776335
Report Date: 2017/04/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EFO549	EFO550	EFO550	EFO551	EFO552		
Sampling Date			2017/04/18 12:00	2017/04/18 13:00	2017/04/18 13:00	2017/04/18 13:00	2017/04/18 13:30		
COC Number			572155-10-01	572155-10-01	572155-10-01	572155-10-01	572155-10-01		
	UNITS	**Criteria**	**VS 370**	**VS 371**	**VS 371 Lab-Dup**	**VS 1371**	**VS 372**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	18	19	19	18	22	0.2	4943831
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	4943839
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
Benzo(g,h,i)perylene	ug/g	**6.6**	0.0058	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
Benzo(k)fluoranthene	ug/g	**0.78**	0.0053	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
Fluoranthene	ug/g	**0.69**	0.0058	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4943847
Surrogate Recovery (%)									
D10-Anthracene	%	-	88	83	94	93	90		4943847
D14-Terphenyl (FS)	%	-	66	65	67	65	69		4943847
D8-Acenaphthylene	%	-	73	67	73	69	71		4943847

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 Job #: B776335
Report Date: 2017/04/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EFO553		
Sampling Date			2017/04/18 14:00		
COC Number			572155-10-01		
	UNITS	Criteria	VS 373	RDL	QC Batch
Inorganics					
Moisture	%	-	19	0.2	4943831
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.014	4943839
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	4943847
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	4943847
Anthracene	ug/g	**0.67**	<0.0050	0.0050	4943847
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	4943847
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	4943847
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	4943847
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0050	4943847
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	4943847
Chrysene	ug/g	**7**	<0.0050	0.0050	4943847
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	4943847
Fluoranthene	ug/g	**0.69**	<0.0050	0.0050	4943847
Fluorene	ug/g	**62**	<0.0050	0.0050	4943847
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	4943847
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4943847
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4943847
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	4943847
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	4943847
Pyrene	ug/g	**78**	<0.0050	0.0050	4943847
Surrogate Recovery (%)					
D10-Anthracene	%	-	88		4943847
D14-Terphenyl (FS)	%	-	66		4943847
D8-Acenaphthylene	%	-	69		4943847

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 #: B776335
Report Date: 2017/04/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EFO549	EFO550	EFO551	EFO551	EFO552		
Sampling Date			2017/04/18 12:00	2017/04/18 13:00	2017/04/18 13:00	2017/04/18 13:00	2017/04/18 13:30		
COC Number			572155-10-01	572155-10-01	572155-10-01	572155-10-01	572155-10-01		
	UNITS	**Criteria**	**VS 370**	**VS 371**	**VS 1371**	**VS 1371 Lab-Dup**	**VS 372**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.3	0.2	<0.2	<0.2	0.6	0.2	4944687

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			EFO553		
Sampling Date			2017/04/18 14:00		
COC Number			572155-10-01		
	UNITS	**Criteria**	**VS 373**	**RDL**	**QC Batch**
Inorganics					
Chromium (VI)	ug/g	**8**	<0.2	0.2	4944687

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 #: B776335
Report Date: 2017/04/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EFO549
Sample ID: VS 370
Matrix: Soil

Collected: 2017/04/18
Shipped:
Received: 2017/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4943839	N/A	2017/04/19	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4944687	2017/04/19	2017/04/19	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4945041	2017/04/19	2017/04/19	Daniel Teclu
Moisture	BAL	4943831	N/A	2017/04/19	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4943847	2017/04/18	2017/04/18	Arezoo Habibagahi

Maxxam ID: EFO550
Sample ID: VS 371
Matrix: Soil

Collected: 2017/04/18
Shipped:
Received: 2017/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4943839	N/A	2017/04/19	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4944687	2017/04/19	2017/04/19	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4945041	2017/04/19	2017/04/19	Daniel Teclu
Moisture	BAL	4943831	N/A	2017/04/19	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4943847	2017/04/18	2017/04/18	Arezoo Habibagahi

Maxxam ID: EFO550 Dup
Sample ID: VS 371
Matrix: Soil

Collected: 2017/04/18
Shipped:
Received: 2017/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4943831	N/A	2017/04/19	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4943847	2017/04/18	2017/04/18	Arezoo Habibagahi

Maxxam ID: EFO551
Sample ID: VS 1371
Matrix: Soil

Collected: 2017/04/18
Shipped:
Received: 2017/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4943839	N/A	2017/04/19	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4944687	2017/04/19	2017/04/19	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4945041	2017/04/19	2017/04/19	Daniel Teclu
Moisture	BAL	4943831	N/A	2017/04/19	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4943847	2017/04/18	2017/04/18	Arezoo Habibagahi

Maxxam ID: EFO551 Dup
Sample ID: VS 1371
Matrix: Soil

Collected: 2017/04/18
Shipped:
Received: 2017/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4944687	2017/04/19	2017/04/19	Manoj Kumar Gera

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 #: B776335
Report Date: 2017/04/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EFO552
Sample ID: VS 372
Matrix: Soil

Collected: 2017/04/18
Shipped:
Received: 2017/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4943839	N/A	2017/04/19	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4944687	2017/04/19	2017/04/19	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4945041	2017/04/19	2017/04/19	Daniel Teclu
Moisture	BAL	4943831	N/A	2017/04/19	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4943847	2017/04/18	2017/04/18	Arezoo Habibagahi

Maxxam ID: EFO552 Dup
Sample ID: VS 372
Matrix: Soil

Collected: 2017/04/18
Shipped:
Received: 2017/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4945041	2017/04/19	2017/04/19	Daniel Teclu

Maxxam ID: EFO553
Sample ID: VS 373
Matrix: Soil

Collected: 2017/04/18
Shipped:
Received: 2017/04/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4943839	N/A	2017/04/19	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4944687	2017/04/19	2017/04/19	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4945041	2017/04/19	2017/04/19	Daniel Teclu
Moisture	BAL	4943831	N/A	2017/04/19	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4943847	2017/04/18	2017/04/18	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 #: B776335
Report Date: 2017/04/19

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	13.3°C

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 #: B776335
Report Date: 2017/04/19

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
4943847	D10-Anthracene	2017/04/18	86	50 - 130	91	50 - 130	109	%		
4943847	D14-Terphenyl (FS)	2017/04/18	68	50 - 130	77	50 - 130	68	%		
4943847	D8-Acenaphthylene	2017/04/18	75	50 - 130	77	50 - 130	74	%		
4943831	Moisture	2017/04/19							0	50
4943847	1-Methylnaphthalene	2017/04/18	81	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
4943847	2-Methylnaphthalene	2017/04/18	81	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4943847	Acenaphthene	2017/04/18	81	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
4943847	Acenaphthylene	2017/04/18	69	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
4943847	Anthracene	2017/04/18	78	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4943847	Benzo(a)anthracene	2017/04/18	81	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4943847	Benzo(a)pyrene	2017/04/18	80	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
4943847	Benzo(b/j)fluoranthene	2017/04/18	86	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4943847	Benzo(g,h,i)perylene	2017/04/18	74	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
4943847	Benzo(k)fluoranthene	2017/04/18	65	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
4943847	Chrysene	2017/04/18	65	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
4943847	Dibenz(a,h)anthracene	2017/04/18	52	50 - 130	52	50 - 130	<0.0050	ug/g	NC	40
4943847	Fluoranthene	2017/04/18	79	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4943847	Fluorene	2017/04/18	80	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4943847	Indeno(1,2,3-cd)pyrene	2017/04/18	63	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
4943847	Naphthalene	2017/04/18	73	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
4943847	Phenanthrene	2017/04/18	77	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
4943847	Pyrene	2017/04/18	78	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
4944687	Chromium (VI)	2017/04/19	64 (1)	75 - 125	90	80 - 120	<0.2	ug/g	NC	35
4945041	Acid Extractable Aluminum (Al)	2017/04/19	NC	75 - 125	99	80 - 120	<50	ug/g	1.5	30
4945041	Acid Extractable Antimony (Sb)	2017/04/19	84	75 - 125	97	80 - 120	<0.20	ug/g	NC	30
4945041	Acid Extractable Arsenic (As)	2017/04/19	99	75 - 125	100	80 - 120	<1.0	ug/g	0.87	30
4945041	Acid Extractable Barium (Ba)	2017/04/19	NC	75 - 125	100	80 - 120	<0.50	ug/g	1.1	30
4945041	Acid Extractable Beryllium (Be)	2017/04/19	99	75 - 125	99	80 - 120	<0.20	ug/g	2.3	30
4945041	Acid Extractable Bismuth (Bi)	2017/04/19	97	75 - 125	100	80 - 120	<1.0	ug/g	NC	30
4945041	Acid Extractable Boron (B)	2017/04/19	95	75 - 125	102	80 - 120	<5.0	ug/g	2.8	30
4945041	Acid Extractable Cadmium (Cd)	2017/04/19	102	75 - 125	100	80 - 120	<0.10	ug/g	11	30

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 #: B776335
Report Date: 2017/04/19

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
4945041	Acid Extractable Calcium (Ca)	2017/04/19	NC	75 - 125	98	80 - 120	<50	ug/g	1.6	30
4945041	Acid Extractable Chromium (Cr)	2017/04/19	NC	75 - 125	98	80 - 120	<1.0	ug/g	0.55	30
4945041	Acid Extractable Cobalt (Co)	2017/04/19	101	75 - 125	100	80 - 120	<0.10	ug/g	2.0	30
4945041	Acid Extractable Copper (Cu)	2017/04/19	100	75 - 125	101	80 - 120	<0.50	ug/g	1.0	30
4945041	Acid Extractable Iron (Fe)	2017/04/19	NC	75 - 125	103	80 - 120	<50	ug/g	0.33	30
4945041	Acid Extractable Lead (Pb)	2017/04/19	99	75 - 125	104	80 - 120	<1.0	ug/g	0.52	30
4945041	Acid Extractable Magnesium (Mg)	2017/04/19	NC	75 - 125	98	80 - 120	<50	ug/g	0.44	30
4945041	Acid Extractable Manganese (Mn)	2017/04/19	NC	75 - 125	96	80 - 120	<1.0	ug/g	0.47	30
4945041	Acid Extractable Mercury (Hg)	2017/04/19	94	75 - 125	99	80 - 120	<0.050	ug/g	NC	30
4945041	Acid Extractable Molybdenum (Mo)	2017/04/19	100	75 - 125	103	80 - 120	<0.50	ug/g	20	30
4945041	Acid Extractable Nickel (Ni)	2017/04/19	NC	75 - 125	99	80 - 120	<0.50	ug/g	2.7	30
4945041	Acid Extractable Phosphorus (P)	2017/04/19	NC	75 - 125	102	80 - 120	<50	ug/g	1.4	30
4945041	Acid Extractable Potassium (K)	2017/04/19	NC	75 - 125	84	80 - 120	<200	ug/g	4.2	30
4945041	Acid Extractable Selenium (Se)	2017/04/19	101	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4945041	Acid Extractable Silver (Ag)	2017/04/19	103	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
4945041	Acid Extractable Sodium (Na)	2017/04/19	101	75 - 125	90	80 - 120	<50	ug/g	4.2	30
4945041	Acid Extractable Strontium (Sr)	2017/04/19	105	75 - 125	103	80 - 120	<1.0	ug/g	0.17	30
4945041	Acid Extractable Thallium (Tl)	2017/04/19	100	75 - 125	104	80 - 120	<0.050	ug/g	3.8	30
4945041	Acid Extractable Tin (Sn)	2017/04/19	102	75 - 125	105	80 - 120	<1.0	ug/g	NC	30
4945041	Acid Extractable Uranium (U)	2017/04/19	100	75 - 125	103	80 - 120	<0.050	ug/g	2.5	30
4945041	Acid Extractable Vanadium (V)	2017/04/19	NC	75 - 125	97	80 - 120	<5.0	ug/g	1.3	30

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 #: B776335
Report Date: 2017/04/19

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
4945041	Acid Extractable Zinc (Zn)	2017/04/19	NC	75 - 125	106	80 - 120	<5.0	ug/g	0.70	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x 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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B776335
Report Date: 2017/04/19

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).

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.

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 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 #: 572155
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#572155-10-01	Madison Bingley
				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)? ___

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: ___ Time Required: 24 hr ☒
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		VS370	17/04/18	1200	Soil		X	X								1	
2		VS371	↓	1300	↓		X	X								1	
3		VS1371	↓	1300	↓		X	X								1	
4		VS372	↓	1330	↓		X	X								1	
5		VS373	↓	1400	↓		X	X								1	
6																	
7																	
8																	
9																	
10																	

RECEIVED IN OTTAWA

RECEIVED IN OTTAWA

18-Apr-17 14:55
Alison Cameron
B776335
KJY OTT-001

ON JC

* 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. Brookshaw / Aaron Brookshaw	17/04/18	1430	[illegible] Jayprasad	2017/04/18	14:55	0		12, 13, 15	Present		2
									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.

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 #: B776335
Report Date: 2017/04/19

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
VS 373	EFO553-02	Acid Extractable Cobalt (Co)	22	23	0.10	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

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Your C.O.C. #: 572155-17-01, 572155-15-01, 572155-14-01

Report Date: 2017/03/31
Report #: R4409366
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B763169
Received: 2017/03/30, 14:55

Sample Matrix: Soil
Samples Received: 22

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	22	N/A	2017/03/31	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	22	2017/03/31	2017/03/31	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	22	2017/03/31	2017/03/31	CAM SOP-00447	EPA 6020B m
Moisture	22	N/A	2017/03/31	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	20	2017/03/30	2017/03/30	OTT SOP-00011	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	2	2017/03/30	2017/03/31	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
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.

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:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Your C.O.C. #: 572155-17-01, 572155-15-01, 572155-14-01

Report Date: 2017/03/31
Report #: R4409366
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B763169
Received: 2017/03/30, 14:55

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EDF842		EDF843	EDF844	EDF845		
Sampling Date			2017/03/30 08:00		2017/03/30 08:30	2017/03/30 08:30	2017/03/30 09:30		
COC Number			572155-17-01		572155-17-01	572155-17-01	572155-17-01		
	UNITS	Criteria	VS350	QC Batch	VS351	VS1351	VS352	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	4921654	<0.20	<0.20	<0.20	0.20	4921651
Acid Extractable Arsenic (As)	ug/g	**18**	1.2	4921654	1.1	<1.0	<1.0	1.0	4921651
Acid Extractable Barium (Ba)	ug/g	**390**	25	4921654	28	31	17	0.50	4921651
Acid Extractable Beryllium (Be)	ug/g	**4**	0.21	4921654	0.23	0.23	0.21	0.20	4921651
Acid Extractable Boron (B)	ug/g	**120**	<5.0	4921654	<5.0	<5.0	<5.0	5.0	4921651
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	4921654	<0.10	<0.10	<0.10	0.10	4921651
Acid Extractable Chromium (Cr)	ug/g	**160**	15	4921654	17	16	15	1.0	4921651
Acid Extractable Cobalt (Co)	ug/g	**22**	4.1	4921654	4.6	4.8	4.0	0.10	4921651
Acid Extractable Copper (Cu)	ug/g	**140**	5.0	4921654	5.3	5.2	3.7	0.50	4921651
Acid Extractable Lead (Pb)	ug/g	**120**	23	4921654	16	9.7	3.1	1.0	4921651
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	4921654	<0.50	<0.50	<0.50	0.50	4921651
Acid Extractable Nickel (Ni)	ug/g	**100**	9.2	4921654	9.8	9.7	8.8	0.50	4921651
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	4921654	<0.50	<0.50	<0.50	0.50	4921651
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	4921654	<0.20	<0.20	<0.20	0.20	4921651
Acid Extractable Thallium (Tl)	ug/g	**1**	0.065	4921654	0.10	0.072	<0.050	0.050	4921651
Acid Extractable Uranium (U)	ug/g	**23**	0.49	4921654	0.39	0.36	0.27	0.050	4921651
Acid Extractable Vanadium (V)	ug/g	**86**	18	4921654	20	19	17	5.0	4921651
Acid Extractable Zinc (Zn)	ug/g	**340**	28	4921654	29	25	22	5.0	4921651
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	4921654	<0.050	<0.050	<0.050	0.050	4921651

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 #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EDF846	EDF847		EDF848	EDF848		
Sampling Date			2017/03/30 10:00	2017/03/30 10:30		2017/03/30 11:00	2017/03/30 11:00		
COC Number			572155-17-01	572155-17-01		572155-17-01	572155-17-01		
	UNITS	Criteria	VS353	VS354	QC Batch	VS355	VS355 Lab-Dup	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	4921651	<0.20	<0.20	0.20	4921654
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	4921651	<1.0	<1.0	1.0	4921654
Acid Extractable Barium (Ba)	ug/g	**390**	20	30	4921651	29	28	0.50	4921654
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	0.21	4921651	0.22	0.23	0.20	4921654
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	4921651	<5.0	<5.0	5.0	4921654
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	4921651	<0.10	<0.10	0.10	4921654
Acid Extractable Chromium (Cr)	ug/g	**160**	14	20	4921651	20	19	1.0	4921654
Acid Extractable Cobalt (Co)	ug/g	**22**	3.9	4.8	4921651	5.0	5.1	0.10	4921654
Acid Extractable Copper (Cu)	ug/g	**140**	4.7	6.0	4921651	5.7	6.0	0.50	4921654
Acid Extractable Lead (Pb)	ug/g	**120**	1.5	2.0	4921651	2.0	2.0	1.0	4921654
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	4921651	<0.50	<0.50	0.50	4921654
Acid Extractable Nickel (Ni)	ug/g	**100**	8.9	9.9	4921651	11	10	0.50	4921654
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	4921651	<0.50	<0.50	0.50	4921654
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	4921651	<0.20	<0.20	0.20	4921654
Acid Extractable Thallium (Tl)	ug/g	**1**	0.058	<0.050	4921651	0.070	0.073	0.050	4921654
Acid Extractable Uranium (U)	ug/g	**23**	0.33	0.70	4921651	0.76	0.51 (1)	0.050	4921654
Acid Extractable Vanadium (V)	ug/g	**86**	19	31	4921651	27	27	5.0	4921654
Acid Extractable Zinc (Zn)	ug/g	**340**	17	18	4921651	23	24	5.0	4921654
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	4921651	<0.050	<0.050	0.050	4921654

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.

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 #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EDF849	EDF850	EDF851	EDF855	EDF856		
Sampling Date			2017/03/30 11:30	2017/03/30 12:00	2017/03/30 12:30	2017/03/30 13:05	2017/03/30 13:15		
COC Number			572155-17-01	572155-17-01	572155-17-01	572155-15-01	572155-15-01		
	UNITS	**Criteria**	**VS356**	**VS357**	**VS358**	**VS359**	**VS360**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4921651
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	1.4	1.1	1.0	4921651
Acid Extractable Barium (Ba)	ug/g	**390**	30	47	51	27	14	0.50	4921651
Acid Extractable Beryllium (Be)	ug/g	**4**	0.24	0.26	0.35	0.22	<0.20	0.20	4921651
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4921651
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	4921651
Acid Extractable Chromium (Cr)	ug/g	**160**	17	20	25	15	15	1.0	4921651
Acid Extractable Cobalt (Co)	ug/g	**22**	4.2	4.4	6.5	4.1	3.7	0.10	4921651
Acid Extractable Copper (Cu)	ug/g	**140**	6.0	8.0	9.1	5.4	6.6	0.50	4921651
Acid Extractable Lead (Pb)	ug/g	**120**	2.0	2.5	4.4	18	1.8	1.0	4921651
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4921651
Acid Extractable Nickel (Ni)	ug/g	**100**	11	11	13	9.1	8.5	0.50	4921651
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4921651
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4921651
Acid Extractable Thallium (Tl)	ug/g	**1**	0.063	0.055	0.11	0.060	0.054	0.050	4921651
Acid Extractable Uranium (U)	ug/g	**23**	0.45	1.0	1.3	0.32	0.42	0.050	4921651
Acid Extractable Vanadium (V)	ug/g	**86**	18	23	39	19	19	5.0	4921651
Acid Extractable Zinc (Zn)	ug/g	**340**	22	25	32	28	17	5.0	4921651
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	0.089	<0.050	0.050	4921651

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 #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EDF857	EDF858	EDF859	EDF860	EDF860		
Sampling Date			2017/03/30 13:20	2017/03/30 13:25	2017/03/30 13:30	2017/03/30 13:35	2017/03/30 13:35		
COC Number			572155-15-01	572155-15-01	572155-15-01	572155-15-01	572155-15-01		
	UNITS	**Criteria**	**VS361**	**VS362**	**VS363**	**VS364**	**VS364 Lab-Dup**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4921651
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4921651
Acid Extractable Barium (Ba)	ug/g	**390**	21	12	17	16	15	0.50	4921651
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	<0.20	<0.20	0.20	<0.20	0.20	4921651
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4921651
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	4921651
Acid Extractable Chromium (Cr)	ug/g	**160**	14	13	16	18	16	1.0	4921651
Acid Extractable Cobalt (Co)	ug/g	**22**	3.1	2.6	3.9	4.3	3.7	0.10	4921651
Acid Extractable Copper (Cu)	ug/g	**140**	4.1	3.3	4.4	3.3	2.9	0.50	4921651
Acid Extractable Lead (Pb)	ug/g	**120**	2.1	1.7	2.2	2.1	1.8	1.0	4921651
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4921651
Acid Extractable Nickel (Ni)	ug/g	**100**	7.5	6.8	9.6	7.8	7.3	0.50	4921651
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4921651
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4921651
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	<0.050	0.053	<0.050	<0.050	0.050	4921651
Acid Extractable Uranium (U)	ug/g	**23**	0.43	0.42	0.30	0.63	0.52	0.050	4921651
Acid Extractable Vanadium (V)	ug/g	**86**	22	20	18	33	28	5.0	4921651
Acid Extractable Zinc (Zn)	ug/g	**340**	15	13	21	15	14	5.0	4921651
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4921651

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 Job #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EDF861	EDF862	EDF863	EDF874	EDF875		
Sampling Date			2017/03/30 13:35	2017/03/30 13:45	2017/03/30 13:50	2017/03/30 14:00	2017/03/30 14:10		
COC Number			572155-15-01	572155-15-01	572155-15-01	572155-14-01	572155-14-01		
	UNITS	**Criteria**	**VS1364**	**VS365**	**VS366**	**VS367**	**VS368**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4921651
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4921651
Acid Extractable Barium (Ba)	ug/g	**390**	17	22	22	37	26	0.50	4921651
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	<0.20	0.22	0.24	<0.20	0.20	4921651
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4921651
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	4921651
Acid Extractable Chromium (Cr)	ug/g	**160**	14	14	15	19	14	1.0	4921651
Acid Extractable Cobalt (Co)	ug/g	**22**	4.1	4.7	3.6	5.7	4.3	0.10	4921651
Acid Extractable Copper (Cu)	ug/g	**140**	3.2	5.1	4.7	4.5	4.0	0.50	4921651
Acid Extractable Lead (Pb)	ug/g	**120**	1.8	4.0	2.1	4.5	2.2	1.0	4921651
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4921651
Acid Extractable Nickel (Ni)	ug/g	**100**	8.1	9.1	8.4	11	8.0	0.50	4921651
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4921651
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4921651
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	0.057	0.058	0.092	0.050	0.050	4921651
Acid Extractable Uranium (U)	ug/g	**23**	0.51	0.26	0.32	0.32	0.44	0.050	4921651
Acid Extractable Vanadium (V)	ug/g	**86**	21	18	18	19	19	5.0	4921651
Acid Extractable Zinc (Zn)	ug/g	**340**	14	23	19	38	17	5.0	4921651
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4921651

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 #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EDF876		
Sampling Date			2017/03/30 14:20		
COC Number			572155-14-01		
	UNITS	**Criteria**	**VS369**	**RDL**	**QC Batch**
Metals					
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	0.20	4921651
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	1.0	4921651
Acid Extractable Barium (Ba)	ug/g	**390**	45	0.50	4921651
Acid Extractable Beryllium (Be)	ug/g	**4**	0.26	0.20	4921651
Acid Extractable Boron (B)	ug/g	**120**	<5.0	5.0	4921651
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.10	4921651
Acid Extractable Chromium (Cr)	ug/g	**160**	19	1.0	4921651
Acid Extractable Cobalt (Co)	ug/g	**22**	6.3	0.10	4921651
Acid Extractable Copper (Cu)	ug/g	**140**	5.1	0.50	4921651
Acid Extractable Lead (Pb)	ug/g	**120**	4.4	1.0	4921651
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.50	4921651
Acid Extractable Nickel (Ni)	ug/g	**100**	13	0.50	4921651
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	0.50	4921651
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	0.20	4921651
Acid Extractable Thallium (Tl)	ug/g	**1**	0.089	0.050	4921651
Acid Extractable Uranium (U)	ug/g	**23**	0.35	0.050	4921651
Acid Extractable Vanadium (V)	ug/g	**86**	25	5.0	4921651
Acid Extractable Zinc (Zn)	ug/g	**340**	23	5.0	4921651
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	0.050	4921651

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 #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EDF842	EDF843	EDF843	EDF844	EDF845		
Sampling Date			2017/03/30 08:00	2017/03/30 08:30	2017/03/30 08:30	2017/03/30 08:30	2017/03/30 09:30		
COC Number			572155-17-01	572155-17-01	572155-17-01	572155-17-01	572155-17-01		
	UNITS	**Criteria**	**VS350**	**VS351**	**VS351 Lab-Dup**	**VS1351**	**VS352**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	17	10		11	12	0.2	4920516
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	4920538
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	0.0075	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0071	<0.0050	<0.0050	<0.0050	0.0050	4920545
Anthracene	ug/g	**0.67**	0.014	0.0082	<0.0050	<0.0050	<0.0050	0.0050	4920545
Benzo(a)anthracene	ug/g	**0.5**	0.034	0.034	0.020 (1)	0.020	<0.0050	0.0050	4920545
Benzo(a)pyrene	ug/g	**0.3**	0.031	0.035	0.020 (1)	0.019	<0.0050	0.0050	4920545
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.043	0.054	0.028 (1)	0.029	<0.0050	0.0050	4920545
Benzo(g,h,i)perylene	ug/g	**6.6**	0.020	0.025	0.015 (1)	0.014	<0.0050	0.0050	4920545
Benzo(k)fluoranthene	ug/g	**0.78**	0.017	0.020	0.0096 (1)	0.0098	<0.0050	0.0050	4920545
Chrysene	ug/g	**7**	0.032	0.032	0.019 (1)	0.020	<0.0050	0.0050	4920545
Dibenz(a,h)anthracene	ug/g	**0.1**	0.0063	0.0076	<0.0050	0.0063	<0.0050	0.0050	4920545
Fluoranthene	ug/g	**0.69**	0.074	0.069	0.041 (1)	0.041	0.0069	0.0050	4920545
Fluorene	ug/g	**62**	0.0063	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.020	0.026	0.016 (1)	0.018	<0.0050	0.0050	4920545
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Phenanthrene	ug/g	**6.2**	0.057	0.037	0.021 (1)	0.025	<0.0050	0.0050	4920545
Pyrene	ug/g	**78**	0.056	0.054	0.032 (1)	0.034	<0.0050	0.0050	4920545
Surrogate Recovery (%)									
D10-Anthracene	%	-	76	74	73	74	76		4920545
D14-Terphenyl (FS)	%	-	77	73	76	74	75		4920545
D8-Acenaphthylene	%	-	70	69	69	68	70		4920545

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.

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 #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EDF846	EDF847	EDF848	EDF849	EDF850		
Sampling Date			2017/03/30 10:00	2017/03/30 10:30	2017/03/30 11:00	2017/03/30 11:30	2017/03/30 12:00		
COC Number			572155-17-01	572155-17-01	572155-17-01	572155-17-01	572155-17-01		
	UNITS	Criteria	VS353	VS354	VS355	VS356	VS357	RDL	QC Batch
Inorganics									
Moisture	%	-	14	21	19	17	18	0.2	4920516
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4920538
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Surrogate Recovery (%)									
D10-Anthracene	%	-	80	85	79	79	78		4920545
D14-Terphenyl (FS)	%	-	77	83	77	79	76		4920545
D8-Acenaphthylene	%	-	73	76	71	73	69		4920545

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 #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EDF851	EDF855	EDF856	EDF857	EDF858		
Sampling Date			2017/03/30 12:30	2017/03/30 13:05	2017/03/30 13:15	2017/03/30 13:20	2017/03/30 13:25		
COC Number			572155-17-01	572155-15-01	572155-15-01	572155-15-01	572155-15-01		
	UNITS	**Criteria**	**VS358**	**VS359**	**VS360**	**VS361**	**VS362**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	19	15	13	18	15	0.2	4920516
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4920538
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Anthracene	ug/g	**0.67**	<0.0050	0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.028	<0.0050	0.011	<0.0050	0.0050	4920545
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.030	<0.0050	0.013	<0.0050	0.0050	4920545
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.042	<0.0050	0.017	<0.0050	0.0050	4920545
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.020	<0.0050	0.0096	<0.0050	0.0050	4920545
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.017	<0.0050	0.0066	<0.0050	0.0050	4920545
Chrysene	ug/g	**7**	<0.0050	0.027	<0.0050	0.011	<0.0050	0.0050	4920545
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0067	<0.0050	<0.0050	<0.0050	0.0050	4920545
Fluoranthene	ug/g	**0.69**	<0.0050	0.058	<0.0050	0.023	<0.0050	0.0050	4920545
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.021	<0.0050	0.0090	<0.0050	0.0050	4920545
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4920545
Phenanthrene	ug/g	**6.2**	<0.0050	0.027	<0.0050	0.0078	<0.0050	0.0050	4920545
Pyrene	ug/g	**78**	<0.0050	0.045	<0.0050	0.017	<0.0050	0.0050	4920545
Surrogate Recovery (%)									
D10-Anthracene	%	-	76	79	81	79	79		4920545
D14-Terphenyl (FS)	%	-	75	77	79	76	76		4920545
D8-Acenaphthylene	%	-	70	72	73	70	72		4920545

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 #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EDF859	EDF860	EDF861	EDF862		EDF863		
Sampling Date			2017/03/30 13:30	2017/03/30 13:35	2017/03/30 13:35	2017/03/30 13:45		2017/03/30 13:50		
COC Number			572155-15-01	572155-15-01	572155-15-01	572155-15-01		572155-15-01		
	UNITS	Criteria	VS363	VS364	VS1364	VS365	QC Batch	VS366	RDL	QC Batch
Inorganics										
Moisture	%	-	19	16	16	17	4920516	16	0.2	4920555
Calculated Parameters										
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	4920538	<0.014	0.014	4920538
Polyaromatic Hydrocarbons										
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	4920545	<0.0050	0.0050	4920545
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	4920545	<0.0050	0.0050	4920545
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	4920545	<0.0050	0.0050	4920545
Benzo(a)anthracene	ug/g	**0.5**	0.019	<0.0050	<0.0050	<0.0050	4920545	<0.0050	0.0050	4920545
Benzo(a)pyrene	ug/g	**0.3**	0.019	<0.0050	<0.0050	<0.0050	4920545	<0.0050	0.0050	4920545
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.024	<0.0050	<0.0050	<0.0050	4920545	<0.0050	0.0050	4920545
Benzo(g,h,i)perylene	ug/g	**6.6**	0.013	<0.0050	<0.0050	<0.0050	4920545	<0.0050	0.0050	4920545
Benzo(k)fluoranthene	ug/g	**0.78**	0.010	<0.0050	<0.0050	<0.0050	4920545	<0.0050	0.0050	4920545
Chrysene	ug/g	**7**	0.016	<0.0050	<0.0050	<0.0050	4920545	<0.0050	0.0050	4920545
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	4920545	<0.0050	0.0050	4920545
Fluoranthene	ug/g	**0.69**	0.034	<0.0050	<0.0050	<0.0050	4920545	0.0062	0.0050	4920545
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	4920545	<0.0050	0.0050	4920545
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.013	<0.0050	<0.0050	<0.0050	4920545	<0.0050	0.0050	4920545
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	4920545	<0.0050	0.0050	4920545
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	4920545	<0.0050	0.0050	4920545
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	4920545	<0.0050	0.0050	4920545
Phenanthrene	ug/g	**6.2**	0.013	<0.0050	<0.0050	<0.0050	4920545	<0.0050	0.0050	4920545
Pyrene	ug/g	**78**	0.029	<0.0050	<0.0050	<0.0050	4920545	0.0051	0.0050	4920545
Surrogate Recovery (%)										
D10-Anthracene	%	-	73	78	80	78	4920545	76		4920545
D14-Terphenyl (FS)	%	-	72	74	76	78	4920545	75		4920545
D8-Acenaphthylene	%	-	67	69	72	71	4920545	70		4920545

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 #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EDF874	EDF874		EDF875	EDF876	EDF876		
Sampling Date			2017/03/30 14:00	2017/03/30 14:00		2017/03/30 14:10	2017/03/30 14:20	2017/03/30 14:20		
COC Number			572155-14-01	572155-14-01		572155-14-01	572155-14-01	572155-14-01		
	UNITS	**Criteria**	**VS367**	**VS367 Lab-Dup**	**QC Batch**	**VS368**	**VS369**	**VS369 Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	-	18	18	4920555	19	17		0.2	4920555
Calculated Parameters										
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		4920538	<0.014	<0.014		0.014	4920538
Polyaromatic Hydrocarbons										
Acenaphthene	ug/g	**7.9**	<0.0050		4920545	<0.0050	<0.0050	<0.0050	0.0050	4920557
Acenaphthylene	ug/g	**0.15**	<0.0050		4920545	<0.0050	<0.0050	<0.0050	0.0050	4920557
Anthracene	ug/g	**0.67**	<0.0050		4920545	<0.0050	<0.0050	<0.0050	0.0050	4920557
Benzo(a)anthracene	ug/g	**0.5**	<0.0050		4920545	0.0074	0.0094	0.022 (1)	0.0050	4920557
Benzo(a)pyrene	ug/g	**0.3**	<0.0050		4920545	0.0090	0.0094	0.021 (1)	0.0050	4920557
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050		4920545	0.012	0.014	0.031 (1)	0.0050	4920557
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050		4920545	<0.0050	0.0072	0.015	0.0050	4920557
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050		4920545	<0.0050	<0.0050	0.012	0.0050	4920557
Chrysene	ug/g	**7**	<0.0050		4920545	0.0069	0.0083	0.020 (1)	0.0050	4920557
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050		4920545	<0.0050	<0.0050	<0.0050	0.0050	4920557
Fluoranthene	ug/g	**0.69**	<0.0050		4920545	0.015	0.017	0.041 (1)	0.0050	4920557
Fluorene	ug/g	**62**	<0.0050		4920545	<0.0050	<0.0050	<0.0050	0.0050	4920557
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050		4920545	<0.0050	0.0072	0.016	0.0050	4920557
1-Methylnaphthalene	ug/g	**0.99**	<0.0050		4920545	<0.0050	<0.0050	<0.0050	0.0050	4920557
2-Methylnaphthalene	ug/g	**0.99**	<0.0050		4920545	<0.0050	<0.0050	<0.0050	0.0050	4920557
Naphthalene	ug/g	**0.6**	<0.0050		4920545	<0.0050	<0.0050	<0.0050	0.0050	4920557
Phenanthrene	ug/g	**6.2**	<0.0050		4920545	0.0058	0.0061	0.017 (1)	0.0050	4920557
Pyrene	ug/g	**78**	<0.0050		4920545	0.012	0.013	0.033 (1)	0.0050	4920557
Surrogate Recovery (%)										
D10-Anthracene	%	-	75		4920545	95	92	91		4920557
D14-Terphenyl (FS)	%	-	75		4920545	96	89	92		4920557
D8-Acenaphthylene	%	-	70		4920545	85	82	83		4920557

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.

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 #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EDF842	EDF843	EDF844	EDF845	EDF846		
Sampling Date			2017/03/30 08:00	2017/03/30 08:30	2017/03/30 08:30	2017/03/30 09:30	2017/03/30 10:00		
COC Number			572155-17-01	572155-17-01	572155-17-01	572155-17-01	572155-17-01		
	UNITS	**Criteria**	**VS350**	**VS351**	**VS1351**	**VS352**	**VS353**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4921431

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			EDF847	EDF848	EDF849	EDF850	EDF851		
Sampling Date			2017/03/30 10:30	2017/03/30 11:00	2017/03/30 11:30	2017/03/30 12:00	2017/03/30 12:30		
COC Number			572155-17-01	572155-17-01	572155-17-01	572155-17-01	572155-17-01		
	UNITS	**Criteria**	**VS354**	**VS355**	**VS356**	**VS357**	**VS358**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	0.3	<0.2	<0.2	0.3	0.2	4921431

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			EDF855	EDF856	EDF857		EDF858	EDF858		
Sampling Date			2017/03/30 13:05	2017/03/30 13:15	2017/03/30 13:20		2017/03/30 13:25	2017/03/30 13:25		
COC Number			572155-15-01	572155-15-01	572155-15-01		572155-15-01	572155-15-01		
	UNITS	**Criteria**	**VS359**	**VS360**	**VS361**	**QC Batch**	**VS362**	**VS362 Lab-Dup**	**RDL**	**QC Batch**
Inorganics										
Chromium (VI)	ug/g	**8**	<0.2	<0.2	<0.2	4921431	<0.2	<0.2	0.2	4921435

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 Job #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EDF859		EDF860		EDF861	EDF862		
Sampling Date			2017/03/30 13:30		2017/03/30 13:35		2017/03/30 13:35	2017/03/30 13:45		
COC Number			572155-15-01		572155-15-01		572155-15-01	572155-15-01		
	UNITS	**Criteria**	**VS363**	**QC Batch**	**VS364**	**QC Batch**	**VS1364**	**VS365**	**RDL**	**QC Batch**
Inorganics										
Chromium (VI)	ug/g	**8**	<0.2	4921431	0.2	4921435	<0.2	<0.2	0.2	4921431

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			EDF863	EDF863	EDF874	EDF875	EDF876		
Sampling Date			2017/03/30 13:50	2017/03/30 13:50	2017/03/30 14:00	2017/03/30 14:10	2017/03/30 14:20		
COC Number			572155-15-01	572155-15-01	572155-14-01	572155-14-01	572155-14-01		
	UNITS	**Criteria**	**VS366**	**VS366 Lab-Dup**	**VS367**	**VS368**	**VS369**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.3	0.3	<0.2	0.3	<0.2	0.2	4921431

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 Job #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EDF842
Sample ID: VS350
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921654	2017/03/31	2017/03/31	Viviana Canzonieri
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF843
Sample ID: VS351
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF843 Dup
Sample ID: VS351
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF844
Sample ID: VS1351
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF845
Sample ID: VS352
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	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 #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EDF846
Sample ID: VS353
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF847
Sample ID: VS354
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF848
Sample ID: VS355
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921654	2017/03/31	2017/03/31	Viviana Canzonieri
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF848 Dup
Sample ID: VS355
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921654	2017/03/31	2017/03/31	Viviana Canzonieri

Maxxam ID: EDF849
Sample ID: VS356
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	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 #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EDF850
Sample ID: VS357
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF851
Sample ID: VS358
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF855
Sample ID: VS359
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF856
Sample ID: VS360
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF857
Sample ID: VS361
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin

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 #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EDF857
Sample ID: VS361
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF858
Sample ID: VS362
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921435	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF858 Dup
Sample ID: VS362
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4921435	2017/03/31	2017/03/31	Sally Coughlin

Maxxam ID: EDF859
Sample ID: VS363
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF860
Sample ID: VS364
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921435	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	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 #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EDF860 Dup
Sample ID: VS364
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu

Maxxam ID: EDF861
Sample ID: VS1364
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF862
Sample ID: VS365
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920516	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF863
Sample ID: VS366
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920555	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF863 Dup
Sample ID: VS366
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin

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 #: B763169
Report Date: 2017/03/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EDF874
Sample ID: VS367
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920555	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920545	2017/03/30	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDF874 Dup
Sample ID: VS367
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4920555	N/A	2017/03/31	Liliana Gaburici

Maxxam ID: EDF875
Sample ID: VS368
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920555	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920557	2017/03/30	2017/03/31	Arezoo Habibagahi

Maxxam ID: EDF876
Sample ID: VS369
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4920538	N/A	2017/03/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4921431	2017/03/31	2017/03/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4921651	2017/03/31	2017/03/31	Daniel Teclu
Moisture	BAL	4920555	N/A	2017/03/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920557	2017/03/30	2017/03/31	Arezoo Habibagahi

Maxxam ID: EDF876 Dup
Sample ID: VS369
Matrix: Soil

Collected: 2017/03/30
Shipped:
Received: 2017/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4920557	2017/03/30	2017/03/31	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

GENERAL COMMENTS

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

Package 1	13.3°C

Revised Report (2017/03/31): Requested regulatory criteria have been included on this report.

Sample EDF843 [VS351] : PAH Analysis: Duplicate results exceeded RPD acceptance criteria for flagged analytes. This is likely due to sample heterogeneity.

Sample EDF876 [VS369] : PAH Analysis: Duplicate results exceeded RPD acceptance criteria for flagged analytes. This is likely due to sample heterogeneity.

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 #: B763169
Report Date: 2017/03/31

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
4920545	D10-Anthracene	2017/03/30	77	50 - 130	88	50 - 130	90	%		
4920545	D14-Terphenyl (FS)	2017/03/30	77	50 - 130	87	50 - 130	87	%		
4920545	D8-Acenaphthylene	2017/03/30	71	50 - 130	82	50 - 130	82	%		
4920557	D10-Anthracene	2017/03/31	91	50 - 130	92	50 - 130	95	%		
4920557	D14-Terphenyl (FS)	2017/03/31	90	50 - 130	92	50 - 130	93	%		
4920557	D8-Acenaphthylene	2017/03/31	83	50 - 130	85	50 - 130	84	%		
4920516	Moisture	2017/03/31							5.2	50
4920545	1-Methylnaphthalene	2017/03/30	78	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
4920545	2-Methylnaphthalene	2017/03/30	83	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4920545	Acenaphthene	2017/03/30	80	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
4920545	Acenaphthylene	2017/03/30	72	50 - 130	79	50 - 130	<0.0050	ug/g	34	40
4920545	Anthracene	2017/03/30	74	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4920545	Benzo(a)anthracene	2017/03/30	80	50 - 130	91	50 - 130	<0.0050	ug/g	54 (1)	40
4920545	Benzo(a)pyrene	2017/03/30	75	50 - 130	86	50 - 130	<0.0050	ug/g	55 (1)	40
4920545	Benzo(b/j)fluoranthene	2017/03/30	76	50 - 130	87	50 - 130	<0.0050	ug/g	64 (1)	40
4920545	Benzo(g,h,i)perylene	2017/03/30	80	50 - 130	88	50 - 130	<0.0050	ug/g	54 (1)	40
4920545	Benzo(k)fluoranthene	2017/03/30	81	50 - 130	88	50 - 130	<0.0050	ug/g	71 (1)	40
4920545	Chrysene	2017/03/30	72	50 - 130	83	50 - 130	<0.0050	ug/g	51 (1)	40
4920545	Dibenz(a,h)anthracene	2017/03/30	57	50 - 130	62	50 - 130	<0.0050	ug/g	NC	40
4920545	Fluoranthene	2017/03/30	71	50 - 130	85	50 - 130	<0.0050	ug/g	52 (1)	40
4920545	Fluorene	2017/03/30	84	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
4920545	Indeno(1,2,3-cd)pyrene	2017/03/30	79	50 - 130	87	50 - 130	<0.0050	ug/g	49 (1)	40
4920545	Naphthalene	2017/03/30	71	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
4920545	Phenanthrene	2017/03/30	67	50 - 130	83	50 - 130	<0.0050	ug/g	55 (1)	40
4920545	Pyrene	2017/03/30	70	50 - 130	81	50 - 130	<0.0050	ug/g	51 (1)	40
4920555	Moisture	2017/03/31							3.3	50
4920557	1-Methylnaphthalene	2017/03/31	91	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
4920557	2-Methylnaphthalene	2017/03/31	97	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
4920557	Acenaphthene	2017/03/31	96	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4920557	Acenaphthylene	2017/03/31	82	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
4920557	Anthracene	2017/03/31	89	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40

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 #: B763169
Report Date: 2017/03/31

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
4920557	Benzo(a)anthracene	2017/03/31	98	50 - 130	97	50 - 130	<0.0050	ug/g	79 (1)	40
4920557	Benzo(a)pyrene	2017/03/31	89	50 - 130	91	50 - 130	<0.0050	ug/g	77 (1)	40
4920557	Benzo(b/j)fluoranthene	2017/03/31	95	50 - 130	94	50 - 130	<0.0050	ug/g	74 (1)	40
4920557	Benzo(g,h,i)perylene	2017/03/31	91	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
4920557	Benzo(k)fluoranthene	2017/03/31	93	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
4920557	Chrysene	2017/03/31	87	50 - 130	89	50 - 130	<0.0050	ug/g	81 (1)	40
4920557	Dibenz(a,h)anthracene	2017/03/31	58	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40
4920557	Fluoranthene	2017/03/31	87	50 - 130	90	50 - 130	<0.0050	ug/g	84 (1)	40
4920557	Fluorene	2017/03/31	99	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
4920557	Indeno(1,2,3-cd)pyrene	2017/03/31	90	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4920557	Naphthalene	2017/03/31	83	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4920557	Phenanthrene	2017/03/31	86	50 - 130	88	50 - 130	<0.0050	ug/g	94 (1)	40
4920557	Pyrene	2017/03/31	84	50 - 130	86	50 - 130	<0.0050	ug/g	86 (1)	40
4921431	Chromium (VI)	2017/03/31	69 (2)	75 - 125	91	80 - 120	<0.2	ug/g	0.66	35
4921435	Chromium (VI)	2017/03/31	84	75 - 125	89	80 - 120	<0.2	ug/g	NC	35
4921651	Acid Extractable Antimony (Sb)	2017/03/31	97	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
4921651	Acid Extractable Arsenic (As)	2017/03/31	100	75 - 125	100	80 - 120	<1.0	ug/g	NC	30
4921651	Acid Extractable Barium (Ba)	2017/03/31	93	75 - 125	106	80 - 120	<0.50	ug/g	11	30
4921651	Acid Extractable Beryllium (Be)	2017/03/31	103	75 - 125	101	80 - 120	<0.20	ug/g	0.52	30
4921651	Acid Extractable Boron (B)	2017/03/31	98	75 - 125	100	80 - 120	<5.0	ug/g	NC	30
4921651	Acid Extractable Cadmium (Cd)	2017/03/31	99	75 - 125	102	80 - 120	<0.10	ug/g	NC	30
4921651	Acid Extractable Chromium (Cr)	2017/03/31	100	75 - 125	104	80 - 120	<1.0	ug/g	13	30
4921651	Acid Extractable Cobalt (Co)	2017/03/31	99	75 - 125	105	80 - 120	<0.10	ug/g	13	30
4921651	Acid Extractable Copper (Cu)	2017/03/31	103	75 - 125	103	80 - 120	<0.50	ug/g	11	30
4921651	Acid Extractable Lead (Pb)	2017/03/31	100	75 - 125	101	80 - 120	<1.0	ug/g	14	30
4921651	Acid Extractable Mercury (Hg)	2017/03/31	101	75 - 125	98	80 - 120	<0.050	ug/g	NC	30
4921651	Acid Extractable Molybdenum (Mo)	2017/03/31	99	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
4921651	Acid Extractable Nickel (Ni)	2017/03/31	103	75 - 125	108	80 - 120	<0.50	ug/g	7.4	30
4921651	Acid Extractable Selenium (Se)	2017/03/31	104	75 - 125	105	80 - 120	<0.50	ug/g	NC	30
4921651	Acid Extractable Silver (Ag)	2017/03/31	101	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
4921651	Acid Extractable Thallium (Tl)	2017/03/31	99	75 - 125	101	80 - 120	<0.050	ug/g	NC	30

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 #: B763169
Report Date: 2017/03/31

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
4921651	Acid Extractable Uranium (U)	2017/03/31	97	75 - 125	98	80 - 120	<0.050	ug/g	19	30
4921651	Acid Extractable Vanadium (V)	2017/03/31	NC	75 - 125	102	80 - 120	<5.0	ug/g	19	30
4921651	Acid Extractable Zinc (Zn)	2017/03/31	102	75 - 125	104	80 - 120	<5.0	ug/g	3.8	30
4921654	Acid Extractable Antimony (Sb)	2017/03/31	87	75 - 125	98	80 - 120	<0.20	ug/g	NC	30
4921654	Acid Extractable Arsenic (As)	2017/03/31	98	75 - 125	99	80 - 120	<1.0	ug/g	NC	30
4921654	Acid Extractable Barium (Ba)	2017/03/31	NC	75 - 125	104	80 - 120	<0.50	ug/g	2.4	30
4921654	Acid Extractable Beryllium (Be)	2017/03/31	100	75 - 125	100	80 - 120	<0.20	ug/g	4.5	30
4921654	Acid Extractable Boron (B)	2017/03/31	97	75 - 125	100	80 - 120	<5.0	ug/g	NC	30
4921654	Acid Extractable Cadmium (Cd)	2017/03/31	97	75 - 125	98	80 - 120	<0.10	ug/g	NC	30
4921654	Acid Extractable Chromium (Cr)	2017/03/31	95	75 - 125	103	80 - 120	<1.0	ug/g	2.3	30
4921654	Acid Extractable Cobalt (Co)	2017/03/31	97	75 - 125	101	80 - 120	<0.10	ug/g	1.8	30
4921654	Acid Extractable Copper (Cu)	2017/03/31	98	75 - 125	102	80 - 120	<0.50	ug/g	5.4	30
4921654	Acid Extractable Lead (Pb)	2017/03/31	97	75 - 125	100	80 - 120	<1.0	ug/g	1.3	30
4921654	Acid Extractable Mercury (Hg)	2017/03/31	101	75 - 125	94	80 - 120	<0.050	ug/g	NC	30
4921654	Acid Extractable Molybdenum (Mo)	2017/03/31	97	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
4921654	Acid Extractable Nickel (Ni)	2017/03/31	96	75 - 125	99	80 - 120	<0.50	ug/g	5.4	30
4921654	Acid Extractable Selenium (Se)	2017/03/31	102	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
4921654	Acid Extractable Silver (Ag)	2017/03/31	96	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
4921654	Acid Extractable Thallium (Tl)	2017/03/31	96	75 - 125	99	80 - 120	<0.050	ug/g	4.0	30
4921654	Acid Extractable Uranium (U)	2017/03/31	93	75 - 125	97	80 - 120	<0.050	ug/g	40 (1)	30
4921654	Acid Extractable Vanadium (V)	2017/03/31	NC	75 - 125	104	80 - 120	<5.0	ug/g	1.7	30

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 #: B763169
Report Date: 2017/03/31

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
4921654	Acid Extractable Zinc (Zn)	2017/03/31	89	75 - 125	101	80 - 120	<5.0	ug/g	2.3	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.

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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x 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.

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 #: B763169
Report Date: 2017/03/31

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.

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 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 23 of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 572155
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#572155-15-01	Madison Bingley
				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)? ___

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: 24hr ☒
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								# of Bottles	Comments
1		VS359	17/03/30	1305	Soil		X	X								1	
2		VS360		1315			X	X								1	
3		VS361		1320			X	X								1	
4		VS362		1325			X	X								1	
5		VS363	~~1330~~	1330			X	X								1	
6		VS364	~~1335~~	1335			X	X								1	RECEIVED IN OTTAWA
7		VS1364	~~1335~~	1335			X	X								1	
8		VS365	~~1345~~	1345			X	X								1	
9		VS366	~~1350~~	1350			X	X								1	
10																	ON Ice

30-Mar-17 14:55
Alison Cameron
B763169
KJY 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	Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
A Bradshaw/Aaron Bradshaw	17/03/30	1430	[illegible]	2017/03/30	14:55	0		12, 14, 14	Present	X	
									Intact	X	

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 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:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 572155
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#572155-17-01	Madison Bingley
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)? ___

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: 24hr ☒
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		VS350	17/03/30	800	Soil		X	X								1	
2		VS351		830			X	X								1	
3		VS1351		830			X	X								1	
4		VS352		930			X	X								1	
5		VS353		1000			X	X								1	
6		VS354		1030			X	X								1	
7		VS355		1100			X	X								1	
8		VS356		1130			X	X								1	
9		VS357		1200			X	X								1	
10		VS358		1230			X	X								1	ON Ice

RECEIVED IN OTTAWA
30-Mar-17 14:55
Alison Cameron
B763169
KJY OTT-001

* 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	17/03/30	1430	[illegible] Jenyskiera	2017/03/30	14:55	0		12, 14, 14	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.

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 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 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 #: 572155
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#572155-14-01	Madison Bingley
				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)? ___

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: 24hr ☒
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		VS367	17/03/30	1400	Soil		X	X								1	
2		VS368	↓	1410	↓		X	X								1	
3		VS369	↓	1420	↓		X	X								1	
4																	
5																	
6																	
7																	
8																	
9																	
10																	ON Je

30-Mar-17 14:55
Alison Cameron
B763169
KJY OTT-001

* 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	17/03/30	1430	[illegible]	2017/03/30	14:55	0		12, 14, 14	Present		
									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.

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 #: B763169
Report Date: 2017/03/31

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. #: 572155-16-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/03/30
Report #: R4408191
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B762121
Received: 2017/03/29, 14:55

Sample Matrix: Soil
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	10	N/A	2017/03/30	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	10	2017/03/30	2017/03/30	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	10	2017/03/30	2017/03/30	CAM SOP-00447	EPA 6020B m
Moisture	10	N/A	2017/03/30	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	10	2017/03/29	2017/03/30	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-16-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/03/30
Report #: R4408191
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B762121
Received: 2017/03/29, 14:55

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B762121
Report Date: 2017/03/30

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EDA571	EDA572	EDA573	EDA574	EDA575		
Sampling Date			2017/03/29 07:30	2017/03/29 08:00	2017/03/29 08:30	2017/03/29 09:00	2017/03/29 10:00		
COC Number			572155-16-01	572155-16-01	572155-16-01	572155-16-01	572155-16-01		
	UNITS	**Criteria**	**VS341**	**VS342**	**VS343**	**VS344**	**VS345**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	0.68	0.64	<0.20	0.31	0.20	4919953
Acid Extractable Arsenic (As)	ug/g	**18**	2.7	2.8	3.1	1.7	2.5	1.0	4919953
Acid Extractable Barium (Ba)	ug/g	**390**	120	65	140	120	120	0.50	4919953
Acid Extractable Beryllium (Be)	ug/g	**4**	0.46	0.33	0.54	0.41	0.50	0.20	4919953
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4919953
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.18	0.28	0.26	0.10	0.17	0.10	4919953
Acid Extractable Chromium (Cr)	ug/g	**160**	29	22	35	48	32	1.0	4919953
Acid Extractable Cobalt (Co)	ug/g	**22**	9.9	6.5	9.2	11	8.6	0.10	4919953
Acid Extractable Copper (Cu)	ug/g	**140**	13	12	17	24	13	0.50	4919953
Acid Extractable Lead (Pb)	ug/g	**120**	21	100	60	29	23	1.0	4919953
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.72	0.72	0.86	<0.50	0.79	0.50	4919953
Acid Extractable Nickel (Ni)	ug/g	**100**	16	13	19	28	16	0.50	4919953
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	0.76	<0.50	0.50	0.50	4919953
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4919953
Acid Extractable Thallium (Tl)	ug/g	**1**	0.20	0.12	0.21	0.20	0.20	0.050	4919953
Acid Extractable Uranium (U)	ug/g	**23**	0.84	0.75	0.74	0.80	1.1	0.050	4919953
Acid Extractable Vanadium (V)	ug/g	**86**	41	28	43	48	39	5.0	4919953
Acid Extractable Zinc (Zn)	ug/g	**340**	71	130	98	68	84	5.0	4919953
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	0.11	0.056	0.070	<0.050	0.050	4919953

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 #: B762121
Report Date: 2017/03/30

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EDA576	EDA577	EDA578	EDA579	EDA580		
Sampling Date			2017/03/29 12:00	2017/03/29 12:00	2017/03/29 13:00	2017/03/29 13:30	2017/03/29 14:00		
COC Number			572155-16-01	572155-16-01	572155-16-01	572155-16-01	572155-16-01		
	UNITS	**Criteria**	**VS346**	**VS1346**	**VS347**	**VS348**	**VS349**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	0.47	0.48	<0.20	0.22	<0.20	0.20	4919953
Acid Extractable Arsenic (As)	ug/g	**18**	2.1	2.1	1.5	3.1	2.3	1.0	4919953
Acid Extractable Barium (Ba)	ug/g	**390**	110	110	130	120	130	0.50	4919953
Acid Extractable Beryllium (Be)	ug/g	**4**	0.47	0.47	0.53	0.56	0.61	0.20	4919953
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4919953
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.21	0.18	0.21	0.15	<0.10	0.10	4919953
Acid Extractable Chromium (Cr)	ug/g	**160**	30	30	49	31	36	1.0	4919953
Acid Extractable Cobalt (Co)	ug/g	**22**	8.1	7.6	13	11	12	0.10	4919953
Acid Extractable Copper (Cu)	ug/g	**140**	13	13	30	11	12	0.50	4919953
Acid Extractable Lead (Pb)	ug/g	**120**	22	22	28	21	7.9	1.0	4919953
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.89	0.73	<0.50	0.67	<0.50	0.50	4919953
Acid Extractable Nickel (Ni)	ug/g	**100**	16	16	25	15	18	0.50	4919953
Acid Extractable Selenium (Se)	ug/g	**2.4**	0.64	0.67	<0.50	<0.50	<0.50	0.50	4919953
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4919953
Acid Extractable Thallium (Tl)	ug/g	**1**	0.17	0.17	0.19	0.18	0.23	0.050	4919953
Acid Extractable Uranium (U)	ug/g	**23**	0.87	0.82	1.2	0.96	0.79	0.050	4919953
Acid Extractable Vanadium (V)	ug/g	**86**	37	37	52	51	58	5.0	4919953
Acid Extractable Zinc (Zn)	ug/g	**340**	75	77	150	72	64	5.0	4919953
Acid Extractable Mercury (Hg)	ug/g	**0.27**	0.073	0.060	0.058	**0.50**	<0.050	0.050	4919953

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 #: B762121
Report Date: 2017/03/30

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EDA580		
Sampling Date			2017/03/29 14:00		
COC Number			572155-16-01		
	UNITS	**Criteria**	**VS349 Lab-Dup**	**RDL**	**QC Batch**
Metals					
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	0.20	4919953
Acid Extractable Arsenic (As)	ug/g	**18**	2.4	1.0	4919953
Acid Extractable Barium (Ba)	ug/g	**390**	140	0.50	4919953
Acid Extractable Beryllium (Be)	ug/g	**4**	0.63	0.20	4919953
Acid Extractable Boron (B)	ug/g	**120**	<5.0	5.0	4919953
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.10	4919953
Acid Extractable Chromium (Cr)	ug/g	**160**	37	1.0	4919953
Acid Extractable Cobalt (Co)	ug/g	**22**	12	0.10	4919953
Acid Extractable Copper (Cu)	ug/g	**140**	13	0.50	4919953
Acid Extractable Lead (Pb)	ug/g	**120**	7.7	1.0	4919953
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.50	4919953
Acid Extractable Nickel (Ni)	ug/g	**100**	18	0.50	4919953
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	0.50	4919953
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	0.20	4919953
Acid Extractable Thallium (Tl)	ug/g	**1**	0.21	0.050	4919953
Acid Extractable Uranium (U)	ug/g	**23**	0.76	0.050	4919953
Acid Extractable Vanadium (V)	ug/g	**86**	59	5.0	4919953
Acid Extractable Zinc (Zn)	ug/g	**340**	65	5.0	4919953
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	0.050	4919953

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 Job #: B762121
Report Date: 2017/03/30

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EDA571	EDA572	EDA572	EDA573	EDA574		
Sampling Date			2017/03/29 07:30	2017/03/29 08:00	2017/03/29 08:00	2017/03/29 08:30	2017/03/29 09:00		
COC Number			572155-16-01	572155-16-01	572155-16-01	572155-16-01	572155-16-01		
	UNITS	**Criteria**	**VS341**	**VS342**	**VS342 Lab-Dup**	**VS343**	**VS344**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	20	25		25	27	0.2	4918467
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.018		<0.014	<0.014	0.014	4918704
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	0.054	0.073	0.010	0.018	0.0050	4918756
Acenaphthylene	ug/g	**0.15**	0.018	0.024	0.027	0.013	0.0074	0.0050	4918756
Anthracene	ug/g	**0.67**	0.014	0.16	0.20	0.027	0.052	0.0050	4918756
Benzo(a)anthracene	ug/g	**0.5**	0.082	0.47	0.49	0.10	0.13	0.0050	4918756
Benzo(a)pyrene	ug/g	**0.3**	0.092	**0.39**	**0.42**	0.11	0.10	0.0050	4918756
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.14	0.49	0.54	0.15	0.15	0.0050	4918756
Benzo(g,h,i)perylene	ug/g	**6.6**	0.061	0.25	0.25	0.073	0.056	0.0050	4918756
Benzo(k)fluoranthene	ug/g	**0.78**	0.052	0.17	0.21	0.058	0.055	0.0050	4918756
Chrysene	ug/g	**7**	0.089	0.37	0.41	0.10	0.12	0.0050	4918756
Dibenz(a,h)anthracene	ug/g	**0.1**	0.016	0.066	0.070	0.019	0.019	0.0050	4918756
Fluoranthene	ug/g	**0.69**	0.19	**0.97**	**1.1**	0.26	0.30	0.0050	4918756
Fluorene	ug/g	**62**	0.0083	0.056	0.077	0.011	0.021	0.0050	4918756
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.066	0.26	0.28	0.082	0.062	0.0050	4918756
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.010	0.011	<0.0050	<0.0050	0.0050	4918756
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0083	0.0093	<0.0050	<0.0050	0.0050	4918756
Naphthalene	ug/g	**0.6**	<0.0050	0.011	0.014	<0.0050	<0.0050	0.0050	4918756
Phenanthrene	ug/g	**6.2**	0.098	0.59	0.79	0.16	0.22	0.0050	4918756
Pyrene	ug/g	**78**	0.15	0.84	0.92	0.19	0.24	0.0050	4918756
Surrogate Recovery (%)									
D10-Anthracene	%	-	73	76	78	74	75		4918756
D14-Terphenyl (FS)	%	-	72	80	81	74	77		4918756
D8-Acenaphthylene	%	-	66	72	71	69	70		4918756

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 Job #: B762121
Report Date: 2017/03/30

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EDA575	EDA576	EDA577	EDA578	EDA579		
Sampling Date			2017/03/29 10:00	2017/03/29 12:00	2017/03/29 12:00	2017/03/29 13:00	2017/03/29 13:30		
COC Number			572155-16-01	572155-16-01	572155-16-01	572155-16-01	572155-16-01		
	UNITS	**Criteria**	**VS345**	**VS346**	**VS1346**	**VS347**	**VS348**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	23	22	21	28	24	0.2	4918467
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4918704
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	0.0050	<0.0050	<0.0050	0.0067	0.0065	0.0050	4918756
Acenaphthylene	ug/g	**0.15**	0.014	0.015	0.016	0.0054	0.019	0.0050	4918756
Anthracene	ug/g	**0.67**	0.017	0.012	0.014	0.025	0.018	0.0050	4918756
Benzo(a)anthracene	ug/g	**0.5**	0.081	0.068	0.077	0.12	0.099	0.0050	4918756
Benzo(a)pyrene	ug/g	**0.3**	0.088	0.078	0.084	0.12	0.11	0.0050	4918756
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.13	0.11	0.12	0.15	0.16	0.0050	4918756
Benzo(g,h,i)perylene	ug/g	**6.6**	0.060	0.053	0.058	0.075	0.073	0.0050	4918756
Benzo(k)fluoranthene	ug/g	**0.78**	0.049	0.044	0.047	0.062	0.061	0.0050	4918756
Chrysene	ug/g	**7**	0.083	0.074	0.080	0.11	0.10	0.0050	4918756
Dibenz(a,h)anthracene	ug/g	**0.1**	0.018	0.017	0.019	0.023	0.023	0.0050	4918756
Fluoranthene	ug/g	**0.69**	0.19	0.16	0.18	0.24	0.23	0.0050	4918756
Fluorene	ug/g	**62**	0.0075	0.0073	0.0072	0.0085	0.0098	0.0050	4918756
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.068	0.066	0.068	0.080	0.086	0.0050	4918756
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4918756
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4918756
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4918756
Phenanthrene	ug/g	**6.2**	0.11	0.083	0.090	0.11	0.12	0.0050	4918756
Pyrene	ug/g	**78**	0.15	0.12	0.13	0.19	0.17	0.0050	4918756
Surrogate Recovery (%)									
D10-Anthracene	%	-	74	74	69	76	73		4918756
D14-Terphenyl (FS)	%	-	75	75	73	78	74		4918756
D8-Acenaphthylene	%	-	69	70	67	69	70		4918756

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 #: B762121
Report Date: 2017/03/30

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EDA580		
Sampling Date			2017/03/29 14:00		
COC Number			572155-16-01		
	UNITS	**Criteria**	**VS349**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	-	20	0.2	4918467
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.014	4918704
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	4918756
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	4918756
Anthracene	ug/g	**0.67**	<0.0050	0.0050	4918756
Benzo(a)anthracene	ug/g	**0.5**	0.010	0.0050	4918756
Benzo(a)pyrene	ug/g	**0.3**	0.011	0.0050	4918756
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.016	0.0050	4918756
Benzo(g,h,i)perylene	ug/g	**6.6**	0.0097	0.0050	4918756
Benzo(k)fluoranthene	ug/g	**0.78**	0.0063	0.0050	4918756
Chrysene	ug/g	**7**	0.011	0.0050	4918756
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	4918756
Fluoranthene	ug/g	**0.69**	0.023	0.0050	4918756
Fluorene	ug/g	**62**	<0.0050	0.0050	4918756
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.010	0.0050	4918756
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4918756
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4918756
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	4918756
Phenanthrene	ug/g	**6.2**	0.017	0.0050	4918756
Pyrene	ug/g	**78**	0.018	0.0050	4918756
Surrogate Recovery (%)					
D10-Anthracene	%	-	76		4918756
D14-Terphenyl (FS)	%	-	76		4918756
D8-Acenaphthylene	%	-	71		4918756

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 #: B762121
Report Date: 2017/03/30

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EDA571	EDA572	EDA573	EDA574	EDA574		
Sampling Date			2017/03/29 07:30	2017/03/29 08:00	2017/03/29 08:30	2017/03/29 09:00	2017/03/29 09:00		
COC Number			572155-16-01	572155-16-01	572155-16-01	572155-16-01	572155-16-01		
	UNITS	Criteria	VS341	VS342	VS343	VS344	VS344 Lab-Dup	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4919543

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			EDA575	EDA576	EDA577	EDA578	EDA579		
Sampling Date			2017/03/29 10:00	2017/03/29 12:00	2017/03/29 12:00	2017/03/29 13:00	2017/03/29 13:30		
COC Number			572155-16-01	572155-16-01	572155-16-01	572155-16-01	572155-16-01		
	UNITS	Criteria	VS345	VS346	VS1346	VS347	VS348	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	8	<0.2	<0.2	<0.2	0.7	<0.2	0.2	4919543

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			EDA580		
Sampling Date			2017/03/29 14:00		
COC Number			572155-16-01		
	UNITS	Criteria	VS349	RDL	QC Batch
Inorganics					
Chromium (VI)	ug/g	8	<0.2	0.2	4919543

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 #: B762121
Report Date: 2017/03/30

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EDA571
Sample ID: VS341
Matrix: Soil

Collected: 2017/03/29
Shipped:
Received: 2017/03/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4918704	N/A	2017/03/30	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4919543	2017/03/30	2017/03/30	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4919953	2017/03/30	2017/03/30	Viviana Canzonieri
Moisture	BAL	4918467	N/A	2017/03/30	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4918756	2017/03/29	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDA572
Sample ID: VS342
Matrix: Soil

Collected: 2017/03/29
Shipped:
Received: 2017/03/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4918704	N/A	2017/03/30	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4919543	2017/03/30	2017/03/30	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4919953	2017/03/30	2017/03/30	Viviana Canzonieri
Moisture	BAL	4918467	N/A	2017/03/30	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4918756	2017/03/29	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDA572 Dup
Sample ID: VS342
Matrix: Soil

Collected: 2017/03/29
Shipped:
Received: 2017/03/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4918756	2017/03/29	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDA573
Sample ID: VS343
Matrix: Soil

Collected: 2017/03/29
Shipped:
Received: 2017/03/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4918704	N/A	2017/03/30	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4919543	2017/03/30	2017/03/30	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4919953	2017/03/30	2017/03/30	Viviana Canzonieri
Moisture	BAL	4918467	N/A	2017/03/30	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4918756	2017/03/29	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDA574
Sample ID: VS344
Matrix: Soil

Collected: 2017/03/29
Shipped:
Received: 2017/03/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4918704	N/A	2017/03/30	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4919543	2017/03/30	2017/03/30	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4919953	2017/03/30	2017/03/30	Viviana Canzonieri
Moisture	BAL	4918467	N/A	2017/03/30	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4918756	2017/03/29	2017/03/30	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 #: B762121
Report Date: 2017/03/30

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EDA574 Dup
Sample ID: VS344
Matrix: Soil

Collected: 2017/03/29
Shipped:
Received: 2017/03/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4919543	2017/03/30	2017/03/30	Sally Coughlin

Maxxam ID: EDA575
Sample ID: VS345
Matrix: Soil

Collected: 2017/03/29
Shipped:
Received: 2017/03/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4918704	N/A	2017/03/30	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4919543	2017/03/30	2017/03/30	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4919953	2017/03/30	2017/03/30	Viviana Canzonieri
Moisture	BAL	4918467	N/A	2017/03/30	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4918756	2017/03/29	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDA576
Sample ID: VS346
Matrix: Soil

Collected: 2017/03/29
Shipped:
Received: 2017/03/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4918704	N/A	2017/03/30	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4919543	2017/03/30	2017/03/30	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4919953	2017/03/30	2017/03/30	Viviana Canzonieri
Moisture	BAL	4918467	N/A	2017/03/30	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4918756	2017/03/29	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDA577
Sample ID: VS1346
Matrix: Soil

Collected: 2017/03/29
Shipped:
Received: 2017/03/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4918704	N/A	2017/03/30	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4919543	2017/03/30	2017/03/30	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4919953	2017/03/30	2017/03/30	Viviana Canzonieri
Moisture	BAL	4918467	N/A	2017/03/30	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4918756	2017/03/29	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDA578
Sample ID: VS347
Matrix: Soil

Collected: 2017/03/29
Shipped:
Received: 2017/03/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4918704	N/A	2017/03/30	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4919543	2017/03/30	2017/03/30	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4919953	2017/03/30	2017/03/30	Viviana Canzonieri
Moisture	BAL	4918467	N/A	2017/03/30	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4918756	2017/03/29	2017/03/30	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 #: B762121
Report Date: 2017/03/30

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EDA579
Sample ID: VS348
Matrix: Soil

Collected: 2017/03/29
Shipped:
Received: 2017/03/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4918704	N/A	2017/03/30	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4919543	2017/03/30	2017/03/30	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4919953	2017/03/30	2017/03/30	Viviana Canzonieri
Moisture	BAL	4918467	N/A	2017/03/30	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4918756	2017/03/29	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDA580
Sample ID: VS349
Matrix: Soil

Collected: 2017/03/29
Shipped:
Received: 2017/03/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4918704	N/A	2017/03/30	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	4919543	2017/03/30	2017/03/30	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4919953	2017/03/30	2017/03/30	Viviana Canzonieri
Moisture	BAL	4918467	N/A	2017/03/30	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4918756	2017/03/29	2017/03/30	Arezoo Habibagahi

Maxxam ID: EDA580 Dup
Sample ID: VS349
Matrix: Soil

Collected: 2017/03/29
Shipped:
Received: 2017/03/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4919953	2017/03/30	2017/03/30	Viviana Canzonieri

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 #: B762121
Report Date: 2017/03/30

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	11.0°C

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 #: B762121
Report Date: 2017/03/30

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
4918756	D10-Anthracene	2017/03/30	73	50 - 130	82	50 - 130	85	%		
4918756	D14-Terphenyl (FS)	2017/03/30	78	50 - 130	85	50 - 130	81	%		
4918756	D8-Acenaphthylene	2017/03/30	69	50 - 130	77	50 - 130	76	%		
4918467	Moisture	2017/03/30							25	50
4918756	1-Methylnaphthalene	2017/03/30	78	50 - 130	81	50 - 130	<0.0050	ug/g	10	40
4918756	2-Methylnaphthalene	2017/03/30	82	50 - 130	86	50 - 130	<0.0050	ug/g	11	40
4918756	Acenaphthene	2017/03/30	81	50 - 130	85	50 - 130	<0.0050	ug/g	29	40
4918756	Acenaphthylene	2017/03/30	69	50 - 130	73	50 - 130	<0.0050	ug/g	12	40
4918756	Anthracene	2017/03/30	75	50 - 130	77	50 - 130	<0.0050	ug/g	22	40
4918756	Benzo(a)anthracene	2017/03/30	82	50 - 130	84	50 - 130	<0.0050	ug/g	5.7	40
4918756	Benzo(a)pyrene	2017/03/30	78	50 - 130	82	50 - 130	<0.0050	ug/g	6.2	40
4918756	Benzo(b/j)fluoranthene	2017/03/30	76	50 - 130	82	50 - 130	<0.0050	ug/g	9.8	40
4918756	Benzo(g,h,i)perylene	2017/03/30	82	50 - 130	85	50 - 130	<0.0050	ug/g	0.82	40
4918756	Benzo(k)fluoranthene	2017/03/30	82	50 - 130	87	50 - 130	<0.0050	ug/g	17	40
4918756	Chrysene	2017/03/30	78	50 - 130	76	50 - 130	<0.0050	ug/g	8.6	40
4918756	Dibenz(a,h)anthracene	2017/03/30	60	50 - 130	58	50 - 130	<0.0050	ug/g	5.4	40
4918756	Fluoranthene	2017/03/30	80	50 - 130	79	50 - 130	<0.0050	ug/g	17	40
4918756	Fluorene	2017/03/30	82	50 - 130	86	50 - 130	<0.0050	ug/g	32	40
4918756	Indeno(1,2,3-cd)pyrene	2017/03/30	83	50 - 130	84	50 - 130	<0.0050	ug/g	6.8	40
4918756	Naphthalene	2017/03/30	70	50 - 130	74	50 - 130	<0.0050	ug/g	19	40
4918756	Phenanthrene	2017/03/30	74	50 - 130	76	50 - 130	<0.0050	ug/g	30	40
4918756	Pyrene	2017/03/30	76	50 - 130	76	50 - 130	<0.0050	ug/g	9.1	40
4919543	Chromium (VI)	2017/03/30	65 (1)	75 - 125	85	80 - 120	<0.2	ug/g	NC	35
4919953	Acid Extractable Antimony (Sb)	2017/03/30	89	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
4919953	Acid Extractable Arsenic (As)	2017/03/30	100	75 - 125	98	80 - 120	<1.0	ug/g	5.0	30
4919953	Acid Extractable Barium (Ba)	2017/03/30	NC	75 - 125	98	80 - 120	<0.50	ug/g	4.2	30
4919953	Acid Extractable Beryllium (Be)	2017/03/30	100	75 - 125	96	80 - 120	<0.20	ug/g	2.2	30
4919953	Acid Extractable Boron (B)	2017/03/30	93	75 - 125	94	80 - 120	<5.0	ug/g	NC	30
4919953	Acid Extractable Cadmium (Cd)	2017/03/30	102	75 - 125	98	80 - 120	<0.10	ug/g	NC	30
4919953	Acid Extractable Chromium (Cr)	2017/03/30	NC	75 - 125	96	80 - 120	<1.0	ug/g	1.2	30
4919953	Acid Extractable Cobalt (Co)	2017/03/30	101	75 - 125	98	80 - 120	<0.10	ug/g	0.033	30

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 #: B762121
Report Date: 2017/03/30

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
4919953	Acid Extractable Copper (Cu)	2017/03/30	100	75 - 125	98	80 - 120	<0.50	ug/g	4.3	30
4919953	Acid Extractable Lead (Pb)	2017/03/30	98	75 - 125	101	80 - 120	<1.0	ug/g	2.9	30
4919953	Acid Extractable Mercury (Hg)	2017/03/30	101	75 - 125	101	80 - 120	<0.050	ug/g	NC	30
4919953	Acid Extractable Molybdenum (Mo)	2017/03/30	100	75 - 125	98	80 - 120	<0.50	ug/g	NC	30
4919953	Acid Extractable Nickel (Ni)	2017/03/30	96	75 - 125	100	80 - 120	<0.50	ug/g	0.11	30
4919953	Acid Extractable Selenium (Se)	2017/03/30	99	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4919953	Acid Extractable Silver (Ag)	2017/03/30	104	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
4919953	Acid Extractable Thallium (Tl)	2017/03/30	102	75 - 125	99	80 - 120	<0.050	ug/g	9.0	30
4919953	Acid Extractable Uranium (U)	2017/03/30	101	75 - 125	101	80 - 120	<0.050	ug/g	3.0	30
4919953	Acid Extractable Vanadium (V)	2017/03/30	NC	75 - 125	98	80 - 120	<5.0	ug/g	1.7	30
4919953	Acid Extractable Zinc (Zn)	2017/03/30	NC	75 - 125	98	80 - 120	<5.0	ug/g	1.2	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x 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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B762121
Report Date: 2017/03/30

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.

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 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 #: 572155
COC #: C#572155-16-01
Project Manager: Madison Bingley

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

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: 24hr ☑
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								# of Bottles	Comments
1		VS341	17/03/29	7:30	Soil		X	X								1	
2		VS342	↓	800	↓		X	X								1	
3		VS343		830			X	X								1	
4		VS344		900			X	X								1	
5		VS345		1000			X	X								1	
6		VS346		1200			X	X								1	
7		VS1346		1200			X	X								1	
8		VS347		1300			X	X								1	RECEIVED IN OTTAWA
9		VS348		1330			X	X								1	
10		VS349	↓	1400	↓		X	X								1	ON Ice

29-Mar-17 14:55
Alison Cameron
B762121
KJY OTT-001

* 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	17/03/29	1440	[illegible]	2017/03/29	14:55	0

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	12, 10, 11	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.

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 #: B762121
Report Date: 2017/03/30

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
VS342	EDA572-01	Benzo(a)pyrene	0.3	0.39	0.0050	ug/g
VS342	EDA572-01-Lab Dup	Benzo(a)pyrene	0.3	0.42	0.0050	ug/g
VS342	EDA572-01	Fluoranthene	0.69	0.97	0.0050	ug/g
VS342	EDA572-01-Lab Dup	Fluoranthene	0.69	1.1	0.0050	ug/g
VS348	EDA579-02	Acid Extractable Mercury (Hg)	0.27	0.50	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. #: 572155-18-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/03/29
Report #: R4406642
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B761148
Received: 2017/03/28, 14:55

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	6	N/A	2017/03/29	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	6	2017/03/29	2017/03/29	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	6	2017/03/29	2017/03/29	CAM SOP-00447	EPA 6020B m
Moisture	6	N/A	2017/03/29	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	6	2017/03/28	2017/03/28	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-18-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/03/29
Report #: R4406642
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B761148
Received: 2017/03/28, 14:55

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B761148
Report Date: 2017/03/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ECV870	ECV870	ECV871	ECV872	ECV873		
Sampling Date			2017/03/28 10:00	2017/03/28 10:00	2017/03/28 11:00	2017/03/28 12:00	2017/03/28 13:00		
COC Number			572155-18-01	572155-18-01	572155-18-01	572155-18-01	572155-18-01		
	UNITS	**Criteria**	**VS335**	**VS335 Lab-Dup**	**VS336**	**VS337**	**VS338**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	0.27	0.32	<0.20	<0.20	<0.20	0.20	4918139
Acid Extractable Arsenic (As)	ug/g	**18**	3.0	3.0	2.2	3.2	2.1	1.0	4918139
Acid Extractable Barium (Ba)	ug/g	**390**	90	91	98	140	110	0.50	4918139
Acid Extractable Beryllium (Be)	ug/g	**4**	0.40	0.41	0.46	0.57	0.54	0.20	4918139
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	5.2	<5.0	5.0	4918139
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.13	0.16	0.13	0.19	<0.10	0.10	4918139
Acid Extractable Chromium (Cr)	ug/g	**160**	25	25	27	32	36	1.0	4918139
Acid Extractable Cobalt (Co)	ug/g	**22**	8.0	7.9	9.5	9.7	11	0.10	4918139
Acid Extractable Copper (Cu)	ug/g	**140**	9.5	9.8	10	14	7.5	0.50	4918139
Acid Extractable Lead (Pb)	ug/g	**120**	23	22	19	20	7.1	1.0	4918139
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.66	0.64	<0.50	0.63	<0.50	0.50	4918139
Acid Extractable Nickel (Ni)	ug/g	**100**	12	12	14	15	16	0.50	4918139
Acid Extractable Selenium (Se)	ug/g	**2.4**	0.51	<0.50	<0.50	<0.50	<0.50	0.50	4918139
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4918139
Acid Extractable Thallium (Tl)	ug/g	**1**	0.14	0.14	0.14	0.20	0.15	0.050	4918139
Acid Extractable Uranium (U)	ug/g	**23**	0.62	0.62	0.65	0.81	0.87	0.050	4918139
Acid Extractable Vanadium (V)	ug/g	**86**	41	40	45	50	60	5.0	4918139
Acid Extractable Zinc (Zn)	ug/g	**340**	58	57	54	74	81	5.0	4918139
Acid Extractable Mercury (Hg)	ug/g	**0.27**	0.10	0.096	0.057	0.088	<0.050	0.050	4918139

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 Job #: B761148
Report Date: 2017/03/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ECV874	ECV875		
Sampling Date			2017/03/28 14:00	2017/03/28 14:30		
COC Number			572155-18-01	572155-18-01		
	UNITS	**Criteria**	**VS339**	**VS340**	**RDL**	**QC Batch**
Metals						
Acid Extractable Antimony (Sb)	ug/g	**7.5**	0.21	0.26	0.20	4918139
Acid Extractable Arsenic (As)	ug/g	**18**	2.8	2.6	1.0	4918139
Acid Extractable Barium (Ba)	ug/g	**390**	140	130	0.50	4918139
Acid Extractable Beryllium (Be)	ug/g	**4**	0.62	0.60	0.20	4918139
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	5.0	4918139
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.21	0.22	0.10	4918139
Acid Extractable Chromium (Cr)	ug/g	**160**	34	34	1.0	4918139
Acid Extractable Cobalt (Co)	ug/g	**22**	12	11	0.10	4918139
Acid Extractable Copper (Cu)	ug/g	**140**	13	14	0.50	4918139
Acid Extractable Lead (Pb)	ug/g	**120**	20	33	1.0	4918139
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.70	0.52	0.50	4918139
Acid Extractable Nickel (Ni)	ug/g	**100**	16	16	0.50	4918139
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	0.50	4918139
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	0.20	4918139
Acid Extractable Thallium (Tl)	ug/g	**1**	0.20	0.20	0.050	4918139
Acid Extractable Uranium (U)	ug/g	**23**	1.0	0.96	0.050	4918139
Acid Extractable Vanadium (V)	ug/g	**86**	52	52	5.0	4918139
Acid Extractable Zinc (Zn)	ug/g	**340**	80	86	5.0	4918139
Acid Extractable Mercury (Hg)	ug/g	**0.27**	0.074	<0.050	0.050	4918139

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 #: B761148
Report Date: 2017/03/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ECV870	ECV871	ECV871	ECV872	ECV873		
Sampling Date			2017/03/28 10:00	2017/03/28 11:00	2017/03/28 11:00	2017/03/28 12:00	2017/03/28 13:00		
COC Number			572155-18-01	572155-18-01	572155-18-01	572155-18-01	572155-18-01		
	UNITS	**Criteria**	**VS335**	**VS336**	**VS336 Lab-Dup**	**VS337**	**VS338**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	21	24		24	20	0.2	4916564
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	4917038
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	0.011	<0.0050	0.0084	<0.0050	<0.0050	0.0050	4917061
Acenaphthylene	ug/g	**0.15**	0.021	0.018	0.016	0.021	<0.0050	0.0050	4917061
Anthracene	ug/g	**0.67**	0.031	0.020	0.023	0.015	<0.0050	0.0050	4917061
Benzo(a)anthracene	ug/g	**0.5**	0.12	0.12	0.090	0.088	<0.0050	0.0050	4917061
Benzo(a)pyrene	ug/g	**0.3**	0.12	0.12	0.086	0.094	<0.0050	0.0050	4917061
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.18	0.17	0.14	0.15	<0.0050	0.0050	4917061
Benzo(g,h,i)perylene	ug/g	**6.6**	0.070	0.070	0.057	0.067	<0.0050	0.0050	4917061
Benzo(k)fluoranthene	ug/g	**0.78**	0.063	0.058	0.047	0.051	<0.0050	0.0050	4917061
Chrysene	ug/g	**7**	0.12	0.12	0.087	0.091	<0.0050	0.0050	4917061
Dibenz(a,h)anthracene	ug/g	**0.1**	0.019	0.021	0.015	0.017	<0.0050	0.0050	4917061
Fluoranthene	ug/g	**0.69**	0.27	0.26	0.21	0.20	0.0074	0.0050	4917061
Fluorene	ug/g	**62**	0.014	0.0065	0.010	0.0066	<0.0050	0.0050	4917061
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.082	0.092	0.072	0.083	<0.0050	0.0050	4917061
1-Methylnaphthalene	ug/g	**0.99**	0.0060	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4917061
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4917061
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4917061
Phenanthrene	ug/g	**6.2**	0.15	0.099	0.11	0.083	<0.0050	0.0050	4917061
Pyrene	ug/g	**78**	0.20	0.20	0.16	0.15	0.0057	0.0050	4917061
Surrogate Recovery (%)									
D10-Anthracene	%	-	78	75	75	73	75		4917061
D14-Terphenyl (FS)	%	-	79	79	79	78	77		4917061
D8-Acenaphthylene	%	-	79	77	76	74	76		4917061

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 Job #: B761148
Report Date: 2017/03/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ECV874	ECV875		
Sampling Date			2017/03/28 14:00	2017/03/28 14:30		
COC Number			572155-18-01	572155-18-01		
	UNITS	Criteria	VS339	VS340	RDL	QC Batch
Inorganics						
Moisture	%	-	22	21	0.2	4916564
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	0.014	4917038
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	0.0050	4917061
Acenaphthylene	ug/g	**0.15**	0.016	0.017	0.0050	4917061
Anthracene	ug/g	**0.67**	0.013	0.016	0.0050	4917061
Benzo(a)anthracene	ug/g	**0.5**	0.067	0.081	0.0050	4917061
Benzo(a)pyrene	ug/g	**0.3**	0.072	0.082	0.0050	4917061
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.11	0.13	0.0050	4917061
Benzo(g,h,i)perylene	ug/g	**6.6**	0.050	0.050	0.0050	4917061
Benzo(k)fluoranthene	ug/g	**0.78**	0.039	0.046	0.0050	4917061
Chrysene	ug/g	**7**	0.074	0.088	0.0050	4917061
Dibenz(a,h)anthracene	ug/g	**0.1**	0.011	0.012	0.0050	4917061
Fluoranthene	ug/g	**0.69**	0.17	0.20	0.0050	4917061
Fluorene	ug/g	**62**	0.0078	0.0086	0.0050	4917061
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.064	0.062	0.0050	4917061
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	4917061
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	4917061
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	0.0050	4917061
Phenanthrene	ug/g	**6.2**	0.087	0.10	0.0050	4917061
Pyrene	ug/g	**78**	0.12	0.14	0.0050	4917061
Surrogate Recovery (%)						
D10-Anthracene	%	-	72	74		4917061
D14-Terphenyl (FS)	%	-	76	77		4917061
D8-Acenaphthylene	%	-	72	75		4917061

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 #: B761148
Report Date: 2017/03/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ECV870	ECV871	ECV872	ECV873	ECV874		
Sampling Date			2017/03/28 10:00	2017/03/28 11:00	2017/03/28 12:00	2017/03/28 13:00	2017/03/28 14:00		
COC Number			572155-18-01	572155-18-01	572155-18-01	572155-18-01	572155-18-01		
	UNITS	**Criteria**	**VS335**	**VS336**	**VS337**	**VS338**	**VS339**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	4917759

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			ECV874	ECV875		
Sampling Date			2017/03/28 14:00	2017/03/28 14:30		
COC Number			572155-18-01	572155-18-01		
	UNITS	**Criteria**	**VS339 Lab-Dup**	**VS340**	**RDL**	**QC Batch**
Inorganics						
Chromium (VI)	ug/g	**8**	<0.2	<0.2	0.2	4917759

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 Job #: B761148
Report Date: 2017/03/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ECV870
Sample ID: VS335
Matrix: Soil

Collected: 2017/03/28
Shipped:
Received: 2017/03/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4917038	N/A	2017/03/29	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4917759	2017/03/29	2017/03/29	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4918139	2017/03/29	2017/03/29	Daniel Teclu
Moisture	BAL	4916564	N/A	2017/03/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4917061	2017/03/28	2017/03/28	Arezoo Habibagahi

Maxxam ID: ECV870 Dup
Sample ID: VS335
Matrix: Soil

Collected: 2017/03/28
Shipped:
Received: 2017/03/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4918139	2017/03/29	2017/03/29	Daniel Teclu

Maxxam ID: ECV871
Sample ID: VS336
Matrix: Soil

Collected: 2017/03/28
Shipped:
Received: 2017/03/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4917038	N/A	2017/03/29	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4917759	2017/03/29	2017/03/29	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4918139	2017/03/29	2017/03/29	Daniel Teclu
Moisture	BAL	4916564	N/A	2017/03/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4917061	2017/03/28	2017/03/28	Arezoo Habibagahi

Maxxam ID: ECV871 Dup
Sample ID: VS336
Matrix: Soil

Collected: 2017/03/28
Shipped:
Received: 2017/03/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4917061	2017/03/28	2017/03/28	Arezoo Habibagahi

Maxxam ID: ECV872
Sample ID: VS337
Matrix: Soil

Collected: 2017/03/28
Shipped:
Received: 2017/03/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4917038	N/A	2017/03/29	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4917759	2017/03/29	2017/03/29	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4918139	2017/03/29	2017/03/29	Daniel Teclu
Moisture	BAL	4916564	N/A	2017/03/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4917061	2017/03/28	2017/03/28	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 #: B761148
Report Date: 2017/03/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ECV873
Sample ID: VS338
Matrix: Soil

Collected: 2017/03/28
Shipped:
Received: 2017/03/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4917038	N/A	2017/03/29	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4917759	2017/03/29	2017/03/29	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4918139	2017/03/29	2017/03/29	Daniel Teclu
Moisture	BAL	4916564	N/A	2017/03/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4917061	2017/03/28	2017/03/28	Arezoo Habibagahi

Maxxam ID: ECV874
Sample ID: VS339
Matrix: Soil

Collected: 2017/03/28
Shipped:
Received: 2017/03/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4917038	N/A	2017/03/29	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4917759	2017/03/29	2017/03/29	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4918139	2017/03/29	2017/03/29	Daniel Teclu
Moisture	BAL	4916564	N/A	2017/03/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4917061	2017/03/28	2017/03/28	Arezoo Habibagahi

Maxxam ID: ECV874 Dup
Sample ID: VS339
Matrix: Soil

Collected: 2017/03/28
Shipped:
Received: 2017/03/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4917759	2017/03/29	2017/03/29	Sally Coughlin

Maxxam ID: ECV875
Sample ID: VS340
Matrix: Soil

Collected: 2017/03/28
Shipped:
Received: 2017/03/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4917038	N/A	2017/03/29	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4917759	2017/03/29	2017/03/29	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4918139	2017/03/29	2017/03/29	Daniel Teclu
Moisture	BAL	4916564	N/A	2017/03/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4917061	2017/03/28	2017/03/28	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 #: B761148
Report Date: 2017/03/29

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	13.3°C

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 Job #: B761148
Report Date: 2017/03/29

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
4917061	D10-Anthracene	2017/03/28	75	50 - 130	84	50 - 130	85	%		
4917061	D14-Terphenyl (FS)	2017/03/28	78	50 - 130	89	50 - 130	81	%		
4917061	D8-Acenaphthylene	2017/03/28	75	50 - 130	85	50 - 130	84	%		
4916564	Moisture	2017/03/29							6.5	50
4917061	1-Methylnaphthalene	2017/03/28	79	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
4917061	2-Methylnaphthalene	2017/03/28	80	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4917061	Acenaphthene	2017/03/28	77	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4917061	Acenaphthylene	2017/03/28	78	50 - 130	87	50 - 130	<0.0050	ug/g	11	40
4917061	Anthracene	2017/03/28	72	50 - 130	85	50 - 130	<0.0050	ug/g	14	40
4917061	Benzo(a)anthracene	2017/03/28	71	50 - 130	91	50 - 130	<0.0050	ug/g	31	40
4917061	Benzo(a)pyrene	2017/03/28	64	50 - 130	80	50 - 130	<0.0050	ug/g	30	40
4917061	Benzo(b/j)fluoranthene	2017/03/28	72	50 - 130	87	50 - 130	<0.0050	ug/g	20	40
4917061	Benzo(g,h,i)perylene	2017/03/28	66	50 - 130	78	50 - 130	<0.0050	ug/g	21	40
4917061	Benzo(k)fluoranthene	2017/03/28	72	50 - 130	84	50 - 130	<0.0050	ug/g	21	40
4917061	Chrysene	2017/03/28	71	50 - 130	85	50 - 130	<0.0050	ug/g	31	40
4917061	Dibenz(a,h)anthracene	2017/03/28	50	50 - 130	56	50 - 130	<0.0050	ug/g	30	40
4917061	Fluoranthene	2017/03/28	63	50 - 130	88	50 - 130	<0.0050	ug/g	20	40
4917061	Fluorene	2017/03/28	82	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
4917061	Indeno(1,2,3-cd)pyrene	2017/03/28	70	50 - 130	81	50 - 130	<0.0050	ug/g	25	40
4917061	Naphthalene	2017/03/28	68	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
4917061	Phenanthrene	2017/03/28	58	50 - 130	81	50 - 130	<0.0050	ug/g	9.7	40
4917061	Pyrene	2017/03/28	61	50 - 130	83	50 - 130	<0.0050	ug/g	22	40
4917759	Chromium (VI)	2017/03/29	5.7 (1)	75 - 125	81	80 - 120	<0.2	ug/g	NC	35
4918139	Acid Extractable Antimony (Sb)	2017/03/29	86	75 - 125	102	80 - 120	<0.20	ug/g	17	30
4918139	Acid Extractable Arsenic (As)	2017/03/29	93	75 - 125	104	80 - 120	<1.0	ug/g	0.35	30
4918139	Acid Extractable Barium (Ba)	2017/03/29	NC	75 - 125	103	80 - 120	<0.50	ug/g	0.24	30
4918139	Acid Extractable Beryllium (Be)	2017/03/29	94	75 - 125	97	80 - 120	<0.20	ug/g	1.5	30
4918139	Acid Extractable Boron (B)	2017/03/29	88	75 - 125	98	80 - 120	<5.0	ug/g	NC	30
4918139	Acid Extractable Cadmium (Cd)	2017/03/29	92	75 - 125	97	80 - 120	<0.10	ug/g	15	30
4918139	Acid Extractable Chromium (Cr)	2017/03/29	90	75 - 125	97	80 - 120	<1.0	ug/g	0.37	30
4918139	Acid Extractable Cobalt (Co)	2017/03/29	94	75 - 125	98	80 - 120	<0.10	ug/g	1.2	30

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 #: B761148
Report Date: 2017/03/29

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
4918139	Acid Extractable Copper (Cu)	2017/03/29	95	75 - 125	100	80 - 120	<0.50	ug/g	3.0	30
4918139	Acid Extractable Lead (Pb)	2017/03/29	94	75 - 125	96	80 - 120	<1.0	ug/g	1.8	30
4918139	Acid Extractable Mercury (Hg)	2017/03/29	90	75 - 125	91	80 - 120	<0.050	ug/g	8.2	30
4918139	Acid Extractable Molybdenum (Mo)	2017/03/29	95	75 - 125	100	80 - 120	<0.50	ug/g	2.3	30
4918139	Acid Extractable Nickel (Ni)	2017/03/29	90	75 - 125	102	80 - 120	<0.50	ug/g	1.1	30
4918139	Acid Extractable Selenium (Se)	2017/03/29	92	75 - 125	99	80 - 120	<0.50	ug/g	2.4	30
4918139	Acid Extractable Silver (Ag)	2017/03/29	95	75 - 125	98	80 - 120	<0.20	ug/g	NC	30
4918139	Acid Extractable Thallium (Tl)	2017/03/29	94	75 - 125	96	80 - 120	<0.050	ug/g	2.1	30
4918139	Acid Extractable Uranium (U)	2017/03/29	91	75 - 125	92	80 - 120	<0.050	ug/g	0.91	30
4918139	Acid Extractable Vanadium (V)	2017/03/29	NC	75 - 125	98	80 - 120	<5.0	ug/g	1.5	30
4918139	Acid Extractable Zinc (Zn)	2017/03/29	NC	75 - 125	97	80 - 120	<5.0	ug/g	1.4	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.

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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x 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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B761148
Report Date: 2017/03/29

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).

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.

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 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 #: 572155
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#572155-18-01	Madison Bingley
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)? ___

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: 24hr ☒
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		VS335	17/03/28	1000	Soil		X	X								1	
2		VS336	↓	1100	↓		X	X								1	
3		VS337	↓	1200	↓		X	X								1	
4		VS338	↓	1300	↓		X	X								1	
5		VS339	↓	1400	↓		X	X								1	
6		VS340	↓	14:30	↓		X	X								1	
7																	
8																	
9																	On ice
10																	

28-Mar-17 14:55
Alison Cameron
B761148
KJY 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				
A Bradshaw / Aaron Bradshaw	17/03/28	14:40	Mariana Vascon MVascon	2017/03/28	~~15:40~~ 14:55 MVascon 2017/03/28	0	Time Sensitive	Temperature (°C) on Receipt: 13, 14, 13	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

Maxxam Job #: B761148
Report Date: 2017/03/29

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. #: 572155-19-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/03/28
Report #: R4405825
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B760262
Received: 2017/03/27, 14:50

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	9	N/A	2017/03/28	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	9	2017/03/28	2017/03/28	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	9	2017/03/28	2017/03/28	CAM SOP-00447	EPA 6020B m
Moisture	9	N/A	2017/03/28	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	9	2017/03/27	2017/03/27	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-19-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/03/28
Report #: R4405825
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B760262
Received: 2017/03/27, 14:50

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B760262
Report Date: 2017/03/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ECR895	ECR896	ECR897	ECR898	ECR899		
Sampling Date			2017/03/27 08:00	2017/03/27 09:00	2017/03/27 10:00	2017/03/27 11:00	2017/03/27 12:00		
COC Number			572155-19-01	572155-19-01	572155-19-01	572155-19-01	572155-19-01		
	UNITS	**Criteria**	**VS 327**	**VS 328**	**VS 329**	**VS 330**	**VS 331**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4916371
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	1.7	<1.0	1.0	4916371
Acid Extractable Barium (Ba)	ug/g	**390**	26	23	27	160	38	0.50	4916371
Acid Extractable Beryllium (Be)	ug/g	**4**	0.30	0.21	0.28	0.57	0.29	0.20	4916371
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4916371
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	4916371
Acid Extractable Chromium (Cr)	ug/g	**160**	21	17	21	36	21	1.0	4916371
Acid Extractable Cobalt (Co)	ug/g	**22**	6.5	5.9	5.3	9.3	5.7	0.10	4916371
Acid Extractable Copper (Cu)	ug/g	**140**	5.6	5.2	5.5	14	5.9	0.50	4916371
Acid Extractable Lead (Pb)	ug/g	**120**	2.3	1.9	2.3	5.0	2.3	1.0	4916371
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4916371
Acid Extractable Nickel (Ni)	ug/g	**100**	11	9.7	12	19	13	0.50	4916371
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4916371
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4916371
Acid Extractable Thallium (Tl)	ug/g	**1**	0.068	0.053	0.077	0.20	0.075	0.050	4916371
Acid Extractable Uranium (U)	ug/g	**23**	0.47	0.44	0.45	0.58	0.40	0.050	4916371
Acid Extractable Vanadium (V)	ug/g	**86**	28	25	27	49	28	5.0	4916371
Acid Extractable Zinc (Zn)	ug/g	**340**	23	19	25	56	27	5.0	4916371
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4916371

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 #: B760262
Report Date: 2017/03/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ECR900	ECR901	ECR902	ECR903		
Sampling Date			2017/03/27 13:00	2017/03/27 13:30	2017/03/27 13:30	2017/03/27 14:00		
COC Number			572155-19-01	572155-19-01	572155-19-01	572155-19-01		
	UNITS	**Criteria**	**VS 332**	**VS 333**	**VS 1313**	**VS 334**	**RDL**	**QC Batch**
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	4916371
Acid Extractable Arsenic (As)	ug/g	**18**	2.3	1.8	1.8	1.9	1.0	4916371
Acid Extractable Barium (Ba)	ug/g	**390**	160	98	100	130	0.50	4916371
Acid Extractable Beryllium (Be)	ug/g	**4**	0.65	0.43	0.45	0.55	0.20	4916371
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.0	4916371
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	0.10	4916371
Acid Extractable Chromium (Cr)	ug/g	**160**	38	28	29	33	1.0	4916371
Acid Extractable Cobalt (Co)	ug/g	**22**	11	8.4	8.6	9.9	0.10	4916371
Acid Extractable Copper (Cu)	ug/g	**140**	18	8.6	8.9	13	0.50	4916371
Acid Extractable Lead (Pb)	ug/g	**120**	6.7	12	12	5.1	1.0	4916371
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	0.50	4916371
Acid Extractable Nickel (Ni)	ug/g	**100**	21	13	14	17	0.50	4916371
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	4916371
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	4916371
Acid Extractable Thallium (Tl)	ug/g	**1**	0.23	0.17	0.14	0.19	0.050	4916371
Acid Extractable Uranium (U)	ug/g	**23**	0.70	0.59	0.63	0.64	0.050	4916371
Acid Extractable Vanadium (V)	ug/g	**86**	57	40	41	48	5.0	4916371
Acid Extractable Zinc (Zn)	ug/g	**340**	63	48	51	49	5.0	4916371
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.050	4916371

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 #: B760262
Report Date: 2017/03/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ECR895	ECR896	ECR897	ECR898	ECR899		
Sampling Date			2017/03/27 08:00	2017/03/27 09:00	2017/03/27 10:00	2017/03/27 11:00	2017/03/27 12:00		
COC Number			572155-19-01	572155-19-01	572155-19-01	572155-19-01	572155-19-01		
	UNITS	**Criteria**	**VS 327**	**VS 328**	**VS 329**	**VS 330**	**VS 331**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	21	16	20	21	21	0.2	4914990
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4915435
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Surrogate Recovery (%)									
D10-Anthracene	%	-	80	79	78	77	78		4915069
D14-Terphenyl (FS)	%	-	82	78	78	75	76		4915069
D8-Acenaphthylene	%	-	79	78	76	77	76		4915069

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 #: B760262
Report Date: 2017/03/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ECR900	ECR901	ECR902	ECR903		
Sampling Date			2017/03/27 13:00	2017/03/27 13:30	2017/03/27 13:30	2017/03/27 14:00		
COC Number			572155-19-01	572155-19-01	572155-19-01	572155-19-01		
	UNITS	Criteria	VS 332	VS 333	VS 1313	VS 334	RDL	QC Batch
Inorganics								
Moisture	%	-	20	18	19	19	0.2	4914990
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	0.014	4915435
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0070	<0.0050	<0.0050	0.0050	4915069
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0079	<0.0050	<0.0050	0.0050	4915069
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.013	0.0065	<0.0050	0.0050	4915069
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0065	<0.0050	<0.0050	0.0050	4915069
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Chrysene	ug/g	**7**	<0.0050	0.0075	<0.0050	<0.0050	0.0050	4915069
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Fluoranthene	ug/g	**0.69**	<0.0050	0.013	0.0075	<0.0050	0.0050	4915069
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0070	<0.0050	<0.0050	0.0050	4915069
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4915069
Phenanthrene	ug/g	**6.2**	<0.0050	0.0051	<0.0050	<0.0050	0.0050	4915069
Pyrene	ug/g	**78**	<0.0050	0.011	0.0061	<0.0050	0.0050	4915069
Surrogate Recovery (%)								
D10-Anthracene	%	-	81	74	75	77		4915069
D14-Terphenyl (FS)	%	-	81	75	77	78		4915069
D8-Acenaphthylene	%	-	81	73	75	77		4915069

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 #: B760262
Report Date: 2017/03/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ECR895	ECR896	ECR896	ECR897	ECR898		
Sampling Date			2017/03/27 08:00	2017/03/27 09:00	2017/03/27 09:00	2017/03/27 10:00	2017/03/27 11:00		
COC Number			572155-19-01	572155-19-01	572155-19-01	572155-19-01	572155-19-01		
	UNITS	**Criteria**	**VS 327**	**VS 328**	**VS 328 Lab-Dup**	**VS 329**	**VS 330**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.2	<0.2	<0.2	0.2	0.6	0.2	4916134

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			ECR899	ECR900	ECR901	ECR902	ECR903		
Sampling Date			2017/03/27 12:00	2017/03/27 13:00	2017/03/27 13:30	2017/03/27 13:30	2017/03/27 14:00		
COC Number			572155-19-01	572155-19-01	572155-19-01	572155-19-01	572155-19-01		
	UNITS	**Criteria**	**VS 331**	**VS 332**	**VS 333**	**VS 1313**	**VS 334**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	0.5	0.3	<0.2	0.3	0.2	4916134

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 #: B760262
Report Date: 2017/03/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ECR895
Sample ID: VS 327
Matrix: Soil

Collected: 2017/03/27
Shipped:
Received: 2017/03/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4915435	N/A	2017/03/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4916134	2017/03/28	2017/03/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4916371	2017/03/28	2017/03/28	Viviana Canzonieri
Moisture	BAL	4914990	N/A	2017/03/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4915069	2017/03/27	2017/03/27	Arezoo Habibagahi

Maxxam ID: ECR896
Sample ID: VS 328
Matrix: Soil

Collected: 2017/03/27
Shipped:
Received: 2017/03/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4915435	N/A	2017/03/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4916134	2017/03/28	2017/03/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4916371	2017/03/28	2017/03/28	Viviana Canzonieri
Moisture	BAL	4914990	N/A	2017/03/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4915069	2017/03/27	2017/03/27	Arezoo Habibagahi

Maxxam ID: ECR896 Dup
Sample ID: VS 328
Matrix: Soil

Collected: 2017/03/27
Shipped:
Received: 2017/03/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4916134	2017/03/28	2017/03/28	Sally Coughlin

Maxxam ID: ECR897
Sample ID: VS 329
Matrix: Soil

Collected: 2017/03/27
Shipped:
Received: 2017/03/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4915435	N/A	2017/03/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4916134	2017/03/28	2017/03/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4916371	2017/03/28	2017/03/28	Viviana Canzonieri
Moisture	BAL	4914990	N/A	2017/03/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4915069	2017/03/27	2017/03/27	Arezoo Habibagahi

Maxxam ID: ECR898
Sample ID: VS 330
Matrix: Soil

Collected: 2017/03/27
Shipped:
Received: 2017/03/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4915435	N/A	2017/03/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4916134	2017/03/28	2017/03/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4916371	2017/03/28	2017/03/28	Viviana Canzonieri
Moisture	BAL	4914990	N/A	2017/03/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4915069	2017/03/27	2017/03/27	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 #: B760262
Report Date: 2017/03/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ECR899
Sample ID: VS 331
Matrix: Soil

Collected: 2017/03/27
Shipped:
Received: 2017/03/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4915435	N/A	2017/03/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4916134	2017/03/28	2017/03/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4916371	2017/03/28	2017/03/28	Viviana Canzonieri
Moisture	BAL	4914990	N/A	2017/03/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4915069	2017/03/27	2017/03/27	Arezoo Habibagahi

Maxxam ID: ECR900
Sample ID: VS 332
Matrix: Soil

Collected: 2017/03/27
Shipped:
Received: 2017/03/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4915435	N/A	2017/03/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4916134	2017/03/28	2017/03/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4916371	2017/03/28	2017/03/28	Viviana Canzonieri
Moisture	BAL	4914990	N/A	2017/03/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4915069	2017/03/27	2017/03/27	Arezoo Habibagahi

Maxxam ID: ECR901
Sample ID: VS 333
Matrix: Soil

Collected: 2017/03/27
Shipped:
Received: 2017/03/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4915435	N/A	2017/03/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4916134	2017/03/28	2017/03/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4916371	2017/03/28	2017/03/28	Viviana Canzonieri
Moisture	BAL	4914990	N/A	2017/03/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4915069	2017/03/27	2017/03/27	Arezoo Habibagahi

Maxxam ID: ECR902
Sample ID: VS 1313
Matrix: Soil

Collected: 2017/03/27
Shipped:
Received: 2017/03/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4915435	N/A	2017/03/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4916134	2017/03/28	2017/03/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4916371	2017/03/28	2017/03/28	Viviana Canzonieri
Moisture	BAL	4914990	N/A	2017/03/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4915069	2017/03/27	2017/03/27	Arezoo Habibagahi

Maxxam ID: ECR903
Sample ID: VS 334
Matrix: Soil

Collected: 2017/03/27
Shipped:
Received: 2017/03/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4915435	N/A	2017/03/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4916134	2017/03/28	2017/03/28	Sally Coughlin

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 #: B760262
Report Date: 2017/03/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ECR903
Sample ID: VS 334
Matrix: Soil

Collected: 2017/03/27
Shipped:
Received: 2017/03/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4916371	2017/03/28	2017/03/28	Viviana Canzonieri
Moisture	BAL	4914990	N/A	2017/03/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4915069	2017/03/27	2017/03/27	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 #: B760262
Report Date: 2017/03/28

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	6.0°C

Revised Report (2017/03/28): Includes O'Reg 153 criteria.

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 #: B760262
Report Date: 2017/03/28

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
4915069	D10-Anthracene	2017/03/27	84	50 - 130	86	50 - 130	82	%		
4915069	D14-Terphenyl (FS)	2017/03/27	85	50 - 130	87	50 - 130	81	%		
4915069	D8-Acenaphthylene	2017/03/27	85	50 - 130	87	50 - 130	81	%		
4914990	Moisture	2017/03/28							22	50
4915069	1-Methylnaphthalene	2017/03/27	88	50 - 130	88	50 - 130	<0.0050	ug/g	40	40
4915069	2-Methylnaphthalene	2017/03/27	87	50 - 130	87	50 - 130	<0.0050	ug/g	36	40
4915069	Acenaphthene	2017/03/27	87	50 - 130	90	50 - 130	<0.0050	ug/g	11	40
4915069	Acenaphthylene	2017/03/27	87	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4915069	Anthracene	2017/03/27	83	50 - 130	83	50 - 130	<0.0050	ug/g	28	40
4915069	Benzo(a)anthracene	2017/03/27	88	50 - 130	89	50 - 130	<0.0050	ug/g	59 (1)	40
4915069	Benzo(a)pyrene	2017/03/27	79	50 - 130	81	50 - 130	<0.0050	ug/g	60 (1)	40
4915069	Benzo(b/j)fluoranthene	2017/03/27	88	50 - 130	87	50 - 130	<0.0050	ug/g	53 (1)	40
4915069	Benzo(g,h,i)perylene	2017/03/27	74	50 - 130	77	50 - 130	<0.0050	ug/g	57 (1)	40
4915069	Benzo(k)fluoranthene	2017/03/27	80	50 - 130	84	50 - 130	<0.0050	ug/g	56 (1)	40
4915069	Chrysene	2017/03/27	73	50 - 130	75	50 - 130	<0.0050	ug/g	54 (1)	40
4915069	Dibenz(a,h)anthracene	2017/03/27	53	50 - 130	50	50 - 130	<0.0050	ug/g	NC	40
4915069	Fluoranthene	2017/03/27	86	50 - 130	89	50 - 130	<0.0050	ug/g	46 (1)	40
4915069	Fluorene	2017/03/27	92	50 - 130	92	50 - 130	<0.0050	ug/g	5.3	40
4915069	Indeno(1,2,3-cd)pyrene	2017/03/27	81	50 - 130	81	50 - 130	<0.0050	ug/g	64 (1)	40
4915069	Naphthalene	2017/03/27	75	50 - 130	75	50 - 130	<0.0050	ug/g	39	40
4915069	Phenanthrene	2017/03/27	80	50 - 130	81	50 - 130	<0.0050	ug/g	19	40
4915069	Pyrene	2017/03/27	82	50 - 130	83	50 - 130	<0.0050	ug/g	52 (1)	40
4916134	Chromium (VI)	2017/03/28	76	75 - 125	82	80 - 120	<0.2	ug/g	NC	35
4916371	Acid Extractable Antimony (Sb)	2017/03/28	82	75 - 125	97	80 - 120	<0.20	ug/g	0.26	30
4916371	Acid Extractable Arsenic (As)	2017/03/28	95	75 - 125	102	80 - 120	<1.0	ug/g	3.3	30
4916371	Acid Extractable Barium (Ba)	2017/03/28	NC	75 - 125	103	80 - 120	<0.50	ug/g	2.3	30
4916371	Acid Extractable Beryllium (Be)	2017/03/28	99	75 - 125	100	80 - 120	<0.20	ug/g	1.2	30
4916371	Acid Extractable Boron (B)	2017/03/28	92	75 - 125	99	80 - 120	<5.0	ug/g	NC	30
4916371	Acid Extractable Cadmium (Cd)	2017/03/28	94	75 - 125	102	80 - 120	<0.10	ug/g	NC	30
4916371	Acid Extractable Chromium (Cr)	2017/03/28	98	75 - 125	102	80 - 120	<1.0	ug/g	3.5	30
4916371	Acid Extractable Cobalt (Co)	2017/03/28	98	75 - 125	101	80 - 120	<0.10	ug/g	3.8	30

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 #: B760262
Report Date: 2017/03/28

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
4916371	Acid Extractable Copper (Cu)	2017/03/28	96	75 - 125	103	80 - 120	<0.50	ug/g	4.3	30
4916371	Acid Extractable Lead (Pb)	2017/03/28	98	75 - 125	102	80 - 120	<1.0	ug/g	3.8	30
4916371	Acid Extractable Mercury (Hg)	2017/03/28	95	75 - 125	98	80 - 120	<0.050	ug/g	NC	30
4916371	Acid Extractable Molybdenum (Mo)	2017/03/28	97	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4916371	Acid Extractable Nickel (Ni)	2017/03/28	98	75 - 125	102	80 - 120	<0.50	ug/g	0.91	30
4916371	Acid Extractable Selenium (Se)	2017/03/28	98	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
4916371	Acid Extractable Silver (Ag)	2017/03/28	99	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
4916371	Acid Extractable Thallium (Tl)	2017/03/28	99	75 - 125	101	80 - 120	<0.050	ug/g	12	30
4916371	Acid Extractable Uranium (U)	2017/03/28	99	75 - 125	100	80 - 120	<0.050	ug/g	7.1	30
4916371	Acid Extractable Vanadium (V)	2017/03/28	NC	75 - 125	104	80 - 120	<5.0	ug/g	0.25	30
4916371	Acid Extractable Zinc (Zn)	2017/03/28	NC	75 - 125	102	80 - 120	<5.0	ug/g	1.8	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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 #: B760262
Report Date: 2017/03/28

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.

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 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 #: 572155
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#572155-19-01	Madison Bingley
				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)? ___

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: ___ Time Required: 24hr ☒
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		VS327	17/03/27	800	Soil		X	X								1	
2		VS328		900			X	X								1	
3		VS329		1000			X	X								1	
4		VS330		1100			X	X								1	
5		VS331		1200			X	X								1	
6		VS332		1300			X	X								1	RECEIVED IN OTTAWA
7		VS333		1330			X	X								1	
8		VS1333		1330			X	X								1	
9		VS334		1400			X	X								1	
10																	ON Ice

27-Mar-17 14:50
Alison Cameron
B760262
KIY OTT-001

* 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	17/03/27	1400	Ivan Jaquinod	2017/03/27	14.50	0		6, 6, 6	Present	✓	
									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.

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 #: B760262
Report Date: 2017/03/28

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.

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. #: 572155-20-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/17
Report #: R4362333
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B732097
Received: 2017/02/16, 10:00

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	1	N/A	2017/02/16	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	1	2017/02/17	2017/02/17	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	1	2017/02/17	2017/02/17	CAM SOP-00447	EPA 6020B m
Moisture	1	N/A	2017/02/16	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	1	2017/02/16	2017/02/16	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-20-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/17
Report #: R4362333
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B732097
Received: 2017/02/16, 10:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager
Email: MBingley@maxxam.ca
Phone# (613)274-3549
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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 #: B732097
Report Date: 2017/02/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			DXO310		
Sampling Date			2017/02/16 09:15		
COC Number			572155-20-01		
	UNITS	**Criteria**	**VS324 B**	**RDL**	**QC Batch**
Metals					
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	0.20	4867422
Acid Extractable Arsenic (As)	ug/g	**18**	1.0	1.0	4867422
Acid Extractable Barium (Ba)	ug/g	**390**	390	0.50	4867422
Acid Extractable Beryllium (Be)	ug/g	**4**	0.90	0.20	4867422
Acid Extractable Boron (B)	ug/g	**120**	<5.0	5.0	4867422
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.12	0.10	4867422
Acid Extractable Chromium (Cr)	ug/g	**160**	120	1.0	4867422
Acid Extractable Cobalt (Co)	ug/g	**22**	**26**	0.10	4867422
Acid Extractable Copper (Cu)	ug/g	**140**	60	0.50	4867422
Acid Extractable Lead (Pb)	ug/g	**120**	7.1	1.0	4867422
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.50	4867422
Acid Extractable Nickel (Ni)	ug/g	**100**	66	0.50	4867422
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	0.50	4867422
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	0.20	4867422
Acid Extractable Thallium (Tl)	ug/g	**1**	0.50	0.050	4867422
Acid Extractable Uranium (U)	ug/g	**23**	1.8	0.050	4867422
Acid Extractable Vanadium (V)	ug/g	**86**	**110**	5.0	4867422
Acid Extractable Zinc (Zn)	ug/g	**340**	150	5.0	4867422
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	0.050	4867422

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 #: B732097
Report Date: 2017/02/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			DXO310		
Sampling Date			2017/02/16 09:15		
COC Number			572155-20-01		
	UNITS	**Criteria**	**VS324 B**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	-	26	0.2	4865949
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.014	4865912
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	4866461
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	4866461
Anthracene	ug/g	**0.67**	<0.0050	0.0050	4866461
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	4866461
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	4866461
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	4866461
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0050	4866461
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	4866461
Chrysene	ug/g	**7**	<0.0050	0.0050	4866461
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	4866461
Fluoranthene	ug/g	**0.69**	<0.0050	0.0050	4866461
Fluorene	ug/g	**62**	<0.0050	0.0050	4866461
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	4866461
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4866461
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4866461
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	4866461
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	4866461
Pyrene	ug/g	**78**	<0.0050	0.0050	4866461
Surrogate Recovery (%)					
D10-Anthracene	%	-	89		4866461
D14-Terphenyl (FS)	%	-	81		4866461
D8-Acenaphthylene	%	-	55		4866461

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 #: B732097
Report Date: 2017/02/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			DXO310	DXO310		
Sampling Date			2017/02/16 09:15	2017/02/16 09:15		
COC Number			572155-20-01	572155-20-01		
	UNITS	**Criteria**	**VS324 B**	**VS324 B Lab-Dup**	**RDL**	**QC Batch**
Inorganics						
Chromium (VI)	ug/g	**8**	0.5	0.5	0.2	4867501

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 Job #: B732097
Report Date: 2017/02/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: DXO310
Sample ID: VS324 B
Matrix: Soil

Collected: 2017/02/16
Shipped:
Received: 2017/02/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4865912	N/A	2017/02/16	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4867501	2017/02/17	2017/02/17	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4867422	2017/02/17	2017/02/17	Viviana Canzonieri
Moisture	BAL	4865949	N/A	2017/02/16	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4866461	2017/02/16	2017/02/16	Arezoo Habibagahi

Maxxam ID: DXO310 Dup
Sample ID: VS324 B
Matrix: Soil

Collected: 2017/02/16
Shipped:
Received: 2017/02/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4867501	2017/02/17	2017/02/17	Sally Coughlin

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 #: B732097
Report Date: 2017/02/17

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	8.3°C

Custody seal was not present on the cooler.
The sample was received at the laboratory on the sampling date with average temperature of 8 degrees C.

O.REG 153 PAHS (SOIL)

PAH Compounds in Soil by GC/MS (SIM): The recovery of the compound D8-Acenaphthylene in Blank 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.

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 #: B732097
Report Date: 2017/02/17

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4866461	D10-Anthracene	2017/02/16	96	50 - 130	92	50 - 130	71	%		
4866461	D14-Terphenyl (FS)	2017/02/16	89	50 - 130	87	50 - 130	63	%		
4866461	D8-Acenaphthylene	2017/02/16	62	50 - 130	60	50 - 130	NC	%		
4865949	Moisture	2017/02/16							0.72	50
4866461	1-Methylnaphthalene	2017/02/16	79	50 - 130	78	50 - 130	<0.0050	ug/g	0.76	40
4866461	2-Methylnaphthalene	2017/02/16	83	50 - 130	83	50 - 130	<0.0050	ug/g	0.72	40
4866461	Acenaphthene	2017/02/16	92	50 - 130	92	50 - 130	<0.0050	ug/g	0.22	40
4866461	Acenaphthylene	2017/02/16	76	50 - 130	75	50 - 130	<0.0050	ug/g	0.66	40
4866461	Anthracene	2017/02/16	82	50 - 130	82	50 - 130	<0.0050	ug/g	1.3	40
4866461	Benzo(a)anthracene	2017/02/16	83	50 - 130	81	50 - 130	<0.0050	ug/g	0.25	40
4866461	Benzo(a)pyrene	2017/02/16	80	50 - 130	76	50 - 130	<0.0050	ug/g	4.9	40
4866461	Benzo(b/j)fluoranthene	2017/02/16	84	50 - 130	82	50 - 130	<0.0050	ug/g	5.9	40
4866461	Benzo(g,h,i)perylene	2017/02/16	80	50 - 130	77	50 - 130	<0.0050	ug/g	1.4	40
4866461	Benzo(k)fluoranthene	2017/02/16	84	50 - 130	82	50 - 130	<0.0050	ug/g	2.7	40
4866461	Chrysene	2017/02/16	89	50 - 130	90	50 - 130	<0.0050	ug/g	1.2	40
4866461	Dibenz(a,h)anthracene	2017/02/16	82	50 - 130	76	50 - 130	<0.0050	ug/g	1.4	40
4866461	Fluoranthene	2017/02/16	86	50 - 130	84	50 - 130	<0.0050	ug/g	1.3	40
4866461	Fluorene	2017/02/16	91	50 - 130	91	50 - 130	<0.0050	ug/g	0.66	40
4866461	Indeno(1,2,3-cd)pyrene	2017/02/16	82	50 - 130	76	50 - 130	<0.0050	ug/g	5.9	40
4866461	Naphthalene	2017/02/16	81	50 - 130	81	50 - 130	<0.0050	ug/g	0.25	40
4866461	Phenanthrene	2017/02/16	84	50 - 130	85	50 - 130	<0.0050	ug/g	0.95	40
4866461	Pyrene	2017/02/16	85	50 - 130	84	50 - 130	<0.0050	ug/g	0.12	40
4867422	Acid Extractable Antimony (Sb)	2017/02/17	100	75 - 125	106	80 - 120	<0.20	ug/g	NC	30
4867422	Acid Extractable Arsenic (As)	2017/02/17	100	75 - 125	100	80 - 120	<1.0	ug/g	NC	30
4867422	Acid Extractable Barium (Ba)	2017/02/17	NC	75 - 125	100	80 - 120	<0.50	ug/g	5.6	30
4867422	Acid Extractable Beryllium (Be)	2017/02/17	99	75 - 125	98	80 - 120	<0.20	ug/g	NC	30
4867422	Acid Extractable Boron (B)	2017/02/17	97	75 - 125	97	80 - 120	<5.0	ug/g	NC	30
4867422	Acid Extractable Cadmium (Cd)	2017/02/17	100	75 - 125	99	80 - 120	<0.10	ug/g	NC	30
4867422	Acid Extractable Chromium (Cr)	2017/02/17	106	75 - 125	100	80 - 120	<1.0	ug/g	9.1	30
4867422	Acid Extractable Cobalt (Co)	2017/02/17	99	75 - 125	99	80 - 120	<0.10	ug/g	11	30
4867422	Acid Extractable Copper (Cu)	2017/02/17	96	75 - 125	101	80 - 120	<0.50	ug/g	9.4	30

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 #: B732097
Report Date: 2017/02/17

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4867422	Acid Extractable Lead (Pb)	2017/02/17	NC	75 - 125	101	80 - 120	<1.0	ug/g	13	30
4867422	Acid Extractable Mercury (Hg)	2017/02/17	93	75 - 125	96	80 - 120	<0.050	ug/g	NC	30
4867422	Acid Extractable Molybdenum (Mo)	2017/02/17	104	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4867422	Acid Extractable Nickel (Ni)	2017/02/17	103	75 - 125	99	80 - 120	<0.50	ug/g	1.4	30
4867422	Acid Extractable Selenium (Se)	2017/02/17	101	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
4867422	Acid Extractable Silver (Ag)	2017/02/17	99	75 - 125	105	80 - 120	<0.20	ug/g	NC	30
4867422	Acid Extractable Thallium (Tl)	2017/02/17	97	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
4867422	Acid Extractable Uranium (U)	2017/02/17	98	75 - 125	99	80 - 120	<0.050	ug/g	13	30
4867422	Acid Extractable Vanadium (V)	2017/02/17	NC	75 - 125	99	80 - 120	<5.0	ug/g	NC	30
4867422	Acid Extractable Zinc (Zn)	2017/02/17	NC	75 - 125	99	80 - 120	<5.0	ug/g	NC	30
4867501	Chromium (VI)	2017/02/17	107	75 - 125	82	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).

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 #: B732097
Report Date: 2017/02/17

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.

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 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 #: 572155
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#572155-20-01	Madison Bingley
				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:
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.
24 hr (TL)

Job Specific Rush TAT (if applies to entire submission) ☐
Date Required: ___ Time Required: 24 hr
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		VS324 B	Feb 16, 17	9:15	Soil	NA	✓	✓								1	
2																	
3																	
4																	
5																	RECEIVED IN OTTAWA
6																	
7																	
8																	
9																	No ice
10																	

16-Feb-17 10:00
Madison Bingley
B732097
KJY OTT-001

* 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	17/02/16	10:00	Mariana Dascon	2017/02/16	10:00			9, 8, 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

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B732097
Report Date: 2017/02/17

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
VS324 B	DXO310-02	Acid Extractable Cobalt (Co)	22	26	0.10	ug/g
VS324 B	DXO310-02	Acid Extractable Vanadium (V)	86	110	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.

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/ MAIN STREET
Your C.O.C. #: 572155-21-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/10
Report #: R4355899
Version: 3 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B727347
Received: 2017/02/09, 08:29

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	8	N/A	2017/02/10	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	8	2017/02/10	2017/02/10	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	8	2017/02/10	2017/02/10	CAM SOP-00447	EPA 6020B m
Moisture	8	N/A	2017/02/10	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	8	2017/02/09	2017/02/09	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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/ MAIN STREET
Your C.O.C. #: 572155-21-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/10
Report #: R4355899
Version: 3 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B727347
Received: 2017/02/09, 08:29

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Madison Bingley, Project Manager
Email: MBingley@maxxam.ca
Phone# (613)274-3549
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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 #: B727347
Report Date: 2017/02/10

Golder Associates Ltd
Client Project #: 1525113/ MAIN STREET
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			DWS201	DWS202	DWS203	DWS204	DWS204		
Sampling Date			2017/02/08 11:30	2017/02/08 12:00	2017/02/08 13:00	2017/02/08 14:00	2017/02/08 14:00		
COC Number			572155-21-01	572155-21-01	572155-21-01	572155-21-01	572155-21-01		
	UNITS	**Criteria**	**VS 320**	**VS 321**	**VS 322**	**VS 323**	**VS 323 Lab-Dup**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4859532
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	1.1	1.4	1.2	1.1	1.0	4859532
Acid Extractable Barium (Ba)	ug/g	**390**	**410**	**420**	**430**	**460**	**480**	0.50	4859532
Acid Extractable Beryllium (Be)	ug/g	**4**	0.90	1.1	1.3	0.95	0.99	0.20	4859532
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4859532
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	0.14	<0.10	<0.10	0.10	4859532
Acid Extractable Chromium (Cr)	ug/g	**160**	120	110	120	120	130	1.0	4859532
Acid Extractable Cobalt (Co)	ug/g	**22**	**27**	**28**	**28**	**29**	**29**	0.10	4859532
Acid Extractable Copper (Cu)	ug/g	**140**	61	56	64	68	70	0.50	4859532
Acid Extractable Lead (Pb)	ug/g	**120**	6.8	7.8	9.3	7.2	7.4	1.0	4859532
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	0.58	<0.50	<0.50	0.50	4859532
Acid Extractable Nickel (Ni)	ug/g	**100**	69	66	69	71	75	0.50	4859532
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4859532
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4859532
Acid Extractable Thallium (Tl)	ug/g	**1**	0.51	0.54	0.56	0.54	0.51	0.050	4859532
Acid Extractable Uranium (U)	ug/g	**23**	1.5	2.6	2.7	2.1	2.2	0.050	4859532
Acid Extractable Vanadium (V)	ug/g	**86**	**120**	**110**	**120**	**120**	**120**	5.0	4859532
Acid Extractable Zinc (Zn)	ug/g	**340**	140	140	150	140	150	5.0	4859532
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4859532

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 Job #: B727347
Report Date: 2017/02/10

Golder Associates Ltd
Client Project #: 1525113/ MAIN STREET
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			DWS205	DWS206	DWS207	DWS208		
Sampling Date			2017/02/08 14:30	2017/02/08 15:00	2017/02/08 15:30	2017/02/08 15:00		
COC Number			572155-21-01	572155-21-01	572155-21-01	572155-21-01		
	UNITS	**Criteria**	**VS 324**	**VS 325**	**VS 326**	**VS1 325**	**RDL**	**QC Batch**
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	4859532
Acid Extractable Arsenic (As)	ug/g	**18**	1.1	1.4	1.4	2.0	1.0	4859532
Acid Extractable Barium (Ba)	ug/g	**390**	380	**420**	390	**400**	0.50	4859532
Acid Extractable Beryllium (Be)	ug/g	**4**	0.93	1.1	1.1	1.2	0.20	4859532
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.0	4859532
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.30	<0.10	0.12	<0.10	0.10	4859532
Acid Extractable Chromium (Cr)	ug/g	**160**	110	110	110	110	1.0	4859532
Acid Extractable Cobalt (Co)	ug/g	**22**	**26**	**27**	**26**	**25**	0.10	4859532
Acid Extractable Copper (Cu)	ug/g	**140**	59	57	60	57	0.50	4859532
Acid Extractable Lead (Pb)	ug/g	**120**	7.3	8.2	10	8.4	1.0	4859532
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	0.53	0.50	4859532
Acid Extractable Nickel (Ni)	ug/g	**100**	61	59	63	60	0.50	4859532
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	4859532
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	4859532
Acid Extractable Thallium (Tl)	ug/g	**1**	0.51	0.54	0.54	0.52	0.050	4859532
Acid Extractable Uranium (U)	ug/g	**23**	1.4	2.4	1.9	2.7	0.050	4859532
Acid Extractable Vanadium (V)	ug/g	**86**	**110**	**110**	**110**	**120**	5.0	4859532
Acid Extractable Zinc (Zn)	ug/g	**340**	**360**	130	140	130	5.0	4859532
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.050	4859532

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 #: B727347
Report Date: 2017/02/10

Golder Associates Ltd
Client Project #: 1525113/ MAIN STREET
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			DWS201	DWS202	DWS202	DWS203	DWS204		
Sampling Date			2017/02/08 11:30	2017/02/08 12:00	2017/02/08 12:00	2017/02/08 13:00	2017/02/08 14:00		
COC Number			572155-21-01	572155-21-01	572155-21-01	572155-21-01	572155-21-01		
	UNITS	**Criteria**	**VS 320**	**VS 321**	**VS 321 Lab-Dup**	**VS 322**	**VS 323**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	27	27	27	32	28	0.2	4857992
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	4857858
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Surrogate Recovery (%)									
D10-Anthracene	%	-	81	82	83	82	82		4857994
D14-Terphenyl (FS)	%	-	85	86	86	84	85		4857994
D8-Acenaphthylene	%	-	58	58	58	57	57		4857994

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 Job #: B727347
Report Date: 2017/02/10

Golder Associates Ltd
Client Project #: 1525113/ MAIN STREET
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			DWS205	DWS206	DWS207	DWS208		
Sampling Date			2017/02/08 14:30	2017/02/08 15:00	2017/02/08 15:30	2017/02/08 15:00		
COC Number			572155-21-01	572155-21-01	572155-21-01	572155-21-01		
	UNITS	Criteria	VS 324	VS 325	VS 326	VS1 325	RDL	QC Batch
Inorganics								
Moisture	%	-	25	28	28	28	0.2	4857992
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	0.014	4857858
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4857994
Surrogate Recovery (%)								
D10-Anthracene	%	-	82	84	80	85		4857994
D14-Terphenyl (FS)	%	-	85	87	83	89		4857994
D8-Acenaphthylene	%	-	56	58	57	59		4857994

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 #: B727347
Report Date: 2017/02/10

Golder Associates Ltd
Client Project #: 1525113/ MAIN STREET
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			DWS201	DWS201	DWS202	DWS203	DWS204		
Sampling Date			2017/02/08 11:30	2017/02/08 11:30	2017/02/08 12:00	2017/02/08 13:00	2017/02/08 14:00		
COC Number			572155-21-01	572155-21-01	572155-21-01	572155-21-01	572155-21-01		
	UNITS	**Criteria**	**VS 320**	**VS 320 Lab-Dup**	**VS 321**	**VS 322**	**VS 323**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.7	0.7	0.8	0.6	0.7	0.2	4859361

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			DWS205	DWS206	DWS207	DWS208		
Sampling Date			2017/02/08 14:30	2017/02/08 15:00	2017/02/08 15:30	2017/02/08 15:00		
COC Number			572155-21-01	572155-21-01	572155-21-01	572155-21-01		
	UNITS	**Criteria**	**VS 324**	**VS 325**	**VS 326**	**VS1 325**	**RDL**	**QC Batch**
Inorganics								
Chromium (VI)	ug/g	**8**	0.7	0.6	0.7	0.7	0.2	4859361

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 #: B727347
Report Date: 2017/02/10

Golder Associates Ltd
Client Project #: 1525113/ MAIN STREET
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: DWS201
Sample ID: VS 320
Matrix: Soil

Collected: 2017/02/08
Shipped:
Received: 2017/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4857858	N/A	2017/02/10	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4859361	2017/02/10	2017/02/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4859532	2017/02/10	2017/02/10	Viviana Canzonieri
Moisture	BAL	4857992	N/A	2017/02/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4857994	2017/02/09	2017/02/09	Arezoo Habibagahi

Maxxam ID: DWS201 Dup
Sample ID: VS 320
Matrix: Soil

Collected: 2017/02/08
Shipped:
Received: 2017/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4859361	2017/02/10	2017/02/10	Sally Coughlin

Maxxam ID: DWS202
Sample ID: VS 321
Matrix: Soil

Collected: 2017/02/08
Shipped:
Received: 2017/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4857858	N/A	2017/02/10	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4859361	2017/02/10	2017/02/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4859532	2017/02/10	2017/02/10	Viviana Canzonieri
Moisture	BAL	4857992	N/A	2017/02/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4857994	2017/02/09	2017/02/09	Arezoo Habibagahi

Maxxam ID: DWS202 Dup
Sample ID: VS 321
Matrix: Soil

Collected: 2017/02/08
Shipped:
Received: 2017/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4857992	N/A	2017/02/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4857994	2017/02/09	2017/02/09	Arezoo Habibagahi

Maxxam ID: DWS203
Sample ID: VS 322
Matrix: Soil

Collected: 2017/02/08
Shipped:
Received: 2017/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4857858	N/A	2017/02/10	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4859361	2017/02/10	2017/02/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4859532	2017/02/10	2017/02/10	Viviana Canzonieri
Moisture	BAL	4857992	N/A	2017/02/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4857994	2017/02/09	2017/02/09	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 #: B727347
Report Date: 2017/02/10

Golder Associates Ltd
Client Project #: 1525113/ MAIN STREET
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: DWS204
Sample ID: VS 323
Matrix: Soil

Collected: 2017/02/08
Shipped:
Received: 2017/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4857858	N/A	2017/02/10	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4859361	2017/02/10	2017/02/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4859532	2017/02/10	2017/02/10	Viviana Canzonieri
Moisture	BAL	4857992	N/A	2017/02/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4857994	2017/02/09	2017/02/09	Arezoo Habibagahi

Maxxam ID: DWS204 Dup
Sample ID: VS 323
Matrix: Soil

Collected: 2017/02/08
Shipped:
Received: 2017/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4859532	2017/02/10	2017/02/10	Viviana Canzonieri

Maxxam ID: DWS205
Sample ID: VS 324
Matrix: Soil

Collected: 2017/02/08
Shipped:
Received: 2017/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4857858	N/A	2017/02/10	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4859361	2017/02/10	2017/02/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4859532	2017/02/10	2017/02/10	Viviana Canzonieri
Moisture	BAL	4857992	N/A	2017/02/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4857994	2017/02/09	2017/02/09	Arezoo Habibagahi

Maxxam ID: DWS206
Sample ID: VS 325
Matrix: Soil

Collected: 2017/02/08
Shipped:
Received: 2017/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4857858	N/A	2017/02/10	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4859361	2017/02/10	2017/02/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4859532	2017/02/10	2017/02/10	Viviana Canzonieri
Moisture	BAL	4857992	N/A	2017/02/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4857994	2017/02/09	2017/02/09	Arezoo Habibagahi

Maxxam ID: DWS207
Sample ID: VS 326
Matrix: Soil

Collected: 2017/02/08
Shipped:
Received: 2017/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4857858	N/A	2017/02/10	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4859361	2017/02/10	2017/02/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4859532	2017/02/10	2017/02/10	Viviana Canzonieri
Moisture	BAL	4857992	N/A	2017/02/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4857994	2017/02/09	2017/02/09	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 #: B727347
Report Date: 2017/02/10

Golder Associates Ltd
Client Project #: 1525113/ MAIN STREET
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: DWS208
Sample ID: VS1 325
Matrix: Soil

Collected: 2017/02/08
Shipped:
Received: 2017/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4857858	N/A	2017/02/10	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4859361	2017/02/10	2017/02/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4859532	2017/02/10	2017/02/10	Viviana Canzonieri
Moisture	BAL	4857992	N/A	2017/02/10	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4857994	2017/02/09	2017/02/09	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 #: B727347
Report Date: 2017/02/10

Golder Associates Ltd
Client Project #: 1525113/ MAIN STREET
Sampler Initials: AB

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.

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 #: B727347
Report Date: 2017/02/10

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113/ MAIN STREET
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
4857994	D10-Anthracene	2017/02/09	83	50 - 130	86	50 - 130	84	%		
4857994	D14-Terphenyl (FS)	2017/02/09	88	50 - 130	90	50 - 130	87	%		
4857994	D8-Acenaphthylene	2017/02/09	59	50 - 130	60	50 - 130	58	%		
4857992	Moisture	2017/02/10							0.74	50
4857994	1-Methylnaphthalene	2017/02/09	83	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
4857994	2-Methylnaphthalene	2017/02/09	87	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4857994	Acenaphthene	2017/02/09	95	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
4857994	Acenaphthylene	2017/02/09	74	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
4857994	Anthracene	2017/02/09	80	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
4857994	Benzo(a)anthracene	2017/02/09	80	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
4857994	Benzo(a)pyrene	2017/02/09	84	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4857994	Benzo(b/j)fluoranthene	2017/02/09	88	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4857994	Benzo(g,h,i)perylene	2017/02/09	69	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
4857994	Benzo(k)fluoranthene	2017/02/09	84	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
4857994	Chrysene	2017/02/09	90	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
4857994	Dibenz(a,h)anthracene	2017/02/09	75	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
4857994	Fluoranthene	2017/02/09	80	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
4857994	Fluorene	2017/02/09	98	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
4857994	Indeno(1,2,3-cd)pyrene	2017/02/09	61	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40
4857994	Naphthalene	2017/02/09	80	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
4857994	Phenanthrene	2017/02/09	82	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4857994	Pyrene	2017/02/09	81	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4859361	Chromium (VI)	2017/02/10	68 (1)	75 - 125	93	80 - 120	<0.2	ug/g	NC	35
4859532	Acid Extractable Antimony (Sb)	2017/02/10	70 (2)	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
4859532	Acid Extractable Arsenic (As)	2017/02/10	90	75 - 125	99	80 - 120	<1.0	ug/g	NC	30
4859532	Acid Extractable Barium (Ba)	2017/02/10	NC	75 - 125	103	80 - 120	<0.50	ug/g	3.3	30
4859532	Acid Extractable Beryllium (Be)	2017/02/10	98	75 - 125	97	80 - 120	<0.20	ug/g	NC	30
4859532	Acid Extractable Boron (B)	2017/02/10	91	75 - 125	96	80 - 120	<5.0	ug/g	NC	30
4859532	Acid Extractable Cadmium (Cd)	2017/02/10	97	75 - 125	97	80 - 120	<0.10	ug/g	NC	30
4859532	Acid Extractable Chromium (Cr)	2017/02/10	NC	75 - 125	99	80 - 120	<1.0	ug/g	4.7	30
4859532	Acid Extractable Cobalt (Co)	2017/02/10	NC	75 - 125	98	80 - 120	<0.10	ug/g	1.0	30

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 #: B727347
Report Date: 2017/02/10

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113/ MAIN STREET
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
4859532	Acid Extractable Copper (Cu)	2017/02/10	NC	75 - 125	99	80 - 120	<0.50	ug/g	4.0	30
4859532	Acid Extractable Lead (Pb)	2017/02/10	95	75 - 125	99	80 - 120	<1.0	ug/g	1.7	30
4859532	Acid Extractable Mercury (Hg)	2017/02/10	95	75 - 125	101	80 - 120	<0.050	ug/g	NC	30
4859532	Acid Extractable Molybdenum (Mo)	2017/02/10	95	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
4859532	Acid Extractable Nickel (Ni)	2017/02/10	NC	75 - 125	98	80 - 120	<0.50	ug/g	6.3	30
4859532	Acid Extractable Selenium (Se)	2017/02/10	92	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
4859532	Acid Extractable Silver (Ag)	2017/02/10	100	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
4859532	Acid Extractable Thallium (Tl)	2017/02/10	94	75 - 125	98	80 - 120	<0.050	ug/g	5.7	30
4859532	Acid Extractable Uranium (U)	2017/02/10	95	75 - 125	98	80 - 120	<0.050	ug/g	3.2	30
4859532	Acid Extractable Vanadium (V)	2017/02/10	NC	75 - 125	100	80 - 120	<5.0	ug/g	2.6	30
4859532	Acid Extractable Zinc (Zn)	2017/02/10	NC	75 - 125	98	80 - 120	<5.0	ug/g	2.8	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) 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.

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 #: B727347
Report Date: 2017/02/10

Golder Associates Ltd
Client Project #: 1525113/ MAIN STREET
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

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.

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 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 #: 572155
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#572155-21-01	Madison Bingley
				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								# of Bottles	Comments
1		VS320	17/02/08	1130	Soil		X	X								1	
2		VS321		1200			X	X								1	
3		VS322		1300			X	X								1	
4		VS323		1400			X	X								1	
5		VS324		1430			X	X								1	
6		VS325		1500			X	X								1	
7		VS326		1530			X	X								1	
8		VS1325		1500			X	X								1	
9																	RECEIVED IN OTTAWA
10																	

09-Feb-17 08:29
Madison Bingley
B727347
KJY OTT-001

* 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
T. Brown / Aaron Bradshaw	17/02/09		V. Clement	17/02/09	8:29	0		4/4/5	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 DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B727347
Report Date: 2017/02/10

Golder Associates Ltd
Client Project #: 1525113/ MAIN STREET
Sampler Initials: AB

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS 320	DWS201-02	Acid Extractable Barium (Ba)	390	410	0.50	ug/g
VS 320	DWS201-02	Acid Extractable Cobalt (Co)	22	27	0.10	ug/g
VS 320	DWS201-02	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 321	DWS202-02	Acid Extractable Barium (Ba)	390	420	0.50	ug/g
VS 321	DWS202-02	Acid Extractable Cobalt (Co)	22	28	0.10	ug/g
VS 321	DWS202-02	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 322	DWS203-02	Acid Extractable Barium (Ba)	390	430	0.50	ug/g
VS 322	DWS203-02	Acid Extractable Cobalt (Co)	22	28	0.10	ug/g
VS 322	DWS203-02	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 323	DWS204-02	Acid Extractable Barium (Ba)	390	460	0.50	ug/g
VS 323	DWS204-02-Lab Dup	Acid Extractable Barium (Ba)	390	480	0.50	ug/g
VS 323	DWS204-02	Acid Extractable Cobalt (Co)	22	29	0.10	ug/g
VS 323	DWS204-02-Lab Dup	Acid Extractable Cobalt (Co)	22	29	0.10	ug/g
VS 323	DWS204-02	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 323	DWS204-02-Lab Dup	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 324	DWS205-02	Acid Extractable Cobalt (Co)	22	26	0.10	ug/g
VS 324	DWS205-02	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 324	DWS205-02	Acid Extractable Zinc (Zn)	340	360	5.0	ug/g
VS 325	DWS206-02	Acid Extractable Barium (Ba)	390	420	0.50	ug/g
VS 325	DWS206-02	Acid Extractable Cobalt (Co)	22	27	0.10	ug/g
VS 325	DWS206-02	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 326	DWS207-02	Acid Extractable Cobalt (Co)	22	26	0.10	ug/g
VS 326	DWS207-02	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS1 325	DWS208-02	Acid Extractable Barium (Ba)	390	400	0.50	ug/g
VS1 325	DWS208-02	Acid Extractable Cobalt (Co)	22	25	0.10	ug/g
VS1 325	DWS208-02	Acid Extractable Vanadium (V)	86	120	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.

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. #: 618826-16-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/24
Report #: R4674022
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7I2402
Received: 2017/08/23, 14:00

Sample Matrix: Soil
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	7	N/A	2017/08/24	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	7	2017/08/24	2017/08/24	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	7	2017/08/24	2017/08/24	CAM SOP-00447	EPA 6020B m
Moisture	7	N/A	2017/08/24	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	7	2017/08/23	2017/08/23	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-16-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/24
Report #: R4674022
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7I2402
Received: 2017/08/23, 14:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EZM879	EZM880	EZM881	EZM882	EZM883		
Sampling Date			2017/08/23 08:00	2017/08/23 08:30	2017/08/23 09:00	2017/08/23 09:30	2017/08/23 10:00		
COC Number			618826-16-01	618826-16-01	618826-16-01	618826-16-01	618826-16-01		
	UNITS	Criteria	VS 612	VS 613	VS 614	VS 615	VS 1615	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5134184
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	1.0	<1.0	<1.0	1.0	5134184
Acid Extractable Barium (Ba)	ug/g	**390**	58	26	330	320	350	0.50	5134184
Acid Extractable Beryllium (Be)	ug/g	**4**	0.32	<0.20	0.85	0.79	0.82	0.20	5134184
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5134184
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	0.10	<0.10	<0.10	0.10	5134184
Acid Extractable Chromium (Cr)	ug/g	**160**	27	13	97	90	98	1.0	5134184
Acid Extractable Cobalt (Co)	ug/g	**22**	5.3	3.1	**24**	**26**	**28**	0.10	5134184
Acid Extractable Copper (Cu)	ug/g	**140**	12	6.1	50	51	58	0.50	5134184
Acid Extractable Lead (Pb)	ug/g	**120**	3.0	2.0	8.4	6.5	6.1	1.0	5134184
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5134184
Acid Extractable Nickel (Ni)	ug/g	**100**	14	7.4	57	55	58	0.50	5134184
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5134184
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5134184
Acid Extractable Thallium (Tl)	ug/g	**1**	0.12	<0.050	0.41	0.41	0.45	0.050	5134184
Acid Extractable Uranium (U)	ug/g	**23**	1.1	0.64	1.6	1.1	1.2	0.050	5134184
Acid Extractable Vanadium (V)	ug/g	**86**	26	19	**95**	**100**	**110**	5.0	5134184
Acid Extractable Zinc (Zn)	ug/g	**340**	31	18	120	120	130	5.0	5134184
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5134184

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 #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EZM884	EZM885		
Sampling Date			2017/08/23 10:30	2017/08/23 11:00		
COC Number			618826-16-01	618826-16-01		
	UNITS	**Criteria**	**VS 616**	**VS 617**	**RDL**	**QC Batch**
Metals						
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	0.20	5134184
Acid Extractable Arsenic (As)	ug/g	**18**	1.0	<1.0	1.0	5134184
Acid Extractable Barium (Ba)	ug/g	**390**	**420**	23	0.50	5134184
Acid Extractable Beryllium (Be)	ug/g	**4**	1.0	<0.20	0.20	5134184
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	5.0	5134184
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.16	<0.10	0.10	5134184
Acid Extractable Chromium (Cr)	ug/g	**160**	130	14	1.0	5134184
Acid Extractable Cobalt (Co)	ug/g	**22**	**30**	3.3	0.10	5134184
Acid Extractable Copper (Cu)	ug/g	**140**	62	5.2	0.50	5134184
Acid Extractable Lead (Pb)	ug/g	**120**	7.7	2.5	1.0	5134184
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.54	<0.50	0.50	5134184
Acid Extractable Nickel (Ni)	ug/g	**100**	71	7.3	0.50	5134184
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	0.50	5134184
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	0.20	5134184
Acid Extractable Thallium (Tl)	ug/g	**1**	0.52	<0.050	0.050	5134184
Acid Extractable Uranium (U)	ug/g	**23**	1.7	0.62	0.050	5134184
Acid Extractable Vanadium (V)	ug/g	**86**	**120**	19	5.0	5134184
Acid Extractable Zinc (Zn)	ug/g	**340**	140	16	5.0	5134184
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	0.050	5134184

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 #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EZM879	EZM879	EZM880	EZM881	EZM882		
Sampling Date			2017/08/23 08:00	2017/08/23 08:00	2017/08/23 08:30	2017/08/23 09:00	2017/08/23 09:30		
COC Number			618826-16-01	618826-16-01	618826-16-01	618826-16-01	618826-16-01		
	UNITS	Criteria	VS 612	VS 612 Lab-Dup	VS 613	VS 614	VS 615	RDL	QC Batch
Inorganics									
Moisture	%	-	17	16	21	28	30	0.2	5132396
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	5132426
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5132431
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5132431
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0071	<0.0050	0.0050	5132431
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	0.018	<0.0050	0.0050	5132431
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	0.013	<0.0050	0.0050	5132431
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.021	<0.0050	0.0050	5132431
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	0.014	<0.0050	0.0050	5132431
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0065	<0.0050	0.0050	5132431
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	0.016	<0.0050	0.0050	5132431
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5132431
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	0.044	<0.0050	0.0050	5132431
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5132431
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	0.010	<0.0050	0.0050	5132431
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5132431
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5132431
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5132431
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	0.027	<0.0050	0.0050	5132431
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	0.036	<0.0050	0.0050	5132431
Surrogate Recovery (%)									
D10-Anthracene	%	-	99	98	97	98	99		5132431
D14-Terphenyl (FS)	%	-	91	91	90	92	90		5132431
D8-Acenaphthylene	%	-	83	84	84	85	85		5132431

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 Job #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EZM883	EZM884	EZM885		
Sampling Date			2017/08/23 10:00	2017/08/23 10:30	2017/08/23 11:00		
COC Number			618826-16-01	618826-16-01	618826-16-01		
	UNITS	Criteria	VS 1615	VS 616	VS 617	RDL	QC Batch
Inorganics							
Moisture	%	-	34	31	20	0.2	5132396
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	0.014	5132426
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	0.0050	5132431
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	5132431
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Surrogate Recovery (%)							
D10-Anthracene	%	-	101	99	98		5132431
D14-Terphenyl (FS)	%	-	87	91	84		5132431
D8-Acenaphthylene	%	-	81	85	83		5132431

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 #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EZM879	EZM880	EZM881	EZM882	EZM883		
Sampling Date			2017/08/23 08:00	2017/08/23 08:30	2017/08/23 09:00	2017/08/23 09:30	2017/08/23 10:00		
COC Number			618826-16-01	618826-16-01	618826-16-01	618826-16-01	618826-16-01		
	UNITS	**Criteria**	**VS 612**	**VS 613**	**VS 614**	**VS 615**	**VS 1615**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.4	0.3	0.4	0.3	0.4	0.2	5132924

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			EZM884	EZM885		
Sampling Date			2017/08/23 10:30	2017/08/23 11:00		
COC Number			618826-16-01	618826-16-01		
	UNITS	**Criteria**	**VS 616**	**VS 617**	**RDL**	**QC Batch**
Inorganics						
Chromium (VI)	ug/g	**8**	0.6	<0.2	0.2	5132924

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 #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EZM879
Sample ID: VS 612
Matrix: Soil

Collected: 2017/08/23
Shipped:
Received: 2017/08/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5132426	N/A	2017/08/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5132924	2017/08/24	2017/08/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5134184	2017/08/24	2017/08/24	Daniel Teclu
Moisture	BAL	5132396	N/A	2017/08/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5132431	2017/08/23	2017/08/23	Liliana Gaburici

Maxxam ID: EZM879 Dup
Sample ID: VS 612
Matrix: Soil

Collected: 2017/08/23
Shipped:
Received: 2017/08/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5132396	N/A	2017/08/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5132431	2017/08/23	2017/08/23	Liliana Gaburici

Maxxam ID: EZM880
Sample ID: VS 613
Matrix: Soil

Collected: 2017/08/23
Shipped:
Received: 2017/08/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5132426	N/A	2017/08/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5132924	2017/08/24	2017/08/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5134184	2017/08/24	2017/08/24	Daniel Teclu
Moisture	BAL	5132396	N/A	2017/08/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5132431	2017/08/23	2017/08/23	Liliana Gaburici

Maxxam ID: EZM881
Sample ID: VS 614
Matrix: Soil

Collected: 2017/08/23
Shipped:
Received: 2017/08/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5132426	N/A	2017/08/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5132924	2017/08/24	2017/08/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5134184	2017/08/24	2017/08/24	Daniel Teclu
Moisture	BAL	5132396	N/A	2017/08/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5132431	2017/08/23	2017/08/23	Liliana Gaburici

Maxxam ID: EZM882
Sample ID: VS 615
Matrix: Soil

Collected: 2017/08/23
Shipped:
Received: 2017/08/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5132426	N/A	2017/08/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5132924	2017/08/24	2017/08/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5134184	2017/08/24	2017/08/24	Daniel Teclu
Moisture	BAL	5132396	N/A	2017/08/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5132431	2017/08/23	2017/08/23	Liliana Gaburici

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 #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EZM883
Sample ID: VS 1615
Matrix: Soil

Collected: 2017/08/23
Shipped:
Received: 2017/08/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5132426	N/A	2017/08/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5132924	2017/08/24	2017/08/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5134184	2017/08/24	2017/08/24	Daniel Teclu
Moisture	BAL	5132396	N/A	2017/08/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5132431	2017/08/23	2017/08/23	Liliana Gaburici

Maxxam ID: EZM884
Sample ID: VS 616
Matrix: Soil

Collected: 2017/08/23
Shipped:
Received: 2017/08/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5132426	N/A	2017/08/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5132924	2017/08/24	2017/08/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5134184	2017/08/24	2017/08/24	Daniel Teclu
Moisture	BAL	5132396	N/A	2017/08/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5132431	2017/08/23	2017/08/23	Liliana Gaburici

Maxxam ID: EZM885
Sample ID: VS 617
Matrix: Soil

Collected: 2017/08/23
Shipped:
Received: 2017/08/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5132426	N/A	2017/08/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5132924	2017/08/24	2017/08/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5134184	2017/08/24	2017/08/24	Daniel Teclu
Moisture	BAL	5132396	N/A	2017/08/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5132431	2017/08/23	2017/08/23	Liliana Gaburici

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 #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

GENERAL COMMENTS

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

Package 1	21.3°C

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 #: B7I2402
Report Date: 2017/08/24

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5132431	D10-Anthracene	2017/08/23	91	50 - 130	94	50 - 130	97	%		
5132431	D14-Terphenyl (FS)	2017/08/23	86	50 - 130	90	50 - 130	92	%		
5132431	D8-Acenaphthylene	2017/08/23	85	50 - 130	87	50 - 130	87	%		
5132396	Moisture	2017/08/24							4.3	50
5132431	1-Methylnaphthalene	2017/08/23	86	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
5132431	2-Methylnaphthalene	2017/08/23	83	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5132431	Acenaphthene	2017/08/23	92	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
5132431	Acenaphthylene	2017/08/23	87	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5132431	Anthracene	2017/08/23	92	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5132431	Benzo(a)anthracene	2017/08/23	87	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5132431	Benzo(a)pyrene	2017/08/23	79	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5132431	Benzo(b/j)fluoranthene	2017/08/23	90	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5132431	Benzo(g,h,i)perylene	2017/08/23	86	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
5132431	Benzo(k)fluoranthene	2017/08/23	80	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5132431	Chrysene	2017/08/23	87	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5132431	Dibenz(a,h)anthracene	2017/08/23	96	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5132431	Fluoranthene	2017/08/23	96	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
5132431	Fluorene	2017/08/23	109	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40
5132431	Indeno(1,2,3-cd)pyrene	2017/08/23	93	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5132431	Naphthalene	2017/08/23	78	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5132431	Phenanthrene	2017/08/23	87	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5132431	Pyrene	2017/08/23	97	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5132924	Chromium (VI)	2017/08/24	67 (1)	75 - 125	87	80 - 120	<0.2	ug/g	NC	35
5134184	Acid Extractable Antimony (Sb)	2017/08/24	89	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5134184	Acid Extractable Arsenic (As)	2017/08/24	93	75 - 125	100	80 - 120	<1.0	ug/g	11	30
5134184	Acid Extractable Barium (Ba)	2017/08/24	NC	75 - 125	94	80 - 120	<0.50	ug/g	0.34	30
5134184	Acid Extractable Beryllium (Be)	2017/08/24	97	75 - 125	99	80 - 120	<0.20	ug/g	4.1	30
5134184	Acid Extractable Boron (B)	2017/08/24	90	75 - 125	97	80 - 120	<5.0	ug/g	8.9	30
5134184	Acid Extractable Cadmium (Cd)	2017/08/24	97	75 - 125	100	80 - 120	<0.10	ug/g	1.4	30
5134184	Acid Extractable Chromium (Cr)	2017/08/24	NC	75 - 125	99	80 - 120	<1.0	ug/g	1.8	30
5134184	Acid Extractable Cobalt (Co)	2017/08/24	93	75 - 125	98	80 - 120	<0.10	ug/g	1.4	30

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 #: B7I2402
Report Date: 2017/08/24

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5134184	Acid Extractable Copper (Cu)	2017/08/24	93	75 - 125	99	80 - 120	<0.50	ug/g	0.057	30
5134184	Acid Extractable Lead (Pb)	2017/08/24	93	75 - 125	100	80 - 120	<1.0	ug/g	0.86	30
5134184	Acid Extractable Mercury (Hg)	2017/08/24	95	75 - 125	103	80 - 120	<0.050	ug/g		
5134184	Acid Extractable Molybdenum (Mo)	2017/08/24	98	75 - 125	99	80 - 120	<0.50	ug/g	25	30
5134184	Acid Extractable Nickel (Ni)	2017/08/24	88	75 - 125	101	80 - 120	<0.50	ug/g	0.43	30
5134184	Acid Extractable Selenium (Se)	2017/08/24	96	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
5134184	Acid Extractable Silver (Ag)	2017/08/24	97	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
5134184	Acid Extractable Thallium (Tl)	2017/08/24	94	75 - 125	100	80 - 120	<0.050	ug/g	8.1	30
5134184	Acid Extractable Uranium (U)	2017/08/24	95	75 - 125	99	80 - 120	<0.050	ug/g	2.9	30
5134184	Acid Extractable Vanadium (V)	2017/08/24	NC	75 - 125	98	80 - 120	<5.0	ug/g	4.3	30
5134184	Acid Extractable Zinc (Zn)	2017/08/24	NC	75 - 125	99	80 - 120	<5.0	ug/g	0.45	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x 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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #: 618826
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#618826-16-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	SHAHAN CHOWDHURY		

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)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals (Soil)	Hexavalent Chromium in Soil by IC	# of Bottles	Comments
1		VS 612	17/08/23	0800 HRS	SOIL	X	X	X	1	
2		VS 613		0830 HRS		X	X	X	1	
3		VS 614		0900 HRS		X	X	X	1	
4		VS 615		0930 HRS		X	X	X	1	
5		VS 1615		1000 HRS		X	X	X	1	
6		VS 616		1030 HRS		X	X	X	1	
7		VS 617		1100 HRS		X	X	X	1	
8										
9										
10										ON the Ice Pack

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: ___ Time Required: 24HRS ☒
Rush Confirmation Number: ___ *(call lab for #)*

23-Aug-17 14:00
Alison Cameron
B7I2402
KIV 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 Recei	Custody Seal	Yes	No
SHAHAN CHOWDHURY	17/08/23	12:00HRS	[illegible]	24/08/23	14:00	0		22, 21, 21	Present	X	
									Intact	X	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS 614	EZM881-02	Acid Extractable Cobalt (Co)	22	24	0.10	ug/g
VS 614	EZM881-02	Acid Extractable Vanadium (V)	86	95	5.0	ug/g
VS 615	EZM882-02	Acid Extractable Cobalt (Co)	22	26	0.10	ug/g
VS 615	EZM882-02	Acid Extractable Vanadium (V)	86	100	5.0	ug/g
VS 1615	EZM883-02	Acid Extractable Cobalt (Co)	22	28	0.10	ug/g
VS 1615	EZM883-02	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 616	EZM884-02	Acid Extractable Barium (Ba)	390	420	0.50	ug/g
VS 616	EZM884-02	Acid Extractable Cobalt (Co)	22	30	0.10	ug/g
VS 616	EZM884-02	Acid Extractable Vanadium (V)	86	120	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.

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. #: 618826-15-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/19
Report #: R4661909
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H7524
Received: 2017/08/17, 14:00

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	6	N/A	2017/08/18	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	6	2017/08/18	2017/08/18	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	6	2017/08/18	2017/08/18	CAM SOP-00447	EPA 6020B m
Moisture	6	N/A	2017/08/17	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	6	2017/08/17	2017/08/17	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-15-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/19
Report #: R4661909
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H7524
Received: 2017/08/17, 14:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EYP873	EYP874	EYP875	EYP876	EYP877		
Sampling Date			2017/08/17 12:00	2017/08/17 12:15	2017/08/17 12:30	2017/08/17 12:45	2017/08/17 13:00		
COC Number			618826-15-01	618826-15-01	618826-15-01	618826-15-01	618826-15-01		
	UNITS	**Criteria**	**VS 606**	**VS 607**	**VS 608**	**VS 609**	**VS 610**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	30	23	23	26	28	0.2	5123552
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	5123541
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Surrogate Recovery (%)									
D10-Anthracene	%	-	90	88	92	89	93		5123581
D14-Terphenyl (FS)	%	-	93	90	92	90	93		5123581
D8-Acenaphthylene	%	-	79	81	85	81	85		5123581

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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EYP878		
Sampling Date			2017/08/17 13:15		
COC Number			618826-15-01		
	UNITS	**Criteria**	**VS 611**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	-	26	0.2	5123552
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.014	5123541
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	5123581
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	5123581
Anthracene	ug/g	**0.67**	<0.0050	0.0050	5123581
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	5123581
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	5123581
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5123581
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0050	5123581
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5123581
Chrysene	ug/g	**7**	<0.0050	0.0050	5123581
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	5123581
Fluoranthene	ug/g	**0.69**	<0.0050	0.0050	5123581
Fluorene	ug/g	**62**	<0.0050	0.0050	5123581
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	5123581
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5123581
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5123581
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	5123581
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	5123581
Pyrene	ug/g	**78**	<0.0050	0.0050	5123581
Surrogate Recovery (%)					
D10-Anthracene	%	-	90		5123581
D14-Terphenyl (FS)	%	-	92		5123581
D8-Acenaphthylene	%	-	85		5123581

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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EYP873	EYP874	EYP875	EYP876	EYP877		
Sampling Date			2017/08/17 12:00	2017/08/17 12:15	2017/08/17 12:30	2017/08/17 12:45	2017/08/17 13:00		
COC Number			618826-15-01	618826-15-01	618826-15-01	618826-15-01	618826-15-01		
	UNITS	**Criteria**	**VS 606**	**VS 607**	**VS 608**	**VS 609**	**VS 610**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.4	<0.2	<0.2	<0.2	0.3	0.2	5125066
Metals									
Acid Extractable Aluminum (Al)	ug/g	**-**	36000	11000	11000	17000	40000	50	5125703
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5125703
Acid Extractable Arsenic (As)	ug/g	**18**	1.0	1.8	1.9	2.4	<1.0	1.0	5125703
Acid Extractable Barium (Ba)	ug/g	**390**	390	140	140	180	380	0.50	5125703
Acid Extractable Beryllium (Be)	ug/g	**4**	0.87	0.40	0.39	0.54	1.1	0.20	5125703
Acid Extractable Bismuth (Bi)	ug/g	**-**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5125703
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	7.7	<5.0	5.0	5125703
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.13	<0.10	<0.10	<0.10	0.18	0.10	5125703
Acid Extractable Calcium (Ca)	ug/g	**-**	11000	25000	25000	28000	11000	50	5125703
Acid Extractable Chromium (Cr)	ug/g	**160**	110	27	27	39	110	1.0	5125703
Acid Extractable Cobalt (Co)	ug/g	**22**	**27**	8.6	8.9	12	**33**	0.10	5125703
Acid Extractable Copper (Cu)	ug/g	**140**	58	17	18	23	58	0.50	5125703
Acid Extractable Iron (Fe)	ug/g	**-**	56000	21000	22000	29000	55000	50	5125703
Acid Extractable Lead (Pb)	ug/g	**120**	6.5	3.8	3.9	5.4	7.4	1.0	5125703
Acid Extractable Magnesium (Mg)	ug/g	**-**	21000	13000	13000	16000	20000	50	5125703
Acid Extractable Manganese (Mn)	ug/g	**-**	970	380	390	540	1000	1.0	5125703
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.71	0.76	0.86	<0.50	0.50	5125703
Acid Extractable Nickel (Ni)	ug/g	**100**	67	16	17	25	65	0.50	5125703
Acid Extractable Phosphorus (P)	ug/g	**-**	1100	1100	1100	1100	1100	50	5125703
Acid Extractable Potassium (K)	ug/g	**-**	13000	4100	4300	6200	12000	200	5125703
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5125703
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5125703
Acid Extractable Sodium (Na)	ug/g	**-**	2200	760	760	1100	1800	50	5125703
Acid Extractable Strontium (Sr)	ug/g	**-**	64	58	57	71	67	1.0	5125703
Acid Extractable Thallium (Tl)	ug/g	**1**	0.54	0.15	0.15	0.21	0.50	0.050	5125703
Acid Extractable Tin (Sn)	ug/g	**-**	1.5	<1.0	<1.0	<1.0	1.5	1.0	5125703
Acid Extractable Uranium (U)	ug/g	**23**	1.1	0.90	0.80	0.88	1.2	0.050	5125703
Acid Extractable Vanadium (V)	ug/g	**86**	**120**	42	44	57	**110**	5.0	5125703
Acid Extractable Zinc (Zn)	ug/g	**340**	150	48	49	70	140	5.0	5125703

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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EYP878		
Sampling Date			2017/08/17 13:15		
COC Number			618826-15-01		
	UNITS	**Criteria**	**VS 611**	**RDL**	**QC Batch**
Inorganics					
Chromium (VI)	ug/g	**8**	<0.2	0.2	5125066
Metals					
Acid Extractable Aluminum (Al)	ug/g	**-**	18000	50	5125703
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	0.20	5125703
Acid Extractable Arsenic (As)	ug/g	**18**	2.7	1.0	5125703
Acid Extractable Barium (Ba)	ug/g	**390**	180	0.50	5125703
Acid Extractable Beryllium (Be)	ug/g	**4**	0.64	0.20	5125703
Acid Extractable Bismuth (Bi)	ug/g	**-**	<1.0	1.0	5125703
Acid Extractable Boron (B)	ug/g	**120**	8.3	5.0	5125703
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.10	5125703
Acid Extractable Calcium (Ca)	ug/g	**-**	29000	50	5125703
Acid Extractable Chromium (Cr)	ug/g	**160**	42	1.0	5125703
Acid Extractable Cobalt (Co)	ug/g	**22**	13	0.10	5125703
Acid Extractable Copper (Cu)	ug/g	**140**	25	0.50	5125703
Acid Extractable Iron (Fe)	ug/g	**-**	31000	50	5125703
Acid Extractable Lead (Pb)	ug/g	**120**	5.7	1.0	5125703
Acid Extractable Magnesium (Mg)	ug/g	**-**	17000	50	5125703
Acid Extractable Manganese (Mn)	ug/g	**-**	580	1.0	5125703
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.75	0.50	5125703
Acid Extractable Nickel (Ni)	ug/g	**100**	27	0.50	5125703
Acid Extractable Phosphorus (P)	ug/g	**-**	1100	50	5125703
Acid Extractable Potassium (K)	ug/g	**-**	6600	200	5125703
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	0.50	5125703
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	0.20	5125703
Acid Extractable Sodium (Na)	ug/g	**-**	1200	50	5125703
Acid Extractable Strontium (Sr)	ug/g	**-**	72	1.0	5125703
Acid Extractable Thallium (Tl)	ug/g	**1**	0.23	0.050	5125703
Acid Extractable Tin (Sn)	ug/g	**-**	<1.0	1.0	5125703
Acid Extractable Uranium (U)	ug/g	**23**	0.89	0.050	5125703
Acid Extractable Vanadium (V)	ug/g	**86**	62	5.0	5125703

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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EYP878		
Sampling Date			2017/08/17 13:15		
COC Number			618826-15-01		
	UNITS	**Criteria**	**VS 611**	**RDL**	**QC Batch**
Acid Extractable Zinc (Zn)	ug/g	**340**	74	5.0	5125703

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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EYP873
Sample ID: VS 606
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5123541	N/A	2017/08/18	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu
Moisture	BAL	5123552	N/A	2017/08/17	Paul Rubinato
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

Maxxam ID: EYP874
Sample ID: VS 607
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5123541	N/A	2017/08/18	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu
Moisture	BAL	5123552	N/A	2017/08/17	Paul Rubinato
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

Maxxam ID: EYP875
Sample ID: VS 608
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5123541	N/A	2017/08/18	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu
Moisture	BAL	5123552	N/A	2017/08/17	Paul Rubinato
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

Maxxam ID: EYP876
Sample ID: VS 609
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5123541	N/A	2017/08/18	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu
Moisture	BAL	5123552	N/A	2017/08/17	Paul Rubinato
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

Maxxam ID: EYP877
Sample ID: VS 610
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5123541	N/A	2017/08/18	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin

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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EYP877
Sample ID: VS 610
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu
Moisture	BAL	5123552	N/A	2017/08/17	Paul Rubinato
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

Maxxam ID: EYP878
Sample ID: VS 611
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5123541	N/A	2017/08/18	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu
Moisture	BAL	5123552	N/A	2017/08/17	Paul Rubinato
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

GENERAL COMMENTS

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

Package 1	22.0°C

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 #: B7H7524
Report Date: 2017/08/19

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5123581	D10-Anthracene	2017/08/17	112	50 - 130	100	50 - 130	95	%		
5123581	D14-Terphenyl (FS)	2017/08/17	124	50 - 130	113	50 - 130	97	%		
5123581	D8-Acenaphthylene	2017/08/17	79	50 - 130	83	50 - 130	82	%		
5123552	Moisture	2017/08/17							0.36	50
5123581	1-Methylnaphthalene	2017/08/17	86	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5123581	2-Methylnaphthalene	2017/08/17	82	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5123581	Acenaphthene	2017/08/17	96	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
5123581	Acenaphthylene	2017/08/17	79	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5123581	Anthracene	2017/08/17	92	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5123581	Benzo(a)anthracene	2017/08/17	85	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5123581	Benzo(a)pyrene	2017/08/17	82	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5123581	Benzo(b/j)fluoranthene	2017/08/17	94	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
5123581	Benzo(g,h,i)perylene	2017/08/17	73	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5123581	Benzo(k)fluoranthene	2017/08/17	86	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5123581	Chrysene	2017/08/17	86	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5123581	Dibenz(a,h)anthracene	2017/08/17	93	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5123581	Fluoranthene	2017/08/17	94	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5123581	Fluorene	2017/08/17	100	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
5123581	Indeno(1,2,3-cd)pyrene	2017/08/17	91	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5123581	Naphthalene	2017/08/17	80	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5123581	Phenanthrene	2017/08/17	90	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5123581	Pyrene	2017/08/17	97	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5125066	Chromium (VI)	2017/08/18	82	75 - 125	90	80 - 120	<0.2	ug/g	0.19	35
5125703	Acid Extractable Aluminum (Al)	2017/08/18	NC	75 - 125	96	80 - 120	<50	ug/g		
5125703	Acid Extractable Antimony (Sb)	2017/08/18	72 (1)	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5125703	Acid Extractable Arsenic (As)	2017/08/18	95	75 - 125	101	80 - 120	<1.0	ug/g	2.9	30
5125703	Acid Extractable Barium (Ba)	2017/08/18	NC	75 - 125	95	80 - 120	<0.50	ug/g	4.4	30
5125703	Acid Extractable Beryllium (Be)	2017/08/18	101	75 - 125	100	80 - 120	<0.20	ug/g	2.5	30
5125703	Acid Extractable Bismuth (Bi)	2017/08/18	94	75 - 125	97	80 - 120	<1.0	ug/g		
5125703	Acid Extractable Boron (B)	2017/08/18	92	75 - 125	97	80 - 120	<5.0	ug/g	NC	30
5125703	Acid Extractable Cadmium (Cd)	2017/08/18	97	75 - 125	100	80 - 120	<0.10	ug/g	4.4	30

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 #: B7H7524
Report Date: 2017/08/19

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5125703	Acid Extractable Calcium (Ca)	2017/08/18	NC	75 - 125	80	80 - 120	<50	ug/g		
5125703	Acid Extractable Chromium (Cr)	2017/08/18	NC	75 - 125	100	80 - 120	<1.0	ug/g	0.95	30
5125703	Acid Extractable Cobalt (Co)	2017/08/18	NC	75 - 125	102	80 - 120	<0.10	ug/g	0.25	30
5125703	Acid Extractable Copper (Cu)	2017/08/18	NC	75 - 125	101	80 - 120	<0.50	ug/g	3.2	30
5125703	Acid Extractable Iron (Fe)	2017/08/18	NC	75 - 125	99	80 - 120	<50	ug/g		
5125703	Acid Extractable Lead (Pb)	2017/08/18	97	75 - 125	101	80 - 120	<1.0	ug/g	2.5	30
5125703	Acid Extractable Magnesium (Mg)	2017/08/18	NC	75 - 125	102	80 - 120	<50	ug/g		
5125703	Acid Extractable Manganese (Mn)	2017/08/18	NC	75 - 125	97	80 - 120	<1.0	ug/g		
5125703	Acid Extractable Molybdenum (Mo)	2017/08/18	95	75 - 125	98	80 - 120	<0.50	ug/g	6.2	30
5125703	Acid Extractable Nickel (Ni)	2017/08/18	NC	75 - 125	105	80 - 120	<0.50	ug/g	0.30	30
5125703	Acid Extractable Phosphorus (P)	2017/08/18	NC	75 - 125	94	80 - 120	<50	ug/g		
5125703	Acid Extractable Potassium (K)	2017/08/18	NC	75 - 125	92	80 - 120	<200	ug/g		
5125703	Acid Extractable Selenium (Se)	2017/08/18	96	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
5125703	Acid Extractable Silver (Ag)	2017/08/18	99	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
5125703	Acid Extractable Sodium (Na)	2017/08/18	NC	75 - 125	92	80 - 120	<50	ug/g		
5125703	Acid Extractable Strontium (Sr)	2017/08/18	NC	75 - 125	100	80 - 120	<1.0	ug/g		
5125703	Acid Extractable Thallium (Tl)	2017/08/18	97	75 - 125	101	80 - 120	<0.050	ug/g	2.9	30
5125703	Acid Extractable Tin (Sn)	2017/08/18	101	75 - 125	94	80 - 120	<1.0	ug/g		
5125703	Acid Extractable Uranium (U)	2017/08/18	101	75 - 125	101	80 - 120	<0.050	ug/g	1.6	30
5125703	Acid Extractable Vanadium (V)	2017/08/18	NC	75 - 125	98	80 - 120	<5.0	ug/g	1.0	30
5125703	Acid Extractable Zinc (Zn)	2017/08/18	NC	75 - 125	102	80 - 120	<5.0	ug/g	0.099	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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 Service 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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #: 618826
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#618826-15-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	SHAHAN CHOWDHURY		

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)

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: ~~24HR~~
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 ICPMS Metals (Soil)	Hexavalent Chromium in Soil by IC							# of Bottles	Comments
1		VS 606	17/08/17	1200 HRS	SOIL		X	X	X							1	
2		VS607		1215 HRS			X	X	X							1	
3		VS608		1230 HRS			X	X	X							1	
4		VS609		1245 HRS			X	X	X							1	
5		VS610		1300 HRS			X	X	X							1	
6		VS611		1315 HRS			X	X	X							1	
7																	
8																	
9																	On ice packs
10																	

RECEIVED IN OTTAWA

17-Aug-17 14:00
Alison Cameron
B7H7524
MVA OTT-001

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
SHAHAN CHOWDHURY	17/08/17	1330 HRS	Mariana Bassan/Bassan	2017/08/17	14:00	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	22, 22, 22	Present	✓	
		Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS 606	EYP873-02	Acid Extractable Cobalt (Co)	22	27	0.10	ug/g
VS 606	EYP873-02	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 610	EYP877-02	Acid Extractable Cobalt (Co)	22	33	0.10	ug/g
VS 610	EYP877-02	Acid Extractable Vanadium (V)	86	110	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.

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. #: 618826-16-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/24
Report #: R4674022
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7I2402
Received: 2017/08/23, 14:00

Sample Matrix: Soil
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	7	N/A	2017/08/24	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	7	2017/08/24	2017/08/24	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	7	2017/08/24	2017/08/24	CAM SOP-00447	EPA 6020B m
Moisture	7	N/A	2017/08/24	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	7	2017/08/23	2017/08/23	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-16-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/24
Report #: R4674022
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7I2402
Received: 2017/08/23, 14:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EZM879	EZM880	EZM881	EZM882	EZM883		
Sampling Date			2017/08/23 08:00	2017/08/23 08:30	2017/08/23 09:00	2017/08/23 09:30	2017/08/23 10:00		
COC Number			618826-16-01	618826-16-01	618826-16-01	618826-16-01	618826-16-01		
	UNITS	Criteria	VS 612	VS 613	VS 614	VS 615	VS 1615	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5134184
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	1.0	<1.0	<1.0	1.0	5134184
Acid Extractable Barium (Ba)	ug/g	**390**	58	26	330	320	350	0.50	5134184
Acid Extractable Beryllium (Be)	ug/g	**4**	0.32	<0.20	0.85	0.79	0.82	0.20	5134184
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5134184
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	0.10	<0.10	<0.10	0.10	5134184
Acid Extractable Chromium (Cr)	ug/g	**160**	27	13	97	90	98	1.0	5134184
Acid Extractable Cobalt (Co)	ug/g	**22**	5.3	3.1	**24**	**26**	**28**	0.10	5134184
Acid Extractable Copper (Cu)	ug/g	**140**	12	6.1	50	51	58	0.50	5134184
Acid Extractable Lead (Pb)	ug/g	**120**	3.0	2.0	8.4	6.5	6.1	1.0	5134184
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5134184
Acid Extractable Nickel (Ni)	ug/g	**100**	14	7.4	57	55	58	0.50	5134184
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5134184
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5134184
Acid Extractable Thallium (Tl)	ug/g	**1**	0.12	<0.050	0.41	0.41	0.45	0.050	5134184
Acid Extractable Uranium (U)	ug/g	**23**	1.1	0.64	1.6	1.1	1.2	0.050	5134184
Acid Extractable Vanadium (V)	ug/g	**86**	26	19	**95**	**100**	**110**	5.0	5134184
Acid Extractable Zinc (Zn)	ug/g	**340**	31	18	120	120	130	5.0	5134184
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5134184

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 #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EZM884	EZM885		
Sampling Date			2017/08/23 10:30	2017/08/23 11:00		
COC Number			618826-16-01	618826-16-01		
	UNITS	**Criteria**	**VS 616**	**VS 617**	**RDL**	**QC Batch**
Metals						
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	0.20	5134184
Acid Extractable Arsenic (As)	ug/g	**18**	1.0	<1.0	1.0	5134184
Acid Extractable Barium (Ba)	ug/g	**390**	**420**	23	0.50	5134184
Acid Extractable Beryllium (Be)	ug/g	**4**	1.0	<0.20	0.20	5134184
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	5.0	5134184
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.16	<0.10	0.10	5134184
Acid Extractable Chromium (Cr)	ug/g	**160**	130	14	1.0	5134184
Acid Extractable Cobalt (Co)	ug/g	**22**	**30**	3.3	0.10	5134184
Acid Extractable Copper (Cu)	ug/g	**140**	62	5.2	0.50	5134184
Acid Extractable Lead (Pb)	ug/g	**120**	7.7	2.5	1.0	5134184
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.54	<0.50	0.50	5134184
Acid Extractable Nickel (Ni)	ug/g	**100**	71	7.3	0.50	5134184
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	0.50	5134184
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	0.20	5134184
Acid Extractable Thallium (Tl)	ug/g	**1**	0.52	<0.050	0.050	5134184
Acid Extractable Uranium (U)	ug/g	**23**	1.7	0.62	0.050	5134184
Acid Extractable Vanadium (V)	ug/g	**86**	**120**	19	5.0	5134184
Acid Extractable Zinc (Zn)	ug/g	**340**	140	16	5.0	5134184
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	0.050	5134184

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 #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EZM879	EZM879	EZM880	EZM881	EZM882		
Sampling Date			2017/08/23 08:00	2017/08/23 08:00	2017/08/23 08:30	2017/08/23 09:00	2017/08/23 09:30		
COC Number			618826-16-01	618826-16-01	618826-16-01	618826-16-01	618826-16-01		
	UNITS	Criteria	VS 612	VS 612 Lab-Dup	VS 613	VS 614	VS 615	RDL	QC Batch
Inorganics									
Moisture	%	-	17	16	21	28	30	0.2	5132396
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	5132426
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5132431
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5132431
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0071	<0.0050	0.0050	5132431
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	0.018	<0.0050	0.0050	5132431
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	0.013	<0.0050	0.0050	5132431
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.021	<0.0050	0.0050	5132431
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	0.014	<0.0050	0.0050	5132431
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0065	<0.0050	0.0050	5132431
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	0.016	<0.0050	0.0050	5132431
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5132431
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	0.044	<0.0050	0.0050	5132431
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5132431
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	0.010	<0.0050	0.0050	5132431
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5132431
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5132431
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5132431
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	0.027	<0.0050	0.0050	5132431
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	0.036	<0.0050	0.0050	5132431
Surrogate Recovery (%)									
D10-Anthracene	%	-	99	98	97	98	99		5132431
D14-Terphenyl (FS)	%	-	91	91	90	92	90		5132431
D8-Acenaphthylene	%	-	83	84	84	85	85		5132431

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 Job #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EZM883	EZM884	EZM885		
Sampling Date			2017/08/23 10:00	2017/08/23 10:30	2017/08/23 11:00		
COC Number			618826-16-01	618826-16-01	618826-16-01		
	UNITS	Criteria	VS 1615	VS 616	VS 617	RDL	QC Batch
Inorganics							
Moisture	%	-	34	31	20	0.2	5132396
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	0.014	5132426
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	0.0050	5132431
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	5132431
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	0.0050	5132431
Surrogate Recovery (%)							
D10-Anthracene	%	-	101	99	98		5132431
D14-Terphenyl (FS)	%	-	87	91	84		5132431
D8-Acenaphthylene	%	-	81	85	83		5132431

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 #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EZM879	EZM880	EZM881	EZM882	EZM883		
Sampling Date			2017/08/23 08:00	2017/08/23 08:30	2017/08/23 09:00	2017/08/23 09:30	2017/08/23 10:00		
COC Number			618826-16-01	618826-16-01	618826-16-01	618826-16-01	618826-16-01		
	UNITS	**Criteria**	**VS 612**	**VS 613**	**VS 614**	**VS 615**	**VS 1615**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.4	0.3	0.4	0.3	0.4	0.2	5132924

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			EZM884	EZM885		
Sampling Date			2017/08/23 10:30	2017/08/23 11:00		
COC Number			618826-16-01	618826-16-01		
	UNITS	**Criteria**	**VS 616**	**VS 617**	**RDL**	**QC Batch**
Inorganics						
Chromium (VI)	ug/g	**8**	0.6	<0.2	0.2	5132924

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 #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EZM879
Sample ID: VS 612
Matrix: Soil

Collected: 2017/08/23
Shipped:
Received: 2017/08/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5132426	N/A	2017/08/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5132924	2017/08/24	2017/08/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5134184	2017/08/24	2017/08/24	Daniel Teclu
Moisture	BAL	5132396	N/A	2017/08/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5132431	2017/08/23	2017/08/23	Liliana Gaburici

Maxxam ID: EZM879 Dup
Sample ID: VS 612
Matrix: Soil

Collected: 2017/08/23
Shipped:
Received: 2017/08/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5132396	N/A	2017/08/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5132431	2017/08/23	2017/08/23	Liliana Gaburici

Maxxam ID: EZM880
Sample ID: VS 613
Matrix: Soil

Collected: 2017/08/23
Shipped:
Received: 2017/08/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5132426	N/A	2017/08/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5132924	2017/08/24	2017/08/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5134184	2017/08/24	2017/08/24	Daniel Teclu
Moisture	BAL	5132396	N/A	2017/08/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5132431	2017/08/23	2017/08/23	Liliana Gaburici

Maxxam ID: EZM881
Sample ID: VS 614
Matrix: Soil

Collected: 2017/08/23
Shipped:
Received: 2017/08/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5132426	N/A	2017/08/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5132924	2017/08/24	2017/08/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5134184	2017/08/24	2017/08/24	Daniel Teclu
Moisture	BAL	5132396	N/A	2017/08/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5132431	2017/08/23	2017/08/23	Liliana Gaburici

Maxxam ID: EZM882
Sample ID: VS 615
Matrix: Soil

Collected: 2017/08/23
Shipped:
Received: 2017/08/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5132426	N/A	2017/08/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5132924	2017/08/24	2017/08/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5134184	2017/08/24	2017/08/24	Daniel Teclu
Moisture	BAL	5132396	N/A	2017/08/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5132431	2017/08/23	2017/08/23	Liliana Gaburici

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 #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EZM883
Sample ID: VS 1615
Matrix: Soil

Collected: 2017/08/23
Shipped:
Received: 2017/08/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5132426	N/A	2017/08/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5132924	2017/08/24	2017/08/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5134184	2017/08/24	2017/08/24	Daniel Teclu
Moisture	BAL	5132396	N/A	2017/08/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5132431	2017/08/23	2017/08/23	Liliana Gaburici

Maxxam ID: EZM884
Sample ID: VS 616
Matrix: Soil

Collected: 2017/08/23
Shipped:
Received: 2017/08/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5132426	N/A	2017/08/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5132924	2017/08/24	2017/08/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5134184	2017/08/24	2017/08/24	Daniel Teclu
Moisture	BAL	5132396	N/A	2017/08/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5132431	2017/08/23	2017/08/23	Liliana Gaburici

Maxxam ID: EZM885
Sample ID: VS 617
Matrix: Soil

Collected: 2017/08/23
Shipped:
Received: 2017/08/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5132426	N/A	2017/08/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5132924	2017/08/24	2017/08/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5134184	2017/08/24	2017/08/24	Daniel Teclu
Moisture	BAL	5132396	N/A	2017/08/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5132431	2017/08/23	2017/08/23	Liliana Gaburici

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 #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

GENERAL COMMENTS

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

Package 1	21.3°C

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 #: B7I2402
Report Date: 2017/08/24

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5132431	D10-Anthracene	2017/08/23	91	50 - 130	94	50 - 130	97	%		
5132431	D14-Terphenyl (FS)	2017/08/23	86	50 - 130	90	50 - 130	92	%		
5132431	D8-Acenaphthylene	2017/08/23	85	50 - 130	87	50 - 130	87	%		
5132396	Moisture	2017/08/24							4.3	50
5132431	1-Methylnaphthalene	2017/08/23	86	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
5132431	2-Methylnaphthalene	2017/08/23	83	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5132431	Acenaphthene	2017/08/23	92	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
5132431	Acenaphthylene	2017/08/23	87	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5132431	Anthracene	2017/08/23	92	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5132431	Benzo(a)anthracene	2017/08/23	87	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5132431	Benzo(a)pyrene	2017/08/23	79	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5132431	Benzo(b/j)fluoranthene	2017/08/23	90	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5132431	Benzo(g,h,i)perylene	2017/08/23	86	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
5132431	Benzo(k)fluoranthene	2017/08/23	80	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5132431	Chrysene	2017/08/23	87	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5132431	Dibenz(a,h)anthracene	2017/08/23	96	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5132431	Fluoranthene	2017/08/23	96	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
5132431	Fluorene	2017/08/23	109	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40
5132431	Indeno(1,2,3-cd)pyrene	2017/08/23	93	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5132431	Naphthalene	2017/08/23	78	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5132431	Phenanthrene	2017/08/23	87	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5132431	Pyrene	2017/08/23	97	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5132924	Chromium (VI)	2017/08/24	67 (1)	75 - 125	87	80 - 120	<0.2	ug/g	NC	35
5134184	Acid Extractable Antimony (Sb)	2017/08/24	89	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5134184	Acid Extractable Arsenic (As)	2017/08/24	93	75 - 125	100	80 - 120	<1.0	ug/g	11	30
5134184	Acid Extractable Barium (Ba)	2017/08/24	NC	75 - 125	94	80 - 120	<0.50	ug/g	0.34	30
5134184	Acid Extractable Beryllium (Be)	2017/08/24	97	75 - 125	99	80 - 120	<0.20	ug/g	4.1	30
5134184	Acid Extractable Boron (B)	2017/08/24	90	75 - 125	97	80 - 120	<5.0	ug/g	8.9	30
5134184	Acid Extractable Cadmium (Cd)	2017/08/24	97	75 - 125	100	80 - 120	<0.10	ug/g	1.4	30
5134184	Acid Extractable Chromium (Cr)	2017/08/24	NC	75 - 125	99	80 - 120	<1.0	ug/g	1.8	30
5134184	Acid Extractable Cobalt (Co)	2017/08/24	93	75 - 125	98	80 - 120	<0.10	ug/g	1.4	30

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 #: B7I2402
Report Date: 2017/08/24

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5134184	Acid Extractable Copper (Cu)	2017/08/24	93	75 - 125	99	80 - 120	<0.50	ug/g	0.057	30
5134184	Acid Extractable Lead (Pb)	2017/08/24	93	75 - 125	100	80 - 120	<1.0	ug/g	0.86	30
5134184	Acid Extractable Mercury (Hg)	2017/08/24	95	75 - 125	103	80 - 120	<0.050	ug/g		
5134184	Acid Extractable Molybdenum (Mo)	2017/08/24	98	75 - 125	99	80 - 120	<0.50	ug/g	25	30
5134184	Acid Extractable Nickel (Ni)	2017/08/24	88	75 - 125	101	80 - 120	<0.50	ug/g	0.43	30
5134184	Acid Extractable Selenium (Se)	2017/08/24	96	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
5134184	Acid Extractable Silver (Ag)	2017/08/24	97	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
5134184	Acid Extractable Thallium (Tl)	2017/08/24	94	75 - 125	100	80 - 120	<0.050	ug/g	8.1	30
5134184	Acid Extractable Uranium (U)	2017/08/24	95	75 - 125	99	80 - 120	<0.050	ug/g	2.9	30
5134184	Acid Extractable Vanadium (V)	2017/08/24	NC	75 - 125	98	80 - 120	<5.0	ug/g	4.3	30
5134184	Acid Extractable Zinc (Zn)	2017/08/24	NC	75 - 125	99	80 - 120	<5.0	ug/g	0.45	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x 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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #: 618826
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#618826-16-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	SHAHAN CHOWDHURY		

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)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals (Soil)	Hexavalent Chromium in Soil by IC	# of Bottles	Comments
1		VS 612	17/08/23	0800 HRS	SOIL	X	X	X	1	
2		VS 613		0830 HRS		X	X	X	1	
3		VS 614		0900 HRS		X	X	X	1	
4		VS 615		0930 HRS		X	X	X	1	
5		VS 1615		1000 HRS		X	X	X	1	
6		VS 616		1030 HRS		X	X	X	1	
7		VS 617		1100 HRS		X	X	X	1	
8										
9										
10										ON the Ice Pack

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: ___ Time Required: 24HRS ☒
Rush Confirmation Number: ___ *(call lab for #)*

23-Aug-17 14:00
Alison Cameron
B7I2402
KIV 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 Recei	Custody Seal	Yes	No
SHAHAN CHOWDHURY	17/08/23	12:00HRS	[illegible]	24/08/23	14:00	0		22, 21, 21	Present	X	
									Intact	X	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7I2402
Report Date: 2017/08/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS 614	EZM881-02	Acid Extractable Cobalt (Co)	22	24	0.10	ug/g
VS 614	EZM881-02	Acid Extractable Vanadium (V)	86	95	5.0	ug/g
VS 615	EZM882-02	Acid Extractable Cobalt (Co)	22	26	0.10	ug/g
VS 615	EZM882-02	Acid Extractable Vanadium (V)	86	100	5.0	ug/g
VS 1615	EZM883-02	Acid Extractable Cobalt (Co)	22	28	0.10	ug/g
VS 1615	EZM883-02	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 616	EZM884-02	Acid Extractable Barium (Ba)	390	420	0.50	ug/g
VS 616	EZM884-02	Acid Extractable Cobalt (Co)	22	30	0.10	ug/g
VS 616	EZM884-02	Acid Extractable Vanadium (V)	86	120	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.

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. #: 618826-15-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/19
Report #: R4661909
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H7524
Received: 2017/08/17, 14:00

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	6	N/A	2017/08/18	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	6	2017/08/18	2017/08/18	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	6	2017/08/18	2017/08/18	CAM SOP-00447	EPA 6020B m
Moisture	6	N/A	2017/08/17	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	6	2017/08/17	2017/08/17	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-15-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/19
Report #: R4661909
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H7524
Received: 2017/08/17, 14:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EYP873	EYP874	EYP875	EYP876	EYP877		
Sampling Date			2017/08/17 12:00	2017/08/17 12:15	2017/08/17 12:30	2017/08/17 12:45	2017/08/17 13:00		
COC Number			618826-15-01	618826-15-01	618826-15-01	618826-15-01	618826-15-01		
	UNITS	**Criteria**	**VS 606**	**VS 607**	**VS 608**	**VS 609**	**VS 610**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	30	23	23	26	28	0.2	5123552
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	5123541
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Surrogate Recovery (%)									
D10-Anthracene	%	-	90	88	92	89	93		5123581
D14-Terphenyl (FS)	%	-	93	90	92	90	93		5123581
D8-Acenaphthylene	%	-	79	81	85	81	85		5123581

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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EYP878		
Sampling Date			2017/08/17 13:15		
COC Number			618826-15-01		
	UNITS	**Criteria**	**VS 611**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	-	26	0.2	5123552
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.014	5123541
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	5123581
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	5123581
Anthracene	ug/g	**0.67**	<0.0050	0.0050	5123581
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	5123581
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	5123581
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5123581
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0050	5123581
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5123581
Chrysene	ug/g	**7**	<0.0050	0.0050	5123581
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	5123581
Fluoranthene	ug/g	**0.69**	<0.0050	0.0050	5123581
Fluorene	ug/g	**62**	<0.0050	0.0050	5123581
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	5123581
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5123581
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5123581
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	5123581
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	5123581
Pyrene	ug/g	**78**	<0.0050	0.0050	5123581
Surrogate Recovery (%)					
D10-Anthracene	%	-	90		5123581
D14-Terphenyl (FS)	%	-	92		5123581
D8-Acenaphthylene	%	-	85		5123581

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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EYP873	EYP874	EYP875	EYP876	EYP877		
Sampling Date			2017/08/17 12:00	2017/08/17 12:15	2017/08/17 12:30	2017/08/17 12:45	2017/08/17 13:00		
COC Number			618826-15-01	618826-15-01	618826-15-01	618826-15-01	618826-15-01		
	UNITS	**Criteria**	**VS 606**	**VS 607**	**VS 608**	**VS 609**	**VS 610**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.4	<0.2	<0.2	<0.2	0.3	0.2	5125066
Metals									
Acid Extractable Aluminum (Al)	ug/g	**-**	36000	11000	11000	17000	40000	50	5125703
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5125703
Acid Extractable Arsenic (As)	ug/g	**18**	1.0	1.8	1.9	2.4	<1.0	1.0	5125703
Acid Extractable Barium (Ba)	ug/g	**390**	390	140	140	180	380	0.50	5125703
Acid Extractable Beryllium (Be)	ug/g	**4**	0.87	0.40	0.39	0.54	1.1	0.20	5125703
Acid Extractable Bismuth (Bi)	ug/g	**-**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5125703
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	7.7	<5.0	5.0	5125703
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.13	<0.10	<0.10	<0.10	0.18	0.10	5125703
Acid Extractable Calcium (Ca)	ug/g	**-**	11000	25000	25000	28000	11000	50	5125703
Acid Extractable Chromium (Cr)	ug/g	**160**	110	27	27	39	110	1.0	5125703
Acid Extractable Cobalt (Co)	ug/g	**22**	**27**	8.6	8.9	12	**33**	0.10	5125703
Acid Extractable Copper (Cu)	ug/g	**140**	58	17	18	23	58	0.50	5125703
Acid Extractable Iron (Fe)	ug/g	**-**	56000	21000	22000	29000	55000	50	5125703
Acid Extractable Lead (Pb)	ug/g	**120**	6.5	3.8	3.9	5.4	7.4	1.0	5125703
Acid Extractable Magnesium (Mg)	ug/g	**-**	21000	13000	13000	16000	20000	50	5125703
Acid Extractable Manganese (Mn)	ug/g	**-**	970	380	390	540	1000	1.0	5125703
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.71	0.76	0.86	<0.50	0.50	5125703
Acid Extractable Nickel (Ni)	ug/g	**100**	67	16	17	25	65	0.50	5125703
Acid Extractable Phosphorus (P)	ug/g	**-**	1100	1100	1100	1100	1100	50	5125703
Acid Extractable Potassium (K)	ug/g	**-**	13000	4100	4300	6200	12000	200	5125703
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5125703
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5125703
Acid Extractable Sodium (Na)	ug/g	**-**	2200	760	760	1100	1800	50	5125703
Acid Extractable Strontium (Sr)	ug/g	**-**	64	58	57	71	67	1.0	5125703
Acid Extractable Thallium (Tl)	ug/g	**1**	0.54	0.15	0.15	0.21	0.50	0.050	5125703
Acid Extractable Tin (Sn)	ug/g	**-**	1.5	<1.0	<1.0	<1.0	1.5	1.0	5125703
Acid Extractable Uranium (U)	ug/g	**23**	1.1	0.90	0.80	0.88	1.2	0.050	5125703
Acid Extractable Vanadium (V)	ug/g	**86**	**120**	42	44	57	**110**	5.0	5125703
Acid Extractable Zinc (Zn)	ug/g	**340**	150	48	49	70	140	5.0	5125703

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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EYP878		
Sampling Date			2017/08/17 13:15		
COC Number			618826-15-01		
	UNITS	**Criteria**	**VS 611**	**RDL**	**QC Batch**
Inorganics					
Chromium (VI)	ug/g	**8**	<0.2	0.2	5125066
Metals					
Acid Extractable Aluminum (Al)	ug/g	**-**	18000	50	5125703
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	0.20	5125703
Acid Extractable Arsenic (As)	ug/g	**18**	2.7	1.0	5125703
Acid Extractable Barium (Ba)	ug/g	**390**	180	0.50	5125703
Acid Extractable Beryllium (Be)	ug/g	**4**	0.64	0.20	5125703
Acid Extractable Bismuth (Bi)	ug/g	**-**	<1.0	1.0	5125703
Acid Extractable Boron (B)	ug/g	**120**	8.3	5.0	5125703
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.10	5125703
Acid Extractable Calcium (Ca)	ug/g	**-**	29000	50	5125703
Acid Extractable Chromium (Cr)	ug/g	**160**	42	1.0	5125703
Acid Extractable Cobalt (Co)	ug/g	**22**	13	0.10	5125703
Acid Extractable Copper (Cu)	ug/g	**140**	25	0.50	5125703
Acid Extractable Iron (Fe)	ug/g	**-**	31000	50	5125703
Acid Extractable Lead (Pb)	ug/g	**120**	5.7	1.0	5125703
Acid Extractable Magnesium (Mg)	ug/g	**-**	17000	50	5125703
Acid Extractable Manganese (Mn)	ug/g	**-**	580	1.0	5125703
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.75	0.50	5125703
Acid Extractable Nickel (Ni)	ug/g	**100**	27	0.50	5125703
Acid Extractable Phosphorus (P)	ug/g	**-**	1100	50	5125703
Acid Extractable Potassium (K)	ug/g	**-**	6600	200	5125703
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	0.50	5125703
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	0.20	5125703
Acid Extractable Sodium (Na)	ug/g	**-**	1200	50	5125703
Acid Extractable Strontium (Sr)	ug/g	**-**	72	1.0	5125703
Acid Extractable Thallium (Tl)	ug/g	**1**	0.23	0.050	5125703
Acid Extractable Tin (Sn)	ug/g	**-**	<1.0	1.0	5125703
Acid Extractable Uranium (U)	ug/g	**23**	0.89	0.050	5125703
Acid Extractable Vanadium (V)	ug/g	**86**	62	5.0	5125703

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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EYP878		
Sampling Date			2017/08/17 13:15		
COC Number			618826-15-01		
	UNITS	**Criteria**	**VS 611**	**RDL**	**QC Batch**
Acid Extractable Zinc (Zn)	ug/g	**340**	74	5.0	5125703

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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EYP873
Sample ID: VS 606
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5123541	N/A	2017/08/18	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu
Moisture	BAL	5123552	N/A	2017/08/17	Paul Rubinato
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

Maxxam ID: EYP874
Sample ID: VS 607
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5123541	N/A	2017/08/18	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu
Moisture	BAL	5123552	N/A	2017/08/17	Paul Rubinato
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

Maxxam ID: EYP875
Sample ID: VS 608
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5123541	N/A	2017/08/18	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu
Moisture	BAL	5123552	N/A	2017/08/17	Paul Rubinato
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

Maxxam ID: EYP876
Sample ID: VS 609
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5123541	N/A	2017/08/18	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu
Moisture	BAL	5123552	N/A	2017/08/17	Paul Rubinato
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

Maxxam ID: EYP877
Sample ID: VS 610
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5123541	N/A	2017/08/18	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin

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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EYP877
Sample ID: VS 610
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu
Moisture	BAL	5123552	N/A	2017/08/17	Paul Rubinato
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

Maxxam ID: EYP878
Sample ID: VS 611
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5123541	N/A	2017/08/18	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu
Moisture	BAL	5123552	N/A	2017/08/17	Paul Rubinato
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

GENERAL COMMENTS

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

Package 1	22.0°C

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 #: B7H7524
Report Date: 2017/08/19

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5123581	D10-Anthracene	2017/08/17	112	50 - 130	100	50 - 130	95	%		
5123581	D14-Terphenyl (FS)	2017/08/17	124	50 - 130	113	50 - 130	97	%		
5123581	D8-Acenaphthylene	2017/08/17	79	50 - 130	83	50 - 130	82	%		
5123552	Moisture	2017/08/17							0.36	50
5123581	1-Methylnaphthalene	2017/08/17	86	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5123581	2-Methylnaphthalene	2017/08/17	82	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5123581	Acenaphthene	2017/08/17	96	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
5123581	Acenaphthylene	2017/08/17	79	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5123581	Anthracene	2017/08/17	92	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5123581	Benzo(a)anthracene	2017/08/17	85	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5123581	Benzo(a)pyrene	2017/08/17	82	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5123581	Benzo(b/j)fluoranthene	2017/08/17	94	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
5123581	Benzo(g,h,i)perylene	2017/08/17	73	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5123581	Benzo(k)fluoranthene	2017/08/17	86	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5123581	Chrysene	2017/08/17	86	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5123581	Dibenz(a,h)anthracene	2017/08/17	93	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5123581	Fluoranthene	2017/08/17	94	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5123581	Fluorene	2017/08/17	100	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
5123581	Indeno(1,2,3-cd)pyrene	2017/08/17	91	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5123581	Naphthalene	2017/08/17	80	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5123581	Phenanthrene	2017/08/17	90	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5123581	Pyrene	2017/08/17	97	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5125066	Chromium (VI)	2017/08/18	82	75 - 125	90	80 - 120	<0.2	ug/g	0.19	35
5125703	Acid Extractable Aluminum (Al)	2017/08/18	NC	75 - 125	96	80 - 120	<50	ug/g		
5125703	Acid Extractable Antimony (Sb)	2017/08/18	72 (1)	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5125703	Acid Extractable Arsenic (As)	2017/08/18	95	75 - 125	101	80 - 120	<1.0	ug/g	2.9	30
5125703	Acid Extractable Barium (Ba)	2017/08/18	NC	75 - 125	95	80 - 120	<0.50	ug/g	4.4	30
5125703	Acid Extractable Beryllium (Be)	2017/08/18	101	75 - 125	100	80 - 120	<0.20	ug/g	2.5	30
5125703	Acid Extractable Bismuth (Bi)	2017/08/18	94	75 - 125	97	80 - 120	<1.0	ug/g		
5125703	Acid Extractable Boron (B)	2017/08/18	92	75 - 125	97	80 - 120	<5.0	ug/g	NC	30
5125703	Acid Extractable Cadmium (Cd)	2017/08/18	97	75 - 125	100	80 - 120	<0.10	ug/g	4.4	30

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 #: B7H7524
Report Date: 2017/08/19

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5125703	Acid Extractable Calcium (Ca)	2017/08/18	NC	75 - 125	80	80 - 120	<50	ug/g		
5125703	Acid Extractable Chromium (Cr)	2017/08/18	NC	75 - 125	100	80 - 120	<1.0	ug/g	0.95	30
5125703	Acid Extractable Cobalt (Co)	2017/08/18	NC	75 - 125	102	80 - 120	<0.10	ug/g	0.25	30
5125703	Acid Extractable Copper (Cu)	2017/08/18	NC	75 - 125	101	80 - 120	<0.50	ug/g	3.2	30
5125703	Acid Extractable Iron (Fe)	2017/08/18	NC	75 - 125	99	80 - 120	<50	ug/g		
5125703	Acid Extractable Lead (Pb)	2017/08/18	97	75 - 125	101	80 - 120	<1.0	ug/g	2.5	30
5125703	Acid Extractable Magnesium (Mg)	2017/08/18	NC	75 - 125	102	80 - 120	<50	ug/g		
5125703	Acid Extractable Manganese (Mn)	2017/08/18	NC	75 - 125	97	80 - 120	<1.0	ug/g		
5125703	Acid Extractable Molybdenum (Mo)	2017/08/18	95	75 - 125	98	80 - 120	<0.50	ug/g	6.2	30
5125703	Acid Extractable Nickel (Ni)	2017/08/18	NC	75 - 125	105	80 - 120	<0.50	ug/g	0.30	30
5125703	Acid Extractable Phosphorus (P)	2017/08/18	NC	75 - 125	94	80 - 120	<50	ug/g		
5125703	Acid Extractable Potassium (K)	2017/08/18	NC	75 - 125	92	80 - 120	<200	ug/g		
5125703	Acid Extractable Selenium (Se)	2017/08/18	96	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
5125703	Acid Extractable Silver (Ag)	2017/08/18	99	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
5125703	Acid Extractable Sodium (Na)	2017/08/18	NC	75 - 125	92	80 - 120	<50	ug/g		
5125703	Acid Extractable Strontium (Sr)	2017/08/18	NC	75 - 125	100	80 - 120	<1.0	ug/g		
5125703	Acid Extractable Thallium (Tl)	2017/08/18	97	75 - 125	101	80 - 120	<0.050	ug/g	2.9	30
5125703	Acid Extractable Tin (Sn)	2017/08/18	101	75 - 125	94	80 - 120	<1.0	ug/g		
5125703	Acid Extractable Uranium (U)	2017/08/18	101	75 - 125	101	80 - 120	<0.050	ug/g	1.6	30
5125703	Acid Extractable Vanadium (V)	2017/08/18	NC	75 - 125	98	80 - 120	<5.0	ug/g	1.0	30
5125703	Acid Extractable Zinc (Zn)	2017/08/18	NC	75 - 125	102	80 - 120	<5.0	ug/g	0.099	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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 #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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 Service 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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #: 618826
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#618826-15-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	SHAHAN CHOWDHURY		

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)

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: ~~24HR~~
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 ICPMS Metals (Soil)	Hexavalent Chromium in Soil by IC							# of Bottles	Comments
1		VS 606	17/08/17	1200 HRS	SOIL		X	X	X							1	
2		VS607		1215 HRS			X	X	X							1	
3		VS608		1230 HRS			X	X	X							1	
4		VS609		1245 HRS			X	X	X							1	
5		VS610		1300 HRS			X	X	X							1	
6		VS611		1315 HRS			X	X	X							1	
7																	
8																	
9																	On ice packs
10																	

RECEIVED IN OTTAWA

17-Aug-17 14:00
Alison Cameron
B7H7524
MVA OTT-001

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
SHAHAN CHOWDHURY	17/08/17	1330 HRS	Mariana Bassan/Bassan	2017/08/17	14:00	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	22, 22, 22	Present	✓	
		Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7H7524
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS 606	EYP873-02	Acid Extractable Cobalt (Co)	22	27	0.10	ug/g
VS 606	EYP873-02	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 610	EYP877-02	Acid Extractable Cobalt (Co)	22	33	0.10	ug/g
VS 610	EYP877-02	Acid Extractable Vanadium (V)	86	110	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.

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. #: 618826-13-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/19
Report #: R4661907
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H7235
Received: 2017/08/17, 11:00

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	4	N/A	2017/08/18	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	4	2017/08/18	2017/08/18	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	4	2017/08/18	2017/08/18	CAM SOP-00447	EPA 6020B m
Moisture	4	N/A	2017/08/17	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	4	2017/08/17	2017/08/17	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-13-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/19
Report #: R4661907
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H7235
Received: 2017/08/17, 11:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7H7235
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EYO163	EYO164	EYO165	EYO165	EYO166		
Sampling Date			2017/08/17 08:00	2017/08/17 08:30	2017/08/17 09:00	2017/08/17 09:00	2017/08/17 09:30		
COC Number			618826-13-01	618826-13-01	618826-13-01	618826-13-01	618826-13-01		
	UNITS	**Criteria**	**VS 603**	**VS 604**	**VS 605**	**VS 605 Lab-Dup**	**VS 1605**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5125703
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	1.4	1.4	1.4	1.0	5125703
Acid Extractable Barium (Ba)	ug/g	**390**	**400**	28	**420**	**440**	**410**	0.50	5125703
Acid Extractable Beryllium (Be)	ug/g	**4**	0.94	0.21	0.98	1.0	1.1	0.20	5125703
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5125703
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.14	<0.10	0.30	0.29	0.21	0.10	5125703
Acid Extractable Chromium (Cr)	ug/g	**160**	120	15	110	110	110	1.0	5125703
Acid Extractable Cobalt (Co)	ug/g	**22**	**26**	3.5	**27**	**27**	**24**	0.10	5125703
Acid Extractable Copper (Cu)	ug/g	**140**	59	5.6	43	45	45	0.50	5125703
Acid Extractable Lead (Pb)	ug/g	**120**	7.2	2.1	7.9	8.1	7.6	1.0	5125703
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	0.53	<0.50	0.50	5125703
Acid Extractable Nickel (Ni)	ug/g	**100**	67	7.5	61	61	57	0.50	5125703
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5125703
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5125703
Acid Extractable Thallium (Tl)	ug/g	**1**	0.47	<0.050	0.51	0.53	0.49	0.050	5125703
Acid Extractable Uranium (U)	ug/g	**23**	1.9	0.81	1.7	1.7	1.7	0.050	5125703
Acid Extractable Vanadium (V)	ug/g	**86**	**110**	21	**110**	**110**	**110**	5.0	5125703
Acid Extractable Zinc (Zn)	ug/g	**340**	140	21	150	150	150	5.0	5125703
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5125703

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 Job #: B7H7235
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EYO163	EYO163	EYO164	EYO165	EYO166		
Sampling Date			2017/08/17 08:00	2017/08/17 08:00	2017/08/17 08:30	2017/08/17 09:00	2017/08/17 09:30		
COC Number			618826-13-01	618826-13-01	618826-13-01	618826-13-01	618826-13-01		
	UNITS	Criteria	VS 603	VS 603 Lab-Dup	VS 604	VS 605	VS 1605	RDL	QC Batch
Inorganics									
Moisture	%	-	29		18	28	29	0.2	5123552
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	5123541
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5123581
Surrogate Recovery (%)									
D10-Anthracene	%	-	90	94	89	93	89		5123581
D14-Terphenyl (FS)	%	-	91	96	88	94	89		5123581
D8-Acenaphthylene	%	-	76	81	76	79	81		5123581

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 Job #: B7H7235
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EYO163	EYO164	EYO165	EYO165	EYO166		
Sampling Date			2017/08/17 08:00	2017/08/17 08:30	2017/08/17 09:00	2017/08/17 09:00	2017/08/17 09:30		
COC Number			618826-13-01	618826-13-01	618826-13-01	618826-13-01	618826-13-01		
	UNITS	**Criteria**	**VS 603**	**VS 604**	**VS 605**	**VS 605 Lab-Dup**	**VS 1605**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.3	0.2	0.5	0.5	0.5	0.2	5125066

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 Job #: B7H7235
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EYO163
Sample ID: VS 603
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5123541	N/A	2017/08/18	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu
Moisture	BAL	5123552	N/A	2017/08/17	Paul Rubinato
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

Maxxam ID: EYO163 Dup
Sample ID: VS 603
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

Maxxam ID: EYO164
Sample ID: VS 604
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5123541	N/A	2017/08/18	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu
Moisture	BAL	5123552	N/A	2017/08/17	Paul Rubinato
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

Maxxam ID: EYO165
Sample ID: VS 605
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5123541	N/A	2017/08/18	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu
Moisture	BAL	5123552	N/A	2017/08/17	Paul Rubinato
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

Maxxam ID: EYO165 Dup
Sample ID: VS 605
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu

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 #: B7H7235
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EYO166
Sample ID: VS 1605
Matrix: Soil

Collected: 2017/08/17
Shipped:
Received: 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5123541	N/A	2017/08/18	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5125066	2017/08/18	2017/08/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5125703	2017/08/18	2017/08/18	Daniel Teclu
Moisture	BAL	5123552	N/A	2017/08/17	Paul Rubinato
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5123581	2017/08/17	2017/08/17	Liliana Gaburici

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 #: B7H7235
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

GENERAL COMMENTS

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

Package 1	17.3°C

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 #: B7H7235
Report Date: 2017/08/19

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5123581	D10-Anthracene	2017/08/17	112	50 - 130	100	50 - 130	95	%		
5123581	D14-Terphenyl (FS)	2017/08/17	124	50 - 130	113	50 - 130	97	%		
5123581	D8-Acenaphthylene	2017/08/17	79	50 - 130	83	50 - 130	82	%		
5123552	Moisture	2017/08/17							0.36	50
5123581	1-Methylnaphthalene	2017/08/17	86	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5123581	2-Methylnaphthalene	2017/08/17	82	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5123581	Acenaphthene	2017/08/17	96	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
5123581	Acenaphthylene	2017/08/17	79	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5123581	Anthracene	2017/08/17	92	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5123581	Benzo(a)anthracene	2017/08/17	85	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5123581	Benzo(a)pyrene	2017/08/17	82	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5123581	Benzo(b/j)fluoranthene	2017/08/17	94	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
5123581	Benzo(g,h,i)perylene	2017/08/17	73	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5123581	Benzo(k)fluoranthene	2017/08/17	86	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5123581	Chrysene	2017/08/17	86	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5123581	Dibenz(a,h)anthracene	2017/08/17	93	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5123581	Fluoranthene	2017/08/17	94	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5123581	Fluorene	2017/08/17	100	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
5123581	Indeno(1,2,3-cd)pyrene	2017/08/17	91	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5123581	Naphthalene	2017/08/17	80	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5123581	Phenanthrene	2017/08/17	90	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5123581	Pyrene	2017/08/17	97	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5125066	Chromium (VI)	2017/08/18	82	75 - 125	90	80 - 120	<0.2	ug/g	0.19	35
5125703	Acid Extractable Antimony (Sb)	2017/08/18	72 (1)	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5125703	Acid Extractable Arsenic (As)	2017/08/18	95	75 - 125	101	80 - 120	<1.0	ug/g	2.9	30
5125703	Acid Extractable Barium (Ba)	2017/08/18	NC	75 - 125	95	80 - 120	<0.50	ug/g	4.4	30
5125703	Acid Extractable Beryllium (Be)	2017/08/18	101	75 - 125	100	80 - 120	<0.20	ug/g	2.5	30
5125703	Acid Extractable Boron (B)	2017/08/18	92	75 - 125	97	80 - 120	<5.0	ug/g	NC	30
5125703	Acid Extractable Cadmium (Cd)	2017/08/18	97	75 - 125	100	80 - 120	<0.10	ug/g	4.4	30
5125703	Acid Extractable Chromium (Cr)	2017/08/18	NC	75 - 125	100	80 - 120	<1.0	ug/g	0.95	30
5125703	Acid Extractable Cobalt (Co)	2017/08/18	NC	75 - 125	102	80 - 120	<0.10	ug/g	0.25	30

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 #: B7H7235
Report Date: 2017/08/19

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5125703	Acid Extractable Copper (Cu)	2017/08/18	NC	75 - 125	101	80 - 120	<0.50	ug/g	3.2	30
5125703	Acid Extractable Lead (Pb)	2017/08/18	97	75 - 125	101	80 - 120	<1.0	ug/g	2.5	30
5125703	Acid Extractable Mercury (Hg)	2017/08/18	91	75 - 125	95	80 - 120	<0.050	ug/g	NC	30
5125703	Acid Extractable Molybdenum (Mo)	2017/08/18	95	75 - 125	98	80 - 120	<0.50	ug/g	6.2	30
5125703	Acid Extractable Nickel (Ni)	2017/08/18	NC	75 - 125	105	80 - 120	<0.50	ug/g	0.30	30
5125703	Acid Extractable Selenium (Se)	2017/08/18	96	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
5125703	Acid Extractable Silver (Ag)	2017/08/18	99	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
5125703	Acid Extractable Thallium (Tl)	2017/08/18	97	75 - 125	101	80 - 120	<0.050	ug/g	2.9	30
5125703	Acid Extractable Uranium (U)	2017/08/18	101	75 - 125	101	80 - 120	<0.050	ug/g	1.6	30
5125703	Acid Extractable Vanadium (V)	2017/08/18	NC	75 - 125	98	80 - 120	<5.0	ug/g	1.0	30
5125703	Acid Extractable Zinc (Zn)	2017/08/18	NC	75 - 125	102	80 - 120	<5.0	ug/g	0.099	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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 #: B7H7235
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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 Service 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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #: 618826
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#618826-13-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	SHIHAN CHOWDHURY		

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: ___ Time Required: ~~24HR~~ ☒
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 (Soil)	Hexavalent Chromium in Soil by IC	# of Bottles	Comments
1		VS603	17/08/17	0800 HRS	SOIL		X	X	X	1	
2		VS604	↓	0830 HRS	↓		X	X	X	1	
3		VS605	↓	0900 HRS	↓		X	X	X	1	
4		VS1605	↓	0930 HRS	↓		X	X	X	1	
5											
6											
7											
8											
9											
10											ON Site Park

17-Aug-17 11:00
Alison Cameron
B7H7235
KIV OTT-001

RECEIVED IN OTTAWA
DELIVERED 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 Recei	Custody Seal	Yes	No
SHIHAN CHOWDHURY	17/08/17	1030 HRS	Kim Jungwa NS	247/08/17	11.00	8		17, 18, 17	Present	X	
									Intact	X	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7H7235
Report Date: 2017/08/19

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS 603	EYO163-02	Acid Extractable Barium (Ba)	390	400	0.50	ug/g
VS 603	EYO163-02	Acid Extractable Cobalt (Co)	22	26	0.10	ug/g
VS 603	EYO163-02	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 605	EYO165-02	Acid Extractable Barium (Ba)	390	420	0.50	ug/g
VS 605	EYO165-02-Lab Dup	Acid Extractable Barium (Ba)	390	440	0.50	ug/g
VS 605	EYO165-02	Acid Extractable Cobalt (Co)	22	27	0.10	ug/g
VS 605	EYO165-02-Lab Dup	Acid Extractable Cobalt (Co)	22	27	0.10	ug/g
VS 605	EYO165-02	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 605	EYO165-02-Lab Dup	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 1605	EYO166-02	Acid Extractable Barium (Ba)	390	410	0.50	ug/g
VS 1605	EYO166-02	Acid Extractable Cobalt (Co)	22	24	0.10	ug/g
VS 1605	EYO166-02	Acid Extractable Vanadium (V)	86	110	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.

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. #: 618826-12-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/17
Report #: R4657967
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H6254
Received: 2017/08/16, 14:00

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	3	N/A	2017/08/17	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	3	2017/08/17	2017/08/17	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	3	2017/08/17	2017/08/17	CAM SOP-00447	EPA 6020B m
Moisture	3	N/A	2017/08/17	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	3	2017/08/16	2017/08/16	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-12-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/17
Report #: R4657967
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H6254
Received: 2017/08/16, 14:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7H6254
Report Date: 2017/08/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EYJ826	EYJ827	EYJ828	EYJ828		
Sampling Date			2017/08/16 10:00	2017/08/16 10:30	2017/08/16 11:00	2017/08/16 11:00		
COC Number			618826-12-01	618826-12-01	618826-12-01	618826-12-01		
	UNITS	Criteria	VS 600	VS 601	VS 602	VS 602 Lab-Dup	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	5123781
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	1.4	1.4	1.0	5123781
Acid Extractable Barium (Ba)	ug/g	**390**	350	360	**400**	**410**	0.50	5123781
Acid Extractable Beryllium (Be)	ug/g	**4**	0.79	0.79	1.2	1.1	0.20	5123781
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.0	5123781
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.10	0.14	0.20	0.10	5123781
Acid Extractable Chromium (Cr)	ug/g	**160**	100	110	120	120	1.0	5123781
Acid Extractable Cobalt (Co)	ug/g	**22**	**26**	**25**	**41**	**42**	0.10	5123781
Acid Extractable Copper (Cu)	ug/g	**140**	59	64	52	52	0.50	5123781
Acid Extractable Lead (Pb)	ug/g	**120**	6.8	6.5	10	10	1.0	5123781
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	0.60	0.64	0.50	5123781
Acid Extractable Nickel (Ni)	ug/g	**100**	64	65	64	64	0.50	5123781
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	5123781
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	5123781
Acid Extractable Thallium (Tl)	ug/g	**1**	0.44	0.44	0.52	0.52	0.050	5123781
Acid Extractable Uranium (U)	ug/g	**23**	1.3	1.5	1.5	1.5	0.050	5123781
Acid Extractable Vanadium (V)	ug/g	**86**	**110**	**120**	**120**	**110**	5.0	5123781
Acid Extractable Zinc (Zn)	ug/g	**340**	140	140	150	150	5.0	5123781
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.050	5123781

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 Job #: B7H6254
Report Date: 2017/08/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EYJ826	EYJ826	EYJ827	EYJ828		
Sampling Date			2017/08/16 10:00	2017/08/16 10:00	2017/08/16 10:30	2017/08/16 11:00		
COC Number			618826-12-01	618826-12-01	618826-12-01	618826-12-01		
	UNITS	Criteria	VS 600	VS 600 Lab-Dup	VS 601	VS 602	RDL	QC Batch
Inorganics								
Moisture	%	-	29	30	35	29	0.2	5121879
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	0.014	5121330
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5121882
Surrogate Recovery (%)								
D10-Anthracene	%	-	95	91	88	92		5121882
D14-Terphenyl (FS)	%	-	97	94	89	95		5121882
D8-Acenaphthylene	%	-	82	80	75	79		5121882

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 Job #: B7H6254
Report Date: 2017/08/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EYJ826	EYJ827	EYJ828		
Sampling Date			2017/08/16 10:00	2017/08/16 10:30	2017/08/16 11:00		
COC Number			618826-12-01	618826-12-01	618826-12-01		
	UNITS	**Criteria**	**VS 600**	**VS 601**	**VS 602**	**RDL**	**QC Batch**
Inorganics							
Chromium (VI)	ug/g	**8**	0.4	0.6	0.5	0.2	5123003

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 #: B7H6254
Report Date: 2017/08/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EYJ826
Sample ID: VS 600
Matrix: Soil

Collected: 2017/08/16
Shipped:
Received: 2017/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5121330	N/A	2017/08/17	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5123003	2017/08/17	2017/08/17	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5123781	2017/08/17	2017/08/17	Thao Nguyen
Moisture	BAL	5121879	N/A	2017/08/17	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5121882	2017/08/16	2017/08/16	Liliana Gaburici

Maxxam ID: EYJ826 Dup
Sample ID: VS 600
Matrix: Soil

Collected: 2017/08/16
Shipped:
Received: 2017/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5121879	N/A	2017/08/17	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5121882	2017/08/16	2017/08/16	Liliana Gaburici

Maxxam ID: EYJ827
Sample ID: VS 601
Matrix: Soil

Collected: 2017/08/16
Shipped:
Received: 2017/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5121330	N/A	2017/08/17	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5123003	2017/08/17	2017/08/17	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5123781	2017/08/17	2017/08/17	Thao Nguyen
Moisture	BAL	5121879	N/A	2017/08/17	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5121882	2017/08/16	2017/08/16	Liliana Gaburici

Maxxam ID: EYJ828
Sample ID: VS 602
Matrix: Soil

Collected: 2017/08/16
Shipped:
Received: 2017/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5121330	N/A	2017/08/17	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5123003	2017/08/17	2017/08/17	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5123781	2017/08/17	2017/08/17	Thao Nguyen
Moisture	BAL	5121879	N/A	2017/08/17	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5121882	2017/08/16	2017/08/16	Liliana Gaburici

Maxxam ID: EYJ828 Dup
Sample ID: VS 602
Matrix: Soil

Collected: 2017/08/16
Shipped:
Received: 2017/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5123781	2017/08/17	2017/08/17	Thao Nguyen

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 #: B7H6254
Report Date: 2017/08/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

GENERAL COMMENTS

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

Package 1	19.7°C

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 #: B7H6254
Report Date: 2017/08/17

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5121882	D10-Anthracene	2017/08/16	83	50 - 130	88	50 - 130	92	%		
5121882	D14-Terphenyl (FS)	2017/08/16	83	50 - 130	88	50 - 130	91	%		
5121882	D8-Acenaphthylene	2017/08/16	73	50 - 130	77	50 - 130	78	%		
5121879	Moisture	2017/08/17							3.0	50
5121882	1-Methylnaphthalene	2017/08/16	89	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5121882	2-Methylnaphthalene	2017/08/16	85	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5121882	Acenaphthene	2017/08/16	99	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5121882	Acenaphthylene	2017/08/16	83	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5121882	Anthracene	2017/08/16	95	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
5121882	Benzo(a)anthracene	2017/08/16	88	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
5121882	Benzo(a)pyrene	2017/08/16	83	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5121882	Benzo(b/j)fluoranthene	2017/08/16	94	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5121882	Benzo(g,h,i)perylene	2017/08/16	73	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40
5121882	Benzo(k)fluoranthene	2017/08/16	91	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
5121882	Chrysene	2017/08/16	89	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5121882	Dibenz(a,h)anthracene	2017/08/16	92	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
5121882	Fluoranthene	2017/08/16	98	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5121882	Fluorene	2017/08/16	98	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5121882	Indeno(1,2,3-cd)pyrene	2017/08/16	87	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5121882	Naphthalene	2017/08/16	82	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5121882	Phenanthrene	2017/08/16	93	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5121882	Pyrene	2017/08/16	103	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5123003	Chromium (VI)	2017/08/17	87	75 - 125	88	80 - 120	<0.2	ug/g	NC	35
5123781	Acid Extractable Antimony (Sb)	2017/08/17	77	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
5123781	Acid Extractable Arsenic (As)	2017/08/17	96	75 - 125	103	80 - 120	<1.0	ug/g	2.5	30
5123781	Acid Extractable Barium (Ba)	2017/08/17	NC	75 - 125	95	80 - 120	<0.50	ug/g	0.25	30
5123781	Acid Extractable Beryllium (Be)	2017/08/17	95	75 - 125	92	80 - 120	<0.20	ug/g	2.4	30
5123781	Acid Extractable Boron (B)	2017/08/17	84	75 - 125	99	80 - 120	<5.0	ug/g	NC	30
5123781	Acid Extractable Cadmium (Cd)	2017/08/17	103	75 - 125	99	80 - 120	<0.10	ug/g	NC	30
5123781	Acid Extractable Chromium (Cr)	2017/08/17	NC	75 - 125	96	80 - 120	<1.0	ug/g	1.8	30
5123781	Acid Extractable Cobalt (Co)	2017/08/17	NC	75 - 125	97	80 - 120	<0.10	ug/g	1.7	30

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 #: B7H6254
Report Date: 2017/08/17

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5123781	Acid Extractable Copper (Cu)	2017/08/17	NC	75 - 125	96	80 - 120	<0.50	ug/g	0.25	30
5123781	Acid Extractable Lead (Pb)	2017/08/17	101	75 - 125	100	80 - 120	<1.0	ug/g	0.67	30
5123781	Acid Extractable Mercury (Hg)	2017/08/17	92	75 - 125	96	80 - 120	<0.050	ug/g	NC	30
5123781	Acid Extractable Molybdenum (Mo)	2017/08/17	100	75 - 125	97	80 - 120	<0.50	ug/g	5.6	30
5123781	Acid Extractable Nickel (Ni)	2017/08/17	NC	75 - 125	100	80 - 120	<0.50	ug/g	0.72	30
5123781	Acid Extractable Selenium (Se)	2017/08/17	98	75 - 125	98	80 - 120	<0.50	ug/g	NC	30
5123781	Acid Extractable Silver (Ag)	2017/08/17	103	75 - 125	98	80 - 120	<0.20	ug/g	NC	30
5123781	Acid Extractable Thallium (Tl)	2017/08/17	99	75 - 125	99	80 - 120	<0.050	ug/g	0.48	30
5123781	Acid Extractable Uranium (U)	2017/08/17	103	75 - 125	100	80 - 120	<0.050	ug/g	1.0	30
5123781	Acid Extractable Vanadium (V)	2017/08/17	NC	75 - 125	96	80 - 120	<5.0	ug/g	2.3	30
5123781	Acid Extractable Zinc (Zn)	2017/08/17	NC	75 - 125	97	80 - 120	<5.0	ug/g	1.2	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7H6254
Report Date: 2017/08/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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 Service 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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #: 618826
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#618826-12-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	SHIRAN CHOWDHURY		

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)? _____

Field Filtered (please circle): Metals / Hg / Cr VI

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: _____ Time Required: 24HR ☒
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 (Soil)	Hexavalent Chromium in Soil by IC	# of Bottles	Comments
1		VS 600	17/08/16	1000 HRS	SOIL		X	X	X	1	
2		VS 601	↓	1030 HRS	↓		X	X	X	1	
3		VS 602	↓	1100 HRS	↓		X	X	X	1	
4											
5											
6											
7											
8											
9											
10											

16-Aug-17 14:00
Alison Cameron
B7H6254
KIV OTT-001

RECEIVED IN OTTAWA

ON the 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 Recei	Custody Seal	Yes	No
SHIRAN CHOWDHURY	17/08/16	1145 HRS	[illegible]	2017/08/16	14-00	0		20, 20, 19	Present Intact	✗	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7H6254
Report Date: 2017/08/17

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS 600	EYJ826-02	Acid Extractable Cobalt (Co)	22	26	0.10	ug/g
VS 600	EYJ826-02	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 601	EYJ827-02	Acid Extractable Cobalt (Co)	22	25	0.10	ug/g
VS 601	EYJ827-02	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 602	EYJ828-02	Acid Extractable Barium (Ba)	390	400	0.50	ug/g
VS 602	EYJ828-02-Lab Dup	Acid Extractable Barium (Ba)	390	410	0.50	ug/g
VS 602	EYJ828-02	Acid Extractable Cobalt (Co)	22	41	0.10	ug/g
VS 602	EYJ828-02-Lab Dup	Acid Extractable Cobalt (Co)	22	42	0.10	ug/g
VS 602	EYJ828-02-Lab Dup	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 602	EYJ828-02	Acid Extractable Vanadium (V)	86	120	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.

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 - MAIN STREET
Your C.O.C. #: 624860-01-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/17
Report #: R4657985
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H6193
Received: 2017/08/16, 14:00

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	3	N/A	2017/08/16	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (2)	3	2017/08/16	2017/08/17	OTT SOP-00001	CCME CWS
Moisture	3	N/A	2017/08/17	CAM SOP-00445	McKeague 2nd ed 1978

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
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) 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.
(2) 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.

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 - MAIN STREET
Your C.O.C. #: 624860-01-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/17
Report #: R4657985
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H6193
Received: 2017/08/16, 14:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7H6193
Report Date: 2017/08/17

Golder Associates Ltd
Client Project #: 1525113 - MAIN STREET
Sampler Initials: SC

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID			EYJ521	EYJ521	EYJ522	EYJ523		
Sampling Date			2017/08/16 12:30	2017/08/16 12:30	2017/08/16 12:40	2017/08/16 12:50		
COC Number			624860-01-01	624860-01-01	624860-01-01	624860-01-01		
	UNITS	**Criteria**	**PID-F1**	**PID-F1 Lab-Dup**	**PID-F2**	**PID-W1**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	-	20		22	21	0.2	5121191
BTEX & F1 Hydrocarbons								
Benzene	ug/g	**0.21**	<0.02	<0.02	**1.1**	**0.60**	0.02	5121780
Toluene	ug/g	**2.3**	<0.02	<0.02	0.80	0.25	0.02	5121780
Ethylbenzene	ug/g	**2**	<0.02	<0.02	0.03	0.99	0.02	5121780
o-Xylene	ug/g	**-**	<0.02	<0.02	<0.02	0.29	0.02	5121780
p+m-Xylene	ug/g	**-**	<0.04	<0.04	<0.04	0.99	0.04	5121780
Total Xylenes	ug/g	**3.1**	<0.04	<0.04	<0.04	1.3	0.04	5121780
F1 (C6-C10)	ug/g	**55**	<10	<10	<10	<10	10	5121780
F1 (C6-C10) - BTEX	ug/g	**55**	<10	<10	<10	<10	10	5121780
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	**98**	<10	<10	<10	<10	10	5121884
F3 (C16-C34 Hydrocarbons)	ug/g	**300**	<50	<50	<50	<50	50	5121884
F4 (C34-C50 Hydrocarbons)	ug/g	**2800**	<50	<50	<50	<50	50	5121884
Reached Baseline at C50	ug/g	**-**	Yes	Yes	Yes	Yes		5121884
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	**-**	89	86	85	77		5121780
4-Bromofluorobenzene	%	**-**	88	87	84	84		5121780
D10-Ethylbenzene	%	**-**	109	112	110	121		5121780
D4-1,2-Dichloroethane	%	**-**	97	94	86	93		5121780
o-Terphenyl	%	**-**	86	88	88	88		5121884

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 Job #: B7H6193
Report Date: 2017/08/17

Golder Associates Ltd
Client Project #: 1525113 - MAIN STREET
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EYJ521
Sample ID: PID-F1
Matrix: Soil

Collected: 2017/08/16
Shipped:
Received: 2017/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5121780	N/A	2017/08/16	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5121884	2017/08/16	2017/08/17	Paul Rubinato
Moisture	BAL	5121191	N/A	2017/08/17	Liliana Gaburici

Maxxam ID: EYJ521 Dup
Sample ID: PID-F1
Matrix: Soil

Collected: 2017/08/16
Shipped:
Received: 2017/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5121780	N/A	2017/08/16	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5121884	2017/08/16	2017/08/17	Paul Rubinato

Maxxam ID: EYJ522
Sample ID: PID-F2
Matrix: Soil

Collected: 2017/08/16
Shipped:
Received: 2017/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5121780	N/A	2017/08/16	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5121884	2017/08/16	2017/08/17	Paul Rubinato
Moisture	BAL	5121191	N/A	2017/08/17	Liliana Gaburici

Maxxam ID: EYJ523
Sample ID: PID-W1
Matrix: Soil

Collected: 2017/08/16
Shipped:
Received: 2017/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5121780	N/A	2017/08/16	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5121884	2017/08/16	2017/08/17	Paul Rubinato
Moisture	BAL	5121191	N/A	2017/08/17	Liliana Gaburici

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 #: B7H6193
Report Date: 2017/08/17

Golder Associates Ltd
Client Project #: 1525113 - MAIN STREET
Sampler Initials: SC

GENERAL COMMENTS

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

Package 1	9.0°C

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Petroleum Hydro. CCME F1 & BTEX in Soil: Matrix spiked recoveries were not calculated (NC) due to high concentration of target compounds in the parent sample.

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 Job #: B7H6193
Report Date: 2017/08/17

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113 - MAIN STREET
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5121780	1,4-Difluorobenzene	2017/08/16	87	60 - 140	87	60 - 140	88	%		
5121780	4-Bromofluorobenzene	2017/08/16	87	60 - 140	88	60 - 140	87	%		
5121780	D10-Ethylbenzene	2017/08/16	106	30 - 130	100	30 - 130	97	%		
5121780	D4-1,2-Dichloroethane	2017/08/16	97	60 - 140	93	60 - 140	96	%		
5121884	o-Terphenyl	2017/08/17	88	30 - 130	88	30 - 130	83	%		
5121191	Moisture	2017/08/17							10	50
5121780	Benzene	2017/08/16	NC	60 - 140	88	60 - 140	<0.02	ug/g	NC	50
5121780	Ethylbenzene	2017/08/16	98	60 - 140	102	60 - 140	<0.02	ug/g	NC	50
5121780	F1 (C6-C10) - BTEX	2017/08/16					<10	ug/g	NC	50
5121780	F1 (C6-C10)	2017/08/16	91	60 - 140	93	80 - 120	<10	ug/g	NC	50
5121780	o-Xylene	2017/08/16	99	60 - 140	99	60 - 140	<0.02	ug/g	NC	50
5121780	p+m-Xylene	2017/08/16	102	60 - 140	105	60 - 140	<0.04	ug/g	NC	50
5121780	Toluene	2017/08/16	82	60 - 140	92	60 - 140	<0.02	ug/g	NC	50
5121780	Total Xylenes	2017/08/16					<0.04	ug/g	NC	50
5121884	F2 (C10-C16 Hydrocarbons)	2017/08/17	103	50 - 130	104	80 - 120	<10	ug/g	NC	50
5121884	F3 (C16-C34 Hydrocarbons)	2017/08/17	103	50 - 130	104	80 - 120	<50	ug/g	NC	50
5121884	F4 (C34-C50 Hydrocarbons)	2017/08/17	103	50 - 130	104	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.

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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7H6193
Report Date: 2017/08/17

Golder Associates Ltd
Client Project #: 1525113 - MAIN STREET
Sampler Initials: SC

VALIDATION SIGNATURE PAGE

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

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.

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 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 #: 624860
Attention:	Accounts Payable	Attention:		P.O. #:			
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113 - MAIN STREET	COC #:	Project Manager:
Tel:	(613) 592-9600 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#624860-01-01	Alison Cameron
Email:	AP_CustomerService@golder.com	Email:		Site #:			
				Sampled By:	SHIHAN CHOUDHURY		

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)? _____

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): O.Reg 153 Petroleum Hydrocarbons (Soil) + BTEX

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: 24HR ☒
Rush Confirmation Number: _____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered	O.Reg 153 Petroleum Hydrocarbons (Soil) + BTEX								# of Bottles	Comments
1		PID - F1	17/08/16	1230 HRS	SOIL		X								3	
2		PID - F2	↓	1240 HRS	↓		X								3	
3		PID - W1	↓	1250 HRS	↓		X								3	
4																
5																
6																
7																
8																
9																
10																ON Ice

16-Aug-17 14:00
Alison Cameron
B7H6193
KIV 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 Recei	Custody Seal	Yes	No
SHIHAN CHOUDHURY	17/08/16	1300 HRS	[illegible]	2017/08/16	14:00	0		9, 9, 9	Present Intact	✓ ✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7H6193
Report Date: 2017/08/17

Golder Associates Ltd
Client Project #: 1525113 - MAIN STREET
Sampler Initials: SC

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
PID-F2	EYJ522-02	Benzene	0.21	1.1	0.02	ug/g
PID-W1	EYJ523-02	Benzene	0.21	0.60	0.02	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. #: 618826-11-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/15
Report #: R4653547
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H4073
Received: 2017/08/14, 14:55

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	9	N/A	2017/08/15	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	9	2017/08/15	2017/08/15	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	9	2017/08/15	2017/08/15	CAM SOP-00447	EPA 6020B m
Moisture	9	N/A	2017/08/15	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	9	2017/08/14	2017/08/15	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-11-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/15
Report #: R4653547
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H4073
Received: 2017/08/14, 14:55

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7H4073
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EXY785	EXY786	EXY787	EXY788	EXY788		
Sampling Date			2017/08/14 08:00	2017/08/14 08:30	2017/08/14 09:00	2017/08/14 09:30	2017/08/14 09:30		
COC Number			618826-11-01	618826-11-01	618826-11-01	618826-11-01	618826-11-01		
	UNITS	**Criteria**	**VS 592**	**VS 593**	**VS 594**	**VS 595**	**VS 595 Lab-Dup**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5119372
Acid Extractable Arsenic (As)	ug/g	**18**	1.3	<1.0	<1.0	<1.0	<1.0	1.0	5119372
Acid Extractable Barium (Ba)	ug/g	**390**	27	28	30	18	18	0.50	5119372
Acid Extractable Beryllium (Be)	ug/g	**4**	0.22	0.23	<0.20	<0.20	<0.20	0.20	5119372
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5119372
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5119372
Acid Extractable Chromium (Cr)	ug/g	**160**	16	17	15	10	9.8	1.0	5119372
Acid Extractable Cobalt (Co)	ug/g	**22**	4.6	4.3	4.3	3.0	2.9	0.10	5119372
Acid Extractable Copper (Cu)	ug/g	**140**	6.4	6.7	5.9	3.7	3.5	0.50	5119372
Acid Extractable Lead (Pb)	ug/g	**120**	9.6	3.3	2.3	4.5	4.4	1.0	5119372
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5119372
Acid Extractable Nickel (Ni)	ug/g	**100**	9.4	9.2	8.6	6.3	6.0	0.50	5119372
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5119372
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5119372
Acid Extractable Thallium (Tl)	ug/g	**1**	0.064	0.050	0.060	<0.050	<0.050	0.050	5119372
Acid Extractable Uranium (U)	ug/g	**23**	0.62	0.94	0.62	0.54	0.52	0.050	5119372
Acid Extractable Vanadium (V)	ug/g	**86**	19	22	15	14	13	5.0	5119372
Acid Extractable Zinc (Zn)	ug/g	**340**	24	19	13	16	15	5.0	5119372
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5119372

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 Job #: B7H4073
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EXY789	EXY790	EXY791	EXY792	EXY793		
Sampling Date			2017/08/14 10:00	2017/08/14 10:30	2017/08/14 11:00	2017/08/14 11:30	2017/08/14 12:00		
COC Number			618826-11-01	618826-11-01	618826-11-01	618826-11-01	618826-11-01		
	UNITS	**Criteria**	**VS 1595**	**VS 596**	**VS 597**	**VS 598**	**VS 599**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5119372
Acid Extractable Arsenic (As)	ug/g	**18**	1.0	2.0	<1.0	1.1	<1.0	1.0	5119372
Acid Extractable Barium (Ba)	ug/g	**390**	20	230	120	300	330	0.50	5119372
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	0.59	0.34	0.65	0.88	0.20	5119372
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5119372
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.11	0.11	0.10	5119372
Acid Extractable Chromium (Cr)	ug/g	**160**	11	66	38	70	86	1.0	5119372
Acid Extractable Cobalt (Co)	ug/g	**22**	3.6	16	11	19	**23**	0.10	5119372
Acid Extractable Copper (Cu)	ug/g	**140**	4.1	25	12	39	43	0.50	5119372
Acid Extractable Lead (Pb)	ug/g	**120**	5.6	9.5	4.6	6.1	6.8	1.0	5119372
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.61	0.50	<0.50	<0.50	0.50	5119372
Acid Extractable Nickel (Ni)	ug/g	**100**	6.5	35	20	45	47	0.50	5119372
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5119372
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5119372
Acid Extractable Thallium (Tl)	ug/g	**1**	0.051	0.26	0.13	0.38	0.49	0.050	5119372
Acid Extractable Uranium (U)	ug/g	**23**	0.58	1.4	0.97	1.0	1.7	0.050	5119372
Acid Extractable Vanadium (V)	ug/g	**86**	15	68	57	**90**	**110**	5.0	5119372
Acid Extractable Zinc (Zn)	ug/g	**340**	18	90	45	110	130	5.0	5119372
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5119372

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 #: B7H4073
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EXY785	EXY786	EXY787	EXY788	EXY789		
Sampling Date			2017/08/14 08:00	2017/08/14 08:30	2017/08/14 09:00	2017/08/14 09:30	2017/08/14 10:00		
COC Number			618826-11-01	618826-11-01	618826-11-01	618826-11-01	618826-11-01		
	UNITS	**Criteria**	**VS 592**	**VS 593**	**VS 594**	**VS 595**	**VS 1595**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	15	16	13	9.7	11	0.2	5117758
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	5117471
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.0061	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Surrogate Recovery (%)									
D10-Anthracene	%	-	90	97	94	97	99		5117763
D14-Terphenyl (FS)	%	-	91	99	95	98	101		5117763
D8-Acenaphthylene	%	-	81	85	84	89	88		5117763

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 #: B7H4073
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EXY790	EXY791	EXY792	EXY793		
Sampling Date			2017/08/14 10:30	2017/08/14 11:00	2017/08/14 11:30	2017/08/14 12:00		
COC Number			618826-11-01	618826-11-01	618826-11-01	618826-11-01		
	UNITS	Criteria	VS 596	VS 597	VS 598	VS 599	RDL	QC Batch
Inorganics								
Moisture	%	-	26	20	29	25	0.2	5117758
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	0.014	5117471
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**7.9**	0.012	<0.0050	<0.0050	<0.0050	0.0050	5117763
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Anthracene	ug/g	**0.67**	0.028	<0.0050	<0.0050	<0.0050	0.0050	5117763
Benzo(a)anthracene	ug/g	**0.5**	0.050	0.0050	<0.0050	<0.0050	0.0050	5117763
Benzo(a)pyrene	ug/g	**0.3**	0.031	<0.0050	<0.0050	<0.0050	0.0050	5117763
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.047	<0.0050	<0.0050	<0.0050	0.0050	5117763
Benzo(g,h,i)perylene	ug/g	**6.6**	0.014	<0.0050	<0.0050	<0.0050	0.0050	5117763
Benzo(k)fluoranthene	ug/g	**0.78**	0.016	<0.0050	<0.0050	<0.0050	0.0050	5117763
Chrysene	ug/g	**7**	0.039	0.0050	<0.0050	<0.0050	0.0050	5117763
Dibenz(a,h)anthracene	ug/g	**0.1**	0.0054	<0.0050	<0.0050	<0.0050	0.0050	5117763
Fluoranthene	ug/g	**0.69**	0.14	0.010	<0.0050	<0.0050	0.0050	5117763
Fluorene	ug/g	**62**	0.014	<0.0050	<0.0050	<0.0050	0.0050	5117763
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.019	<0.0050	<0.0050	<0.0050	0.0050	5117763
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Phenanthrene	ug/g	**6.2**	0.11	<0.0050	<0.0050	<0.0050	0.0050	5117763
Pyrene	ug/g	**78**	0.10	0.0075	<0.0050	<0.0050	0.0050	5117763
Surrogate Recovery (%)								
D10-Anthracene	%	-	104	100	98	91		5117763
D14-Terphenyl (FS)	%	-	107	100	100	91		5117763
D8-Acenaphthylene	%	-	92	91	90	84		5117763

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 #: B7H4073
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EXY785	EXY786	EXY787	EXY787	EXY788		
Sampling Date			2017/08/14 08:00	2017/08/14 08:30	2017/08/14 09:00	2017/08/14 09:00	2017/08/14 09:30		
COC Number			618826-11-01	618826-11-01	618826-11-01	618826-11-01	618826-11-01		
	UNITS	**Criteria**	**VS 592**	**VS 593**	**VS 594**	**VS 594 Lab-Dup**	**VS 595**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	0.3	0.3	0.3	<0.2	0.2	5118907

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			EXY789	EXY790	EXY791	EXY792	EXY793		
Sampling Date			2017/08/14 10:00	2017/08/14 10:30	2017/08/14 11:00	2017/08/14 11:30	2017/08/14 12:00		
COC Number			618826-11-01	618826-11-01	618826-11-01	618826-11-01	618826-11-01		
	UNITS	**Criteria**	**VS 1595**	**VS 596**	**VS 597**	**VS 598**	**VS 599**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.2	0.3	<0.2	0.3	0.6	0.2	5118907

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 #: B7H4073
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXY785
Sample ID: VS 592
Matrix: Soil

Collected: 2017/08/14
Shipped:
Received: 2017/08/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5117471	N/A	2017/08/15	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5118907	2017/08/15	2017/08/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5119372	2017/08/15	2017/08/15	Viviana Canzonieri
Moisture	BAL	5117758	N/A	2017/08/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5117763	2017/08/14	2017/08/15	Liliana Gaburici

Maxxam ID: EXY786
Sample ID: VS 593
Matrix: Soil

Collected: 2017/08/14
Shipped:
Received: 2017/08/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5117471	N/A	2017/08/15	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5118907	2017/08/15	2017/08/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5119372	2017/08/15	2017/08/15	Viviana Canzonieri
Moisture	BAL	5117758	N/A	2017/08/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5117763	2017/08/14	2017/08/15	Liliana Gaburici

Maxxam ID: EXY787
Sample ID: VS 594
Matrix: Soil

Collected: 2017/08/14
Shipped:
Received: 2017/08/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5117471	N/A	2017/08/15	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5118907	2017/08/15	2017/08/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5119372	2017/08/15	2017/08/15	Viviana Canzonieri
Moisture	BAL	5117758	N/A	2017/08/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5117763	2017/08/14	2017/08/15	Liliana Gaburici

Maxxam ID: EXY787 Dup
Sample ID: VS 594
Matrix: Soil

Collected: 2017/08/14
Shipped:
Received: 2017/08/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5118907	2017/08/15	2017/08/15	Sally Coughlin

Maxxam ID: EXY788
Sample ID: VS 595
Matrix: Soil

Collected: 2017/08/14
Shipped:
Received: 2017/08/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5117471	N/A	2017/08/15	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5118907	2017/08/15	2017/08/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5119372	2017/08/15	2017/08/15	Viviana Canzonieri
Moisture	BAL	5117758	N/A	2017/08/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5117763	2017/08/14	2017/08/15	Liliana Gaburici

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 #: B7H4073
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXY788 Dup
Sample ID: VS 595
Matrix: Soil

Collected: 2017/08/14
Shipped:
Received: 2017/08/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5119372	2017/08/15	2017/08/15	Viviana Canzonieri

Maxxam ID: EXY789
Sample ID: VS 1595
Matrix: Soil

Collected: 2017/08/14
Shipped:
Received: 2017/08/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5117471	N/A	2017/08/15	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5118907	2017/08/15	2017/08/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5119372	2017/08/15	2017/08/15	Viviana Canzonieri
Moisture	BAL	5117758	N/A	2017/08/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5117763	2017/08/14	2017/08/15	Liliana Gaburici

Maxxam ID: EXY790
Sample ID: VS 596
Matrix: Soil

Collected: 2017/08/14
Shipped:
Received: 2017/08/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5117471	N/A	2017/08/15	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5118907	2017/08/15	2017/08/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5119372	2017/08/15	2017/08/15	Viviana Canzonieri
Moisture	BAL	5117758	N/A	2017/08/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5117763	2017/08/14	2017/08/15	Liliana Gaburici

Maxxam ID: EXY791
Sample ID: VS 597
Matrix: Soil

Collected: 2017/08/14
Shipped:
Received: 2017/08/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5117471	N/A	2017/08/15	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5118907	2017/08/15	2017/08/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5119372	2017/08/15	2017/08/15	Viviana Canzonieri
Moisture	BAL	5117758	N/A	2017/08/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5117763	2017/08/14	2017/08/15	Liliana Gaburici

Maxxam ID: EXY792
Sample ID: VS 598
Matrix: Soil

Collected: 2017/08/14
Shipped:
Received: 2017/08/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5117471	N/A	2017/08/15	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5118907	2017/08/15	2017/08/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5119372	2017/08/15	2017/08/15	Viviana Canzonieri
Moisture	BAL	5117758	N/A	2017/08/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5117763	2017/08/14	2017/08/15	Liliana Gaburici

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 #: B7H4073
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXY793
Sample ID: VS 599
Matrix: Soil

Collected: 2017/08/14
Shipped:
Received: 2017/08/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5117471	N/A	2017/08/15	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5118907	2017/08/15	2017/08/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5119372	2017/08/15	2017/08/15	Viviana Canzonieri
Moisture	BAL	5117758	N/A	2017/08/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5117763	2017/08/14	2017/08/15	Liliana Gaburici

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 #: B7H4073
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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.

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 #: B7H4073
Report Date: 2017/08/15

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5117763	D10-Anthracene	2017/08/14	103	50 - 130	97	50 - 130	102	%		
5117763	D14-Terphenyl (FS)	2017/08/14	105	50 - 130	99	50 - 130	103	%		
5117763	D8-Acenaphthylene	2017/08/14	94	50 - 130	88	50 - 130	91	%		
5117758	Moisture	2017/08/15							0.78	50
5117763	1-Methylnaphthalene	2017/08/14	98	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
5117763	2-Methylnaphthalene	2017/08/14	95	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5117763	Acenaphthene	2017/08/14	107	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5117763	Acenaphthylene	2017/08/14	96	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5117763	Anthracene	2017/08/14	105	50 - 130	103	50 - 130	<0.0050	ug/g	NC	40
5117763	Benzo(a)anthracene	2017/08/14	101	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5117763	Benzo(a)pyrene	2017/08/14	93	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
5117763	Benzo(b/j)fluoranthene	2017/08/14	109	50 - 130	110	50 - 130	<0.0050	ug/g	NC	40
5117763	Benzo(g,h,i)perylene	2017/08/14	84	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5117763	Benzo(k)fluoranthene	2017/08/14	101	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5117763	Chrysene	2017/08/14	98	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
5117763	Dibenz(a,h)anthracene	2017/08/14	86	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5117763	Fluoranthene	2017/08/14	113	50 - 130	109	50 - 130	<0.0050	ug/g	NC	40
5117763	Fluorene	2017/08/14	112	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
5117763	Indeno(1,2,3-cd)pyrene	2017/08/14	103	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
5117763	Naphthalene	2017/08/14	89	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5117763	Phenanthrene	2017/08/14	102	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5117763	Pyrene	2017/08/14	112	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5118907	Chromium (VI)	2017/08/15	88	75 - 125	93	80 - 120	<0.2	ug/g	1.1	35
5119372	Acid Extractable Antimony (Sb)	2017/08/15	94	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5119372	Acid Extractable Arsenic (As)	2017/08/15	98	75 - 125	101	80 - 120	<1.0	ug/g	NC	30
5119372	Acid Extractable Barium (Ba)	2017/08/15	107	75 - 125	101	80 - 120	<0.50	ug/g	0.64	30
5119372	Acid Extractable Beryllium (Be)	2017/08/15	96	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
5119372	Acid Extractable Boron (B)	2017/08/15	91	75 - 125	98	80 - 120	<5.0	ug/g	NC	30
5119372	Acid Extractable Cadmium (Cd)	2017/08/15	96	75 - 125	99	80 - 120	<0.10	ug/g	NC	30
5119372	Acid Extractable Chromium (Cr)	2017/08/15	99	75 - 125	101	80 - 120	<1.0	ug/g	5.9	30
5119372	Acid Extractable Cobalt (Co)	2017/08/15	100	75 - 125	102	80 - 120	<0.10	ug/g	3.3	30

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 #: B7H4073
Report Date: 2017/08/15

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5119372	Acid Extractable Copper (Cu)	2017/08/15	94	75 - 125	103	80 - 120	<0.50	ug/g	5.5	30
5119372	Acid Extractable Lead (Pb)	2017/08/15	98	75 - 125	101	80 - 120	<1.0	ug/g	1.9	30
5119372	Acid Extractable Mercury (Hg)	2017/08/15	90	75 - 125	97	80 - 120	<0.050	ug/g	NC	30
5119372	Acid Extractable Molybdenum (Mo)	2017/08/15	95	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
5119372	Acid Extractable Nickel (Ni)	2017/08/15	102	75 - 125	106	80 - 120	<0.50	ug/g	5.3	30
5119372	Acid Extractable Selenium (Se)	2017/08/15	99	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
5119372	Acid Extractable Silver (Ag)	2017/08/15	98	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
5119372	Acid Extractable Thallium (Tl)	2017/08/15	97	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
5119372	Acid Extractable Uranium (U)	2017/08/15	101	75 - 125	104	80 - 120	<0.050	ug/g	4.3	30
5119372	Acid Extractable Vanadium (V)	2017/08/15	97	75 - 125	101	80 - 120	<5.0	ug/g	5.6	30
5119372	Acid Extractable Zinc (Zn)	2017/08/15	92	75 - 125	94	80 - 120	<5.0	ug/g	5.5	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 (absolute difference <= 2x RDL).

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 #: B7H4073
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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 Service Specialist

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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #: 618826
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#618826-11-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	SHIHAN CHOWDHURY		

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)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals (Soil)	Hexavalent Chromium in Soil by IC	# of Bottles	Comments
1		VS 592	17/08/14	0800 HRS	SOIL	X	X	X	1	
2		VS 593	↓	0830 HRS	↓	X	X	X	1	
3		VS 594	↓	0900 HRS	↓	X	X	X	1	
4		VS 595	↓	0930 HRS	↓	X	X	X	1	
5		VS 1595	↓	1000 HRS	↓	X	X	X	1	
6		VS 596	↓	1030 HRS	↓	X	X	X	1	
7		VS 597	↓	1100 HRS	↓	X	X	X	1	
8		VS 598	↓	1130 HRS	↓	X	X	X	1	
9		VS599	↓	1200 HRS	↓	X	X	X	1	
10										

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: 24HR ☒
Rush Confirmation Number: ___ (call lab for #)

RECEIVED IN OTTAWA
14-Aug-17 14:55
Alison Cameron
B7H4073
KIV OTT-001

ON the 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 Recei	Custody Seal	Yes	No
SHIHAN CHOWDHURY	17/08/14	1300 HRS	[illegible]	2017/08/14	14:55	0		22, 21, 20	Present	✓	
									Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7H4073
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS 598	EXY792-02	Acid Extractable Vanadium (V)	86	90	5.0	ug/g
VS 599	EXY793-02	Acid Extractable Cobalt (Co)	22	23	0.10	ug/g
VS 599	EXY793-02	Acid Extractable Vanadium (V)	86	110	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.

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. #: 618826-10-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/15
Report #: R4653553
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H3672
Received: 2017/08/14, 09:30

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	3	N/A	2017/08/15	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	3	2017/08/15	2017/08/15	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	3	2017/08/15	2017/08/15	CAM SOP-00447	EPA 6020B m
Moisture	3	N/A	2017/08/15	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	3	2017/08/14	2017/08/14	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-10-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/15
Report #: R4653553
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H3672
Received: 2017/08/14, 09:30

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7H3672
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EXW778	EXW779	EXW780		
Sampling Date			2017/08/12 09:00	2017/08/12 10:00	2017/08/12 10:30		
COC Number			618826-10-01	618826-10-01	618826-10-01		
	UNITS	Criteria	VS 589	VS 590	VS 591	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	0.20	5119372
Acid Extractable Arsenic (As)	ug/g	**18**	2.2	1.9	2.1	1.0	5119372
Acid Extractable Barium (Ba)	ug/g	**390**	210	190	160	0.50	5119372
Acid Extractable Beryllium (Be)	ug/g	**4**	0.73	0.62	0.50	0.20	5119372
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	5.0	5119372
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.10	<0.10	0.10	5119372
Acid Extractable Chromium (Cr)	ug/g	**160**	49	42	35	1.0	5119372
Acid Extractable Cobalt (Co)	ug/g	**22**	17	14	11	0.10	5119372
Acid Extractable Copper (Cu)	ug/g	**140**	29	25	22	0.50	5119372
Acid Extractable Lead (Pb)	ug/g	**120**	6.8	6.1	5.1	1.0	5119372
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	0.50	5119372
Acid Extractable Nickel (Ni)	ug/g	**100**	31	28	22	0.50	5119372
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	0.50	5119372
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	0.20	5119372
Acid Extractable Thallium (Tl)	ug/g	**1**	0.28	0.23	0.21	0.050	5119372
Acid Extractable Uranium (U)	ug/g	**23**	0.85	0.75	0.66	0.050	5119372
Acid Extractable Vanadium (V)	ug/g	**86**	67	59	53	5.0	5119372
Acid Extractable Zinc (Zn)	ug/g	**340**	84	79	62	5.0	5119372
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	0.050	5119372

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 #: B7H3672
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EXW778	EXW778	EXW779	EXW780		
Sampling Date			2017/08/12 09:00	2017/08/12 09:00	2017/08/12 10:00	2017/08/12 10:30		
COC Number			618826-10-01	618826-10-01	618826-10-01	618826-10-01		
	UNITS	Criteria	VS 589	VS 589 Lab-Dup	VS 590	VS 591	RDL	QC Batch
Inorganics								
Moisture	%	-	26	26	24	25	0.2	5117758
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	0.014	5117471
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117763
Surrogate Recovery (%)								
D10-Anthracene	%	-	97	100	93	96		5117763
D14-Terphenyl (FS)	%	-	99	103	96	98		5117763
D8-Acenaphthylene	%	-	88	89	86	86		5117763

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 Job #: B7H3672
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EXW778	EXW779	EXW780		
Sampling Date			2017/08/12 09:00	2017/08/12 10:00	2017/08/12 10:30		
COC Number			618826-10-01	618826-10-01	618826-10-01		
	UNITS	**Criteria**	**VS 589**	**VS 590**	**VS 591**	**RDL**	**QC Batch**
Inorganics							
Chromium (VI)	ug/g	**8**	0.3	0.3	0.2	0.2	5118907

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 #: B7H3672
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXW778
Sample ID: VS 589
Matrix: Soil

Collected: 2017/08/12
Shipped:
Received: 2017/08/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5117471	N/A	2017/08/15	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5118907	2017/08/15	2017/08/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5119372	2017/08/15	2017/08/15	Viviana Canzonieri
Moisture	BAL	5117758	N/A	2017/08/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5117763	2017/08/14	2017/08/14	Liliana Gaburici

Maxxam ID: EXW778 Dup
Sample ID: VS 589
Matrix: Soil

Collected: 2017/08/12
Shipped:
Received: 2017/08/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5117758	N/A	2017/08/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5117763	2017/08/14	2017/08/14	Liliana Gaburici

Maxxam ID: EXW779
Sample ID: VS 590
Matrix: Soil

Collected: 2017/08/12
Shipped:
Received: 2017/08/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5117471	N/A	2017/08/15	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5118907	2017/08/15	2017/08/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5119372	2017/08/15	2017/08/15	Viviana Canzonieri
Moisture	BAL	5117758	N/A	2017/08/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5117763	2017/08/14	2017/08/14	Liliana Gaburici

Maxxam ID: EXW780
Sample ID: VS 591
Matrix: Soil

Collected: 2017/08/12
Shipped:
Received: 2017/08/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5117471	N/A	2017/08/15	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5118907	2017/08/15	2017/08/15	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5119372	2017/08/15	2017/08/15	Viviana Canzonieri
Moisture	BAL	5117758	N/A	2017/08/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5117763	2017/08/14	2017/08/14	Liliana Gaburici

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 #: B7H3672
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

GENERAL COMMENTS

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

Package 1	7.0°C

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 Job #: B7H3672
Report Date: 2017/08/15

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5117763	D10-Anthracene	2017/08/14	103	50 - 130	97	50 - 130	102	%		
5117763	D14-Terphenyl (FS)	2017/08/14	105	50 - 130	99	50 - 130	103	%		
5117763	D8-Acenaphthylene	2017/08/14	94	50 - 130	88	50 - 130	91	%		
5117758	Moisture	2017/08/15							0.78	50
5117763	1-Methylnaphthalene	2017/08/14	98	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
5117763	2-Methylnaphthalene	2017/08/14	95	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5117763	Acenaphthene	2017/08/14	107	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5117763	Acenaphthylene	2017/08/14	96	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5117763	Anthracene	2017/08/14	105	50 - 130	103	50 - 130	<0.0050	ug/g	NC	40
5117763	Benzo(a)anthracene	2017/08/14	101	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5117763	Benzo(a)pyrene	2017/08/14	93	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
5117763	Benzo(b/j)fluoranthene	2017/08/14	109	50 - 130	110	50 - 130	<0.0050	ug/g	NC	40
5117763	Benzo(g,h,i)perylene	2017/08/14	84	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5117763	Benzo(k)fluoranthene	2017/08/14	101	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5117763	Chrysene	2017/08/14	98	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
5117763	Dibenz(a,h)anthracene	2017/08/14	86	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5117763	Fluoranthene	2017/08/14	113	50 - 130	109	50 - 130	<0.0050	ug/g	NC	40
5117763	Fluorene	2017/08/14	112	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
5117763	Indeno(1,2,3-cd)pyrene	2017/08/14	103	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
5117763	Naphthalene	2017/08/14	89	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5117763	Phenanthrene	2017/08/14	102	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5117763	Pyrene	2017/08/14	112	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5118907	Chromium (VI)	2017/08/15	88	75 - 125	93	80 - 120	<0.2	ug/g	1.1	35
5119372	Acid Extractable Antimony (Sb)	2017/08/15	94	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5119372	Acid Extractable Arsenic (As)	2017/08/15	98	75 - 125	101	80 - 120	<1.0	ug/g	NC	30
5119372	Acid Extractable Barium (Ba)	2017/08/15	107	75 - 125	101	80 - 120	<0.50	ug/g	0.64	30
5119372	Acid Extractable Beryllium (Be)	2017/08/15	96	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
5119372	Acid Extractable Boron (B)	2017/08/15	91	75 - 125	98	80 - 120	<5.0	ug/g	NC	30
5119372	Acid Extractable Cadmium (Cd)	2017/08/15	96	75 - 125	99	80 - 120	<0.10	ug/g	NC	30
5119372	Acid Extractable Chromium (Cr)	2017/08/15	99	75 - 125	101	80 - 120	<1.0	ug/g	5.9	30
5119372	Acid Extractable Cobalt (Co)	2017/08/15	100	75 - 125	102	80 - 120	<0.10	ug/g	3.3	30

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 #: B7H3672
Report Date: 2017/08/15

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5119372	Acid Extractable Copper (Cu)	2017/08/15	94	75 - 125	103	80 - 120	<0.50	ug/g	5.5	30
5119372	Acid Extractable Lead (Pb)	2017/08/15	98	75 - 125	101	80 - 120	<1.0	ug/g	1.9	30
5119372	Acid Extractable Mercury (Hg)	2017/08/15	90	75 - 125	97	80 - 120	<0.050	ug/g	NC	30
5119372	Acid Extractable Molybdenum (Mo)	2017/08/15	95	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
5119372	Acid Extractable Nickel (Ni)	2017/08/15	102	75 - 125	106	80 - 120	<0.50	ug/g	5.3	30
5119372	Acid Extractable Selenium (Se)	2017/08/15	99	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
5119372	Acid Extractable Silver (Ag)	2017/08/15	98	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
5119372	Acid Extractable Thallium (Tl)	2017/08/15	97	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
5119372	Acid Extractable Uranium (U)	2017/08/15	101	75 - 125	104	80 - 120	<0.050	ug/g	4.3	30
5119372	Acid Extractable Vanadium (V)	2017/08/15	97	75 - 125	101	80 - 120	<5.0	ug/g	5.6	30
5119372	Acid Extractable Zinc (Zn)	2017/08/15	92	75 - 125	94	80 - 120	<5.0	ug/g	5.5	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 (absolute difference <= 2x RDL).

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 #: B7H3672
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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 Service Specialist

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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #: 618826
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#618826-10-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	SHUHAN CHOWDHURY		

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)

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: _____ Time Required: 24 HR ☒
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 (Soil)	Hexavalent Chromium in Soil by IC	# of Bottles	Comments
1		VS 589	17/08/12	0900 HRS	SOIL		X	X	X	1	
2		VS 590	↓	1000 HRS	↓		X	X	X	1	
3		VS 591	↓	1030 HRS	↓		X	X	X	1	
4											
5											
6											
7											
8											
9											ON Ice Pack
10											

14-Aug-17 09:30
Alison Cameron
B7H3672
KIV 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 Recei	Custody Seal	Yes	No
SHUHAN CHOWDHURY	17/08/12	1100 HRS	[illegible]	2017/08/14	9:30	0		5.7 & 6	Present Intact	☒	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7H3672
Report Date: 2017/08/15

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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. #: 618826-09-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/14
Report #: R4651490
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H2728
Received: 2017/08/11, 15:00

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	6	N/A	2017/08/14	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	6	2017/08/14	2017/08/14	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	6	2017/08/14	2017/08/14	CAM SOP-00447	EPA 6020B m
Moisture	6	N/A	2017/08/14	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	6	2017/08/11	2017/08/11	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-09-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/14
Report #: R4651490
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H2728
Received: 2017/08/11, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7H2728
Report Date: 2017/08/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EXR689	EXR690	EXR691	EXR691	EXR692		
Sampling Date			2017/08/11 11:30	2017/08/11 12:00	2017/08/11 12:30	2017/08/11 12:30	2017/08/11 13:00		
COC Number			618826-09-01	618826-09-01	618826-09-01	618826-09-01	618826-09-01		
	UNITS	**Criteria**	**VS 583**	**VS 584**	**VS 585**	**VS 585 Lab-Dup**	**VS 1585**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5117528
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	<1.0	1.2	1.0	5117528
Acid Extractable Barium (Ba)	ug/g	**390**	390	360	**400**	**400**	**400**	0.50	5117528
Acid Extractable Beryllium (Be)	ug/g	**4**	0.76	0.87	0.90	0.88	0.84	0.20	5117528
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5117528
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	0.12	<0.10	0.12	0.10	5117528
Acid Extractable Chromium (Cr)	ug/g	**160**	96	100	120	120	120	1.0	5117528
Acid Extractable Cobalt (Co)	ug/g	**22**	**25**	**26**	**27**	**27**	**29**	0.10	5117528
Acid Extractable Copper (Cu)	ug/g	**140**	50	57	60	60	59	0.50	5117528
Acid Extractable Lead (Pb)	ug/g	**120**	6.5	7.0	7.0	7.0	7.0	1.0	5117528
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5117528
Acid Extractable Nickel (Ni)	ug/g	**100**	59	60	68	66	66	0.50	5117528
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5117528
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5117528
Acid Extractable Thallium (Tl)	ug/g	**1**	0.54	0.47	0.56	0.55	0.55	0.050	5117528
Acid Extractable Uranium (U)	ug/g	**23**	0.94	1.3	1.7	1.7	1.6	0.050	5117528
Acid Extractable Vanadium (V)	ug/g	**86**	**110**	**110**	**120**	**120**	**120**	5.0	5117528
Acid Extractable Zinc (Zn)	ug/g	**340**	140	130	150	140	140	5.0	5117528
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5117528

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 Job #: B7H2728
Report Date: 2017/08/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EXR694	EXR695		
Sampling Date			2017/08/11 14:00	2017/08/11 14:30		
COC Number			618826-09-01	618826-09-01		
	UNITS	Criteria	VS 587	VS 588	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	0.20	5117528
Acid Extractable Arsenic (As)	ug/g	**18**	1.4	1.0	1.0	5117528
Acid Extractable Barium (Ba)	ug/g	**390**	140	360	0.50	5117528
Acid Extractable Beryllium (Be)	ug/g	**4**	0.41	0.86	0.20	5117528
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	5.0	5117528
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	0.10	5117528
Acid Extractable Chromium (Cr)	ug/g	**160**	30	110	1.0	5117528
Acid Extractable Cobalt (Co)	ug/g	**22**	9.2	**24**	0.10	5117528
Acid Extractable Copper (Cu)	ug/g	**140**	18	59	0.50	5117528
Acid Extractable Lead (Pb)	ug/g	**120**	4.4	7.4	1.0	5117528
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	0.50	5117528
Acid Extractable Nickel (Ni)	ug/g	**100**	20	62	0.50	5117528
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	0.50	5117528
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	0.20	5117528
Acid Extractable Thallium (Tl)	ug/g	**1**	0.19	0.45	0.050	5117528
Acid Extractable Uranium (U)	ug/g	**23**	0.61	1.7	0.050	5117528
Acid Extractable Vanadium (V)	ug/g	**86**	48	**110**	5.0	5117528
Acid Extractable Zinc (Zn)	ug/g	**340**	53	130	5.0	5117528
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	0.050	5117528

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 #: B7H2728
Report Date: 2017/08/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EXR689	EXR689	EXR690	EXR691	EXR692		
Sampling Date			2017/08/11 11:30	2017/08/11 11:30	2017/08/11 12:00	2017/08/11 12:30	2017/08/11 13:00		
COC Number			618826-09-01	618826-09-01	618826-09-01	618826-09-01	618826-09-01		
	UNITS	Criteria	VS 583	VS 583 Lab-Dup	VS 584	VS 585	VS 1585	RDL	QC Batch
Inorganics									
Moisture	%	-	32	30	31	27	27	0.2	5115568
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	5115519
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5115571
Surrogate Recovery (%)									
D10-Anthracene	%	-	97	98	97	104	98		5115571
D14-Terphenyl (FS)	%	-	105	105	104	108	105		5115571
D8-Acenaphthylene	%	-	83	85	85	86	84		5115571

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 Job #: B7H2728
Report Date: 2017/08/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EXR694	EXR695		
Sampling Date			2017/08/11 14:00	2017/08/11 14:30		
COC Number			618826-09-01	618826-09-01		
	UNITS	Criteria	VS 587	VS 588	RDL	QC Batch
Inorganics						
Moisture	%	-	25	31	0.2	5115568
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	0.014	5115519
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	0.0050	5115571
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	0.0050	5115571
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	0.0050	5115571
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	0.0050	5115571
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0050	5115571
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	5115571
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	0.0050	5115571
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	5115571
Chrysene	ug/g	**7**	<0.0050	<0.0050	0.0050	5115571
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	0.0050	5115571
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	0.0050	5115571
Fluorene	ug/g	**62**	<0.0050	<0.0050	0.0050	5115571
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	0.0050	5115571
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	5115571
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	5115571
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	0.0050	5115571
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	0.0050	5115571
Pyrene	ug/g	**78**	<0.0050	<0.0050	0.0050	5115571
Surrogate Recovery (%)						
D10-Anthracene	%	-	102	98		5115571
D14-Terphenyl (FS)	%	-	110	105		5115571
D8-Acenaphthylene	%	-	88	84		5115571

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 #: B7H2728
Report Date: 2017/08/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EXR689	EXR690	EXR691	EXR692	EXR694		
Sampling Date			2017/08/11 11:30	2017/08/11 12:00	2017/08/11 12:30	2017/08/11 13:00	2017/08/11 14:00		
COC Number			618826-09-01	618826-09-01	618826-09-01	618826-09-01	618826-09-01		
	UNITS	**Criteria**	**VS 583**	**VS 584**	**VS 585**	**VS 1585**	**VS 587**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.4	0.5	0.5	0.5	0.2	0.2	5117222

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			EXR695		
Sampling Date			2017/08/11 14:30		
COC Number			618826-09-01		
	UNITS	**Criteria**	**VS 588**	**RDL**	**QC Batch**
Inorganics					
Chromium (VI)	ug/g	**8**	0.4	0.2	5117222

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 #: B7H2728
Report Date: 2017/08/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXR689
Sample ID: VS 583
Matrix: Soil

Collected: 2017/08/11
Shipped:
Received: 2017/08/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5115519	N/A	2017/08/14	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5117222	2017/08/14	2017/08/14	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5117528	2017/08/14	2017/08/14	Daniel Teclu
Moisture	BAL	5115568	N/A	2017/08/14	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5115571	2017/08/11	2017/08/11	Liliana Gaburici

Maxxam ID: EXR689 Dup
Sample ID: VS 583
Matrix: Soil

Collected: 2017/08/11
Shipped:
Received: 2017/08/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5115568	N/A	2017/08/14	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5115571	2017/08/11	2017/08/11	Liliana Gaburici

Maxxam ID: EXR690
Sample ID: VS 584
Matrix: Soil

Collected: 2017/08/11
Shipped:
Received: 2017/08/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5115519	N/A	2017/08/14	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5117222	2017/08/14	2017/08/14	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5117528	2017/08/14	2017/08/14	Daniel Teclu
Moisture	BAL	5115568	N/A	2017/08/14	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5115571	2017/08/11	2017/08/11	Liliana Gaburici

Maxxam ID: EXR691
Sample ID: VS 585
Matrix: Soil

Collected: 2017/08/11
Shipped:
Received: 2017/08/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5115519	N/A	2017/08/14	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5117222	2017/08/14	2017/08/14	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5117528	2017/08/14	2017/08/14	Daniel Teclu
Moisture	BAL	5115568	N/A	2017/08/14	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5115571	2017/08/11	2017/08/11	Liliana Gaburici

Maxxam ID: EXR691 Dup
Sample ID: VS 585
Matrix: Soil

Collected: 2017/08/11
Shipped:
Received: 2017/08/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5117528	2017/08/14	2017/08/14	Daniel Teclu

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 #: B7H2728
Report Date: 2017/08/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXR692
Sample ID: VS 1585
Matrix: Soil

Collected: 2017/08/11
Shipped:
Received: 2017/08/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5115519	N/A	2017/08/14	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5117222	2017/08/14	2017/08/14	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5117528	2017/08/14	2017/08/14	Daniel Teclu
Moisture	BAL	5115568	N/A	2017/08/14	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5115571	2017/08/11	2017/08/11	Liliana Gaburici

Maxxam ID: EXR694
Sample ID: VS 587
Matrix: Soil

Collected: 2017/08/11
Shipped:
Received: 2017/08/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5115519	N/A	2017/08/14	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5117222	2017/08/14	2017/08/14	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5117528	2017/08/14	2017/08/14	Daniel Teclu
Moisture	BAL	5115568	N/A	2017/08/14	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5115571	2017/08/11	2017/08/11	Liliana Gaburici

Maxxam ID: EXR695
Sample ID: VS 588
Matrix: Soil

Collected: 2017/08/11
Shipped:
Received: 2017/08/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5115519	N/A	2017/08/14	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5117222	2017/08/14	2017/08/14	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5117528	2017/08/14	2017/08/14	Daniel Teclu
Moisture	BAL	5115568	N/A	2017/08/14	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5115571	2017/08/11	2017/08/11	Liliana Gaburici

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 #: B7H2728
Report Date: 2017/08/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

GENERAL COMMENTS

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

Package 1	20.7°C

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 #: B7H2728
Report Date: 2017/08/14

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5115571	D10-Anthracene	2017/08/11	85	50 - 130	97	50 - 130	94	%		
5115571	D14-Terphenyl (FS)	2017/08/11	89	50 - 130	101	50 - 130	101	%		
5115571	D8-Acenaphthylene	2017/08/11	73	50 - 130	86	50 - 130	84	%		
5115568	Moisture	2017/08/14							5.2	50
5115571	1-Methylnaphthalene	2017/08/11	92	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5115571	2-Methylnaphthalene	2017/08/11	88	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
5115571	Acenaphthene	2017/08/11	103	50 - 130	110	50 - 130	<0.0050	ug/g	NC	40
5115571	Acenaphthylene	2017/08/11	84	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5115571	Anthracene	2017/08/11	97	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40
5115571	Benzo(a)anthracene	2017/08/11	88	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
5115571	Benzo(a)pyrene	2017/08/11	93	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5115571	Benzo(b/j)fluoranthene	2017/08/11	111	50 - 130	115	50 - 130	<0.0050	ug/g	NC	40
5115571	Benzo(g,h,i)perylene	2017/08/11	70	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
5115571	Benzo(k)fluoranthene	2017/08/11	104	50 - 130	109	50 - 130	<0.0050	ug/g	NC	40
5115571	Chrysene	2017/08/11	92	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5115571	Dibenz(a,h)anthracene	2017/08/11	89	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5115571	Fluoranthene	2017/08/11	103	50 - 130	111	50 - 130	<0.0050	ug/g	NC	40
5115571	Fluorene	2017/08/11	102	50 - 130	113	50 - 130	<0.0050	ug/g	NC	40
5115571	Indeno(1,2,3-cd)pyrene	2017/08/11	82	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5115571	Naphthalene	2017/08/11	87	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
5115571	Phenanthrene	2017/08/11	95	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5115571	Pyrene	2017/08/11	104	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
5117222	Chromium (VI)	2017/08/14	86	75 - 125	92	80 - 120	<0.2	ug/g	NC	35
5117528	Acid Extractable Antimony (Sb)	2017/08/14	66 (1)	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5117528	Acid Extractable Arsenic (As)	2017/08/14	94	75 - 125	101	80 - 120	<1.0	ug/g	NC	30
5117528	Acid Extractable Barium (Ba)	2017/08/14	NC	75 - 125	103	80 - 120	<0.50	ug/g	0.049	30
5117528	Acid Extractable Beryllium (Be)	2017/08/14	97	75 - 125	97	80 - 120	<0.20	ug/g	1.9	30
5117528	Acid Extractable Boron (B)	2017/08/14	90	75 - 125	96	80 - 120	<5.0	ug/g	NC	30
5117528	Acid Extractable Cadmium (Cd)	2017/08/14	101	75 - 125	103	80 - 120	<0.10	ug/g	16	30
5117528	Acid Extractable Chromium (Cr)	2017/08/14	NC	75 - 125	103	80 - 120	<1.0	ug/g	2.7	30
5117528	Acid Extractable Cobalt (Co)	2017/08/14	NC	75 - 125	101	80 - 120	<0.10	ug/g	1.6	30

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 #: B7H2728
Report Date: 2017/08/14

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5117528	Acid Extractable Copper (Cu)	2017/08/14	NC	75 - 125	101	80 - 120	<0.50	ug/g	0.47	30
5117528	Acid Extractable Lead (Pb)	2017/08/14	99	75 - 125	101	80 - 120	<1.0	ug/g	0.31	30
5117528	Acid Extractable Mercury (Hg)	2017/08/14	97	75 - 125	98	80 - 120	<0.050	ug/g	NC	30
5117528	Acid Extractable Molybdenum (Mo)	2017/08/14	100	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
5117528	Acid Extractable Nickel (Ni)	2017/08/14	NC	75 - 125	101	80 - 120	<0.50	ug/g	2.3	30
5117528	Acid Extractable Selenium (Se)	2017/08/14	98	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
5117528	Acid Extractable Silver (Ag)	2017/08/14	102	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5117528	Acid Extractable Thallium (Tl)	2017/08/14	100	75 - 125	101	80 - 120	<0.050	ug/g	2.0	30
5117528	Acid Extractable Uranium (U)	2017/08/14	99	75 - 125	100	80 - 120	<0.050	ug/g	3.6	30
5117528	Acid Extractable Vanadium (V)	2017/08/14	NC	75 - 125	99	80 - 120	<5.0	ug/g	1.1	30
5117528	Acid Extractable Zinc (Zn)	2017/08/14	NC	75 - 125	102	80 - 120	<5.0	ug/g	1.5	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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 #: B7H2728
Report Date: 2017/08/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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 Service 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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #: 618826
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#618826-09-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	SAHAN CHOWDHURY		

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)

	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)	Hexavalent Chromium in Soil by IC							# of Bottles	Comments
1		VS 583	17/08/11	1130 HRS	SOIL		X	X	X							1	
2		VS 584		1200 HRS			X	X	X							1	
3		VS 585		1230 HRS			X	X	X							1	
4		VS 1585		1300 HRS			X	X	X							1	
5		VS 586		1330 HRS			X	X	X							1	
6		VS 587		1400 HRS			X	X	X							1	
7		VS 588		1430 HRS			X	X	X							1	
8																	
9																	
10																	

11-Aug-17 15:00
Alison Cameron
B7H2728
KIV OTT-001

RECEIVED IN OTTAWA

ON Ice Pack

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: 24 HRS ☒
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 Recei	Custody Seal	Yes	No
SAHAN CHOWDHURY	17/08/11	1445 HRS	[illegible]	2017/08/11	15:40	0		21, 21, 20	Present Intact	X	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7H2728
Report Date: 2017/08/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS 583	EXR689-02	Acid Extractable Cobalt (Co)	22	25	0.10	ug/g
VS 583	EXR689-02	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 584	EXR690-02	Acid Extractable Cobalt (Co)	22	26	0.10	ug/g
VS 584	EXR690-02	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 585	EXR691-02-Lab Dup	Acid Extractable Barium (Ba)	390	400	0.50	ug/g
VS 585	EXR691-02	Acid Extractable Barium (Ba)	390	400	0.50	ug/g
VS 585	EXR691-02-Lab Dup	Acid Extractable Cobalt (Co)	22	27	0.10	ug/g
VS 585	EXR691-02	Acid Extractable Cobalt (Co)	22	27	0.10	ug/g
VS 585	EXR691-02-Lab Dup	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 585	EXR691-02	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 1585	EXR692-02	Acid Extractable Barium (Ba)	390	400	0.50	ug/g
VS 1585	EXR692-02	Acid Extractable Cobalt (Co)	22	29	0.10	ug/g
VS 1585	EXR692-02	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 588	EXR695-02	Acid Extractable Cobalt (Co)	22	24	0.10	ug/g
VS 588	EXR695-02	Acid Extractable Vanadium (V)	86	110	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.

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. #: 618826-07-01, 618826-08-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/11
Report #: R4645557
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H1382
Received: 2017/08/10, 15:00

Sample Matrix: Soil
Samples Received: 14

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	14	N/A	2017/08/11	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	14	2017/08/11	2017/08/11	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	14	2017/08/11	2017/08/11	CAM SOP-00447	EPA 6020B m
Moisture	14	N/A	2017/08/11	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	4	2017/08/10	2017/08/10	OTT SOP-00011	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	10	2017/08/10	2017/08/11	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-07-01, 618826-08-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/11
Report #: R4645557
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H1382
Received: 2017/08/10, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EXL424	EXL425	EXL426	EXL427	EXL428		
Sampling Date			2017/08/10 09:00	2017/08/10 09:30	2017/08/10 10:00	2017/08/10 10:30	2017/08/10 11:00		
COC Number			618826-07-01	618826-07-01	618826-07-01	618826-07-01	618826-07-01		
	UNITS	**Criteria**	**VS 570**	**VS 571**	**VS 572**	**VS 573**	**VS 574**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.21	0.20	5115079
Acid Extractable Arsenic (As)	ug/g	**18**	1.2	1.2	1.2	1.3	1.5	1.0	5115079
Acid Extractable Barium (Ba)	ug/g	**390**	370	280	340	**470**	40	0.50	5115079
Acid Extractable Beryllium (Be)	ug/g	**4**	1.0	0.72	0.87	1.4	0.22	0.20	5115079
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5115079
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.14	<0.10	0.10	5115079
Acid Extractable Chromium (Cr)	ug/g	**160**	110	66	100	120	15	1.0	5115079
Acid Extractable Cobalt (Co)	ug/g	**22**	**23**	17	21	**36**	3.5	0.10	5115079
Acid Extractable Copper (Cu)	ug/g	**140**	59	35	57	59	6.1	0.50	5115079
Acid Extractable Lead (Pb)	ug/g	**120**	8.6	5.7	6.3	9.0	30	1.0	5115079
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	0.67	<0.50	0.50	5115079
Acid Extractable Nickel (Ni)	ug/g	**100**	60	39	57	65	8.9	0.50	5115079
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5115079
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5115079
Acid Extractable Thallium (Tl)	ug/g	**1**	0.45	0.34	0.44	0.54	0.064	0.050	5115079
Acid Extractable Uranium (U)	ug/g	**23**	2.3	1.3	2.0	2.5	0.41	0.050	5115079
Acid Extractable Vanadium (V)	ug/g	**86**	**110**	80	**100**	**120**	18	5.0	5115079
Acid Extractable Zinc (Zn)	ug/g	**340**	130	96	130	150	40	5.0	5115079
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5115079

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EXL429	EXL430	EXL431	EXL432	EXL433		
Sampling Date			2017/08/10 11:30	2017/08/10 11:30	2017/08/10 12:00	2017/08/10 12:30	2017/08/10 13:00		
COC Number			618826-07-01	618826-07-01	618826-07-01	618826-07-01	618826-07-01		
	UNITS	**Criteria**	**VS 575**	**VS 1575**	**VS 576**	**VS 577**	**VS 578**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5115079
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	1.3	1.1	1.0	5115079
Acid Extractable Barium (Ba)	ug/g	**390**	29	28	31	**410**	29	0.50	5115079
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	<0.20	0.24	1.2	0.26	0.20	5115079
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5115079
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.14	<0.10	0.10	5115079
Acid Extractable Chromium (Cr)	ug/g	**160**	17	18	17	120	17	1.0	5115079
Acid Extractable Cobalt (Co)	ug/g	**22**	3.7	3.8	4.2	**31**	4.8	0.10	5115079
Acid Extractable Copper (Cu)	ug/g	**140**	5.4	5.3	7.3	58	7.5	0.50	5115079
Acid Extractable Lead (Pb)	ug/g	**120**	2.2	2.2	3.5	8.3	4.0	1.0	5115079
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	1.8	<0.50	0.50	5115079
Acid Extractable Nickel (Ni)	ug/g	**100**	8.7	8.3	9.7	65	11	0.50	5115079
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5115079
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5115079
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	0.052	<0.050	0.51	0.072	0.050	5115079
Acid Extractable Uranium (U)	ug/g	**23**	0.87	0.89	0.71	1.9	0.63	0.050	5115079
Acid Extractable Vanadium (V)	ug/g	**86**	22	23	22	**110**	21	5.0	5115079
Acid Extractable Zinc (Zn)	ug/g	**340**	18	18	20	140	21	5.0	5115079
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5115079

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EXL450	EXL451	EXL452	EXL453		
Sampling Date			2017/08/10 13:30	2017/08/10 13:30	2017/08/10 14:00	2017/08/10 14:30		
COC Number			618826-08-01	618826-08-01	618826-08-01	618826-08-01		
	UNITS	**Criteria**	**VS 759**	**VS 580**	**VS 581**	**VS 582**	**RDL**	**QC Batch**
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	5115079
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	1.3	1.1	1.1	1.0	5115079
Acid Extractable Barium (Ba)	ug/g	**390**	22	**420**	140	330	0.50	5115079
Acid Extractable Beryllium (Be)	ug/g	**4**	0.21	1.4	0.53	0.73	0.20	5115079
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.0	5115079
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	0.10	5115079
Acid Extractable Chromium (Cr)	ug/g	**160**	13	130	42	78	1.0	5115079
Acid Extractable Cobalt (Co)	ug/g	**22**	3.8	**29**	11	20	0.10	5115079
Acid Extractable Copper (Cu)	ug/g	**140**	4.7	65	26	43	0.50	5115079
Acid Extractable Lead (Pb)	ug/g	**120**	3.0	7.8	4.3	5.6	1.0	5115079
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	0.50	5115079
Acid Extractable Nickel (Ni)	ug/g	**100**	7.2	73	31	47	0.50	5115079
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	5115079
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	5115079
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	0.49	0.21	0.42	0.050	5115079
Acid Extractable Uranium (U)	ug/g	**23**	0.54	2.8	2.0	0.79	0.050	5115079
Acid Extractable Vanadium (V)	ug/g	**86**	16	**120**	55	**92**	5.0	5115079
Acid Extractable Zinc (Zn)	ug/g	**340**	13	140	50	110	5.0	5115079
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.050	5115079

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EXL424	EXL424	EXL425	EXL426	EXL427		
Sampling Date			2017/08/10 09:00	2017/08/10 09:00	2017/08/10 09:30	2017/08/10 10:00	2017/08/10 10:30		
COC Number			618826-07-01	618826-07-01	618826-07-01	618826-07-01	618826-07-01		
	UNITS	Criteria	VS 570	VS 570 Lab-Dup	VS 571	VS 572	VS 573	RDL	QC Batch
Inorganics									
Moisture	%	-	27	26	22	24	28	0.2	5114354
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	5113536
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Surrogate Recovery (%)									
D10-Anthracene	%	-	97	96	97	96	92		5114358
D14-Terphenyl (FS)	%	-	97	94	94	98	95		5114358
D8-Acenaphthylene	%	-	97	95	94	95	94		5114358

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 Job #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EXL428	EXL429	EXL430	EXL431	EXL432		
Sampling Date			2017/08/10 11:00	2017/08/10 11:30	2017/08/10 11:30	2017/08/10 12:00	2017/08/10 12:30		
COC Number			618826-07-01	618826-07-01	618826-07-01	618826-07-01	618826-07-01		
	UNITS	**Criteria**	**VS 574**	**VS 575**	**VS 1575**	**VS 576**	**VS 577**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	14	13	13	15	30	0.2	5114354
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	5113536
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	0.0082	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Acenaphthylene	ug/g	**0.15**	0.012	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Anthracene	ug/g	**0.67**	0.029	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(a)anthracene	ug/g	**0.5**	0.18	<0.0050	<0.0050	<0.0050	0.0075	0.0050	5114358
Benzo(a)pyrene	ug/g	**0.3**	0.15	<0.0050	<0.0050	<0.0050	0.0075	0.0050	5114358
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.24	<0.0050	<0.0050	<0.0050	0.014	0.0050	5114358
Benzo(g,h,i)perylene	ug/g	**6.6**	0.087	<0.0050	<0.0050	<0.0050	0.0067	0.0050	5114358
Benzo(k)fluoranthene	ug/g	**0.78**	0.082	<0.0050	<0.0050	<0.0050	0.0067	0.0050	5114358
Chrysene	ug/g	**7**	0.15	<0.0050	<0.0050	<0.0050	0.0060	0.0050	5114358
Dibenz(a,h)anthracene	ug/g	**0.1**	0.026	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Fluoranthene	ug/g	**0.69**	0.34	<0.0050	<0.0050	0.0059	0.014	0.0050	5114358
Fluorene	ug/g	**62**	0.011	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.11	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Phenanthrene	ug/g	**6.2**	0.12	<0.0050	<0.0050	<0.0050	0.0067	0.0050	5114358
Pyrene	ug/g	**78**	0.31	<0.0050	<0.0050	<0.0050	0.013	0.0050	5114358
Surrogate Recovery (%)									
D10-Anthracene	%	-	91	97	98	100	92		5114358
D14-Terphenyl (FS)	%	-	91	97	99	100	91		5114358
D8-Acenaphthylene	%	-	92	98	97	100	93		5114358

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EXL433	EXL450	EXL451	EXL452	EXL453		
Sampling Date			2017/08/10 13:00	2017/08/10 13:30	2017/08/10 13:30	2017/08/10 14:00	2017/08/10 14:30		
COC Number			618826-07-01	618826-08-01	618826-08-01	618826-08-01	618826-08-01		
	UNITS	**Criteria**	**VS 578**	**VS 759**	**VS 580**	**VS 581**	**VS 582**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	15	15	31	21	33	0.2	5114354
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	5113536
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0052	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(a)pyrene	ug/g	**0.3**	0.0058	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.010	0.0075	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0052	<0.0050	<0.0050	<0.0050	0.0050	5114358
Chrysene	ug/g	**7**	0.0064	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Fluoranthene	ug/g	**0.69**	0.013	0.0085	<0.0050	<0.0050	<0.0050	0.0050	5114358
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Phenanthrene	ug/g	**6.2**	0.0069	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Pyrene	ug/g	**78**	0.0096	0.0075	<0.0050	<0.0050	<0.0050	0.0050	5114358
Surrogate Recovery (%)									
D10-Anthracene	%	-	97	101	97	92	95		5114358
D14-Terphenyl (FS)	%	-	98	101	93	91	93		5114358
D8-Acenaphthylene	%	-	97	99	94	89	91		5114358

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EXL424	EXL425	EXL426	EXL427	EXL428		
Sampling Date			2017/08/10 09:00	2017/08/10 09:30	2017/08/10 10:00	2017/08/10 10:30	2017/08/10 11:00		
COC Number			618826-07-01	618826-07-01	618826-07-01	618826-07-01	618826-07-01		
	UNITS	**Criteria**	**VS 570**	**VS 571**	**VS 572**	**VS 573**	**VS 574**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.8	0.5	0.4	0.6	0.3	0.2	5114487

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			EXL429	EXL429	EXL430	EXL431	EXL432		
Sampling Date			2017/08/10 11:30	2017/08/10 11:30	2017/08/10 11:30	2017/08/10 12:00	2017/08/10 12:30		
COC Number			618826-07-01	618826-07-01	618826-07-01	618826-07-01	618826-07-01		
	UNITS	**Criteria**	**VS 575**	**VS 575 Lab-Dup**	**VS 1575**	**VS 576**	**VS 577**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.2	0.2	0.3	0.4	0.5	0.2	5114487

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			EXL433	EXL450	EXL451	EXL452	EXL453		
Sampling Date			2017/08/10 13:00	2017/08/10 13:30	2017/08/10 13:30	2017/08/10 14:00	2017/08/10 14:30		
COC Number			618826-07-01	618826-08-01	618826-08-01	618826-08-01	618826-08-01		
	UNITS	**Criteria**	**VS 578**	**VS 759**	**VS 580**	**VS 581**	**VS 582**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.3	0.2	0.4	0.5	0.8	0.2	5114487

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXL424
Sample ID: VS 570
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/10	Liliana Gaburici

Maxxam ID: EXL424 Dup
Sample ID: VS 570
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/10	Liliana Gaburici

Maxxam ID: EXL425
Sample ID: VS 571
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/10	Liliana Gaburici

Maxxam ID: EXL426
Sample ID: VS 572
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/10	Liliana Gaburici

Maxxam ID: EXL427
Sample ID: VS 573
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/10	Liliana Gaburici

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXL428
Sample ID: VS 574
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

Maxxam ID: EXL429
Sample ID: VS 575
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

Maxxam ID: EXL429 Dup
Sample ID: VS 575
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin

Maxxam ID: EXL430
Sample ID: VS 1575
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

Maxxam ID: EXL431
Sample ID: VS 576
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXL432
Sample ID: VS 577
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

Maxxam ID: EXL433
Sample ID: VS 578
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

Maxxam ID: EXL450
Sample ID: VS 759
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

Maxxam ID: EXL451
Sample ID: VS 580
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

Maxxam ID: EXL452
Sample ID: VS 581
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXL452
Sample ID: VS 581
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

Maxxam ID: EXL453
Sample ID: VS 582
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

GENERAL COMMENTS

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

Package 1	22.0°C

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 #: B7H1382
Report Date: 2017/08/11

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5114358	D10-Anthracene	2017/08/10	89	50 - 130	92	50 - 130	100	%		
5114358	D14-Terphenyl (FS)	2017/08/10	87	50 - 130	92	50 - 130	98	%		
5114358	D8-Acenaphthylene	2017/08/10	88	50 - 130	93	50 - 130	97	%		
5114354	Moisture	2017/08/11							1.1	50
5114358	1-Methylnaphthalene	2017/08/10	96	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
5114358	2-Methylnaphthalene	2017/08/10	93	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5114358	Acenaphthene	2017/08/10	105	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5114358	Acenaphthylene	2017/08/10	98	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
5114358	Anthracene	2017/08/10	99	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5114358	Benzo(a)anthracene	2017/08/10	97	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
5114358	Benzo(a)pyrene	2017/08/10	82	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5114358	Benzo(b/j)fluoranthene	2017/08/10	104	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40
5114358	Benzo(g,h,i)perylene	2017/08/10	73	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5114358	Benzo(k)fluoranthene	2017/08/10	94	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5114358	Chrysene	2017/08/10	94	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5114358	Dibenz(a,h)anthracene	2017/08/10	78	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5114358	Fluoranthene	2017/08/10	100	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
5114358	Fluorene	2017/08/10	115	50 - 130	112	50 - 130	<0.0050	ug/g	NC	40
5114358	Indeno(1,2,3-cd)pyrene	2017/08/10	86	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
5114358	Naphthalene	2017/08/10	87	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5114358	Phenanthrene	2017/08/10	100	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5114358	Pyrene	2017/08/10	102	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
5114487	Chromium (VI)	2017/08/11	82	75 - 125	91	80 - 120	<0.2	ug/g	0.57	35
5115079	Acid Extractable Antimony (Sb)	2017/08/11	98	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
5115079	Acid Extractable Arsenic (As)	2017/08/11	97	75 - 125	103	80 - 120	<1.0	ug/g	2.0	30
5115079	Acid Extractable Barium (Ba)	2017/08/11	102	75 - 125	97	80 - 120	<0.50	ug/g	2.6	30
5115079	Acid Extractable Beryllium (Be)	2017/08/11	106	75 - 125	105	80 - 120	<0.20	ug/g	3.6	30
5115079	Acid Extractable Boron (B)	2017/08/11	101	75 - 125	100	80 - 120	<5.0	ug/g	NC	30
5115079	Acid Extractable Cadmium (Cd)	2017/08/11	99	75 - 125	98	80 - 120	<0.10	ug/g	8.7	30
5115079	Acid Extractable Chromium (Cr)	2017/08/11	97	75 - 125	101	80 - 120	<1.0	ug/g	1.4	30
5115079	Acid Extractable Cobalt (Co)	2017/08/11	96	75 - 125	101	80 - 120	<0.10	ug/g	0.58	30

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 #: B7H1382
Report Date: 2017/08/11

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5115079	Acid Extractable Copper (Cu)	2017/08/11	99	75 - 125	103	80 - 120	<0.50	ug/g	1.4	30
5115079	Acid Extractable Lead (Pb)	2017/08/11	97	75 - 125	102	80 - 120	<1.0	ug/g	0.34	30
5115079	Acid Extractable Mercury (Hg)	2017/08/11	87	75 - 125	93	80 - 120	<0.050	ug/g		
5115079	Acid Extractable Molybdenum (Mo)	2017/08/11	99	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
5115079	Acid Extractable Nickel (Ni)	2017/08/11	100	75 - 125	105	80 - 120	<0.50	ug/g	2.7	30
5115079	Acid Extractable Selenium (Se)	2017/08/11	100	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
5115079	Acid Extractable Silver (Ag)	2017/08/11	99	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5115079	Acid Extractable Thallium (Tl)	2017/08/11	94	75 - 125	99	80 - 120	<0.050	ug/g	14	30
5115079	Acid Extractable Uranium (U)	2017/08/11	102	75 - 125	106	80 - 120	<0.050	ug/g	2.3	30
5115079	Acid Extractable Vanadium (V)	2017/08/11	103	75 - 125	103	80 - 120	<5.0	ug/g	2.6	30
5115079	Acid Extractable Zinc (Zn)	2017/08/11	NC	75 - 125	101	80 - 120	<5.0	ug/g	1.8	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #: 618826
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#618826-08-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	SHIHAN CHOWDHURY		

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: _____ Time Required: 24HR ☒
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 (Soil)	Hexavalent Chromium in Soil by IC							# of Bottles	Comments
1		VS 579	17/08/10	1330 HRS	SOIL		X	X	X							1	
2		VS 580	↓	1330 HRS	↓		X	X	X							1	
3		VS 581	↓	1400 HRS	↓		X	X	X							1	
4		VS 582	↓	1430 HRS	↓		X	X	X							1	
5																	
6																	
7																	
8																	
9																	
10																	

10-Aug-17 15:00
Alison Cameron
B7H1382
KIY OTT-001

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
SHIHAN CHOWDHURY	17/08/10	1445 HRS		2017/08/10	15	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei 23, 21, 22	Custody Seal	Yes	No
		Present	✓	
		Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

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

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B70916	Maxxam Job #:	Bottle Order #:
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			618826
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113	COC #:	Project Manager:
Tel:	(613) 592-9600 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#618826-07-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	SHIHAN CHOWDHURY		

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: _____ Time Required: 24 HR ☒
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 (Soil)	Hexavalent Chromium in Soil by IC							# of Bottles	Comments
1		VS 570	17/08/10	0900 HRS	SOIL		X	X	X							1	
2		VS 571		0930 HRS			X	X	X							1	
3		VS 572		1000 HRS			X	X	X							1	
4		VS 573		1030 HRS			X	X	X							1	
5		VS 574		1100 HRS			X	X	X							1	
6		VS 575		1130 HRS			X	X	X							1	
7		VS 1575		1130 HRS			X	X	X							1	
8		VS 576		1200 HRS			X	X	X							1	
9		VS 577		1230 HRS			X	X	X							1	
10		VS 578		1300 HRS			X	X	X							1	

10-Aug-17 15:00
Alison Cameron
B7H1382
KIY OTT-001

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 Recei	Custody Seal	Yes	No
Shihan / SHIHAN CHOWDHURY	17/08/10	1445 HRS	Kim Jongeun	2017/08/10	16-00	0		23, 21, 22	Present Intact	☒	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS 570	EXL424-02	Acid Extractable Cobalt (Co)	22	23	0.10	ug/g
VS 570	EXL424-02	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 572	EXL426-02	Acid Extractable Vanadium (V)	86	100	5.0	ug/g
VS 573	EXL427-02	Acid Extractable Barium (Ba)	390	470	0.50	ug/g
VS 573	EXL427-02	Acid Extractable Cobalt (Co)	22	36	0.10	ug/g
VS 573	EXL427-02	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 577	EXL432-02	Acid Extractable Barium (Ba)	390	410	0.50	ug/g
VS 577	EXL432-02	Acid Extractable Cobalt (Co)	22	31	0.10	ug/g
VS 577	EXL432-02	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 580	EXL451-02	Acid Extractable Barium (Ba)	390	420	0.50	ug/g
VS 580	EXL451-02	Acid Extractable Cobalt (Co)	22	29	0.10	ug/g
VS 580	EXL451-02	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 582	EXL453-02	Acid Extractable Vanadium (V)	86	92	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.

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. #: 618826-07-01, 618826-08-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/11
Report #: R4645557
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H1382
Received: 2017/08/10, 15:00

Sample Matrix: Soil
Samples Received: 14

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	14	N/A	2017/08/11	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	14	2017/08/11	2017/08/11	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	14	2017/08/11	2017/08/11	CAM SOP-00447	EPA 6020B m
Moisture	14	N/A	2017/08/11	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	4	2017/08/10	2017/08/10	OTT SOP-00011	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	10	2017/08/10	2017/08/11	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-07-01, 618826-08-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/11
Report #: R4645557
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H1382
Received: 2017/08/10, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EXL424	EXL425	EXL426	EXL427	EXL428		
Sampling Date			2017/08/10 09:00	2017/08/10 09:30	2017/08/10 10:00	2017/08/10 10:30	2017/08/10 11:00		
COC Number			618826-07-01	618826-07-01	618826-07-01	618826-07-01	618826-07-01		
	UNITS	**Criteria**	**VS 570**	**VS 571**	**VS 572**	**VS 573**	**VS 574**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.21	0.20	5115079
Acid Extractable Arsenic (As)	ug/g	**18**	1.2	1.2	1.2	1.3	1.5	1.0	5115079
Acid Extractable Barium (Ba)	ug/g	**390**	370	280	340	**470**	40	0.50	5115079
Acid Extractable Beryllium (Be)	ug/g	**4**	1.0	0.72	0.87	1.4	0.22	0.20	5115079
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5115079
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.14	<0.10	0.10	5115079
Acid Extractable Chromium (Cr)	ug/g	**160**	110	66	100	120	15	1.0	5115079
Acid Extractable Cobalt (Co)	ug/g	**22**	**23**	17	21	**36**	3.5	0.10	5115079
Acid Extractable Copper (Cu)	ug/g	**140**	59	35	57	59	6.1	0.50	5115079
Acid Extractable Lead (Pb)	ug/g	**120**	8.6	5.7	6.3	9.0	30	1.0	5115079
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	0.67	<0.50	0.50	5115079
Acid Extractable Nickel (Ni)	ug/g	**100**	60	39	57	65	8.9	0.50	5115079
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5115079
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5115079
Acid Extractable Thallium (Tl)	ug/g	**1**	0.45	0.34	0.44	0.54	0.064	0.050	5115079
Acid Extractable Uranium (U)	ug/g	**23**	2.3	1.3	2.0	2.5	0.41	0.050	5115079
Acid Extractable Vanadium (V)	ug/g	**86**	**110**	80	**100**	**120**	18	5.0	5115079
Acid Extractable Zinc (Zn)	ug/g	**340**	130	96	130	150	40	5.0	5115079
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5115079

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EXL429	EXL430	EXL431	EXL432	EXL433		
Sampling Date			2017/08/10 11:30	2017/08/10 11:30	2017/08/10 12:00	2017/08/10 12:30	2017/08/10 13:00		
COC Number			618826-07-01	618826-07-01	618826-07-01	618826-07-01	618826-07-01		
	UNITS	**Criteria**	**VS 575**	**VS 1575**	**VS 576**	**VS 577**	**VS 578**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5115079
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	1.3	1.1	1.0	5115079
Acid Extractable Barium (Ba)	ug/g	**390**	29	28	31	**410**	29	0.50	5115079
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	<0.20	0.24	1.2	0.26	0.20	5115079
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5115079
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.14	<0.10	0.10	5115079
Acid Extractable Chromium (Cr)	ug/g	**160**	17	18	17	120	17	1.0	5115079
Acid Extractable Cobalt (Co)	ug/g	**22**	3.7	3.8	4.2	**31**	4.8	0.10	5115079
Acid Extractable Copper (Cu)	ug/g	**140**	5.4	5.3	7.3	58	7.5	0.50	5115079
Acid Extractable Lead (Pb)	ug/g	**120**	2.2	2.2	3.5	8.3	4.0	1.0	5115079
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	1.8	<0.50	0.50	5115079
Acid Extractable Nickel (Ni)	ug/g	**100**	8.7	8.3	9.7	65	11	0.50	5115079
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5115079
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5115079
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	0.052	<0.050	0.51	0.072	0.050	5115079
Acid Extractable Uranium (U)	ug/g	**23**	0.87	0.89	0.71	1.9	0.63	0.050	5115079
Acid Extractable Vanadium (V)	ug/g	**86**	22	23	22	**110**	21	5.0	5115079
Acid Extractable Zinc (Zn)	ug/g	**340**	18	18	20	140	21	5.0	5115079
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5115079

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EXL450	EXL451	EXL452	EXL453		
Sampling Date			2017/08/10 13:30	2017/08/10 13:30	2017/08/10 14:00	2017/08/10 14:30		
COC Number			618826-08-01	618826-08-01	618826-08-01	618826-08-01		
	UNITS	**Criteria**	**VS 759**	**VS 580**	**VS 581**	**VS 582**	**RDL**	**QC Batch**
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	5115079
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	1.3	1.1	1.1	1.0	5115079
Acid Extractable Barium (Ba)	ug/g	**390**	22	**420**	140	330	0.50	5115079
Acid Extractable Beryllium (Be)	ug/g	**4**	0.21	1.4	0.53	0.73	0.20	5115079
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.0	5115079
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	0.10	5115079
Acid Extractable Chromium (Cr)	ug/g	**160**	13	130	42	78	1.0	5115079
Acid Extractable Cobalt (Co)	ug/g	**22**	3.8	**29**	11	20	0.10	5115079
Acid Extractable Copper (Cu)	ug/g	**140**	4.7	65	26	43	0.50	5115079
Acid Extractable Lead (Pb)	ug/g	**120**	3.0	7.8	4.3	5.6	1.0	5115079
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	0.50	5115079
Acid Extractable Nickel (Ni)	ug/g	**100**	7.2	73	31	47	0.50	5115079
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	5115079
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	5115079
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	0.49	0.21	0.42	0.050	5115079
Acid Extractable Uranium (U)	ug/g	**23**	0.54	2.8	2.0	0.79	0.050	5115079
Acid Extractable Vanadium (V)	ug/g	**86**	16	**120**	55	**92**	5.0	5115079
Acid Extractable Zinc (Zn)	ug/g	**340**	13	140	50	110	5.0	5115079
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.050	5115079

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EXL424	EXL424	EXL425	EXL426	EXL427		
Sampling Date			2017/08/10 09:00	2017/08/10 09:00	2017/08/10 09:30	2017/08/10 10:00	2017/08/10 10:30		
COC Number			618826-07-01	618826-07-01	618826-07-01	618826-07-01	618826-07-01		
	UNITS	Criteria	VS 570	VS 570 Lab-Dup	VS 571	VS 572	VS 573	RDL	QC Batch
Inorganics									
Moisture	%	-	27	26	22	24	28	0.2	5114354
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	5113536
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Surrogate Recovery (%)									
D10-Anthracene	%	-	97	96	97	96	92		5114358
D14-Terphenyl (FS)	%	-	97	94	94	98	95		5114358
D8-Acenaphthylene	%	-	97	95	94	95	94		5114358

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 Job #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EXL428	EXL429	EXL430	EXL431	EXL432		
Sampling Date			2017/08/10 11:00	2017/08/10 11:30	2017/08/10 11:30	2017/08/10 12:00	2017/08/10 12:30		
COC Number			618826-07-01	618826-07-01	618826-07-01	618826-07-01	618826-07-01		
	UNITS	**Criteria**	**VS 574**	**VS 575**	**VS 1575**	**VS 576**	**VS 577**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	14	13	13	15	30	0.2	5114354
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	5113536
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	0.0082	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Acenaphthylene	ug/g	**0.15**	0.012	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Anthracene	ug/g	**0.67**	0.029	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(a)anthracene	ug/g	**0.5**	0.18	<0.0050	<0.0050	<0.0050	0.0075	0.0050	5114358
Benzo(a)pyrene	ug/g	**0.3**	0.15	<0.0050	<0.0050	<0.0050	0.0075	0.0050	5114358
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.24	<0.0050	<0.0050	<0.0050	0.014	0.0050	5114358
Benzo(g,h,i)perylene	ug/g	**6.6**	0.087	<0.0050	<0.0050	<0.0050	0.0067	0.0050	5114358
Benzo(k)fluoranthene	ug/g	**0.78**	0.082	<0.0050	<0.0050	<0.0050	0.0067	0.0050	5114358
Chrysene	ug/g	**7**	0.15	<0.0050	<0.0050	<0.0050	0.0060	0.0050	5114358
Dibenz(a,h)anthracene	ug/g	**0.1**	0.026	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Fluoranthene	ug/g	**0.69**	0.34	<0.0050	<0.0050	0.0059	0.014	0.0050	5114358
Fluorene	ug/g	**62**	0.011	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.11	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Phenanthrene	ug/g	**6.2**	0.12	<0.0050	<0.0050	<0.0050	0.0067	0.0050	5114358
Pyrene	ug/g	**78**	0.31	<0.0050	<0.0050	<0.0050	0.013	0.0050	5114358
Surrogate Recovery (%)									
D10-Anthracene	%	-	91	97	98	100	92		5114358
D14-Terphenyl (FS)	%	-	91	97	99	100	91		5114358
D8-Acenaphthylene	%	-	92	98	97	100	93		5114358

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EXL433	EXL450	EXL451	EXL452	EXL453		
Sampling Date			2017/08/10 13:00	2017/08/10 13:30	2017/08/10 13:30	2017/08/10 14:00	2017/08/10 14:30		
COC Number			618826-07-01	618826-08-01	618826-08-01	618826-08-01	618826-08-01		
	UNITS	**Criteria**	**VS 578**	**VS 759**	**VS 580**	**VS 581**	**VS 582**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	15	15	31	21	33	0.2	5114354
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	5113536
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0052	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(a)pyrene	ug/g	**0.3**	0.0058	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.010	0.0075	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0052	<0.0050	<0.0050	<0.0050	0.0050	5114358
Chrysene	ug/g	**7**	0.0064	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Fluoranthene	ug/g	**0.69**	0.013	0.0085	<0.0050	<0.0050	<0.0050	0.0050	5114358
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Phenanthrene	ug/g	**6.2**	0.0069	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5114358
Pyrene	ug/g	**78**	0.0096	0.0075	<0.0050	<0.0050	<0.0050	0.0050	5114358
Surrogate Recovery (%)									
D10-Anthracene	%	-	97	101	97	92	95		5114358
D14-Terphenyl (FS)	%	-	98	101	93	91	93		5114358
D8-Acenaphthylene	%	-	97	99	94	89	91		5114358

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EXL424	EXL425	EXL426	EXL427	EXL428		
Sampling Date			2017/08/10 09:00	2017/08/10 09:30	2017/08/10 10:00	2017/08/10 10:30	2017/08/10 11:00		
COC Number			618826-07-01	618826-07-01	618826-07-01	618826-07-01	618826-07-01		
	UNITS	**Criteria**	**VS 570**	**VS 571**	**VS 572**	**VS 573**	**VS 574**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.8	0.5	0.4	0.6	0.3	0.2	5114487

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			EXL429	EXL429	EXL430	EXL431	EXL432		
Sampling Date			2017/08/10 11:30	2017/08/10 11:30	2017/08/10 11:30	2017/08/10 12:00	2017/08/10 12:30		
COC Number			618826-07-01	618826-07-01	618826-07-01	618826-07-01	618826-07-01		
	UNITS	**Criteria**	**VS 575**	**VS 575 Lab-Dup**	**VS 1575**	**VS 576**	**VS 577**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.2	0.2	0.3	0.4	0.5	0.2	5114487

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			EXL433	EXL450	EXL451	EXL452	EXL453		
Sampling Date			2017/08/10 13:00	2017/08/10 13:30	2017/08/10 13:30	2017/08/10 14:00	2017/08/10 14:30		
COC Number			618826-07-01	618826-08-01	618826-08-01	618826-08-01	618826-08-01		
	UNITS	**Criteria**	**VS 578**	**VS 759**	**VS 580**	**VS 581**	**VS 582**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.3	0.2	0.4	0.5	0.8	0.2	5114487

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXL424
Sample ID: VS 570
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/10	Liliana Gaburici

Maxxam ID: EXL424 Dup
Sample ID: VS 570
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/10	Liliana Gaburici

Maxxam ID: EXL425
Sample ID: VS 571
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/10	Liliana Gaburici

Maxxam ID: EXL426
Sample ID: VS 572
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/10	Liliana Gaburici

Maxxam ID: EXL427
Sample ID: VS 573
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/10	Liliana Gaburici

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXL428
Sample ID: VS 574
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

Maxxam ID: EXL429
Sample ID: VS 575
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

Maxxam ID: EXL429 Dup
Sample ID: VS 575
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin

Maxxam ID: EXL430
Sample ID: VS 1575
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

Maxxam ID: EXL431
Sample ID: VS 576
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXL432
Sample ID: VS 577
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

Maxxam ID: EXL433
Sample ID: VS 578
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

Maxxam ID: EXL450
Sample ID: VS 759
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

Maxxam ID: EXL451
Sample ID: VS 580
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

Maxxam ID: EXL452
Sample ID: VS 581
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXL452
Sample ID: VS 581
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

Maxxam ID: EXL453
Sample ID: VS 582
Matrix: Soil

Collected: 2017/08/10
Shipped:
Received: 2017/08/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5113536	N/A	2017/08/11	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5114487	2017/08/11	2017/08/11	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5115079	2017/08/11	2017/08/11	Thao Nguyen
Moisture	BAL	5114354	N/A	2017/08/11	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5114358	2017/08/10	2017/08/11	Liliana Gaburici

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

GENERAL COMMENTS

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

Package 1	22.0°C

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 #: B7H1382
Report Date: 2017/08/11

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5114358	D10-Anthracene	2017/08/10	89	50 - 130	92	50 - 130	100	%		
5114358	D14-Terphenyl (FS)	2017/08/10	87	50 - 130	92	50 - 130	98	%		
5114358	D8-Acenaphthylene	2017/08/10	88	50 - 130	93	50 - 130	97	%		
5114354	Moisture	2017/08/11							1.1	50
5114358	1-Methylnaphthalene	2017/08/10	96	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
5114358	2-Methylnaphthalene	2017/08/10	93	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5114358	Acenaphthene	2017/08/10	105	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5114358	Acenaphthylene	2017/08/10	98	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
5114358	Anthracene	2017/08/10	99	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5114358	Benzo(a)anthracene	2017/08/10	97	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
5114358	Benzo(a)pyrene	2017/08/10	82	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5114358	Benzo(b/j)fluoranthene	2017/08/10	104	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40
5114358	Benzo(g,h,i)perylene	2017/08/10	73	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5114358	Benzo(k)fluoranthene	2017/08/10	94	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5114358	Chrysene	2017/08/10	94	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5114358	Dibenz(a,h)anthracene	2017/08/10	78	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5114358	Fluoranthene	2017/08/10	100	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
5114358	Fluorene	2017/08/10	115	50 - 130	112	50 - 130	<0.0050	ug/g	NC	40
5114358	Indeno(1,2,3-cd)pyrene	2017/08/10	86	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
5114358	Naphthalene	2017/08/10	87	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5114358	Phenanthrene	2017/08/10	100	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5114358	Pyrene	2017/08/10	102	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
5114487	Chromium (VI)	2017/08/11	82	75 - 125	91	80 - 120	<0.2	ug/g	0.57	35
5115079	Acid Extractable Antimony (Sb)	2017/08/11	98	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
5115079	Acid Extractable Arsenic (As)	2017/08/11	97	75 - 125	103	80 - 120	<1.0	ug/g	2.0	30
5115079	Acid Extractable Barium (Ba)	2017/08/11	102	75 - 125	97	80 - 120	<0.50	ug/g	2.6	30
5115079	Acid Extractable Beryllium (Be)	2017/08/11	106	75 - 125	105	80 - 120	<0.20	ug/g	3.6	30
5115079	Acid Extractable Boron (B)	2017/08/11	101	75 - 125	100	80 - 120	<5.0	ug/g	NC	30
5115079	Acid Extractable Cadmium (Cd)	2017/08/11	99	75 - 125	98	80 - 120	<0.10	ug/g	8.7	30
5115079	Acid Extractable Chromium (Cr)	2017/08/11	97	75 - 125	101	80 - 120	<1.0	ug/g	1.4	30
5115079	Acid Extractable Cobalt (Co)	2017/08/11	96	75 - 125	101	80 - 120	<0.10	ug/g	0.58	30

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 #: B7H1382
Report Date: 2017/08/11

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5115079	Acid Extractable Copper (Cu)	2017/08/11	99	75 - 125	103	80 - 120	<0.50	ug/g	1.4	30
5115079	Acid Extractable Lead (Pb)	2017/08/11	97	75 - 125	102	80 - 120	<1.0	ug/g	0.34	30
5115079	Acid Extractable Mercury (Hg)	2017/08/11	87	75 - 125	93	80 - 120	<0.050	ug/g		
5115079	Acid Extractable Molybdenum (Mo)	2017/08/11	99	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
5115079	Acid Extractable Nickel (Ni)	2017/08/11	100	75 - 125	105	80 - 120	<0.50	ug/g	2.7	30
5115079	Acid Extractable Selenium (Se)	2017/08/11	100	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
5115079	Acid Extractable Silver (Ag)	2017/08/11	99	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5115079	Acid Extractable Thallium (Tl)	2017/08/11	94	75 - 125	99	80 - 120	<0.050	ug/g	14	30
5115079	Acid Extractable Uranium (U)	2017/08/11	102	75 - 125	106	80 - 120	<0.050	ug/g	2.3	30
5115079	Acid Extractable Vanadium (V)	2017/08/11	103	75 - 125	103	80 - 120	<5.0	ug/g	2.6	30
5115079	Acid Extractable Zinc (Zn)	2017/08/11	NC	75 - 125	101	80 - 120	<5.0	ug/g	1.8	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #: 618826
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#618826-08-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	SHIHAN CHOWDHURY		

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: _____ Time Required: 24HR ☒
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 (Soil)	Hexavalent Chromium in Soil by IC							# of Bottles	Comments
1		VS 579	17/08/10	1330 HRS	SOIL		X	X	X							1	
2		VS 580	↓	1330 HRS	↓		X	X	X							1	
3		VS 581	↓	1400 HRS	↓		X	X	X							1	
4		VS 582	↓	1430 HRS	↓		X	X	X							1	
5																	
6																	
7																	
8																	
9																	
10																	

10-Aug-17 15:00
Alison Cameron
B7H1382
KIY OTT-001

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
SHIHAN CHOWDHURY	17/08/10	1445 HRS		2017/08/10	15	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei 23, 21, 22	Custody Seal	Yes	No
		Present	✓	
		Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

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

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B70916	Maxxam Job #:	Bottle Order #:
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			618826
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113	COC #:	Project Manager:
Tel:	(613) 592-9600 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#618826-07-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	SHIHAN CHOWDHURY		

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: _____ Time Required: 24 HR ☒
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 (Soil)	Hexavalent Chromium in Soil by IC							# of Bottles	Comments
1		VS 570	17/08/10	0900 HRS	SOIL		X	X	X							1	
2		VS 571		0930 HRS			X	X	X							1	
3		VS 572		1000 HRS			X	X	X							1	
4		VS 573		1030 HRS			X	X	X							1	
5		VS 574		1100 HRS			X	X	X							1	
6		VS 575		1130 HRS			X	X	X							1	
7		VS 1575		1130 HRS			X	X	X							1	
8		VS 576		1200 HRS			X	X	X							1	
9		VS 577		1230 HRS			X	X	X							1	
10		VS 578		1300 HRS			X	X	X							1	

10-Aug-17 15:00
Alison Cameron
B7H1382
KIY OTT-001

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 Recei	Custody Seal	Yes	No
Shihan / SHIHAN CHOWDHURY	17/08/10	1445 HRS	Kim Jongeun	2017/08/10	16-00	0		23, 21, 22	Present Intact	☒	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7H1382
Report Date: 2017/08/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS 570	EXL424-02	Acid Extractable Cobalt (Co)	22	23	0.10	ug/g
VS 570	EXL424-02	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 572	EXL426-02	Acid Extractable Vanadium (V)	86	100	5.0	ug/g
VS 573	EXL427-02	Acid Extractable Barium (Ba)	390	470	0.50	ug/g
VS 573	EXL427-02	Acid Extractable Cobalt (Co)	22	36	0.10	ug/g
VS 573	EXL427-02	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 577	EXL432-02	Acid Extractable Barium (Ba)	390	410	0.50	ug/g
VS 577	EXL432-02	Acid Extractable Cobalt (Co)	22	31	0.10	ug/g
VS 577	EXL432-02	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 580	EXL451-02	Acid Extractable Barium (Ba)	390	420	0.50	ug/g
VS 580	EXL451-02	Acid Extractable Cobalt (Co)	22	29	0.10	ug/g
VS 580	EXL451-02	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 582	EXL453-02	Acid Extractable Vanadium (V)	86	92	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.

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

Success Through Science®

Your Project #: 1525113
Your C.O.C. #: 618826-06-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/10
Report #: R4643046
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H0064
Received: 2017/08/09, 15:00

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	9	N/A	2017/08/10	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (2)	9	2017/08/10	2017/08/10	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS	9	2017/08/10	2017/08/10	CAM SOP-00447	EPA 6020B m
Moisture (1)	9	N/A	2017/08/10	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM) (1)	9	2017/08/09	2017/08/09	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-06-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/10
Report #: R4643046
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H0064
Received: 2017/08/09, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@maxxam.ca
Phone# (519) 652-9444
==========
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

Maxxam Job #: B7H0064
Report Date: 2017/08/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EXE354	EXE355	EXE355	EXE356	EXE357		
Sampling Date			2017/08/09 10:30	2017/08/09 11:00	2017/08/09 11:00	2017/08/09 11:30	2017/08/09 12:00		
COC Number			618826-06-01	618826-06-01	618826-06-01	618826-06-01	618826-06-01		
	UNITS	**Criteria**	**VS 562**	**VS 563**	**VS 563 Lab-Dup**	**VS 564**	**VS 565**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5113067
Acid Extractable Arsenic (As)	ug/g	**18**	1.4	1.1	<1.0	1.9	2.1	1.0	5113067
Acid Extractable Barium (Ba)	ug/g	**390**	250	66	69	68	150	0.50	5113067
Acid Extractable Beryllium (Be)	ug/g	**4**	0.78	0.35	0.35	0.44	0.58	0.20	5113067
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5113067
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.12	<0.10	0.10	5113067
Acid Extractable Chromium (Cr)	ug/g	**160**	69	25	25	29	39	1.0	5113067
Acid Extractable Cobalt (Co)	ug/g	**22**	16	6.0	5.9	8.1	9.7	0.10	5113067
Acid Extractable Copper (Cu)	ug/g	**140**	32	9.7	9.1	5.7	20	0.50	5113067
Acid Extractable Lead (Pb)	ug/g	**120**	6.4	8.3	8.4	6.8	5.3	1.0	5113067
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5113067
Acid Extractable Nickel (Ni)	ug/g	**100**	36	12	13	14	22	0.50	5113067
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5113067
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5113067
Acid Extractable Thallium (Tl)	ug/g	**1**	0.36	0.13	0.12	0.12	0.20	0.050	5113067
Acid Extractable Uranium (U)	ug/g	**23**	1.4	0.63	0.65	1.1	0.93	0.050	5113067
Acid Extractable Vanadium (V)	ug/g	**86**	**87**	35	34	43	51	5.0	5113067
Acid Extractable Zinc (Zn)	ug/g	**340**	95	36	35	68	54	5.0	5113067

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 #: B7H0064
Report Date: 2017/08/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EXE358	EXE359	EXE360	EXE361	EXE362		
Sampling Date			2017/08/09 12:00	2017/08/09 12:30	2017/08/09 13:00	2017/08/09 13:30	2017/08/09 14:00		
COC Number			618826-06-01	618826-06-01	618826-06-01	618826-06-01	618826-06-01		
	UNITS	**Criteria**	**VS 1565**	**VS 566**	**VS 567**	**VS 568**	**VS 569**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5113067
Acid Extractable Arsenic (As)	ug/g	**18**	1.6	<1.0	1.1	2.8	1.6	1.0	5113067
Acid Extractable Barium (Ba)	ug/g	**390**	140	310	380	220	120	0.50	5113067
Acid Extractable Beryllium (Be)	ug/g	**4**	0.53	0.73	0.99	0.74	0.46	0.20	5113067
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	5.8	<5.0	5.0	5113067
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	0.12	<0.10	<0.10	0.10	5113067
Acid Extractable Chromium (Cr)	ug/g	**160**	35	68	110	47	30	1.0	5113067
Acid Extractable Cobalt (Co)	ug/g	**22**	8.5	18	**27**	16	7.1	0.10	5113067
Acid Extractable Copper (Cu)	ug/g	**140**	19	37	62	28	18	0.50	5113067
Acid Extractable Lead (Pb)	ug/g	**120**	4.7	5.9	7.4	6.6	4.2	1.0	5113067
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5113067
Acid Extractable Nickel (Ni)	ug/g	**100**	19	41	62	30	18	0.50	5113067
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5113067
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5113067
Acid Extractable Thallium (Tl)	ug/g	**1**	0.17	0.41	0.46	0.26	0.18	0.050	5113067
Acid Extractable Uranium (U)	ug/g	**23**	0.79	1.0	1.5	0.94	0.68	0.050	5113067
Acid Extractable Vanadium (V)	ug/g	**86**	47	85	**120**	67	46	5.0	5113067
Acid Extractable Zinc (Zn)	ug/g	**340**	52	110	140	82	50	5.0	5113067

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

Maxxam Job #: B7H0064
Report Date: 2017/08/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EXE354	EXE354	EXE355	EXE356	EXE357		
Sampling Date			2017/08/09 10:30	2017/08/09 10:30	2017/08/09 11:00	2017/08/09 11:30	2017/08/09 12:00		
COC Number			618826-06-01	618826-06-01	618826-06-01	618826-06-01	618826-06-01		
	UNITS	Criteria	VS 562	VS 562 Lab-Dup	VS 563	VS 564	VS 565	RDL	QC Batch
Inorganics									
Moisture	%	-	22	22	16	22	17	0.2	5111261
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	5111305
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	0.0073	<0.0050	<0.0050	0.0050	5111376
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0055	<0.0050	<0.0050	0.0050	5111376
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.010	<0.0050	<0.0050	0.0050	5111376
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Chrysene	ug/g	**7**	<0.0050	<0.0050	0.0067	<0.0050	<0.0050	0.0050	5111376
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	0.013	<0.0050	<0.0050	0.0050	5111376
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Pyrene	ug/g	**78**	<0.0050	<0.0050	0.012	<0.0050	<0.0050	0.0050	5111376
Surrogate Recovery (%)									
D10-Anthracene	%	-	94	97	91	91	91		5111376
D14-Terphenyl (FS)	%	-	91	90	86	88	91		5111376
D8-Acenaphthylene	%	-	87	86	85	87	84		5111376

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 #: B7H0064
Report Date: 2017/08/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EXE358	EXE359	EXE360	EXE361	EXE362		
Sampling Date			2017/08/09 12:00	2017/08/09 12:30	2017/08/09 13:00	2017/08/09 13:30	2017/08/09 14:00		
COC Number			618826-06-01	618826-06-01	618826-06-01	618826-06-01	618826-06-01		
	UNITS	Criteria	VS 1565	VS 566	VS 567	VS 568	VS 569	RDL	QC Batch
Inorganics									
Moisture	%	-	17	23	26	21	18	0.2	5111261
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	5111305
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5111376
Surrogate Recovery (%)									
D10-Anthracene	%	-	91	94	92	89	99		5111376
D14-Terphenyl (FS)	%	-	89	89	85	89	91		5111376
D8-Acenaphthylene	%	-	84	86	86	86	93		5111376

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

Maxxam Job #: B7H0064
Report Date: 2017/08/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EXE354	EXE355	EXE356	EXE357	EXE358		
Sampling Date			2017/08/09 10:30	2017/08/09 11:00	2017/08/09 11:30	2017/08/09 12:00	2017/08/09 12:00		
COC Number			618826-06-01	618826-06-01	618826-06-01	618826-06-01	618826-06-01		
	UNITS	**Criteria**	**VS 562**	**VS 563**	**VS 564**	**VS 565**	**VS 1565**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.8	0.7	<0.2	0.7	0.5	0.2	5112352

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			EXE359	EXE360	EXE361	EXE361	EXE362		
Sampling Date			2017/08/09 12:30	2017/08/09 13:00	2017/08/09 13:30	2017/08/09 13:30	2017/08/09 14:00		
COC Number			618826-06-01	618826-06-01	618826-06-01	618826-06-01	618826-06-01		
	UNITS	**Criteria**	**VS 566**	**VS 567**	**VS 568**	**VS 568 Lab-Dup**	**VS 569**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.5	0.5	0.7	0.8	0.5	0.2	5112352

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 #: B7H0064
Report Date: 2017/08/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXE354
Sample ID: VS 562
Matrix: Soil

Collected: 2017/08/09
Shipped:
Received: 2017/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5111305	N/A	2017/08/10	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5112352	2017/08/10	2017/08/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5113067	2017/08/10	2017/08/10	Daniel Teclu
Moisture	BAL	5111261	N/A	2017/08/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5111376	2017/08/09	2017/08/09	Liliana Gaburici

Maxxam ID: EXE354 Dup
Sample ID: VS 562
Matrix: Soil

Collected: 2017/08/09
Shipped:
Received: 2017/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5111261	N/A	2017/08/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5111376	2017/08/09	2017/08/09	Liliana Gaburici

Maxxam ID: EXE355
Sample ID: VS 563
Matrix: Soil

Collected: 2017/08/09
Shipped:
Received: 2017/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5111305	N/A	2017/08/10	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5112352	2017/08/10	2017/08/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5113067	2017/08/10	2017/08/10	Daniel Teclu
Moisture	BAL	5111261	N/A	2017/08/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5111376	2017/08/09	2017/08/09	Liliana Gaburici

Maxxam ID: EXE355 Dup
Sample ID: VS 563
Matrix: Soil

Collected: 2017/08/09
Shipped:
Received: 2017/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5113067	2017/08/10	2017/08/10	Daniel Teclu

Maxxam ID: EXE356
Sample ID: VS 564
Matrix: Soil

Collected: 2017/08/09
Shipped:
Received: 2017/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5111305	N/A	2017/08/10	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5112352	2017/08/10	2017/08/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5113067	2017/08/10	2017/08/10	Daniel Teclu
Moisture	BAL	5111261	N/A	2017/08/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5111376	2017/08/09	2017/08/09	Liliana Gaburici

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 #: B7H0064
Report Date: 2017/08/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXE357
Sample ID: VS 565
Matrix: Soil

Collected: 2017/08/09
Shipped:
Received: 2017/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5111305	N/A	2017/08/10	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5112352	2017/08/10	2017/08/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5113067	2017/08/10	2017/08/10	Daniel Teclu
Moisture	BAL	5111261	N/A	2017/08/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5111376	2017/08/09	2017/08/09	Liliana Gaburici

Maxxam ID: EXE358
Sample ID: VS 1565
Matrix: Soil

Collected: 2017/08/09
Shipped:
Received: 2017/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5111305	N/A	2017/08/10	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5112352	2017/08/10	2017/08/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5113067	2017/08/10	2017/08/10	Daniel Teclu
Moisture	BAL	5111261	N/A	2017/08/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5111376	2017/08/09	2017/08/09	Liliana Gaburici

Maxxam ID: EXE359
Sample ID: VS 566
Matrix: Soil

Collected: 2017/08/09
Shipped:
Received: 2017/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5111305	N/A	2017/08/10	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5112352	2017/08/10	2017/08/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5113067	2017/08/10	2017/08/10	Daniel Teclu
Moisture	BAL	5111261	N/A	2017/08/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5111376	2017/08/09	2017/08/09	Liliana Gaburici

Maxxam ID: EXE360
Sample ID: VS 567
Matrix: Soil

Collected: 2017/08/09
Shipped:
Received: 2017/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5111305	N/A	2017/08/10	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5112352	2017/08/10	2017/08/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5113067	2017/08/10	2017/08/10	Daniel Teclu
Moisture	BAL	5111261	N/A	2017/08/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5111376	2017/08/09	2017/08/09	Liliana Gaburici

Maxxam ID: EXE361
Sample ID: VS 568
Matrix: Soil

Collected: 2017/08/09
Shipped:
Received: 2017/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5111305	N/A	2017/08/10	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5112352	2017/08/10	2017/08/10	Sally Coughlin

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 #: B7H0064
Report Date: 2017/08/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EXE361
Sample ID: VS 568
Matrix: Soil

Collected: 2017/08/09
Shipped:
Received: 2017/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5113067	2017/08/10	2017/08/10	Daniel Teclu
Moisture	BAL	5111261	N/A	2017/08/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5111376	2017/08/09	2017/08/09	Liliana Gaburici

Maxxam ID: EXE361 Dup
Sample ID: VS 568
Matrix: Soil

Collected: 2017/08/09
Shipped:
Received: 2017/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5112352	2017/08/10	2017/08/10	Sally Coughlin

Maxxam ID: EXE362
Sample ID: VS 569
Matrix: Soil

Collected: 2017/08/09
Shipped:
Received: 2017/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5111305	N/A	2017/08/10	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5112352	2017/08/10	2017/08/10	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5113067	2017/08/10	2017/08/10	Daniel Teclu
Moisture	BAL	5111261	N/A	2017/08/10	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5111376	2017/08/09	2017/08/09	Liliana Gaburici

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 #: B7H0064
Report Date: 2017/08/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

GENERAL COMMENTS

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

Package 1	24.7°C

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

Maxxam Job #: B7H0064
Report Date: 2017/08/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #: 618826
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113	COC #: C#618826-06-01	Project Manager: Alison Cameron
Tel:	(613) 592-9600 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:			
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	SHAHAN CHOWDHURY		

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: _____ Time Required: 24 HR ☒
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 (Soil)	Hexavalent Chromium in Soil by IC	# of Bottles	Comments
1		VS 562	17/08/09	1030 HRS	SOIL		X	X	X	1	
2		VS 563		1100 HRS			X	X	X	1	
3		VS 564		1130 HRS			X	X	X	1	
4		VS 565		1200 HRS			X	X	X	1	
5		VS1565		1200 HRS			X	X	X	1	
6		VS 566		1230 HRS			X	X	X	1	
7		VS 567		1300 HRS			X	X	X	1	
8		VS 568		1330 HRS			X	X	X	1	
9		VS 569		1400 HRS			X	X	X	1	
10											ON the Ice Pack

RECEIVED IN OTTAWA

09-Aug-17 15:00
Alison Cameron
B7H0064
MVA OTT-001

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
SHAHAN CHOWDHURY	17/08/09	1420 HRS		2009/08/09	15:00	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	25, 24, 25	Present		
		Intact	X	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7H0064
Report Date: 2017/08/10

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
VS 562	EXE354-02	Acid Extractable Vanadium (V)	86	87	5.0	ug/g
VS 567	EXE360-02	Acid Extractable Cobalt (Co)	22	27	0.10	ug/g
VS 567	EXE360-02	Acid Extractable Vanadium (V)	86	120	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.

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

Your Project #: 1525113
Your C.O.C. #: 618826-05-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/09
Report #: R4640753
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7G8945
Received: 2017/08/08, 15:00

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	5	N/A	2017/08/09	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	5	2017/08/09	2017/08/09	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	5	2017/08/09	2017/08/09	CAM SOP-00447	EPA 6020B m
Moisture	5	N/A	2017/08/09	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	4	2017/08/08	2017/08/08	OTT SOP-00011	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	1	2017/08/08	2017/08/09	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-05-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/09
Report #: R4640753
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7G8945
Received: 2017/08/08, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7G8945
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EWY392	EWY393	EWY394	EWY394	EWY395		
Sampling Date			2017/08/08 10:00	2017/08/08 11:00	2017/08/08 12:00	2017/08/08 12:00	2017/08/08 13:00		
COC Number			618826-05-01	618826-05-01	618826-05-01	618826-05-01	618826-05-01		
	UNITS	**Criteria**	**VS 557**	**VS 558**	**VS 559**	**VS 559 Lab-Dup**	**VS 560**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5110551
Acid Extractable Arsenic (As)	ug/g	**18**	1.7	1.9	<1.0	<1.0	2.5	1.0	5110551
Acid Extractable Barium (Ba)	ug/g	**390**	140	120	26	28	190	0.50	5110551
Acid Extractable Beryllium (Be)	ug/g	**4**	0.43	0.56	<0.20	<0.20	0.60	0.20	5110551
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5110551
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5110551
Acid Extractable Chromium (Cr)	ug/g	**160**	29	37	13	14	40	1.0	5110551
Acid Extractable Cobalt (Co)	ug/g	**22**	9.1	9.4	3.3	3.5	13	0.10	5110551
Acid Extractable Copper (Cu)	ug/g	**140**	17	20	3.7	3.8	24	0.50	5110551
Acid Extractable Lead (Pb)	ug/g	**120**	4.6	5.1	1.3	1.3	5.2	1.0	5110551
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	0.53	0.50	5110551
Acid Extractable Nickel (Ni)	ug/g	**100**	17	20	8.0	8.0	26	0.50	5110551
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5110551
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5110551
Acid Extractable Thallium (Tl)	ug/g	**1**	0.16	0.17	0.053	0.071	0.23	0.050	5110551
Acid Extractable Uranium (U)	ug/g	**23**	0.55	0.95	0.36	0.34	0.60	0.050	5110551
Acid Extractable Vanadium (V)	ug/g	**86**	48	57	17	17	60	5.0	5110551
Acid Extractable Zinc (Zn)	ug/g	**340**	51	51	21	23	71	5.0	5110551
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5110551

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 Job #: B7G8945
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EWY396		
Sampling Date			2017/08/08 14:00		
COC Number			618826-05-01		
	UNITS	**Criteria**	**VS 561**	**RDL**	**QC Batch**
Metals					
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	0.20	5110551
Acid Extractable Arsenic (As)	ug/g	**18**	2.5	1.0	5110551
Acid Extractable Barium (Ba)	ug/g	**390**	110	0.50	5110551
Acid Extractable Beryllium (Be)	ug/g	**4**	0.48	0.20	5110551
Acid Extractable Boron (B)	ug/g	**120**	<5.0	5.0	5110551
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.16	0.10	5110551
Acid Extractable Chromium (Cr)	ug/g	**160**	33	1.0	5110551
Acid Extractable Cobalt (Co)	ug/g	**22**	9.9	0.10	5110551
Acid Extractable Copper (Cu)	ug/g	**140**	13	0.50	5110551
Acid Extractable Lead (Pb)	ug/g	**120**	6.6	1.0	5110551
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.50	5110551
Acid Extractable Nickel (Ni)	ug/g	**100**	18	0.50	5110551
Acid Extractable Selenium (Se)	ug/g	**2.4**	0.52	0.50	5110551
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	0.20	5110551
Acid Extractable Thallium (Tl)	ug/g	**1**	0.16	0.050	5110551
Acid Extractable Uranium (U)	ug/g	**23**	1.4	0.050	5110551
Acid Extractable Vanadium (V)	ug/g	**86**	46	5.0	5110551
Acid Extractable Zinc (Zn)	ug/g	**340**	60	5.0	5110551
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	0.050	5110551

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 #: B7G8945
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EWY392	EWY392	EWY393	EWY394	EWY395		
Sampling Date			2017/08/08 10:00	2017/08/08 10:00	2017/08/08 11:00	2017/08/08 12:00	2017/08/08 13:00		
COC Number			618826-05-01	618826-05-01	618826-05-01	618826-05-01	618826-05-01		
	UNITS	Criteria	VS 557	VS 557 Lab-Dup	VS 558	VS 559	VS 560	RDL	QC Batch
Inorganics									
Moisture	%	-	22	22	17	19	21	0.2	5109124
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	5109109
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	5108917
Acenaphthylene	ug/g	**0.15**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	5108917
Anthracene	ug/g	**0.67**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	5108917
Benzo(a)anthracene	ug/g	**0.5**	0.019		<0.0050	<0.0050	<0.0050	0.0050	5108917
Benzo(a)pyrene	ug/g	**0.3**	0.0088		<0.0050	<0.0050	<0.0050	0.0050	5108917
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.013		<0.0050	<0.0050	<0.0050	0.0050	5108917
Benzo(g,h,i)perylene	ug/g	**6.6**	0.0099		<0.0050	<0.0050	<0.0050	0.0050	5108917
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	5108917
Chrysene	ug/g	**7**	0.029		<0.0050	<0.0050	<0.0050	0.0050	5108917
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	5108917
Fluoranthene	ug/g	**0.69**	0.012		<0.0050	<0.0050	<0.0050	0.0050	5108917
Fluorene	ug/g	**62**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	5108917
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	5108917
1-Methylnaphthalene	ug/g	**0.99**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	5108917
2-Methylnaphthalene	ug/g	**0.99**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	5108917
Naphthalene	ug/g	**0.6**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	5108917
Phenanthrene	ug/g	**6.2**	<0.0050		<0.0050	<0.0050	<0.0050	0.0050	5108917
Pyrene	ug/g	**78**	0.080		<0.0050	<0.0050	<0.0050	0.0050	5108917
Surrogate Recovery (%)									
D10-Anthracene	%	-	93		102	100	97		5108917
D14-Terphenyl (FS)	%	-	97		96	95	92		5108917
D8-Acenaphthylene	%	-	80		99	96	94		5108917

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 Job #: B7G8945
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EWY396		
Sampling Date			2017/08/08 14:00		
COC Number			618826-05-01		
	UNITS	**Criteria**	**VS 561**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	-	26	0.2	5109124
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.014	5109109
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	5108917
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	5108917
Anthracene	ug/g	**0.67**	<0.0050	0.0050	5108917
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	5108917
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	5108917
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5108917
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0050	5108917
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5108917
Chrysene	ug/g	**7**	<0.0050	0.0050	5108917
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	5108917
Fluoranthene	ug/g	**0.69**	<0.0050	0.0050	5108917
Fluorene	ug/g	**62**	<0.0050	0.0050	5108917
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	5108917
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5108917
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5108917
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	5108917
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	5108917
Pyrene	ug/g	**78**	<0.0050	0.0050	5108917
Surrogate Recovery (%)					
D10-Anthracene	%	-	98		5108917
D14-Terphenyl (FS)	%	-	94		5108917
D8-Acenaphthylene	%	-	95		5108917

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 #: B7G8945
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EWY392	EWY393	EWY394	EWY395	EWY396		
Sampling Date			2017/08/08 10:00	2017/08/08 11:00	2017/08/08 12:00	2017/08/08 13:00	2017/08/08 14:00		
COC Number			618826-05-01	618826-05-01	618826-05-01	618826-05-01	618826-05-01		
	UNITS	**Criteria**	**VS 557**	**VS 558**	**VS 559**	**VS 560**	**VS 561**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	0.3	<0.2	0.3	<0.2	0.2	5110123

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 #: B7G8945
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EWY392
Sample ID: VS 557
Matrix: Soil

Collected: 2017/08/08
Shipped:
Received: 2017/08/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5109109	N/A	2017/08/09	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5110123	2017/08/09	2017/08/09	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5110551	2017/08/09	2017/08/09	Daniel Teclu
Moisture	BAL	5109124	N/A	2017/08/09	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5108917	2017/08/08	2017/08/09	Liliana Gaburici

Maxxam ID: EWY392 Dup
Sample ID: VS 557
Matrix: Soil

Collected: 2017/08/08
Shipped:
Received: 2017/08/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5109124	N/A	2017/08/09	Liliana Gaburici

Maxxam ID: EWY393
Sample ID: VS 558
Matrix: Soil

Collected: 2017/08/08
Shipped:
Received: 2017/08/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5109109	N/A	2017/08/09	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5110123	2017/08/09	2017/08/09	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5110551	2017/08/09	2017/08/09	Daniel Teclu
Moisture	BAL	5109124	N/A	2017/08/09	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5108917	2017/08/08	2017/08/08	Liliana Gaburici

Maxxam ID: EWY394
Sample ID: VS 559
Matrix: Soil

Collected: 2017/08/08
Shipped:
Received: 2017/08/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5109109	N/A	2017/08/09	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5110123	2017/08/09	2017/08/09	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5110551	2017/08/09	2017/08/09	Daniel Teclu
Moisture	BAL	5109124	N/A	2017/08/09	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5108917	2017/08/08	2017/08/08	Liliana Gaburici

Maxxam ID: EWY394 Dup
Sample ID: VS 559
Matrix: Soil

Collected: 2017/08/08
Shipped:
Received: 2017/08/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5110551	2017/08/09	2017/08/09	Daniel Teclu

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 #: B7G8945
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EWY395
Sample ID: VS 560
Matrix: Soil

Collected: 2017/08/08
Shipped:
Received: 2017/08/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5109109	N/A	2017/08/09	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5110123	2017/08/09	2017/08/09	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5110551	2017/08/09	2017/08/09	Daniel Teclu
Moisture	BAL	5109124	N/A	2017/08/09	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5108917	2017/08/08	2017/08/08	Liliana Gaburici

Maxxam ID: EWY396
Sample ID: VS 561
Matrix: Soil

Collected: 2017/08/08
Shipped:
Received: 2017/08/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5109109	N/A	2017/08/09	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5110123	2017/08/09	2017/08/09	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5110551	2017/08/09	2017/08/09	Daniel Teclu
Moisture	BAL	5109124	N/A	2017/08/09	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5108917	2017/08/08	2017/08/08	Liliana Gaburici

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 #: B7G8945
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

GENERAL COMMENTS

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

Package 1	20.7°C

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 #: B7G8945
Report Date: 2017/08/09

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5108917	D10-Anthracene	2017/08/08	92	50 - 130	94	50 - 130	98	%		
5108917	D14-Terphenyl (FS)	2017/08/08	88	50 - 130	89	50 - 130	90	%		
5108917	D8-Acenaphthylene	2017/08/08	87	50 - 130	86	50 - 130	89	%		
5108917	1-Methylnaphthalene	2017/08/08	91	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5108917	2-Methylnaphthalene	2017/08/08	87	50 - 130	85	50 - 130	<0.0050	ug/g	5.5	40
5108917	Acenaphthene	2017/08/08	93	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5108917	Acenaphthylene	2017/08/08	87	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5108917	Anthracene	2017/08/08	90	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5108917	Benzo(a)anthracene	2017/08/08	95	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5108917	Benzo(a)pyrene	2017/08/08	75	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5108917	Benzo(b/j)fluoranthene	2017/08/08	89	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5108917	Benzo(g,h,i)perylene	2017/08/08	68	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5108917	Benzo(k)fluoranthene	2017/08/08	84	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5108917	Chrysene	2017/08/08	91	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
5108917	Dibenz(a,h)anthracene	2017/08/08	84	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5108917	Fluoranthene	2017/08/08	90	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5108917	Fluorene	2017/08/08	106	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5108917	Indeno(1,2,3-cd)pyrene	2017/08/08	82	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5108917	Naphthalene	2017/08/08	79	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5108917	Phenanthrene	2017/08/08	92	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5108917	Pyrene	2017/08/08	93	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5109124	Moisture	2017/08/09							0	50
5110123	Chromium (VI)	2017/08/09	34 (1)	75 - 125	90	80 - 120	<0.2	ug/g	NC	35
5110551	Acid Extractable Antimony (Sb)	2017/08/09	94	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5110551	Acid Extractable Arsenic (As)	2017/08/09	101	75 - 125	104	80 - 120	<1.0	ug/g	NC	30
5110551	Acid Extractable Barium (Ba)	2017/08/09	NC	75 - 125	103	80 - 120	<0.50	ug/g	6.2	30
5110551	Acid Extractable Beryllium (Be)	2017/08/09	99	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5110551	Acid Extractable Boron (B)	2017/08/09	94	75 - 125	97	80 - 120	<5.0	ug/g	NC	30
5110551	Acid Extractable Cadmium (Cd)	2017/08/09	100	75 - 125	102	80 - 120	<0.10	ug/g	NC	30
5110551	Acid Extractable Chromium (Cr)	2017/08/09	102	75 - 125	99	80 - 120	<1.0	ug/g	4.1	30
5110551	Acid Extractable Cobalt (Co)	2017/08/09	99	75 - 125	99	80 - 120	<0.10	ug/g	3.5	30

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 #: B7G8945
Report Date: 2017/08/09

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5110551	Acid Extractable Copper (Cu)	2017/08/09	94	75 - 125	99	80 - 120	<0.50	ug/g	3.5	30
5110551	Acid Extractable Lead (Pb)	2017/08/09	100	75 - 125	99	80 - 120	<1.0	ug/g	0.20	30
5110551	Acid Extractable Mercury (Hg)	2017/08/09	98	75 - 125	93	80 - 120	<0.050	ug/g	NC	30
5110551	Acid Extractable Molybdenum (Mo)	2017/08/09	94	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
5110551	Acid Extractable Nickel (Ni)	2017/08/09	102	75 - 125	101	80 - 120	<0.50	ug/g	0.43	30
5110551	Acid Extractable Selenium (Se)	2017/08/09	102	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
5110551	Acid Extractable Silver (Ag)	2017/08/09	99	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5110551	Acid Extractable Thallium (Tl)	2017/08/09	98	75 - 125	98	80 - 120	<0.050	ug/g	29	30
5110551	Acid Extractable Uranium (U)	2017/08/09	97	75 - 125	97	80 - 120	<0.050	ug/g	4.6	30
5110551	Acid Extractable Vanadium (V)	2017/08/09	95	75 - 125	100	80 - 120	<5.0	ug/g	1.7	30
5110551	Acid Extractable Zinc (Zn)	2017/08/09	104	75 - 125	97	80 - 120	<5.0	ug/g	8.8	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x 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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B7G8945
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #:
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			618826
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113	COC #:	Project Manager:
Tel:	(613) 592-9600 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#618826-05-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	SHIHAN CHOWDHURY		

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 ☐ 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)? _____

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)	Hexavalent Chromium in Soil by IC	# of Bottles	Comments
1		VS 557	17/08/08	1000 HRS	SOIL		X	X	X		
2		VS 558	↓	1100 HRS	↓		X	X	X		
3		VS 559		1200 HRS			X	X	X		
4		VS 560		1300 HRS			X	X	X		
5		VS 561	↓	1400 HRS	↓		X	X	X		
6											
7											
8											
9											
10											ON HOLD

RECEIVED IN OTTAWA

08-Aug-17 15:00
Alison Cameron
B7G8945
KIV OTT-001

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: 24 HR ☒
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 Recei	Custody Seal	Yes	No
SHIHAN CHOWDHURY	17/08/08	1430 HRS	[illegible]	2017/08/08	15:00	0		21, 20, 21	Present	✓	
									Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7G8945
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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. #: 618826-04-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/09
Report #: R4640780
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7G7661
Received: 2017/08/04, 16:00

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	6	N/A	2017/08/09	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	6	2017/08/08	2017/08/08	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	6	2017/08/09	2017/08/09	CAM SOP-00447	EPA 6020B m
Moisture	6	N/A	2017/08/08	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	6	2017/08/04	2017/08/05	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-04-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/09
Report #: R4640780
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7G7661
Received: 2017/08/04, 16:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7G7661
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EWR221	EWR222	EWR223	EWR224	EWR225		
Sampling Date			2017/08/04 11:00	2017/08/04 12:00	2017/08/04 13:00	2017/08/04 14:00	2017/08/04 14:00		
COC Number			618826-04-01	618826-04-01	618826-04-01	618826-04-01	618826-04-01		
	UNITS	**Criteria**	**VS 552**	**VS 553**	**VS 554**	**VS1555**	**VS 555**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	16	22	20	16	17	0.2	5105689
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	5106052
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105691
Surrogate Recovery (%)									
D10-Anthracene	%	-	102	95	94	95	94		5105691
D14-Terphenyl (FS)	%	-	99	90	90	91	91		5105691
D8-Acenaphthylene	%	-	99	92	89	92	90		5105691

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 #: B7G7661
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EWR226		
Sampling Date			2017/08/04 15:00		
COC Number			618826-04-01		
	UNITS	**Criteria**	**VS 556**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	-	17	0.2	5105689
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.014	5106052
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	5105691
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	5105691
Anthracene	ug/g	**0.67**	<0.0050	0.0050	5105691
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	5105691
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	5105691
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5105691
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0050	5105691
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5105691
Chrysene	ug/g	**7**	<0.0050	0.0050	5105691
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	5105691
Fluoranthene	ug/g	**0.69**	<0.0050	0.0050	5105691
Fluorene	ug/g	**62**	<0.0050	0.0050	5105691
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	5105691
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5105691
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5105691
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	5105691
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	5105691
Pyrene	ug/g	**78**	<0.0050	0.0050	5105691
Surrogate Recovery (%)					
D10-Anthracene	%	-	101		5105691
D14-Terphenyl (FS)	%	-	100		5105691
D8-Acenaphthylene	%	-	95		5105691

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 #: B7G7661
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EWR221	EWR221	EWR222	EWR223	EWR224		
Sampling Date			2017/08/04 11:00	2017/08/04 11:00	2017/08/04 12:00	2017/08/04 13:00	2017/08/04 14:00		
COC Number			618826-04-01	618826-04-01	618826-04-01	618826-04-01	618826-04-01		
	UNITS	**Criteria**	**VS 552**	**VS 552 Lab-Dup**	**VS 553**	**VS 554**	**VS1555**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.5	0.5	0.5	0.7	<0.2	0.2	5108235
Metals									
Acid Extractable Aluminum (Al)	ug/g	**-**	8400	8200	16000	17000	6200	50	5110014
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5110014
Acid Extractable Arsenic (As)	ug/g	**18**	1.0	<1.0	1.7	1.3	<1.0	1.0	5110014
Acid Extractable Barium (Ba)	ug/g	**390**	49	50	160	160	26	0.50	5110014
Acid Extractable Beryllium (Be)	ug/g	**4**	0.28	0.27	0.48	0.53	<0.20	0.20	5110014
Acid Extractable Bismuth (Bi)	ug/g	**-**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5110014
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5110014
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.16	<0.10	0.10	5110014
Acid Extractable Calcium (Ca)	ug/g	**-**	3900	3700	6500	6100	2500	50	5110014
Acid Extractable Chromium (Cr)	ug/g	**160**	23	23	36	38	15	1.0	5110014
Acid Extractable Cobalt (Co)	ug/g	**22**	6.5	6.6	10	11	3.3	0.10	5110014
Acid Extractable Copper (Cu)	ug/g	**140**	6.8	6.8	18	14	2.9	0.50	5110014
Acid Extractable Iron (Fe)	ug/g	**-**	12000	13000	25000	26000	9400	50	5110014
Acid Extractable Lead (Pb)	ug/g	**120**	2.9	3.1	4.4	4.9	1.7	1.0	5110014
Acid Extractable Magnesium (Mg)	ug/g	**-**	3500	3600	6600	6200	3100	50	5110014
Acid Extractable Manganese (Mn)	ug/g	**-**	340	360	500	750	160	1.0	5110014
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	0.66	<0.50	<0.50	0.50	5110014
Acid Extractable Nickel (Ni)	ug/g	**100**	11	12	21	19	8.6	0.50	5110014
Acid Extractable Phosphorus (P)	ug/g	**-**	870	820	1200	1200	800	50	5110014
Acid Extractable Potassium (K)	ug/g	**-**	1300	1300	4200	3800	960	200	5110014
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5110014
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5110014
Acid Extractable Sodium (Na)	ug/g	**-**	570	580	570	490	80	50	5110014
Acid Extractable Strontium (Sr)	ug/g	**-**	22	23	43	34	13	1.0	5110014
Acid Extractable Thallium (Tl)	ug/g	**1**	0.085	0.078	0.17	0.20	0.063	0.050	5110014
Acid Extractable Tin (Sn)	ug/g	**-**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5110014
Acid Extractable Uranium (U)	ug/g	**23**	0.62	0.67	0.74	0.88	0.36	0.050	5110014

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 Job #: B7G7661
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EWR221	EWR221	EWR222	EWR223	EWR224		
Sampling Date			2017/08/04 11:00	2017/08/04 11:00	2017/08/04 12:00	2017/08/04 13:00	2017/08/04 14:00		
COC Number			618826-04-01	618826-04-01	618826-04-01	618826-04-01	618826-04-01		
	UNITS	**Criteria**	**VS 552**	**VS 552 Lab-Dup**	**VS 553**	**VS 554**	**VS1555**	**RDL**	**QC Batch**
Acid Extractable Vanadium (V)	ug/g	**86**	25	25	47	45	16	5.0	5110014
Acid Extractable Zinc (Zn)	ug/g	**340**	36	37	64	67	29	5.0	5110014

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 Job #: B7G7661
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EWR225	EWR226		
Sampling Date			2017/08/04 14:00	2017/08/04 15:00		
COC Number			618826-04-01	618826-04-01		
	UNITS	**Criteria**	**VS 555**	**VS 556**	**RDL**	**QC Batch**
Inorganics						
Chromium (VI)	ug/g	**8**	<0.2	0.3	0.2	5108235
Metals						
Acid Extractable Aluminum (Al)	ug/g	**-**	6100	9500	50	5110014
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	0.20	5110014
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	1.0	5110014
Acid Extractable Barium (Ba)	ug/g	**390**	25	78	0.50	5110014
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	0.32	0.20	5110014
Acid Extractable Bismuth (Bi)	ug/g	**-**	<1.0	<1.0	1.0	5110014
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	5.0	5110014
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	0.10	5110014
Acid Extractable Calcium (Ca)	ug/g	**-**	2600	4400	50	5110014
Acid Extractable Chromium (Cr)	ug/g	**160**	15	23	1.0	5110014
Acid Extractable Cobalt (Co)	ug/g	**22**	3.2	5.6	0.10	5110014
Acid Extractable Copper (Cu)	ug/g	**140**	2.9	8.3	0.50	5110014
Acid Extractable Iron (Fe)	ug/g	**-**	9200	16000	50	5110014
Acid Extractable Lead (Pb)	ug/g	**120**	1.6	3.0	1.0	5110014
Acid Extractable Magnesium (Mg)	ug/g	**-**	2900	4200	50	5110014
Acid Extractable Manganese (Mn)	ug/g	**-**	150	260	1.0	5110014
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	0.50	5110014
Acid Extractable Nickel (Ni)	ug/g	**100**	8.6	12	0.50	5110014
Acid Extractable Phosphorus (P)	ug/g	**-**	790	1100	50	5110014
Acid Extractable Potassium (K)	ug/g	**-**	980	2000	200	5110014
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	0.50	5110014
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	0.20	5110014
Acid Extractable Sodium (Na)	ug/g	**-**	82	770	50	5110014
Acid Extractable Strontium (Sr)	ug/g	**-**	13	22	1.0	5110014
Acid Extractable Thallium (Tl)	ug/g	**1**	0.052	0.10	0.050	5110014
Acid Extractable Tin (Sn)	ug/g	**-**	<1.0	<1.0	1.0	5110014
Acid Extractable Uranium (U)	ug/g	**23**	0.39	0.68	0.050	5110014
Acid Extractable Vanadium (V)	ug/g	**86**	17	32	5.0	5110014

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 #: B7G7661
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EWR225	EWR226		
Sampling Date			2017/08/04 14:00	2017/08/04 15:00		
COC Number			618826-04-01	618826-04-01		
	UNITS	**Criteria**	**VS 555**	**VS 556**	**RDL**	**QC Batch**
Acid Extractable Zinc (Zn)	ug/g	**340**	27	34	5.0	5110014

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 #: B7G7661
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EWR221
Sample ID: VS 552
Matrix: Soil

Collected: 2017/08/04
Shipped:
Received: 2017/08/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5106052	N/A	2017/08/09	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5108235	2017/08/08	2017/08/08	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5110014	2017/08/09	2017/08/09	Daniel Teclu
Moisture	BAL	5105689	N/A	2017/08/08	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5105691	2017/08/04	2017/08/05	Liliana Gaburici

Maxxam ID: EWR221 Dup
Sample ID: VS 552
Matrix: Soil

Collected: 2017/08/04
Shipped:
Received: 2017/08/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5108235	2017/08/08	2017/08/08	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5110014	2017/08/09	2017/08/09	Daniel Teclu

Maxxam ID: EWR222
Sample ID: VS 553
Matrix: Soil

Collected: 2017/08/04
Shipped:
Received: 2017/08/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5106052	N/A	2017/08/09	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5108235	2017/08/08	2017/08/08	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5110014	2017/08/09	2017/08/09	Daniel Teclu
Moisture	BAL	5105689	N/A	2017/08/08	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5105691	2017/08/04	2017/08/05	Liliana Gaburici

Maxxam ID: EWR223
Sample ID: VS 554
Matrix: Soil

Collected: 2017/08/04
Shipped:
Received: 2017/08/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5106052	N/A	2017/08/09	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5108235	2017/08/08	2017/08/08	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5110014	2017/08/09	2017/08/09	Daniel Teclu
Moisture	BAL	5105689	N/A	2017/08/08	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5105691	2017/08/04	2017/08/05	Liliana Gaburici

Maxxam ID: EWR224
Sample ID: VS1555
Matrix: Soil

Collected: 2017/08/04
Shipped:
Received: 2017/08/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5106052	N/A	2017/08/09	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5108235	2017/08/08	2017/08/08	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5110014	2017/08/09	2017/08/09	Daniel Teclu
Moisture	BAL	5105689	N/A	2017/08/08	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5105691	2017/08/04	2017/08/05	Liliana Gaburici

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 #: B7G7661
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EWR225
Sample ID: VS 555
Matrix: Soil

Collected: 2017/08/04
Shipped:
Received: 2017/08/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5106052	N/A	2017/08/09	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5108235	2017/08/08	2017/08/08	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5110014	2017/08/09	2017/08/09	Daniel Teclu
Moisture	BAL	5105689	N/A	2017/08/08	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5105691	2017/08/04	2017/08/05	Liliana Gaburici

Maxxam ID: EWR226
Sample ID: VS 556
Matrix: Soil

Collected: 2017/08/04
Shipped:
Received: 2017/08/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5106052	N/A	2017/08/09	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5108235	2017/08/08	2017/08/08	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5110014	2017/08/09	2017/08/09	Daniel Teclu
Moisture	BAL	5105689	N/A	2017/08/08	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5105691	2017/08/04	2017/08/05	Liliana Gaburici

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 #: B7G7661
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

GENERAL COMMENTS

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

Package 1	27.0°C

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 #: B7G7661
Report Date: 2017/08/09

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5105691	D10-Anthracene	2017/08/05	107	50 - 130	108	50 - 130	108	%		
5105691	D14-Terphenyl (FS)	2017/08/05	110	50 - 130	104	50 - 130	105	%		
5105691	D8-Acenaphthylene	2017/08/05	103	50 - 130	102	50 - 130	99	%		
5105689	Moisture	2017/08/08							0.62	50
5105691	1-Methylnaphthalene	2017/08/05	98	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
5105691	2-Methylnaphthalene	2017/08/05	93	50 - 130	92	50 - 130	<0.0050	ug/g	13	40
5105691	Acenaphthene	2017/08/05	100	50 - 130	103	50 - 130	<0.0050	ug/g	1.0	40
5105691	Acenaphthylene	2017/08/05	99	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5105691	Anthracene	2017/08/05	97	50 - 130	101	50 - 130	<0.0050	ug/g	19	40
5105691	Benzo(a)anthracene	2017/08/05	100	50 - 130	101	50 - 130	<0.0050	ug/g	34	40
5105691	Benzo(a)pyrene	2017/08/05	79	50 - 130	84	50 - 130	<0.0050	ug/g	17	40
5105691	Benzo(b/j)fluoranthene	2017/08/05	97	50 - 130	100	50 - 130	<0.0050	ug/g	22	40
5105691	Benzo(g,h,i)perylene	2017/08/05	75	50 - 130	80	50 - 130	<0.0050	ug/g	4.1	40
5105691	Benzo(k)fluoranthene	2017/08/05	93	50 - 130	94	50 - 130	<0.0050	ug/g	29	40
5105691	Chrysene	2017/08/05	98	50 - 130	97	50 - 130	<0.0050	ug/g	24	40
5105691	Dibenz(a,h)anthracene	2017/08/05	88	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
5105691	Fluoranthene	2017/08/05	98	50 - 130	102	50 - 130	<0.0050	ug/g	38	40
5105691	Fluorene	2017/08/05	109	50 - 130	116	50 - 130	<0.0050	ug/g	14	40
5105691	Indeno(1,2,3-cd)pyrene	2017/08/05	87	50 - 130	109	50 - 130	<0.0050	ug/g	34	40
5105691	Naphthalene	2017/08/05	87	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5105691	Phenanthrene	2017/08/05	92	50 - 130	98	50 - 130	<0.0050	ug/g	32	40
5105691	Pyrene	2017/08/05	99	50 - 130	100	50 - 130	<0.0050	ug/g	36	40
5108235	Chromium (VI)	2017/08/08	89	75 - 125	89	80 - 120	<0.2	ug/g	4.5	35
5110014	Acid Extractable Aluminum (Al)	2017/08/09	NC	75 - 125	103	80 - 120	<50	ug/g	2.3	30
5110014	Acid Extractable Antimony (Sb)	2017/08/09	82	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
5110014	Acid Extractable Arsenic (As)	2017/08/09	99	75 - 125	104	80 - 120	<1.0	ug/g	1.5	30
5110014	Acid Extractable Barium (Ba)	2017/08/09	NC	75 - 125	101	80 - 120	<0.50	ug/g	1.8	30
5110014	Acid Extractable Beryllium (Be)	2017/08/09	97	75 - 125	99	80 - 120	<0.20	ug/g	5.3	30
5110014	Acid Extractable Bismuth (Bi)	2017/08/09	97	75 - 125	98	80 - 120	<1.0	ug/g	NC	30
5110014	Acid Extractable Boron (B)	2017/08/09	95	75 - 125	96	80 - 120	<5.0	ug/g	NC	30
5110014	Acid Extractable Cadmium (Cd)	2017/08/09	99	75 - 125	99	80 - 120	<0.10	ug/g	NC	30

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 #: B7G7661
Report Date: 2017/08/09

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5110014	Acid Extractable Calcium (Ca)	2017/08/09	NC	75 - 125	108	80 - 120	<50	ug/g	4.9	30
5110014	Acid Extractable Chromium (Cr)	2017/08/09	98	75 - 125	99	80 - 120	<1.0	ug/g	1.6	30
5110014	Acid Extractable Cobalt (Co)	2017/08/09	98	75 - 125	99	80 - 120	<0.10	ug/g	1.1	30
5110014	Acid Extractable Copper (Cu)	2017/08/09	94	75 - 125	99	80 - 120	<0.50	ug/g	0.31	30
5110014	Acid Extractable Iron (Fe)	2017/08/09	NC	75 - 125	103	80 - 120	<50	ug/g	3.7	30
5110014	Acid Extractable Lead (Pb)	2017/08/09	98	75 - 125	99	80 - 120	<1.0	ug/g	3.7	30
5110014	Acid Extractable Magnesium (Mg)	2017/08/09	NC	75 - 125	106	80 - 120	<50	ug/g	3.1	30
5110014	Acid Extractable Manganese (Mn)	2017/08/09	NC	75 - 125	101	80 - 120	<1.0	ug/g	4.4	30
5110014	Acid Extractable Molybdenum (Mo)	2017/08/09	95	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
5110014	Acid Extractable Nickel (Ni)	2017/08/09	98	75 - 125	101	80 - 120	<0.50	ug/g	3.7	30
5110014	Acid Extractable Phosphorus (P)	2017/08/09	NC	75 - 125	103	80 - 120	<50	ug/g	6.5	30
5110014	Acid Extractable Potassium (K)	2017/08/09	NC	75 - 125	99	80 - 120	<200	ug/g	1.1	30
5110014	Acid Extractable Selenium (Se)	2017/08/09	99	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
5110014	Acid Extractable Silver (Ag)	2017/08/09	98	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5110014	Acid Extractable Sodium (Na)	2017/08/09	NC	75 - 125	92	80 - 120	<50	ug/g	2.3	30
5110014	Acid Extractable Strontium (Sr)	2017/08/09	104	75 - 125	104	80 - 120	<1.0	ug/g	0.98	30
5110014	Acid Extractable Thallium (Tl)	2017/08/09	97	75 - 125	97	80 - 120	<0.050	ug/g	8.5	30
5110014	Acid Extractable Tin (Sn)	2017/08/09	101	75 - 125	97	80 - 120	<1.0	ug/g	NC	30
5110014	Acid Extractable Uranium (U)	2017/08/09	96	75 - 125	95	80 - 120	<0.050	ug/g	7.8	30
5110014	Acid Extractable Vanadium (V)	2017/08/09	105	75 - 125	99	80 - 120	<5.0	ug/g	0.32	30
5110014	Acid Extractable Zinc (Zn)	2017/08/09	NC	75 - 125	101	80 - 120	<5.0	ug/g	3.7	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.

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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7G7661
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #: 618826
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#618826-04-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	SHIMAN CHOWDHURY		

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)

	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 (Soil)	Hexavalent Chromium in Soil by IC	# of Bottles	Comments
1		VS552	17/08/04	1100 HRS	SOIL		X	X	X		
2		VS553		1200 HRS			X	X	X		
3		VS554		1300 HRS			X	X	X		
4		VS1555		1400 HRS			X	X	X		
5		VS555		1400 HRS			X	X	X		
6		VS556		1500 HRS			X	X	X		
7											RECEIVED IN OTTAWA
8											
9											On ice back
10											

04-Aug-17 16:00
Alison Cameron
B7G7661
MVA OTT-001

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: 24 HR ☒
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	Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
SHIMAN CHOWDHURY	17/08/04	1500 HRS	Mariana Bascar Bascar	2017/08/04	16:00	0		27,27,27	Present Intact	Y Y	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7G7661
Report Date: 2017/08/09

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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. #: 618826-03-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/04
Report #: R4633419
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7G6254
Received: 2017/08/03, 15:00

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	5	N/A	2017/08/04	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	5	2017/08/04	2017/08/04	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	5	2017/08/04	2017/08/04	CAM SOP-00447	EPA 6020B m
Moisture	5	N/A	2017/08/04	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	1	2017/08/03	2017/08/03	OTT SOP-00011	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	4	2017/08/03	2017/08/04	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-03-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/04
Report #: R4633419
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7G6254
Received: 2017/08/03, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7G6254
Report Date: 2017/08/04

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EWK966	EWK966	EWK967	EWK968	EWK969		
Sampling Date			2017/08/03 10:00	2017/08/03 10:00	2017/08/03 11:00	2017/08/03 12:00	2017/08/03 13:00		
COC Number			618826-03-01	618826-03-01	618826-03-01	618826-03-01	618826-03-01		
	UNITS	Criteria	VS 547	VS 547 Lab-Dup	VS 548	VS 549	VS 550	RDL	QC Batch
Inorganics									
Moisture	%	-	18	18	21	20	16	0.2	5105412
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	5104129
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105413
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105413
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105413
Benzo(a)anthracene	ug/g	**0.5**	0.018	0.0096	<0.0050	<0.0050	<0.0050	0.0050	5105413
Benzo(a)pyrene	ug/g	**0.3**	0.020	0.010	<0.0050	<0.0050	<0.0050	0.0050	5105413
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.028	0.019	<0.0050	<0.0050	<0.0050	0.0050	5105413
Benzo(g,h,i)perylene	ug/g	**6.6**	0.010	0.0096	<0.0050	<0.0050	<0.0050	0.0050	5105413
Benzo(k)fluoranthene	ug/g	**0.78**	0.0096	0.0072	<0.0050	<0.0050	<0.0050	0.0050	5105413
Chrysene	ug/g	**7**	0.015	0.0084	<0.0050	<0.0050	<0.0050	0.0050	5105413
Dibenz(a,h)anthracene	ug/g	**0.1**	0.0051	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105413
Fluoranthene	ug/g	**0.69**	0.022	0.015	<0.0050	<0.0050	<0.0050	0.0050	5105413
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105413
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.012	0.0090	<0.0050	<0.0050	<0.0050	0.0050	5105413
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105413
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105413
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105413
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5105413
Pyrene	ug/g	**78**	0.019	0.015	<0.0050	<0.0050	<0.0050	0.0050	5105413
Surrogate Recovery (%)									
D10-Anthracene	%	-	125	121	107	121	116		5105413
D14-Terphenyl (FS)	%	-	98	104	81	104	101		5105413
D8-Acenaphthylene	%	-	118	120	100	121	114		5105413

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 Job #: B7G6254
Report Date: 2017/08/04

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

O.REG 153 PAHS (SOIL)

Maxxam ID			EWK970		
Sampling Date			2017/08/03 14:00		
COC Number			618826-03-01		
	UNITS	**Criteria**	**VS 551**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	-	18	0.2	5105412
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.014	5104129
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	5105413
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	5105413
Anthracene	ug/g	**0.67**	<0.0050	0.0050	5105413
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	5105413
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	5105413
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5105413
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0050	5105413
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5105413
Chrysene	ug/g	**7**	<0.0050	0.0050	5105413
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	5105413
Fluoranthene	ug/g	**0.69**	<0.0050	0.0050	5105413
Fluorene	ug/g	**62**	<0.0050	0.0050	5105413
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	5105413
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5105413
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5105413
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	5105413
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	5105413
Pyrene	ug/g	**78**	<0.0050	0.0050	5105413
Surrogate Recovery (%)					
D10-Anthracene	%	-	112		5105413
D14-Terphenyl (FS)	%	-	93		5105413
D8-Acenaphthylene	%	-	107		5105413

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 #: B7G6254
Report Date: 2017/08/04

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EWK966	EWK966	EWK967	EWK967	EWK968		
Sampling Date			2017/08/03 10:00	2017/08/03 10:00	2017/08/03 11:00	2017/08/03 11:00	2017/08/03 12:00		
COC Number			618826-03-01	618826-03-01	618826-03-01	618826-03-01	618826-03-01		
	UNITS	**Criteria**	**VS 547**	**VS 547 Lab-Dup**	**VS 548**	**VS 548 Lab-Dup**	**VS 549**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.4	0.4	0.5		0.4	0.2	5105498
Metals									
Acid Extractable Aluminum (Al)	ug/g	**-**	21000		19000	19000	15000	50	5106095
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20		<0.20	<0.20	<0.20	0.20	5106095
Acid Extractable Arsenic (As)	ug/g	**18**	2.6		1.8	2.3	1.4	1.0	5106095
Acid Extractable Barium (Ba)	ug/g	**390**	200		180	180	130	0.50	5106095
Acid Extractable Beryllium (Be)	ug/g	**4**	0.73		0.70	0.67	0.54	0.20	5106095
Acid Extractable Bismuth (Bi)	ug/g	**-**	<1.0		<1.0	<1.0	<1.0	1.0	5106095
Acid Extractable Boron (B)	ug/g	**120**	6.3		<5.0	<5.0	<5.0	5.0	5106095
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10		<0.10	<0.10	<0.10	0.10	5106095
Acid Extractable Calcium (Ca)	ug/g	**-**	7100		7200	7200	6100	50	5106095
Acid Extractable Chromium (Cr)	ug/g	**160**	44		41	43	35	1.0	5106095
Acid Extractable Cobalt (Co)	ug/g	**22**	13		12	12	10	0.10	5106095
Acid Extractable Copper (Cu)	ug/g	**140**	28		22	23	24	0.50	5106095
Acid Extractable Iron (Fe)	ug/g	**-**	33000		29000	30000	25000	50	5106095
Acid Extractable Lead (Pb)	ug/g	**120**	7.8		5.8	6.0	5.1	1.0	5106095
Acid Extractable Magnesium (Mg)	ug/g	**-**	9800		8600	8700	6900	50	5106095
Acid Extractable Manganese (Mn)	ug/g	**-**	610		480	480	380	1.0	5106095
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50		<0.50	<0.50	<0.50	0.50	5106095
Acid Extractable Nickel (Ni)	ug/g	**100**	27		26	26	22	0.50	5106095
Acid Extractable Phosphorus (P)	ug/g	**-**	1200		1200	1200	1200	50	5106095
Acid Extractable Potassium (K)	ug/g	**-**	5300		5000	5000	4300	200	5106095
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50		<0.50	<0.50	<0.50	0.50	5106095
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20		<0.20	<0.20	<0.20	0.20	5106095
Acid Extractable Sodium (Na)	ug/g	**-**	620		750	760	1000	50	5106095
Acid Extractable Strontium (Sr)	ug/g	**-**	47		44	44	34	1.0	5106095
Acid Extractable Thallium (Tl)	ug/g	**1**	0.28		0.20	0.22	0.18	0.050	5106095
Acid Extractable Tin (Sn)	ug/g	**-**	<1.0		1.0	1.1	<1.0	1.0	5106095
Acid Extractable Uranium (U)	ug/g	**23**	0.94		0.86	0.90	1.0	0.050	5106095

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 Job #: B7G6254
Report Date: 2017/08/04

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EWK966	EWK966	EWK967	EWK967	EWK968		
Sampling Date			2017/08/03 10:00	2017/08/03 10:00	2017/08/03 11:00	2017/08/03 11:00	2017/08/03 12:00		
COC Number			618826-03-01	618826-03-01	618826-03-01	618826-03-01	618826-03-01		
	UNITS	**Criteria**	**VS 547**	**VS 547 Lab-Dup**	**VS 548**	**VS 548 Lab-Dup**	**VS 549**	**RDL**	**QC Batch**
Acid Extractable Vanadium (V)	ug/g	**86**	63		57	57	57	5.0	5106095
Acid Extractable Zinc (Zn)	ug/g	**340**	74		69	67	56	5.0	5106095

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 Job #: B7G6254
Report Date: 2017/08/04

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EWK969	EWK970		
Sampling Date			2017/08/03 13:00	2017/08/03 14:00		
COC Number			618826-03-01	618826-03-01		
	UNITS	**Criteria**	**VS 550**	**VS 551**	**RDL**	**QC Batch**
Inorganics						
Chromium (VI)	ug/g	**8**	0.4	0.6	0.2	5105498
Metals						
Acid Extractable Aluminum (Al)	ug/g	**-**	12000	15000	50	5106095
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	0.20	5106095
Acid Extractable Arsenic (As)	ug/g	**18**	1.2	1.1	1.0	5106095
Acid Extractable Barium (Ba)	ug/g	**390**	96	150	0.50	5106095
Acid Extractable Beryllium (Be)	ug/g	**4**	0.44	0.51	0.20	5106095
Acid Extractable Bismuth (Bi)	ug/g	**-**	<1.0	<1.0	1.0	5106095
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	5.0	5106095
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	0.10	5106095
Acid Extractable Calcium (Ca)	ug/g	**-**	5200	5600	50	5106095
Acid Extractable Chromium (Cr)	ug/g	**160**	30	37	1.0	5106095
Acid Extractable Cobalt (Co)	ug/g	**22**	8.0	9.2	0.10	5106095
Acid Extractable Copper (Cu)	ug/g	**140**	14	18	0.50	5106095
Acid Extractable Iron (Fe)	ug/g	**-**	20000	25000	50	5106095
Acid Extractable Lead (Pb)	ug/g	**120**	4.3	4.4	1.0	5106095
Acid Extractable Magnesium (Mg)	ug/g	**-**	5200	6600	50	5106095
Acid Extractable Manganese (Mn)	ug/g	**-**	300	440	1.0	5106095
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	0.50	5106095
Acid Extractable Nickel (Ni)	ug/g	**100**	16	21	0.50	5106095
Acid Extractable Phosphorus (P)	ug/g	**-**	1100	1100	50	5106095
Acid Extractable Potassium (K)	ug/g	**-**	2700	3800	200	5106095
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	0.50	5106095
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	0.20	5106095
Acid Extractable Sodium (Na)	ug/g	**-**	290	370	50	5106095
Acid Extractable Strontium (Sr)	ug/g	**-**	34	33	1.0	5106095
Acid Extractable Thallium (Tl)	ug/g	**1**	0.15	0.18	0.050	5106095
Acid Extractable Tin (Sn)	ug/g	**-**	<1.0	<1.0	1.0	5106095
Acid Extractable Uranium (U)	ug/g	**23**	0.79	0.92	0.050	5106095
Acid Extractable Vanadium (V)	ug/g	**86**	44	49	5.0	5106095

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 #: B7G6254
Report Date: 2017/08/04

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EWK969	EWK970		
Sampling Date			2017/08/03 13:00	2017/08/03 14:00		
COC Number			618826-03-01	618826-03-01		
	UNITS	**Criteria**	**VS 550**	**VS 551**	**RDL**	**QC Batch**
Acid Extractable Zinc (Zn)	ug/g	**340**	41	58	5.0	5106095

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 #: B7G6254
Report Date: 2017/08/04

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EWK966
Sample ID: VS 547
Matrix: Soil

Collected: 2017/08/03
Shipped:
Received: 2017/08/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5104129	N/A	2017/08/04	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5105498	2017/08/04	2017/08/04	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5106095	2017/08/04	2017/08/04	Daniel Teclu
Moisture	BAL	5105412	N/A	2017/08/04	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5105413	2017/08/03	2017/08/03	Liliana Gaburici

Maxxam ID: EWK966 Dup
Sample ID: VS 547
Matrix: Soil

Collected: 2017/08/03
Shipped:
Received: 2017/08/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5105498	2017/08/04	2017/08/04	Sally Coughlin
Moisture	BAL	5105412	N/A	2017/08/04	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5105413	2017/08/03	2017/08/03	Liliana Gaburici

Maxxam ID: EWK967
Sample ID: VS 548
Matrix: Soil

Collected: 2017/08/03
Shipped:
Received: 2017/08/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5104129	N/A	2017/08/04	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5105498	2017/08/04	2017/08/04	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5106095	2017/08/04	2017/08/04	Daniel Teclu
Moisture	BAL	5105412	N/A	2017/08/04	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5105413	2017/08/03	2017/08/04	Liliana Gaburici

Maxxam ID: EWK967 Dup
Sample ID: VS 548
Matrix: Soil

Collected: 2017/08/03
Shipped:
Received: 2017/08/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5106095	2017/08/04	2017/08/04	Daniel Teclu

Maxxam ID: EWK968
Sample ID: VS 549
Matrix: Soil

Collected: 2017/08/03
Shipped:
Received: 2017/08/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5104129	N/A	2017/08/04	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5105498	2017/08/04	2017/08/04	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5106095	2017/08/04	2017/08/04	Daniel Teclu
Moisture	BAL	5105412	N/A	2017/08/04	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5105413	2017/08/03	2017/08/04	Liliana Gaburici

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 #: B7G6254
Report Date: 2017/08/04

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

TEST SUMMARY

Maxxam ID: EWK969
Sample ID: VS 550
Matrix: Soil

Collected: 2017/08/03
Shipped:
Received: 2017/08/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5104129	N/A	2017/08/04	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5105498	2017/08/04	2017/08/04	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5106095	2017/08/04	2017/08/04	Daniel Teclu
Moisture	BAL	5105412	N/A	2017/08/04	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5105413	2017/08/03	2017/08/04	Liliana Gaburici

Maxxam ID: EWK970
Sample ID: VS 551
Matrix: Soil

Collected: 2017/08/03
Shipped:
Received: 2017/08/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5104129	N/A	2017/08/04	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5105498	2017/08/04	2017/08/04	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5106095	2017/08/04	2017/08/04	Daniel Teclu
Moisture	BAL	5105412	N/A	2017/08/04	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5105413	2017/08/03	2017/08/04	Liliana Gaburici

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 #: B7G6254
Report Date: 2017/08/04

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

GENERAL COMMENTS

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

Package 1	23.3°C

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 Job #: B7G6254
Report Date: 2017/08/04

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5105413	D10-Anthracene	2017/08/03	117	50 - 130	119	50 - 130	122	%		
5105413	D14-Terphenyl (FS)	2017/08/03	100	50 - 130	99	50 - 130	97	%		
5105413	D8-Acenaphthylene	2017/08/03	116	50 - 130	122	50 - 130	113	%		
5105412	Moisture	2017/08/04							2.2	50
5105413	1-Methylnaphthalene	2017/08/03	99	50 - 130	107	50 - 130	<0.0050	ug/g	NC	40
5105413	2-Methylnaphthalene	2017/08/03	95	50 - 130	103	50 - 130	<0.0050	ug/g	NC	40
5105413	Acenaphthene	2017/08/03	101	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
5105413	Acenaphthylene	2017/08/03	101	50 - 130	111	50 - 130	<0.0050	ug/g	NC	40
5105413	Anthracene	2017/08/03	111	50 - 130	113	50 - 130	<0.0050	ug/g	NC	40
5105413	Benzo(a)anthracene	2017/08/03	101	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40
5105413	Benzo(a)pyrene	2017/08/03	89	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5105413	Benzo(b/j)fluoranthene	2017/08/03	92	50 - 130	99	50 - 130	<0.0050	ug/g	39	40
5105413	Benzo(g,h,i)perylene	2017/08/03	80	50 - 130	91	50 - 130	<0.0050	ug/g	6.6	40
5105413	Benzo(k)fluoranthene	2017/08/03	91	50 - 130	97	50 - 130	<0.0050	ug/g	29	40
5105413	Chrysene	2017/08/03	95	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5105413	Dibenz(a,h)anthracene	2017/08/03	78	50 - 130	89	50 - 130	<0.0050	ug/g	2.3	40
5105413	Fluoranthene	2017/08/03	107	50 - 130	109	50 - 130	<0.0050	ug/g	40	40
5105413	Fluorene	2017/08/03	99	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
5105413	Indeno(1,2,3-cd)pyrene	2017/08/03	80	50 - 130	97	50 - 130	<0.0050	ug/g	25	40
5105413	Naphthalene	2017/08/03	79	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5105413	Phenanthrene	2017/08/03	98	50 - 130	103	50 - 130	<0.0050	ug/g	NC	40
5105413	Pyrene	2017/08/03	106	50 - 130	100	50 - 130	<0.0050	ug/g	25	40
5105498	Chromium (VI)	2017/08/04	79	75 - 125	101	80 - 120	<0.2	ug/g	9.7	35
5106095	Acid Extractable Aluminum (Al)	2017/08/04	NC	75 - 125	98	80 - 120	<50	ug/g	1.0	30
5106095	Acid Extractable Antimony (Sb)	2017/08/04	85	75 - 125	105	80 - 120	<0.20	ug/g	NC	30
5106095	Acid Extractable Arsenic (As)	2017/08/04	93	75 - 125	100	80 - 120	<1.0	ug/g	25	30
5106095	Acid Extractable Barium (Ba)	2017/08/04	NC	75 - 125	97	80 - 120	<0.50	ug/g	0.034	30
5106095	Acid Extractable Beryllium (Be)	2017/08/04	93	75 - 125	100	80 - 120	<0.20	ug/g	4.3	30
5106095	Acid Extractable Bismuth (Bi)	2017/08/04	93	75 - 125	98	80 - 120	<1.0	ug/g	NC	30
5106095	Acid Extractable Boron (B)	2017/08/04	86	75 - 125	94	80 - 120	<5.0	ug/g	NC	30
5106095	Acid Extractable Cadmium (Cd)	2017/08/04	95	75 - 125	100	80 - 120	<0.10	ug/g	NC	30

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 #: B7G6254
Report Date: 2017/08/04

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5106095	Acid Extractable Calcium (Ca)	2017/08/04	NC	75 - 125	102	80 - 120	<50	ug/g	0.19	30
5106095	Acid Extractable Chromium (Cr)	2017/08/04	NC	75 - 125	96	80 - 120	<1.0	ug/g	3.1	30
5106095	Acid Extractable Cobalt (Co)	2017/08/04	93	75 - 125	98	80 - 120	<0.10	ug/g	0.62	30
5106095	Acid Extractable Copper (Cu)	2017/08/04	94	75 - 125	101	80 - 120	<0.50	ug/g	3.1	30
5106095	Acid Extractable Iron (Fe)	2017/08/04	NC	75 - 125	101	80 - 120	<50	ug/g	1.4	30
5106095	Acid Extractable Lead (Pb)	2017/08/04	92	75 - 125	100	80 - 120	<1.0	ug/g	2.9	30
5106095	Acid Extractable Magnesium (Mg)	2017/08/04	NC	75 - 125	94	80 - 120	<50	ug/g	1.5	30
5106095	Acid Extractable Manganese (Mn)	2017/08/04	NC	75 - 125	95	80 - 120	<1.0	ug/g	1.3	30
5106095	Acid Extractable Molybdenum (Mo)	2017/08/04	92	75 - 125	98	80 - 120	<0.50	ug/g	NC	30
5106095	Acid Extractable Nickel (Ni)	2017/08/04	NC	75 - 125	98	80 - 120	<0.50	ug/g	0.56	30
5106095	Acid Extractable Phosphorus (P)	2017/08/04	NC	75 - 125	100	80 - 120	<50	ug/g	0.11	30
5106095	Acid Extractable Potassium (K)	2017/08/04	NC	75 - 125	96	80 - 120	<200	ug/g	1.1	30
5106095	Acid Extractable Selenium (Se)	2017/08/04	92	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
5106095	Acid Extractable Silver (Ag)	2017/08/04	95	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
5106095	Acid Extractable Sodium (Na)	2017/08/04	NC	75 - 125	85	80 - 120	<50	ug/g	0.88	30
5106095	Acid Extractable Strontium (Sr)	2017/08/04	NC	75 - 125	106	80 - 120	<1.0	ug/g	0.43	30
5106095	Acid Extractable Thallium (Tl)	2017/08/04	94	75 - 125	99	80 - 120	<0.050	ug/g	10	30
5106095	Acid Extractable Tin (Sn)	2017/08/04	98	75 - 125	101	80 - 120	<1.0	ug/g	2.4	30
5106095	Acid Extractable Uranium (U)	2017/08/04	95	75 - 125	103	80 - 120	<0.050	ug/g	5.0	30
5106095	Acid Extractable Vanadium (V)	2017/08/04	NC	75 - 125	96	80 - 120	<5.0	ug/g	0.54	30
5106095	Acid Extractable Zinc (Zn)	2017/08/04	NC	75 - 125	96	80 - 120	<5.0	ug/g	3.4	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.

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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7G6254
Report Date: 2017/08/04

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #:
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			618826
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113	COC #:	Project Manager:
Tel:	(613) 592-9600 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#618826-03-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	SHIHAN CHOWDHURY		

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)? _____

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC): O.Reg 153 PAHs (Soil); O.Reg 153 ICPMS Metals (Soil); Hexavalent Chromium in Soil by IC

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: 24HR ☒
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 (Soil)	Hexavalent Chromium in Soil by IC	# of Bottles	Comments
1		VS547	17/08/03	1000 HRS	SOIL		X	X	X	1	
2		VS548		1100 HRS			X	X	X	1	
3		VS549		1200 HRS			X	X	X	1	
4		VS550		1300 HRS			X	X	X	1	
5		VS551		1400 HRS			X	X	X	1	
6											
7											
8											
9											On ice pack
10											

03-Aug-17 15:00
Alison Cameron
B7G6254
MVA 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
SHIHAN CHOWDHURY	17/08/03	1430HRS	Marina Damon / Damon	2017/08/03	15:00	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	24, 23, 23	Present	Y	
		Intact	Y	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7G6254
Report Date: 2017/08/04

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: SC

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. #: 618826-02-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/03
Report #: R4631193
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7G5069
Received: 2017/08/02, 15:00

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	8	N/A	2017/08/03	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	8	2017/08/03	2017/08/03	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	8	2017/08/03	2017/08/03	CAM SOP-00447	EPA 6020B m
Moisture	8	N/A	2017/08/03	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	4	2017/08/02	2017/08/02	OTT SOP-00011	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	4	2017/08/02	2017/08/03	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-02-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/03
Report #: R4631193
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7G5069
Received: 2017/08/02, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7G5069
Report Date: 2017/08/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EWF140	EWF141	EWF142	EWF143	EWF144		
Sampling Date			2017/08/02 11:00	2017/08/02 11:30	2017/08/02 12:00	2017/08/02 12:00	2017/08/02 12:30		
COC Number			618826-02-01	618826-02-01	618826-02-01	618826-02-01	618826-02-01		
	UNITS	**Criteria**	**VS 540**	**VS 541**	**VS 542**	**VS 1542**	**VS 543**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5104226
Acid Extractable Arsenic (As)	ug/g	**18**	2.5	1.1	1.0	1.1	2.2	1.0	5104226
Acid Extractable Barium (Ba)	ug/g	**390**	210	170	140	130	200	0.50	5104226
Acid Extractable Beryllium (Be)	ug/g	**4**	0.71	0.62	0.49	0.49	0.68	0.20	5104226
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.4	5.0	5104226
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	0.13	<0.10	0.11	0.10	5104226
Acid Extractable Chromium (Cr)	ug/g	**160**	48	45	31	30	48	1.0	5104226
Acid Extractable Cobalt (Co)	ug/g	**22**	14	9.7	9.8	10	14	0.10	5104226
Acid Extractable Copper (Cu)	ug/g	**140**	27	22	13	13	27	0.50	5104226
Acid Extractable Lead (Pb)	ug/g	**120**	6.4	5.8	4.6	4.3	7.0	1.0	5104226
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5104226
Acid Extractable Nickel (Ni)	ug/g	**100**	28	24	17	16	30	0.50	5104226
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5104226
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5104226
Acid Extractable Thallium (Tl)	ug/g	**1**	0.29	0.22	0.19	0.18	0.27	0.050	5104226
Acid Extractable Uranium (U)	ug/g	**23**	0.69	1.3	0.86	0.75	0.77	0.050	5104226
Acid Extractable Vanadium (V)	ug/g	**86**	64	49	42	42	64	5.0	5104226
Acid Extractable Zinc (Zn)	ug/g	**340**	82	79	51	50	82	5.0	5104226
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5104226

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 #: B7G5069
Report Date: 2017/08/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EWF145	EWF146	EWF147		
Sampling Date			2017/08/02 13:00	2017/08/02 13:30	2017/08/02 14:00		
COC Number			618826-02-01	618826-02-01	618826-02-01		
	UNITS	**Criteria**	**VS 544**	**VS 545**	**VS 546**	**RDL**	**QC Batch**
Metals							
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	0.20	5104226
Acid Extractable Arsenic (As)	ug/g	**18**	1.1	1.9	2.8	1.0	5104226
Acid Extractable Barium (Ba)	ug/g	**390**	30	210	210	0.50	5104226
Acid Extractable Beryllium (Be)	ug/g	**4**	0.31	0.64	0.66	0.20	5104226
Acid Extractable Boron (B)	ug/g	**120**	<5.0	5.2	5.1	5.0	5104226
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.10	5104226
Acid Extractable Chromium (Cr)	ug/g	**160**	24	46	47	1.0	5104226
Acid Extractable Cobalt (Co)	ug/g	**22**	5.3	16	15	0.10	5104226
Acid Extractable Copper (Cu)	ug/g	**140**	7.6	27	26	0.50	5104226
Acid Extractable Lead (Pb)	ug/g	**120**	3.5	6.2	6.1	1.0	5104226
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	0.50	5104226
Acid Extractable Nickel (Ni)	ug/g	**100**	12	30	31	0.50	5104226
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	0.50	5104226
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	0.20	5104226
Acid Extractable Thallium (Tl)	ug/g	**1**	0.098	0.25	0.24	0.050	5104226
Acid Extractable Uranium (U)	ug/g	**23**	0.56	0.64	0.66	0.050	5104226
Acid Extractable Vanadium (V)	ug/g	**86**	38	63	65	5.0	5104226
Acid Extractable Zinc (Zn)	ug/g	**340**	61	79	82	5.0	5104226
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	0.050	5104226

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 #: B7G5069
Report Date: 2017/08/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EWF140	EWF140	EWF141	EWF142	EWF143		
Sampling Date			2017/08/02 11:00	2017/08/02 11:00	2017/08/02 11:30	2017/08/02 12:00	2017/08/02 12:00		
COC Number			618826-02-01	618826-02-01	618826-02-01	618826-02-01	618826-02-01		
	UNITS	Criteria	VS 540	VS 540 Lab-Dup	VS 541	VS 542	VS 1542	RDL	QC Batch
Inorganics									
Moisture	%	-	20	19	21	16	17	0.2	5102505
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	5102422
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Surrogate Recovery (%)									
D10-Anthracene	%	-	127	129	126	115	119		5102510
D14-Terphenyl (FS)	%	-	125	113	104	96	106		5102510
D8-Acenaphthylene	%	-	95	109	107	102	106		5102510

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 Job #: B7G5069
Report Date: 2017/08/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EWF144	EWF145	EWF146	EWF147		
Sampling Date			2017/08/02 12:30	2017/08/02 13:00	2017/08/02 13:30	2017/08/02 14:00		
COC Number			618826-02-01	618826-02-01	618826-02-01	618826-02-01		
	UNITS	Criteria	VS 543	VS 544	VS 545	VS 546	RDL	QC Batch
Inorganics								
Moisture	%	-	20	15	22	25	0.2	5102505
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	0.014	5102422
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5102510
Surrogate Recovery (%)								
D10-Anthracene	%	-	119	114	107	114		5102510
D14-Terphenyl (FS)	%	-	110	95	102	113		5102510
D8-Acenaphthylene	%	-	109	111	112	111		5102510

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 #: B7G5069
Report Date: 2017/08/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EWF140	EWF141	EWF142	EWF143	EWF144		
Sampling Date			2017/08/02 11:00	2017/08/02 11:30	2017/08/02 12:00	2017/08/02 12:00	2017/08/02 12:30		
COC Number			618826-02-01	618826-02-01	618826-02-01	618826-02-01	618826-02-01		
	UNITS	**Criteria**	**VS 540**	**VS 541**	**VS 542**	**VS 1542**	**VS 543**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.4	0.4	0.3	0.2	0.2	0.2	5103539

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			EWF145	EWF145	EWF146	EWF147		
Sampling Date			2017/08/02 13:00	2017/08/02 13:00	2017/08/02 13:30	2017/08/02 14:00		
COC Number			618826-02-01	618826-02-01	618826-02-01	618826-02-01		
	UNITS	**Criteria**	**VS 544**	**VS 544 Lab-Dup**	**VS 545**	**VS 546**	**RDL**	**QC Batch**
Inorganics								
Chromium (VI)	ug/g	**8**	0.4	0.4	0.6	0.4	0.2	5103539

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 Job #: B7G5069
Report Date: 2017/08/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EWF140
Sample ID: VS 540
Matrix: Soil

Collected: 2017/08/02
Shipped:
Received: 2017/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5102422	N/A	2017/08/03	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5103539	2017/08/03	2017/08/03	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5104226	2017/08/03	2017/08/03	Daniel Teclu
Moisture	BAL	5102505	N/A	2017/08/03	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5102510	2017/08/02	2017/08/02	Liliana Gaburici

Maxxam ID: EWF140 Dup
Sample ID: VS 540
Matrix: Soil

Collected: 2017/08/02
Shipped:
Received: 2017/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5102505	N/A	2017/08/03	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5102510	2017/08/02	2017/08/02	Liliana Gaburici

Maxxam ID: EWF141
Sample ID: VS 541
Matrix: Soil

Collected: 2017/08/02
Shipped:
Received: 2017/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5102422	N/A	2017/08/03	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5103539	2017/08/03	2017/08/03	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5104226	2017/08/03	2017/08/03	Daniel Teclu
Moisture	BAL	5102505	N/A	2017/08/03	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5102510	2017/08/02	2017/08/02	Liliana Gaburici

Maxxam ID: EWF142
Sample ID: VS 542
Matrix: Soil

Collected: 2017/08/02
Shipped:
Received: 2017/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5102422	N/A	2017/08/03	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5103539	2017/08/03	2017/08/03	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5104226	2017/08/03	2017/08/03	Daniel Teclu
Moisture	BAL	5102505	N/A	2017/08/03	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5102510	2017/08/02	2017/08/02	Liliana Gaburici

Maxxam ID: EWF143
Sample ID: VS 1542
Matrix: Soil

Collected: 2017/08/02
Shipped:
Received: 2017/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5102422	N/A	2017/08/03	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5103539	2017/08/03	2017/08/03	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5104226	2017/08/03	2017/08/03	Daniel Teclu
Moisture	BAL	5102505	N/A	2017/08/03	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5102510	2017/08/02	2017/08/02	Liliana Gaburici

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 #: B7G5069
Report Date: 2017/08/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EWF144
Sample ID: VS 543
Matrix: Soil

Collected: 2017/08/02
Shipped:
Received: 2017/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5102422	N/A	2017/08/03	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5103539	2017/08/03	2017/08/03	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5104226	2017/08/03	2017/08/03	Daniel Teclu
Moisture	BAL	5102505	N/A	2017/08/03	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5102510	2017/08/02	2017/08/03	Liliana Gaburici

Maxxam ID: EWF145
Sample ID: VS 544
Matrix: Soil

Collected: 2017/08/02
Shipped:
Received: 2017/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5102422	N/A	2017/08/03	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5103539	2017/08/03	2017/08/03	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5104226	2017/08/03	2017/08/03	Daniel Teclu
Moisture	BAL	5102505	N/A	2017/08/03	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5102510	2017/08/02	2017/08/03	Liliana Gaburici

Maxxam ID: EWF145 Dup
Sample ID: VS 544
Matrix: Soil

Collected: 2017/08/02
Shipped:
Received: 2017/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5103539	2017/08/03	2017/08/03	Sally Coughlin

Maxxam ID: EWF146
Sample ID: VS 545
Matrix: Soil

Collected: 2017/08/02
Shipped:
Received: 2017/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5102422	N/A	2017/08/03	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5103539	2017/08/03	2017/08/03	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5104226	2017/08/03	2017/08/03	Daniel Teclu
Moisture	BAL	5102505	N/A	2017/08/03	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5102510	2017/08/02	2017/08/03	Liliana Gaburici

Maxxam ID: EWF147
Sample ID: VS 546
Matrix: Soil

Collected: 2017/08/02
Shipped:
Received: 2017/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5102422	N/A	2017/08/03	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5103539	2017/08/03	2017/08/03	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5104226	2017/08/03	2017/08/03	Daniel Teclu
Moisture	BAL	5102505	N/A	2017/08/03	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5102510	2017/08/02	2017/08/03	Liliana Gaburici

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 #: B7G5069
Report Date: 2017/08/03

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	23.3°C

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 Job #: B7G5069
Report Date: 2017/08/03

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
5102510	D10-Anthracene	2017/08/03	113	50 - 130	120	50 - 130	118	%		
5102510	D14-Terphenyl (FS)	2017/08/03	100	50 - 130	102	50 - 130	102	%		
5102510	D8-Acenaphthylene	2017/08/03	101	50 - 130	108	50 - 130	100	%		
5102505	Moisture	2017/08/03							2.6	50
5102510	1-Methylnaphthalene	2017/08/02	92	50 - 130	103	50 - 130	<0.0050	ug/g	NC	40
5102510	2-Methylnaphthalene	2017/08/02	89	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
5102510	Acenaphthene	2017/08/02	95	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
5102510	Acenaphthylene	2017/08/02	92	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
5102510	Anthracene	2017/08/02	101	50 - 130	111	50 - 130	<0.0050	ug/g	NC	40
5102510	Benzo(a)anthracene	2017/08/02	91	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
5102510	Benzo(a)pyrene	2017/08/02	79	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5102510	Benzo(b/j)fluoranthene	2017/08/02	86	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
5102510	Benzo(g,h,i)perylene	2017/08/02	74	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5102510	Benzo(k)fluoranthene	2017/08/02	85	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
5102510	Chrysene	2017/08/02	90	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5102510	Dibenz(a,h)anthracene	2017/08/02	88	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5102510	Fluoranthene	2017/08/02	97	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
5102510	Fluorene	2017/08/02	98	50 - 130	110	50 - 130	<0.0050	ug/g	NC	40
5102510	Indeno(1,2,3-cd)pyrene	2017/08/02	82	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5102510	Naphthalene	2017/08/02	75	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5102510	Phenanthrene	2017/08/02	105	50 - 130	119	50 - 130	<0.0050	ug/g	NC	40
5102510	Pyrene	2017/08/02	96	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
5103539	Chromium (VI)	2017/08/03	90	75 - 125	91	80 - 120	<0.2	ug/g	1.4	35
5104226	Acid Extractable Antimony (Sb)	2017/08/03	101	75 - 125	97	80 - 120	<0.20	ug/g	15	30
5104226	Acid Extractable Arsenic (As)	2017/08/03	102	75 - 125	101	80 - 120	<1.0	ug/g	6.9	30
5104226	Acid Extractable Barium (Ba)	2017/08/03	NC	75 - 125	103	80 - 120	<0.50	ug/g	2.4	30
5104226	Acid Extractable Beryllium (Be)	2017/08/03	102	75 - 125	97	80 - 120	<0.20	ug/g	11	30
5104226	Acid Extractable Boron (B)	2017/08/03	97	75 - 125	95	80 - 120	<5.0	ug/g	NC	30
5104226	Acid Extractable Cadmium (Cd)	2017/08/03	102	75 - 125	97	80 - 120	<0.10	ug/g	NC	30
5104226	Acid Extractable Chromium (Cr)	2017/08/03	99	75 - 125	102	80 - 120	<1.0	ug/g	7.2	30
5104226	Acid Extractable Cobalt (Co)	2017/08/03	102	75 - 125	101	80 - 120	<0.10	ug/g	4.4	30

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 #: B7G5069
Report Date: 2017/08/03

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
5104226	Acid Extractable Copper (Cu)	2017/08/03	99	75 - 125	102	80 - 120	<0.50	ug/g	4.3	30
5104226	Acid Extractable Lead (Pb)	2017/08/03	NC	75 - 125	101	80 - 120	<1.0	ug/g	1.8	30
5104226	Acid Extractable Mercury (Hg)	2017/08/03	93	75 - 125	95	80 - 120	<0.050	ug/g	NC	30
5104226	Acid Extractable Molybdenum (Mo)	2017/08/03	101	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
5104226	Acid Extractable Nickel (Ni)	2017/08/03	99	75 - 125	100	80 - 120	<0.50	ug/g	10	30
5104226	Acid Extractable Selenium (Se)	2017/08/03	104	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
5104226	Acid Extractable Silver (Ag)	2017/08/03	100	75 - 125	99	80 - 120	<0.20	ug/g	6.1	30
5104226	Acid Extractable Thallium (Tl)	2017/08/03	101	75 - 125	100	80 - 120	<0.050	ug/g	7.5	30
5104226	Acid Extractable Uranium (U)	2017/08/03	101	75 - 125	99	80 - 120	<0.050	ug/g	8.3	30
5104226	Acid Extractable Vanadium (V)	2017/08/03	95	75 - 125	103	80 - 120	<5.0	ug/g	9.5	30
5104226	Acid Extractable Zinc (Zn)	2017/08/03	NC	75 - 125	101	80 - 120	<5.0	ug/g	4.7	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.

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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7G5069
Report Date: 2017/08/03

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

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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #: 618826
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#618826-02-01	Alison Cameron
Email:	AP-CustomerService@golder.com	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)? _____

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: 24hr ☒
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)	Hexavalent Chromium in Soil by IC	# of Bottles	Comments
1		VS540	17/08/02	1100	Soil		X	X	X	1	
2		VS541	↓	1130	↓		X	X	X	1	
3		VS542	↓	1200	↓		X	X	X	1	
4		VS1542	↓	1200	↓		X	X	X	1	
5		~~VS543~~ VS543	↓	1230	↓		X	X	X	1	
6		VS544	↓	1300	↓		X	X	X	1	
7		VS545	↓	1330	↓		X	X	X	1	
8		VS546	↓	1400	↓		X	X	X	1	
9											
10											

RECEIVED IN OTTAWA
02-Aug-17 15:00
Alison Cameron
B7G5069
KIV OTT-001

ON the 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 Recei	Custody Seal	Yes	No
Aaron Bradshaw	17/08/02	1430	Ian Jenkins	2017/08/02	15:00	0		25, 24, 21	Present Intact	✓ ✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7G5069
Report Date: 2017/08/03

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.

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. #: 618826-01-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/03
Report #: R4629919
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7G3995
Received: 2017/08/01, 15:00

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	8	N/A	2017/08/02	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	8	2017/08/02	2017/08/02	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	8	2017/08/02	2017/08/02	CAM SOP-00447	EPA 6020B m
Moisture	8	N/A	2017/08/02	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	7	2017/08/01	2017/08/01	OTT SOP-00011	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	1	2017/08/01	2017/08/02	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 618826-01-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/08/03
Report #: R4629919
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7G3995
Received: 2017/08/01, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7G3995
Report Date: 2017/08/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EVZ734	EVZ735	EVZ736	EVZ737	EVZ738		
Sampling Date			2017/08/01 07:00	2017/08/01 07:15	2017/08/01 07:30	2017/08/01 07:30	2017/08/01 07:45		
COC Number			618826-01-01	618826-01-01	618826-01-01	618826-01-01	618826-01-01		
	UNITS	Criteria	VS 533	VS 534	VS 535	VS 1535	VS 536	RDL	QC Batch
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5102090
Acid Extractable Arsenic (As)	ug/g	**18**	1.1	2.0	2.3	1.7	2.2	1.0	5102090
Acid Extractable Barium (Ba)	ug/g	**390**	160	190	200	190	210	0.50	5102090
Acid Extractable Beryllium (Be)	ug/g	**4**	0.55	0.74	0.67	0.61	0.73	0.20	5102090
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	5.3	<5.0	5.3	5.0	5102090
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5102090
Acid Extractable Chromium (Cr)	ug/g	**160**	36	41	45	44	50	1.0	5102090
Acid Extractable Cobalt (Co)	ug/g	**22**	9.5	13	13	12	14	0.10	5102090
Acid Extractable Copper (Cu)	ug/g	**140**	23	25	26	24	28	0.50	5102090
Acid Extractable Lead (Pb)	ug/g	**120**	4.6	6.1	6.1	5.7	6.9	1.0	5102090
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5102090
Acid Extractable Nickel (Ni)	ug/g	**100**	21	24	28	27	30	0.50	5102090
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5102090
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5102090
Acid Extractable Thallium (Tl)	ug/g	**1**	0.19	0.26	0.27	0.27	0.33	0.050	5102090
Acid Extractable Uranium (U)	ug/g	**23**	0.82	0.84	0.63	0.59	0.78	0.050	5102090
Acid Extractable Vanadium (V)	ug/g	**86**	47	59	62	59	67	5.0	5102090
Acid Extractable Zinc (Zn)	ug/g	**340**	60	69	80	76	85	5.0	5102090
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5102090

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 #: B7G3995
Report Date: 2017/08/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EVZ739	EVZ740	EVZ741	EVZ741		
Sampling Date			2017/08/01 08:00	2017/08/01 08:15	2017/08/01 08:30	2017/08/01 08:30		
COC Number			618826-01-01	618826-01-01	618826-01-01	618826-01-01		
	UNITS	Criteria	VS 537	VS 538	VS 539	VS 539 Lab-Dup	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	5102090
Acid Extractable Arsenic (As)	ug/g	**18**	2.2	2.0	2.0	2.2	1.0	5102090
Acid Extractable Barium (Ba)	ug/g	**390**	190	190	210	200	0.50	5102090
Acid Extractable Beryllium (Be)	ug/g	**4**	0.62	0.59	0.68	0.69	0.20	5102090
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	5.3	5.4	5.0	5102090
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	0.10	5102090
Acid Extractable Chromium (Cr)	ug/g	**160**	44	42	51	51	1.0	5102090
Acid Extractable Cobalt (Co)	ug/g	**22**	12	12	14	14	0.10	5102090
Acid Extractable Copper (Cu)	ug/g	**140**	27	26	24	24	0.50	5102090
Acid Extractable Lead (Pb)	ug/g	**120**	5.8	5.9	6.9	6.6	1.0	5102090
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	0.50	5102090
Acid Extractable Nickel (Ni)	ug/g	**100**	27	26	29	29	0.50	5102090
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	5102090
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	5102090
Acid Extractable Thallium (Tl)	ug/g	**1**	0.25	0.26	0.27	0.29	0.050	5102090
Acid Extractable Uranium (U)	ug/g	**23**	0.83	0.56	0.72	0.64	0.050	5102090
Acid Extractable Vanadium (V)	ug/g	**86**	61	58	66	66	5.0	5102090
Acid Extractable Zinc (Zn)	ug/g	**340**	74	70	85	84	5.0	5102090
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.050	5102090

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 Job #: B7G3995
Report Date: 2017/08/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EVZ734	EVZ734	EVZ735	EVZ736	EVZ737		
Sampling Date			2017/08/01 07:00	2017/08/01 07:00	2017/08/01 07:15	2017/08/01 07:30	2017/08/01 07:30		
COC Number			618826-01-01	618826-01-01	618826-01-01	618826-01-01	618826-01-01		
	UNITS	Criteria	VS 533	VS 533 Lab-Dup	VS 534	VS 535	VS 1535	RDL	QC Batch
Inorganics									
Moisture	%	-	20	19	20	22	22	0.2	5100721
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	5100621
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Surrogate Recovery (%)									
D10-Anthracene	%	-	95	99	102	104	98		5100724
D14-Terphenyl (FS)	%	-	93	106	99	106	93		5100724
D8-Acenaphthylene	%	-	90	94	96	92	88		5100724

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 Job #: B7G3995
Report Date: 2017/08/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EVZ738	EVZ739	EVZ740	EVZ741		
Sampling Date			2017/08/01 07:45	2017/08/01 08:00	2017/08/01 08:15	2017/08/01 08:30		
COC Number			618826-01-01	618826-01-01	618826-01-01	618826-01-01		
	UNITS	Criteria	VS 536	VS 537	VS 538	VS 539	RDL	QC Batch
Inorganics								
Moisture	%	-	24	21	20	20	0.2	5100721
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	0.014	5100621
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5100724
Surrogate Recovery (%)								
D10-Anthracene	%	-	109	95	103	98		5100724
D14-Terphenyl (FS)	%	-	99	109	94	95		5100724
D8-Acenaphthylene	%	-	91	91	84	90		5100724

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 #: B7G3995
Report Date: 2017/08/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EVZ734	EVZ735	EVZ735	EVZ736	EVZ737		
Sampling Date			2017/08/01 07:00	2017/08/01 07:15	2017/08/01 07:15	2017/08/01 07:30	2017/08/01 07:30		
COC Number			618826-01-01	618826-01-01	618826-01-01	618826-01-01	618826-01-01		
	UNITS	**Criteria**	**VS 533**	**VS 534**	**VS 534 Lab-Dup**	**VS 535**	**VS 1535**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.5	0.6	0.6	0.2	0.4	0.2	5101489

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			EVZ738	EVZ739	EVZ740	EVZ741		
Sampling Date			2017/08/01 07:45	2017/08/01 08:00	2017/08/01 08:15	2017/08/01 08:30		
COC Number			618826-01-01	618826-01-01	618826-01-01	618826-01-01		
	UNITS	**Criteria**	**VS 536**	**VS 537**	**VS 538**	**VS 539**	**RDL**	**QC Batch**
Inorganics								
Chromium (VI)	ug/g	**8**	0.4	0.3	<0.2	0.7	0.2	5101489

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 #: B7G3995
Report Date: 2017/08/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EVZ734
Sample ID: VS 533
Matrix: Soil

Collected: 2017/08/01
Shipped:
Received: 2017/08/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5100621	N/A	2017/08/02	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5101489	2017/08/02	2017/08/02	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5102090	2017/08/02	2017/08/02	Daniel Teclu
Moisture	BAL	5100721	N/A	2017/08/02	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5100724	2017/08/01	2017/08/01	Liliana Gaburici

Maxxam ID: EVZ734 Dup
Sample ID: VS 533
Matrix: Soil

Collected: 2017/08/01
Shipped:
Received: 2017/08/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5100721	N/A	2017/08/02	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5100724	2017/08/01	2017/08/01	Liliana Gaburici

Maxxam ID: EVZ735
Sample ID: VS 534
Matrix: Soil

Collected: 2017/08/01
Shipped:
Received: 2017/08/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5100621	N/A	2017/08/02	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5101489	2017/08/02	2017/08/02	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5102090	2017/08/02	2017/08/02	Daniel Teclu
Moisture	BAL	5100721	N/A	2017/08/02	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5100724	2017/08/01	2017/08/01	Liliana Gaburici

Maxxam ID: EVZ735 Dup
Sample ID: VS 534
Matrix: Soil

Collected: 2017/08/01
Shipped:
Received: 2017/08/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5101489	2017/08/02	2017/08/02	Sally Coughlin

Maxxam ID: EVZ736
Sample ID: VS 535
Matrix: Soil

Collected: 2017/08/01
Shipped:
Received: 2017/08/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5100621	N/A	2017/08/02	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5101489	2017/08/02	2017/08/02	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5102090	2017/08/02	2017/08/02	Daniel Teclu
Moisture	BAL	5100721	N/A	2017/08/02	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5100724	2017/08/01	2017/08/01	Liliana Gaburici

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 #: B7G3995
Report Date: 2017/08/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EVZ737
Sample ID: VS 1535
Matrix: Soil

Collected: 2017/08/01
Shipped:
Received: 2017/08/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5100621	N/A	2017/08/02	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5101489	2017/08/02	2017/08/02	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5102090	2017/08/02	2017/08/02	Daniel Teclu
Moisture	BAL	5100721	N/A	2017/08/02	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5100724	2017/08/01	2017/08/01	Liliana Gaburici

Maxxam ID: EVZ738
Sample ID: VS 536
Matrix: Soil

Collected: 2017/08/01
Shipped:
Received: 2017/08/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5100621	N/A	2017/08/02	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5101489	2017/08/02	2017/08/02	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5102090	2017/08/02	2017/08/02	Daniel Teclu
Moisture	BAL	5100721	N/A	2017/08/02	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5100724	2017/08/01	2017/08/01	Liliana Gaburici

Maxxam ID: EVZ739
Sample ID: VS 537
Matrix: Soil

Collected: 2017/08/01
Shipped:
Received: 2017/08/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5100621	N/A	2017/08/02	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5101489	2017/08/02	2017/08/02	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5102090	2017/08/02	2017/08/02	Daniel Teclu
Moisture	BAL	5100721	N/A	2017/08/02	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5100724	2017/08/01	2017/08/01	Liliana Gaburici

Maxxam ID: EVZ740
Sample ID: VS 538
Matrix: Soil

Collected: 2017/08/01
Shipped:
Received: 2017/08/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5100621	N/A	2017/08/02	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5101489	2017/08/02	2017/08/02	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5102090	2017/08/02	2017/08/02	Daniel Teclu
Moisture	BAL	5100721	N/A	2017/08/02	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5100724	2017/08/01	2017/08/01	Liliana Gaburici

Maxxam ID: EVZ741
Sample ID: VS 539
Matrix: Soil

Collected: 2017/08/01
Shipped:
Received: 2017/08/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5100621	N/A	2017/08/02	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	5101489	2017/08/02	2017/08/02	Sally Coughlin

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 #: B7G3995
Report Date: 2017/08/03

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EVZ741
Sample ID: VS 539
Matrix: Soil

Collected: 2017/08/01
Shipped:
Received: 2017/08/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5102090	2017/08/02	2017/08/02	Daniel Teclu
Moisture	BAL	5100721	N/A	2017/08/02	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5100724	2017/08/01	2017/08/02	Liliana Gaburici

Maxxam ID: EVZ741 Dup
Sample ID: VS 539
Matrix: Soil

Collected: 2017/08/01
Shipped:
Received: 2017/08/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5102090	2017/08/02	2017/08/02	Daniel Teclu

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 #: B7G3995
Report Date: 2017/08/03

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	22.3°C

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 #: B7G3995
Report Date: 2017/08/03

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
5100724	D10-Anthracene	2017/08/01	105	50 - 130	111	50 - 130	107	%		
5100724	D14-Terphenyl (FS)	2017/08/01	94	50 - 130	103	50 - 130	111	%		
5100724	D8-Acenaphthylene	2017/08/01	88	50 - 130	94	50 - 130	97	%		
5100721	Moisture	2017/08/02							1.5	50
5100724	1-Methylnaphthalene	2017/08/01	100	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5100724	2-Methylnaphthalene	2017/08/01	92	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
5100724	Acenaphthene	2017/08/01	103	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40
5100724	Acenaphthylene	2017/08/01	87	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5100724	Anthracene	2017/08/01	100	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5100724	Benzo(a)anthracene	2017/08/01	109	50 - 130	113	50 - 130	<0.0050	ug/g	NC	40
5100724	Benzo(a)pyrene	2017/08/01	94	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5100724	Benzo(b/j)fluoranthene	2017/08/01	107	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40
5100724	Benzo(g,h,i)perylene	2017/08/01	86	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
5100724	Benzo(k)fluoranthene	2017/08/01	87	50 - 130	105	50 - 130	<0.0050	ug/g	NC	40
5100724	Chrysene	2017/08/01	97	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
5100724	Dibenz(a,h)anthracene	2017/08/01	94	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5100724	Fluoranthene	2017/08/01	109	50 - 130	111	50 - 130	<0.0050	ug/g	NC	40
5100724	Fluorene	2017/08/01	101	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
5100724	Indeno(1,2,3-cd)pyrene	2017/08/01	90	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5100724	Naphthalene	2017/08/01	81	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5100724	Phenanthrene	2017/08/01	91	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5100724	Pyrene	2017/08/01	100	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
5101489	Chromium (VI)	2017/08/02	76	75 - 125	84	80 - 120	<0.2	ug/g	5.7	35
5102090	Acid Extractable Antimony (Sb)	2017/08/02	77	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
5102090	Acid Extractable Arsenic (As)	2017/08/02	97	75 - 125	104	80 - 120	<1.0	ug/g	7.1	30
5102090	Acid Extractable Barium (Ba)	2017/08/02	NC	75 - 125	108	80 - 120	<0.50	ug/g	2.5	30
5102090	Acid Extractable Beryllium (Be)	2017/08/02	97	75 - 125	99	80 - 120	<0.20	ug/g	0.34	30
5102090	Acid Extractable Boron (B)	2017/08/02	90	75 - 125	94	80 - 120	<5.0	ug/g	2.8	30
5102090	Acid Extractable Cadmium (Cd)	2017/08/02	95	75 - 125	98	80 - 120	<0.10	ug/g	NC	30
5102090	Acid Extractable Chromium (Cr)	2017/08/02	NC	75 - 125	103	80 - 120	<1.0	ug/g	1.3	30
5102090	Acid Extractable Cobalt (Co)	2017/08/02	91	75 - 125	101	80 - 120	<0.10	ug/g	0.91	30

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 #: B7G3995
Report Date: 2017/08/03

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
5102090	Acid Extractable Copper (Cu)	2017/08/02	88	75 - 125	99	80 - 120	<0.50	ug/g	1.3	30
5102090	Acid Extractable Lead (Pb)	2017/08/02	97	75 - 125	101	80 - 120	<1.0	ug/g	5.0	30
5102090	Acid Extractable Mercury (Hg)	2017/08/02	93	75 - 125	92	80 - 120	<0.050	ug/g	NC	30
5102090	Acid Extractable Molybdenum (Mo)	2017/08/02	98	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
5102090	Acid Extractable Nickel (Ni)	2017/08/02	NC	75 - 125	102	80 - 120	<0.50	ug/g	0.82	30
5102090	Acid Extractable Selenium (Se)	2017/08/02	98	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
5102090	Acid Extractable Silver (Ag)	2017/08/02	97	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
5102090	Acid Extractable Thallium (Tl)	2017/08/02	100	75 - 125	103	80 - 120	<0.050	ug/g	8.3	30
5102090	Acid Extractable Uranium (U)	2017/08/02	99	75 - 125	102	80 - 120	<0.050	ug/g	11	30
5102090	Acid Extractable Vanadium (V)	2017/08/02	NC	75 - 125	102	80 - 120	<5.0	ug/g	0.73	30
5102090	Acid Extractable Zinc (Zn)	2017/08/02	NC	75 - 125	103	80 - 120	<5.0	ug/g	1.8	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7G3995
Report Date: 2017/08/03

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).

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.

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 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 #:	B70916	Maxxam Job #:	Bottle Order #: 618826
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#618826-01-01	Alison Cameron
Email:	AP-CustomerService@golder.com	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	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 ☐ 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)? _____

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: _____ Time Required: 24hr ☒
Rush Confirmation Number: _____ *(call lab for #)*

RECEIVED IN OTTAWA

	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)	Hexavalent Chromium in Soil by IC							# of Bottles	Comments
1		VS533	17/08/01	0700	Soil		X	X	X							1	
2		VS534	↓	0715	↓		X	X	X							1	
3		VS535	↓	0730	↓		X	X	X							1	
4		VS1535	↓	0730	↓		X	X	X							1	
5		VS536	↓	0745	↓		X	X	X							1	
6		VS537	↓	0800	↓		X	X	X							1	
7		VS538	↓	0815	↓		X	X	X							1	
8		VS539	↓	0830	↓		X	X	X							1	
9																	
10																	

01-Aug-17 15:00
Alison Cameron
B7G3995
KIV OTT-001

ON the 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				
Aaron Bratshaw	17/08/01	14:15	Jerri Jongsma	2017/08/01	15:00	0	Time Sensitive	Temperature (°C) on Recei 22, 23, 22	Custody Seal	Yes	No
									Present		
									Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7G3995
Report Date: 2017/08/03

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.

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. #: 572155-50-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/28
Report #: R4619671
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7G0276
Received: 2017/07/27, 15:00

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	8	N/A	2017/07/28	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	8	2017/07/28	2017/07/28	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	8	2017/07/28	2017/07/28	CAM SOP-00447	EPA 6020B m
Moisture	8	N/A	2017/07/28	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	8	2017/07/27	2017/07/27	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-50-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/28
Report #: R4619671
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7G0276
Received: 2017/07/27, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7G0276
Report Date: 2017/07/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EVF667	EVF668	EVF669	EVF670	EVF671		
Sampling Date			2017/07/27 11:00	2017/07/27 11:00	2017/07/27 11:30	2017/07/27 12:00	2017/07/27 12:30		
COC Number			572155-50-01	572155-50-01	572155-50-01	572155-50-01	572155-50-01		
	UNITS	**Criteria**	**VS 1526**	**VS 526**	**VS 527**	**VS 528**	**VS 529**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5095448
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	1.1	<1.0	<1.0	1.0	5095448
Acid Extractable Barium (Ba)	ug/g	**390**	29	26	14	290	380	0.50	5095448
Acid Extractable Beryllium (Be)	ug/g	**4**	0.23	0.22	<0.20	0.75	0.87	0.20	5095448
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5095448
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	0.11	0.10	5095448
Acid Extractable Chromium (Cr)	ug/g	**160**	18	16	9.8	78	110	1.0	5095448
Acid Extractable Cobalt (Co)	ug/g	**22**	4.8	4.4	3.2	19	**27**	0.10	5095448
Acid Extractable Copper (Cu)	ug/g	**140**	7.4	6.7	4.2	49	59	0.50	5095448
Acid Extractable Lead (Pb)	ug/g	**120**	2.2	2.2	1.5	5.8	6.9	1.0	5095448
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5095448
Acid Extractable Nickel (Ni)	ug/g	**100**	9.2	8.7	6.2	48	67	0.50	5095448
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5095448
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5095448
Acid Extractable Thallium (Tl)	ug/g	**1**	0.081	0.063	<0.050	0.35	0.49	0.050	5095448
Acid Extractable Uranium (U)	ug/g	**23**	0.55	0.62	0.33	1.5	1.1	0.050	5095448
Acid Extractable Vanadium (V)	ug/g	**86**	22	20	12	**88**	**120**	5.0	5095448
Acid Extractable Zinc (Zn)	ug/g	**340**	21	17	10	95	140	5.0	5095448
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5095448

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 #: B7G0276
Report Date: 2017/07/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EVF672	EVF673	EVF673	EVF674		
Sampling Date			2017/07/27 13:00	2017/07/27 13:30	2017/07/27 13:30	2017/07/27 14:00		
COC Number			572155-50-01	572155-50-01	572155-50-01	572155-50-01		
	UNITS	Criteria	VS 530	VS 531	VS 531 Lab-Dup	VS 532	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	5095448
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	1.0	1.0	5095448
Acid Extractable Barium (Ba)	ug/g	**390**	360	**440**	**440**	**400**	0.50	5095448
Acid Extractable Beryllium (Be)	ug/g	**4**	0.94	1.0	0.99	1.1	0.20	5095448
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.0	5095448
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.13	0.11	<0.10	0.10	5095448
Acid Extractable Chromium (Cr)	ug/g	**160**	100	130	120	120	1.0	5095448
Acid Extractable Cobalt (Co)	ug/g	**22**	**23**	**30**	**30**	**32**	0.10	5095448
Acid Extractable Copper (Cu)	ug/g	**140**	54	66	65	59	0.50	5095448
Acid Extractable Lead (Pb)	ug/g	**120**	7.4	7.8	7.8	8.0	1.0	5095448
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	0.54	0.50	5095448
Acid Extractable Nickel (Ni)	ug/g	**100**	56	73	70	64	0.50	5095448
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	5095448
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	5095448
Acid Extractable Thallium (Tl)	ug/g	**1**	0.48	0.50	0.49	0.48	0.050	5095448
Acid Extractable Uranium (U)	ug/g	**23**	1.4	2.2	2.2	2.9	0.050	5095448
Acid Extractable Vanadium (V)	ug/g	**86**	**110**	**130**	**120**	**110**	5.0	5095448
Acid Extractable Zinc (Zn)	ug/g	**340**	130	140	140	130	5.0	5095448
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.050	5095448

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 Job #: B7G0276
Report Date: 2017/07/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EVF667	EVF668	EVF668	EVF669	EVF670		
Sampling Date			2017/07/27 11:00	2017/07/27 11:00	2017/07/27 11:00	2017/07/27 11:30	2017/07/27 12:00		
COC Number			572155-50-01	572155-50-01	572155-50-01	572155-50-01	572155-50-01		
	UNITS	**Criteria**	**VS 1526**	**VS 526**	**VS 526 Lab-Dup**	**VS 527**	**VS 528**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	16	15	14	17	26	0.2	5093851
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5093831
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Surrogate Recovery (%)									
D10-Anthracene	%	-	89	94	84	82	86		5093858
D14-Terphenyl (FS)	%	-	69	71	64	64	66		5093858
D8-Acenaphthylene	%	-	76	77	76	73	73		5093858

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 Job #: B7G0276
Report Date: 2017/07/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EVF671	EVF672	EVF673	EVF674		
Sampling Date			2017/07/27 12:30	2017/07/27 13:00	2017/07/27 13:30	2017/07/27 14:00		
COC Number			572155-50-01	572155-50-01	572155-50-01	572155-50-01		
	UNITS	Criteria	VS 529	VS 530	VS 531	VS 532	RDL	QC Batch
Inorganics								
Moisture	%	-	27	27	26	31	0.2	5093851
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	0.014	5093831
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5093858
Surrogate Recovery (%)								
D10-Anthracene	%	-	90	92	92	87		5093858
D14-Terphenyl (FS)	%	-	70	68	65	65		5093858
D8-Acenaphthylene	%	-	74	75	74	73		5093858

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 #: B7G0276
Report Date: 2017/07/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EVF667	EVF668	EVF669	EVF670	EVF671		
Sampling Date			2017/07/27 11:00	2017/07/27 11:00	2017/07/27 11:30	2017/07/27 12:00	2017/07/27 12:30		
COC Number			572155-50-01	572155-50-01	572155-50-01	572155-50-01	572155-50-01		
	UNITS	**Criteria**	**VS 1526**	**VS 526**	**VS 527**	**VS 528**	**VS 529**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.2	0.2	<0.2	0.6	0.5	0.2	5094903

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			EVF672	EVF673	EVF674		
Sampling Date			2017/07/27 13:00	2017/07/27 13:30	2017/07/27 14:00		
COC Number			572155-50-01	572155-50-01	572155-50-01		
	UNITS	**Criteria**	**VS 530**	**VS 531**	**VS 532**	**RDL**	**QC Batch**
Inorganics							
Chromium (VI)	ug/g	**8**	0.5	0.6	0.9	0.2	5094903

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 #: B7G0276
Report Date: 2017/07/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EVF667
Sample ID: VS 1526
Matrix: Soil

Collected: 2017/07/27
Shipped:
Received: 2017/07/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5093831	N/A	2017/07/28	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5094903	2017/07/28	2017/07/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5095448	2017/07/28	2017/07/28	Daniel Teclu
Moisture	BAL	5093851	N/A	2017/07/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5093858	2017/07/27	2017/07/27	Arezoo Habibagahi

Maxxam ID: EVF668
Sample ID: VS 526
Matrix: Soil

Collected: 2017/07/27
Shipped:
Received: 2017/07/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5093831	N/A	2017/07/28	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5094903	2017/07/28	2017/07/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5095448	2017/07/28	2017/07/28	Daniel Teclu
Moisture	BAL	5093851	N/A	2017/07/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5093858	2017/07/27	2017/07/27	Arezoo Habibagahi

Maxxam ID: EVF668 Dup
Sample ID: VS 526
Matrix: Soil

Collected: 2017/07/27
Shipped:
Received: 2017/07/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5093851	N/A	2017/07/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5093858	2017/07/27	2017/07/27	Arezoo Habibagahi

Maxxam ID: EVF669
Sample ID: VS 527
Matrix: Soil

Collected: 2017/07/27
Shipped:
Received: 2017/07/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5093831	N/A	2017/07/28	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5094903	2017/07/28	2017/07/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5095448	2017/07/28	2017/07/28	Daniel Teclu
Moisture	BAL	5093851	N/A	2017/07/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5093858	2017/07/27	2017/07/27	Arezoo Habibagahi

Maxxam ID: EVF670
Sample ID: VS 528
Matrix: Soil

Collected: 2017/07/27
Shipped:
Received: 2017/07/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5093831	N/A	2017/07/28	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5094903	2017/07/28	2017/07/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5095448	2017/07/28	2017/07/28	Daniel Teclu
Moisture	BAL	5093851	N/A	2017/07/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5093858	2017/07/27	2017/07/27	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 #: B7G0276
Report Date: 2017/07/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EVF671
Sample ID: VS 529
Matrix: Soil

Collected: 2017/07/27
Shipped:
Received: 2017/07/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5093831	N/A	2017/07/28	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5094903	2017/07/28	2017/07/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5095448	2017/07/28	2017/07/28	Daniel Teclu
Moisture	BAL	5093851	N/A	2017/07/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5093858	2017/07/27	2017/07/27	Arezoo Habibagahi

Maxxam ID: EVF672
Sample ID: VS 530
Matrix: Soil

Collected: 2017/07/27
Shipped:
Received: 2017/07/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5093831	N/A	2017/07/28	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5094903	2017/07/28	2017/07/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5095448	2017/07/28	2017/07/28	Daniel Teclu
Moisture	BAL	5093851	N/A	2017/07/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5093858	2017/07/27	2017/07/27	Arezoo Habibagahi

Maxxam ID: EVF673
Sample ID: VS 531
Matrix: Soil

Collected: 2017/07/27
Shipped:
Received: 2017/07/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5093831	N/A	2017/07/28	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5094903	2017/07/28	2017/07/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5095448	2017/07/28	2017/07/28	Daniel Teclu
Moisture	BAL	5093851	N/A	2017/07/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5093858	2017/07/27	2017/07/27	Arezoo Habibagahi

Maxxam ID: EVF673 Dup
Sample ID: VS 531
Matrix: Soil

Collected: 2017/07/27
Shipped:
Received: 2017/07/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5095448	2017/07/28	2017/07/28	Daniel Teclu

Maxxam ID: EVF674
Sample ID: VS 532
Matrix: Soil

Collected: 2017/07/27
Shipped:
Received: 2017/07/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5093831	N/A	2017/07/28	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5094903	2017/07/28	2017/07/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5095448	2017/07/28	2017/07/28	Daniel Teclu
Moisture	BAL	5093851	N/A	2017/07/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5093858	2017/07/27	2017/07/27	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 #: B7G0276
Report Date: 2017/07/28

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	19.0°C

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 #: B7G0276
Report Date: 2017/07/28

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
5093858	D10-Anthracene	2017/07/27	80	50 - 130	73	50 - 130	96	%		
5093858	D14-Terphenyl (FS)	2017/07/27	68	50 - 130	63	50 - 130	71	%		
5093858	D8-Acenaphthylene	2017/07/27	77	50 - 130	71	50 - 130	77	%		
5093851	Moisture	2017/07/28							4.9	50
5093858	1-Methylnaphthalene	2017/07/27	83	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
5093858	2-Methylnaphthalene	2017/07/27	85	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
5093858	Acenaphthene	2017/07/27	84	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
5093858	Acenaphthylene	2017/07/27	75	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40
5093858	Anthracene	2017/07/27	79	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
5093858	Benzo(a)anthracene	2017/07/27	84	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
5093858	Benzo(a)pyrene	2017/07/27	77	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
5093858	Benzo(b/j)fluoranthene	2017/07/27	82	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5093858	Benzo(g,h,i)perylene	2017/07/27	75	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40
5093858	Benzo(k)fluoranthene	2017/07/27	74	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40
5093858	Chrysene	2017/07/27	84	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
5093858	Dibenz(a,h)anthracene	2017/07/27	71	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40
5093858	Fluoranthene	2017/07/27	76	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
5093858	Fluorene	2017/07/27	84	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
5093858	Indeno(1,2,3-cd)pyrene	2017/07/27	77	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40
5093858	Naphthalene	2017/07/27	76	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
5093858	Phenanthrene	2017/07/27	77	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40
5093858	Pyrene	2017/07/27	80	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5094903	Chromium (VI)	2017/07/28	73 (1)	75 - 125	88	80 - 120	<0.2	ug/g	NC	35
5095448	Acid Extractable Antimony (Sb)	2017/07/28	71 (1)	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
5095448	Acid Extractable Arsenic (As)	2017/07/28	98	75 - 125	101	80 - 120	<1.0	ug/g	NC	30
5095448	Acid Extractable Barium (Ba)	2017/07/28	NC	75 - 125	103	80 - 120	<0.50	ug/g	1.9	30
5095448	Acid Extractable Beryllium (Be)	2017/07/28	98	75 - 125	97	80 - 120	<0.20	ug/g	1.7	30
5095448	Acid Extractable Boron (B)	2017/07/28	92	75 - 125	95	80 - 120	<5.0	ug/g	NC	30
5095448	Acid Extractable Cadmium (Cd)	2017/07/28	98	75 - 125	98	80 - 120	<0.10	ug/g	15	30
5095448	Acid Extractable Chromium (Cr)	2017/07/28	NC	75 - 125	98	80 - 120	<1.0	ug/g	2.4	30
5095448	Acid Extractable Cobalt (Co)	2017/07/28	NC	75 - 125	98	80 - 120	<0.10	ug/g	0.38	30

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 #: B7G0276
Report Date: 2017/07/28

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
5095448	Acid Extractable Copper (Cu)	2017/07/28	NC	75 - 125	100	80 - 120	<0.50	ug/g	0.95	30
5095448	Acid Extractable Lead (Pb)	2017/07/28	97	75 - 125	98	80 - 120	<1.0	ug/g	0.55	30
5095448	Acid Extractable Mercury (Hg)	2017/07/28	99	75 - 125	102	80 - 120	<0.050	ug/g	NC	30
5095448	Acid Extractable Molybdenum (Mo)	2017/07/28	101	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
5095448	Acid Extractable Nickel (Ni)	2017/07/28	NC	75 - 125	98	80 - 120	<0.50	ug/g	4.3	30
5095448	Acid Extractable Selenium (Se)	2017/07/28	94	75 - 125	98	80 - 120	<0.50	ug/g	NC	30
5095448	Acid Extractable Silver (Ag)	2017/07/28	97	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5095448	Acid Extractable Thallium (Tl)	2017/07/28	97	75 - 125	99	80 - 120	<0.050	ug/g	0.36	30
5095448	Acid Extractable Uranium (U)	2017/07/28	98	75 - 125	98	80 - 120	<0.050	ug/g	0.36	30
5095448	Acid Extractable Vanadium (V)	2017/07/28	NC	75 - 125	100	80 - 120	<5.0	ug/g	3.8	30
5095448	Acid Extractable Zinc (Zn)	2017/07/28	NC	75 - 125	95	80 - 120	<5.0	ug/g	2.8	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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 #: B7G0276
Report Date: 2017/07/28

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, 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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#572155-50-01	Madison Bingley
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 ☐ 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)? _____

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: 24hr ☒
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		VS1526	17/07/27	1100	Soil		X	X								1	
2		VS526		1100			X	X								1	
3		VS527		1130			X	X								1	
4		VS528		1200			X	X								1	
5		VS529		1230			X	X								1	
6		VS530		1300			X	X								1	
7		VS531		1330			X	X								1	RECEIVED IN OTTAWA
8		VS532		1400			X	X								1	
9																	
10																	ON the Ice Pack

27-Jul-17 15:00
Alison Cameron
B7G0276
KIV OTT-001

* 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	17/07/27	1430	[illegible]	2017/07/27	15:00	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	19, 19, 19	Present	✓	
		Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7G0276
Report Date: 2017/07/28

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
VS 528	EVF670-02	Acid Extractable Vanadium (V)	86	88	5.0	ug/g
VS 529	EVF671-02	Acid Extractable Cobalt (Co)	22	27	0.10	ug/g
VS 529	EVF671-02	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 530	EVF672-02	Acid Extractable Cobalt (Co)	22	23	0.10	ug/g
VS 530	EVF672-02	Acid Extractable Vanadium (V)	86	110	5.0	ug/g
VS 531	EVF673-02-Lab Dup	Acid Extractable Barium (Ba)	390	440	0.50	ug/g
VS 531	EVF673-02	Acid Extractable Barium (Ba)	390	440	0.50	ug/g
VS 531	EVF673-02	Acid Extractable Cobalt (Co)	22	30	0.10	ug/g
VS 531	EVF673-02-Lab Dup	Acid Extractable Cobalt (Co)	22	30	0.10	ug/g
VS 531	EVF673-02-Lab Dup	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 531	EVF673-02	Acid Extractable Vanadium (V)	86	130	5.0	ug/g
VS 532	EVF674-02	Acid Extractable Barium (Ba)	390	400	0.50	ug/g
VS 532	EVF674-02	Acid Extractable Cobalt (Co)	22	32	0.10	ug/g
VS 532	EVF674-02	Acid Extractable Vanadium (V)	86	110	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.

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. #: 572155-49-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/25
Report #: R4611675
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7F5681
Received: 2017/07/21, 15:00

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	3	N/A	2017/07/24	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	3	2017/07/24	2017/07/24	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	3	2017/07/24	2017/07/24	CAM SOP-00447	EPA 6020B m
Moisture	3	N/A	2017/07/24	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	3	2017/07/21	2017/07/21	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-49-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/25
Report #: R4611675
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7F5681
Received: 2017/07/21, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7F5681
Report Date: 2017/07/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EUH798	EUH799	EUH800	EUH800		
Sampling Date			2017/07/21 11:00	2017/07/21 11:30	2017/07/21 12:00	2017/07/21 12:00		
COC Number			572155-49-01	572155-49-01	572155-49-01	572155-49-01		
	UNITS	Criteria	VS 523	VS 524	VS 525	VS 525 Lab-Dup	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	5086873
Acid Extractable Arsenic (As)	ug/g	**18**	2.4	1.2	1.6	1.6	1.0	5086873
Acid Extractable Barium (Ba)	ug/g	**390**	220	160	130	130	0.50	5086873
Acid Extractable Beryllium (Be)	ug/g	**4**	0.78	0.55	0.57	0.55	0.20	5086873
Acid Extractable Boron (B)	ug/g	**120**	5.2	<5.0	<5.0	<5.0	5.0	5086873
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	0.10	5086873
Acid Extractable Chromium (Cr)	ug/g	**160**	48	40	36	35	1.0	5086873
Acid Extractable Cobalt (Co)	ug/g	**22**	16	9.7	7.6	7.2	0.10	5086873
Acid Extractable Copper (Cu)	ug/g	**140**	28	23	22	21	0.50	5086873
Acid Extractable Lead (Pb)	ug/g	**120**	6.9	4.7	5.2	5.0	1.0	5086873
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	0.50	5086873
Acid Extractable Nickel (Ni)	ug/g	**100**	30	23	20	19	0.50	5086873
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	5086873
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	5086873
Acid Extractable Thallium (Tl)	ug/g	**1**	0.28	0.21	0.17	0.17	0.050	5086873
Acid Extractable Uranium (U)	ug/g	**23**	0.85	0.94	1.1	1.0	0.050	5086873
Acid Extractable Vanadium (V)	ug/g	**86**	66	55	51	48	5.0	5086873
Acid Extractable Zinc (Zn)	ug/g	**340**	82	59	54	52	5.0	5086873
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.050	5086873

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 Job #: B7F5681
Report Date: 2017/07/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EUH798	EUH799	EUH799	EUH800		
Sampling Date			2017/07/21 11:00	2017/07/21 11:30	2017/07/21 11:30	2017/07/21 12:00		
COC Number			572155-49-01	572155-49-01	572155-49-01	572155-49-01		
	UNITS	Criteria	VS 523	VS 524	VS 524 Lab-Dup	VS 525	RDL	QC Batch
Inorganics								
Moisture	%	-	22	19	18	18	0.2	5085146
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	0.014	5085151
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5085164
Surrogate Recovery (%)								
D10-Anthracene	%	-	98	99	96	96		5085164
D14-Terphenyl (FS)	%	-	71	70	72	70		5085164
D8-Acenaphthylene	%	-	69	66	71	71		5085164

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 Job #: B7F5681
Report Date: 2017/07/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EUH798	EUH799	EUH800		
Sampling Date			2017/07/21 11:00	2017/07/21 11:30	2017/07/21 12:00		
COC Number			572155-49-01	572155-49-01	572155-49-01		
	UNITS	**Criteria**	**VS 523**	**VS 524**	**VS 525**	**RDL**	**QC Batch**
Inorganics							
Chromium (VI)	ug/g	**8**	<0.2	0.4	0.2	0.2	5086796

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 #: B7F5681
Report Date: 2017/07/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EUH798
Sample ID: VS 523
Matrix: Soil

Collected: 2017/07/21
Shipped:
Received: 2017/07/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5085151	N/A	2017/07/24	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5086796	2017/07/24	2017/07/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5086873	2017/07/24	2017/07/24	Daniel Teclu
Moisture	BAL	5085146	N/A	2017/07/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5085164	2017/07/21	2017/07/21	Arezoo Habibagahi

Maxxam ID: EUH799
Sample ID: VS 524
Matrix: Soil

Collected: 2017/07/21
Shipped:
Received: 2017/07/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5085151	N/A	2017/07/24	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5086796	2017/07/24	2017/07/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5086873	2017/07/24	2017/07/24	Daniel Teclu
Moisture	BAL	5085146	N/A	2017/07/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5085164	2017/07/21	2017/07/21	Arezoo Habibagahi

Maxxam ID: EUH799 Dup
Sample ID: VS 524
Matrix: Soil

Collected: 2017/07/21
Shipped:
Received: 2017/07/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5085146	N/A	2017/07/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5085164	2017/07/21	2017/07/21	Arezoo Habibagahi

Maxxam ID: EUH800
Sample ID: VS 525
Matrix: Soil

Collected: 2017/07/21
Shipped:
Received: 2017/07/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5085151	N/A	2017/07/24	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5086796	2017/07/24	2017/07/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5086873	2017/07/24	2017/07/24	Daniel Teclu
Moisture	BAL	5085146	N/A	2017/07/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5085164	2017/07/21	2017/07/21	Arezoo Habibagahi

Maxxam ID: EUH800 Dup
Sample ID: VS 525
Matrix: Soil

Collected: 2017/07/21
Shipped:
Received: 2017/07/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5086873	2017/07/24	2017/07/24	Daniel Teclu

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 #: B7F5681
Report Date: 2017/07/25

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	20.7°C

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 Job #: B7F5681
Report Date: 2017/07/25

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
5085164	D10-Anthracene	2017/07/21	87	50 - 130	86	50 - 130	103	%		
5085164	D14-Terphenyl (FS)	2017/07/21	78	50 - 130	67	50 - 130	68	%		
5085164	D8-Acenaphthylene	2017/07/21	77	50 - 130	70	50 - 130	67	%		
5085146	Moisture	2017/07/24							6.5	50
5085164	1-Methylnaphthalene	2017/07/21	96	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5085164	2-Methylnaphthalene	2017/07/21	85	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5085164	Acenaphthene	2017/07/21	88	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
5085164	Acenaphthylene	2017/07/21	75	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40
5085164	Anthracene	2017/07/21	79	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
5085164	Benzo(a)anthracene	2017/07/21	86	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
5085164	Benzo(a)pyrene	2017/07/21	72	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5085164	Benzo(b/j)fluoranthene	2017/07/21	83	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
5085164	Benzo(g,h,i)perylene	2017/07/21	68	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40
5085164	Benzo(k)fluoranthene	2017/07/21	71	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40
5085164	Chrysene	2017/07/21	79	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
5085164	Dibenz(a,h)anthracene	2017/07/21	67	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5085164	Fluoranthene	2017/07/21	84	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
5085164	Fluorene	2017/07/21	92	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5085164	Indeno(1,2,3-cd)pyrene	2017/07/21	81	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
5085164	Naphthalene	2017/07/21	78	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
5085164	Phenanthrene	2017/07/21	76	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40
5085164	Pyrene	2017/07/21	83	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5086796	Chromium (VI)	2017/07/24	71 (1)	75 - 125	90	80 - 120	<0.2	ug/g	NC	35
5086873	Acid Extractable Antimony (Sb)	2017/07/24	82	75 - 125	105	80 - 120	<0.20	ug/g	NC	30
5086873	Acid Extractable Arsenic (As)	2017/07/24	100	75 - 125	102	80 - 120	<1.0	ug/g	0.83	30
5086873	Acid Extractable Barium (Ba)	2017/07/24	NC	75 - 125	106	80 - 120	<0.50	ug/g	5.4	30
5086873	Acid Extractable Beryllium (Be)	2017/07/24	100	75 - 125	100	80 - 120	<0.20	ug/g	3.8	30
5086873	Acid Extractable Boron (B)	2017/07/24	92	75 - 125	97	80 - 120	<5.0	ug/g	NC	30
5086873	Acid Extractable Cadmium (Cd)	2017/07/24	100	75 - 125	100	80 - 120	<0.10	ug/g	NC	30
5086873	Acid Extractable Chromium (Cr)	2017/07/24	NC	75 - 125	99	80 - 120	<1.0	ug/g	3.4	30
5086873	Acid Extractable Cobalt (Co)	2017/07/24	93	75 - 125	99	80 - 120	<0.10	ug/g	6.1	30

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 #: B7F5681
Report Date: 2017/07/25

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
5086873	Acid Extractable Copper (Cu)	2017/07/24	96	75 - 125	101	80 - 120	<0.50	ug/g	2.4	30
5086873	Acid Extractable Lead (Pb)	2017/07/24	95	75 - 125	99	80 - 120	<1.0	ug/g	5.2	30
5086873	Acid Extractable Mercury (Hg)	2017/07/24	97	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
5086873	Acid Extractable Molybdenum (Mo)	2017/07/24	98	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
5086873	Acid Extractable Nickel (Ni)	2017/07/24	91	75 - 125	99	80 - 120	<0.50	ug/g	5.6	30
5086873	Acid Extractable Selenium (Se)	2017/07/24	96	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
5086873	Acid Extractable Silver (Ag)	2017/07/24	98	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5086873	Acid Extractable Thallium (Tl)	2017/07/24	96	75 - 125	98	80 - 120	<0.050	ug/g	0.13	30
5086873	Acid Extractable Uranium (U)	2017/07/24	97	75 - 125	99	80 - 120	<0.050	ug/g	8.9	30
5086873	Acid Extractable Vanadium (V)	2017/07/24	NC	75 - 125	100	80 - 120	<5.0	ug/g	4.9	30
5086873	Acid Extractable Zinc (Zn)	2017/07/24	NC	75 - 125	99	80 - 120	<5.0	ug/g	3.4	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.

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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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 #: B7F5681
Report Date: 2017/07/25

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).

Brad Newman, Scientific Specialist

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#572155-49-01	Madison Bingley
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	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)? _____

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

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: 24hr ☒
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		VS523	17/07/21	1100	Soil		X	X								1	
2		VS524	↓	1130	↓		X	X								1	
3		VS525	↓	1200	↓		X	X								1	
4																	
5																	
6																	
7																	
8																	
9																	
10																	ON the five pack.

21-Jul-17 15:00
Alison Cameron
B7F5681
KIV 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 Recei	Custody Seal	Yes	No
Aaron Bradshaw	17/07/21	1400	Lani Jungwirth	2017/07/21	15:00	0		21, 20, 21	Present Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7F5681
Report Date: 2017/07/25

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. #: 572155-48-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/20
Report #: R4606702
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7F2920
Received: 2017/07/19, 15:00

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	8	N/A	2017/07/20	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	8	2017/07/20	2017/07/20	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	8	2017/07/20	2017/07/20	CAM SOP-00447	EPA 6020B m
Moisture	8	N/A	2017/07/20	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	8	2017/07/19	2017/07/20	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
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.

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
Your C.O.C. #: 572155-48-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/20
Report #: R4606702
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7F2920
Received: 2017/07/19, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7F2920
Report Date: 2017/07/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ETU470	ETU471	ETU471	ETU472	ETU473		
Sampling Date			2017/07/19 11:00	2017/07/19 11:30	2017/07/19 11:30	2017/07/19 12:00	2017/07/19 12:30		
COC Number			572155-48-01	572155-48-01	572155-48-01	572155-48-01	572155-48-01		
	UNITS	**Criteria**	**VS 517**	**VS 518**	**VS 518 Lab-Dup**	**VS 450B**	**VS 451B**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5082511
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	1.3	1.8	1.0	5082511
Acid Extractable Barium (Ba)	ug/g	**390**	27	16	16	110	120	0.50	5082511
Acid Extractable Beryllium (Be)	ug/g	**4**	0.26	<0.20	<0.20	0.47	0.49	0.20	5082511
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5082511
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5082511
Acid Extractable Chromium (Cr)	ug/g	**160**	16	7.7	7.6	30	31	1.0	5082511
Acid Extractable Cobalt (Co)	ug/g	**22**	4.7	2.1	2.1	7.3	7.6	0.10	5082511
Acid Extractable Copper (Cu)	ug/g	**140**	5.5	1.4	1.5	20	22	0.50	5082511
Acid Extractable Lead (Pb)	ug/g	**120**	2.3	1.2	1.2	4.4	4.5	1.0	5082511
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5082511
Acid Extractable Nickel (Ni)	ug/g	**100**	9.1	4.9	4.9	18	17	0.50	5082511
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5082511
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5082511
Acid Extractable Thallium (Tl)	ug/g	**1**	0.087	<0.050	<0.050	0.17	0.16	0.050	5082511
Acid Extractable Uranium (U)	ug/g	**23**	0.73	0.35	0.36	1.0	1.1	0.050	5082511
Acid Extractable Vanadium (V)	ug/g	**86**	23	9.4	9.5	50	54	5.0	5082511
Acid Extractable Zinc (Zn)	ug/g	**340**	25	18	18	50	48	5.0	5082511
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5082511

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 Job #: B7F2920
Report Date: 2017/07/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ETU474	ETU475	ETU476	ETU477		
Sampling Date			2017/07/19 13:00	2017/07/19 13:30	2017/07/19 14:00	2017/07/19 14:30		
COC Number			572155-48-01	572155-48-01	572155-48-01	572155-48-01		
	UNITS	Criteria	VS 519	VS 520	VS 521	VS 522	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	5082511
Acid Extractable Arsenic (As)	ug/g	**18**	1.6	<1.0	<1.0	2.0	1.0	5082511
Acid Extractable Barium (Ba)	ug/g	**390**	59	21	270	**680**	0.50	5082511
Acid Extractable Beryllium (Be)	ug/g	**4**	0.47	<0.20	0.64	1.2	0.20	5082511
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	7.5	5.0	5082511
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.15	0.10	5082511
Acid Extractable Chromium (Cr)	ug/g	**160**	42	19	69	130	1.0	5082511
Acid Extractable Cobalt (Co)	ug/g	**22**	9.2	3.7	20	**48**	0.10	5082511
Acid Extractable Copper (Cu)	ug/g	**140**	17	6.9	31	42	0.50	5082511
Acid Extractable Lead (Pb)	ug/g	**120**	8.5	2.1	5.9	11	1.0	5082511
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	0.93	0.50	5082511
Acid Extractable Nickel (Ni)	ug/g	**100**	22	9.6	34	75	0.50	5082511
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	5082511
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	5082511
Acid Extractable Thallium (Tl)	ug/g	**1**	0.15	0.072	0.37	0.57	0.050	5082511
Acid Extractable Uranium (U)	ug/g	**23**	1.6	0.49	1.4	1.7	0.050	5082511
Acid Extractable Vanadium (V)	ug/g	**86**	42	21	68	**110**	5.0	5082511
Acid Extractable Zinc (Zn)	ug/g	**340**	50	26	86	230	5.0	5082511
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.050	5082511

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 #: B7F2920
Report Date: 2017/07/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ETU470	ETU471	ETU472	ETU473	ETU474		
Sampling Date			2017/07/19 11:00	2017/07/19 11:30	2017/07/19 12:00	2017/07/19 12:30	2017/07/19 13:00		
COC Number			572155-48-01	572155-48-01	572155-48-01	572155-48-01	572155-48-01		
	UNITS	**Criteria**	**VS 517**	**VS 518**	**VS 450B**	**VS 451B**	**VS 519**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	18	18	20	20	16	0.2	5079852
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	5080675
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5079963
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5079963
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5079963
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5079963
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5079963
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0087	0.0050	5079963
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5079963
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5079963
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	0.0071	0.0050	5079963
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5079963
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	0.0087	0.0050	5079963
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5079963
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5079963
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5079963
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5079963
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5079963
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	0.0065	0.0050	5079963
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0076	0.0050	5079963
Surrogate Recovery (%)									
D10-Anthracene	%	-	91	97	97	96	91		5079963
D14-Terphenyl (FS)	%	-	72	78	76	75	72		5079963
D8-Acenaphthylene	%	-	69	73	70	72	69		5079963

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 #: B7F2920
Report Date: 2017/07/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ETU475	ETU476	ETU477		
Sampling Date			2017/07/19 13:30	2017/07/19 14:00	2017/07/19 14:30		
COC Number			572155-48-01	572155-48-01	572155-48-01		
	UNITS	Criteria	VS 520	VS 521	VS 522	RDL	QC Batch
Inorganics							
Moisture	%	-	13	29	29	0.2	5079852
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	0.014	5080675
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	0.0050	5079963
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	0.0050	5079963
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0050	5079963
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	0.0050	5079963
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	0.0050	5079963
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	5079963
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	0.0050	5079963
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	5079963
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	0.0050	5079963
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	0.0050	5079963
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	0.0050	5079963
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0050	5079963
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	0.0050	5079963
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	5079963
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	5079963
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	0.0050	5079963
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	0.0050	5079963
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	0.0050	5079963
Surrogate Recovery (%)							
D10-Anthracene	%	-	92	93	96		5079963
D14-Terphenyl (FS)	%	-	76	76	74		5079963
D8-Acenaphthylene	%	-	70	70	69		5079963

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 #: B7F2920
Report Date: 2017/07/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ETU470	ETU471	ETU472	ETU473	ETU474		
Sampling Date			2017/07/19 11:00	2017/07/19 11:30	2017/07/19 12:00	2017/07/19 12:30	2017/07/19 13:00		
COC Number			572155-48-01	572155-48-01	572155-48-01	572155-48-01	572155-48-01		
	UNITS	**Criteria**	**VS 517**	**VS 518**	**VS 450B**	**VS 451B**	**VS 519**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.2	<0.2	0.3	0.3	0.5	0.2	5081784

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			ETU475	ETU476	ETU477		
Sampling Date			2017/07/19 13:30	2017/07/19 14:00	2017/07/19 14:30		
COC Number			572155-48-01	572155-48-01	572155-48-01		
	UNITS	**Criteria**	**VS 520**	**VS 521**	**VS 522**	**RDL**	**QC Batch**
Inorganics							
Chromium (VI)	ug/g	**8**	<0.2	0.8	0.3	0.2	5081784

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 #: B7F2920
Report Date: 2017/07/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ETU470
Sample ID: VS 517
Matrix: Soil

Collected: 2017/07/19
Shipped:
Received: 2017/07/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5080675	N/A	2017/07/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5081784	2017/07/20	2017/07/20	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5082511	2017/07/20	2017/07/20	Daniel Teclu
Moisture	BAL	5079852	N/A	2017/07/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5079963	2017/07/19	2017/07/20	Arezoo Habibagahi

Maxxam ID: ETU471
Sample ID: VS 518
Matrix: Soil

Collected: 2017/07/19
Shipped:
Received: 2017/07/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5080675	N/A	2017/07/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5081784	2017/07/20	2017/07/20	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5082511	2017/07/20	2017/07/20	Daniel Teclu
Moisture	BAL	5079852	N/A	2017/07/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5079963	2017/07/19	2017/07/20	Arezoo Habibagahi

Maxxam ID: ETU471 Dup
Sample ID: VS 518
Matrix: Soil

Collected: 2017/07/19
Shipped:
Received: 2017/07/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5082511	2017/07/20	2017/07/20	Daniel Teclu

Maxxam ID: ETU472
Sample ID: VS 450B
Matrix: Soil

Collected: 2017/07/19
Shipped:
Received: 2017/07/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5080675	N/A	2017/07/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5081784	2017/07/20	2017/07/20	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5082511	2017/07/20	2017/07/20	Daniel Teclu
Moisture	BAL	5079852	N/A	2017/07/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5079963	2017/07/19	2017/07/20	Arezoo Habibagahi

Maxxam ID: ETU473
Sample ID: VS 451B
Matrix: Soil

Collected: 2017/07/19
Shipped:
Received: 2017/07/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5080675	N/A	2017/07/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5081784	2017/07/20	2017/07/20	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5082511	2017/07/20	2017/07/20	Daniel Teclu
Moisture	BAL	5079852	N/A	2017/07/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5079963	2017/07/19	2017/07/20	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 #: B7F2920
Report Date: 2017/07/20

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ETU474
Sample ID: VS 519
Matrix: Soil

Collected: 2017/07/19
Shipped:
Received: 2017/07/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5080675	N/A	2017/07/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5081784	2017/07/20	2017/07/20	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5082511	2017/07/20	2017/07/20	Daniel Teclu
Moisture	BAL	5079852	N/A	2017/07/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5079963	2017/07/19	2017/07/20	Arezoo Habibagahi

Maxxam ID: ETU475
Sample ID: VS 520
Matrix: Soil

Collected: 2017/07/19
Shipped:
Received: 2017/07/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5080675	N/A	2017/07/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5081784	2017/07/20	2017/07/20	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5082511	2017/07/20	2017/07/20	Daniel Teclu
Moisture	BAL	5079852	N/A	2017/07/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5079963	2017/07/19	2017/07/20	Arezoo Habibagahi

Maxxam ID: ETU476
Sample ID: VS 521
Matrix: Soil

Collected: 2017/07/19
Shipped:
Received: 2017/07/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5080675	N/A	2017/07/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5081784	2017/07/20	2017/07/20	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5082511	2017/07/20	2017/07/20	Daniel Teclu
Moisture	BAL	5079852	N/A	2017/07/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5079963	2017/07/19	2017/07/20	Arezoo Habibagahi

Maxxam ID: ETU477
Sample ID: VS 522
Matrix: Soil

Collected: 2017/07/19
Shipped:
Received: 2017/07/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5080675	N/A	2017/07/20	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5081784	2017/07/20	2017/07/20	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5082511	2017/07/20	2017/07/20	Daniel Teclu
Moisture	BAL	5079852	N/A	2017/07/20	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5079963	2017/07/19	2017/07/20	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 #: B7F2920
Report Date: 2017/07/20

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	22.7°C

O.REG 153 PAHS (SOIL)

PAH Compounds in Soil by GC/MS (SIM): Matrix spiked recoveries were not calculated (NC) because of matrix interferences.

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 #: B7F2920
Report Date: 2017/07/20

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
5079963	D10-Anthracene	2017/07/20	75	50 - 130	88	50 - 130	90	%		
5079963	D14-Terphenyl (FS)	2017/07/20	74	50 - 130	78	50 - 130	78	%		
5079963	D8-Acenaphthylene	2017/07/20	70	50 - 130	75	50 - 130	75	%		
5079852	Moisture	2017/07/20							2.8	50
5079963	1-Methylnaphthalene	2017/07/20	74	50 - 130	86	50 - 130	<0.0050	ug/g	0.23	40
5079963	2-Methylnaphthalene	2017/07/20	76	50 - 130	87	50 - 130	<0.0050	ug/g	1.0	40
5079963	Acenaphthene	2017/07/20	74	50 - 130	88	50 - 130	<0.0050	ug/g	2.0	40
5079963	Acenaphthylene	2017/07/20	57	50 - 130	74	50 - 130	<0.0050	ug/g	0.14	40
5079963	Anthracene	2017/07/20	NC	50 - 130	80	50 - 130	<0.0050	ug/g	3.9	40
5079963	Benzo(a)anthracene	2017/07/20	NC	50 - 130	85	50 - 130	<0.0050	ug/g	1.4	40
5079963	Benzo(a)pyrene	2017/07/20	NC	50 - 130	75	50 - 130	<0.0050	ug/g	2.3	40
5079963	Benzo(b/j)fluoranthene	2017/07/20	66	50 - 130	86	50 - 130	<0.0050	ug/g	5.6	40
5079963	Benzo(g,h,i)perylene	2017/07/20	NC	50 - 130	71	50 - 130	<0.0050	ug/g	0.85	40
5079963	Benzo(k)fluoranthene	2017/07/20	62	50 - 130	73	50 - 130	<0.0050	ug/g	5.2	40
5079963	Chrysene	2017/07/20	52	50 - 130	79	50 - 130	<0.0050	ug/g	2.3	40
5079963	Dibenz(a,h)anthracene	2017/07/20	56	50 - 130	59	50 - 130	<0.0050	ug/g	4.0	40
5079963	Fluoranthene	2017/07/20	NC	50 - 130	82	50 - 130	<0.0050	ug/g	1.1	40
5079963	Fluorene	2017/07/20	61	50 - 130	96	50 - 130	<0.0050	ug/g	3.0	40
5079963	Indeno(1,2,3-cd)pyrene	2017/07/20	55	50 - 130	81	50 - 130	<0.0050	ug/g	3.5	40
5079963	Naphthalene	2017/07/20	56	50 - 130	77	50 - 130	<0.0050	ug/g	1.7	40
5079963	Phenanthrene	2017/07/20	NC	50 - 130	77	50 - 130	<0.0050	ug/g	0.78	40
5079963	Pyrene	2017/07/20	NC	50 - 130	81	50 - 130	<0.0050	ug/g	2.6	40
5081784	Chromium (VI)	2017/07/20	85	75 - 125	90	80 - 120	<0.2	ug/g	NC	35
5082511	Acid Extractable Antimony (Sb)	2017/07/20	103	75 - 125	107	80 - 120	<0.20	ug/g	NC	30
5082511	Acid Extractable Arsenic (As)	2017/07/20	97	75 - 125	103	80 - 120	<1.0	ug/g	NC	30
5082511	Acid Extractable Barium (Ba)	2017/07/20	100	75 - 125	96	80 - 120	<0.50	ug/g	1.9	30
5082511	Acid Extractable Beryllium (Be)	2017/07/20	97	75 - 125	97	80 - 120	<0.20	ug/g	NC	30
5082511	Acid Extractable Boron (B)	2017/07/20	91	75 - 125	94	80 - 120	<5.0	ug/g	NC	30
5082511	Acid Extractable Cadmium (Cd)	2017/07/20	103	75 - 125	102	80 - 120	<0.10	ug/g	NC	30
5082511	Acid Extractable Chromium (Cr)	2017/07/20	96	75 - 125	97	80 - 120	<1.0	ug/g	1.3	30
5082511	Acid Extractable Cobalt (Co)	2017/07/20	98	75 - 125	96	80 - 120	<0.10	ug/g	0.96	30

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 #: B7F2920
Report Date: 2017/07/20

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
5082511	Acid Extractable Copper (Cu)	2017/07/20	99	75 - 125	97	80 - 120	<0.50	ug/g	8.2	30
5082511	Acid Extractable Lead (Pb)	2017/07/20	103	75 - 125	101	80 - 120	<1.0	ug/g	0.35	30
5082511	Acid Extractable Mercury (Hg)	2017/07/20	105	75 - 125	103	80 - 120	<0.050	ug/g	NC	30
5082511	Acid Extractable Molybdenum (Mo)	2017/07/20	104	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
5082511	Acid Extractable Nickel (Ni)	2017/07/20	97	75 - 125	99	80 - 120	<0.50	ug/g	1.0	30
5082511	Acid Extractable Selenium (Se)	2017/07/20	99	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
5082511	Acid Extractable Silver (Ag)	2017/07/20	104	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5082511	Acid Extractable Thallium (Tl)	2017/07/20	107	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
5082511	Acid Extractable Uranium (U)	2017/07/20	103	75 - 125	99	80 - 120	<0.050	ug/g	3.3	30
5082511	Acid Extractable Vanadium (V)	2017/07/20	93	75 - 125	93	80 - 120	<5.0	ug/g	1.6	30
5082511	Acid Extractable Zinc (Zn)	2017/07/20	96	75 - 125	103	80 - 120	<5.0	ug/g	1.1	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7F2920
Report Date: 2017/07/20

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).

Brad Newman, Scientific Specialist

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	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#572155-48-01	Madison Bingley
				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)? _____

Field Filtered (please circle): Metals / Hg / Cr VI

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: _____ Time Required: 24hr ☒
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								# of Bottles	Comments
1		VS517	17/07/19	1100	Soil		X	X								1	
2		VS518	↓	1130	↓		X	X								1	
3		VS450B		1200			X	X								1	
4		VS451B		1230			X	X								1	
5		VS519		1300			X	X								1	
6		VS520		1330			X	X								1	
7		VS521		1400			X	X								1	
8		VS522	↓	1430	↓		X	X								1	
9																	
10																	ON the Ice Pack

19-Jul-17 15:00
Alison Cameron
B7F2920
XIV 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 Recei	Custody Seal	Yes	No
A. Bradshaw / Aaron Bradshaw	17/07/19	1440	[illegible]	2017/07/19	15:00	0		23, 23, 22	Present Intact	✓ ✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7F2920
Report Date: 2017/07/20

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
VS 522	ETU477-02	Acid Extractable Barium (Ba)	390	680	0.50	ug/g
VS 522	ETU477-02	Acid Extractable Cobalt (Co)	22	48	0.10	ug/g
VS 522	ETU477-02	Acid Extractable Vanadium (V)	86	110	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.

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. #: 572155-33-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/18
Report #: R4603090
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7F0795
Received: 2017/07/17, 15:00

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	4	N/A	2017/07/18	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	4	2017/07/18	2017/07/18	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	4	2017/07/18	2017/07/18	CAM SOP-00447	EPA 6020B m
Moisture	4	N/A	2017/07/18	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	4	2017/07/17	2017/07/17	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-33-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/18
Report #: R4603090
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7F0795
Received: 2017/07/17, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7F0795
Report Date: 2017/07/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ETK419	ETK420	ETK421	ETK421	ETK422		
Sampling Date			2017/07/17 10:00	2017/07/17 10:00	2017/07/17 13:00	2017/07/17 13:00	2017/07/17 14:00		
COC Number			572155-33-01	572155-33-01	572155-33-01	572155-33-01	572155-33-01		
	UNITS	**Criteria**	**VS 514**	**VS 1514**	**VS 515**	**VS 515 Lab-Dup**	**VS 516**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5078085
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	<1.0	2.4	1.0	5078085
Acid Extractable Barium (Ba)	ug/g	**390**	30	29	29	27	170	0.50	5078085
Acid Extractable Beryllium (Be)	ug/g	**4**	0.26	0.24	0.23	0.23	0.66	0.20	5078085
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.0	5.0	5078085
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5078085
Acid Extractable Chromium (Cr)	ug/g	**160**	19	19	18	18	41	1.0	5078085
Acid Extractable Cobalt (Co)	ug/g	**22**	4.0	4.2	4.9	4.6	11	0.10	5078085
Acid Extractable Copper (Cu)	ug/g	**140**	6.8	7.4	4.9	4.8	24	0.50	5078085
Acid Extractable Lead (Pb)	ug/g	**120**	1.6	1.6	1.8	1.9	5.4	1.0	5078085
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5078085
Acid Extractable Nickel (Ni)	ug/g	**100**	10	11	10	9.2	24	0.50	5078085
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5078085
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5078085
Acid Extractable Thallium (Tl)	ug/g	**1**	0.065	0.081	0.057	<0.050	0.22	0.050	5078085
Acid Extractable Uranium (U)	ug/g	**23**	0.34	0.36	0.44	0.49	0.86	0.050	5078085
Acid Extractable Vanadium (V)	ug/g	**86**	22	23	23	24	58	5.0	5078085
Acid Extractable Zinc (Zn)	ug/g	**340**	24	25	21	19	63	5.0	5078085
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5078085

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 Job #: B7F0795
Report Date: 2017/07/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ETK419	ETK420	ETK420	ETK421	ETK422		
Sampling Date			2017/07/17 10:00	2017/07/17 10:00	2017/07/17 10:00	2017/07/17 13:00	2017/07/17 14:00		
COC Number			572155-33-01	572155-33-01	572155-33-01	572155-33-01	572155-33-01		
	UNITS	**Criteria**	**VS 514**	**VS 1514**	**VS 1514 Lab-Dup**	**VS 515**	**VS 516**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	20	20		16	18	0.2	5076066
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5076857
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5076899
Surrogate Recovery (%)									
D10-Anthracene	%	-	104	95	95	93	100		5076899
D14-Terphenyl (FS)	%	-	79	75	78	73	75		5076899
D8-Acenaphthylene	%	-	87	82	84	81	83		5076899

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 Job #: B7F0795
Report Date: 2017/07/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ETK419	ETK420	ETK421	ETK422		
Sampling Date			2017/07/17 10:00	2017/07/17 10:00	2017/07/17 13:00	2017/07/17 14:00		
COC Number			572155-33-01	572155-33-01	572155-33-01	572155-33-01		
	UNITS	**Criteria**	**VS 514**	**VS 1514**	**VS 515**	**VS 516**	**RDL**	**QC Batch**
Inorganics								
Chromium (VI)	ug/g	**8**	0.3	0.2	<0.2	<0.2	0.2	5077482

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 #: B7F0795
Report Date: 2017/07/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ETK419
Sample ID: VS 514
Matrix: Soil

Collected: 2017/07/17
Shipped:
Received: 2017/07/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5076857	N/A	2017/07/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5077482	2017/07/18	2017/07/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5078085	2017/07/18	2017/07/18	Daniel Teclu
Moisture	BAL	5076066	N/A	2017/07/18	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5076899	2017/07/17	2017/07/17	Arezoo Habibagahi

Maxxam ID: ETK420
Sample ID: VS 1514
Matrix: Soil

Collected: 2017/07/17
Shipped:
Received: 2017/07/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5076857	N/A	2017/07/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5077482	2017/07/18	2017/07/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5078085	2017/07/18	2017/07/18	Daniel Teclu
Moisture	BAL	5076066	N/A	2017/07/18	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5076899	2017/07/17	2017/07/17	Arezoo Habibagahi

Maxxam ID: ETK420 Dup
Sample ID: VS 1514
Matrix: Soil

Collected: 2017/07/17
Shipped:
Received: 2017/07/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5076899	2017/07/17	2017/07/17	Arezoo Habibagahi

Maxxam ID: ETK421
Sample ID: VS 515
Matrix: Soil

Collected: 2017/07/17
Shipped:
Received: 2017/07/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5076857	N/A	2017/07/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5077482	2017/07/18	2017/07/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5078085	2017/07/18	2017/07/18	Daniel Teclu
Moisture	BAL	5076066	N/A	2017/07/18	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5076899	2017/07/17	2017/07/17	Arezoo Habibagahi

Maxxam ID: ETK421 Dup
Sample ID: VS 515
Matrix: Soil

Collected: 2017/07/17
Shipped:
Received: 2017/07/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5078085	2017/07/18	2017/07/18	Daniel Teclu

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 #: B7F0795
Report Date: 2017/07/18

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ETK422
Sample ID: VS 516
Matrix: Soil

Collected: 2017/07/17
Shipped:
Received: 2017/07/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5076857	N/A	2017/07/18	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5077482	2017/07/18	2017/07/18	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5078085	2017/07/18	2017/07/18	Daniel Teclu
Moisture	BAL	5076066	N/A	2017/07/18	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5076899	2017/07/17	2017/07/17	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 #: B7F0795
Report Date: 2017/07/18

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	21.3°C

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 #: B7F0795
Report Date: 2017/07/18

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
5076899	D10-Anthracene	2017/07/17	87	50 - 130	89	50 - 130	99	%		
5076899	D14-Terphenyl (FS)	2017/07/17	76	50 - 130	77	50 - 130	80	%		
5076899	D8-Acenaphthylene	2017/07/17	85	50 - 130	86	50 - 130	87	%		
5076066	Moisture	2017/07/18							40	50
5076899	1-Methylnaphthalene	2017/07/17	87	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5076899	2-Methylnaphthalene	2017/07/17	85	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
5076899	Acenaphthene	2017/07/17	90	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5076899	Acenaphthylene	2017/07/17	85	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
5076899	Anthracene	2017/07/17	88	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
5076899	Benzo(a)anthracene	2017/07/17	88	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5076899	Benzo(a)pyrene	2017/07/17	74	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
5076899	Benzo(b/j)fluoranthene	2017/07/17	81	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5076899	Benzo(g,h,i)perylene	2017/07/17	66	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
5076899	Benzo(k)fluoranthene	2017/07/17	76	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
5076899	Chrysene	2017/07/17	82	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
5076899	Dibenz(a,h)anthracene	2017/07/17	52	50 - 130	57	50 - 130	<0.0050	ug/g	NC	40
5076899	Fluoranthene	2017/07/17	87	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5076899	Fluorene	2017/07/17	92	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5076899	Indeno(1,2,3-cd)pyrene	2017/07/17	72	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
5076899	Naphthalene	2017/07/17	74	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5076899	Phenanthrene	2017/07/17	79	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5076899	Pyrene	2017/07/17	83	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5077482	Chromium (VI)	2017/07/18	26 (1)	75 - 125	84	80 - 120	<0.2	ug/g	NC	35
5078085	Acid Extractable Antimony (Sb)	2017/07/18	95	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
5078085	Acid Extractable Arsenic (As)	2017/07/18	99	75 - 125	99	80 - 120	<1.0	ug/g	NC	30
5078085	Acid Extractable Barium (Ba)	2017/07/18	NC	75 - 125	99	80 - 120	<0.50	ug/g	8.6	30
5078085	Acid Extractable Beryllium (Be)	2017/07/18	104	75 - 125	101	80 - 120	<0.20	ug/g	0.15	30
5078085	Acid Extractable Boron (B)	2017/07/18	103	75 - 125	103	80 - 120	<5.0	ug/g	NC	30
5078085	Acid Extractable Cadmium (Cd)	2017/07/18	95	75 - 125	97	80 - 120	<0.10	ug/g	NC	30
5078085	Acid Extractable Chromium (Cr)	2017/07/18	100	75 - 125	100	80 - 120	<1.0	ug/g	0.15	30
5078085	Acid Extractable Cobalt (Co)	2017/07/18	99	75 - 125	99	80 - 120	<0.10	ug/g	5.8	30

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 #: B7F0795
Report Date: 2017/07/18

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
5078085	Acid Extractable Copper (Cu)	2017/07/18	101	75 - 125	101	80 - 120	<0.50	ug/g	3.6	30
5078085	Acid Extractable Lead (Pb)	2017/07/18	94	75 - 125	95	80 - 120	<1.0	ug/g	0.83	30
5078085	Acid Extractable Mercury (Hg)	2017/07/18	96	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
5078085	Acid Extractable Molybdenum (Mo)	2017/07/18	98	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
5078085	Acid Extractable Nickel (Ni)	2017/07/18	99	75 - 125	100	80 - 120	<0.50	ug/g	9.6	30
5078085	Acid Extractable Selenium (Se)	2017/07/18	101	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
5078085	Acid Extractable Silver (Ag)	2017/07/18	98	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
5078085	Acid Extractable Thallium (Tl)	2017/07/18	95	75 - 125	94	80 - 120	<0.050	ug/g	14	30
5078085	Acid Extractable Uranium (U)	2017/07/18	97	75 - 125	98	80 - 120	<0.050	ug/g	9.5	30
5078085	Acid Extractable Vanadium (V)	2017/07/18	99	75 - 125	100	80 - 120	<5.0	ug/g	1.9	30
5078085	Acid Extractable Zinc (Zn)	2017/07/18	96	75 - 125	94	80 - 120	<5.0	ug/g	15	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x 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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B7F0795
Report Date: 2017/07/18

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).

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#572155-33-01	Madison Bingley
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)? ___

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: 24hr ☒
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		VS514	17/07/17	10:00	Soil		X	X								1	
2		VS1514	↓	10:00	↓		X	X								1	
3		VS515	↓	13:00	↓		X	X								1	
4		VS516	↓	14:00	↓		X	X								1	
5																	
6																	
7																	
8																	
9																	
10																	ON the Ice Pack

17-Jul-17 15:00
Alison Cameron
B7F0795
KIV 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 Recei	Custody Seal	Yes	No
Aaron Bradshaw	17/07/17	14:30	Kim Jungman	2017/07/14	15:00	0		21, 22, 21	Present	✓	
									Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7F0795
Report Date: 2017/07/18

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. #: 572155-34-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/14
Report #: R4599183
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7E8200
Received: 2017/07/13, 15:00

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	8	N/A	2017/07/14	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	8	2017/07/14	2017/07/14	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	8	2017/07/14	2017/07/14	CAM SOP-00447	EPA 6020B m
Moisture	8	N/A	2017/07/14	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	8	2017/07/13	2017/07/13	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-34-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/14
Report #: R4599183
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7E8200
Received: 2017/07/13, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7E8200
Report Date: 2017/07/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ESX372	ESX373	ESX374	ESX375	ESX376		
Sampling Date			2017/07/13 10:30	2017/07/13 10:30	2017/07/13 11:00	2017/07/13 11:30	2017/07/13 12:00		
COC Number			572155-34-01	572155-34-01	572155-34-01	572155-34-01	572155-34-01		
	UNITS	**Criteria**	**VS 507**	**VS 1507**	**VS 508**	**VS 509**	**VS 510**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	0.24	<0.20	<0.20	0.20	5073481
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5073481
Acid Extractable Barium (Ba)	ug/g	**390**	33	43	36	18	22	0.50	5073481
Acid Extractable Beryllium (Be)	ug/g	**4**	0.22	0.27	0.31	<0.20	<0.20	0.20	5073481
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5073481
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5073481
Acid Extractable Chromium (Cr)	ug/g	**160**	19	20	23	13	11	1.0	5073481
Acid Extractable Cobalt (Co)	ug/g	**22**	5.0	5.3	5.5	2.6	2.3	0.10	5073481
Acid Extractable Copper (Cu)	ug/g	**140**	5.9	7.7	7.3	2.7	3.0	0.50	5073481
Acid Extractable Lead (Pb)	ug/g	**120**	2.3	2.5	2.4	1.9	1.5	1.0	5073481
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5073481
Acid Extractable Nickel (Ni)	ug/g	**100**	10	12	12	6.6	6.5	0.50	5073481
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5073481
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5073481
Acid Extractable Thallium (Tl)	ug/g	**1**	0.070	0.077	0.096	<0.050	<0.050	0.050	5073481
Acid Extractable Uranium (U)	ug/g	**23**	0.57	0.55	0.66	0.40	0.33	0.050	5073481
Acid Extractable Vanadium (V)	ug/g	**86**	27	27	27	17	11	5.0	5073481
Acid Extractable Zinc (Zn)	ug/g	**340**	21	26	29	16	24	5.0	5073481
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5073481

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 #: B7E8200
Report Date: 2017/07/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ESX376	ESX377	ESX378	ESX379		
Sampling Date			2017/07/13 12:00	2017/07/13 12:30	2017/07/13 13:00	2017/07/13 13:30		
COC Number			572155-34-01	572155-34-01	572155-34-01	572155-34-01		
	UNITS	Criteria	VS 510 Lab-Dup	VS 511	VS 512	VS 513	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	5073481
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	2.9	<1.0	2.0	1.0	5073481
Acid Extractable Barium (Ba)	ug/g	**390**	24	190	28	180	0.50	5073481
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	0.73	0.21	0.65	0.20	5073481
Acid Extractable Boron (B)	ug/g	**120**	<5.0	5.3	<5.0	<5.0	5.0	5073481
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	0.10	5073481
Acid Extractable Chromium (Cr)	ug/g	**160**	11	44	20	41	1.0	5073481
Acid Extractable Cobalt (Co)	ug/g	**22**	2.4	14	4.9	13	0.10	5073481
Acid Extractable Copper (Cu)	ug/g	**140**	3.0	27	5.6	25	0.50	5073481
Acid Extractable Lead (Pb)	ug/g	**120**	1.5	8.2	2.3	7.6	1.0	5073481
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	0.50	5073481
Acid Extractable Nickel (Ni)	ug/g	**100**	6.8	27	10	25	0.50	5073481
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	5073481
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	5073481
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	0.29	0.065	0.24	0.050	5073481
Acid Extractable Uranium (U)	ug/g	**23**	0.31	0.85	0.50	0.82	0.050	5073481
Acid Extractable Vanadium (V)	ug/g	**86**	11	65	25	58	5.0	5073481
Acid Extractable Zinc (Zn)	ug/g	**340**	23	75	21	71	5.0	5073481
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.050	5073481

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 Job #: B7E8200
Report Date: 2017/07/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ESX372	ESX373	ESX374	ESX375	ESX376		
Sampling Date			2017/07/13 10:30	2017/07/13 10:30	2017/07/13 11:00	2017/07/13 11:30	2017/07/13 12:00		
COC Number			572155-34-01	572155-34-01	572155-34-01	572155-34-01	572155-34-01		
	UNITS	**Criteria**	**VS 507**	**VS 1507**	**VS 508**	**VS 509**	**VS 510**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	19	19	20	22	23	0.2	5071736
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	5072033
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5071130
Surrogate Recovery (%)									
D10-Anthracene	%	-	88	92	89	94	94		5071130
D14-Terphenyl (FS)	%	-	78	79	81	84	82		5071130
D8-Acenaphthylene	%	-	81	82	82	87	84		5071130

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 #: B7E8200
Report Date: 2017/07/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ESX377	ESX378	ESX379		
Sampling Date			2017/07/13 12:30	2017/07/13 13:00	2017/07/13 13:30		
COC Number			572155-34-01	572155-34-01	572155-34-01		
	UNITS	Criteria	VS 511	VS 512	VS 513	RDL	QC Batch
Inorganics							
Moisture	%	-	21	20	20	0.2	5071736
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	0.014	5072033
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	0.0050	5071130
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	0.0050	5071130
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0050	5071130
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	0.0050	5071130
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	0.0050	5071130
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	5071130
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	0.0050	5071130
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	5071130
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	0.0050	5071130
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	0.0050	5071130
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	0.0050	5071130
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0050	5071130
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	0.0050	5071130
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	5071130
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	5071130
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	0.0050	5071130
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	0.0050	5071130
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	0.0050	5071130
Surrogate Recovery (%)							
D10-Anthracene	%	-	94	95	91		5071130
D14-Terphenyl (FS)	%	-	81	81	80		5071130
D8-Acenaphthylene	%	-	84	82	83		5071130

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 #: B7E8200
Report Date: 2017/07/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ESX372	ESX373	ESX374	ESX375	ESX376		
Sampling Date			2017/07/13 10:30	2017/07/13 10:30	2017/07/13 11:00	2017/07/13 11:30	2017/07/13 12:00		
COC Number			572155-34-01	572155-34-01	572155-34-01	572155-34-01	572155-34-01		
	UNITS	**Criteria**	**VS 507**	**VS 1507**	**VS 508**	**VS 509**	**VS 510**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.3	<0.2	<0.2	0.4	<0.2	0.2	5072959

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			ESX377	ESX378	ESX379		
Sampling Date			2017/07/13 12:30	2017/07/13 13:00	2017/07/13 13:30		
COC Number			572155-34-01	572155-34-01	572155-34-01		
	UNITS	**Criteria**	**VS 511**	**VS 512**	**VS 513**	**RDL**	**QC Batch**
Inorganics							
Chromium (VI)	ug/g	**8**	<0.2	0.2	<0.2	0.2	5072959

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 #: B7E8200
Report Date: 2017/07/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ESX372
Sample ID: VS 507
Matrix: Soil

Collected: 2017/07/13
Shipped:
Received: 2017/07/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5072033	N/A	2017/07/14	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5072959	2017/07/14	2017/07/14	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5073481	2017/07/14	2017/07/14	Daniel Teclu
Moisture	BAL	5071736	N/A	2017/07/14	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5071130	2017/07/13	2017/07/13	Arezoo Habibagahi

Maxxam ID: ESX373
Sample ID: VS 1507
Matrix: Soil

Collected: 2017/07/13
Shipped:
Received: 2017/07/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5072033	N/A	2017/07/14	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5072959	2017/07/14	2017/07/14	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5073481	2017/07/14	2017/07/14	Daniel Teclu
Moisture	BAL	5071736	N/A	2017/07/14	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5071130	2017/07/13	2017/07/13	Arezoo Habibagahi

Maxxam ID: ESX374
Sample ID: VS 508
Matrix: Soil

Collected: 2017/07/13
Shipped:
Received: 2017/07/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5072033	N/A	2017/07/14	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5072959	2017/07/14	2017/07/14	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5073481	2017/07/14	2017/07/14	Daniel Teclu
Moisture	BAL	5071736	N/A	2017/07/14	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5071130	2017/07/13	2017/07/13	Arezoo Habibagahi

Maxxam ID: ESX375
Sample ID: VS 509
Matrix: Soil

Collected: 2017/07/13
Shipped:
Received: 2017/07/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5072033	N/A	2017/07/14	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5072959	2017/07/14	2017/07/14	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5073481	2017/07/14	2017/07/14	Daniel Teclu
Moisture	BAL	5071736	N/A	2017/07/14	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5071130	2017/07/13	2017/07/13	Arezoo Habibagahi

Maxxam ID: ESX376
Sample ID: VS 510
Matrix: Soil

Collected: 2017/07/13
Shipped:
Received: 2017/07/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5072033	N/A	2017/07/14	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5072959	2017/07/14	2017/07/14	Manoj Kumar Gera

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 #: B7E8200
Report Date: 2017/07/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ESX376
Sample ID: VS 510
Matrix: Soil

Collected: 2017/07/13
Shipped:
Received: 2017/07/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5073481	2017/07/14	2017/07/14	Daniel Teclu
Moisture	BAL	5071736	N/A	2017/07/14	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5071130	2017/07/13	2017/07/13	Arezoo Habibagahi

Maxxam ID: ESX376 Dup
Sample ID: VS 510
Matrix: Soil

Collected: 2017/07/13
Shipped:
Received: 2017/07/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5073481	2017/07/14	2017/07/14	Daniel Teclu

Maxxam ID: ESX377
Sample ID: VS 511
Matrix: Soil

Collected: 2017/07/13
Shipped:
Received: 2017/07/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5072033	N/A	2017/07/14	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5072959	2017/07/14	2017/07/14	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5073481	2017/07/14	2017/07/14	Daniel Teclu
Moisture	BAL	5071736	N/A	2017/07/14	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5071130	2017/07/13	2017/07/13	Arezoo Habibagahi

Maxxam ID: ESX378
Sample ID: VS 512
Matrix: Soil

Collected: 2017/07/13
Shipped:
Received: 2017/07/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5072033	N/A	2017/07/14	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5072959	2017/07/14	2017/07/14	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5073481	2017/07/14	2017/07/14	Daniel Teclu
Moisture	BAL	5071736	N/A	2017/07/14	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5071130	2017/07/13	2017/07/13	Arezoo Habibagahi

Maxxam ID: ESX379
Sample ID: VS 513
Matrix: Soil

Collected: 2017/07/13
Shipped:
Received: 2017/07/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5072033	N/A	2017/07/14	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5072959	2017/07/14	2017/07/14	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5073481	2017/07/14	2017/07/14	Daniel Teclu
Moisture	BAL	5071736	N/A	2017/07/14	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5071130	2017/07/13	2017/07/13	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 #: B7E8200
Report Date: 2017/07/14

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	21.3°C

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 #: B7E8200
Report Date: 2017/07/14

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
5071130	D10-Anthracene	2017/07/13	93	50 - 130	96	50 - 130	99	%		
5071130	D14-Terphenyl (FS)	2017/07/13	87	50 - 130	88	50 - 130	86	%		
5071130	D8-Acenaphthylene	2017/07/13	89	50 - 130	95	50 - 130	92	%		
5071130	1-Methylnaphthalene	2017/07/13	82	50 - 130	95	50 - 130	<0.0050	ug/g	17	40
5071130	2-Methylnaphthalene	2017/07/13	87	50 - 130	93	50 - 130	<0.0050	ug/g	17	40
5071130	Acenaphthene	2017/07/13	109	50 - 130	96	50 - 130	<0.0050	ug/g	25	40
5071130	Acenaphthylene	2017/07/13	76	50 - 130	91	50 - 130	<0.0050	ug/g	77 (1)	40
5071130	Anthracene	2017/07/13	95	50 - 130	89	50 - 130	<0.0050	ug/g	18	40
5071130	Benzo(a)anthracene	2017/07/13	101	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
5071130	Benzo(a)pyrene	2017/07/13	80	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5071130	Benzo(b/j)fluoranthene	2017/07/13	86	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
5071130	Benzo(g,h,i)perylene	2017/07/13	73	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
5071130	Benzo(k)fluoranthene	2017/07/13	85	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5071130	Chrysene	2017/07/13	93	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5071130	Dibenz(a,h)anthracene	2017/07/13	63	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
5071130	Fluoranthene	2017/07/13	105	50 - 130	92	50 - 130	<0.0050	ug/g	22	40
5071130	Fluorene	2017/07/13	115	50 - 130	101	50 - 130	<0.0050	ug/g	15	40
5071130	Indeno(1,2,3-cd)pyrene	2017/07/13	74	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
5071130	Naphthalene	2017/07/13	84	50 - 130	79	50 - 130	<0.0050	ug/g	23	40
5071130	Phenanthrene	2017/07/13	89	50 - 130	83	50 - 130	<0.0050	ug/g	17	40
5071130	Pyrene	2017/07/13	96	50 - 130	89	50 - 130	<0.0050	ug/g	19	40
5071736	Moisture	2017/07/14							4.1	50
5072959	Chromium (VI)	2017/07/14	77	75 - 125	88	80 - 120	<0.2	ug/g	NC	35
5073481	Acid Extractable Antimony (Sb)	2017/07/14	97	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5073481	Acid Extractable Arsenic (As)	2017/07/14	97	75 - 125	102	80 - 120	<1.0	ug/g	NC	30
5073481	Acid Extractable Barium (Ba)	2017/07/14	103	75 - 125	99	80 - 120	<0.50	ug/g	6.1	30
5073481	Acid Extractable Beryllium (Be)	2017/07/14	93	75 - 125	95	80 - 120	<0.20	ug/g	NC	30
5073481	Acid Extractable Boron (B)	2017/07/14	89	75 - 125	94	80 - 120	<5.0	ug/g	NC	30
5073481	Acid Extractable Cadmium (Cd)	2017/07/14	97	75 - 125	95	80 - 120	<0.10	ug/g	NC	30
5073481	Acid Extractable Chromium (Cr)	2017/07/14	95	75 - 125	100	80 - 120	<1.0	ug/g	0.98	30
5073481	Acid Extractable Cobalt (Co)	2017/07/14	96	75 - 125	99	80 - 120	<0.10	ug/g	0.95	30

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 #: B7E8200
Report Date: 2017/07/14

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
5073481	Acid Extractable Copper (Cu)	2017/07/14	93	75 - 125	95	80 - 120	<0.50	ug/g	1.3	30
5073481	Acid Extractable Lead (Pb)	2017/07/14	102	75 - 125	103	80 - 120	<1.0	ug/g	0.19	30
5073481	Acid Extractable Mercury (Hg)	2017/07/14	106	75 - 125	103	80 - 120	<0.050	ug/g	NC	30
5073481	Acid Extractable Molybdenum (Mo)	2017/07/14	96	75 - 125	97	80 - 120	<0.50	ug/g	NC	30
5073481	Acid Extractable Nickel (Ni)	2017/07/14	95	75 - 125	99	80 - 120	<0.50	ug/g	4.4	30
5073481	Acid Extractable Selenium (Se)	2017/07/14	99	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
5073481	Acid Extractable Silver (Ag)	2017/07/14	98	75 - 125	97	80 - 120	<0.20	ug/g	NC	30
5073481	Acid Extractable Thallium (Tl)	2017/07/14	103	75 - 125	102	80 - 120	<0.050	ug/g	NC	30
5073481	Acid Extractable Uranium (U)	2017/07/14	101	75 - 125	101	80 - 120	<0.050	ug/g	5.8	30
5073481	Acid Extractable Vanadium (V)	2017/07/14	96	75 - 125	99	80 - 120	<5.0	ug/g	3.2	30
5073481	Acid Extractable Zinc (Zn)	2017/07/14	95	75 - 125	103	80 - 120	<5.0	ug/g	2.0	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 (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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 #: B7E8200
Report Date: 2017/07/14

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, 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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#572155-34-01	Madison Bingley
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)? ___

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: ___ Time Required: 24hr ☒
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		VS507	1030	17/07/13	Soil		X	X								1	
2		VS1507	1030	↓	↓		X	X								1	
3		VS508	1100	↓	↓		X	X								1	
4		VS509	1130	↓	↓		X	X								1	
5		VS510	1200	↓	↓		X	X								1	
6		VS511	1230	↓	↓		X	X								1	
7		VS512	1300	↓	↓		X	X								1	
8		VS513	1330	↓	↓		X	X								1	
9																	
10																	ON the Ice pack.

13-Jul-17 15:00
Alison Cameron
B7E8200
KIV 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
A. Bradshaw Aaron Bradshaw	17/07/13	14:15	[illegible]	2017/07/13	15-00	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	21, 21, 22	Present		
		Intact	☒	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7E8200
Report Date: 2017/07/14

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. #: 572155-35-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/12
Report #: R4592531
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7E5668
Received: 2017/07/11, 15:00

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	2	N/A	2017/07/12	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	2	2017/07/12	2017/07/12	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	2	2017/07/12	2017/07/12	CAM SOP-00447	EPA 6020B m
Moisture	2	N/A	2017/07/12	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	2	2017/07/11	2017/07/12	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-35-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/12
Report #: R4592531
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7E5668
Received: 2017/07/11, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7E5668
Report Date: 2017/07/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ESK959	ESK960		
Sampling Date			2017/07/11 10:00	2017/07/11 11:00		
COC Number			572155-35-01	572155-35-01		
	UNITS	Criteria	VS 505	VS 506	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	0.20	5069242
Acid Extractable Arsenic (As)	ug/g	**18**	1.2	<1.0	1.0	5069242
Acid Extractable Barium (Ba)	ug/g	**390**	97	32	0.50	5069242
Acid Extractable Beryllium (Be)	ug/g	**4**	0.48	0.20	0.20	5069242
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	5.0	5069242
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	0.10	5069242
Acid Extractable Chromium (Cr)	ug/g	**160**	30	17	1.0	5069242
Acid Extractable Cobalt (Co)	ug/g	**22**	7.3	4.4	0.10	5069242
Acid Extractable Copper (Cu)	ug/g	**140**	15	7.0	0.50	5069242
Acid Extractable Lead (Pb)	ug/g	**120**	4.0	1.6	1.0	5069242
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	0.50	5069242
Acid Extractable Nickel (Ni)	ug/g	**100**	15	10	0.50	5069242
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	0.50	5069242
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	0.20	5069242
Acid Extractable Thallium (Tl)	ug/g	**1**	0.14	<0.050	0.050	5069242
Acid Extractable Uranium (U)	ug/g	**23**	0.79	0.42	0.050	5069242
Acid Extractable Vanadium (V)	ug/g	**86**	46	23	5.0	5069242
Acid Extractable Zinc (Zn)	ug/g	**340**	44	20	5.0	5069242
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	0.050	5069242

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 #: B7E5668
Report Date: 2017/07/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ESK959	ESK960	ESK960		
Sampling Date			2017/07/11 10:00	2017/07/11 11:00	2017/07/11 11:00		
COC Number			572155-35-01	572155-35-01	572155-35-01		
	UNITS	Criteria	VS 505	VS 506	VS 506 Lab-Dup	RDL	QC Batch
Inorganics							
Moisture	%	-	19	20	20	0.2	5067921
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		0.014	5067762
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	0.0050	5067925
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	0.0050	5067925
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0050	5067925
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	0.0050	5067925
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	0.0050	5067925
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	5067925
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	0.0050	5067925
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	5067925
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	0.0050	5067925
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	0.0050	5067925
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	0.0050	5067925
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0050	5067925
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	0.0050	5067925
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	5067925
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	5067925
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	0.0050	5067925
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	0.0050	5067925
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	0.0050	5067925
Surrogate Recovery (%)							
D10-Anthracene	%	-	88	94	92		5067925
D14-Terphenyl (FS)	%	-	81	80	79		5067925
D8-Acenaphthylene	%	-	81	82	82		5067925

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 Job #: B7E5668
Report Date: 2017/07/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ESK959	ESK960		
Sampling Date			2017/07/11 10:00	2017/07/11 11:00		
COC Number			572155-35-01	572155-35-01		
	UNITS	**Criteria**	**VS 505**	**VS 506**	**RDL**	**QC Batch**
Inorganics						
Chromium (VI)	ug/g	**8**	0.4	<0.2	0.2	5068717

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 #: B7E5668
Report Date: 2017/07/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ESK959
Sample ID: VS 505
Matrix: Soil

Collected: 2017/07/11
Shipped:
Received: 2017/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5067762	N/A	2017/07/12	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5068717	2017/07/12	2017/07/12	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5069242	2017/07/12	2017/07/12	Viviana Canzonieri
Moisture	BAL	5067921	N/A	2017/07/12	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5067925	2017/07/11	2017/07/12	Arezoo Habibagahi

Maxxam ID: ESK960
Sample ID: VS 506
Matrix: Soil

Collected: 2017/07/11
Shipped:
Received: 2017/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5067762	N/A	2017/07/12	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5068717	2017/07/12	2017/07/12	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5069242	2017/07/12	2017/07/12	Viviana Canzonieri
Moisture	BAL	5067921	N/A	2017/07/12	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5067925	2017/07/11	2017/07/12	Arezoo Habibagahi

Maxxam ID: ESK960 Dup
Sample ID: VS 506
Matrix: Soil

Collected: 2017/07/11
Shipped:
Received: 2017/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5067921	N/A	2017/07/12	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5067925	2017/07/11	2017/07/12	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 #: B7E5668
Report Date: 2017/07/12

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	24.3°C

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 #: B7E5668
Report Date: 2017/07/12

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
5067925	D10-Anthracene	2017/07/12	83	50 - 130	90	50 - 130	97	%		
5067925	D14-Terphenyl (FS)	2017/07/12	75	50 - 130	80	50 - 130	80	%		
5067925	D8-Acenaphthylene	2017/07/12	78	50 - 130	85	50 - 130	84	%		
5067921	Moisture	2017/07/12							1.5	50
5067925	1-Methylnaphthalene	2017/07/12	85	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5067925	2-Methylnaphthalene	2017/07/12	85	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5067925	Acenaphthene	2017/07/12	88	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5067925	Acenaphthylene	2017/07/12	78	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5067925	Anthracene	2017/07/12	81	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5067925	Benzo(a)anthracene	2017/07/12	85	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5067925	Benzo(a)pyrene	2017/07/12	73	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5067925	Benzo(b/j)fluoranthene	2017/07/12	79	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5067925	Benzo(g,h,i)perylene	2017/07/12	74	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
5067925	Benzo(k)fluoranthene	2017/07/12	74	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5067925	Chrysene	2017/07/12	75	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
5067925	Dibenz(a,h)anthracene	2017/07/12	52	50 - 130	53	50 - 130	<0.0050	ug/g	NC	40
5067925	Fluoranthene	2017/07/12	83	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5067925	Fluorene	2017/07/12	90	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5067925	Indeno(1,2,3-cd)pyrene	2017/07/12	75	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
5067925	Naphthalene	2017/07/12	71	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5067925	Phenanthrene	2017/07/12	76	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5067925	Pyrene	2017/07/12	81	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5068717	Chromium (VI)	2017/07/12	91	75 - 125	94	80 - 120	<0.2	ug/g	NC	35
5069242	Acid Extractable Antimony (Sb)	2017/07/12	97	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
5069242	Acid Extractable Arsenic (As)	2017/07/12	103	75 - 125	105	80 - 120	<1.0	ug/g	0.11	30
5069242	Acid Extractable Barium (Ba)	2017/07/12	99	75 - 125	96	80 - 120	<0.50	ug/g	1.6	30
5069242	Acid Extractable Beryllium (Be)	2017/07/12	99	75 - 125	99	80 - 120	<0.20	ug/g	8.2	30
5069242	Acid Extractable Boron (B)	2017/07/12	97	75 - 125	96	80 - 120	<5.0	ug/g	NC	30
5069242	Acid Extractable Cadmium (Cd)	2017/07/12	99	75 - 125	97	80 - 120	<0.10	ug/g	NC	30
5069242	Acid Extractable Chromium (Cr)	2017/07/12	108	75 - 125	105	80 - 120	<1.0	ug/g	6.9	30
5069242	Acid Extractable Cobalt (Co)	2017/07/12	104	75 - 125	104	80 - 120	<0.10	ug/g	4.1	30

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 #: B7E5668
Report Date: 2017/07/12

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
5069242	Acid Extractable Copper (Cu)	2017/07/12	100	75 - 125	102	80 - 120	<0.50	ug/g	1.9	30
5069242	Acid Extractable Lead (Pb)	2017/07/12	99	75 - 125	99	80 - 120	<1.0	ug/g	4.4	30
5069242	Acid Extractable Mercury (Hg)	2017/07/12	101	75 - 125	104	80 - 120	<0.050	ug/g		
5069242	Acid Extractable Molybdenum (Mo)	2017/07/12	99	75 - 125	97	80 - 120	<0.50	ug/g	NC	30
5069242	Acid Extractable Nickel (Ni)	2017/07/12	104	75 - 125	108	80 - 120	<0.50	ug/g	2.9	30
5069242	Acid Extractable Selenium (Se)	2017/07/12	103	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
5069242	Acid Extractable Silver (Ag)	2017/07/12	105	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5069242	Acid Extractable Thallium (Tl)	2017/07/12	101	75 - 125	99	80 - 120	<0.050	ug/g	NC	30
5069242	Acid Extractable Uranium (U)	2017/07/12	97	75 - 125	95	80 - 120	<0.050	ug/g	4.9	30
5069242	Acid Extractable Vanadium (V)	2017/07/12	106	75 - 125	106	80 - 120	<5.0	ug/g	0.23	30
5069242	Acid Extractable Zinc (Zn)	2017/07/12	NC	75 - 125	102	80 - 120	<5.0	ug/g	1.5	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7E5668
Report Date: 2017/07/12

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).

Brad Newman, 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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#572155-35-01	Madison Bingley
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)? _____

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

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: 24hr ☒
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								# of Bottles	Comments
1		VS505	17/07/11	10:00	Soil		X	X								1	
2		VS506	17/07/11	11:00	Soil		X	X								1	
3																	
4																	
5																	
6																	RECEIVED IN OTTAWA
7																	
8																	
9																	On ice
10																	

11-Jul-17 15:00
Alison Cameron
B7E5668
MVA OTT-001

* 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	17/07/11	14:20	Mariana Vascon	2017/07/11	15:00	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	24, 24, 25	Present	✓	
		Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7E5668
Report Date: 2017/07/12

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. #: 572155-36-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/11
Report #: R4589291
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7E4535
Received: 2017/07/10, 15:00

Sample Matrix: Soil
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	7	N/A	2017/07/11	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	7	2017/07/11	2017/07/11	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	7	2017/07/11	2017/07/11	CAM SOP-00447	EPA 6020B m
Moisture	7	N/A	2017/07/11	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	7	2017/07/10	2017/07/11	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-36-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/11
Report #: R4589291
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7E4535
Received: 2017/07/10, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7E4535
Report Date: 2017/07/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ESF235	ESF236	ESF237	ESF237	ESF238		
Sampling Date			2017/07/10 11:00	2017/07/10 12:30	2017/07/10 12:30	2017/07/10 12:30	2017/07/10 13:00		
COC Number			572155-36-01	572155-36-01	572155-36-01	572155-36-01	572155-36-01		
	UNITS	**Criteria**	**VS 499**	**VS 500**	**VS 1500**	**VS 1500 Lab-Dup**	**VS 501**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5067184
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5067184
Acid Extractable Barium (Ba)	ug/g	**390**	27	38	37	37	56	0.50	5067184
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	0.21	0.24	0.24	0.33	0.20	5067184
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5067184
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5067184
Acid Extractable Chromium (Cr)	ug/g	**160**	13	16	19	18	21	1.0	5067184
Acid Extractable Cobalt (Co)	ug/g	**22**	4.3	4.9	5.7	5.5	4.1	0.10	5067184
Acid Extractable Copper (Cu)	ug/g	**140**	4.2	5.8	6.8	6.2	8.0	0.50	5067184
Acid Extractable Lead (Pb)	ug/g	**120**	1.5	1.7	1.9	1.8	3.2	1.0	5067184
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5067184
Acid Extractable Nickel (Ni)	ug/g	**100**	8.4	10	11	11	9.8	0.50	5067184
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5067184
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5067184
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	0.066	0.069	0.061	0.12	0.050	5067184
Acid Extractable Uranium (U)	ug/g	**23**	0.40	0.39	0.46	0.47	0.78	0.050	5067184
Acid Extractable Vanadium (V)	ug/g	**86**	18	21	27	26	32	5.0	5067184
Acid Extractable Zinc (Zn)	ug/g	**340**	16	22	23	21	29	5.0	5067184
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5067184

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 Job #: B7E4535
Report Date: 2017/07/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ESF239	ESF240	ESF241		
Sampling Date			2017/07/10 13:30	2017/07/10 14:00	2017/07/10 14:30		
COC Number			572155-36-01	572155-36-01	572155-36-01		
	UNITS	Criteria	VS 502	VS 503	VS 504	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	0.20	5067184
Acid Extractable Arsenic (As)	ug/g	**18**	1.4	1.3	1.6	1.0	5067184
Acid Extractable Barium (Ba)	ug/g	**390**	340	280	150	0.50	5067184
Acid Extractable Beryllium (Be)	ug/g	**4**	0.87	0.92	0.60	0.20	5067184
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	5.0	5067184
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.10	5067184
Acid Extractable Chromium (Cr)	ug/g	**160**	79	89	37	1.0	5067184
Acid Extractable Cobalt (Co)	ug/g	**22**	22	20	11	0.10	5067184
Acid Extractable Copper (Cu)	ug/g	**140**	38	32	22	0.50	5067184
Acid Extractable Lead (Pb)	ug/g	**120**	7.4	7.8	5.5	1.0	5067184
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	0.50	5067184
Acid Extractable Nickel (Ni)	ug/g	**100**	42	43	22	0.50	5067184
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	0.50	5067184
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	0.20	5067184
Acid Extractable Thallium (Tl)	ug/g	**1**	0.41	0.43	0.19	0.050	5067184
Acid Extractable Uranium (U)	ug/g	**23**	0.97	1.2	0.81	0.050	5067184
Acid Extractable Vanadium (V)	ug/g	**86**	**90**	**90**	54	5.0	5067184
Acid Extractable Zinc (Zn)	ug/g	**340**	100	100	62	5.0	5067184
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	0.050	5067184

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 #: B7E4535
Report Date: 2017/07/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ESF235	ESF236	ESF236	ESF237	ESF238		
Sampling Date			2017/07/10 11:00	2017/07/10 12:30	2017/07/10 12:30	2017/07/10 12:30	2017/07/10 13:00		
COC Number			572155-36-01	572155-36-01	572155-36-01	572155-36-01	572155-36-01		
	UNITS	**Criteria**	**VS 499**	**VS 500**	**VS 500 Lab-Dup**	**VS 1500**	**VS 501**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	16	16	17	20	19	0.2	5065980
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5065811
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Anthracene	ug/g	**0.67**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Chrysene	ug/g	**7**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Fluorene	ug/g	**62**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Pyrene	ug/g	**78**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Surrogate Recovery (%)									
D10-Anthracene	%	-	97	90		96	97		5065747
D14-Terphenyl (FS)	%	-	82	80		83	85		5065747
D8-Acenaphthylene	%	-	86	83		86	89		5065747

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 Job #: B7E4535
Report Date: 2017/07/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ESF239	ESF240	ESF241		
Sampling Date			2017/07/10 13:30	2017/07/10 14:00	2017/07/10 14:30		
COC Number			572155-36-01	572155-36-01	572155-36-01		
	UNITS	Criteria	VS 502	VS 503	VS 504	RDL	QC Batch
Inorganics							
Moisture	%	-	26	26	22	0.2	5065980
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	0.014	5065811
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	0.0050	5065747
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	5065747
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Surrogate Recovery (%)							
D10-Anthracene	%	-	96	95	93		5065747
D14-Terphenyl (FS)	%	-	83	83	82		5065747
D8-Acenaphthylene	%	-	87	87	84		5065747

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 #: B7E4535
Report Date: 2017/07/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ESF235	ESF236	ESF237	ESF238	ESF239		
Sampling Date			2017/07/10 11:00	2017/07/10 12:30	2017/07/10 12:30	2017/07/10 13:00	2017/07/10 13:30		
COC Number			572155-36-01	572155-36-01	572155-36-01	572155-36-01	572155-36-01		
	UNITS	**Criteria**	**VS 499**	**VS 500**	**VS 1500**	**VS 501**	**VS 502**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	<0.2	0.2	<0.2	0.2	0.2	5066616

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			ESF240	ESF241		
Sampling Date			2017/07/10 14:00	2017/07/10 14:30		
COC Number			572155-36-01	572155-36-01		
	UNITS	**Criteria**	**VS 503**	**VS 504**	**RDL**	**QC Batch**
Inorganics						
Chromium (VI)	ug/g	**8**	<0.2	0.3	0.2	5066616

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 #: B7E4535
Report Date: 2017/07/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ESF235
Sample ID: VS 499
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5065811	N/A	2017/07/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5066616	2017/07/11	2017/07/11	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5067184	2017/07/11	2017/07/11	Viviana Canzonieri
Moisture	BAL	5065980	N/A	2017/07/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5065747	2017/07/10	2017/07/11	Arezoo Habibagahi

Maxxam ID: ESF236
Sample ID: VS 500
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5065811	N/A	2017/07/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5066616	2017/07/11	2017/07/11	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5067184	2017/07/11	2017/07/11	Viviana Canzonieri
Moisture	BAL	5065980	N/A	2017/07/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5065747	2017/07/10	2017/07/11	Arezoo Habibagahi

Maxxam ID: ESF236 Dup
Sample ID: VS 500
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5065980	N/A	2017/07/11	Arezoo Habibagahi

Maxxam ID: ESF237
Sample ID: VS 1500
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5065811	N/A	2017/07/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5066616	2017/07/11	2017/07/11	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5067184	2017/07/11	2017/07/11	Viviana Canzonieri
Moisture	BAL	5065980	N/A	2017/07/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5065747	2017/07/10	2017/07/11	Arezoo Habibagahi

Maxxam ID: ESF237 Dup
Sample ID: VS 1500
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5067184	2017/07/11	2017/07/11	Viviana Canzonieri

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 #: B7E4535
Report Date: 2017/07/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ESF238
Sample ID: VS 501
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5065811	N/A	2017/07/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5066616	2017/07/11	2017/07/11	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5067184	2017/07/11	2017/07/11	Viviana Canzonieri
Moisture	BAL	5065980	N/A	2017/07/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5065747	2017/07/10	2017/07/11	Arezoo Habibagahi

Maxxam ID: ESF239
Sample ID: VS 502
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5065811	N/A	2017/07/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5066616	2017/07/11	2017/07/11	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5067184	2017/07/11	2017/07/11	Viviana Canzonieri
Moisture	BAL	5065980	N/A	2017/07/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5065747	2017/07/10	2017/07/11	Arezoo Habibagahi

Maxxam ID: ESF240
Sample ID: VS 503
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5065811	N/A	2017/07/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5066616	2017/07/11	2017/07/11	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5067184	2017/07/11	2017/07/11	Viviana Canzonieri
Moisture	BAL	5065980	N/A	2017/07/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5065747	2017/07/10	2017/07/11	Arezoo Habibagahi

Maxxam ID: ESF241
Sample ID: VS 504
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5065811	N/A	2017/07/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5066616	2017/07/11	2017/07/11	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5067184	2017/07/11	2017/07/11	Viviana Canzonieri
Moisture	BAL	5065980	N/A	2017/07/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5065747	2017/07/10	2017/07/11	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 #: B7E4535
Report Date: 2017/07/11

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	18.7°C

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 #: B7E4535
Report Date: 2017/07/11

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
5065747	D10-Anthracene	2017/07/11	88	50 - 130	96	50 - 130	98	%		
5065747	D14-Terphenyl (FS)	2017/07/11	80	50 - 130	84	50 - 130	84	%		
5065747	D8-Acenaphthylene	2017/07/11	84	50 - 130	87	50 - 130	87	%		
5065747	1-Methylnaphthalene	2017/07/11	90	50 - 130	90	50 - 130	<0.0050	ug/g	21	40
5065747	2-Methylnaphthalene	2017/07/11	89	50 - 130	87	50 - 130	<0.0050	ug/g	22	40
5065747	Acenaphthene	2017/07/11	93	50 - 130	91	50 - 130	<0.0050	ug/g	103 (1)	40
5065747	Acenaphthylene	2017/07/11	82	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5065747	Anthracene	2017/07/11	85	50 - 130	85	50 - 130	<0.0050	ug/g	109 (1)	40
5065747	Benzo(a)anthracene	2017/07/11	92	50 - 130	91	50 - 130	<0.0050	ug/g	99 (1)	40
5065747	Benzo(a)pyrene	2017/07/11	80	50 - 130	83	50 - 130	<0.0050	ug/g	73 (1)	40
5065747	Benzo(b/j)fluoranthene	2017/07/11	85	50 - 130	88	50 - 130	<0.0050	ug/g	86 (1)	40
5065747	Benzo(g,h,i)perylene	2017/07/11	79	50 - 130	78	50 - 130	<0.0050	ug/g	35	40
5065747	Benzo(k)fluoranthene	2017/07/11	84	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5065747	Chrysene	2017/07/11	86	50 - 130	86	50 - 130	<0.0050	ug/g	102 (1)	40
5065747	Dibenz(a,h)anthracene	2017/07/11	61	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40
5065747	Fluoranthene	2017/07/11	86	50 - 130	88	50 - 130	<0.0050	ug/g	104 (1)	40
5065747	Fluorene	2017/07/11	98	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5065747	Indeno(1,2,3-cd)pyrene	2017/07/11	82	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5065747	Naphthalene	2017/07/11	75	50 - 130	75	50 - 130	<0.0050	ug/g	18	40
5065747	Phenanthrene	2017/07/11	78	50 - 130	81	50 - 130	<0.0050	ug/g	96 (1)	40
5065747	Pyrene	2017/07/11	83	50 - 130	83	50 - 130	<0.0050	ug/g	93 (1)	40
5065980	Moisture	2017/07/11							7.8	50
5066616	Chromium (VI)	2017/07/11	92	75 - 125	91	80 - 120	<0.2	ug/g	NC	35
5067184	Acid Extractable Antimony (Sb)	2017/07/11	89	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5067184	Acid Extractable Arsenic (As)	2017/07/11	96	75 - 125	95	80 - 120	<1.0	ug/g	NC	30
5067184	Acid Extractable Barium (Ba)	2017/07/11	NC	75 - 125	109	80 - 120	<0.50	ug/g	0.11	30
5067184	Acid Extractable Beryllium (Be)	2017/07/11	96	75 - 125	97	80 - 120	<0.20	ug/g	0.69	30
5067184	Acid Extractable Boron (B)	2017/07/11	96	75 - 125	98	80 - 120	<5.0	ug/g	NC	30
5067184	Acid Extractable Cadmium (Cd)	2017/07/11	98	75 - 125	100	80 - 120	<0.10	ug/g	NC	30
5067184	Acid Extractable Chromium (Cr)	2017/07/11	100	75 - 125	99	80 - 120	<1.0	ug/g	3.6	30
5067184	Acid Extractable Cobalt (Co)	2017/07/11	100	75 - 125	101	80 - 120	<0.10	ug/g	3.7	30

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 #: B7E4535
Report Date: 2017/07/11

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
5067184	Acid Extractable Copper (Cu)	2017/07/11	100	75 - 125	102	80 - 120	<0.50	ug/g	9.0	30
5067184	Acid Extractable Lead (Pb)	2017/07/11	99	75 - 125	104	80 - 120	<1.0	ug/g	6.2	30
5067184	Acid Extractable Mercury (Hg)	2017/07/11	95	75 - 125	106	80 - 120	<0.050	ug/g	NC	30
5067184	Acid Extractable Molybdenum (Mo)	2017/07/11	97	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
5067184	Acid Extractable Nickel (Ni)	2017/07/11	99	75 - 125	101	80 - 120	<0.50	ug/g	3.9	30
5067184	Acid Extractable Selenium (Se)	2017/07/11	99	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
5067184	Acid Extractable Silver (Ag)	2017/07/11	101	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
5067184	Acid Extractable Thallium (Tl)	2017/07/11	99	75 - 125	103	80 - 120	<0.050	ug/g	11	30
5067184	Acid Extractable Uranium (U)	2017/07/11	96	75 - 125	102	80 - 120	<0.050	ug/g	1.4	30
5067184	Acid Extractable Vanadium (V)	2017/07/11	NC	75 - 125	98	80 - 120	<5.0	ug/g	4.9	30
5067184	Acid Extractable Zinc (Zn)	2017/07/11	101	75 - 125	100	80 - 120	<5.0	ug/g	10	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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 #: B7E4535
Report Date: 2017/07/11

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

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#572155-36-01	Madison Bingley
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	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

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

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: 24hr ☒
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								# of Bottles	Comments
1		VS499	17/07/10	11:00	Soil		X	X								1	
2		VS500		12:30			X	X								1	
3		VS1500		12:30			X	X								1	
4		VS501		13:00			X	X								1	
5		VS502		13:30			X	X								1	
6		VS503		14:00			X	X								1	
7		VS504		14:30			X	X								1	
8																	
9																	
10																	

RECEIVED IN OTTAWA

10-Jul-17 15:00
Alison Cameron
B7E4535
KIV OTT 001

ON the 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	Laboratory Use Only: Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
A. Bradshaw / Aaron Bradshaw	17/07/10	14:40	[illegible]	2017/07/10	15:00	0		19, 19, 18	Present Intact	☒ ☒	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7E4535
Report Date: 2017/07/11

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
VS 502	ESF239-02	Acid Extractable Vanadium (V)	86	90	5.0	ug/g
VS 503	ESF240-02	Acid Extractable Vanadium (V)	86	90	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.

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. #: 572155-36-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/11
Report #: R4589291
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7E4535
Received: 2017/07/10, 15:00

Sample Matrix: Soil
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	7	N/A	2017/07/11	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	7	2017/07/11	2017/07/11	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	7	2017/07/11	2017/07/11	CAM SOP-00447	EPA 6020B m
Moisture	7	N/A	2017/07/11	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	7	2017/07/10	2017/07/11	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-36-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/11
Report #: R4589291
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7E4535
Received: 2017/07/10, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7E4535
Report Date: 2017/07/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ESF235	ESF236	ESF237	ESF237	ESF238		
Sampling Date			2017/07/10 11:00	2017/07/10 12:30	2017/07/10 12:30	2017/07/10 12:30	2017/07/10 13:00		
COC Number			572155-36-01	572155-36-01	572155-36-01	572155-36-01	572155-36-01		
	UNITS	**Criteria**	**VS 499**	**VS 500**	**VS 1500**	**VS 1500 Lab-Dup**	**VS 501**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5067184
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5067184
Acid Extractable Barium (Ba)	ug/g	**390**	27	38	37	37	56	0.50	5067184
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	0.21	0.24	0.24	0.33	0.20	5067184
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5067184
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5067184
Acid Extractable Chromium (Cr)	ug/g	**160**	13	16	19	18	21	1.0	5067184
Acid Extractable Cobalt (Co)	ug/g	**22**	4.3	4.9	5.7	5.5	4.1	0.10	5067184
Acid Extractable Copper (Cu)	ug/g	**140**	4.2	5.8	6.8	6.2	8.0	0.50	5067184
Acid Extractable Lead (Pb)	ug/g	**120**	1.5	1.7	1.9	1.8	3.2	1.0	5067184
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5067184
Acid Extractable Nickel (Ni)	ug/g	**100**	8.4	10	11	11	9.8	0.50	5067184
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5067184
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5067184
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	0.066	0.069	0.061	0.12	0.050	5067184
Acid Extractable Uranium (U)	ug/g	**23**	0.40	0.39	0.46	0.47	0.78	0.050	5067184
Acid Extractable Vanadium (V)	ug/g	**86**	18	21	27	26	32	5.0	5067184
Acid Extractable Zinc (Zn)	ug/g	**340**	16	22	23	21	29	5.0	5067184
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5067184

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 Job #: B7E4535
Report Date: 2017/07/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ESF239	ESF240	ESF241		
Sampling Date			2017/07/10 13:30	2017/07/10 14:00	2017/07/10 14:30		
COC Number			572155-36-01	572155-36-01	572155-36-01		
	UNITS	Criteria	VS 502	VS 503	VS 504	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	0.20	5067184
Acid Extractable Arsenic (As)	ug/g	**18**	1.4	1.3	1.6	1.0	5067184
Acid Extractable Barium (Ba)	ug/g	**390**	340	280	150	0.50	5067184
Acid Extractable Beryllium (Be)	ug/g	**4**	0.87	0.92	0.60	0.20	5067184
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	5.0	5067184
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.10	5067184
Acid Extractable Chromium (Cr)	ug/g	**160**	79	89	37	1.0	5067184
Acid Extractable Cobalt (Co)	ug/g	**22**	22	20	11	0.10	5067184
Acid Extractable Copper (Cu)	ug/g	**140**	38	32	22	0.50	5067184
Acid Extractable Lead (Pb)	ug/g	**120**	7.4	7.8	5.5	1.0	5067184
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	0.50	5067184
Acid Extractable Nickel (Ni)	ug/g	**100**	42	43	22	0.50	5067184
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	0.50	5067184
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	0.20	5067184
Acid Extractable Thallium (Tl)	ug/g	**1**	0.41	0.43	0.19	0.050	5067184
Acid Extractable Uranium (U)	ug/g	**23**	0.97	1.2	0.81	0.050	5067184
Acid Extractable Vanadium (V)	ug/g	**86**	**90**	**90**	54	5.0	5067184
Acid Extractable Zinc (Zn)	ug/g	**340**	100	100	62	5.0	5067184
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	0.050	5067184

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 #: B7E4535
Report Date: 2017/07/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ESF235	ESF236	ESF236	ESF237	ESF238		
Sampling Date			2017/07/10 11:00	2017/07/10 12:30	2017/07/10 12:30	2017/07/10 12:30	2017/07/10 13:00		
COC Number			572155-36-01	572155-36-01	572155-36-01	572155-36-01	572155-36-01		
	UNITS	**Criteria**	**VS 499**	**VS 500**	**VS 500 Lab-Dup**	**VS 1500**	**VS 501**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	16	16	17	20	19	0.2	5065980
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5065811
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Anthracene	ug/g	**0.67**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Chrysene	ug/g	**7**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Fluorene	ug/g	**62**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Pyrene	ug/g	**78**	<0.0050	<0.0050		<0.0050	<0.0050	0.0050	5065747
Surrogate Recovery (%)									
D10-Anthracene	%	-	97	90		96	97		5065747
D14-Terphenyl (FS)	%	-	82	80		83	85		5065747
D8-Acenaphthylene	%	-	86	83		86	89		5065747

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 Job #: B7E4535
Report Date: 2017/07/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ESF239	ESF240	ESF241		
Sampling Date			2017/07/10 13:30	2017/07/10 14:00	2017/07/10 14:30		
COC Number			572155-36-01	572155-36-01	572155-36-01		
	UNITS	Criteria	VS 502	VS 503	VS 504	RDL	QC Batch
Inorganics							
Moisture	%	-	26	26	22	0.2	5065980
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	0.014	5065811
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	0.0050	5065747
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	5065747
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	0.0050	5065747
Surrogate Recovery (%)							
D10-Anthracene	%	-	96	95	93		5065747
D14-Terphenyl (FS)	%	-	83	83	82		5065747
D8-Acenaphthylene	%	-	87	87	84		5065747

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 #: B7E4535
Report Date: 2017/07/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ESF235	ESF236	ESF237	ESF238	ESF239		
Sampling Date			2017/07/10 11:00	2017/07/10 12:30	2017/07/10 12:30	2017/07/10 13:00	2017/07/10 13:30		
COC Number			572155-36-01	572155-36-01	572155-36-01	572155-36-01	572155-36-01		
	UNITS	**Criteria**	**VS 499**	**VS 500**	**VS 1500**	**VS 501**	**VS 502**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	<0.2	0.2	<0.2	0.2	0.2	5066616

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			ESF240	ESF241		
Sampling Date			2017/07/10 14:00	2017/07/10 14:30		
COC Number			572155-36-01	572155-36-01		
	UNITS	**Criteria**	**VS 503**	**VS 504**	**RDL**	**QC Batch**
Inorganics						
Chromium (VI)	ug/g	**8**	<0.2	0.3	0.2	5066616

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 #: B7E4535
Report Date: 2017/07/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ESF235
Sample ID: VS 499
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5065811	N/A	2017/07/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5066616	2017/07/11	2017/07/11	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5067184	2017/07/11	2017/07/11	Viviana Canzonieri
Moisture	BAL	5065980	N/A	2017/07/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5065747	2017/07/10	2017/07/11	Arezoo Habibagahi

Maxxam ID: ESF236
Sample ID: VS 500
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5065811	N/A	2017/07/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5066616	2017/07/11	2017/07/11	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5067184	2017/07/11	2017/07/11	Viviana Canzonieri
Moisture	BAL	5065980	N/A	2017/07/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5065747	2017/07/10	2017/07/11	Arezoo Habibagahi

Maxxam ID: ESF236 Dup
Sample ID: VS 500
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5065980	N/A	2017/07/11	Arezoo Habibagahi

Maxxam ID: ESF237
Sample ID: VS 1500
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5065811	N/A	2017/07/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5066616	2017/07/11	2017/07/11	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5067184	2017/07/11	2017/07/11	Viviana Canzonieri
Moisture	BAL	5065980	N/A	2017/07/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5065747	2017/07/10	2017/07/11	Arezoo Habibagahi

Maxxam ID: ESF237 Dup
Sample ID: VS 1500
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5067184	2017/07/11	2017/07/11	Viviana Canzonieri

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 #: B7E4535
Report Date: 2017/07/11

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ESF238
Sample ID: VS 501
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5065811	N/A	2017/07/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5066616	2017/07/11	2017/07/11	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5067184	2017/07/11	2017/07/11	Viviana Canzonieri
Moisture	BAL	5065980	N/A	2017/07/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5065747	2017/07/10	2017/07/11	Arezoo Habibagahi

Maxxam ID: ESF239
Sample ID: VS 502
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5065811	N/A	2017/07/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5066616	2017/07/11	2017/07/11	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5067184	2017/07/11	2017/07/11	Viviana Canzonieri
Moisture	BAL	5065980	N/A	2017/07/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5065747	2017/07/10	2017/07/11	Arezoo Habibagahi

Maxxam ID: ESF240
Sample ID: VS 503
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5065811	N/A	2017/07/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5066616	2017/07/11	2017/07/11	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5067184	2017/07/11	2017/07/11	Viviana Canzonieri
Moisture	BAL	5065980	N/A	2017/07/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5065747	2017/07/10	2017/07/11	Arezoo Habibagahi

Maxxam ID: ESF241
Sample ID: VS 504
Matrix: Soil

Collected: 2017/07/10
Shipped:
Received: 2017/07/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5065811	N/A	2017/07/11	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5066616	2017/07/11	2017/07/11	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5067184	2017/07/11	2017/07/11	Viviana Canzonieri
Moisture	BAL	5065980	N/A	2017/07/11	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5065747	2017/07/10	2017/07/11	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 #: B7E4535
Report Date: 2017/07/11

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	18.7°C

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 #: B7E4535
Report Date: 2017/07/11

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
5065747	D10-Anthracene	2017/07/11	88	50 - 130	96	50 - 130	98	%		
5065747	D14-Terphenyl (FS)	2017/07/11	80	50 - 130	84	50 - 130	84	%		
5065747	D8-Acenaphthylene	2017/07/11	84	50 - 130	87	50 - 130	87	%		
5065747	1-Methylnaphthalene	2017/07/11	90	50 - 130	90	50 - 130	<0.0050	ug/g	21	40
5065747	2-Methylnaphthalene	2017/07/11	89	50 - 130	87	50 - 130	<0.0050	ug/g	22	40
5065747	Acenaphthene	2017/07/11	93	50 - 130	91	50 - 130	<0.0050	ug/g	103 (1)	40
5065747	Acenaphthylene	2017/07/11	82	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5065747	Anthracene	2017/07/11	85	50 - 130	85	50 - 130	<0.0050	ug/g	109 (1)	40
5065747	Benzo(a)anthracene	2017/07/11	92	50 - 130	91	50 - 130	<0.0050	ug/g	99 (1)	40
5065747	Benzo(a)pyrene	2017/07/11	80	50 - 130	83	50 - 130	<0.0050	ug/g	73 (1)	40
5065747	Benzo(b/j)fluoranthene	2017/07/11	85	50 - 130	88	50 - 130	<0.0050	ug/g	86 (1)	40
5065747	Benzo(g,h,i)perylene	2017/07/11	79	50 - 130	78	50 - 130	<0.0050	ug/g	35	40
5065747	Benzo(k)fluoranthene	2017/07/11	84	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5065747	Chrysene	2017/07/11	86	50 - 130	86	50 - 130	<0.0050	ug/g	102 (1)	40
5065747	Dibenz(a,h)anthracene	2017/07/11	61	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40
5065747	Fluoranthene	2017/07/11	86	50 - 130	88	50 - 130	<0.0050	ug/g	104 (1)	40
5065747	Fluorene	2017/07/11	98	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5065747	Indeno(1,2,3-cd)pyrene	2017/07/11	82	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5065747	Naphthalene	2017/07/11	75	50 - 130	75	50 - 130	<0.0050	ug/g	18	40
5065747	Phenanthrene	2017/07/11	78	50 - 130	81	50 - 130	<0.0050	ug/g	96 (1)	40
5065747	Pyrene	2017/07/11	83	50 - 130	83	50 - 130	<0.0050	ug/g	93 (1)	40
5065980	Moisture	2017/07/11							7.8	50
5066616	Chromium (VI)	2017/07/11	92	75 - 125	91	80 - 120	<0.2	ug/g	NC	35
5067184	Acid Extractable Antimony (Sb)	2017/07/11	89	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5067184	Acid Extractable Arsenic (As)	2017/07/11	96	75 - 125	95	80 - 120	<1.0	ug/g	NC	30
5067184	Acid Extractable Barium (Ba)	2017/07/11	NC	75 - 125	109	80 - 120	<0.50	ug/g	0.11	30
5067184	Acid Extractable Beryllium (Be)	2017/07/11	96	75 - 125	97	80 - 120	<0.20	ug/g	0.69	30
5067184	Acid Extractable Boron (B)	2017/07/11	96	75 - 125	98	80 - 120	<5.0	ug/g	NC	30
5067184	Acid Extractable Cadmium (Cd)	2017/07/11	98	75 - 125	100	80 - 120	<0.10	ug/g	NC	30
5067184	Acid Extractable Chromium (Cr)	2017/07/11	100	75 - 125	99	80 - 120	<1.0	ug/g	3.6	30
5067184	Acid Extractable Cobalt (Co)	2017/07/11	100	75 - 125	101	80 - 120	<0.10	ug/g	3.7	30

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 #: B7E4535
Report Date: 2017/07/11

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
5067184	Acid Extractable Copper (Cu)	2017/07/11	100	75 - 125	102	80 - 120	<0.50	ug/g	9.0	30
5067184	Acid Extractable Lead (Pb)	2017/07/11	99	75 - 125	104	80 - 120	<1.0	ug/g	6.2	30
5067184	Acid Extractable Mercury (Hg)	2017/07/11	95	75 - 125	106	80 - 120	<0.050	ug/g	NC	30
5067184	Acid Extractable Molybdenum (Mo)	2017/07/11	97	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
5067184	Acid Extractable Nickel (Ni)	2017/07/11	99	75 - 125	101	80 - 120	<0.50	ug/g	3.9	30
5067184	Acid Extractable Selenium (Se)	2017/07/11	99	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
5067184	Acid Extractable Silver (Ag)	2017/07/11	101	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
5067184	Acid Extractable Thallium (Tl)	2017/07/11	99	75 - 125	103	80 - 120	<0.050	ug/g	11	30
5067184	Acid Extractable Uranium (U)	2017/07/11	96	75 - 125	102	80 - 120	<0.050	ug/g	1.4	30
5067184	Acid Extractable Vanadium (V)	2017/07/11	NC	75 - 125	98	80 - 120	<5.0	ug/g	4.9	30
5067184	Acid Extractable Zinc (Zn)	2017/07/11	101	75 - 125	100	80 - 120	<5.0	ug/g	10	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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 #: B7E4535
Report Date: 2017/07/11

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

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#572155-36-01	Madison Bingley
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	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

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

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: 24hr ☒
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								# of Bottles	Comments
1		VS499	17/07/10	11:00	Soil		X	X								1	
2		VS500		12:30			X	X								1	
3		VS1500		12:30			X	X								1	
4		VS501		13:00			X	X								1	
5		VS502		13:30			X	X								1	
6		VS503		14:00			X	X								1	
7		VS504		14:30			X	X								1	
8																	
9																	
10																	

RECEIVED IN OTTAWA

10-Jul-17 15:00
Alison Cameron
B7E4535
KIV OTT 001

ON the 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	Laboratory Use Only: Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
A. Bradshaw / Aaron Bradshaw	17/07/10	14:40	[illegible]	2017/07/10	15:00	0		19, 19, 18	Present Intact	☒ ☒	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7E4535
Report Date: 2017/07/11

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
VS 502	ESF239-02	Acid Extractable Vanadium (V)	86	90	5.0	ug/g
VS 503	ESF240-02	Acid Extractable Vanadium (V)	86	90	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.

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. #: 572155-37-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/07
Report #: R4581656
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7E1857
Received: 2017/07/06, 15:00

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	4	N/A	2017/07/07	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	4	2017/07/07	2017/07/07	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	4	2017/07/07	2017/07/07	CAM SOP-00447	EPA 6020B m
Moisture	4	N/A	2017/07/07	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	4	2017/07/06	2017/07/06	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-37-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/07
Report #: R4581656
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7E1857
Received: 2017/07/06, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7E1857
Report Date: 2017/07/07

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ERR611	ERR612	ERR613	ERR614		
Sampling Date			2017/07/06 11:00	2017/07/06 11:00	2017/07/06 12:00	2017/07/06 13:00		
COC Number			572155-37-01	572155-37-01	572155-37-01	572155-37-01		
	UNITS	**Criteria**	**VS 496**	**VS 1496**	**VS 497**	**VS 498**	**RDL**	**QC Batch**
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	5062667
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	1.1	1.7	<1.0	1.0	5062667
Acid Extractable Barium (Ba)	ug/g	**390**	110	120	**440**	42	0.50	5062667
Acid Extractable Beryllium (Be)	ug/g	**4**	0.44	0.46	0.99	0.29	0.20	5062667
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.0	5062667
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	0.14	<0.10	0.10	5062667
Acid Extractable Chromium (Cr)	ug/g	**160**	33	34	110	25	1.0	5062667
Acid Extractable Cobalt (Co)	ug/g	**22**	6.9	7.8	**33**	4.8	0.10	5062667
Acid Extractable Copper (Cu)	ug/g	**140**	16	16	54	9.1	0.50	5062667
Acid Extractable Lead (Pb)	ug/g	**120**	4.2	4.3	10	3.8	1.0	5062667
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	0.91	<0.50	0.50	5062667
Acid Extractable Nickel (Ni)	ug/g	**100**	15	17	57	12	0.50	5062667
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	5062667
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	5062667
Acid Extractable Thallium (Tl)	ug/g	**1**	0.16	0.17	0.48	0.093	0.050	5062667
Acid Extractable Uranium (U)	ug/g	**23**	0.91	0.97	1.3	0.60	0.050	5062667
Acid Extractable Vanadium (V)	ug/g	**86**	40	40	**120**	26	5.0	5062667
Acid Extractable Zinc (Zn)	ug/g	**340**	48	49	140	26	5.0	5062667
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	0.056	<0.050	0.050	5062667

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 #: B7E1857
Report Date: 2017/07/07

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ERR611	ERR612	ERR612	ERR613	ERR614		
Sampling Date			2017/07/06 11:00	2017/07/06 11:00	2017/07/06 11:00	2017/07/06 12:00	2017/07/06 13:00		
COC Number			572155-37-01	572155-37-01	572155-37-01	572155-37-01	572155-37-01		
	UNITS	**Criteria**	**VS 496**	**VS 1496**	**VS 1496 Lab-Dup**	**VS 497**	**VS 498**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	16	17	17	27	18	0.2	5061257
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5061152
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5061263
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5061263
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5061263
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5061263
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5061263
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5061263
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5061263
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5061263
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5061263
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5061263
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	0.010	<0.0050	0.0050	5061263
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5061263
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5061263
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5061263
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5061263
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5061263
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	0.0060	<0.0050	0.0050	5061263
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	0.0078	<0.0050	0.0050	5061263
Surrogate Recovery (%)									
D10-Anthracene	%	-	96	93	94	94	93		5061263
D14-Terphenyl (FS)	%	-	91	86	85	88	87		5061263
D8-Acenaphthylene	%	-	90	90	86	89	88		5061263

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 Job #: B7E1857
Report Date: 2017/07/07

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ERR611	ERR612	ERR613	ERR614		
Sampling Date			2017/07/06 11:00	2017/07/06 11:00	2017/07/06 12:00	2017/07/06 13:00		
COC Number			572155-37-01	572155-37-01	572155-37-01	572155-37-01		
	UNITS	**Criteria**	**VS 496**	**VS 1496**	**VS 497**	**VS 498**	**RDL**	**QC Batch**
Inorganics								
Chromium (VI)	ug/g	**8**	0.4	0.4	0.4	0.4	0.2	5062109

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 #: B7E1857
Report Date: 2017/07/07

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ERR611
Sample ID: VS 496
Matrix: Soil

Collected: 2017/07/06
Shipped:
Received: 2017/07/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5061152	N/A	2017/07/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5062109	2017/07/07	2017/07/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5062667	2017/07/07	2017/07/07	Kevin Comerford
Moisture	BAL	5061257	N/A	2017/07/07	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5061263	2017/07/06	2017/07/06	Arezoo Habibagahi

Maxxam ID: ERR612
Sample ID: VS 1496
Matrix: Soil

Collected: 2017/07/06
Shipped:
Received: 2017/07/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5061152	N/A	2017/07/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5062109	2017/07/07	2017/07/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5062667	2017/07/07	2017/07/07	Kevin Comerford
Moisture	BAL	5061257	N/A	2017/07/07	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5061263	2017/07/06	2017/07/06	Arezoo Habibagahi

Maxxam ID: ERR612 Dup
Sample ID: VS 1496
Matrix: Soil

Collected: 2017/07/06
Shipped:
Received: 2017/07/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5061257	N/A	2017/07/07	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5061263	2017/07/06	2017/07/06	Arezoo Habibagahi

Maxxam ID: ERR613
Sample ID: VS 497
Matrix: Soil

Collected: 2017/07/06
Shipped:
Received: 2017/07/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5061152	N/A	2017/07/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5062109	2017/07/07	2017/07/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5062667	2017/07/07	2017/07/07	Kevin Comerford
Moisture	BAL	5061257	N/A	2017/07/07	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5061263	2017/07/06	2017/07/06	Arezoo Habibagahi

Maxxam ID: ERR614
Sample ID: VS 498
Matrix: Soil

Collected: 2017/07/06
Shipped:
Received: 2017/07/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5061152	N/A	2017/07/07	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5062109	2017/07/07	2017/07/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5062667	2017/07/07	2017/07/07	Kevin Comerford
Moisture	BAL	5061257	N/A	2017/07/07	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5061263	2017/07/06	2017/07/06	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 #: B7E1857
Report Date: 2017/07/07

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	23.0°C

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 #: B7E1857
Report Date: 2017/07/07

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
5061263	D10-Anthracene	2017/07/06	87	50 - 130	93	50 - 130	99	%		
5061263	D14-Terphenyl (FS)	2017/07/06	88	50 - 130	92	50 - 130	94	%		
5061263	D8-Acenaphthylene	2017/07/06	91	50 - 130	97	50 - 130	96	%		
5061257	Moisture	2017/07/07							0	50
5061263	1-Methylnaphthalene	2017/07/06	89	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5061263	2-Methylnaphthalene	2017/07/06	93	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5061263	Acenaphthene	2017/07/06	90	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5061263	Acenaphthylene	2017/07/06	89	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5061263	Anthracene	2017/07/06	87	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5061263	Benzo(a)anthracene	2017/07/06	94	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
5061263	Benzo(a)pyrene	2017/07/06	76	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
5061263	Benzo(b/j)fluoranthene	2017/07/06	78	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
5061263	Benzo(g,h,i)perylene	2017/07/06	83	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5061263	Benzo(k)fluoranthene	2017/07/06	78	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
5061263	Chrysene	2017/07/06	88	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5061263	Dibenz(a,h)anthracene	2017/07/06	61	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40
5061263	Fluoranthene	2017/07/06	91	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5061263	Fluorene	2017/07/06	110	50 - 130	114	50 - 130	<0.0050	ug/g	NC	40
5061263	Indeno(1,2,3-cd)pyrene	2017/07/06	89	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5061263	Naphthalene	2017/07/06	72	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
5061263	Phenanthrene	2017/07/06	83	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5061263	Pyrene	2017/07/06	90	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5062109	Chromium (VI)	2017/07/07	69 (1)	75 - 125	89	80 - 120	<0.2	ug/g	NC	35
5062667	Acid Extractable Antimony (Sb)	2017/07/07	105	75 - 125	104	80 - 120	<0.20	ug/g	NC	30
5062667	Acid Extractable Arsenic (As)	2017/07/07	98	75 - 125	100	80 - 120	<1.0	ug/g	NC	30
5062667	Acid Extractable Barium (Ba)	2017/07/07	97	75 - 125	92	80 - 120	<0.50	ug/g	1.8	30
5062667	Acid Extractable Beryllium (Be)	2017/07/07	96	75 - 125	93	80 - 120	<0.20	ug/g	NC	30
5062667	Acid Extractable Boron (B)	2017/07/07	93	75 - 125	92	80 - 120	<5.0	ug/g	NC	30
5062667	Acid Extractable Cadmium (Cd)	2017/07/07	98	75 - 125	97	80 - 120	<0.10	ug/g	NC	30
5062667	Acid Extractable Chromium (Cr)	2017/07/07	96	75 - 125	101	80 - 120	<1.0	ug/g	7.9	30
5062667	Acid Extractable Cobalt (Co)	2017/07/07	96	75 - 125	101	80 - 120	<0.10	ug/g	1.8	30

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 #: B7E1857
Report Date: 2017/07/07

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
5062667	Acid Extractable Copper (Cu)	2017/07/07	100	75 - 125	97	80 - 120	<0.50	ug/g	1.7	30
5062667	Acid Extractable Lead (Pb)	2017/07/07	97	75 - 125	100	80 - 120	<1.0	ug/g	2.3	30
5062667	Acid Extractable Mercury (Hg)	2017/07/07	97	75 - 125	103	80 - 120	<0.050	ug/g	NC	30
5062667	Acid Extractable Molybdenum (Mo)	2017/07/07	102	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
5062667	Acid Extractable Nickel (Ni)	2017/07/07	98	75 - 125	99	80 - 120	<0.50	ug/g	3.8	30
5062667	Acid Extractable Selenium (Se)	2017/07/07	102	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
5062667	Acid Extractable Silver (Ag)	2017/07/07	101	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5062667	Acid Extractable Thallium (Tl)	2017/07/07	94	75 - 125	99	80 - 120	<0.050	ug/g	NC	30
5062667	Acid Extractable Uranium (U)	2017/07/07	90	75 - 125	93	80 - 120	<0.050	ug/g	8.3	30
5062667	Acid Extractable Vanadium (V)	2017/07/07	102	75 - 125	99	80 - 120	<5.0	ug/g	8.0	30
5062667	Acid Extractable Zinc (Zn)	2017/07/07	97	75 - 125	102	80 - 120	<5.0	ug/g	4.1	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 (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 (absolute difference <= 2x 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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B7E1857
Report Date: 2017/07/07

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.

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 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 #: 572155
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113	COC #: C#572155-37-01	Project Manager: Madison Bingley
Tel:	(613) 592-9600 x Fax: (613) 592-9601 x	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)	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)

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: _____ Time Required: 24hr ☒
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								# of Bottles	Comments
1		VS496	17/07/06	1100	Soil		X	X								1	
2		VS1496	↓	1100	↓		X	X								1	
3		VS497	↓	1200	↓		X	X								1	
4		VS498	↓	1300	↓		X	X								1	
5																	
6																	
7																	
8																	
9																	
10																	ON the ice packs

06-Jul-17 15:00
Alison Cameron
B7E1857
KIV 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				
Aaron Bradshaw	17/07/06	1400	[illegible]	2017/07/06	15:00	0	Time Sensitive	Temperature (°C) on Recei 22, 23, 24	Custody Seal	Yes	No
									Present	✓	
									Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7E1857
Report Date: 2017/07/07

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
VS 497	ERR613-02	Acid Extractable Barium (Ba)	390	440	0.50	ug/g
VS 497	ERR613-02	Acid Extractable Cobalt (Co)	22	33	0.10	ug/g
VS 497	ERR613-02	Acid Extractable Vanadium (V)	86	120	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.

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. #: 572155-38-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/06
Report #: R4578415
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7D9357
Received: 2017/07/04, 15:00

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	8	N/A	2017/07/05	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	8	2017/07/05	2017/07/05	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	8	2017/07/05	2017/07/05	CAM SOP-00447	EPA 6020B m
Moisture	8	N/A	2017/07/05	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	8	2017/07/04	2017/07/05	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-38-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/07/06
Report #: R4578415
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7D9357
Received: 2017/07/04, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7D9357
Report Date: 2017/07/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ERG028	ERG029	ERG030	ERG031	ERG032		
Sampling Date			2017/07/04 11:30	2017/07/04 12:00	2017/07/04 12:30	2017/07/04 13:00	2017/07/04 13:30		
COC Number			572155-38-01	572155-38-01	572155-38-01	572155-38-01	572155-38-01		
	UNITS	**Criteria**	**VS 488**	**VS 489**	**VS 490**	**VS 491**	**VS 492**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	0.21	<0.20	<0.20	0.20	5058486
Acid Extractable Arsenic (As)	ug/g	**18**	1.0	<1.0	<1.0	<1.0	<1.0	1.0	5058486
Acid Extractable Barium (Ba)	ug/g	**390**	22	22	31	23	27	0.50	5058486
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	0.23	0.23	<0.20	<0.20	0.20	5058486
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5058486
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5058486
Acid Extractable Chromium (Cr)	ug/g	**160**	13	13	15	14	12	1.0	5058486
Acid Extractable Cobalt (Co)	ug/g	**22**	2.6	3.6	5.0	2.5	2.5	0.10	5058486
Acid Extractable Copper (Cu)	ug/g	**140**	3.1	4.4	5.4	3.0	4.1	0.50	5058486
Acid Extractable Lead (Pb)	ug/g	**120**	1.6	1.4	7.0	1.4	1.5	1.0	5058486
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5058486
Acid Extractable Nickel (Ni)	ug/g	**100**	6.4	8.3	9.4	6.3	7.2	0.50	5058486
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5058486
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5058486
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	<0.050	0.054	<0.050	<0.050	0.050	5058486
Acid Extractable Uranium (U)	ug/g	**23**	0.48	0.39	0.48	0.50	0.36	0.050	5058486
Acid Extractable Vanadium (V)	ug/g	**86**	20	16	22	23	15	5.0	5058486
Acid Extractable Zinc (Zn)	ug/g	**340**	15	14	22	11	17	5.0	5058486
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5058486

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 #: B7D9357
Report Date: 2017/07/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ERG033	ERG034	ERG034	ERG035		
Sampling Date			2017/07/04 14:00	2017/07/04 14:15	2017/07/04 14:15	2017/07/04 14:30		
COC Number			572155-38-01	572155-38-01	572155-38-01	572155-38-01		
	UNITS	Criteria	VS 493	VS 494	VS 494 Lab-Dup	VS 495	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	5058486
Acid Extractable Arsenic (As)	ug/g	**18**	1.9	<1.0	<1.0	<1.0	1.0	5058486
Acid Extractable Barium (Ba)	ug/g	**390**	**760**	29	29	30	0.50	5058486
Acid Extractable Beryllium (Be)	ug/g	**4**	1.2	0.26	0.26	0.23	0.20	5058486
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.0	5058486
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.15	<0.10	<0.10	<0.10	0.10	5058486
Acid Extractable Chromium (Cr)	ug/g	**160**	130	22	22	19	1.0	5058486
Acid Extractable Cobalt (Co)	ug/g	**22**	**88**	6.7	6.9	4.3	0.10	5058486
Acid Extractable Copper (Cu)	ug/g	**140**	52	6.0	6.4	7.0	0.50	5058486
Acid Extractable Lead (Pb)	ug/g	**120**	15	3.0	2.8	2.5	1.0	5058486
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.73	<0.50	<0.50	<0.50	0.50	5058486
Acid Extractable Nickel (Ni)	ug/g	**100**	68	9.5	9.9	10	0.50	5058486
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	5058486
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	5058486
Acid Extractable Thallium (Tl)	ug/g	**1**	0.55	0.081	0.094	0.058	0.050	5058486
Acid Extractable Uranium (U)	ug/g	**23**	1.9	0.68	0.64	0.55	0.050	5058486
Acid Extractable Vanadium (V)	ug/g	**86**	**130**	29	28	21	5.0	5058486
Acid Extractable Zinc (Zn)	ug/g	**340**	160	42	43	31	5.0	5058486
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.050	5058486

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 Job #: B7D9357
Report Date: 2017/07/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ERG028	ERG029	ERG029	ERG030	ERG031		
Sampling Date			2017/07/04 11:30	2017/07/04 12:00	2017/07/04 12:00	2017/07/04 12:30	2017/07/04 13:00		
COC Number			572155-38-01	572155-38-01	572155-38-01	572155-38-01	572155-38-01		
	UNITS	**Criteria**	**VS 488**	**VS 489**	**VS 489 Lab-Dup**	**VS 490**	**VS 491**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	21	11	11	17	13	0.2	5057152
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5057098
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5057154
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5057154
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5057154
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	0.012	<0.0050	<0.0050	0.0050	5057154
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0067	0.0053	<0.0050	0.0050	5057154
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.010	0.0075	<0.0050	0.0050	5057154
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5057154
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5057154
Chrysene	ug/g	**7**	<0.0050	<0.0050	0.0090	<0.0050	<0.0050	0.0050	5057154
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5057154
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	0.024 (1)	0.0096	<0.0050	0.0050	5057154
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5057154
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	0.0050	<0.0050	<0.0050	0.0050	5057154
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5057154
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5057154
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5057154
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	0.0084	<0.0050	<0.0050	0.0050	5057154
Pyrene	ug/g	**78**	<0.0050	<0.0050	0.015 (1)	0.0069	<0.0050	0.0050	5057154
Surrogate Recovery (%)									
D10-Anthracene	%	-	93	95	93	91	94		5057154
D14-Terphenyl (FS)	%	-	95	94	94	91	96		5057154
D8-Acenaphthylene	%	-	84	86	86	84	86		5057154

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.

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 #: B7D9357
Report Date: 2017/07/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ERG032	ERG033	ERG034	ERG035		
Sampling Date			2017/07/04 13:30	2017/07/04 14:00	2017/07/04 14:15	2017/07/04 14:30		
COC Number			572155-38-01	572155-38-01	572155-38-01	572155-38-01		
	UNITS	Criteria	VS 492	VS 493	VS 494	VS 495	RDL	QC Batch
Inorganics								
Moisture	%	-	23	33	15	16	0.2	5057152
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	0.014	5057098
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	0.0057	0.0050	5057154
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5057154
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.011	0.0050	5057154
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.011	<0.0050	0.021	0.0050	5057154
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0072	<0.0050	0.015	0.0050	5057154
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.016	<0.0050	0.024	0.0050	5057154
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0072	<0.0050	0.0094	0.0050	5057154
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0083	0.0050	5057154
Chrysene	ug/g	**7**	<0.0050	0.0099	<0.0050	0.021	0.0050	5057154
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0059	<0.0050	0.0068	0.0050	5057154
Fluoranthene	ug/g	**0.69**	<0.0050	0.024	<0.0050	0.053	0.0050	5057154
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0052	0.0050	5057154
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0085	<0.0050	0.0088	0.0050	5057154
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5057154
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5057154
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5057154
Phenanthrene	ug/g	**6.2**	<0.0050	0.011	<0.0050	0.029	0.0050	5057154
Pyrene	ug/g	**78**	<0.0050	0.017	<0.0050	0.035	0.0050	5057154
Surrogate Recovery (%)								
D10-Anthracene	%	-	95	95	96	95		5057154
D14-Terphenyl (FS)	%	-	94	98	95	95		5057154
D8-Acenaphthylene	%	-	86	85	85	85		5057154

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 #: B7D9357
Report Date: 2017/07/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ERG028	ERG028	ERG029	ERG030	ERG031		
Sampling Date			2017/07/04 11:30	2017/07/04 11:30	2017/07/04 12:00	2017/07/04 12:30	2017/07/04 13:00		
COC Number			572155-38-01	572155-38-01	572155-38-01	572155-38-01	572155-38-01		
	UNITS	**Criteria**	**VS 488**	**VS 488 Lab-Dup**	**VS 489**	**VS 490**	**VS 491**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	5057999

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			ERG032	ERG033	ERG034	ERG035		
Sampling Date			2017/07/04 13:30	2017/07/04 14:00	2017/07/04 14:15	2017/07/04 14:30		
COC Number			572155-38-01	572155-38-01	572155-38-01	572155-38-01		
	UNITS	**Criteria**	**VS 492**	**VS 493**	**VS 494**	**VS 495**	**RDL**	**QC Batch**
Inorganics								
Chromium (VI)	ug/g	**8**	<0.2	0.2	<0.2	<0.2	0.2	5057999

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 #: B7D9357
Report Date: 2017/07/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ERG028
Sample ID: VS 488
Matrix: Soil

Collected: 2017/07/04
Shipped:
Received: 2017/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5057098	N/A	2017/07/05	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5057999	2017/07/05	2017/07/05	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5058486	2017/07/05	2017/07/05	Viviana Canzonieri
Moisture	BAL	5057152	N/A	2017/07/05	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5057154	2017/07/04	2017/07/05	Arezoo Habibagahi

Maxxam ID: ERG028 Dup
Sample ID: VS 488
Matrix: Soil

Collected: 2017/07/04
Shipped:
Received: 2017/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5057999	2017/07/05	2017/07/05	Sally Coughlin

Maxxam ID: ERG029
Sample ID: VS 489
Matrix: Soil

Collected: 2017/07/04
Shipped:
Received: 2017/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5057098	N/A	2017/07/05	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5057999	2017/07/05	2017/07/05	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5058486	2017/07/05	2017/07/05	Viviana Canzonieri
Moisture	BAL	5057152	N/A	2017/07/05	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5057154	2017/07/04	2017/07/05	Arezoo Habibagahi

Maxxam ID: ERG029 Dup
Sample ID: VS 489
Matrix: Soil

Collected: 2017/07/04
Shipped:
Received: 2017/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5057152	N/A	2017/07/05	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5057154	2017/07/04	2017/07/05	Arezoo Habibagahi

Maxxam ID: ERG030
Sample ID: VS 490
Matrix: Soil

Collected: 2017/07/04
Shipped:
Received: 2017/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5057098	N/A	2017/07/05	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5057999	2017/07/05	2017/07/05	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5058486	2017/07/05	2017/07/05	Viviana Canzonieri
Moisture	BAL	5057152	N/A	2017/07/05	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5057154	2017/07/04	2017/07/05	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 #: B7D9357
Report Date: 2017/07/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ERG031
Sample ID: VS 491
Matrix: Soil

Collected: 2017/07/04
Shipped:
Received: 2017/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5057098	N/A	2017/07/05	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5057999	2017/07/05	2017/07/05	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5058486	2017/07/05	2017/07/05	Viviana Canzonieri
Moisture	BAL	5057152	N/A	2017/07/05	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5057154	2017/07/04	2017/07/05	Arezoo Habibagahi

Maxxam ID: ERG032
Sample ID: VS 492
Matrix: Soil

Collected: 2017/07/04
Shipped:
Received: 2017/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5057098	N/A	2017/07/05	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5057999	2017/07/05	2017/07/05	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5058486	2017/07/05	2017/07/05	Viviana Canzonieri
Moisture	BAL	5057152	N/A	2017/07/05	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5057154	2017/07/04	2017/07/05	Arezoo Habibagahi

Maxxam ID: ERG033
Sample ID: VS 493
Matrix: Soil

Collected: 2017/07/04
Shipped:
Received: 2017/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5057098	N/A	2017/07/05	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5057999	2017/07/05	2017/07/05	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5058486	2017/07/05	2017/07/05	Viviana Canzonieri
Moisture	BAL	5057152	N/A	2017/07/05	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5057154	2017/07/04	2017/07/05	Arezoo Habibagahi

Maxxam ID: ERG034
Sample ID: VS 494
Matrix: Soil

Collected: 2017/07/04
Shipped:
Received: 2017/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5057098	N/A	2017/07/05	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5057999	2017/07/05	2017/07/05	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5058486	2017/07/05	2017/07/05	Viviana Canzonieri
Moisture	BAL	5057152	N/A	2017/07/05	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5057154	2017/07/04	2017/07/05	Arezoo Habibagahi

Maxxam ID: ERG034 Dup
Sample ID: VS 494
Matrix: Soil

Collected: 2017/07/04
Shipped:
Received: 2017/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5058486	2017/07/05	2017/07/05	Viviana Canzonieri

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 #: B7D9357
Report Date: 2017/07/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ERG035
Sample ID: VS 495
Matrix: Soil

Collected: 2017/07/04
Shipped:
Received: 2017/07/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5057098	N/A	2017/07/05	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5057999	2017/07/05	2017/07/05	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5058486	2017/07/05	2017/07/05	Viviana Canzonieri
Moisture	BAL	5057152	N/A	2017/07/05	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5057154	2017/07/04	2017/07/05	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 #: B7D9357
Report Date: 2017/07/06

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	22.0°C

Sample ERG029 [VS 489] : PAH Analysis: Duplicate results exceeded RPD acceptance criteria for flagged analytes. This is likely due to sample heterogeneity.

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 Job #: B7D9357
Report Date: 2017/07/06

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
5057154	D10-Anthracene	2017/07/05	91	50 - 130	92	50 - 130	93	%		
5057154	D14-Terphenyl (FS)	2017/07/05	99	50 - 130	97	50 - 130	95	%		
5057154	D8-Acenaphthylene	2017/07/05	82	50 - 130	84	50 - 130	83	%		
5057152	Moisture	2017/07/05							1.8	50
5057154	1-Methylnaphthalene	2017/07/05	95	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
5057154	2-Methylnaphthalene	2017/07/05	94	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5057154	Acenaphthene	2017/07/05	97	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5057154	Acenaphthylene	2017/07/05	80	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5057154	Anthracene	2017/07/05	90	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5057154	Benzo(a)anthracene	2017/07/05	91	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
5057154	Benzo(a)pyrene	2017/07/05	85	50 - 130	87	50 - 130	<0.0050	ug/g	29	40
5057154	Benzo(b/j)fluoranthene	2017/07/05	97	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5057154	Benzo(g,h,i)perylene	2017/07/05	95	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
5057154	Benzo(k)fluoranthene	2017/07/05	89	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
5057154	Chrysene	2017/07/05	93	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5057154	Dibenz(a,h)anthracene	2017/07/05	77	50 - 130	129	50 - 130	<0.0050	ug/g	NC	40
5057154	Fluoranthene	2017/07/05	94	50 - 130	96	50 - 130	<0.0050	ug/g	130 (1)	40
5057154	Fluorene	2017/07/05	106	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40
5057154	Indeno(1,2,3-cd)pyrene	2017/07/05	98	50 - 130	106	50 - 130	<0.0050	ug/g	0.94	40
5057154	Naphthalene	2017/07/05	82	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5057154	Phenanthrene	2017/07/05	84	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5057154	Pyrene	2017/07/05	85	50 - 130	86	50 - 130	<0.0050	ug/g	101 (1)	40
5057999	Chromium (VI)	2017/07/05	83	75 - 125	88	80 - 120	<0.2	ug/g	NC	35
5058486	Acid Extractable Antimony (Sb)	2017/07/05	98	75 - 125	104	80 - 120	<0.20	ug/g	NC	30
5058486	Acid Extractable Arsenic (As)	2017/07/05	98	75 - 125	97	80 - 120	<1.0	ug/g	NC	30
5058486	Acid Extractable Barium (Ba)	2017/07/05	NC	75 - 125	103	80 - 120	<0.50	ug/g	0.33	30
5058486	Acid Extractable Beryllium (Be)	2017/07/05	98	75 - 125	98	80 - 120	<0.20	ug/g	0.28	30
5058486	Acid Extractable Boron (B)	2017/07/05	98	75 - 125	98	80 - 120	<5.0	ug/g	NC	30
5058486	Acid Extractable Cadmium (Cd)	2017/07/05	98	75 - 125	96	80 - 120	<0.10	ug/g	NC	30
5058486	Acid Extractable Chromium (Cr)	2017/07/05	96	75 - 125	94	80 - 120	<1.0	ug/g	0.29	30
5058486	Acid Extractable Cobalt (Co)	2017/07/05	97	75 - 125	97	80 - 120	<0.10	ug/g	3.3	30

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 #: B7D9357
Report Date: 2017/07/06

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
5058486	Acid Extractable Copper (Cu)	2017/07/05	98	75 - 125	98	80 - 120	<0.50	ug/g	6.8	30
5058486	Acid Extractable Lead (Pb)	2017/07/05	98	75 - 125	98	80 - 120	<1.0	ug/g	6.8	30
5058486	Acid Extractable Mercury (Hg)	2017/07/05	99	75 - 125	101	80 - 120	<0.050	ug/g	NC	30
5058486	Acid Extractable Molybdenum (Mo)	2017/07/05	96	75 - 125	97	80 - 120	<0.50	ug/g	NC	30
5058486	Acid Extractable Nickel (Ni)	2017/07/05	93	75 - 125	94	80 - 120	<0.50	ug/g	4.5	30
5058486	Acid Extractable Selenium (Se)	2017/07/05	100	75 - 125	98	80 - 120	<0.50	ug/g	NC	30
5058486	Acid Extractable Silver (Ag)	2017/07/05	103	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
5058486	Acid Extractable Thallium (Tl)	2017/07/05	97	75 - 125	95	80 - 120	<0.050	ug/g	14	30
5058486	Acid Extractable Uranium (U)	2017/07/05	94	75 - 125	96	80 - 120	<0.050	ug/g	6.2	30
5058486	Acid Extractable Vanadium (V)	2017/07/05	NC	75 - 125	94	80 - 120	<5.0	ug/g	2.9	30
5058486	Acid Extractable Zinc (Zn)	2017/07/05	NC	75 - 125	88	80 - 120	<5.0	ug/g	4.2	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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 #: B7D9357
Report Date: 2017/07/06

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, Scientific Services

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#572155-38-01	Madison Bingley
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 ☐ 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)? _____

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: 24hr ☒
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		VS488	17/07/04	1130	Soil		X	X								1	
2		VS489	↓	1200	↓		X	X								1	
3		VS490	↓	1230	↓		X	X								1	
4		VS491	↓	1300	↓		X	X								1	
5		VS492	↓	1330	↓		X	X								1	
6		VS493	↓	1400	↓		X	X								1	
7		VS494	↓	1415	↓		X	X								1	
8		VS495	↓	1430	↓		X	X								1	
9																	
10																	ON the Ice Pack

RECEIVED IN OTTAWA

04-Jul-17 15:00
Alison Cameron
B7D9357
KIV OTT 001

* 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 Recei	Custody Seal	Yes	No
Aaron Bradshaw	17/07/04	14:45	Kem Jayem	2017/07/04	15:00	0		21, 24, 21	Present Intact	☒	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7D9357
Report Date: 2017/07/06

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
VS 493	ERG033-02	Acid Extractable Barium (Ba)	390	760	0.50	ug/g
VS 493	ERG033-02	Acid Extractable Cobalt (Co)	22	88	0.10	ug/g
VS 493	ERG033-02	Acid Extractable Vanadium (V)	86	130	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.

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. #: 572155-39-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/29
Report #: R4567273
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7D5501
Received: 2017/06/28, 14:35

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	4	N/A	2017/06/29	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	4	2017/06/29	2017/06/29	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	4	2017/06/29	2017/06/29	CAM SOP-00447	EPA 6020B m
Moisture	4	N/A	2017/06/29	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	4	2017/06/28	2017/06/28	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-39-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/29
Report #: R4567273
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7D5501
Received: 2017/06/28, 14:35

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7D5501
Report Date: 2017/06/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: JL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EQN488	EQN489	EQN490	EQN491		
Sampling Date			2017/06/28 11:20	2017/06/28 11:25	2017/06/28 11:25	2017/06/28 11:30		
COC Number			572155-39-01	572155-39-01	572155-39-01	572155-39-01		
	UNITS	**Criteria**	**VS 485**	**VS 486**	**VS 1486**	**VS 487**	**RDL**	**QC Batch**
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	5051542
Acid Extractable Arsenic (As)	ug/g	**18**	1.7	<1.0	<1.0	<1.0	1.0	5051542
Acid Extractable Barium (Ba)	ug/g	**390**	110	38	34	28	0.50	5051542
Acid Extractable Beryllium (Be)	ug/g	**4**	0.50	0.27	0.25	0.23	0.20	5051542
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.0	5051542
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	0.10	5051542
Acid Extractable Chromium (Cr)	ug/g	**160**	34	22	20	16	1.0	5051542
Acid Extractable Cobalt (Co)	ug/g	**22**	9.4	5.3	4.3	4.1	0.10	5051542
Acid Extractable Copper (Cu)	ug/g	**140**	18	8.2	7.0	4.8	0.50	5051542
Acid Extractable Lead (Pb)	ug/g	**120**	7.2	2.6	2.2	1.7	1.0	5051542
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	0.50	5051542
Acid Extractable Nickel (Ni)	ug/g	**100**	19	11	9.6	8.9	0.50	5051542
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	5051542
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	5051542
Acid Extractable Thallium (Tl)	ug/g	**1**	0.16	0.065	0.057	<0.050	0.050	5051542
Acid Extractable Uranium (U)	ug/g	**23**	0.65	0.59	0.52	0.49	0.050	5051542
Acid Extractable Vanadium (V)	ug/g	**86**	47	29	23	24	5.0	5051542
Acid Extractable Zinc (Zn)	ug/g	**340**	50	25	23	19	5.0	5051542
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.050	5051542

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 #: B7D5501
Report Date: 2017/06/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: JL

O.REG 153 PAHS (SOIL)

Maxxam ID			EQN488	EQN489	EQN489	EQN490	EQN491		
Sampling Date			2017/06/28 11:20	2017/06/28 11:25	2017/06/28 11:25	2017/06/28 11:25	2017/06/28 11:30		
COC Number			572155-39-01	572155-39-01	572155-39-01	572155-39-01	572155-39-01		
	UNITS	**Criteria**	**VS 485**	**VS 486**	**VS 486 Lab-Dup**	**VS 1486**	**VS 487**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	22	21	21	20	14	0.2	5050006
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5049864
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
Benzo(a)anthracene	ug/g	**0.5**	0.0055	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.0080	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
Fluoranthene	ug/g	**0.69**	0.0098	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
Pyrene	ug/g	**78**	0.0092	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5050008
Surrogate Recovery (%)									
D10-Anthracene	%	-	101	97	101	102	101		5050008
D14-Terphenyl (FS)	%	-	94	94	90	96	93		5050008
D8-Acenaphthylene	%	-	87	87	85	86	87		5050008

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 Job #: B7D5501
Report Date: 2017/06/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: JL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EQN488	EQN489	EQN490	EQN490	EQN491		
Sampling Date			2017/06/28 11:20	2017/06/28 11:25	2017/06/28 11:25	2017/06/28 11:25	2017/06/28 11:30		
COC Number			572155-39-01	572155-39-01	572155-39-01	572155-39-01	572155-39-01		
	UNITS	**Criteria**	**VS 485**	**VS 486**	**VS 1486**	**VS 1486 Lab-Dup**	**VS 487**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.4	0.3	0.3	0.3	<0.2	0.2	5051128

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 Job #: B7D5501
Report Date: 2017/06/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: JL

TEST SUMMARY

Maxxam ID: EQN488
Sample ID: VS 485
Matrix: Soil

Collected: 2017/06/28
Shipped:
Received: 2017/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5049864	N/A	2017/06/29	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5051128	2017/06/29	2017/06/29	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	5051542	2017/06/29	2017/06/29	Daniel Teclu
Moisture	BAL	5050006	N/A	2017/06/29	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5050008	2017/06/28	2017/06/28	Arezoo Habibagahi

Maxxam ID: EQN489
Sample ID: VS 486
Matrix: Soil

Collected: 2017/06/28
Shipped:
Received: 2017/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5049864	N/A	2017/06/29	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5051128	2017/06/29	2017/06/29	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	5051542	2017/06/29	2017/06/29	Daniel Teclu
Moisture	BAL	5050006	N/A	2017/06/29	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5050008	2017/06/28	2017/06/28	Arezoo Habibagahi

Maxxam ID: EQN489 Dup
Sample ID: VS 486
Matrix: Soil

Collected: 2017/06/28
Shipped:
Received: 2017/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5050006	N/A	2017/06/29	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5050008	2017/06/28	2017/06/28	Arezoo Habibagahi

Maxxam ID: EQN490
Sample ID: VS 1486
Matrix: Soil

Collected: 2017/06/28
Shipped:
Received: 2017/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5049864	N/A	2017/06/29	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5051128	2017/06/29	2017/06/29	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	5051542	2017/06/29	2017/06/29	Daniel Teclu
Moisture	BAL	5050006	N/A	2017/06/29	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5050008	2017/06/28	2017/06/28	Arezoo Habibagahi

Maxxam ID: EQN490 Dup
Sample ID: VS 1486
Matrix: Soil

Collected: 2017/06/28
Shipped:
Received: 2017/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5051128	2017/06/29	2017/06/29	Lang Le

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 #: B7D5501
Report Date: 2017/06/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: JL

TEST SUMMARY

Maxxam ID: EQN491
Sample ID: VS 487
Matrix: Soil

Collected: 2017/06/28
Shipped:
Received: 2017/06/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5049864	N/A	2017/06/29	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5051128	2017/06/29	2017/06/29	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	5051542	2017/06/29	2017/06/29	Daniel Teclu
Moisture	BAL	5050006	N/A	2017/06/29	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5050008	2017/06/28	2017/06/28	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 #: B7D5501
Report Date: 2017/06/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: JL

GENERAL COMMENTS

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

Package 1	21.7°C

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 #: B7D5501
Report Date: 2017/06/29

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
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
5050008	D10-Anthracene	2017/06/28	89	50 - 130	99	50 - 130	105	%		
5050008	D14-Terphenyl (FS)	2017/06/28	87	50 - 130	92	50 - 130	92	%		
5050008	D8-Acenaphthylene	2017/06/28	84	50 - 130	90	50 - 130	87	%		
5050006	Moisture	2017/06/29							0.94	50
5050008	1-Methylnaphthalene	2017/06/28	92	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5050008	2-Methylnaphthalene	2017/06/28	94	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
5050008	Acenaphthene	2017/06/28	96	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
5050008	Acenaphthylene	2017/06/28	85	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
5050008	Anthracene	2017/06/28	89	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5050008	Benzo(a)anthracene	2017/06/28	94	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
5050008	Benzo(a)pyrene	2017/06/28	81	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5050008	Benzo(b/j)fluoranthene	2017/06/28	92	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5050008	Benzo(g,h,i)perylene	2017/06/28	82	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5050008	Benzo(k)fluoranthene	2017/06/28	84	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5050008	Chrysene	2017/06/28	82	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
5050008	Dibenz(a,h)anthracene	2017/06/28	61	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5050008	Fluoranthene	2017/06/28	95	50 - 130	103	50 - 130	<0.0050	ug/g	NC	40
5050008	Fluorene	2017/06/28	95	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
5050008	Indeno(1,2,3-cd)pyrene	2017/06/28	90	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5050008	Naphthalene	2017/06/28	83	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
5050008	Phenanthrene	2017/06/28	85	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5050008	Pyrene	2017/06/28	89	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
5051128	Chromium (VI)	2017/06/29	82	75 - 125	91	80 - 120	<0.2	ug/g	31	35
5051542	Acid Extractable Antimony (Sb)	2017/06/29	99	75 - 125	99	80 - 120	<0.20	ug/g	2.5	30
5051542	Acid Extractable Arsenic (As)	2017/06/29	99	75 - 125	104	80 - 120	<1.0	ug/g	3.3	30
5051542	Acid Extractable Barium (Ba)	2017/06/29	NC	75 - 125	98	80 - 120	<0.50	ug/g	3.4	30
5051542	Acid Extractable Beryllium (Be)	2017/06/29	101	75 - 125	100	80 - 120	<0.20	ug/g	4.2	30
5051542	Acid Extractable Boron (B)	2017/06/29	106	75 - 125	100	80 - 120	<5.0	ug/g	3.9	30
5051542	Acid Extractable Cadmium (Cd)	2017/06/29	99	75 - 125	99	80 - 120	<0.10	ug/g	1.9	30
5051542	Acid Extractable Chromium (Cr)	2017/06/29	87	75 - 125	106	80 - 120	<1.0	ug/g	2.5	30
5051542	Acid Extractable Cobalt (Co)	2017/06/29	101	75 - 125	102	80 - 120	<0.10	ug/g	5.6	30

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 #: B7D5501
Report Date: 2017/06/29

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
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
5051542	Acid Extractable Copper (Cu)	2017/06/29	101	75 - 125	101	80 - 120	<0.50	ug/g	1.6	30
5051542	Acid Extractable Lead (Pb)	2017/06/29	97	75 - 125	100	80 - 120	<1.0	ug/g	3.9	30
5051542	Acid Extractable Mercury (Hg)	2017/06/29	100	75 - 125	102	80 - 120	<0.050	ug/g	0.59	30
5051542	Acid Extractable Molybdenum (Mo)	2017/06/29	102	75 - 125	99	80 - 120	<0.50	ug/g	4.7	30
5051542	Acid Extractable Nickel (Ni)	2017/06/29	101	75 - 125	102	80 - 120	<0.50	ug/g	0.45	30
5051542	Acid Extractable Selenium (Se)	2017/06/29	99	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
5051542	Acid Extractable Silver (Ag)	2017/06/29	100	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5051542	Acid Extractable Thallium (Tl)	2017/06/29	94	75 - 125	99	80 - 120	<0.050	ug/g	2.4	30
5051542	Acid Extractable Uranium (U)	2017/06/29	98	75 - 125	100	80 - 120	<0.050	ug/g	0.33	30
5051542	Acid Extractable Vanadium (V)	2017/06/29	108	75 - 125	103	80 - 120	<5.0	ug/g	4.9	30
5051542	Acid Extractable Zinc (Zn)	2017/06/29	NC	75 - 125	102	80 - 120	<5.0	ug/g	6.1	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7D5501
Report Date: 2017/06/29

Golder Associates Ltd
Client Project #: 1525113
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

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#572155-39-01	Madison Bingley
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	Jill Lackey		

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: ___ 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		VS485	11:20	June 28 2017	S	N/A	✓	✓								1	
2		VS486	11:25	↓	↓	↓	✓	✓								1	
3		VS1486	11:25	↓	↓	↓	✓	✓								1	
4		VS487	11:30	↓	↓	↓	✓	✓								1	
5																	
6																	Please contact Tony Lyon if there are any questions.
7																	
8																	
9																	
10																	

RECEIVED IN OTTAWA

28-Jun-17 14:35
Alison Cameron
B7D5501
KIV OTT 001

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Jill Lackey	17/06/28	12:00PM	Tony	2017/06/28	14:35	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	22, 21, 22	Present		
		Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

ON the Ice Pack.

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7D5501
Report Date: 2017/06/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: JL

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. #: 572155-40-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/28
Report #: R4563357
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7D4282
Received: 2017/06/27, 14:15

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	4	N/A	2017/06/28	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	4	2017/06/28	2017/06/28	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	4	2017/06/28	2017/06/28	CAM SOP-00447	EPA 6020B m
Moisture	4	N/A	2017/06/28	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	4	2017/06/27	2017/06/27	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-40-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/28
Report #: R4563357
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7D4282
Received: 2017/06/27, 14:15

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7D4282
Report Date: 2017/06/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: JL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EQG983	EQG984	EQG985	EQG986		
Sampling Date			2017/06/27 12:30	2017/06/27 12:35	2017/06/27 12:40	2017/06/27 12:45		
COC Number			572155-40-01	572155-40-01	572155-40-01	572155-40-01		
	UNITS	**Criteria**	**VS 482**	**VS 483**	**VS 484**	**VS 1484**	**RDL**	**QC Batch**
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	0.20	<0.20	<0.20	0.20	5049226
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	3.3	<1.0	<1.0	1.0	5049226
Acid Extractable Barium (Ba)	ug/g	**390**	19	32	26	31	0.50	5049226
Acid Extractable Beryllium (Be)	ug/g	**4**	0.20	0.21	0.21	0.22	0.20	5049226
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.0	5049226
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.12	<0.10	<0.10	0.10	5049226
Acid Extractable Chromium (Cr)	ug/g	**160**	16	15	17	18	1.0	5049226
Acid Extractable Cobalt (Co)	ug/g	**22**	3.7	3.6	5.3	5.9	0.10	5049226
Acid Extractable Copper (Cu)	ug/g	**140**	4.1	6.2	5.4	6.6	0.50	5049226
Acid Extractable Lead (Pb)	ug/g	**120**	1.7	19	1.7	1.7	1.0	5049226
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	0.50	5049226
Acid Extractable Nickel (Ni)	ug/g	**100**	8.2	8.3	10	12	0.50	5049226
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	5049226
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	5049226
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	0.081	0.056	0.071	0.050	5049226
Acid Extractable Uranium (U)	ug/g	**23**	0.45	0.30	0.40	0.34	0.050	5049226
Acid Extractable Vanadium (V)	ug/g	**86**	21	19	24	24	5.0	5049226
Acid Extractable Zinc (Zn)	ug/g	**340**	17	32	19	23	5.0	5049226
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	0.079	<0.050	<0.050	0.050	5049226

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 #: B7D4282
Report Date: 2017/06/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: JL

O.REG 153 PAHS (SOIL)

Maxxam ID			EQG983	EQG984	EQG984	EQG985	EQG986		
Sampling Date			2017/06/27 12:30	2017/06/27 12:35	2017/06/27 12:35	2017/06/27 12:40	2017/06/27 12:45		
COC Number			572155-40-01	572155-40-01	572155-40-01	572155-40-01	572155-40-01		
	UNITS	**Criteria**	**VS 482**	**VS 483**	**VS 483 Lab-Dup**	**VS 484**	**VS 1484**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	15	15		12	13	0.2	5047593
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.018		<0.014	<0.014	0.014	5047983
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	0.047	<0.0050 (1)	<0.0050	<0.0050	0.0050	5048147
Acenaphthylene	ug/g	**0.15**	<0.0050	0.034	0.038	<0.0050	<0.0050	0.0050	5048147
Anthracene	ug/g	**0.67**	<0.0050	0.079	0.023 (1)	<0.0050	<0.0050	0.0050	5048147
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.21	0.15	<0.0050	<0.0050	0.0050	5048147
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.18	0.16	<0.0050	<0.0050	0.0050	5048147
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.33	0.30	<0.0050	<0.0050	0.0050	5048147
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.15	0.14	<0.0050	<0.0050	0.0050	5048147
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.11	0.094	<0.0050	<0.0050	0.0050	5048147
Chrysene	ug/g	**7**	<0.0050	0.21	0.16	<0.0050	<0.0050	0.0050	5048147
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.038	0.032	<0.0050	<0.0050	0.0050	5048147
Fluoranthene	ug/g	**0.69**	<0.0050	0.51	0.33 (1)	<0.0050	<0.0050	0.0050	5048147
Fluorene	ug/g	**62**	<0.0050	0.040	0.0059 (1)	<0.0050	<0.0050	0.0050	5048147
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.17	0.16	<0.0050	<0.0050	0.0050	5048147
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0095	<0.0050	<0.0050	<0.0050	0.0050	5048147
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0084	<0.0050	<0.0050	<0.0050	0.0050	5048147
Naphthalene	ug/g	**0.6**	<0.0050	0.015	<0.0050 (1)	<0.0050	<0.0050	0.0050	5048147
Phenanthrene	ug/g	**6.2**	<0.0050	0.33	0.11 (1)	<0.0050	<0.0050	0.0050	5048147
Pyrene	ug/g	**78**	<0.0050	0.39	0.26	<0.0050	<0.0050	0.0050	5048147
Surrogate Recovery (%)									
D10-Anthracene	%	-	94	92	89	97	98		5048147
D14-Terphenyl (FS)	%	-	91	96	89	95	94		5048147
D8-Acenaphthylene	%	-	79	82	78	84	85		5048147

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.

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 #: B7D4282
Report Date: 2017/06/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: JL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EQG983	EQG984	EQG985	EQG986		
Sampling Date			2017/06/27 12:30	2017/06/27 12:35	2017/06/27 12:40	2017/06/27 12:45		
COC Number			572155-40-01	572155-40-01	572155-40-01	572155-40-01		
	UNITS	**Criteria**	**VS 482**	**VS 483**	**VS 484**	**VS 1484**	**RDL**	**QC Batch**
Inorganics								
Chromium (VI)	ug/g	**8**	0.4	<0.2	<0.2	<0.2	0.2	5048933

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 #: B7D4282
Report Date: 2017/06/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: JL

TEST SUMMARY

Maxxam ID: EQG983
Sample ID: VS 482
Matrix: Soil

Collected: 2017/06/27
Shipped:
Received: 2017/06/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5047983	N/A	2017/06/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5048933	2017/06/28	2017/06/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5049226	2017/06/28	2017/06/28	Daniel Teclu
Moisture	BAL	5047593	N/A	2017/06/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5048147	2017/06/27	2017/06/27	Arezoo Habibagahi

Maxxam ID: EQG984
Sample ID: VS 483
Matrix: Soil

Collected: 2017/06/27
Shipped:
Received: 2017/06/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5047983	N/A	2017/06/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5048933	2017/06/28	2017/06/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5049226	2017/06/28	2017/06/28	Daniel Teclu
Moisture	BAL	5047593	N/A	2017/06/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5048147	2017/06/27	2017/06/27	Arezoo Habibagahi

Maxxam ID: EQG984 Dup
Sample ID: VS 483
Matrix: Soil

Collected: 2017/06/27
Shipped:
Received: 2017/06/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5048147	2017/06/27	2017/06/27	Arezoo Habibagahi

Maxxam ID: EQG985
Sample ID: VS 484
Matrix: Soil

Collected: 2017/06/27
Shipped:
Received: 2017/06/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5047983	N/A	2017/06/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5048933	2017/06/28	2017/06/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5049226	2017/06/28	2017/06/28	Daniel Teclu
Moisture	BAL	5047593	N/A	2017/06/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5048147	2017/06/27	2017/06/27	Arezoo Habibagahi

Maxxam ID: EQG986
Sample ID: VS 1484
Matrix: Soil

Collected: 2017/06/27
Shipped:
Received: 2017/06/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5047983	N/A	2017/06/28	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5048933	2017/06/28	2017/06/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5049226	2017/06/28	2017/06/28	Daniel Teclu
Moisture	BAL	5047593	N/A	2017/06/28	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5048147	2017/06/27	2017/06/27	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 #: B7D4282
Report Date: 2017/06/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: JL

GENERAL COMMENTS

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

Package 1	17.7°C

Sample EQG984 [VS 483] : PAH Analysis: Duplicate results exceeded RPD acceptance criteria for flagged analytes. This is likely due to sample heterogeneity.

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 Job #: B7D4282
Report Date: 2017/06/28

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
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
5048147	D10-Anthracene	2017/06/27	87	50 - 130	94	50 - 130	100	%		
5048147	D14-Terphenyl (FS)	2017/06/27	85	50 - 130	95	50 - 130	90	%		
5048147	D8-Acenaphthylene	2017/06/27	76	50 - 130	86	50 - 130	83	%		
5047593	Moisture	2017/06/28							3.5	50
5048147	1-Methylnaphthalene	2017/06/27	95	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
5048147	2-Methylnaphthalene	2017/06/27	96	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5048147	Acenaphthene	2017/06/27	100	50 - 130	103	50 - 130	<0.0050	ug/g	162 (1)	40
5048147	Acenaphthylene	2017/06/27	77	50 - 130	84	50 - 130	<0.0050	ug/g	9.9	40
5048147	Anthracene	2017/06/27	90	50 - 130	94	50 - 130	<0.0050	ug/g	111 (1)	40
5048147	Benzo(a)anthracene	2017/06/27	93	50 - 130	97	50 - 130	<0.0050	ug/g	35	40
5048147	Benzo(a)pyrene	2017/06/27	84	50 - 130	86	50 - 130	<0.0050	ug/g	13	40
5048147	Benzo(b/j)fluoranthene	2017/06/27	94	50 - 130	98	50 - 130	<0.0050	ug/g	12	40
5048147	Benzo(g,h,i)perylene	2017/06/27	90	50 - 130	96	50 - 130	<0.0050	ug/g	2.6	40
5048147	Benzo(k)fluoranthene	2017/06/27	87	50 - 130	93	50 - 130	<0.0050	ug/g	13	40
5048147	Chrysene	2017/06/27	92	50 - 130	95	50 - 130	<0.0050	ug/g	26	40
5048147	Dibenz(a,h)anthracene	2017/06/27	71	50 - 130	78	50 - 130	<0.0050	ug/g	17	40
5048147	Fluoranthene	2017/06/27	90	50 - 130	96	50 - 130	<0.0050	ug/g	44 (1)	40
5048147	Fluorene	2017/06/27	97	50 - 130	101	50 - 130	<0.0050	ug/g	148 (1)	40
5048147	Indeno(1,2,3-cd)pyrene	2017/06/27	93	50 - 130	90	50 - 130	<0.0050	ug/g	1.6	40
5048147	Naphthalene	2017/06/27	86	50 - 130	88	50 - 130	<0.0050	ug/g	101 (1)	40
5048147	Phenanthrene	2017/06/27	88	50 - 130	91	50 - 130	<0.0050	ug/g	102 (1)	40
5048147	Pyrene	2017/06/27	91	50 - 130	96	50 - 130	<0.0050	ug/g	38	40
5048933	Chromium (VI)	2017/06/28	88	75 - 125	91	80 - 120	<0.2	ug/g	NC	35
5049226	Acid Extractable Antimony (Sb)	2017/06/28	104	75 - 125	106	80 - 120	<0.20	ug/g	NC	30
5049226	Acid Extractable Arsenic (As)	2017/06/28	99	75 - 125	102	80 - 120	<1.0	ug/g	NC	30
5049226	Acid Extractable Barium (Ba)	2017/06/28	100	75 - 125	97	80 - 120	<0.50	ug/g	3.7	30
5049226	Acid Extractable Beryllium (Be)	2017/06/28	98	75 - 125	96	80 - 120	<0.20	ug/g	NC	30
5049226	Acid Extractable Boron (B)	2017/06/28	96	75 - 125	94	80 - 120	<5.0	ug/g	NC	30
5049226	Acid Extractable Cadmium (Cd)	2017/06/28	103	75 - 125	103	80 - 120	<0.10	ug/g	NC	30
5049226	Acid Extractable Chromium (Cr)	2017/06/28	99	75 - 125	101	80 - 120	<1.0	ug/g	2.4	30
5049226	Acid Extractable Cobalt (Co)	2017/06/28	100	75 - 125	104	80 - 120	<0.10	ug/g	6.2	30

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 #: B7D4282
Report Date: 2017/06/28

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
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
5049226	Acid Extractable Copper (Cu)	2017/06/28	102	75 - 125	103	80 - 120	<0.50	ug/g	7.9	30
5049226	Acid Extractable Lead (Pb)	2017/06/28	95	75 - 125	98	80 - 120	<1.0	ug/g	4.7	30
5049226	Acid Extractable Mercury (Hg)	2017/06/28	99	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
5049226	Acid Extractable Molybdenum (Mo)	2017/06/28	105	75 - 125	105	80 - 120	<0.50	ug/g	NC	30
5049226	Acid Extractable Nickel (Ni)	2017/06/28	100	75 - 125	106	80 - 120	<0.50	ug/g	17	30
5049226	Acid Extractable Selenium (Se)	2017/06/28	98	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
5049226	Acid Extractable Silver (Ag)	2017/06/28	100	75 - 125	105	80 - 120	<0.20	ug/g	NC	30
5049226	Acid Extractable Thallium (Tl)	2017/06/28	95	75 - 125	99	80 - 120	<0.050	ug/g	NC	30
5049226	Acid Extractable Uranium (U)	2017/06/28	96	75 - 125	99	80 - 120	<0.050	ug/g	14	30
5049226	Acid Extractable Vanadium (V)	2017/06/28	92	75 - 125	102	80 - 120	<5.0	ug/g	2.9	30
5049226	Acid Extractable Zinc (Zn)	2017/06/28	106	75 - 125	105	80 - 120	<5.0	ug/g	9.2	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 (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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 #: B7D4282
Report Date: 2017/06/28

Golder Associates Ltd
Client Project #: 1525113
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, 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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#572155-40-01	Madison Bingley
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Site #:			
				Sampled By:	Jill Lachey		

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 ☐ 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)? _____

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 (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		VS482	12:30	June 27, 17	Soil	NA	✓	✓								1	
2		VS483	12:35	↓	↓	↓	✓	✓								1	
3		VS484	12:40				✓	✓								1	
4		VS1481	12:45				✓	✓								1	
5																	
6																	
7																	
8																	
9																	
10																	

RECEIVED IN OTTAWA

27-Jun-17 14:15
Alison Cameron
B7D4282
KIV OTT 001

ON the free park

* 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	17/06/27	13:00	[illegible]	2017/06/27	14:15	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	18, 18, 17	Present	✓	
		Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7D4282
Report Date: 2017/06/28

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: JL

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. #: 572155-41-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/26
Report #: R4559435
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7D2072
Received: 2017/06/23, 15:00

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	4	N/A	2017/06/26	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	4	2017/06/26	2017/06/26	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	4	2017/06/26	2017/06/26	CAM SOP-00447	EPA 6020B m
Moisture	4	N/A	2017/06/26	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	2	2017/06/23	2017/06/23	OTT SOP-00011	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	2	2017/06/23	2017/06/24	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-41-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/26
Report #: R4559435
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7D2072
Received: 2017/06/23, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7D2072
Report Date: 2017/06/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EPU848	EPU849	EPU850	EPU851		
Sampling Date			2017/06/23 11:00	2017/06/23 11:00	2017/06/23 11:00	2017/06/23 12:30		
COC Number			572155-41-01	572155-41-01	572155-41-01	572155-41-01		
	UNITS	Criteria	VS479	VS480	VS1480	VS481	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	5045273
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	1.4	1.3	2.0	1.0	5045273
Acid Extractable Barium (Ba)	ug/g	**390**	20	**450**	**450**	**650**	0.50	5045273
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	1.1	1.0	1.1	0.20	5045273
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	5.0	5.0	5045273
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.17	0.15	0.12	0.10	5045273
Acid Extractable Chromium (Cr)	ug/g	**160**	12	130	120	120	1.0	5045273
Acid Extractable Cobalt (Co)	ug/g	**22**	3.6	**34**	**35**	**31**	0.10	5045273
Acid Extractable Copper (Cu)	ug/g	**140**	3.6	71	71	37	0.50	5045273
Acid Extractable Lead (Pb)	ug/g	**120**	2.1	7.7	7.6	9.8	1.0	5045273
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.74	0.79	0.57	0.50	5045273
Acid Extractable Nickel (Ni)	ug/g	**100**	7.1	75	74	68	0.50	5045273
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	5045273
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	5045273
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	0.56	0.53	0.46	0.050	5045273
Acid Extractable Uranium (U)	ug/g	**23**	0.41	2.3	2.2	1.4	0.050	5045273
Acid Extractable Vanadium (V)	ug/g	**86**	17	**130**	**130**	**110**	5.0	5045273
Acid Extractable Zinc (Zn)	ug/g	**340**	16	150	150	210	5.0	5045273
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.050	5045273

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 #: B7D2072
Report Date: 2017/06/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EPU848	EPU849	EPU849	EPU850	EPU851		
Sampling Date			2017/06/23 11:00	2017/06/23 11:00	2017/06/23 11:00	2017/06/23 11:00	2017/06/23 12:30		
COC Number			572155-41-01	572155-41-01	572155-41-01	572155-41-01	572155-41-01		
	UNITS	**Criteria**	**VS479**	**VS480**	**VS480 Lab-Dup**	**VS1480**	**VS481**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	16	31	30	30	28	0.2	5043525
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5043581
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5043652
Surrogate Recovery (%)									
D10-Anthracene	%	-	103	99	101	102	93		5043652
D14-Terphenyl (FS)	%	-	93	93	97	99	96		5043652
D8-Acenaphthylene	%	-	85	85	85	86	85		5043652

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 Job #: B7D2072
Report Date: 2017/06/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EPU848	EPU849	EPU850	EPU851	EPU851		
Sampling Date			2017/06/23 11:00	2017/06/23 11:00	2017/06/23 11:00	2017/06/23 12:30	2017/06/23 12:30		
COC Number			572155-41-01	572155-41-01	572155-41-01	572155-41-01	572155-41-01		
	UNITS	**Criteria**	**VS479**	**VS480**	**VS1480**	**VS481**	**VS481 Lab-Dup**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	0.8	0.9	0.4	0.4	0.2	5045146

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 Job #: B7D2072
Report Date: 2017/06/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EPU848
Sample ID: VS479
Matrix: Soil

Collected: 2017/06/23
Shipped:
Received: 2017/06/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5043581	N/A	2017/06/26	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5045146	2017/06/26	2017/06/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5045273	2017/06/26	2017/06/26	Daniel Teclu
Moisture	BAL	5043525	N/A	2017/06/26	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5043652	2017/06/23	2017/06/23	Arezoo Habibagahi

Maxxam ID: EPU849
Sample ID: VS480
Matrix: Soil

Collected: 2017/06/23
Shipped:
Received: 2017/06/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5043581	N/A	2017/06/26	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5045146	2017/06/26	2017/06/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5045273	2017/06/26	2017/06/26	Daniel Teclu
Moisture	BAL	5043525	N/A	2017/06/26	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5043652	2017/06/23	2017/06/23	Arezoo Habibagahi

Maxxam ID: EPU849 Dup
Sample ID: VS480
Matrix: Soil

Collected: 2017/06/23
Shipped:
Received: 2017/06/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5043525	N/A	2017/06/26	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5043652	2017/06/23	2017/06/24	Arezoo Habibagahi

Maxxam ID: EPU850
Sample ID: VS1480
Matrix: Soil

Collected: 2017/06/23
Shipped:
Received: 2017/06/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5043581	N/A	2017/06/26	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5045146	2017/06/26	2017/06/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5045273	2017/06/26	2017/06/26	Daniel Teclu
Moisture	BAL	5043525	N/A	2017/06/26	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5043652	2017/06/23	2017/06/24	Arezoo Habibagahi

Maxxam ID: EPU851
Sample ID: VS481
Matrix: Soil

Collected: 2017/06/23
Shipped:
Received: 2017/06/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5043581	N/A	2017/06/26	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5045146	2017/06/26	2017/06/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5045273	2017/06/26	2017/06/26	Daniel Teclu
Moisture	BAL	5043525	N/A	2017/06/26	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5043652	2017/06/23	2017/06/24	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 #: B7D2072
Report Date: 2017/06/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EPU851 Dup
Sample ID: VS481
Matrix: Soil

Collected: 2017/06/23
Shipped:
Received: 2017/06/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5045146	2017/06/26	2017/06/26	Sally Coughlin

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

GENERAL COMMENTS

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 Job #: B7D2072
Report Date: 2017/06/26

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
5043652	D10-Anthracene	2017/06/23	86	50 - 130	78	50 - 130	100	%		
5043652	D14-Terphenyl (FS)	2017/06/23	86	50 - 130	75	50 - 130	96	%		
5043652	D8-Acenaphthylene	2017/06/23	77	50 - 130	71	50 - 130	89	%		
5043525	Moisture	2017/06/26							1.3	50
5043652	1-Methylnaphthalene	2017/06/24	81	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
5043652	2-Methylnaphthalene	2017/06/24	84	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
5043652	Acenaphthene	2017/06/24	87	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
5043652	Acenaphthylene	2017/06/24	74	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40
5043652	Anthracene	2017/06/24	84	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
5043652	Benzo(a)anthracene	2017/06/24	85	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40
5043652	Benzo(a)pyrene	2017/06/24	75	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
5043652	Benzo(b/j)fluoranthene	2017/06/24	83	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
5043652	Benzo(g,h,i)perylene	2017/06/24	86	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40
5043652	Benzo(k)fluoranthene	2017/06/24	81	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40
5043652	Chrysene	2017/06/24	80	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40
5043652	Dibenz(a,h)anthracene	2017/06/24	71	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40
5043652	Fluoranthene	2017/06/24	87	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
5043652	Fluorene	2017/06/24	88	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
5043652	Indeno(1,2,3-cd)pyrene	2017/06/24	83	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
5043652	Naphthalene	2017/06/24	74	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40
5043652	Phenanthrene	2017/06/24	78	50 - 130	67	50 - 130	<0.0050	ug/g	NC	40
5043652	Pyrene	2017/06/24	82	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
5045146	Chromium (VI)	2017/06/26	61 (1)	75 - 125	90	80 - 120	<0.2	ug/g	0.80	35
5045273	Acid Extractable Antimony (Sb)	2017/06/26	98	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5045273	Acid Extractable Arsenic (As)	2017/06/26	99	75 - 125	94	80 - 120	<1.0	ug/g	11	30
5045273	Acid Extractable Barium (Ba)	2017/06/26	93	75 - 125	95	80 - 120	<0.50	ug/g	3.3	30
5045273	Acid Extractable Beryllium (Be)	2017/06/26	99	75 - 125	97	80 - 120	<0.20	ug/g	NC	30
5045273	Acid Extractable Boron (B)	2017/06/26	97	75 - 125	96	80 - 120	<5.0	ug/g	0.91	30
5045273	Acid Extractable Cadmium (Cd)	2017/06/26	97	75 - 125	99	80 - 120	<0.10	ug/g	NC	30
5045273	Acid Extractable Chromium (Cr)	2017/06/26	102	75 - 125	99	80 - 120	<1.0	ug/g	0.080	30
5045273	Acid Extractable Cobalt (Co)	2017/06/26	100	75 - 125	100	80 - 120	<0.10	ug/g	1.2	30

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 #: B7D2072
Report Date: 2017/06/26

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
5045273	Acid Extractable Copper (Cu)	2017/06/26	97	75 - 125	102	80 - 120	<0.50	ug/g	4.7	30
5045273	Acid Extractable Lead (Pb)	2017/06/26	95	75 - 125	98	80 - 120	<1.0	ug/g	5.0	30
5045273	Acid Extractable Mercury (Hg)	2017/06/26	96	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
5045273	Acid Extractable Molybdenum (Mo)	2017/06/26	102	75 - 125	99	80 - 120	<0.50	ug/g	12	30
5045273	Acid Extractable Nickel (Ni)	2017/06/26	101	75 - 125	97	80 - 120	<0.50	ug/g	6.9	30
5045273	Acid Extractable Selenium (Se)	2017/06/26	98	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
5045273	Acid Extractable Silver (Ag)	2017/06/26	97	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5045273	Acid Extractable Thallium (Tl)	2017/06/26	94	75 - 125	98	80 - 120	<0.050	ug/g	12	30
5045273	Acid Extractable Uranium (U)	2017/06/26	100	75 - 125	101	80 - 120	<0.050	ug/g	2.7	30
5045273	Acid Extractable Vanadium (V)	2017/06/26	105	75 - 125	98	80 - 120	<5.0	ug/g	3.8	30
5045273	Acid Extractable Zinc (Zn)	2017/06/26	92	75 - 125	95	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.

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 (absolute difference <= 2x 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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B7D2072
Report Date: 2017/06/26

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).

Brad Newman, 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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#572155-41-01	Madison Bingley
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)? _____

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		VS479	17/06/23	1000	Soil		X	X								1	
2		VS480	↓	1100	↓		X	X								1	
3		VS1480	↓	1100	↓		X	X								1	
4		VS481	↓	1230	↓		X	X								1	
5																	
6																	
7																	
8																	
9																	
10																	

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: 24hr ☒
Rush Confirmation Number: _____ *(call lab for #)*

23-Jun-17 15:00
Alison Cameron
B7D2072

* 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 Recei	Custody Seal	Yes	No
A. Bradshaw Aaron Bradshaw	17/06/23	13:45				0			Present		
									Intact		

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7D2072
Report Date: 2017/06/26

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
VS480	EPU849-02	Acid Extractable Barium (Ba)	390	450	0.50	ug/g
VS480	EPU849-02	Acid Extractable Cobalt (Co)	22	34	0.10	ug/g
VS480	EPU849-02	Acid Extractable Vanadium (V)	86	130	5.0	ug/g
VS1480	EPU850-02	Acid Extractable Barium (Ba)	390	450	0.50	ug/g
VS1480	EPU850-02	Acid Extractable Cobalt (Co)	22	35	0.10	ug/g
VS1480	EPU850-02	Acid Extractable Vanadium (V)	86	130	5.0	ug/g
VS481	EPU851-02	Acid Extractable Barium (Ba)	390	650	0.50	ug/g
VS481	EPU851-02	Acid Extractable Cobalt (Co)	22	31	0.10	ug/g
VS481	EPU851-02	Acid Extractable Vanadium (V)	86	110	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.

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. #: 572155-42-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/26
Report #: R4558593
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7D0792
Received: 2017/06/22, 15:00

Sample Matrix: Soil
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	10	N/A	2017/06/23	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	10	2017/06/23	2017/06/23	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	10	2017/06/23	2017/06/23	CAM SOP-00447	EPA 6020B m
Moisture	10	N/A	2017/06/23	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	3	2017/06/22	2017/06/22	OTT SOP-00011	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	7	2017/06/22	2017/06/23	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-42-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/26
Report #: R4558593
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7D0792
Received: 2017/06/22, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7D0792
Report Date: 2017/06/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EPO942	EPO943	EPO944	EPO945	EPO946		
Sampling Date			2017/06/22 10:30	2017/06/22 11:00	2017/06/22 11:00	2017/06/22 11:30	2017/06/22 12:00		
COC Number			572155-42-01	572155-42-01	572155-42-01	572155-42-01	572155-42-01		
	UNITS	**Criteria**	**VS 470**	**VS 471**	**VS 1471**	**VS 472**	**VS 473**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5042633
Acid Extractable Arsenic (As)	ug/g	**18**	2.6	<1.0	1.1	<1.0	1.4	1.0	5042633
Acid Extractable Barium (Ba)	ug/g	**390**	81	**430**	**410**	27	390	0.50	5042633
Acid Extractable Beryllium (Be)	ug/g	**4**	0.48	0.92	0.84	0.22	1.1	0.20	5042633
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5042633
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.16	0.13	<0.10	0.10	0.10	5042633
Acid Extractable Chromium (Cr)	ug/g	**160**	65	130	110	20	110	1.0	5042633
Acid Extractable Cobalt (Co)	ug/g	**22**	**28**	**31**	**27**	3.6	**24**	0.10	5042633
Acid Extractable Copper (Cu)	ug/g	**140**	22	63	58	6.1	53	0.50	5042633
Acid Extractable Lead (Pb)	ug/g	**120**	8.5	6.8	6.8	3.2	8.0	1.0	5042633
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.67	<0.50	<0.50	<0.50	<0.50	0.50	5042633
Acid Extractable Nickel (Ni)	ug/g	**100**	27	71	67	10	61	0.50	5042633
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5042633
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5042633
Acid Extractable Thallium (Tl)	ug/g	**1**	0.18	0.50	0.48	0.078	0.53	0.050	5042633
Acid Extractable Uranium (U)	ug/g	**23**	1.4	1.6	1.5	0.73	1.7	0.050	5042633
Acid Extractable Vanadium (V)	ug/g	**86**	56	**130**	**120**	24	**120**	5.0	5042633
Acid Extractable Zinc (Zn)	ug/g	**340**	91	160	150	24	140	5.0	5042633
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5042633

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 #: B7D0792
Report Date: 2017/06/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EPO947	EPO948	EPO949	EPO950	EPO951		
Sampling Date			2017/06/22 12:30	2017/06/22 13:00	2017/06/22 13:30	2017/06/22 14:00	2017/06/22 14:15		
COC Number			572155-42-01	572155-42-01	572155-42-01	572155-42-01	572155-42-01		
	UNITS	**Criteria**	**VS 474**	**VS 475**	**VS 476**	**VS 477**	**VS 478**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.22	0.20	5042633
Acid Extractable Arsenic (As)	ug/g	**18**	1.6	<1.0	2.1	<1.0	<1.0	1.0	5042633
Acid Extractable Barium (Ba)	ug/g	**390**	**580**	25	180	23	22	0.50	5042633
Acid Extractable Beryllium (Be)	ug/g	**4**	1.1	0.29	0.64	<0.20	<0.20	0.20	5042633
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5042633
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.14	<0.10	<0.10	0.16	<0.10	0.10	5042633
Acid Extractable Chromium (Cr)	ug/g	**160**	110	20	37	13	13	1.0	5042633
Acid Extractable Cobalt (Co)	ug/g	**22**	**41**	5.5	9.9	2.9	3.3	0.10	5042633
Acid Extractable Copper (Cu)	ug/g	**140**	47	4.6	20	5.3	3.3	0.50	5042633
Acid Extractable Lead (Pb)	ug/g	**120**	10	2.6	5.4	1.8	6.1	1.0	5042633
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	0.71	<0.50	<0.50	<0.50	<0.50	0.50	5042633
Acid Extractable Nickel (Ni)	ug/g	**100**	62	11	21	7.2	7.7	0.50	5042633
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5042633
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5042633
Acid Extractable Thallium (Tl)	ug/g	**1**	0.57	0.066	0.22	0.053	<0.050	0.050	5042633
Acid Extractable Uranium (U)	ug/g	**23**	1.4	0.47	0.83	0.43	0.42	0.050	5042633
Acid Extractable Vanadium (V)	ug/g	**86**	**120**	26	53	14	17	5.0	5042633
Acid Extractable Zinc (Zn)	ug/g	**340**	170	27	62	29	35	5.0	5042633
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5042633

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 #: B7D0792
Report Date: 2017/06/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EPO942	EPO943	EPO943	EPO944	EPO945		
Sampling Date			2017/06/22 10:30	2017/06/22 11:00	2017/06/22 11:00	2017/06/22 11:00	2017/06/22 11:30		
COC Number			572155-42-01	572155-42-01	572155-42-01	572155-42-01	572155-42-01		
	UNITS	**Criteria**	**VS 470**	**VS 471**	**VS 471 Lab-Dup**	**VS 1471**	**VS 472**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	17	29		30	15	0.2	5040879
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5041357
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Surrogate Recovery (%)									
D10-Anthracene	%	-	85	82	81	83	83		5041320
D14-Terphenyl (FS)	%	-	80	80	81	81	80		5041320
D8-Acenaphthylene	%	-	76	73	73	72	74		5041320

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 Job #: B7D0792
Report Date: 2017/06/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EPO946	EPO947	EPO948	EPO949	EPO950		
Sampling Date			2017/06/22 12:00	2017/06/22 12:30	2017/06/22 13:00	2017/06/22 13:30	2017/06/22 14:00		
COC Number			572155-42-01	572155-42-01	572155-42-01	572155-42-01	572155-42-01		
	UNITS	**Criteria**	**VS 473**	**VS 474**	**VS 475**	**VS 476**	**VS 477**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	27	29	18	23	19	0.2	5040879
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	5041357
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Fluoranthene	ug/g	**0.69**	0.0090	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Pyrene	ug/g	**78**	0.0064	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5041320
Surrogate Recovery (%)									
D10-Anthracene	%	-	84	80	79	81	81		5041320
D14-Terphenyl (FS)	%	-	83	78	74	77	78		5041320
D8-Acenaphthylene	%	-	71	72	69	69	70		5041320

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 #: B7D0792
Report Date: 2017/06/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EPO951		
Sampling Date			2017/06/22 14:15		
COC Number			572155-42-01		
	UNITS	**Criteria**	**VS 478**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	-	20	0.2	5040879
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.014	5041357
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	5041320
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	5041320
Anthracene	ug/g	**0.67**	<0.0050	0.0050	5041320
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	5041320
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	5041320
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5041320
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0050	5041320
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5041320
Chrysene	ug/g	**7**	<0.0050	0.0050	5041320
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	5041320
Fluoranthene	ug/g	**0.69**	<0.0050	0.0050	5041320
Fluorene	ug/g	**62**	<0.0050	0.0050	5041320
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	5041320
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5041320
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5041320
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	5041320
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	5041320
Pyrene	ug/g	**78**	<0.0050	0.0050	5041320
Surrogate Recovery (%)					
D10-Anthracene	%	-	79		5041320
D14-Terphenyl (FS)	%	-	79		5041320
D8-Acenaphthylene	%	-	71		5041320

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 #: B7D0792
Report Date: 2017/06/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EPO942	EPO943	EPO944	EPO945	EPO946		
Sampling Date			2017/06/22 10:30	2017/06/22 11:00	2017/06/22 11:00	2017/06/22 11:30	2017/06/22 12:00		
COC Number			572155-42-01	572155-42-01	572155-42-01	572155-42-01	572155-42-01		
	UNITS	**Criteria**	**VS 470**	**VS 471**	**VS 1471**	**VS 472**	**VS 473**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.5	0.7	0.5	<0.2	0.9	0.2	5042322

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			EPO947	EPO948	EPO948	EPO949	EPO950		
Sampling Date			2017/06/22 12:30	2017/06/22 13:00	2017/06/22 13:00	2017/06/22 13:30	2017/06/22 14:00		
COC Number			572155-42-01	572155-42-01	572155-42-01	572155-42-01	572155-42-01		
	UNITS	**Criteria**	**VS 474**	**VS 475**	**VS 475 Lab-Dup**	**VS 476**	**VS 477**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.9	0.4	0.4	0.5	<0.2	0.2	5042322

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 Job #: B7D0792
Report Date: 2017/06/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EPO951		
Sampling Date			2017/06/22 14:15		
COC Number			572155-42-01		
	UNITS	**Criteria**	**VS 478**	**RDL**	**QC Batch**
Inorganics					
Chromium (VI)	ug/g	**8**	<0.2	0.2	5042322

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 #: B7D0792
Report Date: 2017/06/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EPO942
Sample ID: VS 470
Matrix: Soil

Collected: 2017/06/22
Shipped:
Received: 2017/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5041357	N/A	2017/06/23	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5042322	2017/06/23	2017/06/23	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5042633	2017/06/23	2017/06/23	Daniel Teclu
Moisture	BAL	5040879	N/A	2017/06/23	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5041320	2017/06/22	2017/06/22	Arezoo Habibagahi

Maxxam ID: EPO943
Sample ID: VS 471
Matrix: Soil

Collected: 2017/06/22
Shipped:
Received: 2017/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5041357	N/A	2017/06/23	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5042322	2017/06/23	2017/06/23	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5042633	2017/06/23	2017/06/23	Daniel Teclu
Moisture	BAL	5040879	N/A	2017/06/23	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5041320	2017/06/22	2017/06/22	Arezoo Habibagahi

Maxxam ID: EPO943 Dup
Sample ID: VS 471
Matrix: Soil

Collected: 2017/06/22
Shipped:
Received: 2017/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5041320	2017/06/22	2017/06/22	Arezoo Habibagahi

Maxxam ID: EPO944
Sample ID: VS 1471
Matrix: Soil

Collected: 2017/06/22
Shipped:
Received: 2017/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5041357	N/A	2017/06/23	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5042322	2017/06/23	2017/06/23	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5042633	2017/06/23	2017/06/23	Daniel Teclu
Moisture	BAL	5040879	N/A	2017/06/23	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5041320	2017/06/22	2017/06/22	Arezoo Habibagahi

Maxxam ID: EPO945
Sample ID: VS 472
Matrix: Soil

Collected: 2017/06/22
Shipped:
Received: 2017/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5041357	N/A	2017/06/23	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5042322	2017/06/23	2017/06/23	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5042633	2017/06/23	2017/06/23	Daniel Teclu
Moisture	BAL	5040879	N/A	2017/06/23	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5041320	2017/06/22	2017/06/23	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 #: B7D0792
Report Date: 2017/06/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EPO946
Sample ID: VS 473
Matrix: Soil

Collected: 2017/06/22
Shipped:
Received: 2017/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5041357	N/A	2017/06/23	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5042322	2017/06/23	2017/06/23	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5042633	2017/06/23	2017/06/23	Daniel Teclu
Moisture	BAL	5040879	N/A	2017/06/23	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5041320	2017/06/22	2017/06/23	Arezoo Habibagahi

Maxxam ID: EPO947
Sample ID: VS 474
Matrix: Soil

Collected: 2017/06/22
Shipped:
Received: 2017/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5041357	N/A	2017/06/23	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5042322	2017/06/23	2017/06/23	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5042633	2017/06/23	2017/06/23	Daniel Teclu
Moisture	BAL	5040879	N/A	2017/06/23	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5041320	2017/06/22	2017/06/23	Arezoo Habibagahi

Maxxam ID: EPO948
Sample ID: VS 475
Matrix: Soil

Collected: 2017/06/22
Shipped:
Received: 2017/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5041357	N/A	2017/06/23	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5042322	2017/06/23	2017/06/23	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5042633	2017/06/23	2017/06/23	Daniel Teclu
Moisture	BAL	5040879	N/A	2017/06/23	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5041320	2017/06/22	2017/06/23	Arezoo Habibagahi

Maxxam ID: EPO948 Dup
Sample ID: VS 475
Matrix: Soil

Collected: 2017/06/22
Shipped:
Received: 2017/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5042322	2017/06/23	2017/06/23	Sally Coughlin

Maxxam ID: EPO949
Sample ID: VS 476
Matrix: Soil

Collected: 2017/06/22
Shipped:
Received: 2017/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5041357	N/A	2017/06/23	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5042322	2017/06/23	2017/06/23	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5042633	2017/06/23	2017/06/23	Daniel Teclu
Moisture	BAL	5040879	N/A	2017/06/23	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5041320	2017/06/22	2017/06/23	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 #: B7D0792
Report Date: 2017/06/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EPO950
Sample ID: VS 477
Matrix: Soil

Collected: 2017/06/22
Shipped:
Received: 2017/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5041357	N/A	2017/06/23	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5042322	2017/06/23	2017/06/23	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5042633	2017/06/23	2017/06/23	Daniel Teclu
Moisture	BAL	5040879	N/A	2017/06/23	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5041320	2017/06/22	2017/06/23	Arezoo Habibagahi

Maxxam ID: EPO951
Sample ID: VS 478
Matrix: Soil

Collected: 2017/06/22
Shipped:
Received: 2017/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5041357	N/A	2017/06/23	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5042322	2017/06/23	2017/06/23	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5042633	2017/06/23	2017/06/23	Daniel Teclu
Moisture	BAL	5040879	N/A	2017/06/23	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5041320	2017/06/22	2017/06/23	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 #: B7D0792
Report Date: 2017/06/26

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	22.3°C

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 Job #: B7D0792
Report Date: 2017/06/26

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
5041320	D10-Anthracene	2017/06/22	79	50 - 130	82	50 - 130	84	%		
5041320	D14-Terphenyl (FS)	2017/06/22	79	50 - 130	81	50 - 130	80	%		
5041320	D8-Acenaphthylene	2017/06/22	74	50 - 130	76	50 - 130	74	%		
5040879	Moisture	2017/06/23							9.8	50
5041320	1-Methylnaphthalene	2017/06/22	76	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5041320	2-Methylnaphthalene	2017/06/22	78	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5041320	Acenaphthene	2017/06/22	78	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
5041320	Acenaphthylene	2017/06/22	74	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5041320	Anthracene	2017/06/22	70	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
5041320	Benzo(a)anthracene	2017/06/22	72	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5041320	Benzo(a)pyrene	2017/06/22	70	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
5041320	Benzo(b/j)fluoranthene	2017/06/22	65	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40
5041320	Benzo(g,h,i)perylene	2017/06/22	60	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40
5041320	Benzo(k)fluoranthene	2017/06/22	58	50 - 130	62	50 - 130	<0.0050	ug/g	NC	40
5041320	Chrysene	2017/06/22	67	50 - 130	60	50 - 130	<0.0050	ug/g	NC	40
5041320	Dibenz(a,h)anthracene	2017/06/22	52	50 - 130	50	50 - 130	<0.0050	ug/g	NC	40
5041320	Fluoranthene	2017/06/22	78	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
5041320	Fluorene	2017/06/22	84	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5041320	Indeno(1,2,3-cd)pyrene	2017/06/22	63	50 - 130	61	50 - 130	<0.0050	ug/g	NC	40
5041320	Naphthalene	2017/06/22	70	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
5041320	Phenanthrene	2017/06/22	69	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
5041320	Pyrene	2017/06/22	71	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
5042322	Chromium (VI)	2017/06/23	59 (1)	75 - 125	86	80 - 120	<0.2	ug/g	0.38	35
5042633	Acid Extractable Antimony (Sb)	2017/06/23	93	75 - 125	108	80 - 120	<0.20	ug/g	NC	30
5042633	Acid Extractable Arsenic (As)	2017/06/23	98	75 - 125	103	80 - 120	<1.0	ug/g	4.4	30
5042633	Acid Extractable Barium (Ba)	2017/06/23	NC	75 - 125	103	80 - 120	<0.50	ug/g	6.2	30
5042633	Acid Extractable Beryllium (Be)	2017/06/23	99	75 - 125	97	80 - 120	<0.20	ug/g	2.0	30
5042633	Acid Extractable Boron (B)	2017/06/23	99	75 - 125	100	80 - 120	<5.0	ug/g	0.81	30
5042633	Acid Extractable Cadmium (Cd)	2017/06/23	101	75 - 125	103	80 - 120	<0.10	ug/g	NC	30
5042633	Acid Extractable Chromium (Cr)	2017/06/23	107	75 - 125	103	80 - 120	<1.0	ug/g	4.6	30
5042633	Acid Extractable Cobalt (Co)	2017/06/23	101	75 - 125	103	80 - 120	<0.10	ug/g	3.8	30

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 #: B7D0792
Report Date: 2017/06/26

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
5042633	Acid Extractable Copper (Cu)	2017/06/23	100	75 - 125	102	80 - 120	<0.50	ug/g	7.6	30
5042633	Acid Extractable Lead (Pb)	2017/06/23	101	75 - 125	104	80 - 120	<1.0	ug/g	2.6	30
5042633	Acid Extractable Mercury (Hg)	2017/06/23	101	75 - 125	107	80 - 120	<0.050	ug/g		
5042633	Acid Extractable Molybdenum (Mo)	2017/06/23	100	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
5042633	Acid Extractable Nickel (Ni)	2017/06/23	98	75 - 125	98	80 - 120	<0.50	ug/g	2.7	30
5042633	Acid Extractable Selenium (Se)	2017/06/23	100	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
5042633	Acid Extractable Silver (Ag)	2017/06/23	100	75 - 125	104	80 - 120	<0.20	ug/g	NC	30
5042633	Acid Extractable Thallium (Tl)	2017/06/23	96	75 - 125	103	80 - 120	<0.050	ug/g	8.3	30
5042633	Acid Extractable Uranium (U)	2017/06/23	103	75 - 125	106	80 - 120	<0.050	ug/g	3.5	30
5042633	Acid Extractable Vanadium (V)	2017/06/23	103	75 - 125	104	80 - 120	<5.0	ug/g	4.7	30
5042633	Acid Extractable Zinc (Zn)	2017/06/23	NC	75 - 125	101	80 - 120	<5.0	ug/g	1.2	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x 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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B7D0792
Report Date: 2017/06/26

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).

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.

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 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) 817-577 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 x Fax: (613) 592-9601 x
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 #: 572155
COC #: C#572155-42-01
Project Manager: Madison Bingley

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)

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: 24hr ☒
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								# of Bottles	Comments
1		VS470	17/06/22	1030	Soil		X	X								1	
2		VS471		1100			X	X								1	
3		VS1471		1100			X	X								1	
4		VS472		1130			X	X								1	
5		VS473		1200			X	X								1	
6		VS474		1230			X	X								1	RECEIVED IN OTTAWA
7		VS475		1300			X	X								1	
8		VS476		1330			X	X								1	
9		VS477		1400			X	X								1	On ice pack
10		VS478		1415			X	X								1	

22-Jun-17 15:00
Alison Cameron
B7D0792
KIV OTT 001

* 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	17/06/22	1420	Mariana Vascon / Vascon	2017/06/22	15:00	0

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	22.22.23	Present	☑	
		Intact	☑	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7D0792
Report Date: 2017/06/26

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
VS 470	EPO942-02	Acid Extractable Cobalt (Co)	22	28	0.10	ug/g
VS 471	EPO943-02	Acid Extractable Barium (Ba)	390	430	0.50	ug/g
VS 471	EPO943-02	Acid Extractable Cobalt (Co)	22	31	0.10	ug/g
VS 471	EPO943-02	Acid Extractable Vanadium (V)	86	130	5.0	ug/g
VS 1471	EPO944-02	Acid Extractable Barium (Ba)	390	410	0.50	ug/g
VS 1471	EPO944-02	Acid Extractable Cobalt (Co)	22	27	0.10	ug/g
VS 1471	EPO944-02	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 473	EPO946-02	Acid Extractable Cobalt (Co)	22	24	0.10	ug/g
VS 473	EPO946-02	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS 474	EPO947-02	Acid Extractable Barium (Ba)	390	580	0.50	ug/g
VS 474	EPO947-02	Acid Extractable Cobalt (Co)	22	41	0.10	ug/g
VS 474	EPO947-02	Acid Extractable Vanadium (V)	86	120	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.

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. #: 572155-43-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/21
Report #: R4553390
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7C8241
Received: 2017/06/20, 15:00

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	5	N/A	2017/06/21	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	5	2017/06/21	2017/06/21	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	5	2017/06/21	2017/06/21	CAM SOP-00447	EPA 6020B m
Moisture	5	N/A	2017/06/21	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	5	2017/06/20	2017/06/20	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-43-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/21
Report #: R4553390
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7C8241
Received: 2017/06/20, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7C8241
Report Date: 2017/06/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EPD399	EPD400	EPD401	EPD402	EPD403		
Sampling Date			2017/06/20 10:00	2017/06/20 11:00	2017/06/20 12:00	2017/06/20 13:00	2017/06/20 14:00		
COC Number			572155-43-01	572155-43-01	572155-43-01	572155-43-01	572155-43-01		
	UNITS	**Criteria**	**VS465**	**VS466**	**VS467**	**VS468**	**VS469**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5038302
Acid Extractable Arsenic (As)	ug/g	**18**	1.2	2.2	<1.0	<1.0	1.0	1.0	5038302
Acid Extractable Barium (Ba)	ug/g	**390**	97	86	33	12	39	0.50	5038302
Acid Extractable Beryllium (Be)	ug/g	**4**	0.42	0.39	0.24	<0.20	0.25	0.20	5038302
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5038302
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5038302
Acid Extractable Chromium (Cr)	ug/g	**160**	27	41	24	13	22	1.0	5038302
Acid Extractable Cobalt (Co)	ug/g	**22**	6.7	11	3.7	2.8	4.4	0.10	5038302
Acid Extractable Copper (Cu)	ug/g	**140**	18	13	3.9	5.4	9.8	0.50	5038302
Acid Extractable Lead (Pb)	ug/g	**120**	3.7	6.2	5.8	2.1	2.3	1.0	5038302
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.55	<0.50	<0.50	<0.50	0.50	5038302
Acid Extractable Nickel (Ni)	ug/g	**100**	16	17	9.9	6.8	11	0.50	5038302
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5038302
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5038302
Acid Extractable Thallium (Tl)	ug/g	**1**	0.13	0.15	0.10	<0.050	0.082	0.050	5038302
Acid Extractable Uranium (U)	ug/g	**23**	0.97	2.3	0.80	0.80	1.2	0.050	5038302
Acid Extractable Vanadium (V)	ug/g	**86**	40	45	20	19	27	5.0	5038302
Acid Extractable Zinc (Zn)	ug/g	**340**	42	47	45	17	25	5.0	5038302
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5038302

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 #: B7C8241
Report Date: 2017/06/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EPD399	EPD400	EPD400	EPD401	EPD402		
Sampling Date			2017/06/20 10:00	2017/06/20 11:00	2017/06/20 11:00	2017/06/20 12:00	2017/06/20 13:00		
COC Number			572155-43-01	572155-43-01	572155-43-01	572155-43-01	572155-43-01		
	UNITS	**Criteria**	**VS465**	**VS466**	**VS466 Lab-Dup**	**VS467**	**VS468**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	19	15		28	15	0.2	5036510
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5036460
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5036949
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5036949
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5036949
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	0.014	0.0075	0.0050	5036949
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	0.017	0.0075	0.0050	5036949
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.020	0.015	0.0050	5036949
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	0.0091	0.0085	0.0050	5036949
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0084	<0.0050	0.0050	5036949
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	0.014	0.0070	0.0050	5036949
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5036949
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	0.032	0.012	0.0050	5036949
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5036949
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	0.0078	0.0080	0.0050	5036949
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5036949
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5036949
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5036949
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	0.017	<0.0050	0.0050	5036949
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	0.025	0.011	0.0050	5036949
Surrogate Recovery (%)									
D10-Anthracene	%	-	76	75	75	74	75		5036949
D14-Terphenyl (FS)	%	-	66	64	64	63	65		5036949
D8-Acenaphthylene	%	-	75	73	73	70	73		5036949

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 Job #: B7C8241
Report Date: 2017/06/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EPD403		
Sampling Date			2017/06/20 14:00		
COC Number			572155-43-01		
	UNITS	**Criteria**	**VS469**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	-	15	0.2	5036510
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.014	5036460
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	5036949
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	5036949
Anthracene	ug/g	**0.67**	<0.0050	0.0050	5036949
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	5036949
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	5036949
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5036949
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0050	5036949
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5036949
Chrysene	ug/g	**7**	<0.0050	0.0050	5036949
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	5036949
Fluoranthene	ug/g	**0.69**	<0.0050	0.0050	5036949
Fluorene	ug/g	**62**	<0.0050	0.0050	5036949
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	5036949
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5036949
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5036949
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	5036949
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	5036949
Pyrene	ug/g	**78**	<0.0050	0.0050	5036949
Surrogate Recovery (%)					
D10-Anthracene	%	-	73		5036949
D14-Terphenyl (FS)	%	-	63		5036949
D8-Acenaphthylene	%	-	71		5036949

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 #: B7C8241
Report Date: 2017/06/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EPD399	EPD400	EPD401	EPD402	EPD403		
Sampling Date			2017/06/20 10:00	2017/06/20 11:00	2017/06/20 12:00	2017/06/20 13:00	2017/06/20 14:00		
COC Number			572155-43-01	572155-43-01	572155-43-01	572155-43-01	572155-43-01		
	UNITS	**Criteria**	**VS465**	**VS466**	**VS467**	**VS468**	**VS469**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	0.3	0.3	0.2	0.4	0.2	5037967

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			EPD403		
Sampling Date			2017/06/20 14:00		
COC Number			572155-43-01		
	UNITS	**Criteria**	**VS469 Lab-Dup**	**RDL**	**QC Batch**
Inorganics					
Chromium (VI)	ug/g	**8**	0.4	0.2	5037967

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 Job #: B7C8241
Report Date: 2017/06/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EPD399
Sample ID: VS465
Matrix: Soil

Collected: 2017/06/20
Shipped:
Received: 2017/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5036460	N/A	2017/06/21	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5037967	2017/06/21	2017/06/21	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5038302	2017/06/21	2017/06/21	Viviana Canzonieri
Moisture	BAL	5036510	N/A	2017/06/21	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5036949	2017/06/20	2017/06/20	Arezoo Habibagahi

Maxxam ID: EPD400
Sample ID: VS466
Matrix: Soil

Collected: 2017/06/20
Shipped:
Received: 2017/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5036460	N/A	2017/06/21	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5037967	2017/06/21	2017/06/21	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5038302	2017/06/21	2017/06/21	Viviana Canzonieri
Moisture	BAL	5036510	N/A	2017/06/21	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5036949	2017/06/20	2017/06/20	Arezoo Habibagahi

Maxxam ID: EPD400 Dup
Sample ID: VS466
Matrix: Soil

Collected: 2017/06/20
Shipped:
Received: 2017/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5036949	2017/06/20	2017/06/20	Arezoo Habibagahi

Maxxam ID: EPD401
Sample ID: VS467
Matrix: Soil

Collected: 2017/06/20
Shipped:
Received: 2017/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5036460	N/A	2017/06/21	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5037967	2017/06/21	2017/06/21	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5038302	2017/06/21	2017/06/21	Viviana Canzonieri
Moisture	BAL	5036510	N/A	2017/06/21	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5036949	2017/06/20	2017/06/20	Arezoo Habibagahi

Maxxam ID: EPD402
Sample ID: VS468
Matrix: Soil

Collected: 2017/06/20
Shipped:
Received: 2017/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5036460	N/A	2017/06/21	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5037967	2017/06/21	2017/06/21	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5038302	2017/06/21	2017/06/21	Viviana Canzonieri
Moisture	BAL	5036510	N/A	2017/06/21	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5036949	2017/06/20	2017/06/20	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 #: B7C8241
Report Date: 2017/06/21

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EPD403
Sample ID: VS469
Matrix: Soil

Collected: 2017/06/20
Shipped:
Received: 2017/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5036460	N/A	2017/06/21	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5037967	2017/06/21	2017/06/21	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5038302	2017/06/21	2017/06/21	Viviana Canzonieri
Moisture	BAL	5036510	N/A	2017/06/21	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5036949	2017/06/20	2017/06/20	Arezoo Habibagahi

Maxxam ID: EPD403 Dup
Sample ID: VS469
Matrix: Soil

Collected: 2017/06/20
Shipped:
Received: 2017/06/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5037967	2017/06/21	2017/06/21	Sally Coughlin

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 #: B7C8241
Report Date: 2017/06/21

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	26.0°C

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 #: B7C8241
Report Date: 2017/06/21

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
5036949	D10-Anthracene	2017/06/20	77	50 - 130	76	50 - 130	82	%		
5036949	D14-Terphenyl (FS)	2017/06/20	67	50 - 130	66	50 - 130	66	%		
5036949	D8-Acenaphthylene	2017/06/20	77	50 - 130	77	50 - 130	77	%		
5036510	Moisture	2017/06/21							26	50
5036949	1-Methylnaphthalene	2017/06/20	87	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5036949	2-Methylnaphthalene	2017/06/20	83	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5036949	Acenaphthene	2017/06/20	87	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5036949	Acenaphthylene	2017/06/20	77	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
5036949	Anthracene	2017/06/20	75	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5036949	Benzo(a)anthracene	2017/06/20	83	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5036949	Benzo(a)pyrene	2017/06/20	77	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
5036949	Benzo(b/j)fluoranthene	2017/06/20	75	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5036949	Benzo(g,h,i)perylene	2017/06/20	81	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
5036949	Benzo(k)fluoranthene	2017/06/20	78	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
5036949	Chrysene	2017/06/20	79	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
5036949	Dibenz(a,h)anthracene	2017/06/20	69	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40
5036949	Fluoranthene	2017/06/20	78	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5036949	Fluorene	2017/06/20	87	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5036949	Indeno(1,2,3-cd)pyrene	2017/06/20	86	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5036949	Naphthalene	2017/06/20	72	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
5036949	Phenanthrene	2017/06/20	77	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
5036949	Pyrene	2017/06/20	76	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
5037967	Chromium (VI)	2017/06/21	82	75 - 125	87	80 - 120	<0.2	ug/g	3.1	35
5038302	Acid Extractable Antimony (Sb)	2017/06/21	99	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
5038302	Acid Extractable Arsenic (As)	2017/06/21	97	75 - 125	101	80 - 120	<1.0	ug/g	NC	30
5038302	Acid Extractable Barium (Ba)	2017/06/21	91	75 - 125	93	80 - 120	<0.50	ug/g	8.6	30
5038302	Acid Extractable Beryllium (Be)	2017/06/21	92	75 - 125	93	80 - 120	<0.20	ug/g	NC	30
5038302	Acid Extractable Boron (B)	2017/06/21	91	75 - 125	90	80 - 120	<5.0	ug/g		
5038302	Acid Extractable Cadmium (Cd)	2017/06/21	98	75 - 125	100	80 - 120	<0.10	ug/g	NC	30
5038302	Acid Extractable Chromium (Cr)	2017/06/21	96	75 - 125	98	80 - 120	<1.0	ug/g	0.56	30
5038302	Acid Extractable Cobalt (Co)	2017/06/21	96	75 - 125	99	80 - 120	<0.10	ug/g	5.7	30

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 #: B7C8241
Report Date: 2017/06/21

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
5038302	Acid Extractable Copper (Cu)	2017/06/21	94	75 - 125	97	80 - 120	<0.50	ug/g	6.3	30
5038302	Acid Extractable Lead (Pb)	2017/06/21	96	75 - 125	99	80 - 120	<1.0	ug/g	1.9	30
5038302	Acid Extractable Mercury (Hg)	2017/06/21	91	75 - 125	101	80 - 120	<0.050	ug/g	NC	30
5038302	Acid Extractable Molybdenum (Mo)	2017/06/21	99	75 - 125	98	80 - 120	<0.50	ug/g	NC	30
5038302	Acid Extractable Nickel (Ni)	2017/06/21	96	75 - 125	97	80 - 120	<0.50	ug/g	0.53	30
5038302	Acid Extractable Selenium (Se)	2017/06/21	97	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
5038302	Acid Extractable Silver (Ag)	2017/06/21	99	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5038302	Acid Extractable Thallium (Tl)	2017/06/21	95	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
5038302	Acid Extractable Uranium (U)	2017/06/21	98	75 - 125	100	80 - 120	<0.050	ug/g	5.5	30
5038302	Acid Extractable Vanadium (V)	2017/06/21	98	75 - 125	98	80 - 120	<5.0	ug/g	4.9	30
5038302	Acid Extractable Zinc (Zn)	2017/06/21	97	75 - 125	96	80 - 120	<5.0	ug/g	6.4	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.

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 (absolute difference <= 2x RDL).

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 #: B7C8241
Report Date: 2017/06/21

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).

Cristina Carriere, Scientific Services

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.

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 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 #: 572155
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113	COC #: C#572155-43-01	Project Manager: Madison Bingley
Tel:	(613) 592-9600 x Fax: (613) 592-9601 x	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)? ___

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

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: 24hr ☒
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	# of Bottles	Comments
1		VS465	17/06/20	1000	Soil		X	X	1	
2		VS466	↓	1100	↓		X	X	1	
3		VS467	↓	1200	↓		X	X	1	
4		VS468	↓	1300	↓		X	X	1	
5		VS469	↓	1400	↓		X	X	1	
6										
7										
8										
9										On ice
10										

20-Jun-17 15:00
Alison Cameron
B7C8241
K1V 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
A. Bradshaw / Aaron Bradshaw	17/06/20	14:15	Mariana Vascon / Vascon	2017/06/20	15:00	0

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	26, 26, 26	Present	Y	
		Intact	Y	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7C8241
Report Date: 2017/06/21

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.

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. #: 572155-44-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/16
Report #: R4535423
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7C4530
Received: 2017/06/15, 15:00

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	4	N/A	2017/06/16	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	4	2017/06/16	2017/06/16	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	4	2017/06/16	2017/06/16	CAM SOP-00447	EPA 6020B m
Moisture	4	N/A	2017/06/16	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	4	2017/06/15	2017/06/15	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-44-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/16
Report #: R4535423
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7C4530
Received: 2017/06/15, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7C4530
Report Date: 2017/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EOK465	EOK466	EOK467	EOK468	EOK468		
Sampling Date			2017/06/15 10:00	2017/06/15 12:00	2017/06/15 12:00	2017/06/15 13:00	2017/06/15 13:00		
COC Number			572155-44-01	572155-44-01	572155-44-01	572155-44-01	572155-44-01		
	UNITS	**Criteria**	**VS462**	**VS463**	**VS1463**	**VS464**	**VS464 Lab-Dup**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5031763
Acid Extractable Arsenic (As)	ug/g	**18**	1.6	1.4	1.3	1.0	<1.0	1.0	5031763
Acid Extractable Barium (Ba)	ug/g	**390**	130	**400**	370	29	30	0.50	5031763
Acid Extractable Beryllium (Be)	ug/g	**4**	0.41	0.94	0.93	0.28	0.27	0.20	5031763
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5031763
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.26	0.33	<0.10	<0.10	0.10	5031763
Acid Extractable Chromium (Cr)	ug/g	**160**	31	110	100	22	21	1.0	5031763
Acid Extractable Cobalt (Co)	ug/g	**22**	9.5	**28**	**26**	5.1	4.8	0.10	5031763
Acid Extractable Copper (Cu)	ug/g	**140**	18	55	52	9.9	8.8	0.50	5031763
Acid Extractable Lead (Pb)	ug/g	**120**	4.1	7.3	6.9	2.2	2.2	1.0	5031763
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.50	0.56	<0.50	<0.50	0.50	5031763
Acid Extractable Nickel (Ni)	ug/g	**100**	19	65	61	11	11	0.50	5031763
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5031763
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5031763
Acid Extractable Thallium (Tl)	ug/g	**1**	0.14	0.49	0.46	0.064	0.058	0.050	5031763
Acid Extractable Uranium (U)	ug/g	**23**	0.57	2.4	2.3	0.86	0.85	0.050	5031763
Acid Extractable Vanadium (V)	ug/g	**86**	47	**120**	**110**	31	29	5.0	5031763
Acid Extractable Zinc (Zn)	ug/g	**340**	51	140	130	22	22	5.0	5031763
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5031763

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 Job #: B7C4530
Report Date: 2017/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EOK465	EOK466	EOK466	EOK467	EOK468		
Sampling Date			2017/06/15 10:00	2017/06/15 12:00	2017/06/15 12:00	2017/06/15 12:00	2017/06/15 13:00		
COC Number			572155-44-01	572155-44-01	572155-44-01	572155-44-01	572155-44-01		
	UNITS	**Criteria**	**VS462**	**VS463**	**VS463 Lab-Dup**	**VS1463**	**VS464**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	23	28		26	19	0.2	5029710
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5030129
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5030154
Surrogate Recovery (%)									
D10-Anthracene	%	-	74	76	78	75	75		5030154
D14-Terphenyl (FS)	%	-	69	70	70	68	65		5030154
D8-Acenaphthylene	%	-	69	73	73	71	69		5030154

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 Job #: B7C4530
Report Date: 2017/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EOK465	EOK466	EOK466	EOK467	EOK468		
Sampling Date			2017/06/15 10:00	2017/06/15 12:00	2017/06/15 12:00	2017/06/15 12:00	2017/06/15 13:00		
COC Number			572155-44-01	572155-44-01	572155-44-01	572155-44-01	572155-44-01		
	UNITS	**Criteria**	**VS462**	**VS463**	**VS463 Lab-Dup**	**VS1463**	**VS464**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	1.0	1.0	0.9	0.3	0.2	5031340

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 Job #: B7C4530
Report Date: 2017/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EOK465
Sample ID: VS462
Matrix: Soil

Collected: 2017/06/15
Shipped:
Received: 2017/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5030129	N/A	2017/06/16	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5031340	2017/06/16	2017/06/16	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5031763	2017/06/16	2017/06/16	Daniel Teclu
Moisture	BAL	5029710	N/A	2017/06/16	Lyndsey Hart
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5030154	2017/06/15	2017/06/15	Arezoo Habibagahi

Maxxam ID: EOK466
Sample ID: VS463
Matrix: Soil

Collected: 2017/06/15
Shipped:
Received: 2017/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5030129	N/A	2017/06/16	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5031340	2017/06/16	2017/06/16	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5031763	2017/06/16	2017/06/16	Daniel Teclu
Moisture	BAL	5029710	N/A	2017/06/16	Lyndsey Hart
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5030154	2017/06/15	2017/06/15	Arezoo Habibagahi

Maxxam ID: EOK466 Dup
Sample ID: VS463
Matrix: Soil

Collected: 2017/06/15
Shipped:
Received: 2017/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5031340	2017/06/16	2017/06/16	Manoj Kumar Gera
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5030154	2017/06/15	2017/06/15	Arezoo Habibagahi

Maxxam ID: EOK467
Sample ID: VS1463
Matrix: Soil

Collected: 2017/06/15
Shipped:
Received: 2017/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5030129	N/A	2017/06/16	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5031340	2017/06/16	2017/06/16	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5031763	2017/06/16	2017/06/16	Daniel Teclu
Moisture	BAL	5029710	N/A	2017/06/16	Lyndsey Hart
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5030154	2017/06/15	2017/06/15	Arezoo Habibagahi

Maxxam ID: EOK468
Sample ID: VS464
Matrix: Soil

Collected: 2017/06/15
Shipped:
Received: 2017/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5030129	N/A	2017/06/16	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5031340	2017/06/16	2017/06/16	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5031763	2017/06/16	2017/06/16	Daniel Teclu
Moisture	BAL	5029710	N/A	2017/06/16	Lyndsey Hart
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5030154	2017/06/15	2017/06/15	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 #: B7C4530
Report Date: 2017/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EOK468 Dup
Sample ID: VS464
Matrix: Soil

Collected: 2017/06/15
Shipped:
Received: 2017/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5031763	2017/06/16	2017/06/16	Daniel Teclu

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 #: B7C4530
Report Date: 2017/06/16

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	21.3°C

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 #: B7C4530
Report Date: 2017/06/16

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
5030154	D10-Anthracene	2017/06/15	79	50 - 130	78	50 - 130	79	%		
5030154	D14-Terphenyl (FS)	2017/06/15	71	50 - 130	71	50 - 130	70	%		
5030154	D8-Acenaphthylene	2017/06/15	76	50 - 130	72	50 - 130	73	%		
5029710	Moisture	2017/06/16							7.5	50
5030154	1-Methylnaphthalene	2017/06/15	84	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5030154	2-Methylnaphthalene	2017/06/15	81	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5030154	Acenaphthene	2017/06/15	85	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5030154	Acenaphthylene	2017/06/15	73	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5030154	Anthracene	2017/06/15	73	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5030154	Benzo(a)anthracene	2017/06/15	80	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5030154	Benzo(a)pyrene	2017/06/15	74	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
5030154	Benzo(b/j)fluoranthene	2017/06/15	73	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
5030154	Benzo(g,h,i)perylene	2017/06/15	73	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5030154	Benzo(k)fluoranthene	2017/06/15	76	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
5030154	Chrysene	2017/06/15	77	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5030154	Dibenz(a,h)anthracene	2017/06/15	66	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40
5030154	Fluoranthene	2017/06/15	76	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
5030154	Fluorene	2017/06/15	85	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5030154	Indeno(1,2,3-cd)pyrene	2017/06/15	77	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5030154	Naphthalene	2017/06/15	71	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
5030154	Phenanthrene	2017/06/15	75	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
5030154	Pyrene	2017/06/15	74	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
5031340	Chromium (VI)	2017/06/16	83	75 - 125	91	80 - 120	<0.2	ug/g	3.2	35
5031763	Acid Extractable Antimony (Sb)	2017/06/16	85	75 - 125	96	80 - 120	<0.20	ug/g	NC	30
5031763	Acid Extractable Arsenic (As)	2017/06/16	96	75 - 125	100	80 - 120	<1.0	ug/g	4.5	30
5031763	Acid Extractable Barium (Ba)	2017/06/16	NC	75 - 125	98	80 - 120	<0.50	ug/g	0.69	30
5031763	Acid Extractable Beryllium (Be)	2017/06/16	95	75 - 125	97	80 - 120	<0.20	ug/g	2.8	30
5031763	Acid Extractable Boron (B)	2017/06/16	92	75 - 125	94	80 - 120	<5.0	ug/g	NC	30
5031763	Acid Extractable Cadmium (Cd)	2017/06/16	96	75 - 125	94	80 - 120	<0.10	ug/g	NC	30
5031763	Acid Extractable Chromium (Cr)	2017/06/16	95	75 - 125	103	80 - 120	<1.0	ug/g	5.1	30
5031763	Acid Extractable Cobalt (Co)	2017/06/16	99	75 - 125	103	80 - 120	<0.10	ug/g	6.8	30

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 #: B7C4530
Report Date: 2017/06/16

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
5031763	Acid Extractable Copper (Cu)	2017/06/16	97	75 - 125	100	80 - 120	<0.50	ug/g	12	30
5031763	Acid Extractable Lead (Pb)	2017/06/16	93	75 - 125	98	80 - 120	<1.0	ug/g	0.21	30
5031763	Acid Extractable Mercury (Hg)	2017/06/16	90	75 - 125	93	80 - 120	<0.050	ug/g	NC	30
5031763	Acid Extractable Molybdenum (Mo)	2017/06/16	97	75 - 125	98	80 - 120	<0.50	ug/g	NC	30
5031763	Acid Extractable Nickel (Ni)	2017/06/16	98	75 - 125	102	80 - 120	<0.50	ug/g	4.0	30
5031763	Acid Extractable Selenium (Se)	2017/06/16	96	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
5031763	Acid Extractable Silver (Ag)	2017/06/16	98	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
5031763	Acid Extractable Thallium (Tl)	2017/06/16	95	75 - 125	97	80 - 120	<0.050	ug/g	9.3	30
5031763	Acid Extractable Uranium (U)	2017/06/16	94	75 - 125	99	80 - 120	<0.050	ug/g	0.37	30
5031763	Acid Extractable Vanadium (V)	2017/06/16	NC	75 - 125	100	80 - 120	<5.0	ug/g	7.5	30
5031763	Acid Extractable Zinc (Zn)	2017/06/16	103	75 - 125	104	80 - 120	<5.0	ug/g	0.85	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7C4530
Report Date: 2017/06/16

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, 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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	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#572155-44-01	Madison Bingley
				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)? _____

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: _____ Time Required: 24hr ☑
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		VS462	17/06/15	1000	Soil		X	X							1	
2		VS463	↓	1200	↓		X	X							1	
3		VS1463	↓	1200	↓		X	X							1	
4		VS464	↓	1300	↓		X	X							1	
5																
6																RECEIVED IN OTTAWA
7																
8																
9																ON the Ice Pack
10																

15-Jun-17 15:00
Alison Cameron
B7C4530
VIY OTT.001

* 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	17/06/15	14:15	Zoni Jampu	2017/06/15	15:00	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	23, 20, 21	Present		
		Intact	☑	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7C4530
Report Date: 2017/06/16

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
VS463	EOK466-02	Acid Extractable Barium (Ba)	390	400	0.50	ug/g
VS463	EOK466-02	Acid Extractable Cobalt (Co)	22	28	0.10	ug/g
VS463	EOK466-02	Acid Extractable Vanadium (V)	86	120	5.0	ug/g
VS1463	EOK467-02	Acid Extractable Cobalt (Co)	22	26	0.10	ug/g
VS1463	EOK467-02	Acid Extractable Vanadium (V)	86	110	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.

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. #: 572155-45-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/16
Report #: R4534981
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7C3385
Received: 2017/06/14, 15:00

Sample Matrix: Soil
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	10	N/A	2017/06/15	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	10	2017/06/15	2017/06/15	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	10	2017/06/15	2017/06/15	CAM SOP-00447	EPA 6020B m
Moisture	10	N/A	2017/06/15	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	10	2017/06/14	2017/06/14	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-45-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/16
Report #: R4534981
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7C3385
Received: 2017/06/14, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7C3385
Report Date: 2017/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		EOE846	EOE847	EOE848	EOE849	EOE850		
Sampling Date		2017/06/14 10:00	2017/06/14 10:00	2017/06/14 10:30	2017/06/14 11:00	2017/06/14 11:30		
COC Number		572155-45-01	572155-45-01	572155-45-01	572155-45-01	572155-45-01		
	UNITS	VS453	VS1453	VS454	VS455	VS456	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5029466
Acid Extractable Arsenic (As)	ug/g	<1.0	<1.0	<1.0	<1.0	1.7	1.0	5029466
Acid Extractable Barium (Ba)	ug/g	27	28	27	20	370	0.50	5029466
Acid Extractable Beryllium (Be)	ug/g	<0.20	<0.20	<0.20	<0.20	1.0	0.20	5029466
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	<5.0	<5.0	5.4	5.0	5029466
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5029466
Acid Extractable Chromium (Cr)	ug/g	14	15	15	14	120	1.0	5029466
Acid Extractable Cobalt (Co)	ug/g	3.4	3.7	2.8	3.8	26	0.10	5029466
Acid Extractable Copper (Cu)	ug/g	4.7	5.4	3.6	6.2	60	0.50	5029466
Acid Extractable Lead (Pb)	ug/g	2.1	2.6	1.7	2.9	9.9	1.0	5029466
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5029466
Acid Extractable Nickel (Ni)	ug/g	7.4	8.2	7.9	8.3	66	0.50	5029466
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5029466
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5029466
Acid Extractable Thallium (Tl)	ug/g	0.058	0.065	<0.050	<0.050	0.53	0.050	5029466
Acid Extractable Uranium (U)	ug/g	0.52	0.55	0.48	0.54	1.9	0.050	5029466
Acid Extractable Vanadium (V)	ug/g	19	21	13	19	120	5.0	5029466
Acid Extractable Zinc (Zn)	ug/g	23	27	24	16	140	5.0	5029466
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5029466

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.maxxam.ca

Maxxam Job #: B7C3385
Report Date: 2017/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		EOE851	EOE852	EOE853	EOE854	EOE855		
Sampling Date		2017/06/14 12:00	2017/06/14 12:30	2017/06/14 13:00	2017/06/14 13:30	2017/06/14 14:00		
COC Number		572155-45-01	572155-45-01	572155-45-01	572155-45-01	572155-45-01		
	UNITS	VS457	VS458	VS459	VS460	VS461	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5029466
Acid Extractable Arsenic (As)	ug/g	<1.0	1.9	<1.0	2.0	1.7	1.0	5029466
Acid Extractable Barium (Ba)	ug/g	380	140	140	150	110	0.50	5029466
Acid Extractable Beryllium (Be)	ug/g	0.85	0.52	0.48	0.52	0.38	0.20	5029466
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5029466
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	0.10	<0.10	<0.10	0.10	5029466
Acid Extractable Chromium (Cr)	ug/g	120	37	37	34	27	1.0	5029466
Acid Extractable Cobalt (Co)	ug/g	27	8.5	7.8	11	7.3	0.10	5029466
Acid Extractable Copper (Cu)	ug/g	64	21	21	24	19	0.50	5029466
Acid Extractable Lead (Pb)	ug/g	7.0	4.2	4.3	4.6	3.8	1.0	5029466
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5029466
Acid Extractable Nickel (Ni)	ug/g	70	22	22	22	16	0.50	5029466
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5029466
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5029466
Acid Extractable Thallium (Tl)	ug/g	0.51	0.18	0.16	0.19	0.15	0.050	5029466
Acid Extractable Uranium (U)	ug/g	1.5	0.86	1.4	0.70	0.69	0.050	5029466
Acid Extractable Vanadium (V)	ug/g	120	50	46	55	44	5.0	5029466
Acid Extractable Zinc (Zn)	ug/g	140	56	62	60	45	5.0	5029466
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5029466

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.maxxam.ca

Maxxam Job #: B7C3385
Report Date: 2017/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID		EOE846	EOE847	EOE847	EOE848	EOE849	EOE850		
Sampling Date		2017/06/14 10:00	2017/06/14 10:00	2017/06/14 10:00	2017/06/14 10:30	2017/06/14 11:00	2017/06/14 11:30		
COC Number		572155-45-01	572155-45-01	572155-45-01	572155-45-01	572155-45-01	572155-45-01		
	UNITS	VS453	VS1453	VS1453 Lab-Dup	VS454	VS455	VS456	RDL	QC Batch
Inorganics									
Moisture	%	20	20		16	15	27	0.2	5027595
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	<0.014	<0.014		<0.014	<0.014	<0.014	0.014	5028075
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Anthracene	ug/g	0.0052	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Benzo(a)anthracene	ug/g	0.0073	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Benzo(b/j)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0054	0.0050	5028121
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Chrysene	ug/g	0.0068	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Fluoranthene	ug/g	0.020	<0.0050	<0.0050	<0.0050	0.0070	<0.0050	0.0050	5028121
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Phenanthrene	ug/g	0.015	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Pyrene	ug/g	0.016	<0.0050	<0.0050	<0.0050	0.0057	<0.0050	0.0050	5028121
Surrogate Recovery (%)									
D10-Anthracene	%	94	101	97	100	99	97		5028121
D14-Terphenyl (FS)	%	77	78	75	74	74	73		5028121
D8-Acenaphthylene	%	74	73	73	74	73	70		5028121

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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 #: B7C3385
Report Date: 2017/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID		EOE851	EOE852	EOE853	EOE854	EOE855		
Sampling Date		2017/06/14 12:00	2017/06/14 12:30	2017/06/14 13:00	2017/06/14 13:30	2017/06/14 14:00		
COC Number		572155-45-01	572155-45-01	572155-45-01	572155-45-01	572155-45-01		
	UNITS	VS457	VS458	VS459	VS460	VS461	RDL	QC Batch
Inorganics								
Moisture	%	26	22	21	23	23	0.2	5027595
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	5028075
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Benzo(b/j)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5028121
Surrogate Recovery (%)								
D10-Anthracene	%	99	103	91	104	98		5028121
D14-Terphenyl (FS)	%	74	72	71	73	74		5028121
D8-Acenaphthylene	%	72	69	70	70	71		5028121

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.maxxam.ca

Maxxam Job #: B7C3385
Report Date: 2017/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		EOE846	EOE847	EOE848	EOE849	EOE849	EOE850		
Sampling Date		2017/06/14 10:00	2017/06/14 10:00	2017/06/14 10:30	2017/06/14 11:00	2017/06/14 11:00	2017/06/14 11:30		
COC Number		572155-45-01	572155-45-01	572155-45-01	572155-45-01	572155-45-01	572155-45-01		
	UNITS	**VS453**	**VS1453**	**VS454**	**VS455**	**VS455 Lab-Dup**	**VS456**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	0.3	0.3	0.3	0.2	0.2	0.6	0.2	5029130

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		EOE851	EOE852	EOE853	EOE854	EOE855		
Sampling Date		2017/06/14 12:00	2017/06/14 12:30	2017/06/14 13:00	2017/06/14 13:30	2017/06/14 14:00		
COC Number		572155-45-01	572155-45-01	572155-45-01	572155-45-01	572155-45-01		
	UNITS	**VS457**	**VS458**	**VS459**	**VS460**	**VS461**	**RDL**	**QC Batch**
Inorganics								
Chromium (VI)	ug/g	0.4	0.6	0.5	0.4	0.4	0.2	5029130

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.maxxam.ca

Maxxam Job #: B7C3385
Report Date: 2017/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EOE846
Sample ID: VS453
Matrix: Soil

Collected: 2017/06/14
Shipped:
Received: 2017/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5028075	N/A	2017/06/15	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5029130	2017/06/15	2017/06/15	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5029466	2017/06/15	2017/06/15	Daniel Teclu
Moisture	BAL	5027595	N/A	2017/06/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5028121	2017/06/14	2017/06/14	Arezoo Habibagahi

Maxxam ID: EOE847
Sample ID: VS1453
Matrix: Soil

Collected: 2017/06/14
Shipped:
Received: 2017/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5028075	N/A	2017/06/15	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5029130	2017/06/15	2017/06/15	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5029466	2017/06/15	2017/06/15	Daniel Teclu
Moisture	BAL	5027595	N/A	2017/06/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5028121	2017/06/14	2017/06/14	Arezoo Habibagahi

Maxxam ID: EOE847 Dup
Sample ID: VS1453
Matrix: Soil

Collected: 2017/06/14
Shipped:
Received: 2017/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5028121	2017/06/14	2017/06/14	Arezoo Habibagahi

Maxxam ID: EOE848
Sample ID: VS454
Matrix: Soil

Collected: 2017/06/14
Shipped:
Received: 2017/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5028075	N/A	2017/06/15	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5029130	2017/06/15	2017/06/15	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5029466	2017/06/15	2017/06/15	Daniel Teclu
Moisture	BAL	5027595	N/A	2017/06/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5028121	2017/06/14	2017/06/14	Arezoo Habibagahi

Maxxam ID: EOE849
Sample ID: VS455
Matrix: Soil

Collected: 2017/06/14
Shipped:
Received: 2017/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5028075	N/A	2017/06/15	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5029130	2017/06/15	2017/06/15	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5029466	2017/06/15	2017/06/15	Daniel Teclu
Moisture	BAL	5027595	N/A	2017/06/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5028121	2017/06/14	2017/06/14	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 #: B7C3385
Report Date: 2017/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EOE849 Dup
Sample ID: VS455
Matrix: Soil

Collected: 2017/06/14
Shipped:
Received: 2017/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5029130	2017/06/15	2017/06/15	Manoj Kumar Gera

Maxxam ID: EOE850
Sample ID: VS456
Matrix: Soil

Collected: 2017/06/14
Shipped:
Received: 2017/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5028075	N/A	2017/06/15	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5029130	2017/06/15	2017/06/15	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5029466	2017/06/15	2017/06/15	Daniel Teclu
Moisture	BAL	5027595	N/A	2017/06/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5028121	2017/06/14	2017/06/14	Arezoo Habibagahi

Maxxam ID: EOE851
Sample ID: VS457
Matrix: Soil

Collected: 2017/06/14
Shipped:
Received: 2017/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5028075	N/A	2017/06/15	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5029130	2017/06/15	2017/06/15	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5029466	2017/06/15	2017/06/15	Daniel Teclu
Moisture	BAL	5027595	N/A	2017/06/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5028121	2017/06/14	2017/06/14	Arezoo Habibagahi

Maxxam ID: EOE852
Sample ID: VS458
Matrix: Soil

Collected: 2017/06/14
Shipped:
Received: 2017/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5028075	N/A	2017/06/15	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5029130	2017/06/15	2017/06/15	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5029466	2017/06/15	2017/06/15	Daniel Teclu
Moisture	BAL	5027595	N/A	2017/06/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5028121	2017/06/14	2017/06/14	Arezoo Habibagahi

Maxxam ID: EOE853
Sample ID: VS459
Matrix: Soil

Collected: 2017/06/14
Shipped:
Received: 2017/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5028075	N/A	2017/06/15	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5029130	2017/06/15	2017/06/15	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5029466	2017/06/15	2017/06/15	Daniel Teclu
Moisture	BAL	5027595	N/A	2017/06/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5028121	2017/06/14	2017/06/14	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 #: B7C3385
Report Date: 2017/06/16

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EOE854
Sample ID: VS460
Matrix: Soil

Collected: 2017/06/14
Shipped:
Received: 2017/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5028075	N/A	2017/06/15	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5029130	2017/06/15	2017/06/15	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5029466	2017/06/15	2017/06/15	Daniel Teclu
Moisture	BAL	5027595	N/A	2017/06/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5028121	2017/06/14	2017/06/14	Arezoo Habibagahi

Maxxam ID: EOE855
Sample ID: VS461
Matrix: Soil

Collected: 2017/06/14
Shipped:
Received: 2017/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5028075	N/A	2017/06/15	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5029130	2017/06/15	2017/06/15	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5029466	2017/06/15	2017/06/15	Daniel Teclu
Moisture	BAL	5027595	N/A	2017/06/15	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5028121	2017/06/14	2017/06/14	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 #: B7C3385
Report Date: 2017/06/16

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	20.0°C

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 #: B7C3385
Report Date: 2017/06/16

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
5028121	D10-Anthracene	2017/06/14	89	50 - 130	86	50 - 130	102	%		
5028121	D14-Terphenyl (FS)	2017/06/14	80	50 - 130	74	50 - 130	75	%		
5028121	D8-Acenaphthylene	2017/06/14	84	50 - 130	76	50 - 130	76	%		
5027595	Moisture	2017/06/15							0.65	50
5028121	1-Methylnaphthalene	2017/06/14	94	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5028121	2-Methylnaphthalene	2017/06/14	95	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5028121	Acenaphthene	2017/06/14	90	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5028121	Acenaphthylene	2017/06/14	81	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
5028121	Anthracene	2017/06/14	80	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5028121	Benzo(a)anthracene	2017/06/14	89	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5028121	Benzo(a)pyrene	2017/06/14	77	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5028121	Benzo(b/j)fluoranthene	2017/06/14	97	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5028121	Benzo(g,h,i)perylene	2017/06/14	67	50 - 130	58	50 - 130	<0.0050	ug/g	NC	40
5028121	Benzo(k)fluoranthene	2017/06/14	64	50 - 130	58	50 - 130	<0.0050	ug/g	NC	40
5028121	Chrysene	2017/06/14	84	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
5028121	Dibenz(a,h)anthracene	2017/06/14	61	50 - 130	52	50 - 130	<0.0050	ug/g	NC	40
5028121	Fluoranthene	2017/06/14	82	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5028121	Fluorene	2017/06/14	95	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5028121	Indeno(1,2,3-cd)pyrene	2017/06/14	77	50 - 130	62	50 - 130	<0.0050	ug/g	NC	40
5028121	Naphthalene	2017/06/14	81	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5028121	Phenanthrene	2017/06/14	75	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
5028121	Pyrene	2017/06/14	80	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
5029130	Chromium (VI)	2017/06/15	84	75 - 125	91	80 - 120	<0.2	ug/g	8.5	35
5029466	Acid Extractable Antimony (Sb)	2017/06/15	100	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
5029466	Acid Extractable Arsenic (As)	2017/06/15	104	75 - 125	104	80 - 120	<1.0	ug/g	NC	30
5029466	Acid Extractable Barium (Ba)	2017/06/15	91	75 - 125	97	80 - 120	<0.50	ug/g	2.2	30
5029466	Acid Extractable Beryllium (Be)	2017/06/15	100	75 - 125	97	80 - 120	<0.20	ug/g	NC	30
5029466	Acid Extractable Boron (B)	2017/06/15	97	75 - 125	96	80 - 120	<5.0	ug/g	NC	30
5029466	Acid Extractable Cadmium (Cd)	2017/06/15	103	75 - 125	98	80 - 120	<0.10	ug/g	NC	30
5029466	Acid Extractable Chromium (Cr)	2017/06/15	106	75 - 125	98	80 - 120	<1.0	ug/g	6.6	30
5029466	Acid Extractable Cobalt (Co)	2017/06/15	106	75 - 125	101	80 - 120	<0.10	ug/g	3.0	30

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 #: B7C3385
Report Date: 2017/06/16

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
5029466	Acid Extractable Copper (Cu)	2017/06/15	103	75 - 125	101	80 - 120	<0.50	ug/g	3.3	30
5029466	Acid Extractable Lead (Pb)	2017/06/15	98	75 - 125	100	80 - 120	<1.0	ug/g	2.5	30
5029466	Acid Extractable Mercury (Hg)	2017/06/15	95	75 - 125	98	80 - 120	<0.050	ug/g	NC	30
5029466	Acid Extractable Molybdenum (Mo)	2017/06/15	105	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
5029466	Acid Extractable Nickel (Ni)	2017/06/15	106	75 - 125	105	80 - 120	<0.50	ug/g	1.7	30
5029466	Acid Extractable Selenium (Se)	2017/06/15	99	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
5029466	Acid Extractable Silver (Ag)	2017/06/15	101	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
5029466	Acid Extractable Thallium (Tl)	2017/06/15	98	75 - 125	101	80 - 120	<0.050	ug/g	NC	30
5029466	Acid Extractable Uranium (U)	2017/06/15	103	75 - 125	104	80 - 120	<0.050	ug/g	6.6	30
5029466	Acid Extractable Vanadium (V)	2017/06/15	104	75 - 125	97	80 - 120	<5.0	ug/g	0.067	30
5029466	Acid Extractable Zinc (Zn)	2017/06/15	101	75 - 125	104	80 - 120	<5.0	ug/g	1.3	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.

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 (absolute difference <= 2x RDL).

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 #: B7C3385
Report Date: 2017/06/16

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, 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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#572155-45-01	Madison Bingley
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)? ___

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

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: 24hr ☒
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	# of Bottles	Comments
1		VS453	17/06/14	1000	Soil		X	X	1	
2		VS1453	↓	1000	↓		X	X	1	
3		VS454	↓	1030	↓		X	X	1	
4		VS455	↓	1100	↓		X	X	1	
5		VS456	↓	1130	↓		X	X	1	
6		VS457	↓	1200	↓		X	X	1	
7		VS458	↓	1230	↓		X	X	1	RECEIVED IN OTTAWA
8		VS459	↓	1300	↓		X	X	1	
9		VS460	↓	1330	↓		X	X	1	
10		VS461	↓	1400	↓		X	X	1	On the Ice pack.

14-Jun-17 15:00
Alison Cameron
B7C3385
KIN - OTT 001

* 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	17/06/14	1425	Jenyscienta	2017/06/14	15:00	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	17, 20, 21	Present	✓	
		Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7C3385
Report Date: 2017/06/16

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.

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. #: 572155-46-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/14
Report #: R4524439
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7C2033
Received: 2017/06/13, 14:41

Sample Matrix: Soil
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	7	N/A	2017/06/14	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	7	2017/06/14	2017/06/14	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	7	2017/06/14	2017/06/14	CAM SOP-00447	EPA 6020B m
Moisture	7	N/A	2017/06/13	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	7	2017/06/13	2017/06/13	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-46-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/14
Report #: R4524439
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7C2033
Received: 2017/06/13, 14:41

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7C2033
Report Date: 2017/06/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ENY659	ENY660	ENY661	ENY662	ENY663		
Sampling Date			2017/06/13 11:00	2017/06/13 11:00	2017/06/13 11:30	2017/06/13 12:00	2017/06/13 12:30		
COC Number			572155-46-01	572155-46-01	572155-46-01	572155-46-01	572155-46-01		
	UNITS	**Criteria**	**VS 447**	**VS 1447**	**VS 448**	**VS 449**	**VS 450**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	1.9	0.20	5027516
Acid Extractable Arsenic (As)	ug/g	**18**	1.3	1.2	2.0	2.0	**34**	1.0	5027516
Acid Extractable Barium (Ba)	ug/g	**390**	130	120	150	140	130	0.50	5027516
Acid Extractable Beryllium (Be)	ug/g	**4**	0.35	0.32	0.39	0.43	0.69	0.20	5027516
Acid Extractable Boron (B)	ug/g	**120**	5.1	<5.0	5.4	5.3	7.7	5.0	5027516
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	0.25	0.10	5027516
Acid Extractable Chromium (Cr)	ug/g	**160**	26	23	28	28	20	1.0	5027516
Acid Extractable Cobalt (Co)	ug/g	**22**	7.8	7.0	8.9	9.2	7.8	0.10	5027516
Acid Extractable Copper (Cu)	ug/g	**140**	15	14	17	19	30	0.50	5027516
Acid Extractable Lead (Pb)	ug/g	**120**	3.8	3.6	4.6	7.3	96	1.0	5027516
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	**12**	0.50	5027516
Acid Extractable Nickel (Ni)	ug/g	**100**	15	14	17	19	21	0.50	5027516
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	1.0	0.50	5027516
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5027516
Acid Extractable Thallium (Tl)	ug/g	**1**	0.14	0.14	0.17	0.18	0.53	0.050	5027516
Acid Extractable Uranium (U)	ug/g	**23**	0.58	0.52	0.62	0.53	0.74	0.050	5027516
Acid Extractable Vanadium (V)	ug/g	**86**	38	37	40	44	46	5.0	5027516
Acid Extractable Zinc (Zn)	ug/g	**340**	42	40	51	54	280	5.0	5027516
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.13	0.050	5027516

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 #: B7C2033
Report Date: 2017/06/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ENY664	ENY665	ENY665		
Sampling Date			2017/06/13 13:00	2017/06/13 13:30	2017/06/13 13:30		
COC Number			572155-46-01	572155-46-01	572155-46-01		
	UNITS	**Criteria**	**VS 451**	**VS 452**	**VS 452 Lab-Dup**	**RDL**	**QC Batch**
Metals							
Acid Extractable Antimony (Sb)	ug/g	**7.5**	0.67	<0.20	<0.20	0.20	5027516
Acid Extractable Arsenic (As)	ug/g	**18**	11	1.6	1.6	1.0	5027516
Acid Extractable Barium (Ba)	ug/g	**390**	140	110	110	0.50	5027516
Acid Extractable Beryllium (Be)	ug/g	**4**	0.53	0.44	0.42	0.20	5027516
Acid Extractable Boron (B)	ug/g	**120**	16	<5.0	<5.0	5.0	5027516
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.23	<0.10	<0.10	0.10	5027516
Acid Extractable Chromium (Cr)	ug/g	**160**	29	27	28	1.0	5027516
Acid Extractable Cobalt (Co)	ug/g	**22**	9.8	8.0	8.2	0.10	5027516
Acid Extractable Copper (Cu)	ug/g	**140**	24	20	20	0.50	5027516
Acid Extractable Lead (Pb)	ug/g	**120**	**210**	4.1	3.9	1.0	5027516
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	1.0	<0.50	<0.50	0.50	5027516
Acid Extractable Nickel (Ni)	ug/g	**100**	19	17	17	0.50	5027516
Acid Extractable Selenium (Se)	ug/g	**2.4**	0.99	<0.50	<0.50	0.50	5027516
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	0.20	5027516
Acid Extractable Thallium (Tl)	ug/g	**1**	0.35	0.16	0.14	0.050	5027516
Acid Extractable Uranium (U)	ug/g	**23**	0.81	1.0	0.93	0.050	5027516
Acid Extractable Vanadium (V)	ug/g	**86**	38	44	44	5.0	5027516
Acid Extractable Zinc (Zn)	ug/g	**340**	110	46	47	5.0	5027516
Acid Extractable Mercury (Hg)	ug/g	**0.27**	0.085	<0.050	<0.050	0.050	5027516

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 Job #: B7C2033
Report Date: 2017/06/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ENY659	ENY660	ENY660	ENY661	ENY662		
Sampling Date			2017/06/13 11:00	2017/06/13 11:00	2017/06/13 11:00	2017/06/13 11:30	2017/06/13 12:00		
COC Number			572155-46-01	572155-46-01	572155-46-01	572155-46-01	572155-46-01		
	UNITS	**Criteria**	**VS 447**	**VS 1447**	**VS 1447 Lab-Dup**	**VS 448**	**VS 449**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	22	21		22	24	0.2	5025663
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5025883
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5025975
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5025975
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5025975
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	0.0051	<0.0050	0.0050	5025975
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5025975
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5025975
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5025975
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5025975
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	0.0086	<0.0050	0.0050	5025975
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5025975
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	0.0057	<0.0050	0.0050	5025975
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5025975
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5025975
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5025975
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5025975
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5025975
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5025975
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	0.010	<0.0050	0.0050	5025975
Surrogate Recovery (%)									
D10-Anthracene	%	-	92	100	102	77	93		5025975
D14-Terphenyl (FS)	%	-	79	79	81	79	80		5025975
D8-Acenaphthylene	%	-	76	73	74	73	73		5025975

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 Job #: B7C2033
Report Date: 2017/06/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ENY663	ENY664	ENY665		
Sampling Date			2017/06/13 12:30	2017/06/13 13:00	2017/06/13 13:30		
COC Number			572155-46-01	572155-46-01	572155-46-01		
	UNITS	Criteria	VS 450	VS 451	VS 452	RDL	QC Batch
Inorganics							
Moisture	%	-	12	7.7	22	0.2	5025663
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	0.019	0.027	<0.014	0.014	5025883
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**7.9**	0.012	0.023	<0.0050	0.0050	5025975
Acenaphthylene	ug/g	**0.15**	0.071	0.022	<0.0050	0.0050	5025975
Anthracene	ug/g	**0.67**	0.066	0.051	<0.0050	0.0050	5025975
Benzo(a)anthracene	ug/g	**0.5**	0.38	0.18	<0.0050	0.0050	5025975
Benzo(a)pyrene	ug/g	**0.3**	**0.39**	0.18	<0.0050	0.0050	5025975
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.55	0.24	<0.0050	0.0050	5025975
Benzo(g,h,i)perylene	ug/g	**6.6**	0.23	0.11	<0.0050	0.0050	5025975
Benzo(k)fluoranthene	ug/g	**0.78**	0.21	0.092	<0.0050	0.0050	5025975
Chrysene	ug/g	**7**	0.35	0.16	<0.0050	0.0050	5025975
Dibenz(a,h)anthracene	ug/g	**0.1**	0.074	0.035	<0.0050	0.0050	5025975
Fluoranthene	ug/g	**0.69**	**0.85**	0.39	<0.0050	0.0050	5025975
Fluorene	ug/g	**62**	0.017	0.028	<0.0050	0.0050	5025975
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.28	0.14	<0.0050	0.0050	5025975
1-Methylnaphthalene	ug/g	**0.99**	0.010	0.013	<0.0050	0.0050	5025975
2-Methylnaphthalene	ug/g	**0.99**	0.0084	0.014	<0.0050	0.0050	5025975
Naphthalene	ug/g	**0.6**	0.0059	0.022	<0.0050	0.0050	5025975
Phenanthrene	ug/g	**6.2**	0.35	0.24	<0.0050	0.0050	5025975
Pyrene	ug/g	**78**	0.75	0.31	<0.0050	0.0050	5025975
Surrogate Recovery (%)							
D10-Anthracene	%	-	77	77	87		5025975
D14-Terphenyl (FS)	%	-	78	76	76		5025975
D8-Acenaphthylene	%	-	74	73	72		5025975

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 #: B7C2033
Report Date: 2017/06/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ENY659	ENY660	ENY660	ENY661	ENY662		
Sampling Date			2017/06/13 11:00	2017/06/13 11:00	2017/06/13 11:00	2017/06/13 11:30	2017/06/13 12:00		
COC Number			572155-46-01	572155-46-01	572155-46-01	572155-46-01	572155-46-01		
	UNITS	**Criteria**	**VS 447**	**VS 1447**	**VS 1447 Lab-Dup**	**VS 448**	**VS 449**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	5027100

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			ENY663	ENY664	ENY665		
Sampling Date			2017/06/13 12:30	2017/06/13 13:00	2017/06/13 13:30		
COC Number			572155-46-01	572155-46-01	572155-46-01		
	UNITS	**Criteria**	**VS 450**	**VS 451**	**VS 452**	**RDL**	**QC Batch**
Inorganics							
Chromium (VI)	ug/g	**8**	<0.2	<0.2	0.4	0.2	5027100

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 #: B7C2033
Report Date: 2017/06/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ENY659
Sample ID: VS 447
Matrix: Soil

Collected: 2017/06/13
Shipped:
Received: 2017/06/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5025883	N/A	2017/06/14	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5027100	2017/06/14	2017/06/14	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5027516	2017/06/14	2017/06/14	Daniel Teclu
Moisture	BAL	5025663	N/A	2017/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5025975	2017/06/13	2017/06/13	Arezoo Habibagahi

Maxxam ID: ENY660
Sample ID: VS 1447
Matrix: Soil

Collected: 2017/06/13
Shipped:
Received: 2017/06/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5025883	N/A	2017/06/14	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5027100	2017/06/14	2017/06/14	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5027516	2017/06/14	2017/06/14	Daniel Teclu
Moisture	BAL	5025663	N/A	2017/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5025975	2017/06/13	2017/06/13	Arezoo Habibagahi

Maxxam ID: ENY660 Dup
Sample ID: VS 1447
Matrix: Soil

Collected: 2017/06/13
Shipped:
Received: 2017/06/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5027100	2017/06/14	2017/06/14	Manoj Kumar Gera
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5025975	2017/06/13	2017/06/13	Arezoo Habibagahi

Maxxam ID: ENY661
Sample ID: VS 448
Matrix: Soil

Collected: 2017/06/13
Shipped:
Received: 2017/06/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5025883	N/A	2017/06/14	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5027100	2017/06/14	2017/06/14	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5027516	2017/06/14	2017/06/14	Daniel Teclu
Moisture	BAL	5025663	N/A	2017/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5025975	2017/06/13	2017/06/13	Arezoo Habibagahi

Maxxam ID: ENY662
Sample ID: VS 449
Matrix: Soil

Collected: 2017/06/13
Shipped:
Received: 2017/06/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5025883	N/A	2017/06/14	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5027100	2017/06/14	2017/06/14	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5027516	2017/06/14	2017/06/14	Daniel Teclu
Moisture	BAL	5025663	N/A	2017/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5025975	2017/06/13	2017/06/13	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 #: B7C2033
Report Date: 2017/06/14

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ENY663
Sample ID: VS 450
Matrix: Soil

Collected: 2017/06/13
Shipped:
Received: 2017/06/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5025883	N/A	2017/06/14	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5027100	2017/06/14	2017/06/14	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5027516	2017/06/14	2017/06/14	Daniel Teclu
Moisture	BAL	5025663	N/A	2017/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5025975	2017/06/13	2017/06/13	Arezoo Habibagahi

Maxxam ID: ENY664
Sample ID: VS 451
Matrix: Soil

Collected: 2017/06/13
Shipped:
Received: 2017/06/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5025883	N/A	2017/06/14	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5027100	2017/06/14	2017/06/14	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5027516	2017/06/14	2017/06/14	Daniel Teclu
Moisture	BAL	5025663	N/A	2017/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5025975	2017/06/13	2017/06/13	Arezoo Habibagahi

Maxxam ID: ENY665
Sample ID: VS 452
Matrix: Soil

Collected: 2017/06/13
Shipped:
Received: 2017/06/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5025883	N/A	2017/06/14	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5027100	2017/06/14	2017/06/14	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5027516	2017/06/14	2017/06/14	Daniel Teclu
Moisture	BAL	5025663	N/A	2017/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5025975	2017/06/13	2017/06/13	Arezoo Habibagahi

Maxxam ID: ENY665 Dup
Sample ID: VS 452
Matrix: Soil

Collected: 2017/06/13
Shipped:
Received: 2017/06/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5027516	2017/06/14	2017/06/14	Daniel Teclu

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 #: B7C2033
Report Date: 2017/06/14

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	20.3°C

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 #: B7C2033
Report Date: 2017/06/14

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
5025975	D10-Anthracene	2017/06/13	79	50 - 130	83	50 - 130	99	%		
5025975	D14-Terphenyl (FS)	2017/06/13	77	50 - 130	79	50 - 130	79	%		
5025975	D8-Acenaphthylene	2017/06/13	74	50 - 130	77	50 - 130	76	%		
5025663	Moisture	2017/06/13							45	50
5025975	1-Methylnaphthalene	2017/06/13	81	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5025975	2-Methylnaphthalene	2017/06/13	82	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5025975	Acenaphthene	2017/06/13	78	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
5025975	Acenaphthylene	2017/06/13	68	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
5025975	Anthracene	2017/06/13	70	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
5025975	Benzo(a)anthracene	2017/06/13	79	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
5025975	Benzo(a)pyrene	2017/06/13	70	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
5025975	Benzo(b/j)fluoranthene	2017/06/13	76	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5025975	Benzo(g,h,i)perylene	2017/06/13	69	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40
5025975	Benzo(k)fluoranthene	2017/06/13	71	50 - 130	66	50 - 130	<0.0050	ug/g	NC	40
5025975	Chrysene	2017/06/13	73	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
5025975	Dibenz(a,h)anthracene	2017/06/13	62	50 - 130	64	50 - 130	<0.0050	ug/g	NC	40
5025975	Fluoranthene	2017/06/13	73	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
5025975	Fluorene	2017/06/13	84	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5025975	Indeno(1,2,3-cd)pyrene	2017/06/13	74	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5025975	Naphthalene	2017/06/13	69	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
5025975	Phenanthrene	2017/06/13	69	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40
5025975	Pyrene	2017/06/13	71	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
5027100	Chromium (VI)	2017/06/14	83	75 - 125	87	80 - 120	<0.2	ug/g	NC	35
5027516	Acid Extractable Antimony (Sb)	2017/06/14	79	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
5027516	Acid Extractable Arsenic (As)	2017/06/14	96	75 - 125	97	80 - 120	<1.0	ug/g	5.7	30
5027516	Acid Extractable Barium (Ba)	2017/06/14	NC	75 - 125	92	80 - 120	<0.50	ug/g	3.1	30
5027516	Acid Extractable Beryllium (Be)	2017/06/14	91	75 - 125	94	80 - 120	<0.20	ug/g	3.9	30
5027516	Acid Extractable Boron (B)	2017/06/14	90	75 - 125	99	80 - 120	<5.0	ug/g	NC	30
5027516	Acid Extractable Cadmium (Cd)	2017/06/14	97	75 - 125	95	80 - 120	<0.10	ug/g	NC	30
5027516	Acid Extractable Chromium (Cr)	2017/06/14	NC	75 - 125	96	80 - 120	<1.0	ug/g	1.1	30
5027516	Acid Extractable Cobalt (Co)	2017/06/14	93	75 - 125	96	80 - 120	<0.10	ug/g	2.6	30

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 #: B7C2033
Report Date: 2017/06/14

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
5027516	Acid Extractable Copper (Cu)	2017/06/14	92	75 - 125	97	80 - 120	<0.50	ug/g	0.21	30
5027516	Acid Extractable Lead (Pb)	2017/06/14	97	75 - 125	98	80 - 120	<1.0	ug/g	4.8	30
5027516	Acid Extractable Mercury (Hg)	2017/06/14	93	75 - 125	93	80 - 120	<0.050	ug/g	NC	30
5027516	Acid Extractable Molybdenum (Mo)	2017/06/14	96	75 - 125	96	80 - 120	<0.50	ug/g	NC	30
5027516	Acid Extractable Nickel (Ni)	2017/06/14	95	75 - 125	94	80 - 120	<0.50	ug/g	3.8	30
5027516	Acid Extractable Selenium (Se)	2017/06/14	97	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
5027516	Acid Extractable Silver (Ag)	2017/06/14	98	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5027516	Acid Extractable Thallium (Tl)	2017/06/14	96	75 - 125	99	80 - 120	<0.050	ug/g	8.6	30
5027516	Acid Extractable Uranium (U)	2017/06/14	100	75 - 125	100	80 - 120	<0.050	ug/g	8.9	30
5027516	Acid Extractable Vanadium (V)	2017/06/14	NC	75 - 125	96	80 - 120	<5.0	ug/g	1.6	30
5027516	Acid Extractable Zinc (Zn)	2017/06/14	NC	75 - 125	97	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.

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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7C2033
Report Date: 2017/06/14

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).

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#572155-46-01	Madison Bingley
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	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

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

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: 24hr ☒
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							# of Bottles	Comments
1		VS447	17/06/13	1100	Soil		X	X							1	
2		VS1447	↓	1100	↓		X	X							1	
3		VS448	↓	1130	↓		X	X							1	
4		VS449	↓	1200	↓		X	X							1	
5		VS450	↓	1230	↓		X	X							1	
6		VS451	↓	1300	↓		X	X							1	
7		VS452	↓	1330	↓		X	X							1	
8																
9																
10																ON the Ice Pack

13-Jun-17 14:41
Alison Cameron
B7C2033
KIV 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 Recei	Custody Seal	Yes	No
Aaron Brookshaw	17/06/13	1400	Kumar Jayaratna	2017/06/13	14:41	0		20, 21, 20	Present	X	
									Intact	X	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7C2033
Report Date: 2017/06/14

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
VS 450	ENY663-02	Acid Extractable Arsenic (As)	18	34	1.0	ug/g
VS 450	ENY663-01	Benzo(a)pyrene	0.3	0.39	0.0050	ug/g
VS 450	ENY663-01	Fluoranthene	0.69	0.85	0.0050	ug/g
VS 450	ENY663-02	Acid Extractable Molybdenum (Mo)	6.9	12	0.50	ug/g
VS 451	ENY664-02	Acid Extractable Lead (Pb)	120	210	1.0	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.

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. #: 572155-47-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/13
Report #: R4519322
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7C0687
Received: 2017/06/12, 10:20

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	9	N/A	2017/06/13	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	9	2017/06/13	2017/06/13	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	9	2017/06/13	2017/06/13	CAM SOP-00447	EPA 6020B m
Moisture	9	N/A	2017/06/13	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	9	2017/06/12	2017/06/13	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-47-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/13
Report #: R4519322
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7C0687
Received: 2017/06/12, 10:20

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7C0687
Report Date: 2017/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ENS098	ENS099	ENS100	ENS101	ENS102		
Sampling Date			2017/06/12 07:40	2017/06/12 08:00	2017/06/12 08:10	2017/06/12 08:20	2017/06/12 08:30		
COC Number			572155-47-01	572155-47-01	572155-47-01	572155-47-01	572155-47-01		
	UNITS	**Criteria**	**VS 439**	**VS 440**	**VS 441**	**VS 442**	**VS 443**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5025545
Acid Extractable Arsenic (As)	ug/g	**18**	1.3	1.1	1.1	1.0	<1.0	1.0	5025545
Acid Extractable Barium (Ba)	ug/g	**390**	150	110	110	50	29	0.50	5025545
Acid Extractable Beryllium (Be)	ug/g	**4**	0.42	0.43	0.48	0.34	0.28	0.20	5025545
Acid Extractable Boron (B)	ug/g	**120**	5.3	<5.0	<5.0	<5.0	<5.0	5.0	5025545
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5025545
Acid Extractable Chromium (Cr)	ug/g	**160**	30	28	31	28	24	1.0	5025545
Acid Extractable Cobalt (Co)	ug/g	**22**	9.1	7.0	7.5	5.7	5.6	0.10	5025545
Acid Extractable Copper (Cu)	ug/g	**140**	17	18	20	10	5.6	0.50	5025545
Acid Extractable Lead (Pb)	ug/g	**120**	4.0	3.8	5.5	12	3.8	1.0	5025545
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5025545
Acid Extractable Nickel (Ni)	ug/g	**100**	17	17	19	15	13	0.50	5025545
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5025545
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5025545
Acid Extractable Thallium (Tl)	ug/g	**1**	0.16	0.15	0.16	0.10	0.077	0.050	5025545
Acid Extractable Uranium (U)	ug/g	**23**	0.57	0.79	1.2	0.94	0.52	0.050	5025545
Acid Extractable Vanadium (V)	ug/g	**86**	44	44	43	31	27	5.0	5025545
Acid Extractable Zinc (Zn)	ug/g	**340**	52	45	48	38	30	5.0	5025545
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5025545

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 #: B7C0687
Report Date: 2017/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ENS103	ENS103	ENS104	ENS105	ENS106		
Sampling Date			2017/06/12 08:40	2017/06/12 08:40	2017/06/12 08:50	2017/06/12 09:00	2017/06/12 09:00		
COC Number			572155-47-01	572155-47-01	572155-47-01	572155-47-01	572155-47-01		
	UNITS	**Criteria**	**VS 444**	**VS 444 Lab-Dup**	**VS 445**	**VS 446**	**VS 1446**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5025545
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	1.2	1.4	1.6	1.0	5025545
Acid Extractable Barium (Ba)	ug/g	**390**	27	27	62	92	96	0.50	5025545
Acid Extractable Beryllium (Be)	ug/g	**4**	0.24	0.24	0.35	0.42	0.42	0.20	5025545
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5025545
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5025545
Acid Extractable Chromium (Cr)	ug/g	**160**	21	21	21	27	29	1.0	5025545
Acid Extractable Cobalt (Co)	ug/g	**22**	5.3	5.7	6.7	7.2	7.5	0.10	5025545
Acid Extractable Copper (Cu)	ug/g	**140**	4.8	5.0	5.8	20	20	0.50	5025545
Acid Extractable Lead (Pb)	ug/g	**120**	3.3	3.3	3.8	3.7	3.7	1.0	5025545
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5025545
Acid Extractable Nickel (Ni)	ug/g	**100**	11	12	9.9	17	17	0.50	5025545
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5025545
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5025545
Acid Extractable Thallium (Tl)	ug/g	**1**	0.058	0.072	0.091	0.12	0.13	0.050	5025545
Acid Extractable Uranium (U)	ug/g	**23**	0.48	0.54	0.64	1.1	1.1	0.050	5025545
Acid Extractable Vanadium (V)	ug/g	**86**	25	26	37	46	46	5.0	5025545
Acid Extractable Zinc (Zn)	ug/g	**340**	24	26	32	42	42	5.0	5025545
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5025545

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 Job #: B7C0687
Report Date: 2017/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ENS098	ENS098	ENS099	ENS100	ENS101		
Sampling Date			2017/06/12 07:40	2017/06/12 07:40	2017/06/12 08:00	2017/06/12 08:10	2017/06/12 08:20		
COC Number			572155-47-01	572155-47-01	572155-47-01	572155-47-01	572155-47-01		
	UNITS	**Criteria**	**VS 439**	**VS 439 Lab-Dup**	**VS 440**	**VS 441**	**VS 442**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	23	23	19	14	12	0.2	5023586
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	5023555
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0099	0.0050	5023589
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	0.027	0.0050	5023589
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	0.038	0.0050	5023589
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.062	0.0050	5023589
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.040	0.0050	5023589
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.016	0.0050	5023589
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	0.034	0.0050	5023589
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Fluoranthene	ug/g	**0.69**	<0.0050	0.0051	<0.0050	0.0061	0.062	0.0050	5023589
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	0.032	0.0050	5023589
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	0.047	0.0050	5023589
Pyrene	ug/g	**78**	0.0079	0.0090	<0.0050	<0.0050	0.051	0.0050	5023589
Surrogate Recovery (%)									
D10-Anthracene	%	-	76	78	77	84	80		5023589
D14-Terphenyl (FS)	%	-	78	79	78	78	76		5023589
D8-Acenaphthylene	%	-	71	73	71	74	71		5023589

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 Job #: B7C0687
Report Date: 2017/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ENS102	ENS103	ENS104	ENS105	ENS106		
Sampling Date			2017/06/12 08:30	2017/06/12 08:40	2017/06/12 08:50	2017/06/12 09:00	2017/06/12 09:00		
COC Number			572155-47-01	572155-47-01	572155-47-01	572155-47-01	572155-47-01		
	UNITS	Criteria	VS 443	VS 444	VS 445	VS 446	VS 1446	RDL	QC Batch
Inorganics									
Moisture	%	-	13	13	14	19	19	0.2	5023586
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	5023555
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Benzo(a)anthracene	ug/g	**0.5**	0.0052	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.0094	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Fluoranthene	ug/g	**0.69**	0.011	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Phenanthrene	ug/g	**6.2**	0.0063	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Pyrene	ug/g	**78**	0.0078	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5023589
Surrogate Recovery (%)									
D10-Anthracene	%	-	83	87	88	88	89		5023589
D14-Terphenyl (FS)	%	-	76	76	76	79	76		5023589
D8-Acenaphthylene	%	-	73	74	72	74	73		5023589

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 #: B7C0687
Report Date: 2017/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ENS098	ENS098	ENS099	ENS100	ENS101		
Sampling Date			2017/06/12 07:40	2017/06/12 07:40	2017/06/12 08:00	2017/06/12 08:10	2017/06/12 08:20		
COC Number			572155-47-01	572155-47-01	572155-47-01	572155-47-01	572155-47-01		
	UNITS	**Criteria**	**VS 439**	**VS 439 Lab-Dup**	**VS 440**	**VS 441**	**VS 442**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	<0.2	0.3	0.3	0.5	0.2	5024946

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			ENS102	ENS103	ENS104	ENS105	ENS106		
Sampling Date			2017/06/12 08:30	2017/06/12 08:40	2017/06/12 08:50	2017/06/12 09:00	2017/06/12 09:00		
COC Number			572155-47-01	572155-47-01	572155-47-01	572155-47-01	572155-47-01		
	UNITS	**Criteria**	**VS 443**	**VS 444**	**VS 445**	**VS 446**	**VS 1446**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.3	0.3	0.4	0.3	0.4	0.2	5024946

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 #: B7C0687
Report Date: 2017/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ENS098
Sample ID: VS 439
Matrix: Soil

Collected: 2017/06/12
Shipped:
Received: 2017/06/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5023555	N/A	2017/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5024946	2017/06/13	2017/06/13	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5025545	2017/06/13	2017/06/13	Daniel Teclu
Moisture	BAL	5023586	N/A	2017/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5023589	2017/06/12	2017/06/13	Arezoo Habibagahi

Maxxam ID: ENS098 Dup
Sample ID: VS 439
Matrix: Soil

Collected: 2017/06/12
Shipped:
Received: 2017/06/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5024946	2017/06/13	2017/06/13	Manoj Kumar Gera
Moisture	BAL	5023586	N/A	2017/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5023589	2017/06/12	2017/06/13	Arezoo Habibagahi

Maxxam ID: ENS099
Sample ID: VS 440
Matrix: Soil

Collected: 2017/06/12
Shipped:
Received: 2017/06/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5023555	N/A	2017/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5024946	2017/06/13	2017/06/13	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5025545	2017/06/13	2017/06/13	Daniel Teclu
Moisture	BAL	5023586	N/A	2017/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5023589	2017/06/12	2017/06/13	Arezoo Habibagahi

Maxxam ID: ENS100
Sample ID: VS 441
Matrix: Soil

Collected: 2017/06/12
Shipped:
Received: 2017/06/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5023555	N/A	2017/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5024946	2017/06/13	2017/06/13	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5025545	2017/06/13	2017/06/13	Daniel Teclu
Moisture	BAL	5023586	N/A	2017/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5023589	2017/06/12	2017/06/13	Arezoo Habibagahi

Maxxam ID: ENS101
Sample ID: VS 442
Matrix: Soil

Collected: 2017/06/12
Shipped:
Received: 2017/06/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5023555	N/A	2017/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5024946	2017/06/13	2017/06/13	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5025545	2017/06/13	2017/06/13	Daniel Teclu
Moisture	BAL	5023586	N/A	2017/06/13	Liliana Gaburici

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 #: B7C0687
Report Date: 2017/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ENS101
Sample ID: VS 442
Matrix: Soil

Collected: 2017/06/12
Shipped:
Received: 2017/06/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5023589	2017/06/12	2017/06/13	Arezoo Habibagahi

Maxxam ID: ENS102
Sample ID: VS 443
Matrix: Soil

Collected: 2017/06/12
Shipped:
Received: 2017/06/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5023555	N/A	2017/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5024946	2017/06/13	2017/06/13	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5025545	2017/06/13	2017/06/13	Daniel Teclu
Moisture	BAL	5023586	N/A	2017/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5023589	2017/06/12	2017/06/13	Arezoo Habibagahi

Maxxam ID: ENS103
Sample ID: VS 444
Matrix: Soil

Collected: 2017/06/12
Shipped:
Received: 2017/06/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5023555	N/A	2017/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5024946	2017/06/13	2017/06/13	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5025545	2017/06/13	2017/06/13	Daniel Teclu
Moisture	BAL	5023586	N/A	2017/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5023589	2017/06/12	2017/06/13	Arezoo Habibagahi

Maxxam ID: ENS103 Dup
Sample ID: VS 444
Matrix: Soil

Collected: 2017/06/12
Shipped:
Received: 2017/06/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5025545	2017/06/13	2017/06/13	Daniel Teclu

Maxxam ID: ENS104
Sample ID: VS 445
Matrix: Soil

Collected: 2017/06/12
Shipped:
Received: 2017/06/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5023555	N/A	2017/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5024946	2017/06/13	2017/06/13	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5025545	2017/06/13	2017/06/13	Daniel Teclu
Moisture	BAL	5023586	N/A	2017/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5023589	2017/06/12	2017/06/13	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 #: B7C0687
Report Date: 2017/06/13

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ENS105
Sample ID: VS 446
Matrix: Soil

Collected: 2017/06/12
Shipped:
Received: 2017/06/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5023555	N/A	2017/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5024946	2017/06/13	2017/06/13	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5025545	2017/06/13	2017/06/13	Daniel Teclu
Moisture	BAL	5023586	N/A	2017/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5023589	2017/06/12	2017/06/13	Arezoo Habibagahi

Maxxam ID: ENS106
Sample ID: VS 1446
Matrix: Soil

Collected: 2017/06/12
Shipped:
Received: 2017/06/12

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5023555	N/A	2017/06/13	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5024946	2017/06/13	2017/06/13	Manoj Kumar Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	5025545	2017/06/13	2017/06/13	Daniel Teclu
Moisture	BAL	5023586	N/A	2017/06/13	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5023589	2017/06/12	2017/06/13	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 #: B7C0687
Report Date: 2017/06/13

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	24.3°C

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 #: B7C0687
Report Date: 2017/06/13

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
5023589	D10-Anthracene	2017/06/13	80	50 - 130	82	50 - 130	89	%		
5023589	D14-Terphenyl (FS)	2017/06/13	78	50 - 130	79	50 - 130	78	%		
5023589	D8-Acenaphthylene	2017/06/13	74	50 - 130	77	50 - 130	75	%		
5023586	Moisture	2017/06/13							1.3	50
5023589	1-Methylnaphthalene	2017/06/13	81	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5023589	2-Methylnaphthalene	2017/06/13	82	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5023589	Acenaphthene	2017/06/13	78	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5023589	Acenaphthylene	2017/06/13	71	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
5023589	Anthracene	2017/06/13	73	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
5023589	Benzo(a)anthracene	2017/06/13	77	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5023589	Benzo(a)pyrene	2017/06/13	72	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
5023589	Benzo(b/j)fluoranthene	2017/06/13	78	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5023589	Benzo(g,h,i)perylene	2017/06/13	72	50 - 130	68	50 - 130	<0.0050	ug/g	NC	40
5023589	Benzo(k)fluoranthene	2017/06/13	65	50 - 130	70	50 - 130	<0.0050	ug/g	NC	40
5023589	Chrysene	2017/06/13	72	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5023589	Dibenz(a,h)anthracene	2017/06/13	63	50 - 130	59	50 - 130	<0.0050	ug/g	NC	40
5023589	Fluoranthene	2017/06/13	75	50 - 130	77	50 - 130	<0.0050	ug/g	2.4	40
5023589	Fluorene	2017/06/13	84	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5023589	Indeno(1,2,3-cd)pyrene	2017/06/13	74	50 - 130	71	50 - 130	<0.0050	ug/g	NC	40
5023589	Naphthalene	2017/06/13	71	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
5023589	Phenanthrene	2017/06/13	70	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40
5023589	Pyrene	2017/06/13	72	50 - 130	75	50 - 130	<0.0050	ug/g	12	40
5024946	Chromium (VI)	2017/06/13	83	75 - 125	90	80 - 120	<0.2	ug/g	NC	35
5025545	Acid Extractable Antimony (Sb)	2017/06/13	90	75 - 125	97	80 - 120	<0.20	ug/g	NC	30
5025545	Acid Extractable Arsenic (As)	2017/06/13	100	75 - 125	100	80 - 120	<1.0	ug/g	NC	30
5025545	Acid Extractable Barium (Ba)	2017/06/13	NC	75 - 125	98	80 - 120	<0.50	ug/g	1.4	30
5025545	Acid Extractable Beryllium (Be)	2017/06/13	101	75 - 125	100	80 - 120	<0.20	ug/g	0.025	30
5025545	Acid Extractable Boron (B)	2017/06/13	97	75 - 125	102	80 - 120	<5.0	ug/g	NC	30
5025545	Acid Extractable Cadmium (Cd)	2017/06/13	101	75 - 125	101	80 - 120	<0.10	ug/g	NC	30
5025545	Acid Extractable Chromium (Cr)	2017/06/13	99	75 - 125	102	80 - 120	<1.0	ug/g	1.5	30
5025545	Acid Extractable Cobalt (Co)	2017/06/13	104	75 - 125	102	80 - 120	<0.10	ug/g	7.8	30

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 #: B7C0687
Report Date: 2017/06/13

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
5025545	Acid Extractable Copper (Cu)	2017/06/13	100	75 - 125	100	80 - 120	<0.50	ug/g	3.6	30
5025545	Acid Extractable Lead (Pb)	2017/06/13	100	75 - 125	103	80 - 120	<1.0	ug/g	0.032	30
5025545	Acid Extractable Mercury (Hg)	2017/06/13	98	75 - 125	102	80 - 120	<0.050	ug/g	NC	30
5025545	Acid Extractable Molybdenum (Mo)	2017/06/13	104	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
5025545	Acid Extractable Nickel (Ni)	2017/06/13	105	75 - 125	98	80 - 120	<0.50	ug/g	7.8	30
5025545	Acid Extractable Selenium (Se)	2017/06/13	105	75 - 125	106	80 - 120	<0.50	ug/g	NC	30
5025545	Acid Extractable Silver (Ag)	2017/06/13	103	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
5025545	Acid Extractable Thallium (Tl)	2017/06/13	99	75 - 125	103	80 - 120	<0.050	ug/g	23	30
5025545	Acid Extractable Uranium (U)	2017/06/13	101	75 - 125	103	80 - 120	<0.050	ug/g	12	30
5025545	Acid Extractable Vanadium (V)	2017/06/13	NC	75 - 125	99	80 - 120	<5.0	ug/g	2.5	30
5025545	Acid Extractable Zinc (Zn)	2017/06/13	98	75 - 125	101	80 - 120	<5.0	ug/g	7.7	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.

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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7C0687
Report Date: 2017/06/13

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

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.

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 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 #: 572155
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1525113	COC #: C#572155-47-01	Project Manager: Madison Bingley
Tel:	(613) 592-9600 x Fax: (613) 592-9601 x	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)? ___

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

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: 24hr ☒
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	# of Bottles	Comments
1		VS439	17/06/12	0740	Soil		X	X	1	
2		VS440		0800			X	X	1	
3		VS441		0810			X	X	1	
4		VS442		0820			X	X	1	
5		VS443		0830			X	X	1	
6		VS444		0840			X	X	1	RECEIVED IN OTTAWA
7		VS445		0850			X	X	1	
8		VS446		0900			X	X	1	
9		VS1446	↓	0900	↓		X	X	1	On ice
10										

12-Jun-17 10:20
Alison Cameron
B7C0687
KIX OTT 001

* 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	17/06/12	0910	Mariana Saxa / Nuscon	2017/06/12	10:20	0

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	25, 25, 23	Present	✓	
		Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7C0687
Report Date: 2017/06/13

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. #: 572155-32-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/12
Report #: R4514348
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7B9841
Received: 2017/06/09, 15:00

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	6	N/A	2017/06/12	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	6	2017/06/12	2017/06/12	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	6	2017/06/12	2017/06/12	CAM SOP-00447	EPA 6020B m
Moisture	6	N/A	2017/06/12	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	6	2017/06/09	2017/06/09	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-32-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/12
Report #: R4514348
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7B9841
Received: 2017/06/09, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7B9841
Report Date: 2017/06/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ENN518	ENN519	ENN520	ENN521	ENN522		
Sampling Date			2017/06/09 10:00	2017/06/09 10:00	2017/06/09 11:00	2017/06/09 12:00	2017/06/09 13:00		
COC Number			572155-32-01	572155-32-01	572155-32-01	572155-32-01	572155-32-01		
	UNITS	**Criteria**	**VS434**	**VS1434**	**VS435**	**VS436**	**VS437**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5023393
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5023393
Acid Extractable Barium (Ba)	ug/g	**390**	25	24	37	26	24	0.50	5023393
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	<0.20	0.26	0.20	<0.20	0.20	5023393
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5023393
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5023393
Acid Extractable Chromium (Cr)	ug/g	**160**	15	15	21	16	13	1.0	5023393
Acid Extractable Cobalt (Co)	ug/g	**22**	3.2	3.0	6.8	4.7	3.3	0.10	5023393
Acid Extractable Copper (Cu)	ug/g	**140**	6.5	3.3	6.7	4.5	3.4	0.50	5023393
Acid Extractable Lead (Pb)	ug/g	**120**	1.4	1.3	2.5	1.9	1.5	1.0	5023393
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5023393
Acid Extractable Nickel (Ni)	ug/g	**100**	9.4	8.4	12	7.9	8.9	0.50	5023393
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5023393
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5023393
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	0.059	0.089	<0.050	0.071	0.050	5023393
Acid Extractable Uranium (U)	ug/g	**23**	0.43	0.36	0.49	0.66	0.29	0.050	5023393
Acid Extractable Vanadium (V)	ug/g	**86**	17	17	27	25	14	5.0	5023393
Acid Extractable Zinc (Zn)	ug/g	**340**	19	17	25	16	24	5.0	5023393
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5023393

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 #: B7B9841
Report Date: 2017/06/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ENN522	ENN523		
Sampling Date			2017/06/09 13:00	2017/06/09 14:00		
COC Number			572155-32-01	572155-32-01		
	UNITS	Criteria	VS437 Lab-Dup	VS438	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	0.20	5023393
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	1.0	5023393
Acid Extractable Barium (Ba)	ug/g	**390**	24	23	0.50	5023393
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	<0.20	0.20	5023393
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	5.0	5023393
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	0.10	5023393
Acid Extractable Chromium (Cr)	ug/g	**160**	12	11	1.0	5023393
Acid Extractable Cobalt (Co)	ug/g	**22**	3.2	2.5	0.10	5023393
Acid Extractable Copper (Cu)	ug/g	**140**	3.2	2.9	0.50	5023393
Acid Extractable Lead (Pb)	ug/g	**120**	1.4	2.3	1.0	5023393
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	0.50	5023393
Acid Extractable Nickel (Ni)	ug/g	**100**	7.9	7.0	0.50	5023393
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	0.50	5023393
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	0.20	5023393
Acid Extractable Thallium (Tl)	ug/g	**1**	0.057	<0.050	0.050	5023393
Acid Extractable Uranium (U)	ug/g	**23**	0.26	0.34	0.050	5023393
Acid Extractable Vanadium (V)	ug/g	**86**	13	11	5.0	5023393
Acid Extractable Zinc (Zn)	ug/g	**340**	23	28	5.0	5023393
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	0.050	5023393

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 Job #: B7B9841
Report Date: 2017/06/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ENN518	ENN519	ENN519	ENN520	ENN521		
Sampling Date			2017/06/09 10:00	2017/06/09 10:00	2017/06/09 10:00	2017/06/09 11:00	2017/06/09 12:00		
COC Number			572155-32-01	572155-32-01	572155-32-01	572155-32-01	572155-32-01		
	UNITS	Criteria	VS434	VS1434	VS1434 Lab-Dup	VS435	VS436	RDL	QC Batch
Inorganics									
Moisture	%	-	16	18	17	17	18	0.2	5021586
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5021551
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5021596
Surrogate Recovery (%)									
D10-Anthracene	%	-	85	87	86	84	87		5021596
D14-Terphenyl (FS)	%	-	84	85	84	82	86		5021596
D8-Acenaphthylene	%	-	78	78	78	76	79		5021596

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 Job #: B7B9841
Report Date: 2017/06/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ENN522	ENN523		
Sampling Date			2017/06/09 13:00	2017/06/09 14:00		
COC Number			572155-32-01	572155-32-01		
	UNITS	Criteria	VS437	VS438	RDL	QC Batch
Inorganics						
Moisture	%	-	19	20	0.2	5021586
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	0.014	5021551
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	0.0050	5021596
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	0.0050	5021596
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	0.0050	5021596
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	0.0050	5021596
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0050	5021596
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	5021596
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	0.0050	5021596
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	5021596
Chrysene	ug/g	**7**	<0.0050	<0.0050	0.0050	5021596
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	0.0050	5021596
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	0.0050	5021596
Fluorene	ug/g	**62**	<0.0050	<0.0050	0.0050	5021596
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	0.0050	5021596
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	5021596
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	5021596
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	0.0050	5021596
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	0.0050	5021596
Pyrene	ug/g	**78**	<0.0050	<0.0050	0.0050	5021596
Surrogate Recovery (%)						
D10-Anthracene	%	-	86	85		5021596
D14-Terphenyl (FS)	%	-	83	86		5021596
D8-Acenaphthylene	%	-	79	80		5021596

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 #: B7B9841
Report Date: 2017/06/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ENN518	ENN518	ENN519	ENN520	ENN521		
Sampling Date			2017/06/09 10:00	2017/06/09 10:00	2017/06/09 10:00	2017/06/09 11:00	2017/06/09 12:00		
COC Number			572155-32-01	572155-32-01	572155-32-01	572155-32-01	572155-32-01		
	UNITS	**Criteria**	**VS434**	**VS434 Lab-Dup**	**VS1434**	**VS435**	**VS436**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.7	0.6	1.0	1.8	1.2	0.2	5023221

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			ENN522	ENN523		
Sampling Date			2017/06/09 13:00	2017/06/09 14:00		
COC Number			572155-32-01	572155-32-01		
	UNITS	**Criteria**	**VS437**	**VS438**	**RDL**	**QC Batch**
Inorganics						
Chromium (VI)	ug/g	**8**	0.5	1.7	0.2	5023221

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 #: B7B9841
Report Date: 2017/06/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ENN518
Sample ID: VS434
Matrix: Soil

Collected: 2017/06/09
Shipped:
Received: 2017/06/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5021551	N/A	2017/06/12	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5023221	2017/06/12	2017/06/12	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	5023393	2017/06/12	2017/06/12	Viviana Canzonieri
Moisture	BAL	5021586	N/A	2017/06/12	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5021596	2017/06/09	2017/06/09	Arezoo Habibagahi

Maxxam ID: ENN518 Dup
Sample ID: VS434
Matrix: Soil

Collected: 2017/06/09
Shipped:
Received: 2017/06/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5023221	2017/06/12	2017/06/12	Lang Le

Maxxam ID: ENN519
Sample ID: VS1434
Matrix: Soil

Collected: 2017/06/09
Shipped:
Received: 2017/06/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5021551	N/A	2017/06/12	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5023221	2017/06/12	2017/06/12	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	5023393	2017/06/12	2017/06/12	Viviana Canzonieri
Moisture	BAL	5021586	N/A	2017/06/12	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5021596	2017/06/09	2017/06/09	Arezoo Habibagahi

Maxxam ID: ENN519 Dup
Sample ID: VS1434
Matrix: Soil

Collected: 2017/06/09
Shipped:
Received: 2017/06/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5021586	N/A	2017/06/12	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5021596	2017/06/09	2017/06/09	Arezoo Habibagahi

Maxxam ID: ENN520
Sample ID: VS435
Matrix: Soil

Collected: 2017/06/09
Shipped:
Received: 2017/06/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5021551	N/A	2017/06/12	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5023221	2017/06/12	2017/06/12	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	5023393	2017/06/12	2017/06/12	Viviana Canzonieri
Moisture	BAL	5021586	N/A	2017/06/12	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5021596	2017/06/09	2017/06/09	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 #: B7B9841
Report Date: 2017/06/12

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ENN521
Sample ID: VS436
Matrix: Soil

Collected: 2017/06/09
Shipped:
Received: 2017/06/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5021551	N/A	2017/06/12	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5023221	2017/06/12	2017/06/12	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	5023393	2017/06/12	2017/06/12	Viviana Canzonieri
Moisture	BAL	5021586	N/A	2017/06/12	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5021596	2017/06/09	2017/06/09	Arezoo Habibagahi

Maxxam ID: ENN522
Sample ID: VS437
Matrix: Soil

Collected: 2017/06/09
Shipped:
Received: 2017/06/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5021551	N/A	2017/06/12	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5023221	2017/06/12	2017/06/12	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	5023393	2017/06/12	2017/06/12	Viviana Canzonieri
Moisture	BAL	5021586	N/A	2017/06/12	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5021596	2017/06/09	2017/06/09	Arezoo Habibagahi

Maxxam ID: ENN522 Dup
Sample ID: VS437
Matrix: Soil

Collected: 2017/06/09
Shipped:
Received: 2017/06/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5023393	2017/06/12	2017/06/12	Viviana Canzonieri

Maxxam ID: ENN523
Sample ID: VS438
Matrix: Soil

Collected: 2017/06/09
Shipped:
Received: 2017/06/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5021551	N/A	2017/06/12	Paul Rubinato
Hexavalent Chromium in Soil by IC	IC/SPEC	5023221	2017/06/12	2017/06/12	Lang Le
Strong Acid Leachable Metals by ICPMS	ICP/MS	5023393	2017/06/12	2017/06/12	Viviana Canzonieri
Moisture	BAL	5021586	N/A	2017/06/12	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5021596	2017/06/09	2017/06/09	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 #: B7B9841
Report Date: 2017/06/12

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	22.0°C

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 #: B7B9841
Report Date: 2017/06/12

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
5021596	D10-Anthracene	2017/06/09	85	50 - 130	86	50 - 130	87	%		
5021596	D14-Terphenyl (FS)	2017/06/09	86	50 - 130	87	50 - 130	85	%		
5021596	D8-Acenaphthylene	2017/06/09	79	50 - 130	79	50 - 130	81	%		
5021586	Moisture	2017/06/12							4.1	50
5021596	1-Methylnaphthalene	2017/06/09	87	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5021596	2-Methylnaphthalene	2017/06/09	88	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5021596	Acenaphthene	2017/06/09	85	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5021596	Acenaphthylene	2017/06/09	74	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
5021596	Anthracene	2017/06/09	75	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
5021596	Benzo(a)anthracene	2017/06/09	87	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5021596	Benzo(a)pyrene	2017/06/09	75	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5021596	Benzo(b/j)fluoranthene	2017/06/09	83	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5021596	Benzo(g,h,i)perylene	2017/06/09	74	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5021596	Benzo(k)fluoranthene	2017/06/09	85	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5021596	Chrysene	2017/06/09	82	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5021596	Dibenz(a,h)anthracene	2017/06/09	73	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
5021596	Fluoranthene	2017/06/09	82	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5021596	Fluorene	2017/06/09	89	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5021596	Indeno(1,2,3-cd)pyrene	2017/06/09	77	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5021596	Naphthalene	2017/06/09	75	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
5021596	Phenanthrene	2017/06/09	76	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
5021596	Pyrene	2017/06/09	78	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
5023221	Chromium (VI)	2017/06/12	85	75 - 125	90	80 - 120	<0.2	ug/g	18	35
5023393	Acid Extractable Antimony (Sb)	2017/06/12	94	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5023393	Acid Extractable Arsenic (As)	2017/06/12	93	75 - 125	97	80 - 120	<1.0	ug/g	NC	30
5023393	Acid Extractable Barium (Ba)	2017/06/12	99	75 - 125	99	80 - 120	<0.50	ug/g	3.2	30
5023393	Acid Extractable Beryllium (Be)	2017/06/12	96	75 - 125	97	80 - 120	<0.20	ug/g	NC	30
5023393	Acid Extractable Boron (B)	2017/06/12	96	75 - 125	96	80 - 120	<5.0	ug/g	NC	30
5023393	Acid Extractable Cadmium (Cd)	2017/06/12	94	75 - 125	98	80 - 120	<0.10	ug/g	NC	30
5023393	Acid Extractable Chromium (Cr)	2017/06/12	97	75 - 125	101	80 - 120	<1.0	ug/g	11	30
5023393	Acid Extractable Cobalt (Co)	2017/06/12	98	75 - 125	100	80 - 120	<0.10	ug/g	5.9	30

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 #: B7B9841
Report Date: 2017/06/12

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
5023393	Acid Extractable Copper (Cu)	2017/06/12	92	75 - 125	102	80 - 120	<0.50	ug/g	6.9	30
5023393	Acid Extractable Lead (Pb)	2017/06/12	97	75 - 125	102	80 - 120	<1.0	ug/g	11	30
5023393	Acid Extractable Mercury (Hg)	2017/06/12	91	75 - 125	99	80 - 120	<0.050	ug/g	NC	30
5023393	Acid Extractable Molybdenum (Mo)	2017/06/12	94	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
5023393	Acid Extractable Nickel (Ni)	2017/06/12	95	75 - 125	101	80 - 120	<0.50	ug/g	12	30
5023393	Acid Extractable Selenium (Se)	2017/06/12	99	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
5023393	Acid Extractable Silver (Ag)	2017/06/12	95	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5023393	Acid Extractable Thallium (Tl)	2017/06/12	97	75 - 125	102	80 - 120	<0.050	ug/g	23	30
5023393	Acid Extractable Uranium (U)	2017/06/12	96	75 - 125	102	80 - 120	<0.050	ug/g	14	30
5023393	Acid Extractable Vanadium (V)	2017/06/12	94	75 - 125	97	80 - 120	<5.0	ug/g	6.8	30
5023393	Acid Extractable Zinc (Zn)	2017/06/12	103	75 - 125	100	80 - 120	<5.0	ug/g	6.2	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 (absolute difference <= 2x RDL).

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 #: B7B9841
Report Date: 2017/06/12

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).

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#572155-32-01	Madison Bingley
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	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

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

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: _____ Time Required: 24hr ☒
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	# of Bottles	Comments
1		VS434	17/06/09	1000	Soil		X	X	1	
2		VS1434	↓	1000	↓		X	X	1	
3		VS435	↓	1100	↓		X	X	1	
4		VS436	↓	1200	↓		X	X	1	
5		VS437	↓	1300	↓		X	X	1	
6		VS438	↓	1400	↓		X	X	1	
7										RECEIVED IN OTTAWA
8										
9										
10										ON Ice

09-Jun-17 15:00
Alison Cameron
B7B9841
KIV 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
Aaron Berkshire	17/06/09	1415	Ian. Jayan	2017/06/09	15:00	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei 23, 21, 22	Custody Seal	Yes	No
		Present		
		Intact	X	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7B9841
Report Date: 2017/06/12

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. #: 572155-31-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/06
Report #: R4500954
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7B5121
Received: 2017/06/05, 15:00

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	2	N/A	2017/06/06	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	2	2017/06/06	2017/06/06	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	2	2017/06/06	2017/06/06	CAM SOP-00447	EPA 6020B m
Moisture	2	N/A	2017/06/06	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	2	2017/06/05	2017/06/05	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-31-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/06
Report #: R4500954
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7B5121
Received: 2017/06/05, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7B5121
Report Date: 2017/06/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EMR563	EMR563	EMR564		
Sampling Date			2017/06/05 11:00	2017/06/05 11:00	2017/06/05 13:00		
COC Number			572155-31-01	572155-31-01	572155-31-01		
	UNITS	Criteria	VS 432	VS 432 Lab-Dup	VS 433	RDL	QC Batch
Metals							
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	0.20	5014786
Acid Extractable Arsenic (As)	ug/g	**18**	2.0	2.6	2.0	1.0	5014786
Acid Extractable Barium (Ba)	ug/g	**390**	180	180	200	0.50	5014786
Acid Extractable Beryllium (Be)	ug/g	**4**	0.66	0.68	0.66	0.20	5014786
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	5.0	5014786
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.10	5014786
Acid Extractable Chromium (Cr)	ug/g	**160**	41	42	47	1.0	5014786
Acid Extractable Cobalt (Co)	ug/g	**22**	13	13	13	0.10	5014786
Acid Extractable Copper (Cu)	ug/g	**140**	23	23	26	0.50	5014786
Acid Extractable Lead (Pb)	ug/g	**120**	6.3	6.4	6.1	1.0	5014786
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	0.50	5014786
Acid Extractable Nickel (Ni)	ug/g	**100**	24	25	26	0.50	5014786
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	0.50	5014786
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	0.20	5014786
Acid Extractable Thallium (Tl)	ug/g	**1**	0.22	0.25	0.25	0.050	5014786
Acid Extractable Uranium (U)	ug/g	**23**	0.68	0.68	0.63	0.050	5014786
Acid Extractable Vanadium (V)	ug/g	**86**	55	58	58	5.0	5014786
Acid Extractable Zinc (Zn)	ug/g	**340**	68	69	78	5.0	5014786
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	0.050	5014786

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 Job #: B7B5121
Report Date: 2017/06/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EMR563	EMR564	EMR564		
Sampling Date			2017/06/05 11:00	2017/06/05 13:00	2017/06/05 13:00		
COC Number			572155-31-01	572155-31-01	572155-31-01		
	UNITS	Criteria	VS 432	VS 433	VS 433 Lab-Dup	RDL	QC Batch
Inorganics							
Moisture	%	-	22	22	22	0.2	5013660
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.0071	<0.0071		0.0071	5013637
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	0.0050	5013664
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	0.0050	5013664
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	0.0050	5013664
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	0.0050	5013664
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	0.0050	5013664
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	5013664
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	0.0050	5013664
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	0.0050	5013664
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	0.0050	5013664
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	0.0050	5013664
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	0.0050	5013664
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	0.0050	5013664
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	0.0050	5013664
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	5013664
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	0.0050	5013664
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	0.0050	5013664
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	0.0050	5013664
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	0.0050	5013664
Surrogate Recovery (%)							
D10-Anthracene	%	-	85	87	86		5013664
D14-Terphenyl (FS)	%	-	82	84	82		5013664
D8-Acenaphthylene	%	-	75	76	76		5013664

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 Job #: B7B5121
Report Date: 2017/06/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EMR563	EMR564		
Sampling Date			2017/06/05 11:00	2017/06/05 13:00		
COC Number			572155-31-01	572155-31-01		
	UNITS	**Criteria**	**VS 432**	**VS 433**	**RDL**	**QC Batch**
Inorganics						
Chromium (VI)	ug/g	**8**	0.5	0.5	0.2	5014365

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 #: B7B5121
Report Date: 2017/06/06

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EMR563
Sample ID: VS 432
Matrix: Soil

Collected: 2017/06/05
Shipped:
Received: 2017/06/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5013637	N/A	2017/06/06	Ewa Pranjic
Hexavalent Chromium in Soil by IC	IC/SPEC	5014365	2017/06/06	2017/06/06	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5014786	2017/06/06	2017/06/06	Daniel Teclu
Moisture	BAL	5013660	N/A	2017/06/06	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5013664	2017/06/05	2017/06/05	Arezoo Habibagahi

Maxxam ID: EMR563 Dup
Sample ID: VS 432
Matrix: Soil

Collected: 2017/06/05
Shipped:
Received: 2017/06/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5014786	2017/06/06	2017/06/06	Daniel Teclu

Maxxam ID: EMR564
Sample ID: VS 433
Matrix: Soil

Collected: 2017/06/05
Shipped:
Received: 2017/06/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5013637	N/A	2017/06/06	Ewa Pranjic
Hexavalent Chromium in Soil by IC	IC/SPEC	5014365	2017/06/06	2017/06/06	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5014786	2017/06/06	2017/06/06	Daniel Teclu
Moisture	BAL	5013660	N/A	2017/06/06	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5013664	2017/06/05	2017/06/05	Arezoo Habibagahi

Maxxam ID: EMR564 Dup
Sample ID: VS 433
Matrix: Soil

Collected: 2017/06/05
Shipped:
Received: 2017/06/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5013660	N/A	2017/06/06	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5013664	2017/06/05	2017/06/05	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 #: B7B5121
Report Date: 2017/06/06

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

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 #: B7B5121
Report Date: 2017/06/06

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
5013664	D10-Anthracene	2017/06/05	88	50 - 130	90	50 - 130	90	%		
5013664	D14-Terphenyl (FS)	2017/06/05	90	50 - 130	88	50 - 130	84	%		
5013664	D8-Acenaphthylene	2017/06/05	79	50 - 130	81	50 - 130	80	%		
5013660	Moisture	2017/06/06							1.4	50
5013664	1-Methylnaphthalene	2017/06/05	85	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5013664	2-Methylnaphthalene	2017/06/05	88	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5013664	Acenaphthene	2017/06/05	91	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
5013664	Acenaphthylene	2017/06/05	76	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5013664	Anthracene	2017/06/05	81	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5013664	Benzo(a)anthracene	2017/06/05	88	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5013664	Benzo(a)pyrene	2017/06/05	81	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
5013664	Benzo(b/j)fluoranthene	2017/06/05	82	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5013664	Benzo(g,h,i)perylene	2017/06/05	94	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5013664	Benzo(k)fluoranthene	2017/06/05	82	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
5013664	Chrysene	2017/06/05	83	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5013664	Dibenz(a,h)anthracene	2017/06/05	71	50 - 130	69	50 - 130	<0.0050	ug/g	NC	40
5013664	Fluoranthene	2017/06/05	85	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5013664	Fluorene	2017/06/05	91	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
5013664	Indeno(1,2,3-cd)pyrene	2017/06/05	89	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
5013664	Naphthalene	2017/06/05	76	50 - 130	75	50 - 130	<0.0050	ug/g	NC	40
5013664	Phenanthrene	2017/06/05	82	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5013664	Pyrene	2017/06/05	82	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5014365	Chromium (VI)	2017/06/06	90	75 - 125	87	80 - 120	<0.2	ug/g	NC	35
5014786	Acid Extractable Antimony (Sb)	2017/06/06	82	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
5014786	Acid Extractable Arsenic (As)	2017/06/06	100	75 - 125	103	80 - 120	<1.0	ug/g	27	30
5014786	Acid Extractable Barium (Ba)	2017/06/06	NC	75 - 125	102	80 - 120	<0.50	ug/g	1.9	30
5014786	Acid Extractable Beryllium (Be)	2017/06/06	98	75 - 125	100	80 - 120	<0.20	ug/g	3.2	30
5014786	Acid Extractable Boron (B)	2017/06/06	96	75 - 125	96	80 - 120	<5.0	ug/g	NC	30
5014786	Acid Extractable Cadmium (Cd)	2017/06/06	99	75 - 125	101	80 - 120	<0.10	ug/g	NC	30
5014786	Acid Extractable Chromium (Cr)	2017/06/06	NC	75 - 125	104	80 - 120	<1.0	ug/g	2.8	30
5014786	Acid Extractable Cobalt (Co)	2017/06/06	102	75 - 125	104	80 - 120	<0.10	ug/g	2.6	30

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 #: B7B5121
Report Date: 2017/06/06

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
5014786	Acid Extractable Copper (Cu)	2017/06/06	99	75 - 125	104	80 - 120	<0.50	ug/g	1.2	30
5014786	Acid Extractable Lead (Pb)	2017/06/06	98	75 - 125	102	80 - 120	<1.0	ug/g	0.34	30
5014786	Acid Extractable Mercury (Hg)	2017/06/06	96	75 - 125	99	80 - 120	<0.050	ug/g	NC	30
5014786	Acid Extractable Molybdenum (Mo)	2017/06/06	98	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
5014786	Acid Extractable Nickel (Ni)	2017/06/06	104	75 - 125	105	80 - 120	<0.50	ug/g	3.1	30
5014786	Acid Extractable Selenium (Se)	2017/06/06	103	75 - 125	105	80 - 120	<0.50	ug/g	NC	30
5014786	Acid Extractable Silver (Ag)	2017/06/06	101	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
5014786	Acid Extractable Thallium (Tl)	2017/06/06	97	75 - 125	102	80 - 120	<0.050	ug/g	13	30
5014786	Acid Extractable Uranium (U)	2017/06/06	99	75 - 125	103	80 - 120	<0.050	ug/g	0.13	30
5014786	Acid Extractable Vanadium (V)	2017/06/06	NC	75 - 125	102	80 - 120	<5.0	ug/g	5.3	30
5014786	Acid Extractable Zinc (Zn)	2017/06/06	NC	75 - 125	104	80 - 120	<5.0	ug/g	0.75	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7B5121
Report Date: 2017/06/06

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).

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#572155-31-01	Madison Bingley
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)? ___

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: ___ Time Required: 24hr ☒
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								# of Bottles	Comments
1		VS432	17/06/05	1100	soil		X	X								1	
2		VS433	17/06/05	1300	Soil		X	X								1	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

RECEIVED IN OTTAWA

05-Jun-17 15:00
Alison Cameron
B7B5121
KIV OTT 001

ON the 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 Recei	Custody Seal	Yes	No
A. Bradshaw / Aaron Bradshaw	17/06/05	13:25	Kim Jamison	2017/06/05	15:00	0		16, 16, 15	Present Intact	✓ ✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7B5121
Report Date: 2017/06/06

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. #: 572155-30-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/05
Report #: R4499372
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7B3706
Received: 2017/06/02, 14:45

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	5	N/A	2017/06/05	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	5	2017/06/05	2017/06/05	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	5	2017/06/05	2017/06/05	CAM SOP-00447	EPA 6020B m
Moisture	5	N/A	2017/06/05	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	5	2017/06/02	2017/06/02	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-30-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/05
Report #: R4499372
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7B3706
Received: 2017/06/02, 14:45

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7B3706
Report Date: 2017/06/05

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EMK299	EMK300	EMK301	EMK302	EMK303		
Sampling Date			2017/06/02 10:30	2017/06/02 11:00	2017/06/02 13:00	2017/06/02 13:30	2017/06/02 14:00		
COC Number			572155-30-01	572155-30-01	572155-30-01	572155-30-01	572155-30-01		
	UNITS	**Criteria**	**VS 427**	**VS 428**	**VS 429**	**VS 430**	**VS 431**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.24	0.20	5012786
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	2.1	2.0	1.9	2.5	1.0	5012786
Acid Extractable Barium (Ba)	ug/g	**390**	26	170	150	140	200	0.50	5012786
Acid Extractable Beryllium (Be)	ug/g	**4**	0.28	0.68	0.47	0.56	0.66	0.20	5012786
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.0	5.0	5012786
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5012786
Acid Extractable Chromium (Cr)	ug/g	**160**	22	41	30	33	43	1.0	5012786
Acid Extractable Cobalt (Co)	ug/g	**22**	4.5	9.8	11	11	11	0.10	5012786
Acid Extractable Copper (Cu)	ug/g	**140**	4.6	18	8.8	16	23	0.50	5012786
Acid Extractable Lead (Pb)	ug/g	**120**	2.2	5.7	5.7	6.3	5.8	1.0	5012786
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5012786
Acid Extractable Nickel (Ni)	ug/g	**100**	11	23	15	18	26	0.50	5012786
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5012786
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5012786
Acid Extractable Thallium (Tl)	ug/g	**1**	0.075	0.23	0.17	0.19	0.25	0.050	5012786
Acid Extractable Uranium (U)	ug/g	**23**	0.40	0.65	0.61	0.72	0.70	0.050	5012786
Acid Extractable Vanadium (V)	ug/g	**86**	28	55	54	49	59	5.0	5012786
Acid Extractable Zinc (Zn)	ug/g	**340**	33	63	44	59	81	5.0	5012786
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5012786

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 #: B7B3706
Report Date: 2017/06/05

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EMK299	EMK300	EMK300	EMK301	EMK302		
Sampling Date			2017/06/02 10:30	2017/06/02 11:00	2017/06/02 11:00	2017/06/02 13:00	2017/06/02 13:30		
COC Number			572155-30-01	572155-30-01	572155-30-01	572155-30-01	572155-30-01		
	UNITS	**Criteria**	**VS 427**	**VS 428**	**VS 428 Lab-Dup**	**VS 429**	**VS 430**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	20	22		18	20	0.2	5010213
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5011068
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5011373
Surrogate Recovery (%)									
D10-Anthracene	%	-	91	90	93	88	89		5011373
D14-Terphenyl (FS)	%	-	86	84	86	84	87		5011373
D8-Acenaphthylene	%	-	81	78	78	75	77		5011373

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 Job #: B7B3706
Report Date: 2017/06/05

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EMK303		
Sampling Date			2017/06/02 14:00		
COC Number			572155-30-01		
	UNITS	**Criteria**	**VS 431**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	-	20	0.2	5010213
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.014	5011068
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	5011373
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	5011373
Anthracene	ug/g	**0.67**	<0.0050	0.0050	5011373
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	5011373
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	5011373
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5011373
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0050	5011373
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5011373
Chrysene	ug/g	**7**	<0.0050	0.0050	5011373
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	5011373
Fluoranthene	ug/g	**0.69**	0.0080	0.0050	5011373
Fluorene	ug/g	**62**	<0.0050	0.0050	5011373
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	5011373
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5011373
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5011373
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	5011373
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	5011373
Pyrene	ug/g	**78**	0.0064	0.0050	5011373
Surrogate Recovery (%)					
D10-Anthracene	%	-	91		5011373
D14-Terphenyl (FS)	%	-	89		5011373
D8-Acenaphthylene	%	-	78		5011373

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 #: B7B3706
Report Date: 2017/06/05

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EMK299	EMK299	EMK300	EMK301	EMK302		
Sampling Date			2017/06/02 10:30	2017/06/02 10:30	2017/06/02 11:00	2017/06/02 13:00	2017/06/02 13:30		
COC Number			572155-30-01	572155-30-01	572155-30-01	572155-30-01	572155-30-01		
	UNITS	**Criteria**	**VS 427**	**VS 427 Lab-Dup**	**VS 428**	**VS 429**	**VS 430**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.5	0.5	0.7	0.4	0.4	0.2	5012754

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			EMK303		
Sampling Date			2017/06/02 14:00		
COC Number			572155-30-01		
	UNITS	**Criteria**	**VS 431**	**RDL**	**QC Batch**
Inorganics					
Chromium (VI)	ug/g	**8**	0.5	0.2	5012754

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 #: B7B3706
Report Date: 2017/06/05

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EMK299
Sample ID: VS 427
Matrix: Soil

Collected: 2017/06/02
Shipped:
Received: 2017/06/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5011068	N/A	2017/06/05	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5012754	2017/06/05	2017/06/05	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5012786	2017/06/05	2017/06/05	Daniel Teclu
Moisture	BAL	5010213	N/A	2017/06/05	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5011373	2017/06/02	2017/06/02	Arezoo Habibagahi

Maxxam ID: EMK299 Dup
Sample ID: VS 427
Matrix: Soil

Collected: 2017/06/02
Shipped:
Received: 2017/06/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5012754	2017/06/05	2017/06/05	Sally Coughlin

Maxxam ID: EMK300
Sample ID: VS 428
Matrix: Soil

Collected: 2017/06/02
Shipped:
Received: 2017/06/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5011068	N/A	2017/06/05	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5012754	2017/06/05	2017/06/05	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5012786	2017/06/05	2017/06/05	Daniel Teclu
Moisture	BAL	5010213	N/A	2017/06/05	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5011373	2017/06/02	2017/06/02	Arezoo Habibagahi

Maxxam ID: EMK300 Dup
Sample ID: VS 428
Matrix: Soil

Collected: 2017/06/02
Shipped:
Received: 2017/06/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5011373	2017/06/02	2017/06/02	Arezoo Habibagahi

Maxxam ID: EMK301
Sample ID: VS 429
Matrix: Soil

Collected: 2017/06/02
Shipped:
Received: 2017/06/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5011068	N/A	2017/06/05	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5012754	2017/06/05	2017/06/05	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5012786	2017/06/05	2017/06/05	Daniel Teclu
Moisture	BAL	5010213	N/A	2017/06/05	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5011373	2017/06/02	2017/06/02	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 #: B7B3706
Report Date: 2017/06/05

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EMK302
Sample ID: VS 430
Matrix: Soil

Collected: 2017/06/02
Shipped:
Received: 2017/06/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5011068	N/A	2017/06/05	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5012754	2017/06/05	2017/06/05	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5012786	2017/06/05	2017/06/05	Daniel Teclu
Moisture	BAL	5010213	N/A	2017/06/05	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5011373	2017/06/02	2017/06/02	Arezoo Habibagahi

Maxxam ID: EMK303
Sample ID: VS 431
Matrix: Soil

Collected: 2017/06/02
Shipped:
Received: 2017/06/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5011068	N/A	2017/06/05	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5012754	2017/06/05	2017/06/05	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5012786	2017/06/05	2017/06/05	Daniel Teclu
Moisture	BAL	5010213	N/A	2017/06/05	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5011373	2017/06/02	2017/06/02	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 #: B7B3706
Report Date: 2017/06/05

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

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 #: B7B3706
Report Date: 2017/06/05

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
5011373	D10-Anthracene	2017/06/02	94	50 - 130	94	50 - 130	96	%		
5011373	D14-Terphenyl (FS)	2017/06/02	90	50 - 130	91	50 - 130	88	%		
5011373	D8-Acenaphthylene	2017/06/02	82	50 - 130	83	50 - 130	81	%		
5010213	Moisture	2017/06/05							17	50
5011373	1-Methylnaphthalene	2017/06/02	89	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
5011373	2-Methylnaphthalene	2017/06/02	92	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5011373	Acenaphthene	2017/06/02	93	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5011373	Acenaphthylene	2017/06/02	81	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
5011373	Anthracene	2017/06/02	86	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5011373	Benzo(a)anthracene	2017/06/02	93	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5011373	Benzo(a)pyrene	2017/06/02	85	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5011373	Benzo(b/j)fluoranthene	2017/06/02	91	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5011373	Benzo(g,h,i)perylene	2017/06/02	79	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
5011373	Benzo(k)fluoranthene	2017/06/02	87	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5011373	Chrysene	2017/06/02	83	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
5011373	Dibenz(a,h)anthracene	2017/06/02	65	50 - 130	65	50 - 130	<0.0050	ug/g	NC	40
5011373	Fluoranthene	2017/06/02	87	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
5011373	Fluorene	2017/06/02	97	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
5011373	Indeno(1,2,3-cd)pyrene	2017/06/02	98	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5011373	Naphthalene	2017/06/02	80	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
5011373	Phenanthrene	2017/06/02	84	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5011373	Pyrene	2017/06/02	85	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5012754	Chromium (VI)	2017/06/05	87	75 - 125	91	80 - 120	<0.2	ug/g	3.4	35
5012786	Acid Extractable Antimony (Sb)	2017/06/05	86	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5012786	Acid Extractable Arsenic (As)	2017/06/05	103	75 - 125	101	80 - 120	<1.0	ug/g	12	30
5012786	Acid Extractable Barium (Ba)	2017/06/05	NC	75 - 125	101	80 - 120	<0.50	ug/g	1.2	30
5012786	Acid Extractable Beryllium (Be)	2017/06/05	100	75 - 125	99	80 - 120	<0.20	ug/g	5.0	30
5012786	Acid Extractable Boron (B)	2017/06/05	96	75 - 125	98	80 - 120	<5.0	ug/g	1.8	30
5012786	Acid Extractable Cadmium (Cd)	2017/06/05	97	75 - 125	103	80 - 120	<0.10	ug/g	NC	30
5012786	Acid Extractable Chromium (Cr)	2017/06/05	NC	75 - 125	104	80 - 120	<1.0	ug/g	5.1	30
5012786	Acid Extractable Cobalt (Co)	2017/06/05	101	75 - 125	103	80 - 120	<0.10	ug/g	5.6	30

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 #: B7B3706
Report Date: 2017/06/05

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
5012786	Acid Extractable Copper (Cu)	2017/06/05	93	75 - 125	101	80 - 120	<0.50	ug/g	1.1	30
5012786	Acid Extractable Lead (Pb)	2017/06/05	96	75 - 125	102	80 - 120	<1.0	ug/g	6.4	30
5012786	Acid Extractable Mercury (Hg)	2017/06/05	93	75 - 125	98	80 - 120	<0.050	ug/g	NC	30
5012786	Acid Extractable Molybdenum (Mo)	2017/06/05	97	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
5012786	Acid Extractable Nickel (Ni)	2017/06/05	NC	75 - 125	98	80 - 120	<0.50	ug/g	9.0	30
5012786	Acid Extractable Selenium (Se)	2017/06/05	97	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
5012786	Acid Extractable Silver (Ag)	2017/06/05	99	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
5012786	Acid Extractable Thallium (Tl)	2017/06/05	94	75 - 125	101	80 - 120	<0.050	ug/g	4.5	30
5012786	Acid Extractable Uranium (U)	2017/06/05	97	75 - 125	103	80 - 120	<0.050	ug/g	11	30
5012786	Acid Extractable Vanadium (V)	2017/06/05	NC	75 - 125	99	80 - 120	<5.0	ug/g	4.5	30
5012786	Acid Extractable Zinc (Zn)	2017/06/05	NC	75 - 125	102	80 - 120	<5.0	ug/g	10	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7B3706
Report Date: 2017/06/05

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).

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#572155-30-01	Madison Bingley
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	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 ☐ 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)? _____

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: _____ Time Required: 24hr ☒
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		VS427	17/06/02	1030	Soil		X	X								1	
2		VS428	↓	1100	↓		X	X								1	
3		VS429	↓	1300	↓		X	X								1	
4		VS430	↓	1330	↓		X	X								1	
5		VS431	↓	1400	↓		X	X								1	
6																	
7																	
8																	
9																	ON the Ice Pack
10																	

RECEIVED IN OTTAWA

02-Jun-17 14:45
Alison Cameron
B7B3706
KIV OTT 001

* 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 Recei	Custody Seal	Yes	No
Aaron Bradshaw	17/06/02	14:15	[illegible]	2017/06/02	14:45	0		17, 17, 16	Present Intact	✓ ✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7B3706
Report Date: 2017/06/05

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. #: 572155-29-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/02
Report #: R4497011
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7B2612
Received: 2017/06/01, 15:00

Sample Matrix: Soil
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	6	N/A	2017/06/02	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	6	2017/06/02	2017/06/02	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	6	2017/06/02	2017/06/02	CAM SOP-00447	EPA 6020B m
Moisture	6	N/A	2017/06/02	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	6	2017/06/01	2017/06/02	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-29-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/02
Report #: R4497011
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7B2612
Received: 2017/06/01, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7B2612
Report Date: 2017/06/02

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EMF257	EMF258	EMF259	EMF260	EMF261		
Sampling Date			2017/06/01 08:00	2017/06/01 08:00	2017/06/01 09:00	2017/06/01 10:00	2017/06/01 12:00		
COC Number			572155-29-01	572155-29-01	572155-29-01	572155-29-01	572155-29-01		
	UNITS	**Criteria**	**VS 422**	**VS 1422**	**VS 423**	**VS 424**	**VS 425**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5010578
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	<1.0	1.6	<1.0	<1.0	1.0	5010578
Acid Extractable Barium (Ba)	ug/g	**390**	21	22	47	15	28	0.50	5010578
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	<0.20	0.31	<0.20	0.22	0.20	5010578
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5010578
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5010578
Acid Extractable Chromium (Cr)	ug/g	**160**	17	19	25	10	18	1.0	5010578
Acid Extractable Cobalt (Co)	ug/g	**22**	3.7	3.8	5.0	2.4	4.3	0.10	5010578
Acid Extractable Copper (Cu)	ug/g	**140**	4.2	4.0	12	2.5	8.8	0.50	5010578
Acid Extractable Lead (Pb)	ug/g	**120**	1.5	1.5	2.4	1.1	1.9	1.0	5010578
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5010578
Acid Extractable Nickel (Ni)	ug/g	**100**	7.5	7.9	15	6.0	9.3	0.50	5010578
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5010578
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5010578
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	<0.050	0.075	<0.050	0.057	0.050	5010578
Acid Extractable Uranium (U)	ug/g	**23**	0.62	0.58	0.56	0.36	0.49	0.050	5010578
Acid Extractable Vanadium (V)	ug/g	**86**	23	26	29	14	25	5.0	5010578
Acid Extractable Zinc (Zn)	ug/g	**340**	13	14	28	13	23	5.0	5010578
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5010578

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 #: B7B2612
Report Date: 2017/06/02

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EMF262		
Sampling Date			2017/06/01 13:00		
COC Number			572155-29-01		
	UNITS	**Criteria**	**VS 426**	**RDL**	**QC Batch**
Metals					
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	0.20	5010578
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	1.0	5010578
Acid Extractable Barium (Ba)	ug/g	**390**	25	0.50	5010578
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	0.20	5010578
Acid Extractable Boron (B)	ug/g	**120**	<5.0	5.0	5010578
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.10	5010578
Acid Extractable Chromium (Cr)	ug/g	**160**	13	1.0	5010578
Acid Extractable Cobalt (Co)	ug/g	**22**	3.0	0.10	5010578
Acid Extractable Copper (Cu)	ug/g	**140**	4.5	0.50	5010578
Acid Extractable Lead (Pb)	ug/g	**120**	1.9	1.0	5010578
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.50	5010578
Acid Extractable Nickel (Ni)	ug/g	**100**	7.1	0.50	5010578
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	0.50	5010578
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	0.20	5010578
Acid Extractable Thallium (Tl)	ug/g	**1**	0.055	0.050	5010578
Acid Extractable Uranium (U)	ug/g	**23**	0.41	0.050	5010578
Acid Extractable Vanadium (V)	ug/g	**86**	15	5.0	5010578
Acid Extractable Zinc (Zn)	ug/g	**340**	22	5.0	5010578
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	0.050	5010578

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 #: B7B2612
Report Date: 2017/06/02

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EMF257	EMF258	EMF258	EMF259	EMF260		
Sampling Date			2017/06/01 08:00	2017/06/01 08:00	2017/06/01 08:00	2017/06/01 09:00	2017/06/01 10:00		
COC Number			572155-29-01	572155-29-01	572155-29-01	572155-29-01	572155-29-01		
	UNITS	Criteria	VS 422	VS 1422	VS 1422 Lab-Dup	VS 423	VS 424	RDL	QC Batch
Inorganics									
Moisture	%	-	17	18		15	18	0.2	5008907
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5009309
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5009319
Surrogate Recovery (%)									
D10-Anthracene	%	-	88	88	89	87	91		5009319
D14-Terphenyl (FS)	%	-	89	90	87	85	95		5009319
D8-Acenaphthylene	%	-	85	84	85	82	86		5009319

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 Job #: B7B2612
Report Date: 2017/06/02

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EMF261	EMF262		
Sampling Date			2017/06/01 12:00	2017/06/01 13:00		
COC Number			572155-29-01	572155-29-01		
	UNITS	Criteria	VS 425	VS 426	RDL	QC Batch
Inorganics						
Moisture	%	-	17	18	0.2	5008907
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	0.014	5009309
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	0.0050	5009319
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	0.0050	5009319
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	0.0050	5009319
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	0.0050	5009319
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	0.0050	5009319
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	5009319
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	0.0050	5009319
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	0.0050	5009319
Chrysene	ug/g	**7**	<0.0050	<0.0050	0.0050	5009319
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	0.0050	5009319
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	0.0050	5009319
Fluorene	ug/g	**62**	<0.0050	<0.0050	0.0050	5009319
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	0.0050	5009319
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	5009319
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	0.0050	5009319
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	0.0050	5009319
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	0.0050	5009319
Pyrene	ug/g	**78**	<0.0050	<0.0050	0.0050	5009319
Surrogate Recovery (%)						
D10-Anthracene	%	-	89	88		5009319
D14-Terphenyl (FS)	%	-	90	86		5009319
D8-Acenaphthylene	%	-	83	82		5009319

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 #: B7B2612
Report Date: 2017/06/02

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EMF257	EMF258	EMF259	EMF260	EMF261		
Sampling Date			2017/06/01 08:00	2017/06/01 08:00	2017/06/01 09:00	2017/06/01 10:00	2017/06/01 12:00		
COC Number			572155-29-01	572155-29-01	572155-29-01	572155-29-01	572155-29-01		
	UNITS	**Criteria**	**VS 422**	**VS 1422**	**VS 423**	**VS 424**	**VS 425**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.6	0.5	0.2	0.3	<0.2	0.2	5010124

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			EMF262		
Sampling Date			2017/06/01 13:00		
COC Number			572155-29-01		
	UNITS	**Criteria**	**VS 426**	**RDL**	**QC Batch**
Inorganics					
Chromium (VI)	ug/g	**8**	<0.2	0.2	5010124

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 #: B7B2612
Report Date: 2017/06/02

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EMF257
Sample ID: VS 422
Matrix: Soil

Collected: 2017/06/01
Shipped:
Received: 2017/06/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5009309	N/A	2017/06/02	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5010124	2017/06/02	2017/06/02	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5010578	2017/06/02	2017/06/02	Daniel Teclu
Moisture	BAL	5008907	N/A	2017/06/02	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5009319	2017/06/01	2017/06/02	Arezoo Habibagahi

Maxxam ID: EMF258
Sample ID: VS 1422
Matrix: Soil

Collected: 2017/06/01
Shipped:
Received: 2017/06/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5009309	N/A	2017/06/02	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5010124	2017/06/02	2017/06/02	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5010578	2017/06/02	2017/06/02	Daniel Teclu
Moisture	BAL	5008907	N/A	2017/06/02	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5009319	2017/06/01	2017/06/02	Arezoo Habibagahi

Maxxam ID: EMF258 Dup
Sample ID: VS 1422
Matrix: Soil

Collected: 2017/06/01
Shipped:
Received: 2017/06/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5009319	2017/06/01	2017/06/02	Arezoo Habibagahi

Maxxam ID: EMF259
Sample ID: VS 423
Matrix: Soil

Collected: 2017/06/01
Shipped:
Received: 2017/06/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5009309	N/A	2017/06/02	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5010124	2017/06/02	2017/06/02	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5010578	2017/06/02	2017/06/02	Daniel Teclu
Moisture	BAL	5008907	N/A	2017/06/02	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5009319	2017/06/01	2017/06/02	Arezoo Habibagahi

Maxxam ID: EMF260
Sample ID: VS 424
Matrix: Soil

Collected: 2017/06/01
Shipped:
Received: 2017/06/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5009309	N/A	2017/06/02	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5010124	2017/06/02	2017/06/02	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5010578	2017/06/02	2017/06/02	Daniel Teclu
Moisture	BAL	5008907	N/A	2017/06/02	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5009319	2017/06/01	2017/06/02	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 #: B7B2612
Report Date: 2017/06/02

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EMF261
Sample ID: VS 425
Matrix: Soil

Collected: 2017/06/01
Shipped:
Received: 2017/06/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5009309	N/A	2017/06/02	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5010124	2017/06/02	2017/06/02	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5010578	2017/06/02	2017/06/02	Daniel Teclu
Moisture	BAL	5008907	N/A	2017/06/02	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5009319	2017/06/01	2017/06/02	Arezoo Habibagahi

Maxxam ID: EMF262
Sample ID: VS 426
Matrix: Soil

Collected: 2017/06/01
Shipped:
Received: 2017/06/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5009309	N/A	2017/06/02	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5010124	2017/06/02	2017/06/02	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5010578	2017/06/02	2017/06/02	Daniel Teclu
Moisture	BAL	5008907	N/A	2017/06/02	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5009319	2017/06/01	2017/06/02	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 #: B7B2612
Report Date: 2017/06/02

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.

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 #: B7B2612
Report Date: 2017/06/02

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
5009319	D10-Anthracene	2017/06/02	89	50 - 130	93	50 - 130	93	%		
5009319	D14-Terphenyl (FS)	2017/06/02	88	50 - 130	96	50 - 130	93	%		
5009319	D8-Acenaphthylene	2017/06/02	86	50 - 130	88	50 - 130	88	%		
5008907	Moisture	2017/06/02							3.9	50
5009319	1-Methylnaphthalene	2017/06/02	88	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5009319	2-Methylnaphthalene	2017/06/02	90	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5009319	Acenaphthene	2017/06/02	89	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5009319	Acenaphthylene	2017/06/02	78	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5009319	Anthracene	2017/06/02	83	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5009319	Benzo(a)anthracene	2017/06/02	85	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5009319	Benzo(a)pyrene	2017/06/02	83	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5009319	Benzo(b/j)fluoranthene	2017/06/02	88	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
5009319	Benzo(g,h,i)perylene	2017/06/02	72	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5009319	Benzo(k)fluoranthene	2017/06/02	85	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5009319	Chrysene	2017/06/02	73	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5009319	Dibenz(a,h)anthracene	2017/06/02	56	50 - 130	65	50 - 130	<0.0050	ug/g	NC	40
5009319	Fluoranthene	2017/06/02	85	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5009319	Fluorene	2017/06/02	93	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
5009319	Indeno(1,2,3-cd)pyrene	2017/06/02	91	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40
5009319	Naphthalene	2017/06/02	79	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5009319	Phenanthrene	2017/06/02	83	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5009319	Pyrene	2017/06/02	81	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5010124	Chromium (VI)	2017/06/02	18 (1)	75 - 125	90	80 - 120	<0.2	ug/g	NC	35
5010578	Acid Extractable Antimony (Sb)	2017/06/02	89	75 - 125	98	80 - 120	<0.20	ug/g	8.9	30
5010578	Acid Extractable Arsenic (As)	2017/06/02	91	75 - 125	99	80 - 120	<1.0	ug/g	1.2	30
5010578	Acid Extractable Barium (Ba)	2017/06/02	NC	75 - 125	99	80 - 120	<0.50	ug/g	7.4	30
5010578	Acid Extractable Beryllium (Be)	2017/06/02	98	75 - 125	99	80 - 120	<0.20	ug/g	5.3	30
5010578	Acid Extractable Boron (B)	2017/06/02	94	75 - 125	96	80 - 120	<5.0	ug/g	7.7	30
5010578	Acid Extractable Cadmium (Cd)	2017/06/02	96	75 - 125	100	80 - 120	<0.10	ug/g	NC	30
5010578	Acid Extractable Chromium (Cr)	2017/06/02	99	75 - 125	103	80 - 120	<1.0	ug/g	2.2	30
5010578	Acid Extractable Cobalt (Co)	2017/06/02	98	75 - 125	103	80 - 120	<0.10	ug/g	0.74	30

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 #: B7B2612
Report Date: 2017/06/02

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
5010578	Acid Extractable Copper (Cu)	2017/06/02	96	75 - 125	104	80 - 120	<0.50	ug/g	4.8	30
5010578	Acid Extractable Lead (Pb)	2017/06/02	NC	75 - 125	100	80 - 120	<1.0	ug/g	5.4	30
5010578	Acid Extractable Mercury (Hg)	2017/06/02	90	75 - 125	101	80 - 120	<0.050	ug/g	NC	30
5010578	Acid Extractable Molybdenum (Mo)	2017/06/02	97	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
5010578	Acid Extractable Nickel (Ni)	2017/06/02	101	75 - 125	105	80 - 120	<0.50	ug/g	5.2	30
5010578	Acid Extractable Selenium (Se)	2017/06/02	96	75 - 125	106	80 - 120	<0.50	ug/g	NC	30
5010578	Acid Extractable Silver (Ag)	2017/06/02	98	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
5010578	Acid Extractable Thallium (Tl)	2017/06/02	94	75 - 125	100	80 - 120	<0.050	ug/g	12	30
5010578	Acid Extractable Uranium (U)	2017/06/02	95	75 - 125	98	80 - 120	<0.050	ug/g	5.9	30
5010578	Acid Extractable Vanadium (V)	2017/06/02	NC	75 - 125	99	80 - 120	<5.0	ug/g	2.3	30
5010578	Acid Extractable Zinc (Zn)	2017/06/02	NC	75 - 125	107	80 - 120	<5.0	ug/g	6.9	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x 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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B7B2612
Report Date: 2017/06/02

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, 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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#572155-29-01	Madison Bingley
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)? _____

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: _____ Time Required: 24hr ☒
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		VS422	17/06/01	0800	Soil		X	X							1	
2		VS1422	↓	0800	↓		X	X							1	
3		VS423	↓	0900	↓		X	X							1	
4		VS424	↓	1000	↓		X	X							1	
5		VS425	↓	1200	↓		X	X							1	
6		VS426	↓	1300	↓		X	X							1	
7																
8																
9																
10																ON the Ice pack

RECEIVED IN OTTAWA

01-Jun-17 15:00
Alison Cameron
B7B2612
KIV OTT 001

* 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				
Aaron Bradshaw	17/06/01	1400	Kuw Jayasaya	2017/06/01	15-00	0	Time Sensitive	Temperature (°C) on Recei 20, 18, 19	Custody Seal	Yes	No
									Present	✓	
									Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7B2612
Report Date: 2017/06/02

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. #: 572155-28-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/01
Report #: R4495679
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7B1327
Received: 2017/05/31, 15:00

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	5	N/A	2017/06/01	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	5	2017/06/01	2017/06/01	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	5	2017/06/01	2017/06/01	CAM SOP-00447	EPA 6020B m
Moisture	5	N/A	2017/06/01	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	5	2017/05/31	2017/05/31	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-28-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/06/01
Report #: R4495679
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7B1327
Received: 2017/05/31, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7B1327
Report Date: 2017/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ELZ414	ELZ415	ELZ416	ELZ417	ELZ418		
Sampling Date			2017/05/31 09:00	2017/05/31 11:00	2017/05/31 12:00	2017/05/31 14:00	2017/05/31 14:30		
COC Number			572155-28-01	572155-28-01	572155-28-01	572155-28-01	572155-28-01		
	UNITS	**Criteria**	**VS 417**	**VS 418**	**VS 419**	**VS 420**	**VS 421**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5008689
Acid Extractable Arsenic (As)	ug/g	**18**	1.8	2.1	<1.0	<1.0	<1.0	1.0	5008689
Acid Extractable Barium (Ba)	ug/g	**390**	170	170	24	25	32	0.50	5008689
Acid Extractable Beryllium (Be)	ug/g	**4**	0.57	0.66	0.27	0.24	0.23	0.20	5008689
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5008689
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5008689
Acid Extractable Chromium (Cr)	ug/g	**160**	39	38	20	17	17	1.0	5008689
Acid Extractable Cobalt (Co)	ug/g	**22**	13	12	5.7	4.5	4.7	0.10	5008689
Acid Extractable Copper (Cu)	ug/g	**140**	15	17	5.8	6.7	5.8	0.50	5008689
Acid Extractable Lead (Pb)	ug/g	**120**	6.1	5.5	1.8	1.9	2.0	1.0	5008689
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5008689
Acid Extractable Nickel (Ni)	ug/g	**100**	20	22	10	9.1	10	0.50	5008689
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5008689
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5008689
Acid Extractable Thallium (Tl)	ug/g	**1**	0.24	0.21	0.079	<0.050	0.052	0.050	5008689
Acid Extractable Uranium (U)	ug/g	**23**	0.60	0.69	0.60	0.47	0.80	0.050	5008689
Acid Extractable Vanadium (V)	ug/g	**86**	53	53	23	25	23	5.0	5008689
Acid Extractable Zinc (Zn)	ug/g	**340**	61	61	21	19	19	5.0	5008689
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5008689

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 #: B7B1327
Report Date: 2017/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ELZ414	ELZ414	ELZ415	ELZ416	ELZ417		
Sampling Date			2017/05/31 09:00	2017/05/31 09:00	2017/05/31 11:00	2017/05/31 12:00	2017/05/31 14:00		
COC Number			572155-28-01	572155-28-01	572155-28-01	572155-28-01	572155-28-01		
	UNITS	Criteria	VS 417	VS 417 Lab-Dup	VS 418	VS 419	VS 420	RDL	QC Batch
Inorganics									
Moisture	%	-	19	19	20	21	20	0.2	5007254
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	<0.014	0.014	5007181
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
Dibenz(a,h)anthracene	ug/g	**0.1**	0.0061	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
Fluoranthene	ug/g	**0.69**	0.0061	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.0055	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5007255
Surrogate Recovery (%)									
D10-Anthracene	%	-	89	85	92	86	90		5007255
D14-Terphenyl (FS)	%	-	92	86	96	89	91		5007255
D8-Acenaphthylene	%	-	81	78	84	80	82		5007255

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 Job #: B7B1327
Report Date: 2017/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ELZ418		
Sampling Date			2017/05/31 14:30		
COC Number			572155-28-01		
	UNITS	**Criteria**	**VS 421**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	-	17	0.2	5007254
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.014	5007181
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	5007255
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	5007255
Anthracene	ug/g	**0.67**	<0.0050	0.0050	5007255
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	5007255
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	5007255
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5007255
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0050	5007255
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	5007255
Chrysene	ug/g	**7**	<0.0050	0.0050	5007255
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	5007255
Fluoranthene	ug/g	**0.69**	<0.0050	0.0050	5007255
Fluorene	ug/g	**62**	<0.0050	0.0050	5007255
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	5007255
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5007255
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	5007255
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	5007255
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	5007255
Pyrene	ug/g	**78**	<0.0050	0.0050	5007255
Surrogate Recovery (%)					
D10-Anthracene	%	-	88		5007255
D14-Terphenyl (FS)	%	-	89		5007255
D8-Acenaphthylene	%	-	78		5007255

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 #: B7B1327
Report Date: 2017/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ELZ414	ELZ415	ELZ415	ELZ416	ELZ417		
Sampling Date			2017/05/31 09:00	2017/05/31 11:00	2017/05/31 11:00	2017/05/31 12:00	2017/05/31 14:00		
COC Number			572155-28-01	572155-28-01	572155-28-01	572155-28-01	572155-28-01		
	UNITS	**Criteria**	**VS 417**	**VS 418**	**VS 418 Lab-Dup**	**VS 419**	**VS 420**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	<0.2	0.6	0.7	0.4	0.3	0.2	5008208

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			ELZ418		
Sampling Date			2017/05/31 14:30		
COC Number			572155-28-01		
	UNITS	**Criteria**	**VS 421**	**RDL**	**QC Batch**
Inorganics					
Chromium (VI)	ug/g	**8**	0.2	0.2	5008208

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 #: B7B1327
Report Date: 2017/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ELZ414
Sample ID: VS 417
Matrix: Soil

Collected: 2017/05/31
Shipped:
Received: 2017/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5007181	N/A	2017/06/01	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5008208	2017/06/01	2017/06/01	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5008689	2017/06/01	2017/06/01	Daniel Teclu
Moisture	BAL	5007254	N/A	2017/06/01	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5007255	2017/05/31	2017/05/31	Arezoo Habibagahi

Maxxam ID: ELZ414 Dup
Sample ID: VS 417
Matrix: Soil

Collected: 2017/05/31
Shipped:
Received: 2017/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5007254	N/A	2017/06/01	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5007255	2017/05/31	2017/05/31	Arezoo Habibagahi

Maxxam ID: ELZ415
Sample ID: VS 418
Matrix: Soil

Collected: 2017/05/31
Shipped:
Received: 2017/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5007181	N/A	2017/06/01	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5008208	2017/06/01	2017/06/01	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5008689	2017/06/01	2017/06/01	Daniel Teclu
Moisture	BAL	5007254	N/A	2017/06/01	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5007255	2017/05/31	2017/05/31	Arezoo Habibagahi

Maxxam ID: ELZ415 Dup
Sample ID: VS 418
Matrix: Soil

Collected: 2017/05/31
Shipped:
Received: 2017/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5008208	2017/06/01	2017/06/01	Sally Coughlin

Maxxam ID: ELZ416
Sample ID: VS 419
Matrix: Soil

Collected: 2017/05/31
Shipped:
Received: 2017/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5007181	N/A	2017/06/01	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5008208	2017/06/01	2017/06/01	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5008689	2017/06/01	2017/06/01	Daniel Teclu
Moisture	BAL	5007254	N/A	2017/06/01	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5007255	2017/05/31	2017/05/31	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 #: B7B1327
Report Date: 2017/06/01

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ELZ417
Sample ID: VS 420
Matrix: Soil

Collected: 2017/05/31
Shipped:
Received: 2017/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5007181	N/A	2017/06/01	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5008208	2017/06/01	2017/06/01	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5008689	2017/06/01	2017/06/01	Daniel Teclu
Moisture	BAL	5007254	N/A	2017/06/01	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5007255	2017/05/31	2017/05/31	Arezoo Habibagahi

Maxxam ID: ELZ418
Sample ID: VS 421
Matrix: Soil

Collected: 2017/05/31
Shipped:
Received: 2017/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5007181	N/A	2017/06/01	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5008208	2017/06/01	2017/06/01	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5008689	2017/06/01	2017/06/01	Daniel Teclu
Moisture	BAL	5007254	N/A	2017/06/01	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5007255	2017/05/31	2017/05/31	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 #: B7B1327
Report Date: 2017/06/01

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	21.7°C

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 #: B7B1327
Report Date: 2017/06/01

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
5007255	D10-Anthracene	2017/05/31	87	50 - 130	95	50 - 130	93	%		
5007255	D14-Terphenyl (FS)	2017/05/31	92	50 - 130	98	50 - 130	95	%		
5007255	D8-Acenaphthylene	2017/05/31	81	50 - 130	86	50 - 130	86	%		
5007254	Moisture	2017/06/01							1.6	50
5007255	1-Methylnaphthalene	2017/05/31	84	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
5007255	2-Methylnaphthalene	2017/05/31	88	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5007255	Acenaphthene	2017/05/31	89	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5007255	Acenaphthylene	2017/05/31	77	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
5007255	Anthracene	2017/05/31	83	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5007255	Benzo(a)anthracene	2017/05/31	89	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5007255	Benzo(a)pyrene	2017/05/31	83	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5007255	Benzo(b/j)fluoranthene	2017/05/31	86	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
5007255	Benzo(g,h,i)perylene	2017/05/31	79	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5007255	Benzo(k)fluoranthene	2017/05/31	82	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5007255	Chrysene	2017/05/31	75	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5007255	Dibenz(a,h)anthracene	2017/05/31	60	50 - 130	64	50 - 130	<0.0050	ug/g	20	40
5007255	Fluoranthene	2017/05/31	85	50 - 130	88	50 - 130	<0.0050	ug/g	20	40
5007255	Fluorene	2017/05/31	95	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5007255	Indeno(1,2,3-cd)pyrene	2017/05/31	100	50 - 130	106	50 - 130	<0.0050	ug/g	9.8	40
5007255	Naphthalene	2017/05/31	76	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
5007255	Phenanthrene	2017/05/31	81	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5007255	Pyrene	2017/05/31	82	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5008208	Chromium (VI)	2017/06/01	86	75 - 125	88	80 - 120	<0.2	ug/g	1.8	35
5008689	Acid Extractable Antimony (Sb)	2017/06/01	81	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
5008689	Acid Extractable Arsenic (As)	2017/06/01	91	75 - 125	98	80 - 120	<1.0	ug/g	NC	30
5008689	Acid Extractable Barium (Ba)	2017/06/01	NC	75 - 125	97	80 - 120	<0.50	ug/g	1.8	30
5008689	Acid Extractable Beryllium (Be)	2017/06/01	100	75 - 125	98	80 - 120	<0.20	ug/g	2.6	30
5008689	Acid Extractable Boron (B)	2017/06/01	101	75 - 125	100	80 - 120	<5.0	ug/g	1.8	30
5008689	Acid Extractable Cadmium (Cd)	2017/06/01	97	75 - 125	99	80 - 120	<0.10	ug/g	NC	30
5008689	Acid Extractable Chromium (Cr)	2017/06/01	NC	75 - 125	96	80 - 120	<1.0	ug/g	2.2	30
5008689	Acid Extractable Cobalt (Co)	2017/06/01	94	75 - 125	100	80 - 120	<0.10	ug/g	0.35	30

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 #: B7B1327
Report Date: 2017/06/01

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
5008689	Acid Extractable Copper (Cu)	2017/06/01	NC	75 - 125	100	80 - 120	<0.50	ug/g	0.47	30
5008689	Acid Extractable Lead (Pb)	2017/06/01	96	75 - 125	101	80 - 120	<1.0	ug/g	1.4	30
5008689	Acid Extractable Mercury (Hg)	2017/06/01	91	75 - 125	98	80 - 120	<0.050	ug/g		
5008689	Acid Extractable Molybdenum (Mo)	2017/06/01	97	75 - 125	103	80 - 120	<0.50	ug/g	7.1	30
5008689	Acid Extractable Nickel (Ni)	2017/06/01	NC	75 - 125	99	80 - 120	<0.50	ug/g	1.8	30
5008689	Acid Extractable Selenium (Se)	2017/06/01	102	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
5008689	Acid Extractable Silver (Ag)	2017/06/01	97	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
5008689	Acid Extractable Thallium (Tl)	2017/06/01	95	75 - 125	100	80 - 120	<0.050	ug/g	0.26	30
5008689	Acid Extractable Uranium (U)	2017/06/01	98	75 - 125	101	80 - 120	<0.050	ug/g	0.38	30
5008689	Acid Extractable Vanadium (V)	2017/06/01	NC	75 - 125	97	80 - 120	<5.0	ug/g	0.16	30
5008689	Acid Extractable Zinc (Zn)	2017/06/01	NC	75 - 125	104	80 - 120	<5.0	ug/g	3.0	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7B1327
Report Date: 2017/06/01

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

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#572155-28-01	Madison Bingley
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 ☐ 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)? _____

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: 24hr ☒
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							# of Bottles	Comments
1		VS417	17/05/31	0900	Soil	✓	X	X							1	
2		VS418		1100		✓	X	X							1	
3		VS419		1200		✓	X	X							1	
4		VS420		1400		✓	X	X							1	
5		VS421		1430		✓	X	X							1	
6																
7																
8																
9																
10																NO Ice

31-May-17 15:00
Alison Cameron
B7B1327
KIV 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
Aaron Bradshaw	17/05/31	1440		2017/05/31	15:00	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	22, 22, 21	Present	☒	
		Intact	☒	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7B1327
Report Date: 2017/06/01

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
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 572155-27-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/31
Report #: R4494491
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7B0113
Received: 2017/05/30, 15:00

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	4	N/A	2017/05/31	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	4	2017/05/31	2017/05/31	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	4	2017/05/31	2017/05/31	CAM SOP-00447	EPA 6020B m
Moisture	4	N/A	2017/05/31	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	4	2017/05/30	2017/05/31	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-27-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/31
Report #: R4494491
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7B0113
Received: 2017/05/30, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7B0113
Report Date: 2017/05/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ELS456	ELS457	ELS458	ELS458	ELS459		
Sampling Date			2017/05/30 10:00	2017/05/30 10:30	2017/05/30 11:30	2017/05/30 11:30	2017/05/30 13:45		
COC Number			572155-27-01	572155-27-01	572155-27-01	572155-27-01	572155-27-01		
	UNITS	**Criteria**	**VS 414**	**VS 415**	**VS 416**	**VS 416 Lab-Dup**	**VS 348B**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5006479
Acid Extractable Arsenic (As)	ug/g	**18**	1.4	2.1	<1.0	<1.0	2.0	1.0	5006479
Acid Extractable Barium (Ba)	ug/g	**390**	110	200	33	34	210	0.50	5006479
Acid Extractable Beryllium (Be)	ug/g	**4**	0.43	0.68	0.27	0.31	0.71	0.20	5006479
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	5.1	5.0	5006479
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5006479
Acid Extractable Chromium (Cr)	ug/g	**160**	32	45	21	20	47	1.0	5006479
Acid Extractable Cobalt (Co)	ug/g	**22**	9.8	12	3.9	3.9	11	0.10	5006479
Acid Extractable Copper (Cu)	ug/g	**140**	6.9	26	4.7	4.9	24	0.50	5006479
Acid Extractable Lead (Pb)	ug/g	**120**	5.0	6.3	3.9	4.1	6.7	1.0	5006479
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5006479
Acid Extractable Nickel (Ni)	ug/g	**100**	14	27	10	10	26	0.50	5006479
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5006479
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5006479
Acid Extractable Thallium (Tl)	ug/g	**1**	0.15	0.21	<0.050	0.051	0.24	0.050	5006479
Acid Extractable Uranium (U)	ug/g	**23**	0.71	0.73	0.51	0.48	0.80	0.050	5006479
Acid Extractable Vanadium (V)	ug/g	**86**	42	55	25	25	57	5.0	5006479
Acid Extractable Zinc (Zn)	ug/g	**340**	66	80	26	27	75	5.0	5006479
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5006479

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 Job #: B7B0113
Report Date: 2017/05/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ELS456	ELS457	ELS457	ELS458	ELS459		
Sampling Date			2017/05/30 10:00	2017/05/30 10:30	2017/05/30 10:30	2017/05/30 11:30	2017/05/30 13:45		
COC Number			572155-27-01	572155-27-01	572155-27-01	572155-27-01	572155-27-01		
	UNITS	**Criteria**	**VS 414**	**VS 415**	**VS 415 Lab-Dup**	**VS 416**	**VS 348B**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	19	22		17	22	0.2	5005319
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5005330
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5005327
Surrogate Recovery (%)									
D10-Anthracene	%	-	91	92	89	88	87		5005327
D14-Terphenyl (FS)	%	-	104	102	104	103	96		5005327
D8-Acenaphthylene	%	-	91	93	92	92	90		5005327

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 Job #: B7B0113
Report Date: 2017/05/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ELS456	ELS457	ELS458	ELS459		
Sampling Date			2017/05/30 10:00	2017/05/30 10:30	2017/05/30 11:30	2017/05/30 13:45		
COC Number			572155-27-01	572155-27-01	572155-27-01	572155-27-01		
	UNITS	**Criteria**	**VS 414**	**VS 415**	**VS 416**	**VS 348B**	**RDL**	**QC Batch**
Inorganics								
Chromium (VI)	ug/g	**8**	0.3	0.3	0.5	<0.2	0.2	5006181

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 #: B7B0113
Report Date: 2017/05/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ELS456
Sample ID: VS 414
Matrix: Soil

Collected: 2017/05/30
Shipped:
Received: 2017/05/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5005330	N/A	2017/05/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5006181	2017/05/31	2017/05/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5006479	2017/05/31	2017/05/31	Viviana Canzonieri
Moisture	BAL	5005319	N/A	2017/05/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5005327	2017/05/30	2017/05/31	Arezoo Habibagahi

Maxxam ID: ELS457
Sample ID: VS 415
Matrix: Soil

Collected: 2017/05/30
Shipped:
Received: 2017/05/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5005330	N/A	2017/05/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5006181	2017/05/31	2017/05/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5006479	2017/05/31	2017/05/31	Viviana Canzonieri
Moisture	BAL	5005319	N/A	2017/05/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5005327	2017/05/30	2017/05/31	Arezoo Habibagahi

Maxxam ID: ELS457 Dup
Sample ID: VS 415
Matrix: Soil

Collected: 2017/05/30
Shipped:
Received: 2017/05/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5005327	2017/05/30	2017/05/31	Arezoo Habibagahi

Maxxam ID: ELS458
Sample ID: VS 416
Matrix: Soil

Collected: 2017/05/30
Shipped:
Received: 2017/05/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5005330	N/A	2017/05/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5006181	2017/05/31	2017/05/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5006479	2017/05/31	2017/05/31	Viviana Canzonieri
Moisture	BAL	5005319	N/A	2017/05/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5005327	2017/05/30	2017/05/31	Arezoo Habibagahi

Maxxam ID: ELS458 Dup
Sample ID: VS 416
Matrix: Soil

Collected: 2017/05/30
Shipped:
Received: 2017/05/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5006479	2017/05/31	2017/05/31	Viviana Canzonieri

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 #: B7B0113
Report Date: 2017/05/31

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ELS459
Sample ID: VS 348B
Matrix: Soil

Collected: 2017/05/30
Shipped:
Received: 2017/05/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5005330	N/A	2017/05/31	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5006181	2017/05/31	2017/05/31	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5006479	2017/05/31	2017/05/31	Viviana Canzonieri
Moisture	BAL	5005319	N/A	2017/05/31	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5005327	2017/05/30	2017/05/31	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 #: B7B0113
Report Date: 2017/05/31

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	16.3°C

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 Job #: B7B0113
Report Date: 2017/05/31

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
5005327	D10-Anthracene	2017/05/31	91	50 - 130	95	50 - 130	93	%		
5005327	D14-Terphenyl (FS)	2017/05/31	104	50 - 130	108	50 - 130	102	%		
5005327	D8-Acenaphthylene	2017/05/31	98	50 - 130	97	50 - 130	98	%		
5005319	Moisture	2017/05/31							1.3	50
5005327	1-Methylnaphthalene	2017/05/31	98	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
5005327	2-Methylnaphthalene	2017/05/31	95	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5005327	Acenaphthene	2017/05/31	97	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5005327	Acenaphthylene	2017/05/31	92	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
5005327	Anthracene	2017/05/31	87	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
5005327	Benzo(a)anthracene	2017/05/31	97	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
5005327	Benzo(a)pyrene	2017/05/31	92	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5005327	Benzo(b/j)fluoranthene	2017/05/31	94	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5005327	Benzo(g,h,i)perylene	2017/05/31	96	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
5005327	Benzo(k)fluoranthene	2017/05/31	107	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
5005327	Chrysene	2017/05/31	90	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5005327	Dibenz(a,h)anthracene	2017/05/31	62	50 - 130	59	50 - 130	<0.0050	ug/g	NC	40
5005327	Fluoranthene	2017/05/31	94	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5005327	Fluorene	2017/05/31	97	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
5005327	Indeno(1,2,3-cd)pyrene	2017/05/31	104	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
5005327	Naphthalene	2017/05/31	86	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5005327	Phenanthrene	2017/05/31	88	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5005327	Pyrene	2017/05/31	89	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
5006181	Chromium (VI)	2017/05/31	84	75 - 125	93	80 - 120	<0.2	ug/g	NC	35
5006479	Acid Extractable Antimony (Sb)	2017/05/31	89	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5006479	Acid Extractable Arsenic (As)	2017/05/31	96	75 - 125	96	80 - 120	<1.0	ug/g	NC	30
5006479	Acid Extractable Barium (Ba)	2017/05/31	NC	75 - 125	96	80 - 120	<0.50	ug/g	2.8	30
5006479	Acid Extractable Beryllium (Be)	2017/05/31	101	75 - 125	99	80 - 120	<0.20	ug/g	13	30
5006479	Acid Extractable Boron (B)	2017/05/31	98	75 - 125	98	80 - 120	<5.0	ug/g	NC	30
5006479	Acid Extractable Cadmium (Cd)	2017/05/31	96	75 - 125	98	80 - 120	<0.10	ug/g	NC	30
5006479	Acid Extractable Chromium (Cr)	2017/05/31	102	75 - 125	100	80 - 120	<1.0	ug/g	2.7	30
5006479	Acid Extractable Cobalt (Co)	2017/05/31	99	75 - 125	96	80 - 120	<0.10	ug/g	1.3	30

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 #: B7B0113
Report Date: 2017/05/31

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
5006479	Acid Extractable Copper (Cu)	2017/05/31	94	75 - 125	97	80 - 120	<0.50	ug/g	5.0	30
5006479	Acid Extractable Lead (Pb)	2017/05/31	100	75 - 125	100	80 - 120	<1.0	ug/g	3.4	30
5006479	Acid Extractable Mercury (Hg)	2017/05/31	100	75 - 125	102	80 - 120	<0.050	ug/g	NC	30
5006479	Acid Extractable Molybdenum (Mo)	2017/05/31	99	75 - 125	98	80 - 120	<0.50	ug/g	NC	30
5006479	Acid Extractable Nickel (Ni)	2017/05/31	98	75 - 125	98	80 - 120	<0.50	ug/g	0.92	30
5006479	Acid Extractable Selenium (Se)	2017/05/31	103	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
5006479	Acid Extractable Silver (Ag)	2017/05/31	98	75 - 125	96	80 - 120	<0.20	ug/g	NC	30
5006479	Acid Extractable Thallium (Tl)	2017/05/31	96	75 - 125	99	80 - 120	<0.050	ug/g	2.6	30
5006479	Acid Extractable Uranium (U)	2017/05/31	101	75 - 125	100	80 - 120	<0.050	ug/g	5.3	30
5006479	Acid Extractable Vanadium (V)	2017/05/31	103	75 - 125	96	80 - 120	<5.0	ug/g	0.26	30
5006479	Acid Extractable Zinc (Zn)	2017/05/31	NC	75 - 125	98	80 - 120	<5.0	ug/g	4.5	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7B0113
Report Date: 2017/05/31

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

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Project Name:		C#572155-27-01	Madison Bingley
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)? _____

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: 24 hr ☒
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		VS414	17/05/30	1000	Soil	✓	X	X								1	
2		VS415	↓	1030	↓	✓	X	X								1	
3		VS416	↓	1130	↓	✓	X	X								1	
4		VS348B	↓	1345	↓	✓	X	X								1	
5																	
6																	
7																	RECEIVED IN OTTAWA
8																	
9																	NO ICE
10																	ON + 17/5/30

30-May-17 15:00
Alison Cameron
B7B0113
KIV OTT 001

* 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 Recei	Custody Seal	Yes	No
A. Bradshaw / Aaron Bradshaw	17/05/30	16:15	Kumi Jayasekaran	2017/05/30	15:00	0		18, 15, 16	Present Intact	☒	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7B0113
Report Date: 2017/05/31

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. #: 572155-26-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/29
Report #: R4491181
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7A7483
Received: 2017/05/26, 13:55

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	4	N/A	2017/05/29	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	4	2017/05/29	2017/05/29	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	4	2017/05/29	2017/05/29	CAM SOP-00447	EPA 6020B m
Moisture	4	N/A	2017/05/29	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	2	2017/05/26	2017/05/26	OTT SOP-00011	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	2	2017/05/26	2017/05/29	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-26-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/29
Report #: R4491181
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7A7483
Received: 2017/05/26, 13:55

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7A7483
Report Date: 2017/05/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ELF387	ELF388	ELF389	ELF390	ELF390		
Sampling Date			2017/05/26 10:00	2017/05/26 10:00	2017/05/26 10:30	2017/05/26 11:00	2017/05/26 11:00		
COC Number			572155-26-01	572155-26-01	572155-26-01	572155-26-01	572155-26-01		
	UNITS	**Criteria**	**VS411**	**VS1411**	**VS412**	**VS413**	**VS413 Lab-Dup**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5002600
Acid Extractable Arsenic (As)	ug/g	**18**	2.0	1.7	<1.0	<1.0	<1.0	1.0	5002600
Acid Extractable Barium (Ba)	ug/g	**390**	130	120	22	30	30	0.50	5002600
Acid Extractable Beryllium (Be)	ug/g	**4**	0.47	0.40	0.28	0.27	0.26	0.20	5002600
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5002600
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5002600
Acid Extractable Chromium (Cr)	ug/g	**160**	31	28	22	22	22	1.0	5002600
Acid Extractable Cobalt (Co)	ug/g	**22**	9.1	8.5	5.3	6.2	6.0	0.10	5002600
Acid Extractable Copper (Cu)	ug/g	**140**	12	11	5.8	8.0	8.1	0.50	5002600
Acid Extractable Lead (Pb)	ug/g	**120**	4.8	4.7	2.3	2.2	2.3	1.0	5002600
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5002600
Acid Extractable Nickel (Ni)	ug/g	**100**	16	15	13	12	12	0.50	5002600
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5002600
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5002600
Acid Extractable Thallium (Tl)	ug/g	**1**	0.18	0.15	0.078	0.070	0.058	0.050	5002600
Acid Extractable Uranium (U)	ug/g	**23**	0.48	0.46	0.37	0.51	0.51	0.050	5002600
Acid Extractable Vanadium (V)	ug/g	**86**	43	38	28	29	29	5.0	5002600
Acid Extractable Zinc (Zn)	ug/g	**340**	46	44	29	26	28	5.0	5002600
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5002600

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 Job #: B7A7483
Report Date: 2017/05/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ELF387	ELF388	ELF388	ELF389	ELF390		
Sampling Date			2017/05/26 10:00	2017/05/26 10:00	2017/05/26 10:00	2017/05/26 10:30	2017/05/26 11:00		
COC Number			572155-26-01	572155-26-01	572155-26-01	572155-26-01	572155-26-01		
	UNITS	**Criteria**	**VS411**	**VS1411**	**VS1411 Lab-Dup**	**VS412**	**VS413**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	17	17		22	23	0.2	5000260
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014		<0.014	<0.014	0.014	5000664
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
Fluoranthene	ug/g	**0.69**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
Pyrene	ug/g	**78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5000671
Surrogate Recovery (%)									
D10-Anthracene	%	-	90	86	86	91	92		5000671
D14-Terphenyl (FS)	%	-	105	102	98	104	108		5000671
D8-Acenaphthylene	%	-	89	86	87	91	92		5000671

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 Job #: B7A7483
Report Date: 2017/05/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ELF387	ELF388	ELF389	ELF390		
Sampling Date			2017/05/26 10:00	2017/05/26 10:00	2017/05/26 10:30	2017/05/26 11:00		
COC Number			572155-26-01	572155-26-01	572155-26-01	572155-26-01		
	UNITS	**Criteria**	**VS411**	**VS1411**	**VS412**	**VS413**	**RDL**	**QC Batch**
Inorganics								
Chromium (VI)	ug/g	**8**	0.5	0.5	0.5	<0.2	0.2	5002531

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 #: B7A7483
Report Date: 2017/05/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ELF387
Sample ID: VS411
Matrix: Soil

Collected: 2017/05/26
Shipped:
Received: 2017/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5000664	N/A	2017/05/29	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5002531	2017/05/29	2017/05/29	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5002600	2017/05/29	2017/05/29	Viviana Canzonieri
Moisture	BAL	5000260	N/A	2017/05/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5000671	2017/05/26	2017/05/29	Liliana Gaburici

Maxxam ID: ELF388
Sample ID: VS1411
Matrix: Soil

Collected: 2017/05/26
Shipped:
Received: 2017/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5000664	N/A	2017/05/29	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5002531	2017/05/29	2017/05/29	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5002600	2017/05/29	2017/05/29	Viviana Canzonieri
Moisture	BAL	5000260	N/A	2017/05/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5000671	2017/05/26	2017/05/29	Liliana Gaburici

Maxxam ID: ELF388 Dup
Sample ID: VS1411
Matrix: Soil

Collected: 2017/05/26
Shipped:
Received: 2017/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5000671	2017/05/26	2017/05/29	Liliana Gaburici

Maxxam ID: ELF389
Sample ID: VS412
Matrix: Soil

Collected: 2017/05/26
Shipped:
Received: 2017/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5000664	N/A	2017/05/29	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5002531	2017/05/29	2017/05/29	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5002600	2017/05/29	2017/05/29	Viviana Canzonieri
Moisture	BAL	5000260	N/A	2017/05/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5000671	2017/05/26	2017/05/26	Liliana Gaburici

Maxxam ID: ELF390
Sample ID: VS413
Matrix: Soil

Collected: 2017/05/26
Shipped:
Received: 2017/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5000664	N/A	2017/05/29	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	5002531	2017/05/29	2017/05/29	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5002600	2017/05/29	2017/05/29	Viviana Canzonieri
Moisture	BAL	5000260	N/A	2017/05/29	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5000671	2017/05/26	2017/05/26	Liliana Gaburici

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 #: B7A7483
Report Date: 2017/05/29

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ELF390 Dup
Sample ID: VS413
Matrix: Soil

Collected: 2017/05/26
Shipped:
Received: 2017/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5002600	2017/05/29	2017/05/29	Viviana Canzonieri

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 #: B7A7483
Report Date: 2017/05/29

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	18.0°C

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 #: B7A7483
Report Date: 2017/05/29

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
5000671	D10-Anthracene	2017/05/29	92	50 - 130	89	50 - 130	94	%		
5000671	D14-Terphenyl (FS)	2017/05/29	105	50 - 130	104	50 - 130	104	%		
5000671	D8-Acenaphthylene	2017/05/29	94	50 - 130	92	50 - 130	92	%		
5000260	Moisture	2017/05/29							6.2	50
5000671	1-Methylnaphthalene	2017/05/29	95	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5000671	2-Methylnaphthalene	2017/05/29	92	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5000671	Acenaphthene	2017/05/29	92	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5000671	Acenaphthylene	2017/05/29	86	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
5000671	Anthracene	2017/05/29	82	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5000671	Benzo(a)anthracene	2017/05/29	92	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5000671	Benzo(a)pyrene	2017/05/29	87	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
5000671	Benzo(b/j)fluoranthene	2017/05/29	87	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
5000671	Benzo(g,h,i)perylene	2017/05/29	101	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40
5000671	Benzo(k)fluoranthene	2017/05/29	100	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
5000671	Chrysene	2017/05/29	91	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
5000671	Dibenz(a,h)anthracene	2017/05/29	74	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
5000671	Fluoranthene	2017/05/29	89	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5000671	Fluorene	2017/05/29	91	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
5000671	Indeno(1,2,3-cd)pyrene	2017/05/29	101	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
5000671	Naphthalene	2017/05/29	83	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
5000671	Phenanthrene	2017/05/29	83	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
5000671	Pyrene	2017/05/29	85	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
5002531	Chromium (VI)	2017/05/29	4.2 (1)	75 - 125	89	80 - 120	<0.2	ug/g	NC	35
5002600	Acid Extractable Antimony (Sb)	2017/05/29	84	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
5002600	Acid Extractable Arsenic (As)	2017/05/29	95	75 - 125	101	80 - 120	<1.0	ug/g	NC	30
5002600	Acid Extractable Barium (Ba)	2017/05/29	NC	75 - 125	98	80 - 120	<0.50	ug/g	1.4	30
5002600	Acid Extractable Beryllium (Be)	2017/05/29	95	75 - 125	97	80 - 120	<0.20	ug/g	3.7	30
5002600	Acid Extractable Boron (B)	2017/05/29	93	75 - 125	95	80 - 120	<5.0	ug/g	NC	30
5002600	Acid Extractable Cadmium (Cd)	2017/05/29	95	75 - 125	98	80 - 120	<0.10	ug/g	NC	30
5002600	Acid Extractable Chromium (Cr)	2017/05/29	96	75 - 125	101	80 - 120	<1.0	ug/g	0.14	30
5002600	Acid Extractable Cobalt (Co)	2017/05/29	99	75 - 125	99	80 - 120	<0.10	ug/g	2.7	30

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 #: B7A7483
Report Date: 2017/05/29

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
5002600	Acid Extractable Copper (Cu)	2017/05/29	93	75 - 125	101	80 - 120	<0.50	ug/g	1.1	30
5002600	Acid Extractable Lead (Pb)	2017/05/29	96	75 - 125	100	80 - 120	<1.0	ug/g	2.5	30
5002600	Acid Extractable Mercury (Hg)	2017/05/29	97	75 - 125	106	80 - 120	<0.050	ug/g	NC	30
5002600	Acid Extractable Molybdenum (Mo)	2017/05/29	93	75 - 125	98	80 - 120	<0.50	ug/g	NC	30
5002600	Acid Extractable Nickel (Ni)	2017/05/29	98	75 - 125	102	80 - 120	<0.50	ug/g	1.4	30
5002600	Acid Extractable Selenium (Se)	2017/05/29	97	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
5002600	Acid Extractable Silver (Ag)	2017/05/29	92	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
5002600	Acid Extractable Thallium (Tl)	2017/05/29	94	75 - 125	98	80 - 120	<0.050	ug/g	19	30
5002600	Acid Extractable Uranium (U)	2017/05/29	96	75 - 125	98	80 - 120	<0.050	ug/g	0.46	30
5002600	Acid Extractable Vanadium (V)	2017/05/29	NC	75 - 125	97	80 - 120	<5.0	ug/g	1.4	30
5002600	Acid Extractable Zinc (Zn)	2017/05/29	NC	75 - 125	98	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x 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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B7A7483
Report Date: 2017/05/29

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	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#572155-26-01	Madison Bingley
				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)? ___

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: 24hr ☒
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		VS411	17/05/26	10:00	Soil		X	X								1	
2		VS1411	↓	10:00	↓		X	X								1	
3		VS412	↓	10:30	↓		X	X								1	
4		VS413	↓	11:00	↓		X	X								1	
5																	
6																	
7																	
8																	
9																	Onice
10																	

26-May-17 13:55
Alison Cameron
B7A7483
MVA 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				
A. Bradshaw / Aaron Bradshaw	17/05/26	12:15	Mariana Vascon / Vascon	2017/05/26	13:55	0	Time Sensitive	Temperature (°C) on Recei 18, 18, 18	Custody Seal Present	Yes ✓	No
									Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7A7483
Report Date: 2017/05/29

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. #: 572155-25-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/26
Report #: R4485260
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7A6590
Received: 2017/05/25, 15:00

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	1	N/A	2017/05/26	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	1	2017/05/26	2017/05/26	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	1	2017/05/26	2017/05/26	CAM SOP-00447	EPA 6020B m
Moisture	1	N/A	2017/05/26	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	1	2017/05/25	2017/05/25	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-25-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/26
Report #: R4485260
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7A6590
Received: 2017/05/25, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7A6590
Report Date: 2017/05/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			ELA551	ELA551		
Sampling Date			2017/05/25 13:00	2017/05/25 13:00		
COC Number			572155-25-01	572155-25-01		
	UNITS	**Criteria**	**VS410**	**VS410 Lab-Dup**	**RDL**	**QC Batch**
Metals						
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	0.20	5000254
Acid Extractable Arsenic (As)	ug/g	**18**	2.1	2.1	1.0	5000254
Acid Extractable Barium (Ba)	ug/g	**390**	190	190	0.50	5000254
Acid Extractable Beryllium (Be)	ug/g	**4**	0.74	0.73	0.20	5000254
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	5.0	5000254
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.16	0.15	0.10	5000254
Acid Extractable Chromium (Cr)	ug/g	**160**	45	44	1.0	5000254
Acid Extractable Cobalt (Co)	ug/g	**22**	12	11	0.10	5000254
Acid Extractable Copper (Cu)	ug/g	**140**	20	20	0.50	5000254
Acid Extractable Lead (Pb)	ug/g	**120**	6.1	6.2	1.0	5000254
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	0.50	5000254
Acid Extractable Nickel (Ni)	ug/g	**100**	23	23	0.50	5000254
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	0.50	5000254
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	0.20	5000254
Acid Extractable Thallium (Tl)	ug/g	**1**	0.24	0.23	0.050	5000254
Acid Extractable Uranium (U)	ug/g	**23**	0.95	0.93	0.050	5000254
Acid Extractable Vanadium (V)	ug/g	**86**	58	57	5.0	5000254
Acid Extractable Zinc (Zn)	ug/g	**340**	79	79	5.0	5000254
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	0.050	5000254

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 Job #: B7A6590
Report Date: 2017/05/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			ELA551		
Sampling Date			2017/05/25 13:00		
COC Number			572155-25-01		
	UNITS	**Criteria**	**VS410**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	-	19	0.2	4998204
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	0.014	4998921
Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	**7.9**	<0.0050	0.0050	4998935
Acenaphthylene	ug/g	**0.15**	<0.0050	0.0050	4998935
Anthracene	ug/g	**0.67**	<0.0050	0.0050	4998935
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0050	4998935
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0050	4998935
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	4998935
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	0.0050	4998935
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	0.0050	4998935
Chrysene	ug/g	**7**	<0.0050	0.0050	4998935
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	0.0050	4998935
Fluoranthene	ug/g	**0.69**	<0.0050	0.0050	4998935
Fluorene	ug/g	**62**	<0.0050	0.0050	4998935
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	0.0050	4998935
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4998935
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	0.0050	4998935
Naphthalene	ug/g	**0.6**	<0.0050	0.0050	4998935
Phenanthrene	ug/g	**6.2**	<0.0050	0.0050	4998935
Pyrene	ug/g	**78**	<0.0050	0.0050	4998935
Surrogate Recovery (%)					
D10-Anthracene	%	-	88		4998935
D14-Terphenyl (FS)	%	-	97		4998935
D8-Acenaphthylene	%	-	88		4998935

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 #: B7A6590
Report Date: 2017/05/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			ELA551	ELA551		
Sampling Date			2017/05/25 13:00	2017/05/25 13:00		
COC Number			572155-25-01	572155-25-01		
	UNITS	**Criteria**	**VS410**	**VS410 Lab-Dup**	**RDL**	**QC Batch**
Inorganics						
Chromium (VI)	ug/g	**8**	1.0	1.0	0.2	4999847

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 Job #: B7A6590
Report Date: 2017/05/26

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: ELA551
Sample ID: VS410
Matrix: Soil

Collected: 2017/05/25
Shipped:
Received: 2017/05/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4998921	N/A	2017/05/26	Steve Roberts
Hexavalent Chromium in Soil by IC	IC/SPEC	4999847	2017/05/26	2017/05/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5000254	2017/05/26	2017/05/26	Daniel Teclu
Moisture	BAL	4998204	N/A	2017/05/26	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4998935	2017/05/25	2017/05/25	Liliana Gaburici

Maxxam ID: ELA551 Dup
Sample ID: VS410
Matrix: Soil

Collected: 2017/05/25
Shipped:
Received: 2017/05/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4999847	2017/05/26	2017/05/26	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	5000254	2017/05/26	2017/05/26	Daniel Teclu

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 #: B7A6590
Report Date: 2017/05/26

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	19.7°C
Package 2	8.0°C

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 #: B7A6590
Report Date: 2017/05/26

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
4998935	D10-Anthracene	2017/05/25	88	50 - 130	91	50 - 130	90	%		
4998935	D14-Terphenyl (FS)	2017/05/25	105	50 - 130	105	50 - 130	100	%		
4998935	D8-Acenaphthylene	2017/05/25	88	50 - 130	93	50 - 130	92	%		
4998204	Moisture	2017/05/26							31	50
4998935	1-Methylnaphthalene	2017/05/25	98	50 - 130	98	50 - 130	<0.0050	ug/g	5.0	40
4998935	2-Methylnaphthalene	2017/05/25	96	50 - 130	97	50 - 130	<0.0050	ug/g	5.2	40
4998935	Acenaphthene	2017/05/25	96	50 - 130	96	50 - 130	<0.0050	ug/g	4.8	40
4998935	Acenaphthylene	2017/05/25	90	50 - 130	93	50 - 130	<0.0050	ug/g	5.4	40
4998935	Anthracene	2017/05/25	87	50 - 130	87	50 - 130	<0.0050	ug/g	6.5	40
4998935	Benzo(a)anthracene	2017/05/25	97	50 - 130	98	50 - 130	<0.0050	ug/g	5.5	40
4998935	Benzo(a)pyrene	2017/05/25	90	50 - 130	98	50 - 130	<0.0050	ug/g	2.2	40
4998935	Benzo(b/j)fluoranthene	2017/05/25	92	50 - 130	97	50 - 130	<0.0050	ug/g	0.46	40
4998935	Benzo(g,h,i)perylene	2017/05/25	103	50 - 130	120	50 - 130	<0.0050	ug/g	2.0	40
4998935	Benzo(k)fluoranthene	2017/05/25	101	50 - 130	112	50 - 130	<0.0050	ug/g	4.0	40
4998935	Chrysene	2017/05/25	98	50 - 130	98	50 - 130	<0.0050	ug/g	5.7	40
4998935	Dibenz(a,h)anthracene	2017/05/25	78	50 - 130	90	50 - 130	<0.0050	ug/g	0.11	40
4998935	Fluoranthene	2017/05/25	93	50 - 130	93	50 - 130	<0.0050	ug/g	6.4	40
4998935	Fluorene	2017/05/25	97	50 - 130	95	50 - 130	<0.0050	ug/g	8.3	40
4998935	Indeno(1,2,3-cd)pyrene	2017/05/25	94	50 - 130	107	50 - 130	<0.0050	ug/g	2.8	40
4998935	Naphthalene	2017/05/25	87	50 - 130	87	50 - 130	<0.0050	ug/g	5.4	40
4998935	Phenanthrene	2017/05/25	88	50 - 130	88	50 - 130	<0.0050	ug/g	4.4	40
4998935	Pyrene	2017/05/25	89	50 - 130	91	50 - 130	<0.0050	ug/g	4.4	40
4999847	Chromium (VI)	2017/05/26	79	75 - 125	93	80 - 120	<0.2	ug/g	2.0	35
5000254	Acid Extractable Antimony (Sb)	2017/05/26	86	75 - 125	104	80 - 120	<0.20	ug/g	NC	30
5000254	Acid Extractable Arsenic (As)	2017/05/26	96	75 - 125	100	80 - 120	<1.0	ug/g	4.0	30
5000254	Acid Extractable Barium (Ba)	2017/05/26	NC	75 - 125	100	80 - 120	<0.50	ug/g	2.2	30
5000254	Acid Extractable Beryllium (Be)	2017/05/26	103	75 - 125	99	80 - 120	<0.20	ug/g	0.74	30
5000254	Acid Extractable Boron (B)	2017/05/26	99	75 - 125	97	80 - 120	<5.0	ug/g	NC	30
5000254	Acid Extractable Cadmium (Cd)	2017/05/26	108	75 - 125	104	80 - 120	<0.10	ug/g	5.7	30
5000254	Acid Extractable Chromium (Cr)	2017/05/26	NC	75 - 125	96	80 - 120	<1.0	ug/g	1.5	30
5000254	Acid Extractable Cobalt (Co)	2017/05/26	98	75 - 125	99	80 - 120	<0.10	ug/g	1.7	30

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 #: B7A6590
Report Date: 2017/05/26

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
5000254	Acid Extractable Copper (Cu)	2017/05/26	100	75 - 125	100	80 - 120	<0.50	ug/g	1.0	30
5000254	Acid Extractable Lead (Pb)	2017/05/26	103	75 - 125	105	80 - 120	<1.0	ug/g	2.3	30
5000254	Acid Extractable Mercury (Hg)	2017/05/26	107	75 - 125	107	80 - 120	<0.050	ug/g	NC	30
5000254	Acid Extractable Molybdenum (Mo)	2017/05/26	104	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
5000254	Acid Extractable Nickel (Ni)	2017/05/26	97	75 - 125	100	80 - 120	<0.50	ug/g	0.54	30
5000254	Acid Extractable Selenium (Se)	2017/05/26	99	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
5000254	Acid Extractable Silver (Ag)	2017/05/26	109	75 - 125	106	80 - 120	<0.20	ug/g	NC	30
5000254	Acid Extractable Thallium (Tl)	2017/05/26	101	75 - 125	103	80 - 120	<0.050	ug/g	3.7	30
5000254	Acid Extractable Uranium (U)	2017/05/26	102	75 - 125	102	80 - 120	<0.050	ug/g	2.0	30
5000254	Acid Extractable Vanadium (V)	2017/05/26	NC	75 - 125	97	80 - 120	<5.0	ug/g	2.2	30
5000254	Acid Extractable Zinc (Zn)	2017/05/26	NC	75 - 125	98	80 - 120	<5.0	ug/g	0.037	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7A6590
Report Date: 2017/05/26

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).

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#572155-25-01	Madison Bingley
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)? _____

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: 24hr ☒
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 ICPMS Metals including Hg and CRVI								# of Bottles	Comments
1		VS410	17/05/25	1300	Soil		X	X								1	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

25-May-17 15:00
Alison Cameron
B7A6590
KIV OTT 001

RECEIVED IN OTTAWA

c NO Jar

* 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 Recei	Custody Seal	Yes	No
Aaron Bradshaw	17/05/25	1430	[illegible]	2017/05/25	15:00	0		20, 20, 19	Present / Intact	X	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7A6590
Report Date: 2017/05/26

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. #: 572155-24-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/25
Report #: R4482885
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7A5130
Received: 2017/05/24, 14:00

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	2	N/A	2017/05/25	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	2	2017/05/25	2017/05/25	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	2	2017/05/25	2017/05/25	CAM SOP-00447	EPA 6020B m
Moisture	2	N/A	2017/05/25	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	2	2017/05/24	2017/05/24	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-24-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/25
Report #: R4482885
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7A5130
Received: 2017/05/24, 14:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7A5130
Report Date: 2017/05/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EKT913	EKT914		
Sampling Date			2017/05/24 13:05	2017/05/24 13:10		
COC Number			572155-24-01	572155-24-01		
	UNITS	**Criteria**	**VS 408**	**VS 409**	**RDL**	**QC Batch**
Metals						
Acid Extractable Antimony (Sb)	ug/g	**7.5**	0.81	0.24	0.20	4997984
Acid Extractable Arsenic (As)	ug/g	**18**	2.2	3.0	1.0	4997984
Acid Extractable Barium (Ba)	ug/g	**390**	210	170	0.50	4997984
Acid Extractable Beryllium (Be)	ug/g	**4**	0.67	0.63	0.20	4997984
Acid Extractable Boron (B)	ug/g	**120**	5.1	<5.0	5.0	4997984
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	0.13	0.20	0.10	4997984
Acid Extractable Chromium (Cr)	ug/g	**160**	44	42	1.0	4997984
Acid Extractable Cobalt (Co)	ug/g	**22**	13	17	0.10	4997984
Acid Extractable Copper (Cu)	ug/g	**140**	25	22	0.50	4997984
Acid Extractable Lead (Pb)	ug/g	**120**	66	15	1.0	4997984
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.60	0.50	4997984
Acid Extractable Nickel (Ni)	ug/g	**100**	26	24	0.50	4997984
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	0.50	4997984
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	0.20	4997984
Acid Extractable Thallium (Tl)	ug/g	**1**	0.25	0.25	0.050	4997984
Acid Extractable Uranium (U)	ug/g	**23**	0.65	0.82	0.050	4997984
Acid Extractable Vanadium (V)	ug/g	**86**	58	58	5.0	4997984
Acid Extractable Zinc (Zn)	ug/g	**340**	100	180	5.0	4997984
Acid Extractable Mercury (Hg)	ug/g	**0.27**	0.074	<0.050	0.050	4997984

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 #: B7A5130
Report Date: 2017/05/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			EKT913	EKT913	EKT914		
Sampling Date			2017/05/24 13:05	2017/05/24 13:05	2017/05/24 13:10		
COC Number			572155-24-01	572155-24-01	572155-24-01		
	UNITS	Criteria	VS 408	VS 408 Lab-Dup	VS 409	RDL	QC Batch
Inorganics							
Moisture	%	-	23	24	21	0.2	4996576
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	0.014	4996570
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	**7.9**	0.015	0.017	<0.0050	0.0050	4996584
Acenaphthylene	ug/g	**0.15**	0.041	0.050	0.0053	0.0050	4996584
Anthracene	ug/g	**0.67**	0.055	0.068	0.0053	0.0050	4996584
Benzo(a)anthracene	ug/g	**0.5**	0.19	0.27	0.018	0.0050	4996584
Benzo(a)pyrene	ug/g	**0.3**	0.18	0.23	0.020	0.0050	4996584
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.29	0.38	0.028	0.0050	4996584
Benzo(g,h,i)perylene	ug/g	**6.6**	0.15	0.17	0.017	0.0050	4996584
Benzo(k)fluoranthene	ug/g	**0.78**	0.11	0.14	0.013	0.0050	4996584
Chrysene	ug/g	**7**	0.21	0.29	0.020	0.0050	4996584
Dibenz(a,h)anthracene	ug/g	**0.1**	0.033	0.036	<0.0050	0.0050	4996584
Fluoranthene	ug/g	**0.69**	0.42	0.58	0.049	0.0050	4996584
Fluorene	ug/g	**62**	0.017	0.021	<0.0050	0.0050	4996584
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.16	0.18	0.011	0.0050	4996584
1-Methylnaphthalene	ug/g	**0.99**	0.0064	0.0076	<0.0050	0.0050	4996584
2-Methylnaphthalene	ug/g	**0.99**	0.0070	0.0069	<0.0050	0.0050	4996584
Naphthalene	ug/g	**0.6**	0.020	0.019	<0.0050	0.0050	4996584
Phenanthrene	ug/g	**6.2**	0.19	0.28	0.023	0.0050	4996584
Pyrene	ug/g	**78**	0.34	0.48	0.038	0.0050	4996584
Surrogate Recovery (%)							
D10-Anthracene	%	-	97	95	104		4996584
D14-Terphenyl (FS)	%	-	100	103	94		4996584
D8-Acenaphthylene	%	-	85	89	76		4996584

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 Job #: B7A5130
Report Date: 2017/05/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EKT913	EKT913	EKT914		
Sampling Date			2017/05/24 13:05	2017/05/24 13:05	2017/05/24 13:10		
COC Number			572155-24-01	572155-24-01	572155-24-01		
	UNITS	**Criteria**	**VS 408**	**VS 408 Lab-Dup**	**VS 409**	**RDL**	**QC Batch**
Inorganics							
Chromium (VI)	ug/g	**8**	0.3	0.3	<0.2	0.2	4998143

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 Job #: B7A5130
Report Date: 2017/05/25

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: EKT913
Sample ID: VS 408
Matrix: Soil

Collected: 2017/05/24
Shipped:
Received: 2017/05/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4996570	N/A	2017/05/25	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	4998143	2017/05/25	2017/05/25	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4997984	2017/05/25	2017/05/25	Daniel Teclu
Moisture	BAL	4996576	N/A	2017/05/25	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4996584	2017/05/24	2017/05/24	Liliana Gaburici

Maxxam ID: EKT913 Dup
Sample ID: VS 408
Matrix: Soil

Collected: 2017/05/24
Shipped:
Received: 2017/05/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4998143	2017/05/25	2017/05/25	Sally Coughlin
Moisture	BAL	4996576	N/A	2017/05/25	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4996584	2017/05/24	2017/05/24	Liliana Gaburici

Maxxam ID: EKT914
Sample ID: VS 409
Matrix: Soil

Collected: 2017/05/24
Shipped:
Received: 2017/05/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4996570	N/A	2017/05/25	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	4998143	2017/05/25	2017/05/25	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4997984	2017/05/25	2017/05/25	Daniel Teclu
Moisture	BAL	4996576	N/A	2017/05/25	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4996584	2017/05/24	2017/05/24	Liliana Gaburici

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 #: B7A5130
Report Date: 2017/05/25

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	16.3°C

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 #: B7A5130
Report Date: 2017/05/25

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4996584	D10-Anthracene	2017/05/24	98	50 - 130	96	50 - 130	128	%		
4996584	D14-Terphenyl (FS)	2017/05/24	102	50 - 130	100	50 - 130	104	%		
4996584	D8-Acenaphthylene	2017/05/24	89	50 - 130	90	50 - 130	91	%		
4996576	Moisture	2017/05/25							0.43	50
4996584	1-Methylnaphthalene	2017/05/24	92	50 - 130	94	50 - 130	<0.0050	ug/g	17	40
4996584	2-Methylnaphthalene	2017/05/24	85	50 - 130	87	50 - 130	<0.0050	ug/g	0.93	40
4996584	Acenaphthene	2017/05/24	88	50 - 130	90	50 - 130	<0.0050	ug/g	17	40
4996584	Acenaphthylene	2017/05/24	83	50 - 130	86	50 - 130	<0.0050	ug/g	19	40
4996584	Anthracene	2017/05/24	83	50 - 130	87	50 - 130	<0.0050	ug/g	20	40
4996584	Benzo(a)anthracene	2017/05/24	88	50 - 130	89	50 - 130	<0.0050	ug/g	36	40
4996584	Benzo(a)pyrene	2017/05/24	79	50 - 130	91	50 - 130	<0.0050	ug/g	24	40
4996584	Benzo(b/j)fluoranthene	2017/05/24	89	50 - 130	93	50 - 130	<0.0050	ug/g	26	40
4996584	Benzo(g,h,i)perylene	2017/05/24	83	50 - 130	86	50 - 130	<0.0050	ug/g	11	40
4996584	Benzo(k)fluoranthene	2017/05/24	79	50 - 130	92	50 - 130	<0.0050	ug/g	25	40
4996584	Chrysene	2017/05/24	83	50 - 130	88	50 - 130	<0.0050	ug/g	33	40
4996584	Dibenz(a,h)anthracene	2017/05/24	75	50 - 130	72	50 - 130	<0.0050	ug/g	9.9	40
4996584	Fluoranthene	2017/05/24	90	50 - 130	94	50 - 130	<0.0050	ug/g	33	40
4996584	Fluorene	2017/05/24	82	50 - 130	85	50 - 130	<0.0050	ug/g	21	40
4996584	Indeno(1,2,3-cd)pyrene	2017/05/24	84	50 - 130	90	50 - 130	<0.0050	ug/g	15	40
4996584	Naphthalene	2017/05/24	80	50 - 130	83	50 - 130	<0.0050	ug/g	2.1	40
4996584	Phenanthrene	2017/05/24	80	50 - 130	81	50 - 130	<0.0050	ug/g	39	40
4996584	Pyrene	2017/05/24	87	50 - 130	92	50 - 130	<0.0050	ug/g	34	40
4997984	Acid Extractable Antimony (Sb)	2017/05/25	83	75 - 125	98	80 - 120	<0.20	ug/g	2.7	30
4997984	Acid Extractable Arsenic (As)	2017/05/25	95	75 - 125	94	80 - 120	<1.0	ug/g	6.8	30
4997984	Acid Extractable Barium (Ba)	2017/05/25	NC	75 - 125	100	80 - 120	<0.50	ug/g	1.9	30
4997984	Acid Extractable Beryllium (Be)	2017/05/25	101	75 - 125	100	80 - 120	<0.20	ug/g	0.010	30
4997984	Acid Extractable Boron (B)	2017/05/25	97	75 - 125	100	80 - 120	<5.0	ug/g	1.6	30
4997984	Acid Extractable Cadmium (Cd)	2017/05/25	99	75 - 125	99	80 - 120	<0.10	ug/g	12	30
4997984	Acid Extractable Chromium (Cr)	2017/05/25	100	75 - 125	99	80 - 120	<1.0	ug/g	0.34	30
4997984	Acid Extractable Cobalt (Co)	2017/05/25	100	75 - 125	101	80 - 120	<0.10	ug/g	0.096	30
4997984	Acid Extractable Copper (Cu)	2017/05/25	NC	75 - 125	99	80 - 120	<0.50	ug/g	3.4	30

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 #: B7A5130
Report Date: 2017/05/25

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4997984	Acid Extractable Lead (Pb)	2017/05/25	NC	75 - 125	101	80 - 120	<1.0	ug/g	3.0	30
4997984	Acid Extractable Mercury (Hg)	2017/05/25	102	75 - 125	99	80 - 120	<0.050	ug/g	6.2	30
4997984	Acid Extractable Molybdenum (Mo)	2017/05/25	96	75 - 125	98	80 - 120	<0.50	ug/g	14	30
4997984	Acid Extractable Nickel (Ni)	2017/05/25	95	75 - 125	100	80 - 120	<0.50	ug/g	4.2	30
4997984	Acid Extractable Selenium (Se)	2017/05/25	101	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
4997984	Acid Extractable Silver (Ag)	2017/05/25	101	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
4997984	Acid Extractable Thallium (Tl)	2017/05/25	98	75 - 125	102	80 - 120	<0.050	ug/g	8.6	30
4997984	Acid Extractable Uranium (U)	2017/05/25	102	75 - 125	103	80 - 120	<0.050	ug/g	1.3	30
4997984	Acid Extractable Vanadium (V)	2017/05/25	99	75 - 125	99	80 - 120	<5.0	ug/g	0.019	30
4997984	Acid Extractable Zinc (Zn)	2017/05/25	NC	75 - 125	106	80 - 120	<5.0	ug/g	6.9	30
4998143	Chromium (VI)	2017/05/25	65 (1)	75 - 125	91	80 - 120	<0.2	ug/g	3.7	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x 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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B7A5130
Report Date: 2017/05/25

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).

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#572155-24-01	Madison Bingley
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	TeLe		

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)

	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		VS408	May 24, 17	13:05	Soil	NA	✓	✓								1	
2		VS409	"	13:10	Soil	NA	✓	✓								1	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	No Ice

24-May-17 14:00
Alison Cameron
B7A5130
MVA OTT-001

RECEIVED IN OTTAWA

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 #)*

* 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 Recei	Custody Seal	Yes	No
Tony Lyon	17/05/24	13:25	Kelvin Jayasekera	2017/05/24	14:00	0		18, 15, 16	Present Intact	☒	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7A5130
Report Date: 2017/05/25

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
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. #: 572155-23-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/24
Report #: R4480286
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7A4269
Received: 2017/05/23, 15:00

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	3	N/A	2017/05/24	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	3	2017/05/24	2017/05/24	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	3	2017/05/24	2017/05/24	CAM SOP-00447	EPA 6020B m
Moisture	3	N/A	2017/05/24	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	3	2017/05/23	2017/05/23	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-23-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/24
Report #: R4480286
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7A4269
Received: 2017/05/23, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7A4269
Report Date: 2017/05/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EKQ077	EKQ078	EKQ078	EKQ079		
Sampling Date			2017/05/23 10:00	2017/05/23 13:00	2017/05/23 13:00	2017/05/23 13:30		
COC Number			572155-23-01	572155-23-01	572155-23-01	572155-23-01		
	UNITS	Criteria	VS 405	VS 406	VS 406 Lab-Dup	VS 407	RDL	QC Batch
Metals								
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	0.20	4996013
Acid Extractable Arsenic (As)	ug/g	**18**	<1.0	2.5	2.0	2.6	1.0	4996013
Acid Extractable Barium (Ba)	ug/g	**390**	17	190	190	190	0.50	4996013
Acid Extractable Beryllium (Be)	ug/g	**4**	<0.20	0.70	0.62	0.69	0.20	4996013
Acid Extractable Boron (B)	ug/g	**120**	<5.0	5.5	<5.0	5.1	5.0	4996013
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.11	<0.10	0.11	0.10	4996013
Acid Extractable Chromium (Cr)	ug/g	**160**	9.8	44	41	42	1.0	4996013
Acid Extractable Cobalt (Co)	ug/g	**22**	2.6	12	12	12	0.10	4996013
Acid Extractable Copper (Cu)	ug/g	**140**	2.7	22	22	18	0.50	4996013
Acid Extractable Lead (Pb)	ug/g	**120**	2.9	5.9	5.6	6.3	1.0	4996013
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	0.50	4996013
Acid Extractable Nickel (Ni)	ug/g	**100**	7.3	26	24	23	0.50	4996013
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	0.50	4996013
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	0.20	4996013
Acid Extractable Thallium (Tl)	ug/g	**1**	<0.050	0.24	0.24	0.28	0.050	4996013
Acid Extractable Uranium (U)	ug/g	**23**	0.31	0.76	0.70	0.72	0.050	4996013
Acid Extractable Vanadium (V)	ug/g	**86**	13	59	55	59	5.0	4996013
Acid Extractable Zinc (Zn)	ug/g	**340**	48	71	71	73	5.0	4996013
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	0.050	4996013

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 Job #: B7A4269
Report Date: 2017/05/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EKQ077	EKQ077	EKQ078	EKQ079		
Sampling Date			2017/05/23 10:00	2017/05/23 10:00	2017/05/23 13:00	2017/05/23 13:30		
COC Number			572155-23-01	572155-23-01	572155-23-01	572155-23-01		
	UNITS	Criteria	VS 405	VS 405 Lab-Dup	VS 406	VS 407	RDL	QC Batch
Inorganics								
Moisture	%	-	7.1	7.5	18	18	0.2	4994916
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		<0.014	<0.014	0.014	4994937
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4994951
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4994951
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4994951
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	0.0069	<0.0050	<0.0050	0.0050	4994951
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	0.0069	<0.0050	<0.0050	0.0050	4994951
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.0081	0.0089	<0.0050	<0.0050	0.0050	4994951
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4994951
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4994951
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4994951
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4994951
Fluoranthene	ug/g	**0.69**	0.012	0.013	<0.0050	<0.0050	0.0050	4994951
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4994951
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4994951
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4994951
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4994951
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4994951
Phenanthrene	ug/g	**6.2**	<0.0050	0.0055	<0.0050	<0.0050	0.0050	4994951
Pyrene	ug/g	**78**	0.0092	0.0099	<0.0050	<0.0050	0.0050	4994951
Surrogate Recovery (%)								
D10-Anthracene	%	-	118	111	122	118		4994951
D14-Terphenyl (FS)	%	-	102	101	107	100		4994951
D8-Acenaphthylene	%	-	82	82	83	82		4994951

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 Job #: B7A4269
Report Date: 2017/05/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EKQ077	EKQ078	EKQ079	EKQ079		
Sampling Date			2017/05/23 10:00	2017/05/23 13:00	2017/05/23 13:30	2017/05/23 13:30		
COC Number			572155-23-01	572155-23-01	572155-23-01	572155-23-01		
	UNITS	**Criteria**	**VS 405**	**VS 406**	**VS 407**	**VS 407 Lab-Dup**	**RDL**	**QC Batch**
Inorganics								
Chromium (VI)	ug/g	**8**	<0.2	0.4	0.7	0.7	0.2	4995679

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 Job #: B7A4269
Report Date: 2017/05/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EKQ077
Sample ID: VS 405
Matrix: Soil

Collected: 2017/05/23
Shipped:
Received: 2017/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4994937	N/A	2017/05/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	4995679	2017/05/24	2017/05/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4996013	2017/05/24	2017/05/24	Daniel Teclu
Moisture	BAL	4994916	N/A	2017/05/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4994951	2017/05/23	2017/05/23	Liliana Gaburici

Maxxam ID: EKQ077 Dup
Sample ID: VS 405
Matrix: Soil

Collected: 2017/05/23
Shipped:
Received: 2017/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4994916	N/A	2017/05/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4994951	2017/05/23	2017/05/23	Liliana Gaburici

Maxxam ID: EKQ078
Sample ID: VS 406
Matrix: Soil

Collected: 2017/05/23
Shipped:
Received: 2017/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4994937	N/A	2017/05/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	4995679	2017/05/24	2017/05/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4996013	2017/05/24	2017/05/24	Daniel Teclu
Moisture	BAL	4994916	N/A	2017/05/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4994951	2017/05/23	2017/05/23	Liliana Gaburici

Maxxam ID: EKQ078 Dup
Sample ID: VS 406
Matrix: Soil

Collected: 2017/05/23
Shipped:
Received: 2017/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4996013	2017/05/24	2017/05/24	Daniel Teclu

Maxxam ID: EKQ079
Sample ID: VS 407
Matrix: Soil

Collected: 2017/05/23
Shipped:
Received: 2017/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4994937	N/A	2017/05/24	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	4995679	2017/05/24	2017/05/24	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4996013	2017/05/24	2017/05/24	Daniel Teclu
Moisture	BAL	4994916	N/A	2017/05/24	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4994951	2017/05/23	2017/05/23	Liliana Gaburici

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 #: B7A4269
Report Date: 2017/05/24

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EKQ079 Dup
Sample ID: VS 407
Matrix: Soil

Collected: 2017/05/23
Shipped:
Received: 2017/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4995679	2017/05/24	2017/05/24	Sally Coughlin

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 #: B7A4269
Report Date: 2017/05/24

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

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 #: B7A4269
Report Date: 2017/05/24

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
4994951	D10-Anthracene	2017/05/23	110	50 - 130	99	50 - 130	128	%		
4994951	D14-Terphenyl (FS)	2017/05/23	113	50 - 130	102	50 - 130	107	%		
4994951	D8-Acenaphthylene	2017/05/23	98	50 - 130	89	50 - 130	85	%		
4994916	Moisture	2017/05/24							5.5	50
4994951	1-Methylnaphthalene	2017/05/23	109	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
4994951	2-Methylnaphthalene	2017/05/23	104	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4994951	Acenaphthene	2017/05/23	109	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4994951	Acenaphthylene	2017/05/23	99	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4994951	Anthracene	2017/05/23	105	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
4994951	Benzo(a)anthracene	2017/05/23	108	50 - 130	93	50 - 130	<0.0050	ug/g	32	40
4994951	Benzo(a)pyrene	2017/05/23	98	50 - 130	86	50 - 130	<0.0050	ug/g	32	40
4994951	Benzo(b/j)fluoranthene	2017/05/23	106	50 - 130	95	50 - 130	<0.0050	ug/g	9.9	40
4994951	Benzo(g,h,i)perylene	2017/05/23	95	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
4994951	Benzo(k)fluoranthene	2017/05/23	105	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4994951	Chrysene	2017/05/23	105	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
4994951	Dibenz(a,h)anthracene	2017/05/23	73	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
4994951	Fluoranthene	2017/05/23	106	50 - 130	98	50 - 130	<0.0050	ug/g	7.7	40
4994951	Fluorene	2017/05/23	101	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
4994951	Indeno(1,2,3-cd)pyrene	2017/05/23	96	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4994951	Naphthalene	2017/05/23	98	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4994951	Phenanthrene	2017/05/23	100	50 - 130	87	50 - 130	<0.0050	ug/g	8.6	40
4994951	Pyrene	2017/05/23	109	50 - 130	95	50 - 130	<0.0050	ug/g	7.9	40
4995679	Chromium (VI)	2017/05/24	92	75 - 125	93	80 - 120	<0.2	ug/g	2.1	35
4996013	Acid Extractable Antimony (Sb)	2017/05/24	87	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
4996013	Acid Extractable Arsenic (As)	2017/05/24	104	75 - 125	96	80 - 120	<1.0	ug/g	20	30
4996013	Acid Extractable Barium (Ba)	2017/05/24	NC	75 - 125	98	80 - 120	<0.50	ug/g	2.8	30
4996013	Acid Extractable Beryllium (Be)	2017/05/24	106	75 - 125	99	80 - 120	<0.20	ug/g	11	30
4996013	Acid Extractable Boron (B)	2017/05/24	95	75 - 125	99	80 - 120	<5.0	ug/g	9.3	30
4996013	Acid Extractable Cadmium (Cd)	2017/05/24	104	75 - 125	101	80 - 120	<0.10	ug/g	5.0	30
4996013	Acid Extractable Chromium (Cr)	2017/05/24	NC	75 - 125	96	80 - 120	<1.0	ug/g	7.6	30
4996013	Acid Extractable Cobalt (Co)	2017/05/24	104	75 - 125	100	80 - 120	<0.10	ug/g	5.2	30

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 #: B7A4269
Report Date: 2017/05/24

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
4996013	Acid Extractable Copper (Cu)	2017/05/24	100	75 - 125	97	80 - 120	<0.50	ug/g	2.6	30
4996013	Acid Extractable Lead (Pb)	2017/05/24	106	75 - 125	105	80 - 120	<1.0	ug/g	5.3	30
4996013	Acid Extractable Mercury (Hg)	2017/05/24	109	75 - 125	108	80 - 120	<0.050	ug/g	NC	30
4996013	Acid Extractable Molybdenum (Mo)	2017/05/24	104	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4996013	Acid Extractable Nickel (Ni)	2017/05/24	NC	75 - 125	95	80 - 120	<0.50	ug/g	6.5	30
4996013	Acid Extractable Selenium (Se)	2017/05/24	103	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
4996013	Acid Extractable Silver (Ag)	2017/05/24	106	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
4996013	Acid Extractable Thallium (Tl)	2017/05/24	105	75 - 125	107	80 - 120	<0.050	ug/g	0.49	30
4996013	Acid Extractable Uranium (U)	2017/05/24	107	75 - 125	107	80 - 120	<0.050	ug/g	8.0	30
4996013	Acid Extractable Vanadium (V)	2017/05/24	NC	75 - 125	95	80 - 120	<5.0	ug/g	6.6	30
4996013	Acid Extractable Zinc (Zn)	2017/05/24	NC	75 - 125	100	80 - 120	<5.0	ug/g	0.19	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7A4269
Report Date: 2017/05/24

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).

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.

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 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 #: 572155
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 x Fax: (613) 592-9601 x	Tel:	Fax:	Site #:		C#572155-23-01	Madison Bingley
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 ☐ 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)? _____

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: _____ Time Required: Next Day ☒
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		VS405	17/05/23	10:00	Soil		X	X								1	
2		VS406	↓	1300	↓		X	X								1	
3		VS407	↓	1330	↓		X	X								1	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

23-May-17 15:00
Alison Cameron
B7A4269
KIV OTT 001

RECEIVED IN OTTAWA

ON fax to park

* 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	17/05/23	1340	[illegible]	2017/05/23	15:00	0

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	16, 14 11	Present		
		Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* 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 CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

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

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7A4269
Report Date: 2017/05/24

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. #: 572155-01-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/23
Report #: R4477801
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7A2588
Received: 2017/05/19, 13:10

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	1	N/A	2017/05/23	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	1	2017/05/23	2017/05/23	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	1	2017/05/23	2017/05/23	CAM SOP-00447	EPA 6020B m
Moisture	1	N/A	2017/05/23	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	1	2017/05/19	2017/05/19	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-01-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/23
Report #: R4477801
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7A2588
Received: 2017/05/19, 13:10

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7A2588
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EKH618		
Sampling Date			2017/05/19 10:00		
COC Number			572155-01-01		
	UNITS	**Criteria**	**VS404**	**RDL**	**QC Batch**
Metals					
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	0.20	4993925
Acid Extractable Arsenic (As)	ug/g	**18**	2.2	1.0	4993925
Acid Extractable Barium (Ba)	ug/g	**390**	180	0.50	4993925
Acid Extractable Beryllium (Be)	ug/g	**4**	0.69	0.20	4993925
Acid Extractable Boron (B)	ug/g	**120**	5.1	5.0	4993925
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.10	4993925
Acid Extractable Chromium (Cr)	ug/g	**160**	46	1.0	4993925
Acid Extractable Cobalt (Co)	ug/g	**22**	13	0.10	4993925
Acid Extractable Copper (Cu)	ug/g	**140**	20	0.50	4993925
Acid Extractable Lead (Pb)	ug/g	**120**	11	1.0	4993925
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.50	4993925
Acid Extractable Nickel (Ni)	ug/g	**100**	25	0.50	4993925
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	0.50	4993925
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	0.20	4993925
Acid Extractable Thallium (Tl)	ug/g	**1**	0.29	0.050	4993925
Acid Extractable Uranium (U)	ug/g	**23**	0.79	0.050	4993925
Acid Extractable Vanadium (V)	ug/g	**86**	58	5.0	4993925
Acid Extractable Zinc (Zn)	ug/g	**340**	97	5.0	4993925
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	0.050	4993925

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 #: B7A2588
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

O.REG 153 PAHS (SOIL)

Maxxam ID			EKH618	EKH618		
Sampling Date			2017/05/19 10:00	2017/05/19 10:00		
COC Number			572155-01-01	572155-01-01		
	UNITS	**Criteria**	**VS404**	**VS404 Lab-Dup**	**RDL**	**QC Batch**
Inorganics						
Moisture	%	-	28	23	0.2	4991471
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014		0.014	4991438
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	**7.9**	<0.0050		0.0050	4991473
Acenaphthylene	ug/g	**0.15**	0.010		0.0050	4991473
Anthracene	ug/g	**0.67**	0.0058		0.0050	4991473
Benzo(a)anthracene	ug/g	**0.5**	0.030		0.0050	4991473
Benzo(a)pyrene	ug/g	**0.3**	0.033		0.0050	4991473
Benzo(b/j)fluoranthene	ug/g	**0.78**	0.055		0.0050	4991473
Benzo(g,h,i)perylene	ug/g	**6.6**	0.029		0.0050	4991473
Benzo(k)fluoranthene	ug/g	**0.78**	0.018		0.0050	4991473
Chrysene	ug/g	**7**	0.037		0.0050	4991473
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050		0.0050	4991473
Fluoranthene	ug/g	**0.69**	0.058		0.0050	4991473
Fluorene	ug/g	**62**	<0.0050		0.0050	4991473
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	0.022		0.0050	4991473
1-Methylnaphthalene	ug/g	**0.99**	<0.0050		0.0050	4991473
2-Methylnaphthalene	ug/g	**0.99**	<0.0050		0.0050	4991473
Naphthalene	ug/g	**0.6**	<0.0050		0.0050	4991473
Phenanthrene	ug/g	**6.2**	0.016		0.0050	4991473
Pyrene	ug/g	**78**	0.050		0.0050	4991473
Surrogate Recovery (%)						
D10-Anthracene	%	-	108			4991473
D14-Terphenyl (FS)	%	-	109			4991473
D8-Acenaphthylene	%	-	93			4991473

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 Job #: B7A2588
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EKH618		
Sampling Date			2017/05/19 10:00		
COC Number			572155-01-01		
	UNITS	**Criteria**	**VS404**	**RDL**	**QC Batch**
Inorganics					
Chromium (VI)	ug/g	**8**	0.7	0.2	4993831

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 #: B7A2588
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: EKH618
Sample ID: VS404
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4991438	N/A	2017/05/23	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	4993831	2017/05/23	2017/05/23	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4993925	2017/05/23	2017/05/23	Viviana Canzonieri
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4991473	2017/05/19	2017/05/19	Liliana Gaburici

Maxxam ID: EKH618 Dup
Sample ID: VS404
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

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 #: B7A2588
Report Date: 2017/05/23

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

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 #: B7A2588
Report Date: 2017/05/23

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
4991473	D10-Anthracene	2017/05/19	100	50 - 130	100	50 - 130	117	%		
4991473	D14-Terphenyl (FS)	2017/05/19	105	50 - 130	103	50 - 130	107	%		
4991473	D8-Acenaphthylene	2017/05/19	95	50 - 130	96	50 - 130	95	%		
4991471	Moisture	2017/05/23							16	50
4991473	1-Methylnaphthalene	2017/05/19	97	50 - 130	96	50 - 130	<0.0050	ug/g	2.6	40
4991473	2-Methylnaphthalene	2017/05/19	96	50 - 130	94	50 - 130	<0.0050	ug/g	2.4	40
4991473	Acenaphthene	2017/05/19	99	50 - 130	96	50 - 130	<0.0050	ug/g	3.1	40
4991473	Acenaphthylene	2017/05/19	91	50 - 130	89	50 - 130	<0.0050	ug/g	3.4	40
4991473	Anthracene	2017/05/19	91	50 - 130	89	50 - 130	<0.0050	ug/g	3.9	40
4991473	Benzo(a)anthracene	2017/05/19	102	50 - 130	96	50 - 130	<0.0050	ug/g	2.4	40
4991473	Benzo(a)pyrene	2017/05/19	94	50 - 130	89	50 - 130	<0.0050	ug/g	2.7	40
4991473	Benzo(b/j)fluoranthene	2017/05/19	97	50 - 130	97	50 - 130	<0.0050	ug/g	2.0	40
4991473	Benzo(g,h,i)perylene	2017/05/19	96	50 - 130	91	50 - 130	<0.0050	ug/g	8.7	40
4991473	Benzo(k)fluoranthene	2017/05/19	102	50 - 130	96	50 - 130	<0.0050	ug/g	0.62	40
4991473	Chrysene	2017/05/19	103	50 - 130	98	50 - 130	<0.0050	ug/g	1.6	40
4991473	Dibenz(a,h)anthracene	2017/05/19	89	50 - 130	79	50 - 130	<0.0050	ug/g	13	40
4991473	Fluoranthene	2017/05/19	108	50 - 130	97	50 - 130	<0.0050	ug/g	2.2	40
4991473	Fluorene	2017/05/19	97	50 - 130	94	50 - 130	<0.0050	ug/g	3.9	40
4991473	Indeno(1,2,3-cd)pyrene	2017/05/19	101	50 - 130	86	50 - 130	<0.0050	ug/g	12	40
4991473	Naphthalene	2017/05/19	87	50 - 130	86	50 - 130	<0.0050	ug/g	4.0	40
4991473	Phenanthrene	2017/05/19	95	50 - 130	86	50 - 130	<0.0050	ug/g	4.7	40
4991473	Pyrene	2017/05/19	101	50 - 130	93	50 - 130	<0.0050	ug/g	2.5	40
4993831	Chromium (VI)	2017/05/23	74 (1)	75 - 125	91	80 - 120	<0.2	ug/g	NC	35
4993925	Acid Extractable Antimony (Sb)	2017/05/23	92	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
4993925	Acid Extractable Arsenic (As)	2017/05/23	95	75 - 125	98	80 - 120	<1.0	ug/g	NC	30
4993925	Acid Extractable Barium (Ba)	2017/05/23	103	75 - 125	96	80 - 120	<0.50	ug/g	7.9	30
4993925	Acid Extractable Beryllium (Be)	2017/05/23	96	75 - 125	96	80 - 120	<0.20	ug/g	NC	30
4993925	Acid Extractable Boron (B)	2017/05/23	96	75 - 125	97	80 - 120	<5.0	ug/g	NC	30
4993925	Acid Extractable Cadmium (Cd)	2017/05/23	94	75 - 125	99	80 - 120	<0.10	ug/g	NC	30
4993925	Acid Extractable Chromium (Cr)	2017/05/23	97	75 - 125	100	80 - 120	<1.0	ug/g	6.1	30
4993925	Acid Extractable Cobalt (Co)	2017/05/23	97	75 - 125	99	80 - 120	<0.10	ug/g	4.3	30

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 #: B7A2588
Report Date: 2017/05/23

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
4993925	Acid Extractable Copper (Cu)	2017/05/23	97	75 - 125	99	80 - 120	<0.50	ug/g	6.9	30
4993925	Acid Extractable Lead (Pb)	2017/05/23	95	75 - 125	101	80 - 120	<1.0	ug/g	1.9	30
4993925	Acid Extractable Mercury (Hg)	2017/05/23	95	75 - 125	98	80 - 120	<0.050	ug/g	NC	30
4993925	Acid Extractable Molybdenum (Mo)	2017/05/23	96	75 - 125	96	80 - 120	<0.50	ug/g	NC	30
4993925	Acid Extractable Nickel (Ni)	2017/05/23	98	75 - 125	100	80 - 120	<0.50	ug/g	2.3	30
4993925	Acid Extractable Selenium (Se)	2017/05/23	97	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
4993925	Acid Extractable Silver (Ag)	2017/05/23	96	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
4993925	Acid Extractable Thallium (Tl)	2017/05/23	93	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
4993925	Acid Extractable Uranium (U)	2017/05/23	90	75 - 125	99	80 - 120	<0.050	ug/g	4.5	30
4993925	Acid Extractable Vanadium (V)	2017/05/23	97	75 - 125	99	80 - 120	<5.0	ug/g	3.2	30
4993925	Acid Extractable Zinc (Zn)	2017/05/23	99	75 - 125	101	80 - 120	<5.0	ug/g	9.6	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 (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 (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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 #: B7A2588
Report Date: 2017/05/23

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

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.

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 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 #:
Attention:	Central Accounting	Attention:	Paul, Tony, Aaron, Equis	P.O. #:			572155
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#572155-01-01	Madison Bingley
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)? ___

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: May 23, 17 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		VS404	17/05/19	10:00	Soil		X	X								1	
2																	
3																	
4																	
5																	
6																	
7																	
8																	Onice
9																	
10																	

19-May-17 13:10
Alison Cameron
B7A2588
MVA 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				
Aaron Bradshaw	17/05/18	12:20	Mariana Vascan / Vascan	2017/05/19	13:10		Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
								16, 15, 16	Present	Y	
									Intact	Y	

* 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 #: B7A2588
Report Date: 2017/05/23

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. #: 572155-05-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/23
Report #: R4476488
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B7A1697
Received: 2017/05/18, 15:00

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	5	N/A	2017/05/19	CAM SOP-00301	EPA 8270D m
Hexavalent Chromium in Soil by IC (1, 2)	5	2017/05/19	2017/05/19	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS (1)	5	2017/05/19	2017/05/19	CAM SOP-00447	EPA 6020B m
Moisture	5	N/A	2017/05/19	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	5	2017/05/18	2017/05/18	OTT SOP-00011	EPA 8270D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

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
Your C.O.C. #: 572155-05-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/23
Report #: R4476488
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B7A1697
Received: 2017/05/18, 15:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7A1697
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EKD306	EKD307	EKD308	EKD308	EKD309		
Sampling Date			2017/05/18 14:30	2017/05/18 14:32	2017/05/18 14:34	2017/05/18 14:34	2017/05/18 14:36		
COC Number			572155-05-01	572155-05-01	572155-05-01	572155-05-01	572155-05-01		
	UNITS	**Criteria**	**VS401**	**VS1401**	**VS402**	**VS402 Lab-Dup**	**VS403**	**RDL**	**QC Batch**
Metals									
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4991238
Acid Extractable Arsenic (As)	ug/g	**18**	3.0	2.5	2.3	2.2	2.4	1.0	4991238
Acid Extractable Barium (Ba)	ug/g	**390**	200	180	230	230	210	0.50	4991238
Acid Extractable Beryllium (Be)	ug/g	**4**	0.71	0.67	0.78	0.74	0.74	0.20	4991238
Acid Extractable Boron (B)	ug/g	**120**	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4991238
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	<0.10	<0.10	0.12	0.14	0.10	4991238
Acid Extractable Chromium (Cr)	ug/g	**160**	45	45	46	46	49	1.0	4991238
Acid Extractable Cobalt (Co)	ug/g	**22**	14	13	13	13	14	0.10	4991238
Acid Extractable Copper (Cu)	ug/g	**140**	26	26	28	27	24	0.50	4991238
Acid Extractable Lead (Pb)	ug/g	**120**	6.7	6.9	6.0	6.2	6.6	1.0	4991238
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4991238
Acid Extractable Nickel (Ni)	ug/g	**100**	28	27	29	29	28	0.50	4991238
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4991238
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4991238
Acid Extractable Thallium (Tl)	ug/g	**1**	0.26	0.26	0.24	0.24	0.27	0.050	4991238
Acid Extractable Uranium (U)	ug/g	**23**	0.71	0.72	0.69	0.72	0.76	0.050	4991238
Acid Extractable Vanadium (V)	ug/g	**86**	64	61	64	64	66	5.0	4991238
Acid Extractable Zinc (Zn)	ug/g	**340**	79	78	83	81	83	5.0	4991238
Acid Extractable Mercury (Hg)	ug/g	**0.27**	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4991238

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 Job #: B7A1697
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID			EKD310		
Sampling Date			2017/05/18 14:15		
COC Number			572155-05-01		
	UNITS	**Criteria**	**VS342B**	**RDL**	**QC Batch**
Metals					
Acid Extractable Antimony (Sb)	ug/g	**7.5**	<0.20	0.20	4991238
Acid Extractable Arsenic (As)	ug/g	**18**	1.8	1.0	4991238
Acid Extractable Barium (Ba)	ug/g	**390**	170	0.50	4991238
Acid Extractable Beryllium (Be)	ug/g	**4**	0.64	0.20	4991238
Acid Extractable Boron (B)	ug/g	**120**	<5.0	5.0	4991238
Acid Extractable Cadmium (Cd)	ug/g	**1.2**	<0.10	0.10	4991238
Acid Extractable Chromium (Cr)	ug/g	**160**	42	1.0	4991238
Acid Extractable Cobalt (Co)	ug/g	**22**	14	0.10	4991238
Acid Extractable Copper (Cu)	ug/g	**140**	14	0.50	4991238
Acid Extractable Lead (Pb)	ug/g	**120**	6.5	1.0	4991238
Acid Extractable Molybdenum (Mo)	ug/g	**6.9**	<0.50	0.50	4991238
Acid Extractable Nickel (Ni)	ug/g	**100**	20	0.50	4991238
Acid Extractable Selenium (Se)	ug/g	**2.4**	<0.50	0.50	4991238
Acid Extractable Silver (Ag)	ug/g	**20**	<0.20	0.20	4991238
Acid Extractable Thallium (Tl)	ug/g	**1**	0.21	0.050	4991238
Acid Extractable Uranium (U)	ug/g	**23**	0.90	0.050	4991238
Acid Extractable Vanadium (V)	ug/g	**86**	59	5.0	4991238
Acid Extractable Zinc (Zn)	ug/g	**340**	76	5.0	4991238
Acid Extractable Mercury (Hg)	ug/g	**0.27**	0.064	0.050	4991238

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 #: B7A1697
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PAHS (SOIL)

Maxxam ID			EKD306	EKD307	EKD308	EKD309	EKD310		
Sampling Date			2017/05/18 14:30	2017/05/18 14:32	2017/05/18 14:34	2017/05/18 14:36	2017/05/18 14:15		
COC Number			572155-05-01	572155-05-01	572155-05-01	572155-05-01	572155-05-01		
	UNITS	**Criteria**	**VS401**	**VS1401**	**VS402**	**VS403**	**VS342B**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	21	22	18	18	18	0.2	4989150
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	**0.99**	<0.014	<0.014	<0.014	<0.014	<0.014	0.014	4989144
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	**7.9**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4989153
Acenaphthylene	ug/g	**0.15**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4989153
Anthracene	ug/g	**0.67**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4989153
Benzo(a)anthracene	ug/g	**0.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4989153
Benzo(a)pyrene	ug/g	**0.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4989153
Benzo(b/j)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4989153
Benzo(g,h,i)perylene	ug/g	**6.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4989153
Benzo(k)fluoranthene	ug/g	**0.78**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4989153
Chrysene	ug/g	**7**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4989153
Dibenz(a,h)anthracene	ug/g	**0.1**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4989153
Fluoranthene	ug/g	**0.69**	0.0052	0.0073	<0.0050	<0.0050	<0.0050	0.0050	4989153
Fluorene	ug/g	**62**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4989153
Indeno(1,2,3-cd)pyrene	ug/g	**0.38**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4989153
1-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4989153
2-Methylnaphthalene	ug/g	**0.99**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4989153
Naphthalene	ug/g	**0.6**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4989153
Phenanthrene	ug/g	**6.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4989153
Pyrene	ug/g	**78**	<0.0050	0.0054	<0.0050	<0.0050	<0.0050	0.0050	4989153
Surrogate Recovery (%)									
D10-Anthracene	%	-	107	108	111	107	104		4989153
D14-Terphenyl (FS)	%	-	108	111	110	106	107		4989153
D8-Acenaphthylene	%	-	96	96	92	90	92		4989153

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 #: B7A1697
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			EKD306	EKD306	EKD307	EKD308	EKD309		
Sampling Date			2017/05/18 14:30	2017/05/18 14:30	2017/05/18 14:32	2017/05/18 14:34	2017/05/18 14:36		
COC Number			572155-05-01	572155-05-01	572155-05-01	572155-05-01	572155-05-01		
	UNITS	**Criteria**	**VS401**	**VS401 Lab-Dup**	**VS1401**	**VS402**	**VS403**	**RDL**	**QC Batch**
Inorganics									
Chromium (VI)	ug/g	**8**	0.6	0.4	0.8	0.5	0.8	0.2	4990763

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			EKD310		
Sampling Date			2017/05/18 14:15		
COC Number			572155-05-01		
	UNITS	**Criteria**	**VS342B**	**RDL**	**QC Batch**
Inorganics					
Chromium (VI)	ug/g	**8**	0.9	0.2	4990763

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 #: B7A1697
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: EKD306
Sample ID: VS401
Matrix: Soil

Collected: 2017/05/18
Shipped:
Received: 2017/05/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4989144	N/A	2017/05/19	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	4990763	2017/05/19	2017/05/19	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4991238	2017/05/19	2017/05/19	Daniel Teclu
Moisture	BAL	4989150	N/A	2017/05/19	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4989153	2017/05/18	2017/05/18	Arezoo Habibagahi

Maxxam ID: EKD306 Dup
Sample ID: VS401
Matrix: Soil

Collected: 2017/05/18
Shipped:
Received: 2017/05/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4990763	2017/05/19	2017/05/19	Sally Coughlin

Maxxam ID: EKD307
Sample ID: VS1401
Matrix: Soil

Collected: 2017/05/18
Shipped:
Received: 2017/05/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4989144	N/A	2017/05/19	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	4990763	2017/05/19	2017/05/19	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4991238	2017/05/19	2017/05/19	Daniel Teclu
Moisture	BAL	4989150	N/A	2017/05/19	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4989153	2017/05/18	2017/05/18	Arezoo Habibagahi

Maxxam ID: EKD308
Sample ID: VS402
Matrix: Soil

Collected: 2017/05/18
Shipped:
Received: 2017/05/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4989144	N/A	2017/05/19	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	4990763	2017/05/19	2017/05/19	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4991238	2017/05/19	2017/05/19	Daniel Teclu
Moisture	BAL	4989150	N/A	2017/05/19	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4989153	2017/05/18	2017/05/18	Arezoo Habibagahi

Maxxam ID: EKD308 Dup
Sample ID: VS402
Matrix: Soil

Collected: 2017/05/18
Shipped:
Received: 2017/05/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4991238	2017/05/19	2017/05/19	Daniel Teclu

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 #: B7A1697
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: EKD309
Sample ID: VS403
Matrix: Soil

Collected: 2017/05/18
Shipped:
Received: 2017/05/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4989144	N/A	2017/05/19	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	4990763	2017/05/19	2017/05/19	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4991238	2017/05/19	2017/05/19	Daniel Teclu
Moisture	BAL	4989150	N/A	2017/05/19	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4989153	2017/05/18	2017/05/18	Arezoo Habibagahi

Maxxam ID: EKD310
Sample ID: VS342B
Matrix: Soil

Collected: 2017/05/18
Shipped:
Received: 2017/05/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4989144	N/A	2017/05/19	Liliana Gaburici
Hexavalent Chromium in Soil by IC	IC/SPEC	4990763	2017/05/19	2017/05/19	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4991238	2017/05/19	2017/05/19	Daniel Teclu
Moisture	BAL	4989150	N/A	2017/05/19	Arezoo Habibagahi
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4989153	2017/05/18	2017/05/18	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 #: B7A1697
Report Date: 2017/05/23

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	24.0°C

Revised Report (2017/05/23): Requested regulatory criteria have been included on this report.

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 #: B7A1697
Report Date: 2017/05/23

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4989153	D10-Anthracene	2017/05/18	99	50 - 130	97	50 - 130	105	%		
4989153	D14-Terphenyl (FS)	2017/05/18	104	50 - 130	104	50 - 130	101	%		
4989153	D8-Acenaphthylene	2017/05/18	93	50 - 130	94	50 - 130	89	%		
4989150	Moisture	2017/05/19							4.2	50
4989153	1-Methylnaphthalene	2017/05/18	94	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4989153	2-Methylnaphthalene	2017/05/18	94	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
4989153	Acenaphthene	2017/05/18	93	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4989153	Acenaphthylene	2017/05/18	88	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
4989153	Anthracene	2017/05/18	90	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
4989153	Benzo(a)anthracene	2017/05/18	92	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4989153	Benzo(a)pyrene	2017/05/18	85	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
4989153	Benzo(b/j)fluoranthene	2017/05/18	86	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
4989153	Benzo(g,h,i)perylene	2017/05/18	87	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4989153	Benzo(k)fluoranthene	2017/05/18	98	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
4989153	Chrysene	2017/05/18	93	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
4989153	Dibenz(a,h)anthracene	2017/05/18	82	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
4989153	Fluoranthene	2017/05/18	91	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
4989153	Fluorene	2017/05/18	96	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4989153	Indeno(1,2,3-cd)pyrene	2017/05/18	91	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
4989153	Naphthalene	2017/05/18	85	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
4989153	Phenanthrene	2017/05/18	85	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
4989153	Pyrene	2017/05/18	88	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
4990763	Chromium (VI)	2017/05/19	88	75 - 125	92	80 - 120	<0.2	ug/g	26	35
4991238	Acid Extractable Antimony (Sb)	2017/05/19	80	75 - 125	98	80 - 120	<0.20	ug/g	NC	30
4991238	Acid Extractable Arsenic (As)	2017/05/19	97	75 - 125	94	80 - 120	<1.0	ug/g	0.56	30
4991238	Acid Extractable Barium (Ba)	2017/05/19	NC	75 - 125	95	80 - 120	<0.50	ug/g	2.2	30
4991238	Acid Extractable Beryllium (Be)	2017/05/19	102	75 - 125	96	80 - 120	<0.20	ug/g	5.4	30
4991238	Acid Extractable Boron (B)	2017/05/19	101	75 - 125	95	80 - 120	<5.0	ug/g	NC	30
4991238	Acid Extractable Cadmium (Cd)	2017/05/19	104	75 - 125	96	80 - 120	<0.10	ug/g	14	30
4991238	Acid Extractable Chromium (Cr)	2017/05/19	NC	75 - 125	99	80 - 120	<1.0	ug/g	0.94	30
4991238	Acid Extractable Cobalt (Co)	2017/05/19	107	75 - 125	101	80 - 120	<0.10	ug/g	5.0	30

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 #: B7A1697
Report Date: 2017/05/23

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4991238	Acid Extractable Copper (Cu)	2017/05/19	NC	75 - 125	100	80 - 120	<0.50	ug/g	3.3	30
4991238	Acid Extractable Lead (Pb)	2017/05/19	103	75 - 125	97	80 - 120	<1.0	ug/g	2.7	30
4991238	Acid Extractable Mercury (Hg)	2017/05/19	101	75 - 125	97	80 - 120	<0.050	ug/g	NC	30
4991238	Acid Extractable Molybdenum (Mo)	2017/05/19	102	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
4991238	Acid Extractable Nickel (Ni)	2017/05/19	NC	75 - 125	98	80 - 120	<0.50	ug/g	2.4	30
4991238	Acid Extractable Selenium (Se)	2017/05/19	103	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
4991238	Acid Extractable Silver (Ag)	2017/05/19	101	75 - 125	98	80 - 120	<0.20	ug/g	NC	30
4991238	Acid Extractable Thallium (Tl)	2017/05/19	100	75 - 125	96	80 - 120	<0.050	ug/g	1.8	30
4991238	Acid Extractable Uranium (U)	2017/05/19	101	75 - 125	95	80 - 120	<0.050	ug/g	4.3	30
4991238	Acid Extractable Vanadium (V)	2017/05/19	NC	75 - 125	101	80 - 120	<5.0	ug/g	0.46	30
4991238	Acid Extractable Zinc (Zn)	2017/05/19	NC	75 - 125	101	80 - 120	<5.0	ug/g	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 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 (absolute difference <= 2x RDL).

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 #: B7A1697
Report Date: 2017/05/23

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

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.

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 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: Tony Lyon

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 572155
COC #: C#572155-05-01
Project Manager: Madison Bingley

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)

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	O.Reg 153 PAHs (Soil)	O.Reg 153 ICPMS Metals including Hg and CRVI	# of Bottles	Comments
1		VS401	May 18/17	15:30	Soil	NA	✓ ✓	1	
2		VS1401	↓	14:32	↓	↓	✓ ✓	1	
3		VS402	↓	14:34	↓	↓	✓ ✓	1	
4		VS403	↓	14:36	↓	↓	✓ ✓	1	
5		VS342B	↓	14:15	↓	↓	✓ ✓	1	
6									RECEIVED IN OTTAWA
7									
8									
9									On ice
10									

18-May-17 15:00
Alison Cameron
B7A1697
MVA OTT-001

* 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	17/05/18	15:00	Mariana Vascan Vascan	2017/05/18	15:00			24, 24, 24	Present	Y	
									Intact	Y	

* 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 #: B7A1697
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

Exceedence Summary Table – Reg153/04 T3-Soil/Res-C

Result Exceedences

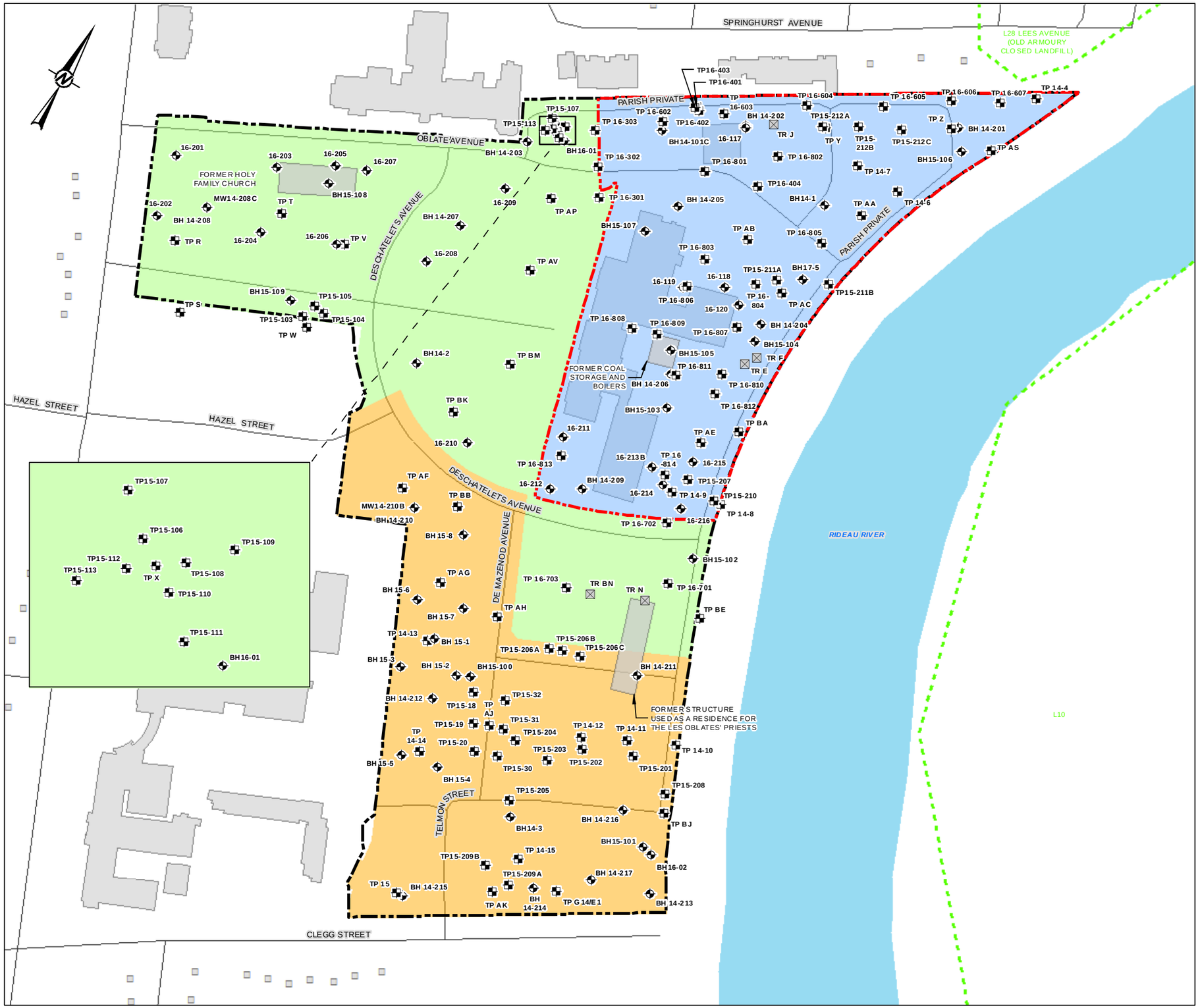
Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
No Exceedences						

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.

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

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
- RSC #2
- RSC #3

0 25 50 100

SCALE 1:2,000 METRES

NOTES

1. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1525113-1000-3

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 #3
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	1000/3	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\RegionalGroupOttawa\PropOttawa\GIS\MXDs\1525113\Ph1000_Ad\PhIIESA\Rep\153_04_PhIIESA\Phase3\1525113-1000-3-HS-00H1.mxd

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	12 (1)	0	10 (2)	1	7 (1)	0	29 (4)	1
Metals	5	0	37 (3)	0	35 (2)	14 (1)	18 (2)	1 (1)	95 (7)	15 (2)
PAHs	19	4	38 (3)	0	35 (2)	21 (1)	19 (2)	1	111 (7)	26 (1)
VOCs	0	NA	0	NA	0	NA	1	0	1	0
PCBs	0	NA	5	0	0	NA	3	0	8	0
pH	0	NA	6	0	5	0	3	0	14	0
RSC #1										
PHC F1-F4 and BTEX	0	NA	1	0	4 (1)	1	1	0	6 (1)	1
Metals	1	0	7	0	13 (1)	7 (1)	6 (1)	1 (1)	27 (2)	8 (2)
PAHs	7	1	7	0	13 (1)	9	5 (1)	None	32 (2)	10
pH	0	NA	2	0	3	0	0	NA	5	0
RSC #2										
PHC F1-F4 and BTEX	0	NA	5 (1)	0	0	NA	0	NA	5 (1)	0
Metals	4	0	19 (2)	0	7 (1)	1	3	0	33 (3)	1
PAHs	12	3	19 (2)	0	7 (1)	3 (1)	3	0	41 (3)	6 (1)
pH	0	NA	2	0	1	0	1	0	4	0
RSC #3										
PHC F1-F4 and BTEX	0	NA	6	0	6 (1)	0	6 (1)	0	18 (2)	0
Metals	0	NA	11 (1)	0	15	6	8 (1)	0	35 (2)	6
PAHs	0	NA	12 (1)	0	15	9	11 (1)	1	38 (2)	10
PCBs	0	NA	5	0	0	NA	3	0	8	0
VOCs	0	NA	0	NA	0	NA	1	0	1	0
pH	0	NA	2	0	1	0	2	0	5	0

APPENDIX I

Soil Brought to the Phase Two Property

SOIL BROUGHT TO THE PHASE TWO PROPERTY REPORT

This report describes the methods and results of the sampling of imported soil brought to the Phase Two Property (RSC #3, hereafter referred to as the "Site"). The Site is a section of the property located at 175 Main Street in Ottawa, Ontario (hereafter referred to as the "Property").

The Property has been split into three (3) separate parcels, identified as RSC #1, RSC #2, and RSC #3 as shown in Appendix H in the Phase Two ESA report (*Phase Two Environmental Site Assessment, Oblates Property RSC #3, 175 Main Street, Ottawa, Ontario*). This report is for the parcel identified as RSC #3 (the "Site").

Sand fill and native clay soil were reworked within the Phase One ESA Property (Parts 1, 2, 3, 4, 5, 6, 7, 8, 10 and 11 on Plan 4R-29138, 175 Main Street, Ottawa, Ontario). Specifically, 4,000 cubic metres of sand fill and native clay soil were moved from the RSC #1 parcel (Parts 1, 2, 3 and 5 on Plan 4R-29138, 175 Main Street, Ottawa, Ontario) to the current RSC parcel (Parts 10 and 11 on Plan 4R-29138, 175 Main Street, Ottawa, Ontario) for grading under future asphalt roadways. The RSC ID Number for the RSC #1 area of the Property is 222394.

The importation of soil described below occurred between August 2016 and June 2017.

The Property (including RSC #1 and RSC #3) is zoned for residential land use.

1.1 Rationale for Selecting Chemical Parameters Analyzed by a Laboratory in Accordance with Section 32 of Schedule E

To determine the potential Contaminants of Concern (COC), the Phase One ESA for the Property, and the Phase Two ESA and RSC specific to RSC #1 were reviewed. Based on a review of the listed documents, the sand fill and native clay soil on RSC #1 met the MOECC Table 3 Standards for Residential/Parkland in a non-potable groundwater use, coarse textured soil. As such, no specific COCs were identified. In addition, soil samples were collected in-situ from the RSC #1 area at a frequency of greater than 1 sample per 160 cubic metres as required by O.Reg 153/04. A total of 91 samples (including 9 duplicates) were submitted for analysis of metals and polycyclic aromatic hydrocarbons (PAHs).

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.

Each of the samples submitted for metals and PAHs met the MOECC Table 3 Standards for Residential/Parkland in a non-potable groundwater use, coarse textured soil. Therefore, the soil imported to the current RSC area was not considered to be a Potential Contaminating Activity (PCA #30 - Importation of Fill Material of Unknown Quality) and therefore not an APEC for the current RSC area.

In addition, after the soil from the RSC #1 area was excavated, it was stockpiled temporarily to asses if any contaminants had been introduced into the soil from site activities, i.e., potential hydrocarbon spills from construction traffic. COCs for the soil handling were identified to be petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene, and xylenes (BTEX).

1.2 Description of the Soil Sampling Activities Conducted

1.2.1 Number of Samples Analyzed and Methodology

As outlined in Ontario Regulation 153/04, as amended, for the importation of 4,000 m^3 of soil, 25 samples would be required. To classify the soil, 91 samples (plus 9 duplicates) were submitted for analysis of the COCs (metals and PAHs). In addition, all soil was stockpiled and sampled in accordance with the O. Reg. 153/04 stockpiling guidelines to assess the potential for contamination introduced during the handling of the soil. This included field screening of 75 locations (selected based on olfactory and visual observations) and selection of the 15 suspected worst case samples (plus 2 duplicate samples) for analysis of PHCs and BTEX.

The 91 samples (plus 9 duplicates) were collected as verification samples as part of the remediation of RSC #1. Table 1a – Analytical Results – Metals and PAHs presents the results of the analysis of samples collected from the area where soil was excavated from RSC #1.

The 15 (plus 2 duplicates) samples submitted for PHC and BTEX were collected from 75 locations that were screened in the field using a photoionization detector (PID) calibrated to 100 parts-per-million-volume (ppmv) isobutylene. The samples were selected based on the suspected worst case samples identified during the field screening. The analytical results for these samples are provided in Table 1b – Analytical Results – PHCs.

1.2.2 Soil Sampling Program Methodology

The soil sampling program included reviewing all verification samples collected during the remediation of RSC #1 to confirm that they met the MOECC Table 3 Standards, as well as confirming that no contaminants had been introduced by construction traffic during the redevelopment of the RSC #1 area.

The sampling methodology used for the verification samples is provided in Appendix G - Remediation Report of the Phase Two ESA for RSC #1. The PHC and BTEX samples were collected from the stockpiled soil by means of hand dug test pits advanced in the 75 screening locations.

1.2.3 Address of the Source Property and Location of any Property Where the Soil was Stored Before it was Deposited on, in or under the Phase Two Property of Deposited Soil

Soil was moved from the RSC #1 area (Parts 1, 2, 3 and 5 on Plan 4R-29138, 175 Main Street, Ottawa, Ontario) to the current RSC area (Parts 10 and 11 on Plan 4R-29138, 175 Main Street, Ottawa, Ontario).

1.2.4 The Former and Current Uses of the Source Property, Including Identification of Any Potentially Contaminating Activity

The source property was agricultural or other (vacant land) previous to 1885. Since 1885 the source property has been residential, it is currently residential and the development at the Property is residential as well.

1.2.5 Total Volume of Soil Brought to the Phase Two Property

4,000 cubic metres of soil was brought to the Phase Two Property (RSC#3).

1.2.6 The Results of Analyses of Soil Samples

All soil samples submitted for analysis met the MOECC Table 3 Standards for residential land use in a non-potable groundwater setting, coarse textured soil.

1.2.7 Figure Showing the Location on the Phase Two Property Where Soil was Deposited

The approximate location of the deposited soil is provided in Figure I1.

1.2.8 Description of Why the Soil was Brought to the Phase Two Property

The soil was brought to the Phase Two Property for grading purposes underneath future roadways.

2.0 CONCLUSIONS

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. Therefore, each of the samples submitted for metals, PAHs, PHC F1-F4 and BTEX analysis met the MOECC Table 3 Standards for Residential/Parkland in a non-potable groundwater use, coarse textured soil, with the exception of the native clay samples that were interpreted to have naturally occurring barium, cobalt, and vanadium as discussed in the Phase Two ESA report and the Remediation report.

Attachments:	Attachment A –	Table I1a – Analytical Results – Metals and PAHs
		Table I1b – Analytical Results – PHCs
	Attachment B –	Figure I1 – Approximate Location of Deposited Imported Soil
	Attachment C –	Laboratory Certificates of Analysis (electronic format)

ATTACHMENT A
Table I1a – Analytical Results – Metals and PAHs

Parameter	Unit	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS011	VS016	VS019	VS021	VS022C	VS023	VS024B	VS025	VS026	VS027	VS028	VS029	VS033	VS034
			07-Dec-2015	07-Dec-2015	14-Dec-2015	16-Dec-2015	20-Jun-2016	16-Dec-2015	18-Dec-2015	18-Dec-2015	18-Dec-2015	18-Dec-2015	18-Dec-2015	18-Dec-2015	11-Jan-2016	11-Jan-2016
			VS011	VS016	VS019	VS021	VS022C	VS023	VS024B	VS025	VS026	VS027	VS028	VS029	VS033	VS034
Metals																
Antimony	ug/g	7.5	<0.2	<0.2	<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	18	1	1	4	2	<1	2	1	<1	<1	2	1	1	3	2
Barium	ug/g	390	53	23	39	220	120	140	230	18	12	32	29	13	41	14
Beryllium	ug/g	4	0.3	0.2	0.3	0.7	0.4	0.5	0.5	<0.2	<0.2	0.3	0.2	<0.2	0.4	0.2
Boron	ug/g	120	<5	<5	<5	7	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	ug/g	1.2	0.1	<0.1	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	160	30	15	22	45	25	30	56	12	11	22	17	12	21	14
Cobalt	ug/g	22	5.4	4.4	6.9	14	7.6	8.5	14	2.4	2.9	4.2	4.4	2.8	5.8	2.9
Copper	ug/g	140	7.0	4.7	7.2	24	15	16	27	4.7	3.8	7.2	5.6	4.0	7.0	3.5
Hexavalent Chromium	ug/g	8	<0.2	<0.2	<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	120	21	7	29	6	4	4	5	2	1	11	5	3	15	4
Mercury	ug/g	0.27	<0.05	<0.05	0.08	<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	6.9	<0.5	<0.5	0.5	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	ug/g	100	13	8.4	9.9	27	15	16	31	7.8	6.8	10	9.5	6.7	11	6.9
Selenium	ug/g	2.4	<0.5	<0.5	<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	20	<0.2	<0.2	<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	1	0.10	<0.05	0.09	0.25	0.14	0.16	0.32	0.08	<0.05	0.08	<0.05	<0.05	0.07	<0.05
Uranium	ug/g	23	0.73	0.55	0.75	1.2	0.74	0.72	0.95	0.46	0.44	0.67	0.58	0.43	0.73	0.53
Vanadium	ug/g	86	32	20	36	66	40	50	70	11	14	24	22	14	29	23
Zinc	ug/g	340	37	16	47	73	38	45	77	23	11	41	26	17	33	15
Semi-VOCs																
1- & 2-Methylnaphthalene	ug/g	0.99 [3]	<0.0071	<0.0071	<0.0071	<0.0071	<0.014	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.014	<0.014
1-Methylnaphthalene	ug/g	0.99 [3]	<0.0050	<0.0050	<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	0.99 [3]	<0.0050	<0.0050	<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	7.9	<0.0050	<0.0050	<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	0.15	<0.0050	<0.0050	0.018	<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	0.67	0.0080	<0.0050	0.018	<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] fluoranthene	ug/g	--	0.037	0.015	0.19	<0.0050	<0.0050	<0.0050	<0.0050	0.012	<0.0050	0.016	0.012	<0.0050	0.018	<0.0050
Benzo[a]anthracene	ug/g	0.5	0.024	0.0086	0.11	<0.0050	<0.0050	<0.0050	<0.0050	0.0062	<0.0050	0.0079	0.0059	<0.0050	0.012	<0.0050
Benzo[a]pyrene	ug/g	0.3	0.025	0.010	0.13	<0.0050	<0.0050	<0.0050	<0.0050	0.0071	<0.0050	0.0097	0.0061	<0.0050	0.018	<0.0050
Benzo[g,h,i]perylene	ug/g	6.6	0.017	0.0066	0.078	<0.0050	<0.0050	<0.0050	<0.0050	0.0057	<0.0050	0.0075	<0.0050	<0.0050	0.012	<0.0050
Benzo[k]fluoranthene	ug/g	0.78	0.011	<0.0050	0.064	<0.0050	0.0078	<0.0050	<0.0050	<0.0050	<0.0050	0.0055	<0.0050	<0.0050	0.0060	<0.0050
Chrysene	ug/g	7	0.024	0.0091	0.095	<0.0050	<0.0050	<0.0050	<0.0050	0.0066	<0.0050	0.0095	0.0068	<0.0050	0.012	<0.0050
Dibenzo[a,h]anthracene	ug/g	0.1	<0.0050	<0.0050	0.019	<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	0.69	0.059	0.018	0.22	<0.0050	<0.0050	<0.0050	<0.0050	0.014	<0.0050	0.018	0.014	<0.0050	0.024	<0.0050
Fluorene	ug/g	62	<0.0050	<0.0050	<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]pyrene	ug/g	0.38	0.019	0.0078	0.091	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	<0.0050	0.0070	<0.0050	<0.0050	0.0060	<0.0050
Naphthalene	ug/g	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	ug/g	6.2	0.031	0.0069	0.065	<0.0050	<0.0050	<0.0050	<0.0050	0.0059	<0.0050	0.0086	0.0082	<0.0050	0.012	<0.0050
Pyrene	ug/g	78	0.045	0.015	0.20	<0.0050	<0.0050	<0.0050	<0.0050	0.013	<0.0050	0.016	0.012	<0.0050	0.018	<0.0050

Parameter	Unit	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS043	VS047	VS047	VS048B	VS054	VS054	VS058	VS059	VS060	VS061	VS062	VS063	VS064
			20-Jan-2016	04-Mar-2016	04-Mar-2016	08-Mar-2016	04-Mar-2016	04-Mar-2016	08-Mar-2016	08-Mar-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016
			VS043	VS047	VS1047 (Field Duplicate)	VS048B	VS1054 (Field Duplicate)	VS054	VS058	VS059	VS060	VS061	VS062	VS063	VS064
Metals															
Antimony	ug/g	7.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.28	0.25	<0.20	<0.20	<0.20
Arsenic	ug/g	18	2	<1	1	2	1	<1	2	1	3.3	1.8	1.3	<1.0	1.9
Barium	ug/g	390	37	85	120	160	68	62	160	51	110	87	120	140	68
Beryllium	ug/g	4	0.3	0.4	0.6	0.7	0.4	0.4	0.8	0.4	0.40	0.46	0.45	0.50	0.43
Boron	ug/g	120	<5	<5	<5	<5	<5	<5	<5	<5	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	ug/g	1.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.22	0.12	<0.10	<0.10	<0.10
Chromium	ug/g	160	19	31	42	42	27	29	62	33	35	39	30	46	41
Cobalt	ug/g	22	4.7	7.2	11	11	8.5	7.1	13	6.9	7.7	8.4	7.7	11	7.5
Copper	ug/g	140	7.7	13	19	24	12	11	22	11	18	15	20	17	16
Hexavalent Chromium	ug/g	8	<0.2	<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	120	17	4	4	5	4	4	10	5	46	9.7	3.9	4.3	9.2
Mercury	ug/g	0.27	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.10	<0.050	<0.050	<0.050	<0.050
Molybdenum	ug/g	6.9	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	0.5	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/g	100	8.9	14	63	24	13	13	31	16	19	19	18	24	18
Selenium	ug/g	2.4	<0.5	<0.5	<0.5	0.6	0.7	0.6	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	ug/g	20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	ug/g	1	0.08	0.13	0.18	0.22	0.14	0.13	0.25	0.12	0.16	0.14	0.14	0.23	0.13
Uranium	ug/g	23	0.74	1.5	1.8	1.3	1.6	1.5	1.6	0.75	0.90	0.91	0.85	1.3	1.5
Vanadium	ug/g	86	25	51	60	58	49	44	67	40	40	41	45	49	40
Zinc	ug/g	340	28	35	62	63	32	33	71	37	130	54	46	58	38
Semi-VOCs															
1- & 2-Methylnaphthalene	ug/g	0.99 [3]	<0.014	<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	0.99 [3]	<0.0050	<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	0.99 [3]	<0.0050	<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	7.9	<0.0050	<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	0.15	0.0058	<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	0.67	0.0058	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	0.0086	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthene	ug/g	--	0.035	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.023	0.038	0.011	<0.0050	<0.0050	0.0060
Benzo[a]anthracene	ug/g	0.5	0.017	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0070	0.014	0.029	0.0079	<0.0050	<0.0050	0.0060
Benzo[a]pyrene	ug/g	0.3	0.023	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0084	0.015	0.027	0.0095	<0.0050	<0.0050	0.0060
Benzo[g,h,i]perylene	ug/g	6.6	0.012	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0070	0.0099	0.016	0.011	<0.0050	0.0070	0.0067
Benzo[k]fluoranthene	ug/g	0.78	0.012	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0099	0.016	0.0063	<0.0050	<0.0050	<0.0050
Chrysene	ug/g	7	0.023	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0091	0.017	0.027	0.0079	<0.0050	<0.0050	0.0067
Dibenzo[a,h]anthracene	ug/g	0.1	0.0058	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0079	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	0.69	0.046	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0098	0.025	0.070	0.0079	<0.0050	<0.0050	0.0087
Fluorene	ug/g	62	<0.0050	<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]pyrene	ug/g	0.38	0.012	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0094	0.016	0.012	<0.0050	0.0064	0.0073
Naphthalene	ug/g	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	ug/g	6.2	0.017	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0056	0.014	0.027	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	78	0.035	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0098	0.022	0.059	0.0079	<0.0050	<0.0050	0.0073

Parameter	Unit	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS065	VS066	VS067	VS068	VS069	VS070	VS071	VS072B	VS073	VS073	VS074	VS075	VS076	VS077
			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	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016
			VS065	VS066	VS067	VS068	VS069	VS070	VS071	VS072B [4]	VS073	VS1073 (Field Duplicate)	VS074	VS075	VS076	VS077
Metals																
Antimony	ug/g	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	ug/g	18	<1.0	1.8	<1.0	1.1	<1.0	<1.0	<1.0	1	<1.0	<1.0	<1.0	<1.0	<1.0	1.3
Barium	ug/g	390	19	76	110	150	15	18	18	**410**	26	24	26	13	21	92
Beryllium	ug/g	4	<0.20	0.48	0.38	0.51	<0.20	0.22	<0.20	1.0	<0.20	<0.20	0.21	<0.20	<0.20	0.43
Boron	ug/g	120	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	ug/g	1.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	ug/g	160	12	42	34	47	6.0	13	11	100	9.0	8.8	12	8.5	10	42
Cobalt	ug/g	22	2.8	8.8	9.3	12	1.9	3.9	3.7	**26**	2.4	2.4	3.7	2.4	3.4	10
Copper	ug/g	140	4.3	17	14	23	3.1	6.1	5.5	49	5.1	4.9	5.1	3.5	5.1	15
Hexavalent Chromium	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lead	ug/g	120	2.7	7.5	3.7	4.2	1.3	2.2	2.2	7	1.6	2.0	2.1	1.9	1.6	5.0
Mercury	ug/g	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	ug/g	6.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/g	100	6.7	20	18	25	3.8	8.7	7.1	59	5.8	5.3	7.1	4.9	7.5	19
Selenium	ug/g	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	<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	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	ug/g	1	<0.050	0.12	0.17	0.21	<0.050	0.052	<0.050	0.50	<0.050	<0.050	<0.050	<0.050	<0.050	0.13
Uranium	ug/g	23	0.48	1.6	1.0	1.2	0.43	0.49	0.46	1.9	0.57	0.58	0.54	0.33	0.32	1.1
Vanadium	ug/g	86	13	41	41	56	9.3	17	16	**110**	11	12	14	14	15	67
Zinc	ug/g	340	13	39	43	54	7.3	15	13	130	10	11	14	11	14	37
Semi-VOCs																
1- & 2-Methylnaphthalene	ug/g	0.99 [3]	<0.014	<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	0.99 [3]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
2-Methylnaphthalene	ug/g	0.99 [3]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Acenaphthene	ug/g	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Acenaphthylene	ug/g	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Anthracene	ug/g	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Benzo [b,j] fluoranthene	ug/g	--	0.0068	<0.0050	0.017	<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	0.5	0.0068	<0.0050	0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Benzo[a]pyrene	ug/g	0.3	0.0075	<0.0050	0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Benzo[g,h,i]perylene	ug/g	6.6	<0.0050	<0.0050	0.0090	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.015
Benzo[k]fluoranthene	ug/g	0.78	<0.0050	<0.0050	0.0084	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Chrysene	ug/g	7	0.0075	<0.0050	0.014	0.0056	<0.0050	<0.0050	0.0061	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Dibenzo[a,h]anthracene	ug/g	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.019
Fluoranthene	ug/g	0.69	0.0093	0.0056	0.032	<0.0050	<0.0050	<0.0050	0.0073	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Fluorene	ug/g	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Indeno[1,2,3-cd]pyrene	ug/g	0.38	<0.0050	<0.0050	0.0095	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.018
Naphthalene	ug/g	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Phenanthrene	ug/g	6.2	<0.0050	<0.0050	0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Pyrene	ug/g	78	0.0087	0.0056	0.028	<0.0050	<0.0050	<0.0050	0.0067	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010

Parameter	Unit	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS078	VS079	VS080B	VS081B	VS082	VS083	VS084	VS087	VS088	VS091	VS093	VS094	VS107	VS108B
			14-Apr-2016	14-Apr-2016	15-Jun-2016	15-Jun-2016	16-Apr-2016	16-Apr-2016	16-Apr-2016	18-Apr-2016	18-Apr-2016	18-Apr-2016	18-Apr-2016	19-Apr-2016	22-Apr-2016	15-Jun-2016
			VS078	VS079	VS080B [4]	VS081B [4]	VS082	VS083	VS084	VS087	VS088	VS091	VS093	VS094	VS107	VS108B [4]
Metals																
Antimony	ug/g	7.5	<0.20	<0.20	<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	18	1.0	1.0	<1	<1	2	2	<1	2	<1	1	2	<1	1	<1
Barium	ug/g	390	35	59	320	**410**	100	220	110	120	36	230	180	77	150	370
Beryllium	ug/g	4	0.23	0.39	0.7	0.9	0.5	0.7	0.6	0.4	0.2	0.6	0.7	0.4	0.5	1.0
Boron	ug/g	120	<5.0	<5.0	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	ug/g	1.2	<0.10	<0.10	<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	160	17	26	78	110	32	42	42	33	21	57	43	33	35	110
Cobalt	ug/g	22	2.8	6.7	**23**	**27**	8.8	12	12	8.7	5.2	16	12	8.7	9.4	**23**
Copper	ug/g	140	9.8	13	42	59	14	19	15	15	6.4	29	24	7.4	20	50
Hexavalent Chromium	ug/g	8	<0.2	<0.2	0.6	0.8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.6
Lead	ug/g	120	2.1	3.8	6	7	4	6	6	4	3	5	6	4	5	7
Mercury	ug/g	0.27	<0.050	<0.050	<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	6.9	<0.50	<0.50	<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	100	9.4	15	51	67	18	25	21	19	13	34	27	16	21	59
Selenium	ug/g	2.4	<0.50	<0.50	1.7	1.3	0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	1.6
Silver	ug/g	20	<0.20	<0.20	<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	1	<0.050	0.090	0.39	0.47	0.13	0.22	0.17	0.16	0.09	0.29	0.22	0.13	0.18	0.52
Uranium	ug/g	23	0.70	1.4	1.0	1.5	0.93	0.75	2.2	0.62	0.63	1.0	0.99	1.0	0.62	1.6
Vanadium	ug/g	86	18	25	**97**	**120**	50	63	67	51	26	70	61	45	52	**110**
Zinc	ug/g	340	18	29	110	140	42	64	50	45	32	81	66	43	55	130
Semi-VOCs																
1- & 2-Methylnaphthalene	ug/g	0.99 [3]	--	--	<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	0.99 [3]	<0.010	<0.010	<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	0.99 [3]	<0.010	<0.010	<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	7.9	<0.010	<0.010	<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	0.15	<0.010	<0.010	<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	0.67	<0.010	<0.010	<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] fluoranthene	ug/g	--	--	--	<0.0050	<0.0050	<0.0050	<0.0050	0.0080	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]anthracene	ug/g	0.5	<0.010	<0.010	0.0051	<0.0050	<0.0050	<0.0050	0.0073	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	0.3	<0.010	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	0.0073	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[g,h,i]perylene	ug/g	6.6	<0.010	<0.010	<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[k]fluoranthene	ug/g	0.78	<0.010	<0.010	<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	7	<0.010	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	0.0073	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthracene	ug/g	0.1	<0.010	<0.010	<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	0.69	<0.010	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	0.014	0.0064	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	ug/g	62	<0.010	<0.010	<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]pyrene	ug/g	0.38	<0.010	<0.010	<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	0.6	<0.010	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	ug/g	6.2	<0.010	<0.010	<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	78	<0.010	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	0.012	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	Unit	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS109 25-Apr-2016 VS109	VS109 25-Apr-2016 VS1109 (Field Duplicate)	VS173 25-May-2016 VS173 [4]	VS174 25-May-2016 VS174 [4]	VS175 25-May-2016 VS175	VS176 25-May-2016 VS176 [4]	VS177 25-May-2016 VS177 [4]	VS177 25-May-2016 VS0177 (Field Duplicate) [4]	VS178 25-May-2016 VS178 [4]	VS179 25-May-2016 VS179 [4]	VS181 26-May-2016 [2] VS181 [4]	VS183C 02-Jun-2016 VS183C
Metals														
Antimony	ug/g	7.5	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	18	1.2	1.2	1	1	1	1	1	1	1	1	1	1
Barium	ug/g	390	140	140	**460**	290	140	**430**	**430**	**430**	**430**	350	370	140
Beryllium	ug/g	4	0.49	0.50	1.3	0.9	0.6	1.3	1.2	1.1	1.3	1.1	1.1	0.4
Boron	ug/g	120	<5.0	<5.0	<5	<5	<5	<5	<5	<5	5	<5	6	<5
Cadmium	ug/g	1.2	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.2	<0.1	<0.1	<0.1
Chromium	ug/g	160	34	35	140	79	36	150	150	150	140	120	130	30
Cobalt	ug/g	22	7.9	8.3	**35**	19	11	**33**	**37**	**36**	**30**	**27**	**26**	10
Copper	ug/g	140	22	22	62	40	20	70	64	69	53	53	62	19
Hexavalent Chromium	ug/g	8	<0.2	<0.2	0.7	0.6	0.3	0.8	0.7	0.4	0.4	0.8	0.5	0.2
Lead	ug/g	120	4.3	4.5	9	7	5	9	8	8	9	7	7	5
Mercury	ug/g	0.27	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	6.9	<0.50	<0.50	0.6	<0.5	<0.5	0.6	0.9	0.8	0.5	<0.5	<0.5	<0.5
Nickel	ug/g	100	20	20	72	44	22	79	80	83	69	63	68	20
Selenium	ug/g	2.4	<0.50	<0.50	1.6	1.1	1.1	1.8	1.4	1.1	1.2	1.4	<0.5	0.8
Silver	ug/g	20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	1	0.16	0.19	0.57	0.42	0.19	0.52	0.53	0.53	0.54	0.43	0.47	0.18
Uranium	ug/g	23	0.87	0.86	2.2	1.4	0.71	2.6	2.0	2.2	1.5	1.7	1.8	0.65
Vanadium	ug/g	86	49	52	**130**	**100**	59	**140**	**140**	**150**	**130**	**120**	**120**	51
Zinc	ug/g	340	52	54	140	110	56	150	150	150	140	120	130	50
Semi-VOCs														
1- & 2-Methylnaphthalene	ug/g	0.99 [3]	<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	0.99 [3]	<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	0.99 [3]	<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	7.9	<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	0.15	<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	0.67	<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] 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
Benzo[a]anthracene	ug/g	0.5	<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	0.3	<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[g,h,i]perylene	ug/g	6.6	<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[k]fluoranthene	ug/g	0.78	<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	7	<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]anthracene	ug/g	0.1	<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	0.69	<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	62	<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]pyrene	ug/g	0.38	<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	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	ug/g	6.2	<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	78	<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	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS184C 02-Jun-2016 VS184C	VS185 26-May-2016 VS185 [4]	VS186 26-May-2016 VS186 [4]	VS188 26-May-2016 VS188 [4]	VS189 26-May-2016 VS189	VS190 26-May-2016 VS190	VS191 26-May-2016 VS191	VS192 26-May-2016 VS192	VS193 26-May-2016 VS193	VS194 26-May-2016 VS194	VS195 26-May-2016 VS195	VS196 26-May-2016 VS196	VS196 26-May-2016 VS1196 (Field Duplicate)
Metals															
Antimony	ug/g	7.5	<0.2	<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	18	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Barium	ug/g	390	240	**560**	370	**430**	46	35	14	12	13	23	18	22	23
Beryllium	ug/g	4	0.5	1.6	1.1	1.5	0.3	0.3	<0.2	<0.2	<0.2	0.2	<0.2	0.2	0.2
Boron	ug/g	120	<5	<5	<5	5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	ug/g	1.2	<0.1	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	ug/g	160	52	160	110	120	25	18	11	10	15	17	12	16	18
Cobalt	ug/g	22	15	**34**	22	**30**	5.3	4.2	2.6	3.0	3.0	3.5	2.5	3.0	3.1
Copper	ug/g	140	26	66	45	57	11	5.3	3.1	3.5	4.9	6.0	4.4	6.7	6.7
Hexavalent Chromium	ug/g	8	0.4	0.5	0.3	0.6	0.2	0.5	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	0.3
Lead	ug/g	120	5	10	8	9	3	2	2	2	3	3	3	2	3
Mercury	ug/g	0.27	<0.05	<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	6.9	<0.5	0.9	<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	100	32	85	57	65	13	10	6.9	6.9	7.4	8.0	6.5	8.0	8.0
Selenium	ug/g	2.4	0.8	<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	20	<0.2	<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	1	0.29	0.53	0.43	0.54	0.07	<0.05	<0.05	<0.05	<0.05	0.06	0.05	<0.05	0.06
Uranium	ug/g	23	0.67	2.0	1.4	1.9	0.93	0.65	0.44	0.46	0.61	0.63	0.67	0.61	0.70
Vanadium	ug/g	86	71	**140**	**100**	**130**	27	30	15	13	21	20	14	22	28
Zinc	ug/g	340	77	150	110	150	24	15	18	24	23	27	17	17	17
Semi-VOCs															
1- & 2-Methylnaphthalene	ug/g	0.99 [3]	<0.014	<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	0.99 [3]	<0.0050	<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	0.99 [3]	<0.0050	<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	7.9	<0.0050	<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	0.15	<0.0050	<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	0.67	<0.0050	<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] 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	<0.0050
Benzo[a]anthracene	ug/g	0.5	<0.0050	<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	0.3	<0.0050	<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[g,h,i]perylene	ug/g	6.6	<0.0050	<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[k]fluoranthene	ug/g	0.78	<0.0050	<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	7	<0.0050	<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]anthracene	ug/g	0.1	<0.0050	<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	0.69	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0051	<0.0050
Fluorene	ug/g	62	<0.0050	<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]pyrene	ug/g	0.38	<0.0050	<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	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	ug/g	6.2	<0.0050	<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	78	<0.0050	<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	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS197	VS202	VS232	VS232	VS233	VS234	VS235	VS236	VS237	VS237	VS238	VS239	VS242
			26-May-2016	09-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	20-Jun-2016
			VS197	VS202	VS232	VS1232 (Field Duplicate)	VS233	VS234	VS235	VS236	VS237	VS1237 (Field Duplicate)	VS238	VS239	VS242
Metals															
Antimony	ug/g	7.5	<0.2	<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	18	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Barium	ug/g	390	61	69	38	39	43	39	27	38	39	39	44	29	29
Beryllium	ug/g	4	0.4	0.5	0.3	0.3	0.2	0.3	<0.2	0.3	0.3	0.3	0.4	0.2	0.2
Boron	ug/g	120	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	ug/g	1.2	<0.1	<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	160	23	34	20	21	23	24	19	20	24	21	26	18	16
Cobalt	ug/g	22	7.4	9.0	4.6	5.1	4.4	3.7	3.5	5.7	4.4	3.7	5.7	4.9	3.7
Copper	ug/g	140	11	14	8.2	8.8	9.8	11	6.1	11	9.3	7.9	10	7.9	6.3
Hexavalent Chromium	ug/g	8	<0.2	0.3	0.3	0.5	0.3	0.4	0.2	<0.2	0.3	0.3	0.5	0.2	0.3
Lead	ug/g	120	4	8	3	3	2	2	3	3	3	6	3	3	4
Mercury	ug/g	0.27	<0.05	<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	6.9	<0.5	<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	100	17	18	11	11	11	12	9.0	12	11	10	12	9.4	8.8
Selenium	ug/g	2.4	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5
Silver	ug/g	20	<0.2	<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	1	0.09	0.13	<0.05	0.06	0.07	0.07	<0.05	0.08	0.07	0.06	0.07	0.06	<0.05
Uranium	ug/g	23	1.1	1.3	0.63	0.71	0.94	0.82	1.4	1.3	1.4	1.2	1.9	1.0	0.83
Vanadium	ug/g	86	32	40	27	28	32	26	42	24	36	23	32	24	21
Zinc	ug/g	340	49	38	21	21	23	24	18	24	20	21	22	16	17
Semi-VOCs															
1- & 2-Methylnaphthalene	ug/g	0.99 [3]	<0.014	<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	0.99 [3]	<0.0050	<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	0.99 [3]	<0.0050	<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	7.9	<0.0050	<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	0.15	<0.0050	<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	0.67	<0.0050	<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] fluoranthene	ug/g	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.013	<0.0050	<0.0050	0.018	0.0054	<0.0050	0.0053
Benzo[a]anthracene	ug/g	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.011	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	0.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.012	<0.0050	0.0095	0.012	0.0074	<0.0050	<0.0050
Benzo[g,h,i]perylene	ug/g	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.012	<0.0050	<0.0050	0.0059	<0.0050
Benzo[k]fluoranthene	ug/g	0.78	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0060	<0.0050	<0.0050	0.0053
Chrysene	ug/g	7	0.0066	0.0051	<0.0050	<0.0050	<0.0050	<0.0050	0.0092	<0.0050	<0.0050	0.0085	<0.0050	<0.0050	<0.0050
Dibenzo[a,h]anthracene	ug/g	0.1	<0.0050	<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	0.69	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.017	<0.0050	<0.0050	0.016	<0.0050	<0.0050	<0.0050
Fluorene	ug/g	62	<0.0050	<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]pyrene	ug/g	0.38	<0.0050	<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	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	ug/g	6.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.010	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	78	0.0066	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.013	<0.0050	<0.0050	0.014	<0.0050	<0.0050	<0.0050

Parameter	Unit	REG153 (11) T3-R/P/I SOIL COARSE [1]	VS243	VS244	VS245	VS246	VS246	VS247
			20-Jun-2016	20-Jun-2016	20-Jun-2016	20-Jun-2016	20-Jun-2016	27-Jun-2016
			VS243	VS244	VS245	VS246	VS1246 (Field Duplicate)	VS247
Metals								
Antimony	ug/g	7.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	ug/g	18	1	1	<1	2	2	<1
Barium	ug/g	390	52	79	45	190	190	28
Beryllium	ug/g	4	0.5	0.5	0.3	0.5	0.5	<0.2
Boron	ug/g	120	<5	<5	<5	6	6	<5
Cadmium	ug/g	1.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	ug/g	160	26	38	25	37	37	16
Cobalt	ug/g	22	9.3	7.9	6.1	12	12	3.9
Copper	ug/g	140	13	17	8.7	22	22	7.1
Hexavalent Chromium	ug/g	8	0.4	0.4	0.7	<0.2	<0.2	0.7
Lead	ug/g	120	7	9	4	5	5	2
Mercury	ug/g	0.27	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	ug/g	6.9	<0.5	<0.5	<0.5	0.8	0.8	<0.5
Nickel	ug/g	100	14	19	12	22	23	8.5
Selenium	ug/g	2.4	<0.5	<0.5	<0.5	0.5	<0.5	1.0
Silver	ug/g	20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	1	0.16	0.13	0.07	0.21	0.20	0.05
Uranium	ug/g	23	1.7	2.7	1.6	0.87	0.84	0.69
Vanadium	ug/g	86	39	41	35	58	58	20
Zinc	ug/g	340	33	39	23	60	60	21
Semi-VOCs								
1- & 2-Methylnaphthalene	ug/g	0.99 [3]	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
1-Methylnaphthalene	ug/g	0.99 [3]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene	ug/g	0.99 [3]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthene	ug/g	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ug/g	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	ug/g	0.67	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo [b,j] fluoranthene	ug/g	--	<0.0050	<0.0050	0.027	<0.0050	<0.0050	0.0086
Benzo[a]anthracene	ug/g	0.5	<0.0050	<0.0050	0.0098	<0.0050	<0.0050	<0.0050
Benzo[a]pyrene	ug/g	0.3	<0.0050	<0.0050	0.016	<0.0050	<0.0050	<0.0050
Benzo[g,h,i]perylene	ug/g	6.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0066
Benzo[k]fluoranthene	ug/g	0.78	<0.0050	<0.0050	0.0098	<0.0050	0.010	<0.0050
Chrysene	ug/g	7	<0.0050	<0.0050	0.018	0.0097	<0.0050	<0.0050
Dibenzo[a,h]anthracene	ug/g	0.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	ug/g	0.69	<0.0050	<0.0050	0.023	<0.0050	<0.0050	<0.0050
Fluorene	ug/g	62	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno[1,2,3-cd]pyrene	ug/g	0.38	<0.0050	<0.0050	0.0064	<0.0050	<0.0050	<0.0050
Naphthalene	ug/g	0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	ug/g	6.2	<0.0050	<0.0050	0.0087	<0.0050	<0.0050	<0.0050
Pyrene	ug/g	78	<0.0050	<0.0050	0.017	<0.0050	<0.0050	<0.0050

Footnotes:

	Tables should be read in conjunction with the accompanying document.
<	Indicates parameter not detected above laboratory method detection limit.
>	Indicates parameter detected above equipment analytical range.
--	Chemical not analyzed or criteria not defined.
Value	Parameter is greater than REG153 (11) T3-R/P/I SOIL COARSE
(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)	Excavated
(3)	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.
(4)	Barium, cobalt and vanadium intrepreted to be naturally occurring metals and not flagged as an exceedence in samples identified to be brown clay. See Appendix G, Section 3.1

ATTACHMENT A
Table I1b – Analytical Results – PHCs

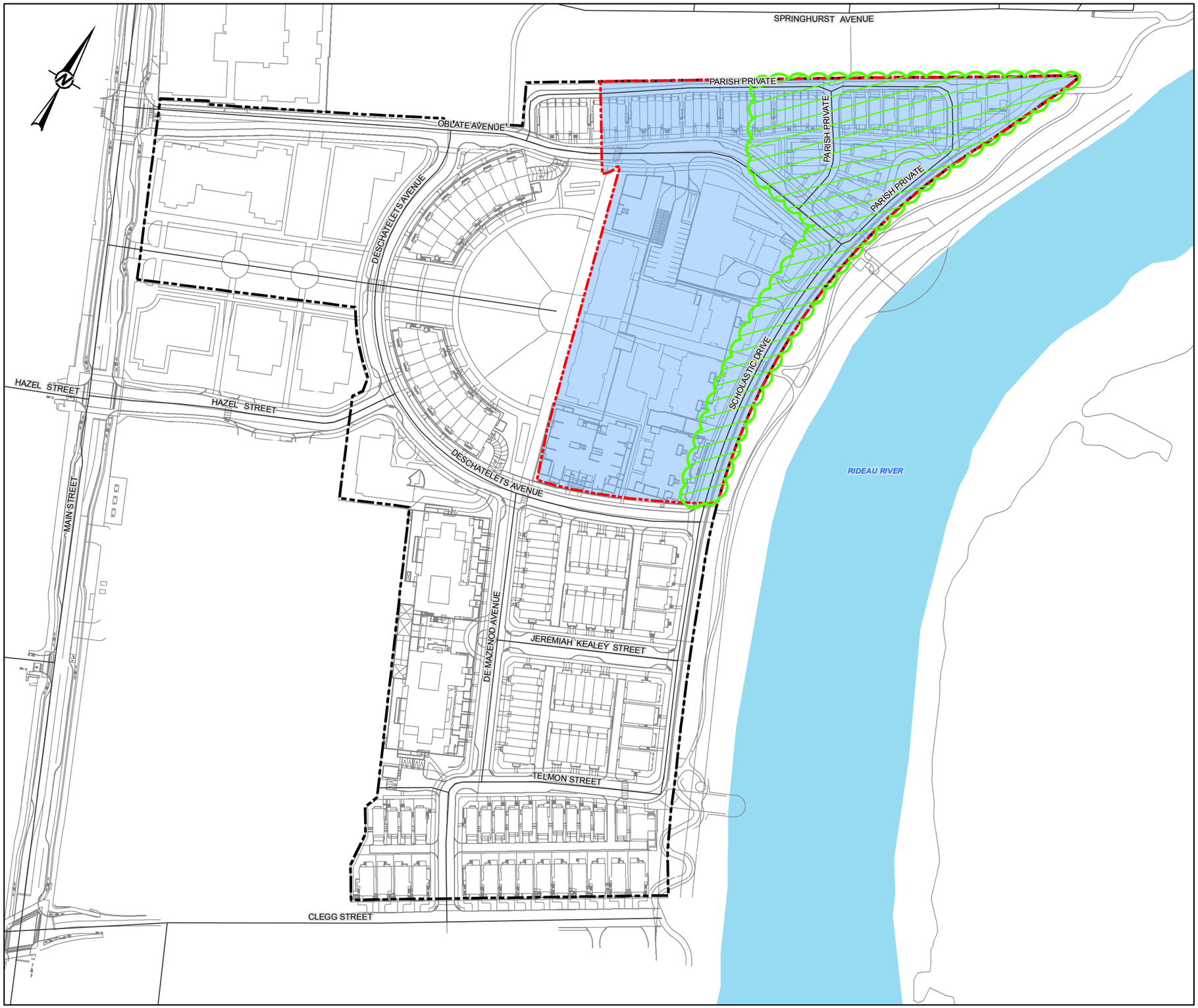
Parameter	Unit	REG153 (11) T3-R/P/I SOIL COARSE [1]	SS17-01	SS17-01	SS17-02	SS17-03	SS17-04	SS17-05	SS17-06	SS17-06	SS17-07	SS17-08	SS17-09
			19-May-2017	19-May-2017	19-May-2017	19-May-2017	19-May-2017	19-May-2017	19-May-2017	19-May-2017	19-May-2017	19-May-2017	19-May-2017
			SS17-01	SS17-21 (Field Duplicate)	SS17-02	SS17-03	SS17-04	SS17-05	SS17-06	SS17-26 (Field Duplicate)	SS17-07	SS17-08	SS17-09
Petroleum Hydrocarbons													
Benzene	ug/g	0.21	<0.02	<0.02	<0.02	<0.02	<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	<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	<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	<0.02	<0.02	<0.02	<0.02
Petroleum Hydrocarbons - F1 (C6-C10)	ug/g	55 [2]	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	ug/g	55 [2]	<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
Petroleum Hydrocarbons - F3 (C16-C34)	ug/g	300	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Petroleum Hydrocarbons - F4 (C34-C50)	ug/g	2800	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Toluene	ug/g	2.3	<0.02	<0.02	<0.02	<0.02	<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	<0.04	<0.04	<0.04	<0.04

Parameter	Unit	REG153 (11) T3-R/P/I SOIL COARSE [1]	SS17-10	SS17-11	SS17-12	SS17-13	SS17-14	SS17-15
			19-May-2017	19-May-2017	19-May-2017	19-May-2017	19-May-2017	19-May-2017
			SS17-10	SS17-11	SS17-12	SS17-13	SS17-14	SS17-15
Petroleum Hydrocarbons								
Benzene	ug/g	0.21	<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
m,p-Xylenes	ug/g	--	<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
Petroleum Hydrocarbons - F1 (C6-C10)	ug/g	55 [2]	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	ug/g	55 [2]	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F2 (C10-C16)	ug/g	98	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F3 (C16-C34)	ug/g	300	<50	<50	55	<50	<50	<50
Petroleum Hydrocarbons - F4 (C34-C50)	ug/g	2800	<50	<50	<50	<50	<50	<50
Toluene	ug/g	2.3	<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

Footnotes:

	Tables should be read in conjunction with the accompanying document.
<	Indicates parameter not detected above laboratory method detection limit.
>	Indicates parameter detected above equipment analytical range.
--	Chemical not analyzed or criteria not defined.
Value	Parameter is greater than REG153 (11) T3-R/P/I SOIL COARSE
(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)	F1 fraction does not include BTEX; however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

ATTACHMENT B
Figure I1 – Approximate Location of Deposited Imported Soil



LEGEND

- PHASE TWO PROPERTY
- PHASE ONE PROPERTY
- RSC PROPERTY
- APPROXIMATE LOCATION OF DEPOSITED IMPORTED SOIL FROM RSC #1

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. 1525113-1000-3

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 #3
OBLATES PROPERTY, 175 MAIN STREET, OTTAWA, ON

TITLE
APPROXIMATE LOCATION OF DEPOSITED IMPORTED SOIL

CONSULTANT

Golder Associates

YYYY-MM-DD	2017-07-24
PREPARED	BR
DESIGN	PH
REVIEW	PH
APPROVED	PAS

PROJECT No.	PHASE/TASK	Rev.	FIGURE
1525113	1000/3	0	I1

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

Path: N:\Active\Spatial_IM\The_Regional_Group\Regional\Group\Oblates\Prop\Ottawa\GIS\MXDs\1525113\Ph1000_AddPhIIESAs\Reg153_04_PhIIESA\Phase3\1525113-1000-3-H1S-001.mxd

ATTACHMENT C
Laboratory Certificates of Analysis (electronic format)

Maxxam
A Bureau Veritas Group Company

Your Project #: 1525113
Your C.O.C. #: 572155-03-01, 572155-02-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/23
Report #: R4476962
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7A2598
Received: 2017/05/19, 13:10

Sample Matrix: Soil
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	17	N/A	2017/05/19	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (2)	17	2017/05/19	2017/05/20	OTT SOP-00001	CCME CWS
Moisture	17	N/A	2017/05/23	CAM SOP-00445	McKeague 2nd ed 1978

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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) 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.
(2) 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.

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
Your C.O.C. #: 572155-03-01, 572155-02-01

Attention:Paul, Tony, Aaron, Equis

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/05/23
Report #: R4476962
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7A2598
Received: 2017/05/19, 13:10

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alison Cameron, Project Manager
Email: ACameron@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 #: B7A2598
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID			EKH662	EKH662	EKH663	EKH664	EKH665		
Sampling Date			2017/05/19 09:00	2017/05/19 09:00	2017/05/19 09:10	2017/05/19 09:20	2017/05/19 09:30		
COC Number			572155-03-01	572155-03-01	572155-03-01	572155-03-01	572155-03-01		
	UNITS	**Criteria**	**SS17-01**	**SS17-01 Lab-Dup**	**SS17-02**	**SS17-03**	**SS17-04**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	15		14	15	10	0.2	4991471
BTEX & F1 Hydrocarbons									
Benzene	ug/g	**0.21**	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4991450
Toluene	ug/g	**2.3**	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4991450
Ethylbenzene	ug/g	**2**	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4991450
o-Xylene	ug/g	**-**	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4991450
p+m-Xylene	ug/g	**-**	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	4991450
Total Xylenes	ug/g	**3.1**	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	4991450
F1 (C6-C10)	ug/g	**55**	<10	<10	<10	<10	<10	10	4991450
F1 (C6-C10) - BTEX	ug/g	**55**	<10	<10	<10	<10	<10	10	4991450
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	**98**	<10	<10	<10	<10	<10	10	4991599
F3 (C16-C34 Hydrocarbons)	ug/g	**300**	<50	<50	<50	<50	<50	50	4991599
F4 (C34-C50 Hydrocarbons)	ug/g	**2800**	<50	<50	<50	<50	<50	50	4991599
Reached Baseline at C50	ug/g	**-**	Yes	Yes	Yes	Yes	Yes		4991599
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	**-**	97	94	99	97	99		4991450
4-Bromofluorobenzene	%	**-**	97	95	98	100	99		4991450
D10-Ethylbenzene	%	**-**	125	98	111	119	112		4991450
D4-1,2-Dichloroethane	%	**-**	106	110	101	100	102		4991450
o-Terphenyl	%	**-**	95	95	98	93	95		4991599

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 Job #: B7A2598
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID			EKH666	EKH667	EKH668	EKH669	EKH670		
Sampling Date			2017/05/19 09:40	2017/05/19 09:50	2017/05/19 10:00	2017/05/19 10:10	2017/05/19 10:20		
COC Number			572155-03-01	572155-03-01	572155-03-01	572155-03-01	572155-03-01		
	UNITS	**Criteria**	**SS17-05**	**SS17-06**	**SS17-07**	**SS17-08**	**SS17-09**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	14	17	20	14	23	0.2	4991471
BTEX & F1 Hydrocarbons									
Benzene	ug/g	**0.21**	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4991450
Toluene	ug/g	**2.3**	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4991450
Ethylbenzene	ug/g	**2**	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4991450
o-Xylene	ug/g	**-**	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4991450
p+m-Xylene	ug/g	**-**	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	4991450
Total Xylenes	ug/g	**3.1**	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	4991450
F1 (C6-C10)	ug/g	**55**	<10	<10	<10	<10	<10	10	4991450
F1 (C6-C10) - BTEX	ug/g	**55**	<10	<10	<10	<10	<10	10	4991450
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	**98**	<10	<10	<10	<10	<10	10	4991599
F3 (C16-C34 Hydrocarbons)	ug/g	**300**	<50	<50	<50	<50	<50	50	4991599
F4 (C34-C50 Hydrocarbons)	ug/g	**2800**	<50	<50	<50	<50	<50	50	4991599
Reached Baseline at C50	ug/g	**-**	Yes	Yes	Yes	Yes	Yes		4991599
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	**-**	98	102	102	101	98		4991450
4-Bromofluorobenzene	%	**-**	100	101	97	100	100		4991450
D10-Ethylbenzene	%	**-**	119	99	113	113	128		4991450
D4-1,2-Dichloroethane	%	**-**	102	98	97	105	103		4991450
o-Terphenyl	%	**-**	102	96	99	94	96		4991599

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 #: B7A2598
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID			EKH671	EKH748	EKH749	EKH750	EKH751		
Sampling Date			2017/05/19 10:30	2017/05/19 10:40	2017/05/19 10:50	2017/05/19 11:00	2017/05/19 11:10		
COC Number			572155-03-01	572155-02-01	572155-02-01	572155-02-01	572155-02-01		
	UNITS	**Criteria**	**SS17-10**	**SS17-11**	**SS17-12**	**SS17-13**	**SS17-14**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	-	15	21	4.0	16	16	0.2	4991471
BTEX & F1 Hydrocarbons									
Benzene	ug/g	**0.21**	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4991450
Toluene	ug/g	**2.3**	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4991450
Ethylbenzene	ug/g	**2**	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4991450
o-Xylene	ug/g	**-**	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4991450
p+m-Xylene	ug/g	**-**	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	4991450
Total Xylenes	ug/g	**3.1**	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	4991450
F1 (C6-C10)	ug/g	**55**	<10	<10	<10	<10	<10	10	4991450
F1 (C6-C10) - BTEX	ug/g	**55**	<10	<10	<10	<10	<10	10	4991450
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	**98**	<10	<10	<10	<10	<10	10	4991599
F3 (C16-C34 Hydrocarbons)	ug/g	**300**	<50	<50	55	<50	<50	50	4991599
F4 (C34-C50 Hydrocarbons)	ug/g	**2800**	<50	<50	<50	<50	<50	50	4991599
Reached Baseline at C50	ug/g	**-**	Yes	Yes	Yes	Yes	Yes		4991599
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	**-**	97	98	97	97	98		4991450
4-Bromofluorobenzene	%	**-**	101	101	102	100	101		4991450
D10-Ethylbenzene	%	**-**	104	116	117	123	122		4991450
D4-1,2-Dichloroethane	%	**-**	99	101	101	103	103		4991450
o-Terphenyl	%	**-**	93	100	95	95	99		4991599

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 #: B7A2598
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID			EKH752	EKH753	EKH754		
Sampling Date			2017/05/19 11:20	2017/05/19 10:00	2017/05/19 10:00		
COC Number			572155-02-01	572155-02-01	572155-02-01		
	UNITS	**Criteria**	**SS17-15**	**SS17-21**	**SS17-26**	**RDL**	**QC Batch**
Inorganics							
Moisture	%	-	42	18	17	0.2	4991471
BTEX & F1 Hydrocarbons							
Benzene	ug/g	**0.21**	<0.02	<0.02	<0.02	0.02	4991450
Toluene	ug/g	**2.3**	<0.02	<0.02	<0.02	0.02	4991450
Ethylbenzene	ug/g	**2**	<0.02	<0.02	<0.02	0.02	4991450
o-Xylene	ug/g	**-**	<0.02	<0.02	<0.02	0.02	4991450
p+m-Xylene	ug/g	**-**	<0.04	<0.04	<0.04	0.04	4991450
Total Xylenes	ug/g	**3.1**	<0.04	<0.04	<0.04	0.04	4991450
F1 (C6-C10)	ug/g	**55**	<10	<10	<10	10	4991450
F1 (C6-C10) - BTEX	ug/g	**55**	<10	<10	<10	10	4991450
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/g	**98**	<10	<10	<10	10	4991599
F3 (C16-C34 Hydrocarbons)	ug/g	**300**	<50	<50	<50	50	4991599
F4 (C34-C50 Hydrocarbons)	ug/g	**2800**	<50	<50	<50	50	4991599
Reached Baseline at C50	ug/g	**-**	Yes	Yes	Yes		4991599
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	**-**	99	97	96		4991450
4-Bromofluorobenzene	%	**-**	100	100	97		4991450
D10-Ethylbenzene	%	**-**	130	127	123		4991450
D4-1,2-Dichloroethane	%	**-**	104	104	105		4991450
o-Terphenyl	%	**-**	91	91	95		4991599

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 #: B7A2598
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: EKH662
Sample ID: SS17-01
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

Maxxam ID: EKH662 Dup
Sample ID: SS17-01
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici

Maxxam ID: EKH663
Sample ID: SS17-02
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

Maxxam ID: EKH664
Sample ID: SS17-03
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

Maxxam ID: EKH665
Sample ID: SS17-04
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

Maxxam ID: EKH666
Sample ID: SS17-05
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici

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 #: B7A2598
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: EKH666
Sample ID: SS17-05
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

Maxxam ID: EKH667
Sample ID: SS17-06
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

Maxxam ID: EKH668
Sample ID: SS17-07
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

Maxxam ID: EKH669
Sample ID: SS17-08
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

Maxxam ID: EKH670
Sample ID: SS17-09
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

Maxxam ID: EKH671
Sample ID: SS17-10
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

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 #: B7A2598
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: EKH748
Sample ID: SS17-11
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

Maxxam ID: EKH749
Sample ID: SS17-12
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

Maxxam ID: EKH750
Sample ID: SS17-13
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

Maxxam ID: EKH751
Sample ID: SS17-14
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

Maxxam ID: EKH752
Sample ID: SS17-15
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

Maxxam ID: EKH753
Sample ID: SS17-21
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart

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 #: B7A2598
Report Date: 2017/05/23

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

TEST SUMMARY

Maxxam ID: EKH753
Sample ID: SS17-21
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

Maxxam ID: EKH754
Sample ID: SS17-26
Matrix: Soil

Collected: 2017/05/19
Shipped:
Received: 2017/05/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4991450	N/A	2017/05/19	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4991599	2017/05/19	2017/05/20	Liliana Gaburici
Moisture	BAL	4991471	N/A	2017/05/23	Liliana Gaburici

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 #: B7A2598
Report Date: 2017/05/23

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	15.3°C

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 Job #: B7A2598
Report Date: 2017/05/23

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1525113
Sampler Initials: TL

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4991450	1,4-Difluorobenzene	2017/05/19			99	60 - 140	100	%		
4991450	4-Bromofluorobenzene	2017/05/19			101	60 - 140	97	%		
4991450	D10-Ethylbenzene	2017/05/19			118	30 - 130	108	%		
4991450	D4-1,2-Dichloroethane	2017/05/19			100	60 - 140	102	%		
4991599	o-Terphenyl	2017/05/20	96	30 - 130	99	30 - 130	97	%		
4991450	Benzene	2017/05/19			89	60 - 140	<0.02	ug/g	NC	50
4991450	Ethylbenzene	2017/05/19			91	60 - 140	<0.02	ug/g	NC	50
4991450	F1 (C6-C10) - BTEX	2017/05/19					<10	ug/g	NC	50
4991450	F1 (C6-C10)	2017/05/19			94	80 - 120	<10	ug/g	NC	50
4991450	o-Xylene	2017/05/19			94	60 - 140	<0.02	ug/g	NC	50
4991450	p+m-Xylene	2017/05/19			93	60 - 140	<0.04	ug/g	NC	50
4991450	Toluene	2017/05/19			96	60 - 140	<0.02	ug/g	NC	50
4991450	Total Xylenes	2017/05/19					<0.04	ug/g	NC	50
4991471	Moisture	2017/05/23							16	50
4991599	F2 (C10-C16 Hydrocarbons)	2017/05/20	95	50 - 130	97	80 - 120	<10	ug/g	NC	50
4991599	F3 (C16-C34 Hydrocarbons)	2017/05/20	95	50 - 130	97	80 - 120	<50	ug/g	NC	50
4991599	F4 (C34-C50 Hydrocarbons)	2017/05/20	95	50 - 130	97	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.

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 (absolute difference <= 2x RDL).

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 #: B7A2598
Report Date: 2017/05/23

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).

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.

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 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:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 572155
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#572155-02-01	Madison Bingley
				Sampled By:	TL / ALB		

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: Tuesday 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	PHC+BTEX							# of Bottles	Comments
1		SS17-11	May 19.17	10:40	Soil	NA			✓							2	
2		SS17-12	↓	10:50	↓	↓			✓							2	
3		SS17-13	↓	11:00	↓	↓			✓							2	
4		SS17-14	↓	11:10	↓	↓			✓							2	
5		SS17-15	↓	11:20	↓	↓			✓							2	19-May-17 13:10 Alison Cameron B7A2598
6		SS17-21	↓	10:00	↓	↓			✓							2	
7		SS17-26	↓	10:06	↓	↓			✓							2	KIV OTT-001
8																	
9																	On ice
10																	

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
22 Tony Lyon	17/05/19	12:00	Mariana Vascan / Vascan	2017/05/19	13:10	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

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 2

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B57625	Maxxam Job #:	Bottle Order #: 572155
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#572155-03-01	Madison Bingley
Email:	AccountsPayable_Maxxam@golder.com, OttawaAccou	Email:	Tony_Lyon@golder.com; Paul_Hurst@golder.com; GAL	Sampled By:	TL / ALB		

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 applied to entire submission)
Date Required: Tuesday 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	PHC+BTEX							# of Bottles	Comments
1		SS17-01	May 19.17	9:00	Soil	NA			✓							2	
2		SS17-02	↓	9:10	↓	↓			✓							2	
3		SS17-03		9:20					✓							2	
4		SS17-04		9:30					✓							2	
5		SS17-05		9:40					✓							2	
6		SS17-06		9:50					✓							2	
7		SS17-07		10:00					✓							2	
8		SS17-08		10:10					✓							2	
9		SS17-09		10:20					✓							2	On ice
10		SS17-10	↓	10:30	↓	↓			✓							2	

RECEIVED IN OTTAWA

19-May-17 13:10
Alison Cameron
B7A2598
KIV OTT 001

* 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				
Tony Lyon	17/05/19	12:00	Mariana Vascan / Vascan	2017/05/19	13:10	0	Time Sensitive	Temperature (°C) on Receipt: 16, 15, 16	Custody Seal	Yes	No
									Present	Y	
									Intact	Y	

* 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

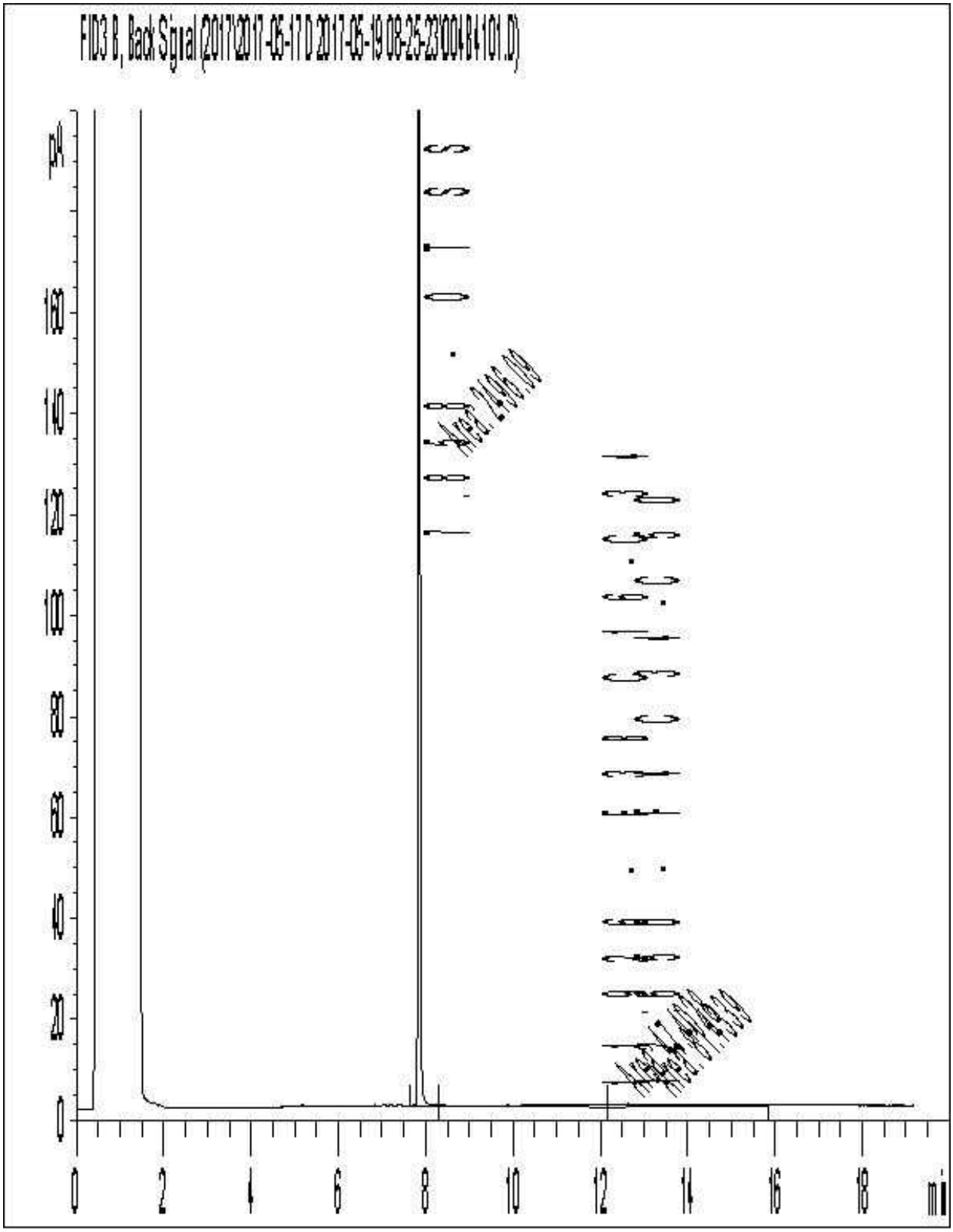
White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH662

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-01

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

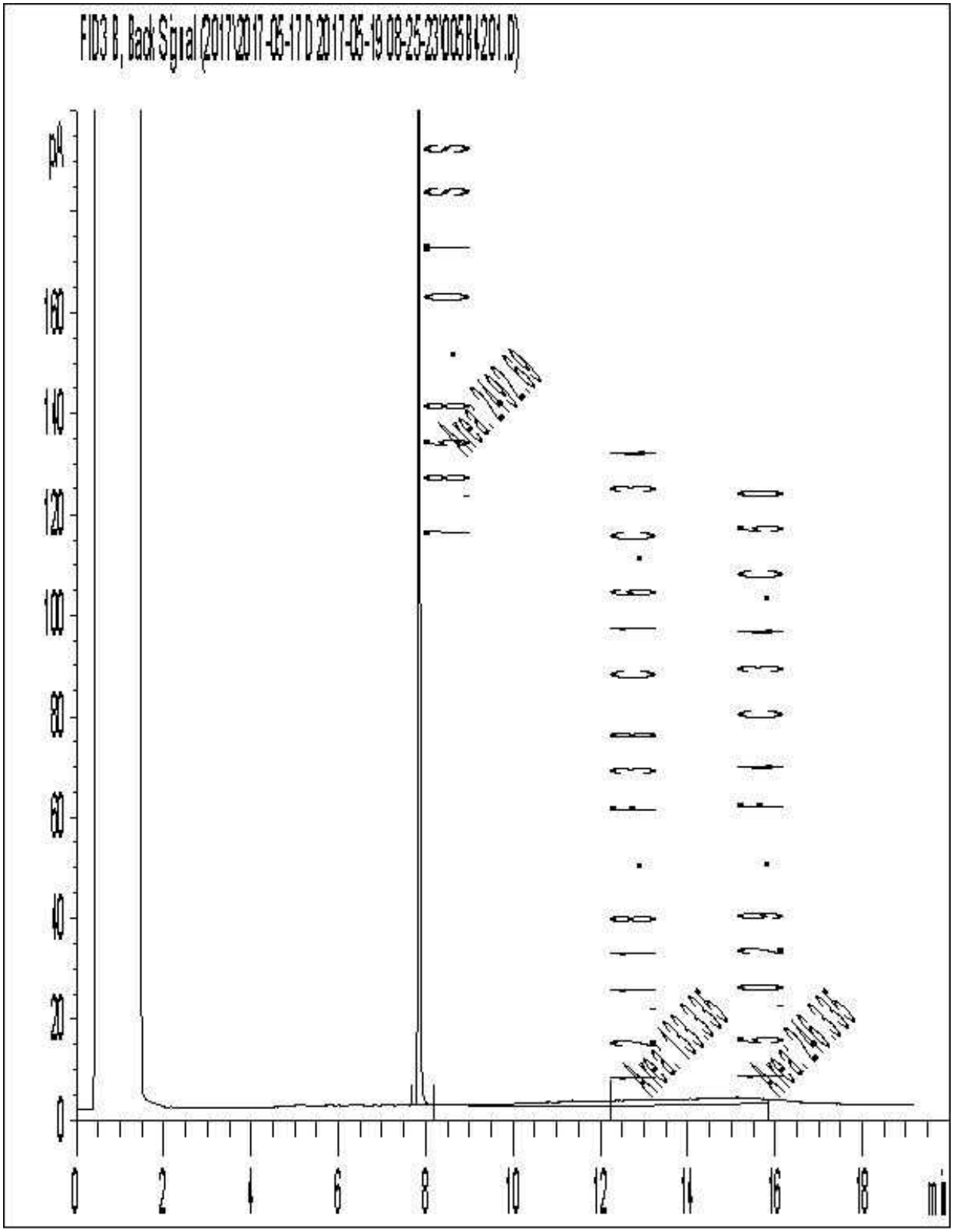


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH662 Lab-Dup

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-01

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

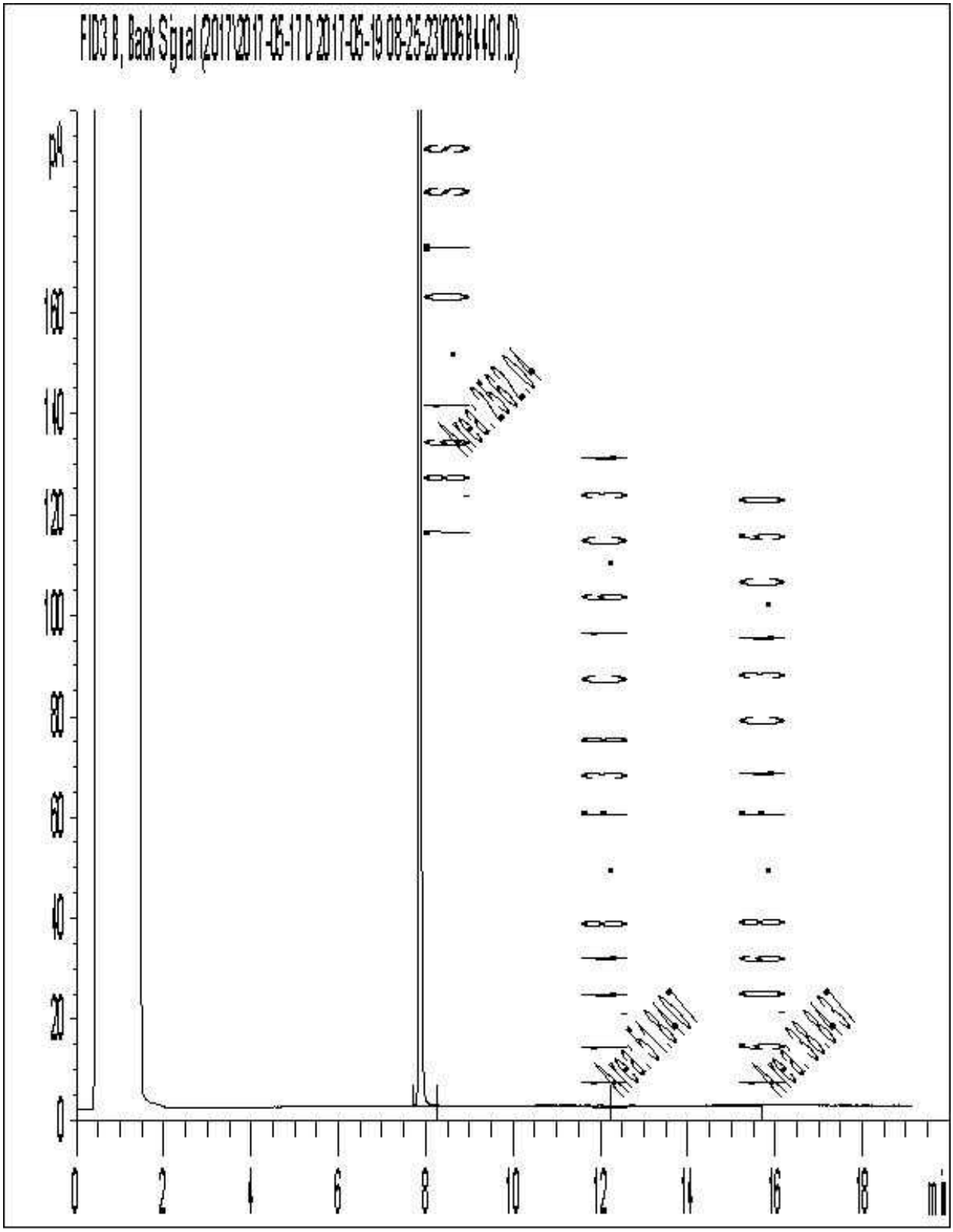


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH663

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-02

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

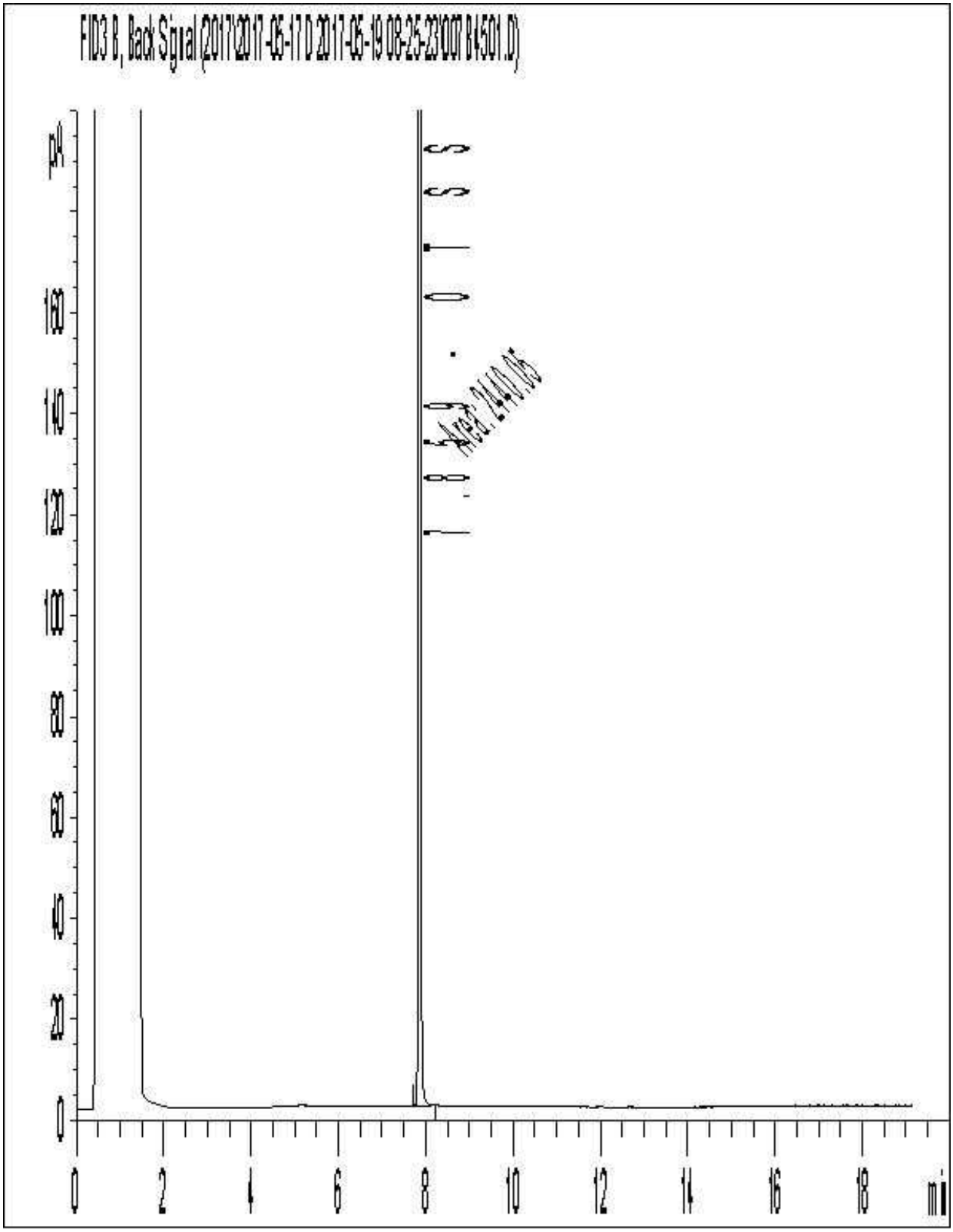


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH664

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-03

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

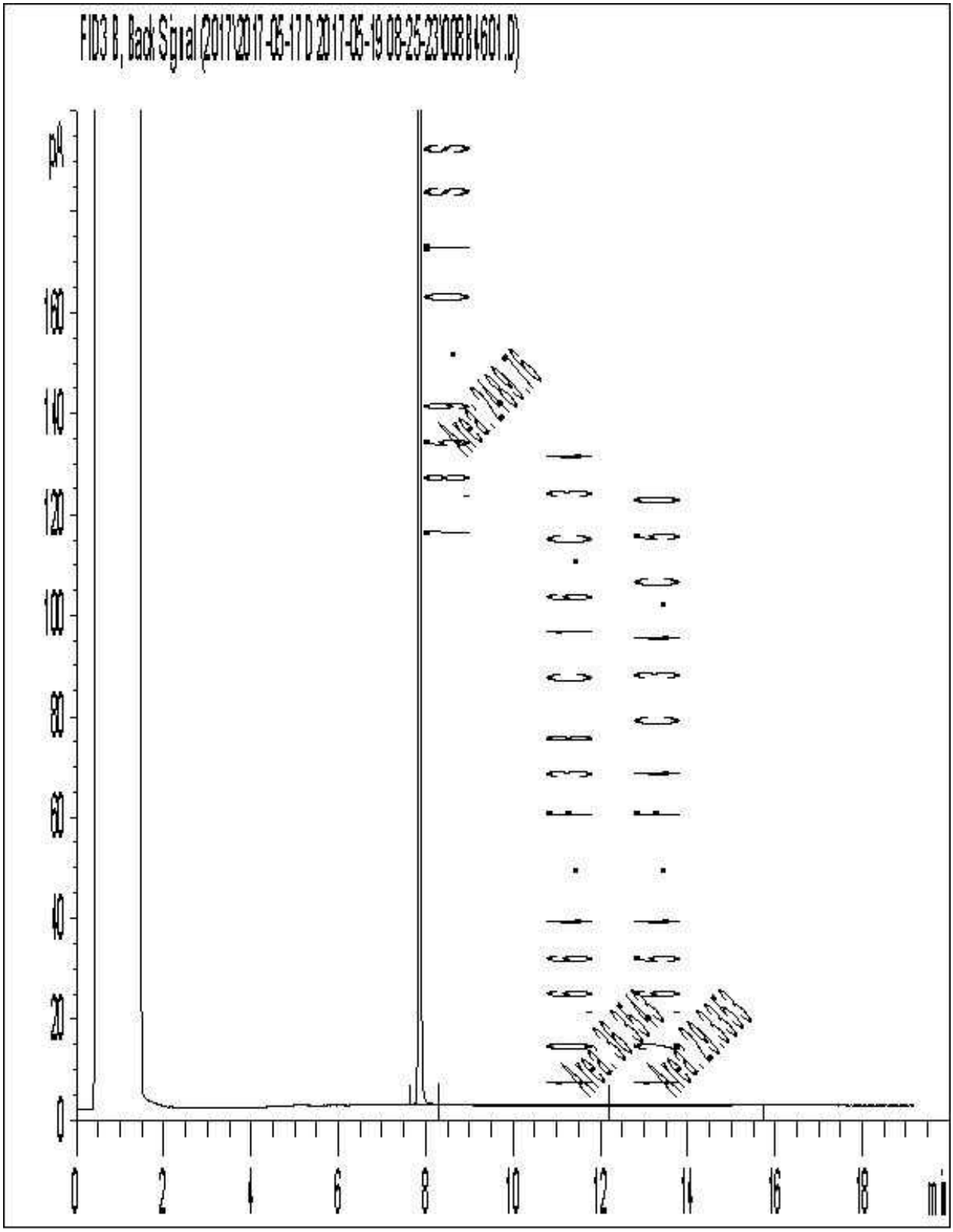


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH665

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-04

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

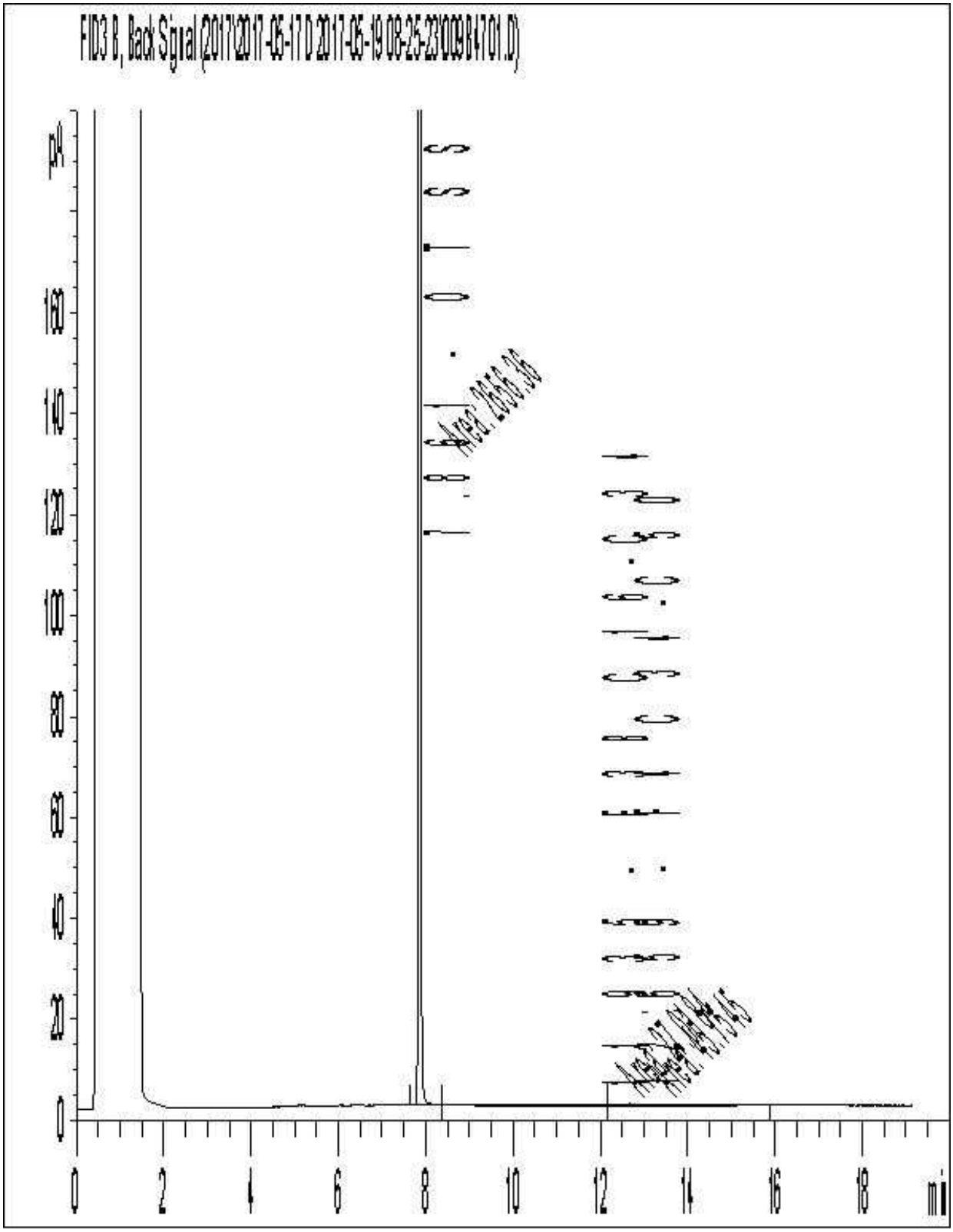


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH666

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-05

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

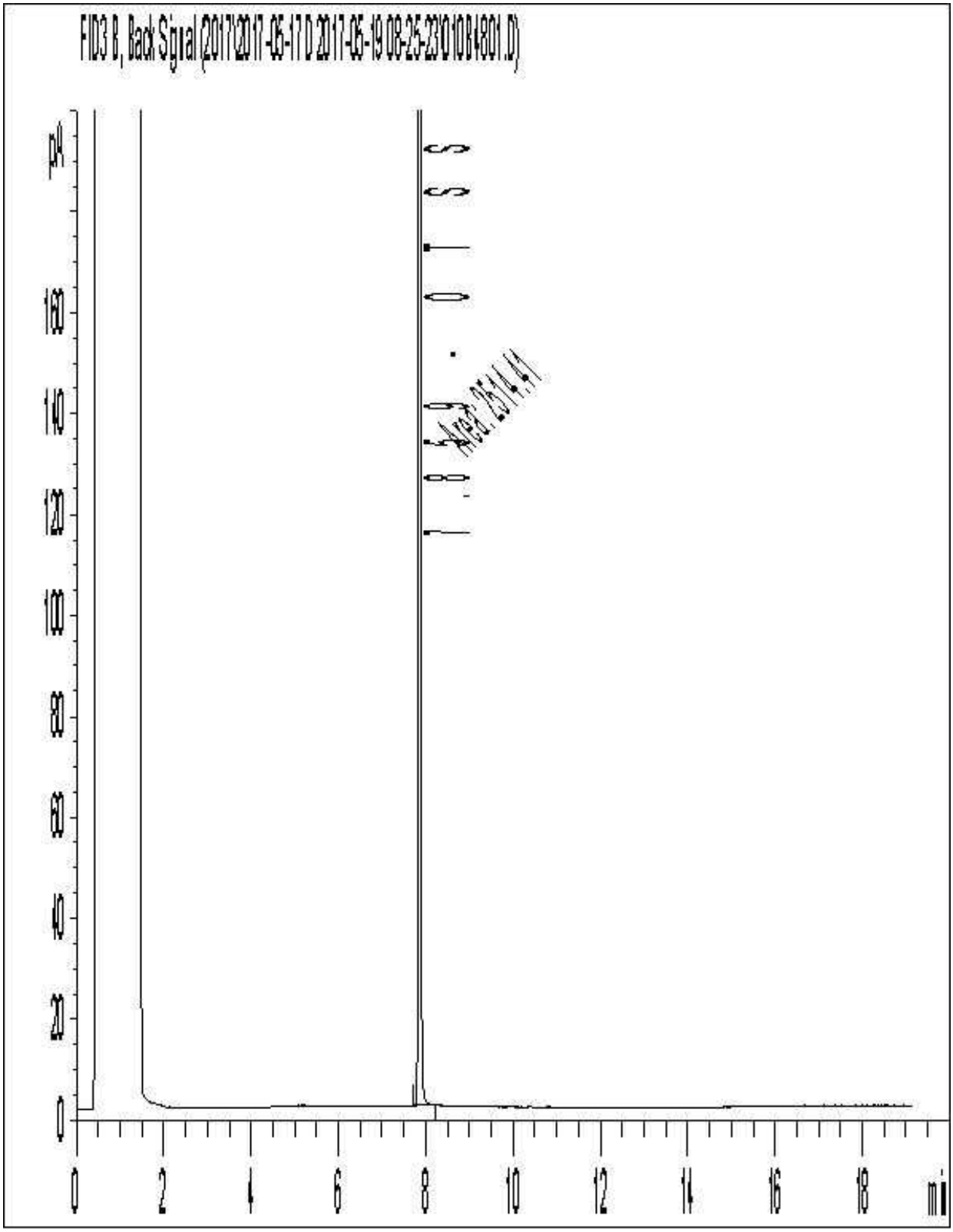


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH667

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-06

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

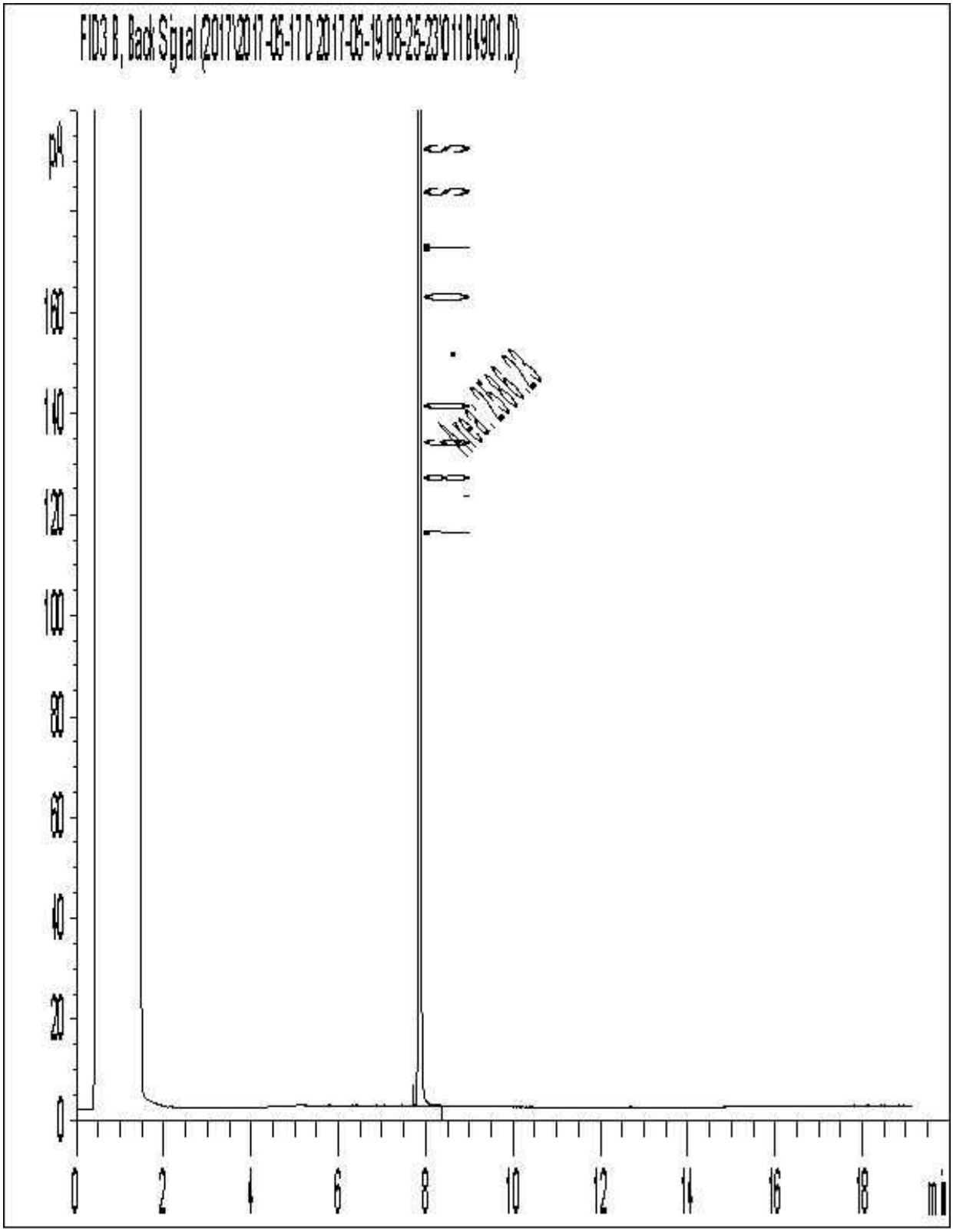


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH668

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-07

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

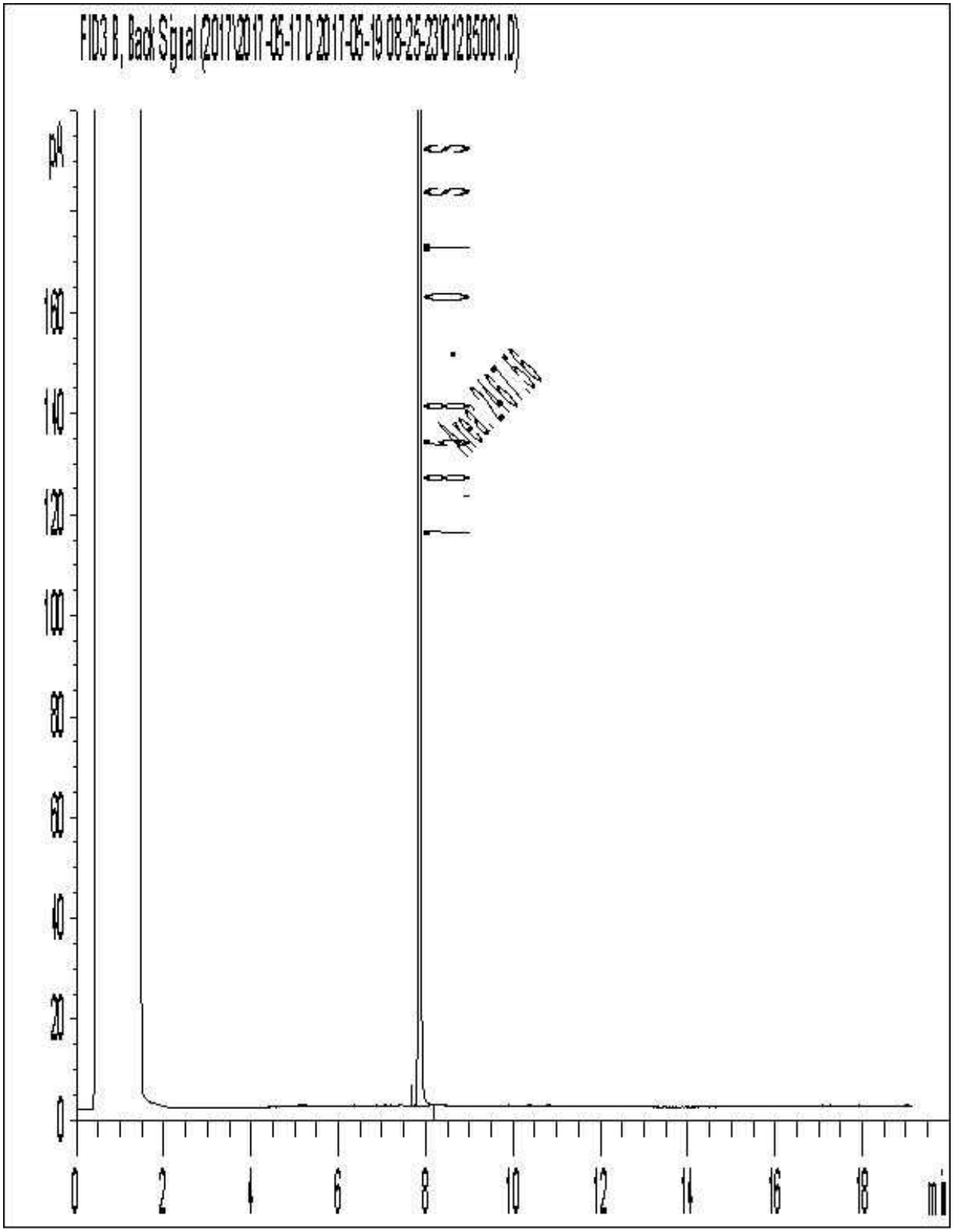


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH669

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-08

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

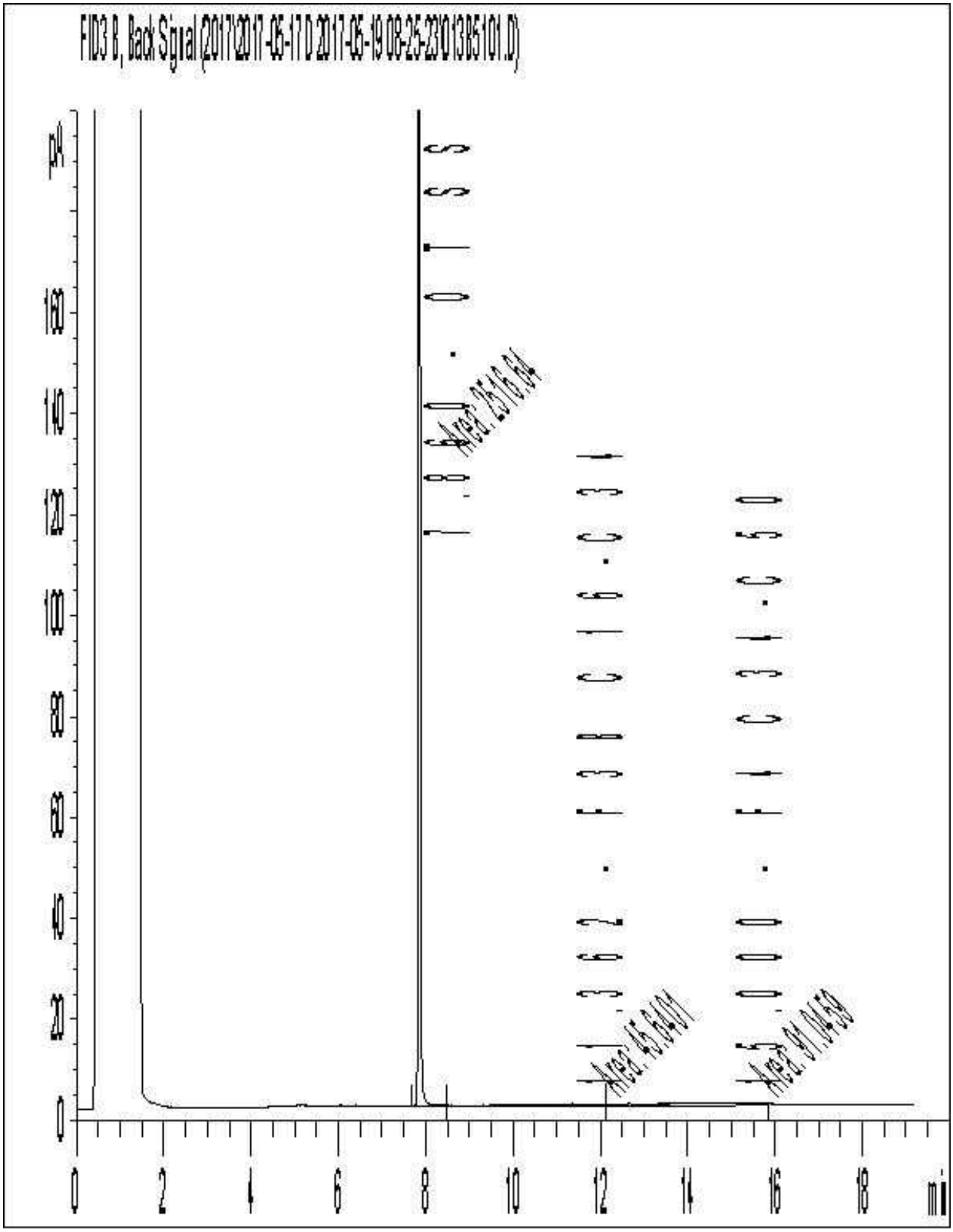


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH670

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-09

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

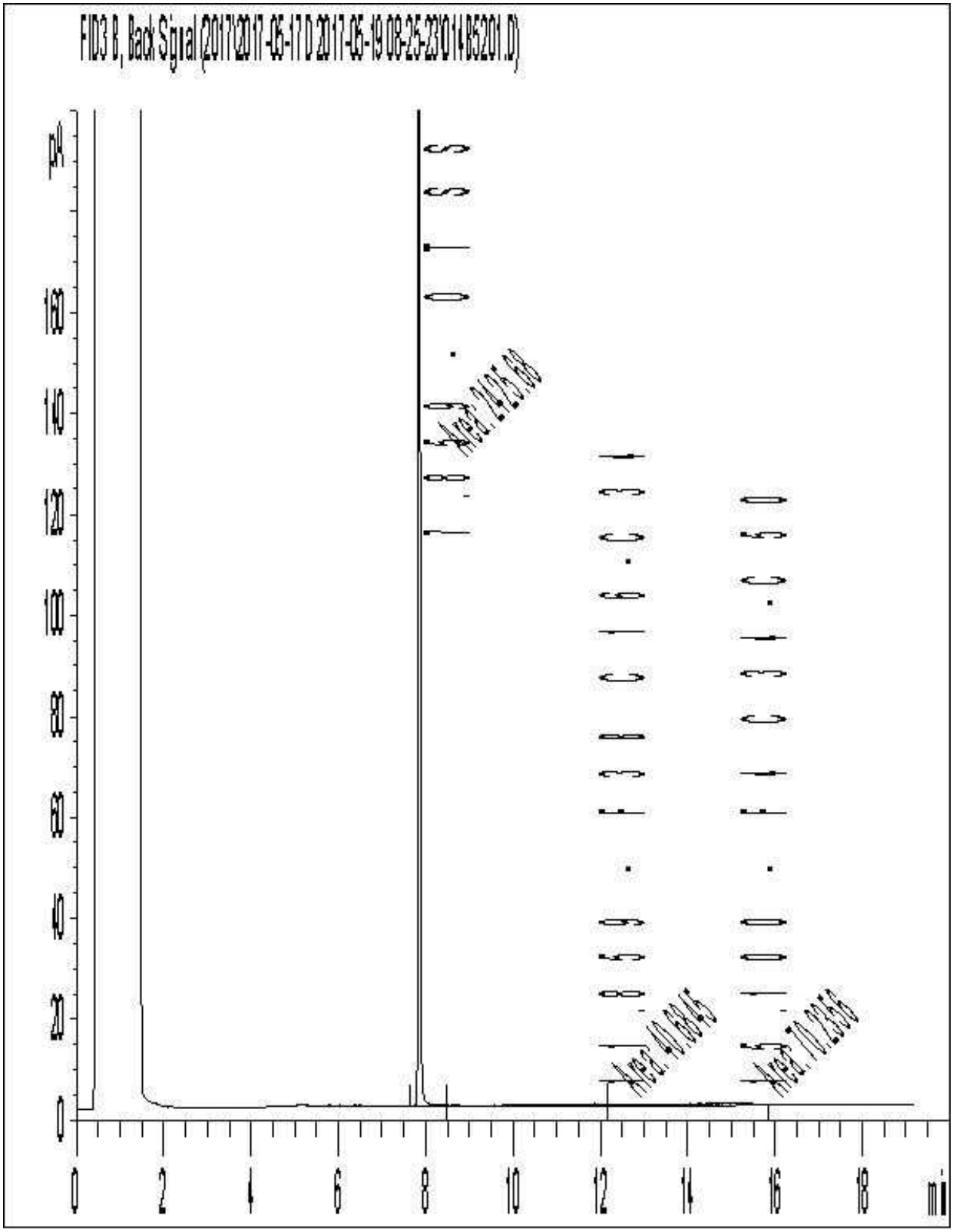


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH671

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-10

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

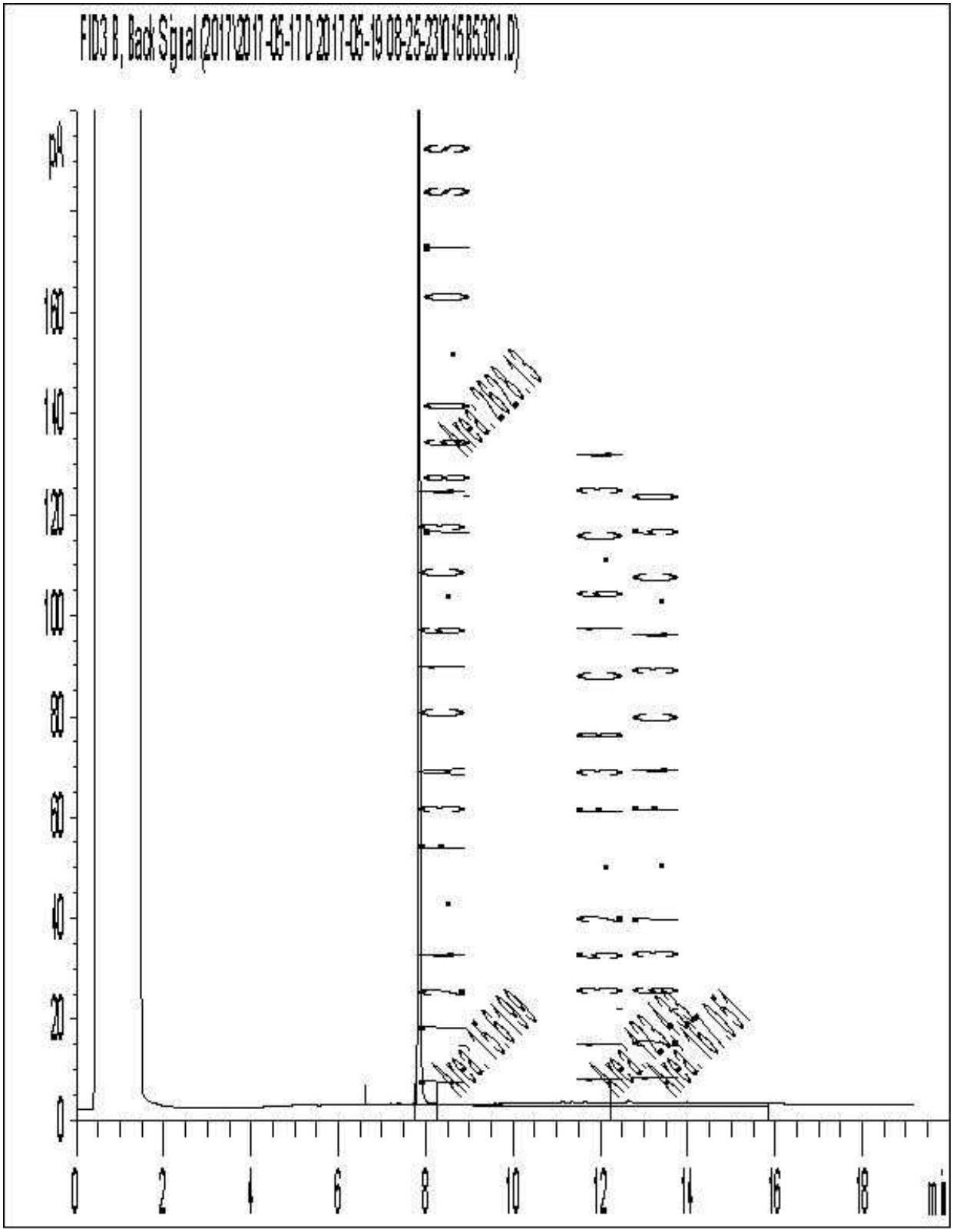


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH748

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-11

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

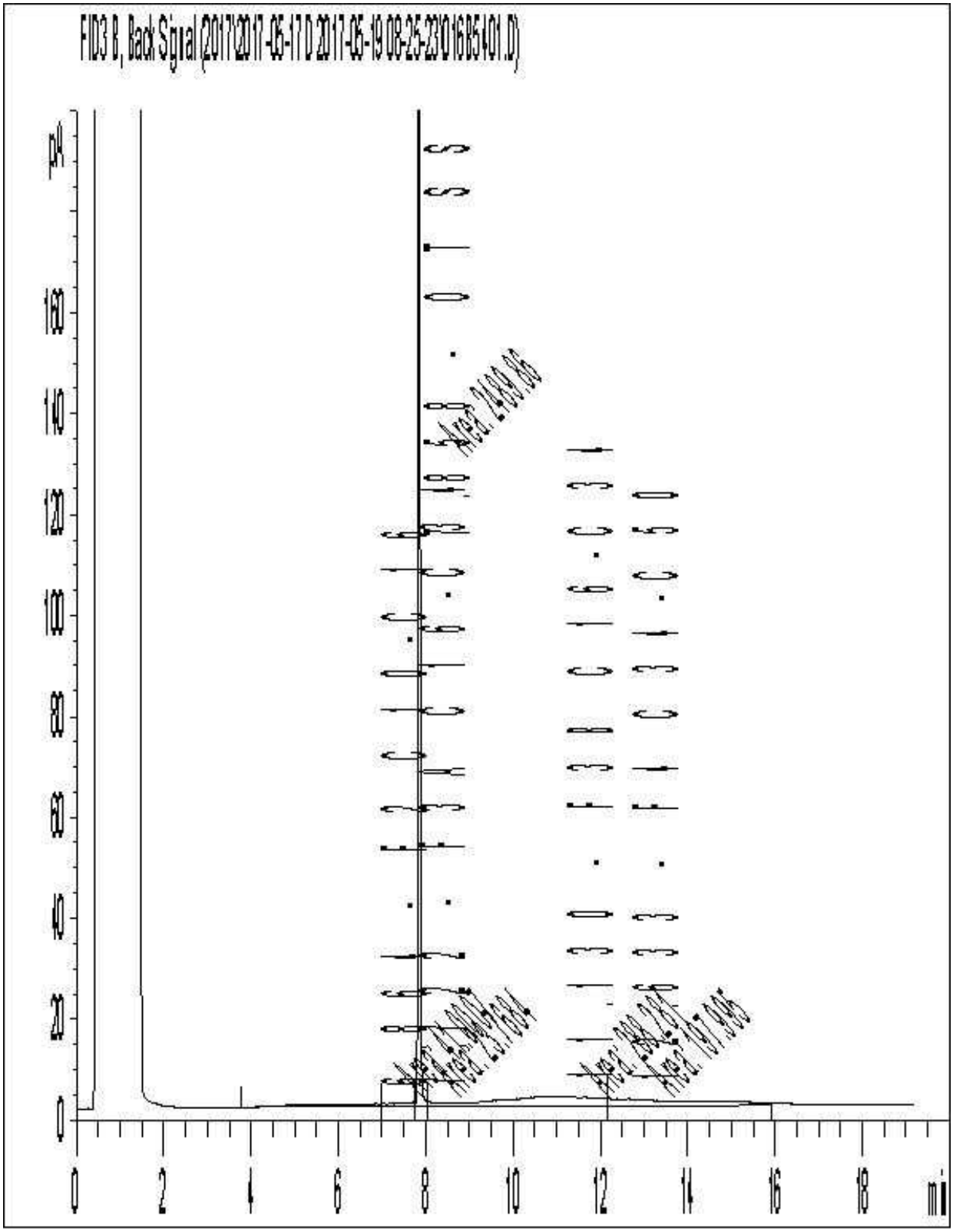


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH749

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-12

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

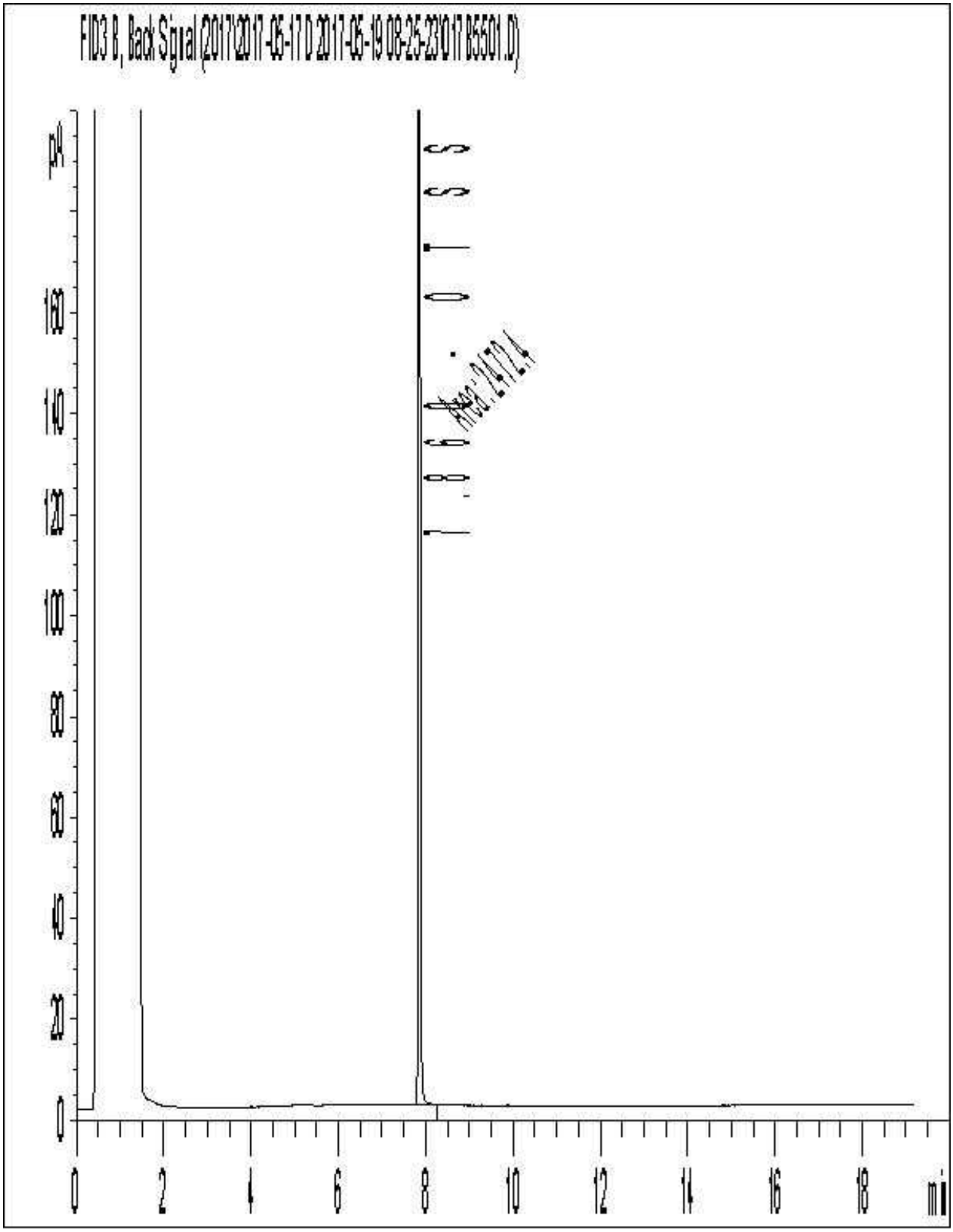


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH750

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-13

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

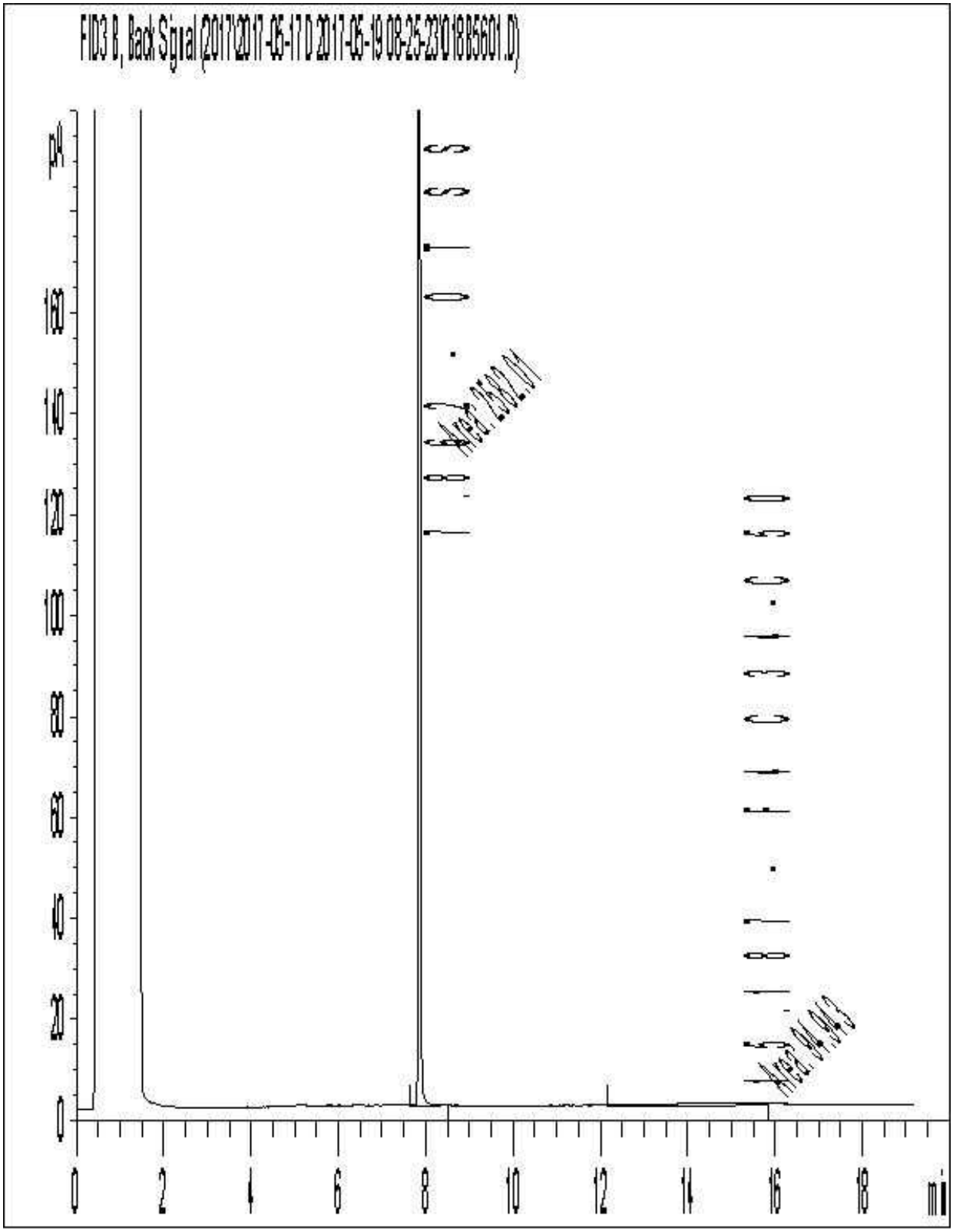


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH751

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-14

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

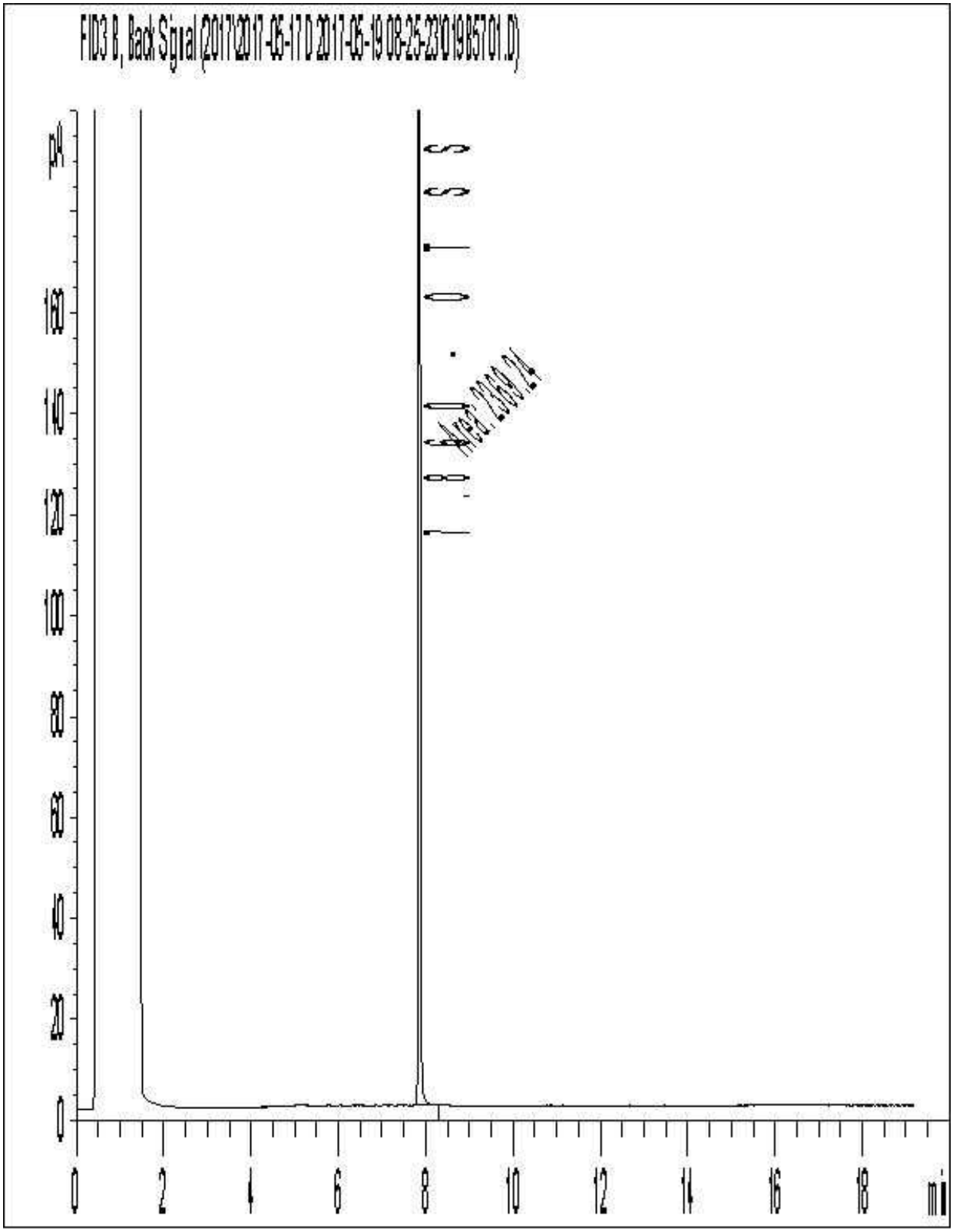


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH752

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-15

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

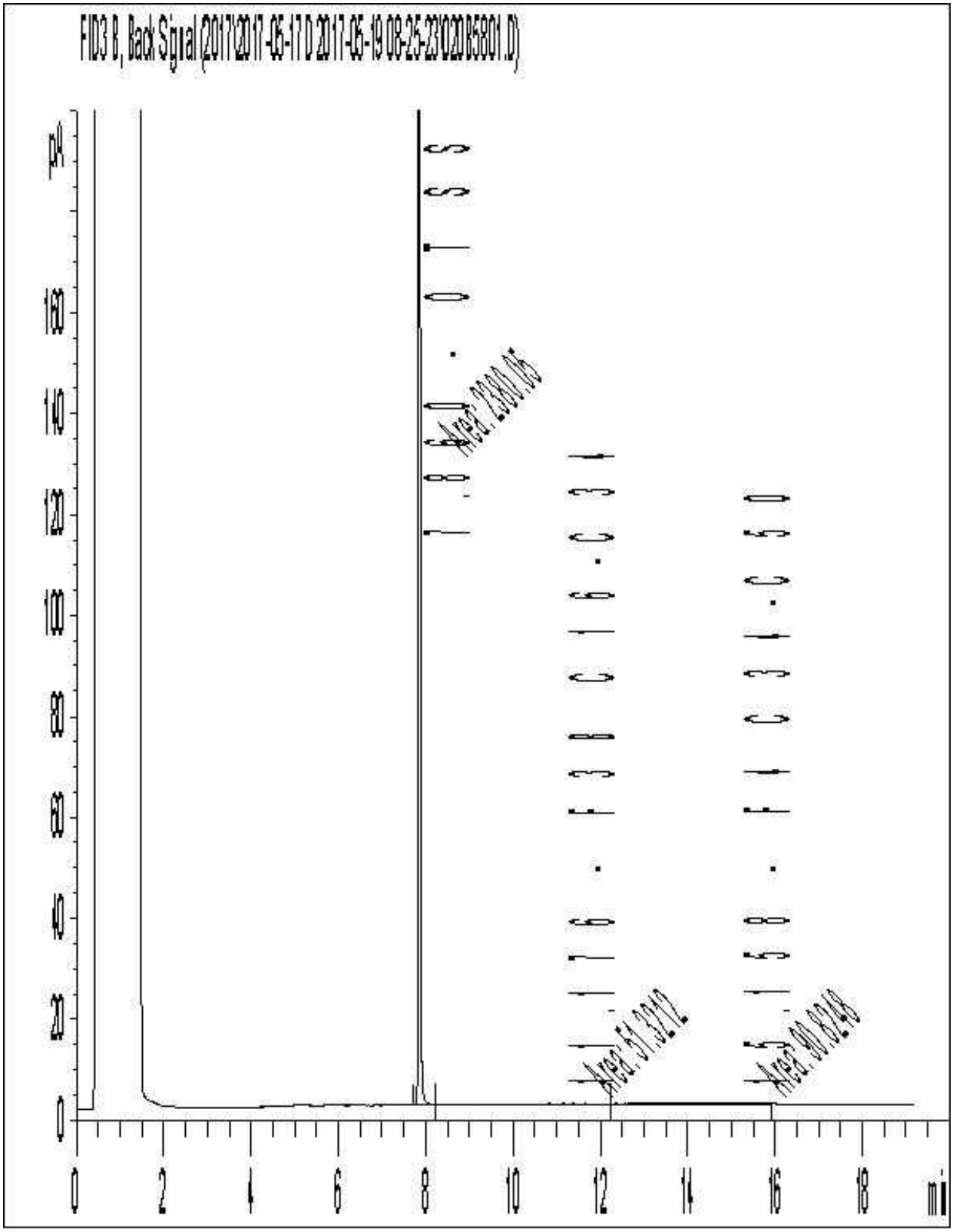


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH753

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-21

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

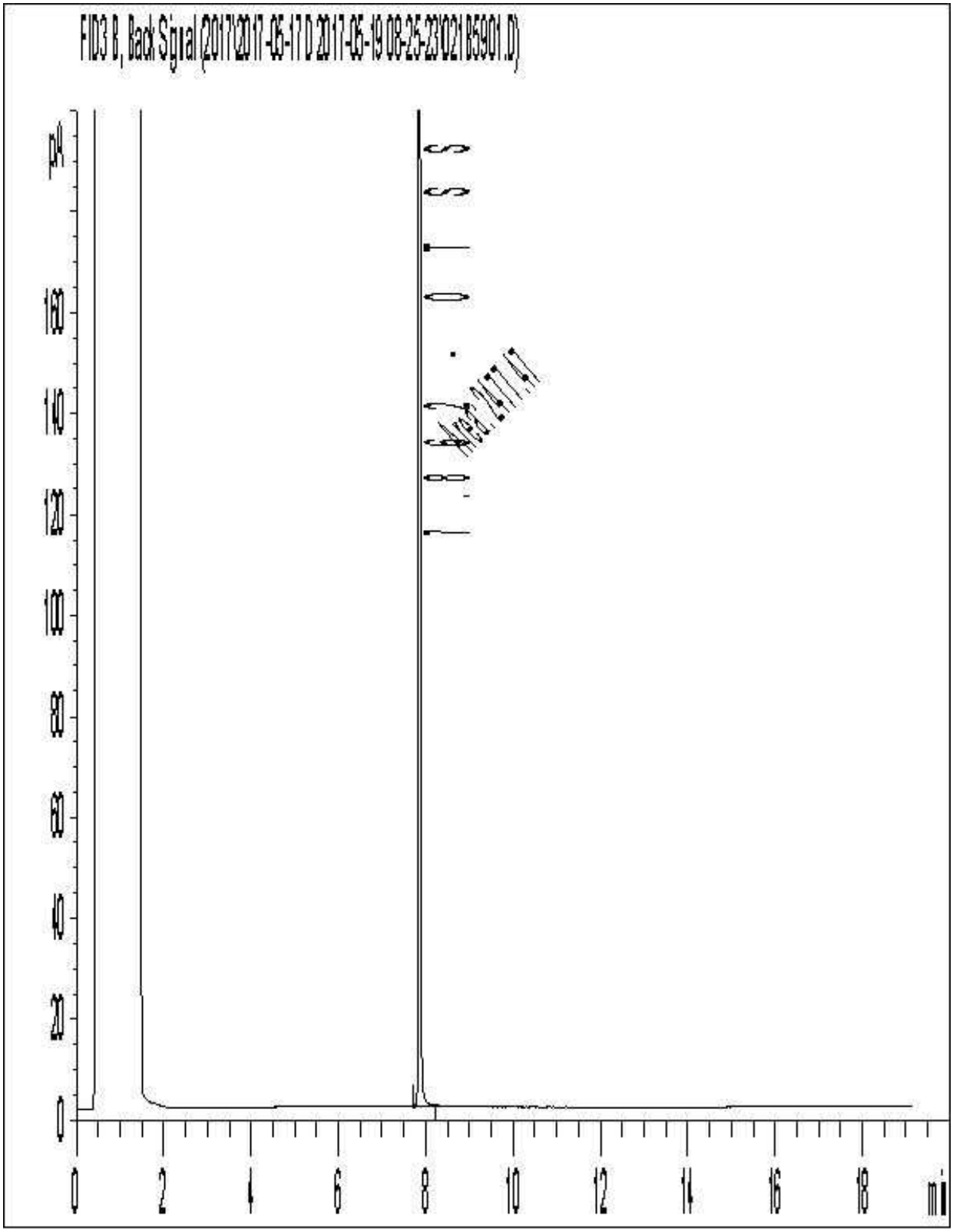


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B7A2598
Report Date: 2017/05/23
Maxxam Sample: EKH754

Golder Associates Ltd
Client Project #: 1525113
Client ID: SS17-26

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 #: B7A2598
Report Date: 2017/05/23

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.

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

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.

For more information, visit golder.com

Africa	+ 27 11 254 4800
Asia	+ 86 21 6258 5522
Australasia	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 56 2 2616 2000

solutions@golder.com
www.golder.com

Golder Associates Ltd.
1931 Robertson Road
Ottawa, Ontario,
K2H 5B7
Canada
T: +1 (613) 592 9600

Golder Associates