FINAL REPORT

Phase Two Environmental Site Assessment

Proposed Development at Riverside Drive and Hunt Club Road, Ottawa, Ontario

Submitted to:

Taggart Realty Management

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Submitted by:

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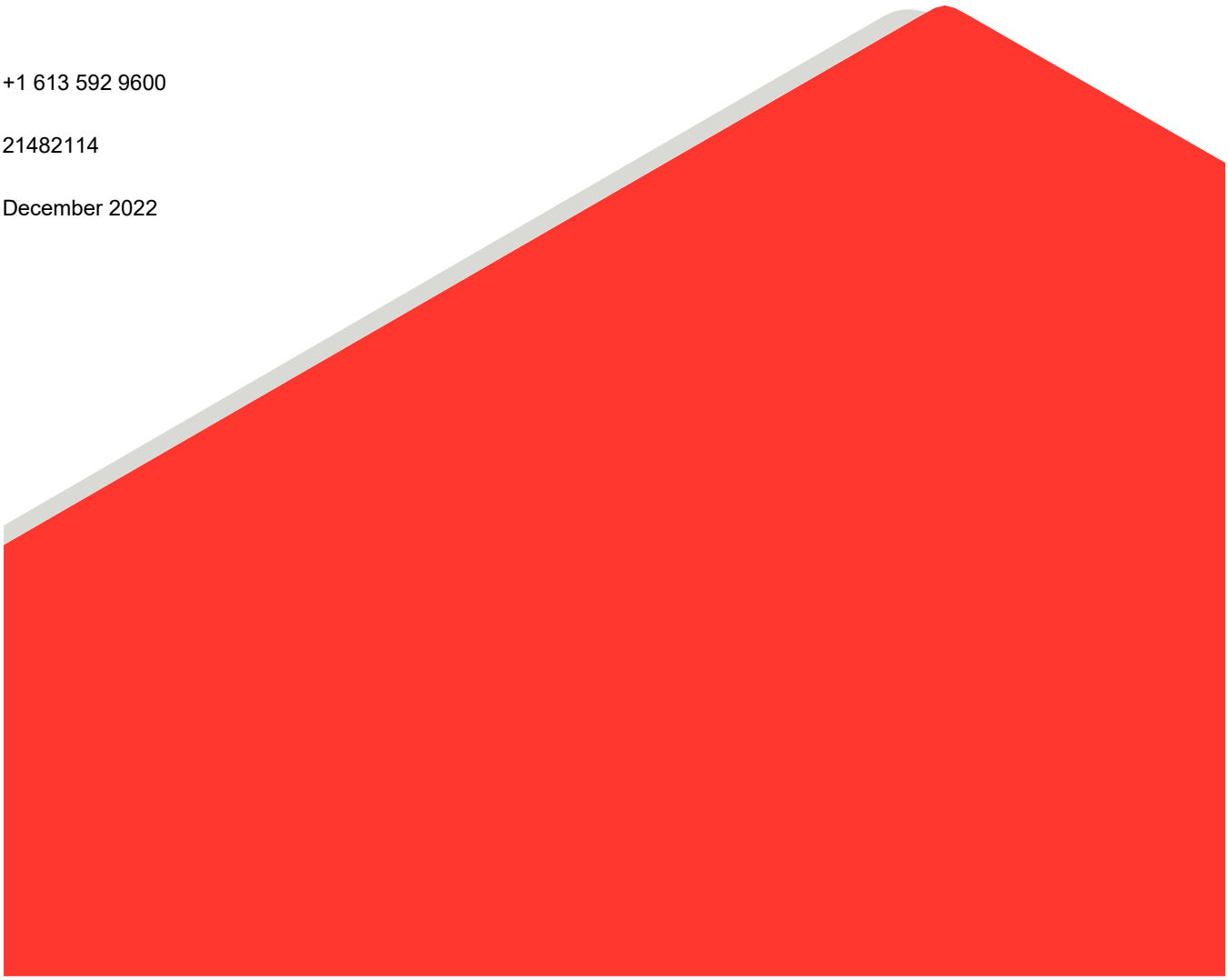

Distribution List

1 e-copy - Taggart Realty Management

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Table of Contents

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 Site Description

Golder Associates Ltd. (Golder) was retained by St. Mary's Land Corporation to conduct a Phase Two Environmental Site Assessment (Phase Two ESA) of the following property:

Municipal Address	3930 Riverside Drive.
Property Identification Numbers	040530608 and Part of 040530578
Legal Description	Part of Lot 5, Concession 2 (Rideau Front), Ottawa, Ontario

The Site location is provided on Figure 1. The boundaries of the Phase Two Property are provided in Figure 2.

1.2 Property Ownership

The contact information for the Phase Two Property is as follows:

Current Site Owner(s)	Current Site Owner(s) Address	Contact Information
Taggart Realty Corporation c/o St. Mary's Development Corporation	225 Metcalfe Street, Suite 809 Ottawa, Ontario K2P 1P9	Kyle Kazda Office: 613-857-8773Ext. 279 Email: kyle.kazda@taggart.ca

1.3 Current and Proposed Future Uses

The Phase Two Property is currently vacant land, and was previously the site of a sand and gravel pit which is considered to be an industrial land use. The Site is proposed to be redeveloped with residential land use with some parkland, both low and high density uses. As the land use will be changing to a more sensitive use (MECP Table 3 Standards for residential, parkland, institutional land use), there is a mandatory requirement for an RSC to be filed.

1.4 Applicable Site Condition Standard

The analytical results of the samples collected for this Phase Two ESA were compared to the Table 3 generic site condition standards (commercial property use, coarse soil texture) presented in the MOECC regulation 153/04 "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*", dated April 15, 2011 (O. Reg. 153/04). The applicable site condition standards were selected based on the following rationale:

- The Site and all other properties located, in whole or in part, within 250 metres of the Site are supplied by the City of Ottawa municipal drinking water system. No wells were identified that are used or intended for use as a source of water.
- The Site is not located in an area designated in a municipal official plan as a well-head protection area or other designation identified by the municipality for the protection of ground water.
- Grain size analysis was not completed as part of the Phase Two ESA and therefore "coarse textured" has been assumed as a conservative approach and due to coarse nature of the fill.
- The closest water body is the Rideau River, located 40 m west of the Phase Two Property.

- There are no features on the Phase Two Property that would meet the conditions of an environmentally sensitive site, as described in Section 41.
- The average pH of surface soil is 5≤pH≤9 and the pH of sub-surface soil meets the requirement that 5≤pH≤11.
- The intended land use for the Phase Two Property is residential with some parkland.
- The overburden thickness is greater than 2 metres over more than one-third of the Phase Two Property.
- The average depth to the water table is greater than 2 metres.

2.0 BACKGROUND INFORMATION

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

The objectives of the Phase Two ESA were to obtain information about environmental conditions in the soil and groundwater on, in or under the Site, and to develop the information necessary to complete a Record of Site Condition for the property. The objectives of this Phase Two ESA were achieved by:

- Developing an understanding of the geological and hydrogeological conditions at the Site; and,
- Conducting field sampling for all contaminants of concern (COCs) associated with each area of potential environmental concern (APEC) identified in the Phase One ESA.

2.1 Physical Setting

The nearest surface water body is the Rideau River, located approximately 40 m west of the Phase Two Property. There are no known areas of natural significance within the Phase One Study Area. Land uses surrounding the Phase Two Property include roadways, parkland and commercial uses.

The topography of the Site and surrounding area is undulating with an overall slope to the west. The Site consists of very uneven terrain as a result of fill placement on the Site. The greatest change in elevation is along the eastern portion of the Site along Riverside Drive where the land slopes steeply downward from Riverside Drive. Local surface water is anticipated to flow west towards the Rideau River located west of the Site.

2.2 Past Investigations

- **"1994 Phase I and Partial Phase II ESA"**, Phase I and Partial Phase II Environmental Site Assessment, Riverwalk Park and St. Mary's Sites, Riverside Drive, Ottawa, Ontario, dated June 1994, prepared by Golder Associates Ltd. for Cumming Cockburn Limited.
- **"1998 Phase I ESA"**, Phase I Environmental Site Assessment, St. Mary's Site, Riverside Drive, Ottawa, Ontario, dated December 1998, prepared by Golder Associates Ltd. for Doran Contractors Limited.
- **"May 2001 Phase I and II ESA"**, Phase I and Phase II Environmental Site Assessment, St. Mary's Site, Riverside Drive, Ottawa, Ontario, dated May 2001, prepared by Golder Associates Ltd. for Dundee Realty Corporation.

- **"September 2001 Phase II ESA and Remediation Program"**, Phase II Environmental Site Assessment and Remediation Program, 3930 Riverside Drive (Riverside Drive and Hunt Club Road), Ottawa, Ontario, dated September 2001, prepared by Golder Associates Ltd. for the City of Ottawa.

The 1994 Phase I and Partial Phase II ESA was completed for the former "St. Mary's Site" and the former "Riverwalk Park Site". The former St. Mary's Site consists of the northern portion of the Site, the northern portion of 3930 Riverside Drive and the property located immediately north of the Site at 3860 Riverside Drive (currently occupied by a park). The Riverwalk Park Site includes the surrounding properties north of the Site, some of which are within the Phase One Study Area. Based on the review of the 1994 Phase I and Partial Phase II ESA, the following is of note for the Site:

- The Site was used as a sand and gravel pit prior to 1935. The pit located on this portion of the Site was backfilled during the 1980's.
- The adjacent lands north of the Site were used as a sand and gravel pit prior to the 1930's into the 1980's, with possible re-vegetation in the 1960's and 1970's.
- At the time of the Site visit, which was conducted in May 1994, irregular backfill was noted on the Site and the adjacent properties north of the Site. Mounds of sand, silty sand, cobbles, boulders as well as brush, topsoil and debris were noted within the former pit areas on these properties.
- Backfill material on the Site consists of granular fill, solid waste and demolition rubble. The origin of the backfill material is unknown; however, some of the backfill material was reportedly brought to the Site in during construction activities on Elgin Street in Ottawa, back in 1986 and 1987.
- During the 1994 Site visit, one aboveground storage tank (AST), likely a fuel AST, was observed on the St. Mary's Site; however, it is not known if it was located on the Site or the adjacent lands north of the Site. No hydrocarbon odours or staining was observed on the St. Mary's Site or the Riverwalk Park Site at the time of the Site visit.
- Fill material was identified in the test pits which primarily consisted of grey silty sand with some gravel and clay. Construction debris including wood, asphalt, glass, brick and/or concrete was observed in some of the fill.
- As part of the 1994 Phase I and Partial Phase II ESA, samples of fill collected from the tests pits were submitted for laboratory analysis of metals and inorganics as well as oil and grease. The soil analytical results were compared to and satisfied the Province of Ontario Soil Clean-Up Guidelines for Decommissioning of Residential, Fine and Medium Textured Soil (1991). A comparison of the soil analytical results to the currently applicable Site standards (the MOE Table 3 Standards) indicate that all samples of fill met the MOE Table 3 Standards with the exception the fill sample that was collected from a test pit completed north of the Site which contained a concentration of electrical conductivity (EC) above the MOE Table 3 Standards.

The 1998 Phase I ESA was completed for the north portion of the Site, the northern portion of 3930 Riverside Drive and the property located immediately north of the Site located at 3860 Riverside Drive (i.e., the former St. Mary's Site). Based on the review of the 1998 Phase I ESA, the following is of note for the Site:

- The northern portion of the Site and adjacent land north of the Site on the northern portion of 3930 Riverside Drive is underlain discontinuously by fill material ranging in thickness of up to 13 m in some locations. The fill, where present, is highly variable in composition, ranging from grey silty clay to gravel, boulders, concrete pieces, asphaltic concrete slabs, etc. Below the fill layer is a native sandy soil layer followed at a depth by a silty clay layer.

- At the time of the Site visit, which was conducted in May 1998, the northern portion of the Site and the adjacent lands north of the Site were vacant. The backfill material that was observed within the former pit areas in 1994 was still present.
- In May 1998, the southeast portion of the Site and the adjacent lands southeast of the Site (i.e., southeast portion of 3930 Riverside Drive) was an abandoned sand and gravel pit that has been backfilled to a variable degree.

The May 2001 Phase I and II ESA was completed for the northern portion of the Site, the northern portion of 3930 Riverside Drive and the property located immediately north of the Site located at 3860 Riverside Drive (i.e., the former St. Mary's Site). Based on the review of the May 2001 Phase I and II ESA, the following is of note for the Site:

- During an interview, the Site Representative stated that approximately 120,000 cubic metres (m^3) of fill material was deposited on the St. Mary's Site between December 2000 and March 2001. The source of this material was the excavation for the Nepean stormwater management pond, located across the Rideau River.
- The Site and the adjacent lands north of the Site were used as a sand and gravel pit from prior to 1931 until the mid-1960's when backfilling commenced on the adjacent property north of the Site at 3860 Riverside Drive. Backfill has continued on the Site and the adjacent lands north of the Site until at least May 2001. The southeast portion of the Site and the adjacent lands southeast of the Site have been used as a sand and gravel pit from prior to 1931 until sometime between 1980 and 1989 when backfilling activities began on it. The backfilling has occurred on this portion of the Site since at least 1997.
- The St. Mary's Site was owned by private individuals from 1802 until 1911, and from then on by commercial interests. Sand and gravel extraction commenced on the St. Mary's Site when it was owned by the Ottawa Hunt and Golf Club which was between June 1911 and June 1960. Between June 1960 and May 2001, the St. Mary's Site was owned by commercial and/or industrial companies including St. Mary's Cement Corporation and Dominion Building Materials Limited.
- No ASTs were observed on the St. Mary's Site at the time of the Site visit.
- There is potential that localized areas of debris or contaminated material may have been buried on the Site during the backfill phases and some of the material may present issues of environmental concern related soil and/or groundwater quality on the Site.
- As part of the 2001 Phase II ESA, nine test pits were excavated on the St. Mary's Site which included a portion of the Site. A monitoring well was installed on the Phase Two Property (monitoring well MW01-2 as shown on Figure 2). Fill material was encountered in all nine test pits and varied in composition, suggesting that there have been several sources of these fill materials. The fill material in the test pit and monitoring well locations ranged from depths of 2.0 metres below ground surface ("mbgs") to at least 5.2 mbgs and were underlain by native light brown sand with trace gravel.
- The groundwater levels measured in the monitoring wells were between 4.74 and 12.38 mbgs.
- Soil samples collected from some of the test pits were analyzed for TPH gas, TPH diesel, TPH heavy oils, metals and/or inorganics. All analyzed soil samples met the MOE Guidelines for Use at Contaminated Sites, Table B Criteria and also meet the currently applicable MOE Table 3 Standards, where direct comparison is applicable.

- The groundwater sample collected from the monitoring well met the MOE Guidelines for Use at Contaminated Sites, Table B Criteria and also meet the MOE Table 3 Standards for all parameters analyzed (TPH gasoline, TPH diesel, benzene, toluene, ethylbenzene and xylenes (BTEX) and metals).

The 2001 Phase II ESA and Remediation Program was completed for the southern and eastern portions of the Site. Based on the review of the September 2001 Phase II ESA and Remediation Program, the following is noted for the Site:

- The Phase II ESA included the completion of several test pits and two boreholes completed as monitoring wells on the southern portion of the Site (monitoring wells MW01-5 and MW01-6 as shown on Figure 2).
- Fill material was encountered in all test pit and monitoring well locations. The depth of the fill material ranged from 2.74 mbgs to 14.17 mbgs. Construction debris including cinders, ash, wood, brick, concrete and/or scrap metals was present in the fill material at both monitoring well locations and in all but one test pit location.
- All soil samples submitted for laboratory analysis from the test pits satisfied the Table B Criteria and satisfy the MOE Table 3 Standards with the exception of soil sample collected from test pit on the west end of the Site which contained a concentration of TPH gas/diesel and TPH heavy oils above the Table B Criteria. The concentrations of TPH gas/diesel and TPH heavy oils in this soil sample were 6540 ug/g and 4500 ug/g, respectively. Although these concentrations cannot be directly compared to the MOE Table 3 Standards, they exceed the MOE Table 3 Standards for PHC F1, F2, F3 and F4.
- Approximately 220 tonnes of PHC impacted soil was removed from the location of the soil exceedance and disposed of off-Site. Confirmatory soil samples collected from the base and sidewalls of the excavation met the MOE Table B Criteria. The approximate location of this remediated area is shown on Figure 2.
  It is possible that the fuel AST formerly present on the Site or adjacent property north of the Site was located in this area.
- There were no exceedances of the MOE Guidelines for Use at Contaminated Sites, Table B Criteria, or the MOE Table 9 Standards for the parameters analyzed (metals, BTEX, TPH gas/diesel and TPH heavy oils) in the groundwater samples collected from the two monitoring wells.
- Groundwater levels measured on the Site were 15.31 mbgs and 16.17 mbgs and those measured in the two monitoring wells north of the Site were 5.135 mbgs and 4.86 mbgs. Based on the measured water levels, groundwater at the Site in interpreted to flow southwest towards to Rideau River.

The June 2017 Phase I and II ESA were completed for the northern portion of the Site, the northern portion of 3930 Riverside Drive and the property located immediately north of the Site located at 3860 Riverside Drive (i.e., the former St. Mary's Site). Based on the review of the May 2017 Phase I and II ESA, the following is of note for the Site:

- Based on the soil analytical results, all the soil samples which had exceedances of the MOE Table 3 Standards were collected from the distinct waste fill laver that is present on the eastern portion of the Site with the exception of fill sample TP17-1013-SA2 which was collected from fil material containing traces of wood at test pit TP17-1013 and had a concentration of benzo(alpyrene above the MOE Table 3 Standards, which is inferred to be unrelated to the waste fill laver or at the western edge of the waste fil layer.

- The deeper soil sample collected from the fill layer underlying the distinct waste fill layer at borehole 17-101 and the shallow soil sample collected from the fill layer above the distinct waste fill layer at test pit TP17-1005 satisfied the MOE Table 3 Standards for the parameters analyzed, suggesting that the overlying and underlying fill lavers of the distinct waste fill do not have impacts above the MOE Table 3 Standards.
- This area is defined by the northern Site boundary, the steep embankment along Riverside Drive and by investigation locations in which debris containing fill was not present (i.e., TP17-1010 and borehole 17-102) or where the debris containing fill (trace) satisfied the MOE Table 3 Standards (TP17-1008 and TP17-1011).
- The groundwater level in monitoring well 17-102 was measured on June 27, 2017. Groundwater was recorded at a depth of approximately 16.90 mbgs at this monitoring well. No hydrocarion sheens or odours were detected in the monitoring well during the measurement of the water level or groundwater sampling.
- Groundwater flow direction cannot be confirmed at the Site given that there is only one monitoring well located on the Site; however, groundwater flow direction is inferred to be west towards the Rideau River.
- Given that there were no groundwater exceedances of the applicable MOE Table 3 Standard, it is Golder's opinion that the fill material on the Site has not impacted the groundwater at the Site.

Based on the review of the previous environmental reports, poor quality fill material including construction debris was noted on the Site. However, none of the soil or groundwater remaining on the Site exceeded the applicable site condition standards for the Site, where comparable to current standards.

Given their age, the historical results are not being relied upon as part of this Phase Two ESA.

2.2.1 Phase One ESA

Golder conducted a Phase One ESA Site which is documented in the report entitled, "*Phase One Environmental Site Assessment proposed Development at Riverside Drive and Hunt Club Road Ottawa, Ontario*", dated December 2022, 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 APEC identified in the 2022 Phase One ESA is summarized in the following table:

APEC #	Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or Sediment)
1	Impacts due to the presence of fill material.	Site-wide.	**PCA 30:** Importation of Fill material of unknown quality	On-Site	PHC F1 to F4, BTEX, PAHs and metals	Groundwater and Soil

Notes:
PCA Potentially contaminating activity as listed O.Reg. 153/04, Schedule D, Table 2
PHC petroleum hydrocarbon compound fractions
PAH polycyclic aromatic hydrocarbon
BTEX benzene, toluene, ethylbenzene, xylenes

This report was prepared by the Qualified Person and has been relied upon for the Phase Two investigation.

3.0 SCOPE OF THE INVESTIGATION

3.1 Overview of Site Investigation

The Phase Two ESA investigation activities were completed between April 26, 2017 and November 7, 2022 and included the following tasks:

- **Health and Safety Plan**: Preparation of a Health and Safety Plan for internal and subcontractor use prior to initiating any field work at the Site.
- **Utility Clearances**: Coordination of utility clearances with local utility companies along with retaining the services of a private locator to assess for possible services in the areas of the proposed test locations.
- **Borehole Advancement and Monitoring Well Installation**: The borehole drilling and monitoring well installation program included drilling eleven boreholes, seven completed as groundwater monitoring wells. The location of the boreholes and monitoring wells are shown on Figure 2. The monitoring well construction details are presented in Table 1. Boreholes were completed up to a depth of between 8 and 22 metres and were completed on two separate occasions, April/May 2017 and June 2017.
- **Test Pitting**: thirty (30) test pits were excavated on the Site to evaluate and delineate exceedance identified in the boreholes and to assist in the delineation of the waste containing fill in the southeast portion of the Phase One Property, as shown on Figure 2. Test pits were excavated to between 0.7 and 6.3 metres depth.
- **Soil Sampling**: Selected soil samples were collected between April 26, 2017 and June 23, 2017 from the boreholes and test pits. Soil samples were submitted for chemical analysis of one or more of the following: petroleum hydrocarbon fractions 1 to 4 (“PHCs F1 to F4”), polycyclic aromatic hydrocarbons (“PAHs”), benzene toluene ethylbenzene and xylenes (“BTEX”), metals and other related parameters (ORP).
- **Groundwater Monitoring and Sampling**: Groundwater samples were collected in May 2017, April 2017 and November 2022 from the monitoring wells completed on the Site as part of this Phase Two ESA as well as two existing monitoring wells (MW01-5 and MW01-6) that were installed on the Site in 2001. These two historical groundwater wells were not included in the 2022 sampling program. Groundwater samples were submitted for analysis of PHCs, BTEX, PAHs and/or metals. Groundwater levels in the monitoring wells were measured on May 2, 3 and 4, 2017.
- **Surveying**: An elevation survey for the boreholes and monitoring wells completed at the Site as part of this Phase Two ESA as well as existing monitoring wells located on the Site was completed on May 8 and 9, 2017.
- **Reporting**: Golder compiled and assessed the field and laboratory results from the above noted activities into this report.

The Phase Two investigation was carried out in general accordance with Golder’s standard operating procedures, which conform to the requirements of O. Reg. 153/04. The data from the Phase Two ESA investigation completed by Golder at the Site were incorporated into a single Phase Two ESA report following the Phase Two ESA report format required by O. Reg. 153/04.

There were no impediments or access limitations that would affect the conclusions of this Phase Two ESA report.

3.2 Media Investigated

To address the potential environmental issues identified in the Phase One ESA, the Phase Two ESA field program included sampling of subsurface soil and of groundwater from wells screened within the overburden at the Site and test pits within the fill. No sediment was present at the Site and therefore no sediment sampling was completed. A summary of media investigated and the applicable contaminants of potential concern are provided in Tables 2 and 3.

3.3 Phase One Conceptual Site Model

The following key Site features (as required by O.Reg. 153/04) are presented in Figures 1 and 2:

- Existing buildings and structures;
- Water bodies and areas of natural significance located in the Phase One Study Area;
- Roads (including names) and railways within the Phase One Study Area;
- Uses of properties adjacent to the Phase One Property; and,
- Location of identified PCAs in the Phase One Study Area (including any storage tanks).

The following describes the Phase One ESA CSM for the Site based on the information obtained and reviewed as part of the Phase One ESA:

- At the time of the Site visit, which was conducted on November 7, 2022, the Phase One Property consisted of an approximately 14.82 acre (0.40 hectare) parcel of undeveloped and vacant land. The majority of the Phase One Property consisted of fill material overgrown with vegetation and was primarily snow covered at the time of the Site visit. A gravel and dirt road extending west from Riverside Drive intersected the central portion of the Site from east to west.
- Fill material overgrown with vegetation is present throughout the Phase One Property. Backfilling of the former sand and gravel pits on the Phase One Property began sometime between 1980 and 1985 and continued until sometime between 2001 and 2005. By 2005, the majority of the Phase One Property had been backfilled and re-vegetated; however, fill material was present on the central portion of the Phase One Property in the 2005 aerial photograph and on a small area on the eastern portion of the Phase One Property in the 2007 aerial photograph. Based on the review of previous environmental reports and the Ecolog ERIS report, construction debris is present within the fill material and there is a potential for the fill material to contain contaminants at a concentrations above the current applicable site standard.
- Two monitoring wells were installed on the Site by Golder during the Phase Two ESA investigation completed in 2001. These monitoring wells were present on the Site at the time of the Site visit.
- The nearest water body is the Rideau River located approximately 40 m southwest of the Site.
- No areas of natural and scientific interest (ANSI) are known to be located on the Phase One Property or on the Phase One Study Area. Based on available information, the Phase One Property is not considered to be an environmentally sensitive area. As such, the Phase One Property is not considered an area of natural significance.
- At the time of the Phase One ESA, the surrounding properties within the Phase One Study Area were comprised of residential and commercial land uses or were vacant land.

- The only roads located within the Phase One Study Area at the time of the Site visit were Riverside Drive, Hunt Club Road, Kimberwalk Crescent and Chancellor Court.
- Soils and the Phase One Property consist of fill material underlain by silty sand, sand and silty clay and bedrock at the Phase One Property is of the Oxford Formation (dolostone, minor shale and sandstone).
- Groundwater is anticipated to flow southwest towards the Rideau River located approximately 40 m southwest of the Site.
- Based on the findings of the Phase One ESA one PCA (#30 Importation of fill of unknown quality) was found to have resulted in an APEC on the Site, as presented below.

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or Sediment)
APEC 1 – Potential for subsurface impacts due to the presence of fill material on the Site.	Site-wide.	Fill material of unknown quality and origin is present Site-wide	On-Site	PHC F1 to F4, BTEX, PAHs, metals and other related parameters (ORP)	Soil and Groundwater

3.4 Impediments

No physical impediments to the Phase Two ESA investigation were encountered. Access to the Phase Two Property was not denied or restricted.

4.0 INVESTIGATION METHOD

4.1 General

The following sections describe the field investigation methodology employed during the Phase Two ESA. The field work was conducted between April 2017 and November 2022.

Prior to initiating the field work, Golder developed and implemented Site-specific protocols to protect the health and safety of its employees and subcontractors through the preparation of a Site-specific Health and Safety Plan. 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. A health and safety tail gate meeting was held with Golder's subcontractors each day prior to completion of the field work. The document was reviewed and signed on-Site by field personnel prior to commencing work. Additionally, prior to any intrusive investigations, including drilling, Golder completed public and private utility clearances.

4.2 Drilling

Drilling was undertaken in two programs, the first was completed between April 26 and May 3, 2017 included seven (7) boreholes (identified as boreholes 17-01, 17-02, 17-03, 17-04, 17-05, 17-07, and 17-09) which were advanced to depths of 5.18 to 21.95 metres below ground surface (“mbgs”). A second program was completed between June 22, 2017 to June 26, 2017 and included four (4) boreholes (identified as boreholes 17-101, 17-102, 17-103 and 17-104) which were advanced to depths of between 13.94 and 19.14 mbgs.

The borehole locations are provided on Figure 2 and the Record of Borehole logs can be found in Appendix A. A description of the quality assurance/quality control measures taken to minimize the potential for cross-contamination between sampling locations is provided in Section 5.12.

Boreholes were advanced by Forage Downing Drilling (“Downing”) using and a CME-75 Power Auger rig and/or a 6620DT Geoprobe rig. During borehole drilling activities, overburden soil samples were collected using dual tube soil sampling equipment with the geoprobe and a split spoon with the power auger.

When using the geoprobe, soil samples were collected continuously using the following method:

- Dual-tube sampler: 4 foot long, 1.85 inch diameter disposable PVC liner inside a 3.25 inch OD direct push rod.

When using the power auger, soil samples were collected at 0.76 m intervals using the following method:

- Split Spoon sampling: 2 foot long, pushed via 140 pound sampler hammer dropped from 30 inches.

4.3 Test Pitting

Following the identification of an exceedances in select boreholes, test pits were excavated on three occasions to assist in the delineation of these impacts. The first event included four (4) test pits were excavated around the perimeter of the borehole 17-02 in order to aid in the delineation of PAH impacts, identified as test pits 17-10, 17-11 and 17-12 and 17-13. Test pit 17-13 was completed at the location of the previous exceedance to gain vertical delineation. Test pits 17-10, 17-11 and 17-12 were excavated to a depth of 4.5 metres and test pit 17-13, at the location of the identified impacts at borehole 17-02, was excavated to a depth of 6.3 metres. Samples of the fill were collected from each test pit every 1.5 metres.

A second round of sixteen (16) test pits was completed on July 9, 2017 in the southwest portion of the Phase Two Property to assist in the delineation of fill containing measurable waste materials. These test pits are identified as TP-1001 through TP-1016 and were completed to depth of between 0.75 and 3.1 mbgs. Samples of the waste containing fill were collected at each location for potential analysis and a description and thickness of the waste containing layer was documented.

The third round of nine (9) test pits was completed on July 31, 2017 to delineate soil exceedances identified in both of the previous two rounds of test pitting. These test pits are identified as TP19-01 through TP19-09 and were completed to between 2.5 and 3.8 metres depth. Samples of the fill were collected from each test pit every 1.5 metres.

4.4 Soil: Sampling

Soil samples were split in the field into two components. One component was placed into laboratory-prepared containers with minimal headspace and stored in a cooler for potential laboratory analysis. The second component was placed inside a plastic bag for field screening, consisting of the soil description, and noting the

presence of any staining, odour and/or debris. A photoionization detector calibrated to 100 parts per million ("ppm") isobutylene (MiniRae 3000) was used to measure the total organic vapour in the headspace in the sealed plastic bag during the drilling work.

The subsurface soil conditions within the boreholes and test pits were described in terms of their texture, presence of staining, odour and debris, if any. Geologic descriptions of soil samples are presented in the Record of Borehole/Test Pit sheets (Appendix A).

All soil samples collected and submitted for chemical analysis were obtained using dedicated nitrile gloves and all equipment in contact with soils was washed between sample locations to prevent the potential of cross contamination.

Soil samples were selected for laboratory analysis based on the field headspace screening measurements, visual observations (e.g., staining, discoloration, presence of debris and/or free product, if any), and olfactory observations (if any). Otherwise, if no visual or olfactory observations were noted, the highest recorded field screening reading and/or depth horizons at which potential contamination was considered most likely to have occurred (i.e. highest debris content in the fill) was used to determine which soil sample to submit for analysis from each test location.

Soil samples were submitted to the analytical laboratory under chain-of-custody procedures. A summary of the soil samples submitted for analysis is provided in Table 2.

Geologic descriptions, visual and olfactory observations, and results of field headspace measurements are presented on the Record of Borehole/Test Pit sheets in Appendix A.

4.5 Field Screening Measurements

Field measurements of sample headspace concentration were made using the following equipment during the drilling program:

Equipment	Make and Model	Parameters Detected	Detection Limits	Precision	Accuracy	Calibration Standard	Calibration Procedure
Photo-ionization detector (PID) MiniRae 3000 10.6 EV bulb	MiniRae 3000	Organic vapours	0 - 15,000 ppm	N/A	+/- 3%	100 ppm Isobutylene	By Golder Associates field staff prior to and during fieldwork

4.6 Groundwater: Monitoring Well Installation

Groundwater monitoring wells were installed by Downing using threaded 50 mm diameter, schedule 40, polyvinyl chloride ("PVC") well screens and riser pipe, which were brought to the Site in sealed plastic bags. The annular space was filled with silica filter sand to at least 0.5 m above the well screen. The monitoring well was sealed with bentonite from the top of the sand pack and completed with a stick mount protective well casing set in concrete. Monitoring well construction details are provided in Table 1. A description of the quality assurance/quality control measures taken to minimize the potential for cross-contamination between sampling locations is provided in Section 5.12.

4.7 Groundwater: Sampling

Following drilling, the monitoring wells were purged prior to sampling on May 2, 3 and 4, 2017 (17-01, 17-02, 17-03, 17-04, 17-07, 17-09, MW01-5 and MW01-6), June 27, 2017 (17-102) and November 9, 2022 (17-101, 17-01, 17-02, 17-03, 17-04, 17-07) using by removing at least three well volumes using dedicated Waterra® pumps (tubing with foot valves). During purging and sampling, qualitative observations were made of water colour, clarity, and the presence or absence of any hydrocarbon sheen or odours.

Groundwater samples were placed in laboratory-prepared containers and stored in a cooler until delivery to the analytical laboratory under chain-of-custody procedures. A summary of the groundwater samples submitted for analysis is presented in Table 3.

4.8 Sediment: Sampling

No sediment samples were collected as part of this investigation.

4.9 Analytical Testing

The contact information for the analytical laboratory is included below.

AGAT Laboratories
Phase 2, unit 7, 6 Antares Dr.
Nepean, ON K2E 8A9
613 255 8668

The analytical laboratory is accredited in accordance with the International Standard ISO/IEC 17025 (CALA) (General Requirement for the Competence of Testing and Calibration Laboratories, May 5, 2005, as amended) and the standards for proficiency testing developed by the Standards Council of Canada, the Canadian Association for Laboratory Accreditation or another accreditation body accepted by the MOECC.

4.10 Elevation Surveying

The 17-## series borehole and monitoring wells completed as part of this Phase Two ESA as well as the existing monitoring wells (MW01-5 and MW01-6) were surveyed on May 8, 2017. The 17-### series boreholes and monitoring wells were surveyed on June 28, 2017. All surveys were completed using a Trimble R8 to a geodetic benchmark. Borehole elevations are indicated on the Record of Borehole sheets in Appendix A.

Groundwater levels were monitored in all four monitoring wells to determine groundwater flow direction and were measured relative to the elevation of the top of the PVC riser.

A summary of recorded groundwater elevations is provided in Table 4.

4.11 Quality Assurance and Quality Control Measures

Golder's quality assurance program for environmental investigations was implemented to ensure that analytical data obtained by the investigation were valid and representative. 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 soil samples at a minimum frequency of one duplicate for every ten samples submitted for laboratory analysis.
- Initial calibration of field equipment was performed at the start of each field day, with a daily checks of calibration, as needed, using a standard of known concentration.
- The collection of at one trip blank for sampling events that include the analysis of PHC F1 and BTEX in groundwater.
- Soil and groundwater samples were handled and stored in accordance with the sample collection and preservation requirement of the Ministry of the Environment (MOE) *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 under chain-of-custody.
- Dedicated sampling equipment (tubing and footvalves) and clean disposable Nitrile™ gloves were used at each sampling location to prevent cross-contamination. All non-dedicated sampling equipment (e.g., water level meters, split spoons) was decontaminated between sampling locations. Sampling equipment in contact with soil, groundwater, or sediment was: cleaned by mechanical means; washed with a phosphate-free, laboratory-grade detergent (e.g., LiquiNox) and, if necessary, an appropriate desorbing wash solution; and thoroughly rinsed with analyte-free 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.
- The submission of samples to the analytical laboratory in accordance with standard chain of custody procedures.

5.0 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.

5.1 Geology

The soil conditions encountered during the borehole drilling are presented in the Record of Borehole/Test pits sheets and provided in Appendix A. The following presents a summary of the subsurface soil conditions encountered during the investigation.

Boreholes were advanced to a maximum depth of 21.9 mbgs. In general, the subsurface soil conditions consist of a layer of fill overlying native overburden. The fill consists of grey and brown silty clay, sandy silt, and/or silty sand with trace organics. Evidence of debris, including bricks, concrete and wood was noted in fill samples collected from boreholes 17-01 and 17-02. A more significant quantity of waste materials including glass, brick, ash, slag,

ceramic, metal, rubber and wood was observed in the southeast portion of the Site in borehole 17-101, TP17-1001 through TP17-1009 and TP 17-1012. The waste fill was noted to be present at a depth of between 1.52 and 2.13 mbgs with an observed thickness of between 1.1 and 3.2 metres averaging at 0.9 metres.

The fill was penetrated at all boreholes. The fill extended to depths ranging between 1.6 and 19.25 mbgs. This fill layer is underlain by fine to medium brown native sand extending to the maximum depth of drilling in several locations. Bedrock was not encountered during drilling.

Based on the soil conditions encountered in the boreholes, the native sand is considered a water bearing formation at the Phase Two Property. None of the documented fill impacts or observed waste materials were below the water table.

5.2 Groundwater: Elevations and Flow Direction

All monitoring wells were used in the interpretation of shallow groundwater contours and shallow groundwater flow direction. Any temporary fluctuation in water levels on the Phase Two Property is not anticipated to effect the conclusions of the Phase Two ESA.

The elevations of the potentiometric surface at each monitoring well are summarized in Table 4. Groundwater elevations at the Site ranged from 75.59 to 87.63 masl and groundwater depths from 6.60 to 16.40 mbgs between May 2, 2017 and May 4, 2017. Based on the interpreted groundwater elevation contours presented in Figure 8, the inferred direction of groundwater flow is to the west, towards the Rideau River.

Based on the soil conditions encountered in the boreholes and the water level measurements, the native sand and lower sandy fill units were inferred to act as an aquifer.

Seasonal fluctuation in water levels on the Site 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 recharge and decline throughout the summer and fall months into the winter.

Underground utility drawings available for the Phase Two Property indicated two sewer lines, one running east-west through the Site and another running along the north boundary of the Site. The presence of subsurface utilities and structures at the Site could act as preferential pathways promoting the migration of COCs as the water table is inferred to intercept buried utilities and subsurface structures at the Phase Two Property.

5.3 Groundwater: Hydraulic Gradients

The horizontal hydraulic conductivity was assumed based the material observed to be the water bearing unit (the native sand and sandy fill) and known hydraulic conductivities of similar materials (Freeze and Cherry, 1979) and assumed to be 10^{-5} meters per second (m/s). The average horizontal hydraulic gradient for shallow groundwater conditions was calculated to using the inferred groundwater contours are presented on Figure 8, and are based on water level measurements completed between May 2, 2017 and May 4, 2017 and is 0.09 to 0.12 m/m to the west - southwest.

Vertical hydraulic gradients were not calculated as no COCs were identified in groundwater exceeding the site condition standards and as such, no nested monitoring wells were installed at the Site.

5.4 Coarse Soil Texture

Grain size analysis was not completed as part of this Phase Two ESA; however, given the coarse-grained fill material present at the Site and that the MOE standards for coarse-grained soil are the most stringent standards, the Site soil is considered to be coarse-textured.

5.5 Soil: Field Screening

Headspace vapour measurements were conducted on a soil samples from each borehole. Organic vapour measurements ranged from 1.5 ppm to 327 ppm.

The results of headspace vapour measurements are presented on the Record of Borehole/Test pit sheets in Appendix A.

5.6 Soil: Quality

Table 2 provides a summary of the soil samples submitted for analysis and the associated test parameters. The analytical results of soil samples are presented in Tables 5A to 5C. Laboratory Certificates of Analysis for the soil samples are included in Appendix B.

Golder completed soil sampling at the Site during borehole and test pit program. The soil samples were submitted for analysis of the following parameters; metals and other related parameters (mercury, chromium VI and hot water extractable boron), BTEX, PAHs and PHCs.

A summary of the number of soil samples analysed and the number of soil samples exceeding the MOE Table 3 Standards is provided below:

Parameter	Number of soil samples analyzed	Number of soil samples exceeding the Table 3 Standards
PAHs	52 +4 Dups	10
Metals (Inc. Hg and Cr VI)	48 + 4 Dups	7
PHC F1-F4/BTEX	31 + 4 Dups	0

All of the site condition standard exceedances were in the fill. Samples BH17-02 SA5 and TP19-03 SA3 contained PAH exceedances in the area of the former remediation. At this location, the impacts at 17-02 and TP19-03 were delineated vertically by two deeper soil samples collected from borehole 17-02 (fill sample BH17-02 SA22 collected at a depth of 14.5 to 15.1 mbgs and native sample BH17-02 SA26 collected at a depth of 18.3 to 18.9 mbgs as well as from test pit 17-13 at the same location as 17-02 which did not have any exceedances of the applicable site condition standards for the parameters analyzed. As such, the PAH impacts in soil in the area of the former remediation is inferred to be limited to the upper fill and are not anticipated to extend below 4.0 mbgs. Test Pits and boreholes 17-12, TP19-04, TP19-02 and TP19-01 were all below the site condition standards and define the lateral extent of PAH impacts in the fill, as shown on Figure 6.

PAH and/or metals exceedances were present in a layer of waste containing fill in the southeast part of the Site, specifically at TP19-05 SA1, TP19-06 SA2, TP17-1005, TP17-1006, TP17-1007, TP-1009, TP1013 and BH17-101 SA2. The impacts are found in samples taken from this layer at depth of between 1.5 and 3.2 metres. Samples collected at the same depth where no to little visible waste was observed satisfied the site condition standards. The fill impacts were delineated vertically by visual characterization and using deeper samples form

boreholes 17-101 (3.1 mbgs) and 17-01 (4.6 mbgs) and 17-102 (6.1 mbgs). The lateral extent was determined based on visual characterization and clean samples from TP19-07, TP19-08, TP19-09, TP17-1008, TP17-1010 and TP17-1011, taken at similar depth ranges. The inferred area of waste containing fill is shown on Figure 5 and Figure 6 and is based on both analytical results and visual characterization.

5.7 Groundwater: Quality

Monitoring well construction details are summarized in Table 1 and a list of groundwater samples submitted for laboratory analysis is provided in Table 3. The analytical results for groundwater samples are summarized in Tables 6A through 6C, along with the applicable MOE Table 3 Standards. Laboratory Certificates of Analysis for groundwater are provided in Appendix B.

Golder completed sampling of monitoring wells at the Site on May 2, 3 and 4, 2017 (17-01, 17-02, 17-03, 17-04, 17-07, 17-09, MW01-5 and MW01-6), June 27, 2017 (17-102) and November 9, 2022 (17-101, 17-01, 17-02, 17-03, 17-04, 17-07). Groundwater samples were submitted for analysis for the following parameters; metals and ORP, PAHs, BTEX, and PHCs.

A summary of the number of groundwater samples analysed and number of samples exceeding the MOE Table 3 Standards is provided below:

Parameter	Number of groundwater samples analyzed	Number of groundwater samples exceeding the 2011 Table 3 Standards
PAHs	16 + 2 Dups	0
Metals (Inc. Hg and Cr VI)	15 +2 Dups	0
PHC F1-F4/BTEX	13 + 2 Dups	0

All groundwater samples submitted for analysis met the applicable Site condition standards, for the parameters tested.

In addition to numerical standards, the MOE 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 condition standards 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. No evidence of free product or sheen in groundwater was observed.

5.8 Sediment: Quality

No sediment samples were collected as part of this investigation as sediment is not present on the property.

5.9 Quality Assurance and Quality Control Results

The quality assurance assessment of the field duplicate sample results was conducted according to the document entitled 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) (“Analytical Protocol”).

To determine the precision of the analytical methods and field sampling procedures, blind duplicate samples were collected during soil and groundwater sampling. Precision is determined by the relative percent difference ("RPD") between the duplicate and original samples and was calculated as follows:

$$RPD = \frac{|x_1 - x_2|}{x_m}$$

Where

x_1 initial sample results
x_2 duplicate sample results
x_m mean of x_1, x_2

RPDs are calculated only if the concentrations of a parameter are greater than the laboratory reported 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 samples only in cases where the measured concentrations of analytes in both samples were ten (10) times greater than the RDL.

The following RPD limits were considered reasonable and are based on Analytical Protocol: RPDs in soil, 30% for metals, 30% for PHCs, 40% for PCBs and 40% for PAHs and in groundwater/surface water, 20% for metals a, 30% for PHCs, 30% for PCBs and 30% for PAHs.

As part of this Phase Two ESA, four soil and two groundwater duplicate soil samples were submitted for laboratory analysis. The calculated RPDs for metals in the original and duplicate soil and groundwater samples were less than 30% and considered within acceptable limits. RPDs could not be calculated for PHCs where the original and duplicate soil sample, as these results were below the laboratory RDL or less that ten times greater than the RDL.

One trip blank sample was submitted for analysis of PHC F1 and BTEX. The trip blank and field blank samples were found to have no detectable concentrations of the parameters analyzed. The quality of the analytical results is further supported by AGAT's internal quality assurance program that includes laboratory blanks, spikes, surrogates and duplicate samples.

All certificates of analysis or analytical reports received pursuant to clause 47 (2) (b) of the regulation comply with subsection 47(3). A certificate of analysis or analytical report has been received for each sample submitted for analysis and is provided in Appendix B. The analytical laboratory did not qualify any of the analytical results.

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

5.10 Phase Two Conceptual Site Model

The Phase Two Conceptual Site Model (CSM) consists of a narrative description of the current condition of the Site and accompanying diagrams, cross-sections and Figures. The Phase Two conceptual site model is presented in the following sections and the Figures that comprise the Phase Two CSM include:

Figure 1 – Key Plan

Figure 2 – Site Plan – PCAs and APECs

Figure 3 – Investigation Locations

Figure 4 – PHC/BTEX Soil Exceedances

Figure 5 – Metals and ORP Soil Exceedances

Figure 6 – PAH Soil Exceedances

Figure 7 – Groundwater Exceedances

Figure 8 – Groundwater Elevations and Interpreted Groundwater Flow Direction

5.10.1 Current and Historical Site Use and Surrounding Land Use

From Golder's review of aerial photography and information provided by the Site Representative, the only use of the Phase One Property has been for sand and gravel extractions (i.e., sand and gravel pits) which occurred since prior to 1931 until sometime between 1981 and 1985. Aside from fill material being placed on the Site, the Site has been undeveloped, vacant land since this time and is currently owned by St. Mary's Land Corporation.

5.10.2 Potential Sources of contamination

5.10.2.1 Potentially Contaminating Activities

Based on the information obtained as part of the Phase One ESA, the following potentially contaminating activities ("PCAs") were identified.

Location	Potentially Contaminating Activity	Information Source	Rationale for Potential Contribution of the PCA to an APEC
Phase One Property and Phase One Study Area	**#30. Importation of Fill Material of Unknown Quality** – Fill material of unknown quality and origin has been used to backfill the sand and gravel pits formerly located on the Site and adjacent lands north, east, south and southwest of the Site. This fill material reportedly contains construction debris.	Previous Environmental Reports, Ecolog ERIS Report, Site Representative , aerial photographs and Site observations	Fill is present across the Site used to fill in the former pit. Historical information suggests some of the fill may contain building debris with soil exceedances (as confirmed in this Phase Two ESA). As such the presence of the fill material on the Site is considered to be a PCA that will result in ana APEC on the Site.
Phase One Study Area	**#28. Gasoline and Associated Products Storage in Fixed Tanks** – Current presence of retail fuel outlet with three associated fuel USTs located approximately 200 m south of the Site at 4000 Riverside Drive.	Site observations, TSSA, aerial photographs, Ecolog ERIS Report	Given the distance and amount of infrastructure between the Site and this facility and that this facility is located hydraulically cross-gradient with respect to the Site, it is not considered to be a PCA that will result in an APEC on the Site.

5.10.2.2 Areas of Potential Environmental Concern

The following APEC was identified, its location can be seen in Figure 2:

APEC #	Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or Sediment)
1	**APEC 1 -** Potential for subsurface impacts due to the presence of fill material on the Site.	Site-wide.	Fill material of unknown quality and origin is present Site-wide	On-Site	PHC F1 to F4, BTEX, PAHs and metals	Soil and Groundwater

5.10.3 Subsurface Structures and Utilities and Potential Migration of COCs

Underground utility drawings available for the Phase Two Property indicated two sewer lines, one running east-west through the Site and another running along the north boundary of the Site. The presence of subsurface utilities and structures at the Site could act as preferential pathways promoting the migration of COCs as the water table is inferred to intercept buried utilities and subsurface structures at the Phase Two Property; however, no COCs are present in groundwater exceeding the Site condition standards and the majority of the impacted fill is above the groundwater table at the Site.

5.10.4 Physical Setting

5.10.4.1 Stratigraphy

In general, the subsurface soil conditions consist of a layer of fill overlying native overburden. The fill consists of grey and brown silty clay, sandy silt, and/or silty sand with trace organics. Evidence of debris, including bricks, concrete and wood was noted in fill samples collected from boreholes 17-01 and 17-02. A more significant quantity of waste materials including glass, brick, ash, slag, ceramic, metal, rubber and wood was observed in the southeast portion of the Site in borehole 17-101, TP17-1001 through TP17-1009 and TP 17-1012. The waste fill was noted to be present at a depth of between 1.52 and 2.13 mbgs with an observed thickness of between 1.1 and 3.2 metres averaging at 0.9 metres.

The fill was penetrated at all boreholes. The fill extended to depths ranging between 1.6 and 19.25 mbgs. This fill layer is underlain by fine to medium brown native sand extending to the maximum depth of drilling in several locations. Bedrock was not encountered during drilling.

Given that the average thickness of overburden at the Site is greater than 2 m, the Site is not considered to be a shallow soil property as defined by O. Reg 153/04 (as amended).

5.10.4.2 Hydrogeological Characteristics

The regional groundwater flow direction is expected to be towards the Rideau River, located approximately 40 m southwest of the Site. Based on the interpreted groundwater elevation contours presented in Figure 8, the inferred direction of the local groundwater flow is to the west-southwest, towards the Rideau River.

Groundwater Levels and Flow Directions

Static groundwater levels were measured in the monitoring wells located across the Site during water sampling events. Figure 8 shows May 2017 groundwater elevations and the interpreted groundwater flow direction. Groundwater elevations at the Site ranged from 75.59 to 87.63 masl and we encountered at depths of 6.6 to 16.4 mbgs.

Based on the soil conditions encountered in the boreholes and the water level measurements, the native sand and lower sandy fill units were inferred to act as an aquifer.

Horizontal Hydraulic Gradients

The horizontal hydraulic conductivity was assumed based the material observed to be the water bearing unit (the native sand and sandy fill) and known hydraulic conductivities of similar materials (Freeze and Cherry, 1979) and assumed to be 10^{-5} meters per second (m/s). The average horizontal hydraulic gradient for shallow groundwater conditions was calculated to using the inferred groundwater contours are presented on Figure 8, and are based on water level measurements completed between May 2, 2017 and May 4, 2017 and is 0.09 to 0.12 m/m to the west – southwest.

Vertical Hydraulic Gradient

Vertical hydraulic gradients were not calculated as no COCs were identified in groundwater exceeding the site condition standards and as such, no nested monitoring wells were installed at the Site.

5.10.5 Shallow Soil Property or Water Body (as per section 43.1 of O.Reg. 153/04)

Bedrock was not encountered during the investigation, in which boreholes which extended up to 21.95 mbgs. As such, based on the depth to bedrock encountered at the Site, the Site is not considered a shallow soil property.

5.10.6 Potable Water Wells

No potable water wells are located on the Site or within 250 m of the Site, based on the results of the Phase One ESA. As such, the Site is not considered to be a potable water site.

5.10.7 Environmentally Sensitive Areas (as per section 41 of O.Reg. 153/04)

No areas of natural and scientific interest (ANSI) are known to be located on the Site, however a comprehensive assessment for sensitive species has not been completed. Additionally, the average pH of surface soil is 5≤pH≤9 and the pH of sub-surface soil meets the requirement that 5≤pH≤11. As such, the Site is not considered to be environmentally sensitive.

5.10.8 Applicable Site Condition Standard

The analytical results of the samples collected for this Phase Two ESA were compared to the Table 3 Full Depth The analytical results of the samples collected for this Phase Two ESA were compared to the Table 3 generic site condition standards (residential, parkland and institutional property use, coarse soil texture) presented in the MOECC "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*", dated April 15, 2011. The applicable site condition standards were selected based on the following rationale:

- The Site and all other properties located, in whole or in part, within 250 metres of the Site are supplied by the City of Ottawa municipal drinking water system. No wells were identified that are used or intended for use as a source of water.

- The Site is not located in an area designated in a municipal official plan as a well-head protection area or other designation identified by the municipality for the protection of ground water.
- Grain size analysis was not completed as part of the Phase Two ESA and therefore “coarse textured” has been assumed as a conservative approach and due to coarse nature of the fill.
- The closest water body is the Rideau River, located 40 m southwest of the Phase Two Property.
- There are no features on the Phase Two Property that would meet the conditions of an environmentally sensitive site, as described in Section 41.
- The average pH of surface soil is 5≤pH≤9 and the pH of sub-surface soil meets the requirement that 5≤pH≤11.
- The intended land use for the Phase Two Property is residential and parkland property use.
- The overburden thickness is greater than 2 metres over more than one-third of the Phase Two Property.
- The average depth to the water table is greater than 2 metres.

5.10.9 Findings of the Phase Two ESA with Respect to APECs

To address the APEC identified at the Site, soil and groundwater sampling and analysis of potential COCs was completed as part of this Phase Two ESA. MOE Table 3 Standards (April 15, 2011) were used for comparison of the soil and groundwater results. A summary of the findings of the Phase Two ESA with respect to the APECs identified by the Phase One ESA is provided in the table below:

APEC #	Area of Potential Environmental Concern	Potentially Contaminating Activity	Contaminants of Potential Concern	Soil and/or Groundwater Exceedances of 2011 MOE Table 3 Standards
1	Impacts due to the presence of fill material.	**PCA 30:** Importation of Fill material of unknown quality	Soil - PHC F1-F4, BTEX, metals and PAHs Groundwater – PHCs F1-F4, BTEX, PAHs and metals	Soil – 17-101, TP17-1005, TP17-1006, TP17-1007, TP1009, TP17-1013, 17-02, 19-03, 19-05, 19-06 Groundwater – None

As summarized in the above table, the results of this Phase Two ESA indicate that no groundwater impacts associated with the one APEC were identified in any of the groundwater samples collected from the monitoring wells; however, two areas of soil exceedances was identified, the first being PAH impacts above the MECP Table 3 Standards at borehole 17-02 and 19-03 located on the western portion of the Site and the second being PAH and metals in impacts in fill above MECP Table 3 Standards at the boreholes and test pits 17-101, TP17-1005, TP17-1006, TP17-1007, TP1009, TP17-1013, 19-05, 19-06 located in the southwest part of the Site.

The PAH impacts at the first area in the west of the Site were present at a depth of 2.43 to 3.05 mbgs. Given that no exceedances of the applicable site condition standard were identified in the two deeper soil samples collected from below the impacts at 17-02 and no impacts were identified in the test pit 17-13, excavated at the location of 17-02, at a depth of 4.0-4.7 metres, the vertical extent of PAHs impacts in fill in the vicinity of borehole 17-02 is inferred to extend from ground surface to approximately 4 mbgs (depth of next clean sample test pit 17-13). The lateral extent of PAH impacts at this location is defined by 17-12, TP19-04, TP19-02 and TP19-01 which were all satisfied the site condition standards for PAHs, as shown on Figure 6.

The PAH and/or metals exceedances in the second area were present in a layer of waste containing fill in the southeast part of the Site, specifically at TP19-05 SA1, TP19-06 SA2, TP17-1005, TP17-1006, TP17-1007, TP-1009, TP1013 and BH17-101 SA2. The impacts are found in samples taken from this layer at depth of between 1.5 and 3.2 metres. Samples collected at the same depth where no to little visible waste was observed satisfied the site condition standards. The fill impacts were delineated vertically by visual characterization and using deeper samples form boreholes 17-101 (3.1 mbgs) and 17-01 (4.6 mbgs) and 17-102 (6.1 mbgs). The lateral extent was determined based on visual characterization and clean samples from TP19-07, TP19-08, TP19-09, TP17-1008, TP17-1010 and TP17-1011, taken at similar depth ranges. The inferred area of waste containing fill is shown on Figure 5 and Figure 6 and is based on both analytical results and visual characterization.

6.0 CONCLUSIONS

The Phase Two ESA investigated the APECs identified in the 2022 Phase One ESA. The reported concentrations of the contaminants of potential concern in soil as of the certification date of November 9, 2022 were identified above the applicable site condition standards (MECP Table 3 residential, parkland and institutional land use) in two areas of the Phase Two Property. Groundwater satisfied the site condition standards. Therefore, remediation and/or risk assessment will be required to obtain a Record of Site Condition.

7.0 REFERENCES

Golder, 2017 Draft Phase One ESA Report No. 1670692-1000 entitled, “Phase One Environmental Site Assessment, Proposed Development at Riverside Drive and Hunt Club Road, Ottawa, Ontario”, dated February 2017.

MOE. 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).

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

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

8.0 LIMITATIONS

This report was prepared for the exclusive use of St. Mary's Land Corporation. The report, which specifically includes all tables, figures and appendices, is based on data and information, collected during conducting the 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 Associates 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 Associates Ltd. accepts no responsibility for damages, if any, suffered by any third party (other than as noted above) 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 statutes are subject to change.

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

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

Signature Page

Golder Associates Ltd.

Shivam Bhandari

Shivam Bhandari, EIT
Environmental Consultant

Keith Holmes, MSc, PGeo
Principal Geoscientist

SB/KPH/sg

https://golderassociates.sharepoint.com/sites/150381/project files/6 deliverables/environmental site assessment/phase two esa/21482114-r-st marys riverside hunt club phase two esa_16dec2022.docx

Tables

Monitoring Well ID	Installation Date	Ground Surface Elevation (masl)	Top of Pipe Elevation (masl)	Borehole Depth (mbgs)	Borehole Depth (masl)	Screened Interval (mbgs)	Screened Interval (masl)	Screened Media
17-01	03-May-17	94.82	95.20	21.5	73.32	19.2 - 20.7	73.64 - 72.87	Sandy silt with gravel
17-02	28-Apr-17	91.84	92.68	18.9	72.94	14.10 - 17.14	73.70 - 76.74	Sand and gravel
17-03	02-May-17	94.26	95.13	8.23	86.03	4.33 - 7.33	89.03 - 86.03	Sand
17-04	28-Apr-17	88.38	89.17	12.8	75.58	11.15 - 12.65	77.23 - 75.73	Sand, trace gravel
17-07	28-Apr-17	93.80	94.64	8.23	85.57	6.10 - 7.62	87.70 - 86.18	Silty clay and clayey silt (fill) and sand
17-09	03-May-17	88.49	89.45	5.18	83.31	2.13 - 5.18	86.36 - 83.31	Sand and silty clay
MW01-5	09-Aug-01	93.72	93.52	17.37	76.35	13.9 - 16.95	79.82 - 76.77	Sandy silt (fill) and sand with gravel
MW01-6	09-Aug-01	93.82	93.81	17.56	76.26	14.5 - 17.56	79.32 - 76.17	Sand and gravel

Table 2 - Soil Sample Submissions

Borehole ID	Soil Samples Submitted for Analysis	Sample Depths (meters below top)	Description	PID (PPM)	Sample Collection Date	Analytical Paramaters	MOECC Table 3 Exceedances [1]
17-101	17-101 SA2 (SA22 Dup)	1.53 - 2.13	FILL; silty clay with some gravel and bricks	6	23/06/2017	Metals, PHCs F1-F4, BTEX, PAHs	Metals, PAH
	17-101 SA22 (Dup of SA2)	1.53 - 2.13	FILL; silty clay with some gravel and bricks	6	23/06/2017	Metals, PHCs F1-F4, BTEX, PAHs	Metals,PAH
	17-101 SA4	3.05 - 3.66	FILL; silty clay trace to some sand	0	22/06/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
17-102	17-102 SA5	6.1 - 6.71	FILL; silty clay with some sand trace to some gravel	8	22/06/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
17-103	17-103 SA3	3.81 - 4.42	FILL; silty sand and gravel	21	22/06/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
17-104	17-104 SA5	6.1 - 6.71	FILL; silty sand trace gravel, organic matter and wood pieces	4	26/06/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
BH17-01	BH#17-01 SA#7	4.57 - 5.18	FILL; grey-brown silty clay and clayey silt with some gravel and trace brick	5.8	02/05/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
	BH#17-01 SA#17	12.1 - 12.8	FILL; silty clay with some gravel and asphaltic concrete	5.7	02/05/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
	BH#17-01 SA#24	18.3 - 18.7	FILL; grey-brown sandy silt with gravel and some silty clay layers	14.9	02/05/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
BH17-02	BH#17-02 SA#5	2.43 - 3.05	FILL; brown silty sand and sandy silt with some gravel and clay lumps and trace brick.	7.5	26/04/2017	Metals, PHCs F1-F4, BTEX, PAHs	PAHs
	BH#17-02 SA#22	14.5 - 15.1	FILL; brown fine-medium sand with trace gravel and mortar	9.5	27/04/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
	BH#17-02 SA#26	18.3 - 18.9	NATIVE; brown sand and gravel	133.0	27/04/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
BH17-03	BH#17-03 SA#2	0.76 - 1.37	FILL; grey-brown silty clay with some sand	155.7	02/05/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
	BH#17-03 SA#10	6.86 - 7.47	NATIVE; brown fine-medium sand	85.5	02/05/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
BH17-04	BH#17-04 SA#2	0.61 - 1.22	FILL; grey and grey-brown silty clay and clayey silt with fine sand mix and trace organics	5.0	26/04/2017	pH, EC, SAR	None
	BH#17-04 SA#4	1.83 - 2.44	FILL; silty clay and sandy silt	6.7	26/04/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
	BH#17-04 SA#7	3.66 - 4.27	FILL; grey-brown and grey silty clay, clayey silt, and silty sand with trace wood and some black staining	5.8	26/04/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
BH17-05	17-05 SA2	3.05 - 3.66	FILL; grey silty clay with fine sand layers and trace gravel	5.4	03/05/2017	Metals, PHCs F1-F4, BTEX, PAHs, pH, EC, SAR	None
BH17-07	BH#17-07 SA#2	0.76 - 1.37	FILL; grey and grey-brown sandy silt with some gravel and silty clay layers	7.0	28/04/2017	pH, SAR, EC	None
	BH#17-07 SA#8	5.33 - 5.94	FILL; grey silty clay and clayey silt with trace gravel	8.0	28/04/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
	17-07 SA11	7.62 - 8.23	NATIVE; brown fine sand	29.4	28/04/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
	17-07 SA12 (DUP SA11)				28/04/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
	BH#17-07 A.S	3.05 - 4.57	FILL; grey clayey silt with trace gravel and slight hydrocarbon ordour	63.8	28/04/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
BH17-09	17-09 SA1	0.15 - 0.61	FILL; brown silty sand with clayey silt layers and trace organics	3.3	03/05/2017	Metals, PHCs F1-F4, BTEX, PAHs, pH, EC, SAR	None
TP17-10	TP17-10 SA3	4 - 4.5	FILL	NA	17/05/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
TP17-11	TP17-111 SA2 (Dup SA2)	4 - 4.5	FILL	NA	17/05/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
	TP17-11 SA2	3.0	FILL	NA	17/05/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
TP17-12	TP17-12 SA3	4.5	FILL	NA	17/05/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
TP17-13	TP17-13 SA3	4.0 - 4.7	FILL	NA	17/05/2017	Metals, PHCs F1-F4, BTEX, PAHs	None
TP-1005	TP-1005	1.95 - 2.55	FILL; sitly clay, some sand, trace gravel	NA	7/09/2017	Metals, PAHs	Metals, PAHs
TP-1005A	TP-1005A SA1	0 - 1.45	FILL; gravelly sitly sand with brick, ash, slag, cermaic, glass and coal	NA	7/09/2017	Metals, PAHs	None
TP-1006	TP-1006	1.3 - 2.3	FILL; gravelly sitly sand with brick, ash, slag, cermaic, wood, glass and coal	NA	7/09/2017	Metals, PAHs	Metals, PAHs
TP-1007	TP-1007	1.75 - 2.3	FILL; gravelly sitly sand with brick, ash, slag, wood and coal	NA	7/09/2017	Metals, PAHs	Metals, PAHs
TP-1008	TP-1008	1.8 - 2.2	FILL; gravelly sitly sand with brick, ash, wood, mica and metal	NA	7/09/2017	Metals, PAHs	None

Borehole ID	Soil Samples Submitted for Analysis	Sample Depths (meters below top)	Description	PID (PPM)	Sample Collection Date	Analytical Paramaters	MOECC Table 3 Exceedances (1)
TP-1009	TP-1009	2.3 - 3.2	FILL; gravelly sitly sand with brick, ash, slag, cermaic, glass and rubber	NA	7/09/2017	Metals, PAHs	Metals, PAHs
TP-1010	TP-1010 SA2	1.3 - 2.7	FILL; sitly clay trace gravel and brick and wood	NA	7/09/2017	Metals, PAHs	None
TP-1011	TP-1011 SA2	0.9 - 2.1	FILL; sitly clay trace gravel and brick and aspalt	NA	7/09/2017	Metals, PAHs	None
TP-1012	TP-1012 SA2	1.4 - 2.8	FILL; silty sand brick and ash	NA	7/09/2017	Metals, PAHs	None
TP-1013	TP-1013 SA2	1.6 - 2.9	FILL; sitly clay with wood and trace gravel	NA	7/09/2017	Metals, PAHs	PAHs
TP-1014	TP-1014 SA2	1.5 - 2.13	FILL; sandy sitly clay, trace gravel	NA	7/09/2017	Metals, PAHs	None
TP-1016	TP-1016 SA2	1.1 - 2.12	FILL; sandy silty clay, trace gravel, glass, ceramic and wood	NA	7/09/2017	Metals, PAHs	None
TP19-01	TP19-01 SA3	2.8 - 3.0	FILL; Silty clay, wood, plastic, brick, silty sand	NA	07/31/2019	Metals, PAHs	None
TP19-02	TP19-02 SA3	2.9 - 3.5	FILL; Sand, gravel, wood, shale, silty sand	NA	07/31/2019	Metals, PAHs	None
TP19-03	TP19-03 SA3	2.5 - 2.9	FILL; Silty clay, wood, lumber, bricks, metal pipe, metal conduit, cobbles, silty sand, brick, concrete and some gravel	NA	07/31/2019	Metals, PAHs	PAHs
TP19-04	TP19-04 SA3	3.2 - 3.5	FILL; Silty sand with some cobbles and shae, brick, concrete, wood	NA	07/31/2019	Metals, PAHs	None
TP19-05	TP19-05 SA1	1.0 - 1.5	FILL; Silty sand with some gravel and cobbles, plastic, cobbles, concrete w/ rebar, coal, silty clay with traces of gravel	NA	07/31/2019	Metals, PAHs	Metals, PAHs
TP19-06	TP19-06 SA2	2.5 - 2.7	FILL; Silty clay containing asphalt, wood, plastic, glass, PVC pipe, wood, charcoal, brick	NA	07/31/2019	Metals, PAHs	Metals, PAHs
TP19-07	TP19-07 SA1	1.3 - 1.5	FILL; Silty clay with some cobbles, containing rebar, concrete	NA	07/31/2019	Metals, PAHs	None
TP19-08	TP19-08 SA1	2.0 - 2.4	FILL; Silty clay containing concrete, rags and glass	NA	07/31/2019	Metals, PAHs	None
TP19-09	TP19-09 SA1	1.8 - 2.5	FILL; Silty clay and cobbles containing concrete, Silty sand	NA	07/31/2019	Metals, PAHs	None

Notes:

PHCs F1-F4 = Petroleum hydrocarbon fractions F1 to F4
BTEX = Benzene, toluene, ethylbenzene and xylenes
PAHs = Polycyclic Aromatic Hydrocarbons
EC = Electrical Conductivity
SAR = Sodium Adsorption Ratio
None = Not detected above method detection limit and/ or does not exceed MOE Table 3 Standards
N/A = Not applicable

(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 (MOECC Table 3 Standards).

Monitoring Well ID	Groundwater Samples Submitted for Analysis	Date Sampled	Analytical Parameters	MOECC Table 3 Exceedances (1)
17-102	17-102	27-Jun-17	PHCs F1-F4, BTEX	None
	17-102	10-Nov-22	PHCs F1-F4, PAHs, BTEX, and Metals (inc. Hg & Cr VI)	None
17-01	MW17-01	03-May-17	PHCs F1-F4, PAHs, BTEX, and Metals (inc. Hg & Cr VI)	None
	MW17-01	03-Apr-17	Metals	None
	17-01 and Dup-1	09-Nov-22	PHCs F1-F4, PAHs, BTEX, and Metals (inc. Hg & Cr VI)	None
17-02	MW17-02	02-May-17	PHCs F1-F4, PAHs, BTEX, and Metals (inc. Hg & Cr VI)	None
	17-02	10-Nov-22	PHCs F1-F4, PAHs, BTEX, and Metals (inc. Hg & Cr VI)	None
17-03	MW17-04	03-May-17	PHCs F1-F4, PAHs, BTEX, and Metals (inc. Hg & Cr VI)	None
17-04	MW17-04	02-May-17	PHCs F1-F4, PAHs, BTEX, and Metals (inc. Hg & Cr VI)	None
	MW17-01	03-Apr-17	metals, PAH	None
	17-041	10-Nov-22	PHCs F1-F4, PAHs, BTEX, and Metals (inc. Hg & Cr VI)	None
17-07	MW17-07	02-May-17	PHCs F1-F4, PAHs, BTEX, and Metals (inc. Hg & Cr VI)	None
	17-07	10-Nov-22	PHCs F1-F4, PAHs, BTEX, and Metals (inc. Hg & Cr VI)	None
17-09	MW17-09 and DUP-01	04-May-17	PHCs F1-F4, PAHs, BTEX, and Metals (inc. Hg & Cr VI)	None
MW01-5	MW01-2	04-May-17	PHCs F1-F4, PAHs, BTEX, and Metals (inc. Hg & Cr VI)	None
MW01-6	MW01-2	04-May-17	PHCs F1-F4, PAHs, BTEX, and Metals (inc. Hg & Cr VI)	None

Notes:

PHCs F1-F4 = Petroleum hydrocarbon fractions F1 to F5
BTEX = Benzene, toluene, ethylbenzene and xylenese
PAHs = Polycyclic Aromatic Hydrocarbons
Hg = Mercury
Cr VI = Chromium VI
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 Property Use, coarse-textured soil, April 15, 2011 (MOECC Table 3 Standards).

Monitoring Well	Date of Monitoring Well Installation	Ground Surface Elevation (mASL)	Depth to Groundwater (mbgs)	Groundwater Elevation (mASL)	Groundwater Level Measurement and Elevation Date	Product Measurement (mm)
17-01	05-Apr-17	94.82	16.40	78.41	04-May-17	0.00
17-02	28-Apr-17	91.84	16.25	75.59	02-May-17	0.00
17-03	02-May-17	94.26	6.63	87.63	03-May-17	0.00
17-04	28-Apr-17	88.38	11.37	77.02	02-May-17	0.00
17-07	28-Apr-17	93.80	5.60	88.20	02-May-17	0.00
17-09	03-May-17	88.49	3.60	84.93	04-May-17	0.00
MW01-5	09-Aug-01	93.72	15.04	77.74	03-May-17	0.00
MW01-6	09-Aug-01	92.97	14.69	77.87	04-May-17	0.00

Notes:

mbgs- metres below ground surface

mASL- metres above sea level

Table 5a: Soil Analytical Results: Petroleum Hydrocarbons and BTEX

Parameter	Unit	MOE Table 3 Standards (R/P/I) [1]	17-101			17-102	17-103	17-104	17-01		
			23-Jun-17	23-Jun-17	23-Jun-17	22-Jun-17	22-Jun-17	26-Jun-17	2-May-2017	2-May-2017	26-Apr-2017
			17-101 SA2	17-101 SA22 (Duplicate of 17-101 SA2)	17-101 SA4	17-102 SA5	17-103 SA3	17-104 SA5[3]	BH#17-01 SA#7	BH#17-01 SA#17	BH#17-01 SA#24
Sample Depth	m		1.52 - 2.13	1.52 - 2.13	3.05 - 3.66	6.10 - 6.71	3.81 - 4.42	6.10 - 6.71	4.57 - 5.18	12.1 -12.8	18.3 - 18.7
Benzene	µg/g	0.21	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Ethylbenzene	µg/g	2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Xylenes	µg/g	3.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons - F1 (C6-C10)	µg/g	55	<5	<5	<5	<5	<5	<5	<5	<5	<5
Petroleum Hydrocarbons - F2 (C10-C16)	µg/g	98	<10	<10	<10	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F3 (C16-C34)	µg/g	300	110	90	<50	<50	<50	<50	<50	<50	65
Petroleum Hydrocarbons - F4 (C34-C50)	µg/g	2800	<50	<50	<50	<50	<50	<50	<50	<50	<50

Notes:

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.

(1) Ontario Reg 153/04 (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use for Coarse Grained Soils

(2) Grey and bold background indicated parameter concentration greater than the MOE Table 3 Standards

(3) Sample ID on Laboratory Certificates of Analysis is 17-105 SA5

Table 5a: Soil Analytical Results: Petroleum Hydrocarbons and BTEX

Parameter	Unit	MOE Table 3 Standards (R/P/I) [1]	17-02			17-03		17-04		17-05
			26-Apr-2017	26-Apr-2017	26-Apr-2017	2-May-2017	2-May-2017	26-Apr-2017	26-Apr-2017	3-May-2017
			BH#17-02 SA#5	BH#17-02 SA#22	BH#17-02 SA#26	BH#17-03 SA#2	BH#17-03 SA#10	BH#17-04 SA#4	BH#17-04 SA#7	17-05 SA2
Sample Depth	m		2.43 - 3.05	14.5 - 15.1	18.3 - 18.9	0.76 - 1.37	6.86 - 7.47	1.83 - 2.44	3.66 - 4.27	3.05 - 3.66
Benzene	µg/g	0.21	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Ethylbenzene	µg/g	2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Xylenes	µg/g	3.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons - F1 (C6-C10)	µg/g	55	<5	<5	<5	<5	<5	<5	<5	<5
Petroleum Hydrocarbons - F2 (C10-C16)	µg/g	98	<10	<10	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F3 (C16-C34)	µg/g	300	<50	<50	<50	<50	<50	<50	<50	<50
Petroleum Hydrocarbons - F4 (C34-C50)	µg/g	2800	<50	<50	<50	<50	<50	<50	<50	<50

Notes:

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-- Chemical not analyzed or criteria not defined.

(1) Ontario Reg 153/04 (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use for Coarse Grained Soils

(2) Grey and bold background indicated parameter concentration greater than the MOE Table 3 Standards

(3) Sample ID on Laboratory Certificates of Analysis is 17-105 SA5

Table 5a: Soil Analytical Results: Petroleum Hydrocarbons and BTEX

Parameter	Unit	MOE Table 3 Standards (R/P/I) [1]	17-07				17-09	TP17-10	TP17-11		TP17-12	TP17-13
			28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	3-May-2017	05/17/2017	05/17/2017	05/17/2017	05/17/2017	05/17/2017
			BH#17-07 SA#8	17-07 SA11	17-07 SA12 (Duplicate of 17-01 SA11)	BH#17-07 A.S	17-09 SA1	17-10 SA3	17-11 SA2	17-111 SA2 (duplicate of 17-11 SA2)	17-12 SA3	17-13 SA3
Sample Depth	m		5.33 - 5.94	7.62 - 8.23	7.62 - 8.23	3.05 - 4.57	0.15 - 0.61	4.0 - 4.5	3.0	3.0	4.5	4.0 - 4.7
Benzene	µg/g	0.21	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Ethylbenzene	µg/g	2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Xylenes	µg/g	3.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	0.06	<0.05	<0.05
Petroleum Hydrocarbons - F1 (C6-C10)	µg/g	55	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Petroleum Hydrocarbons - F2 (C10-C16)	µg/g	98	<10	<10	<10	67	<10	<10	<10	<10	<10	<10
Petroleum Hydrocarbons - F3 (C16-C34)	µg/g	300	<50	<50	<50	130	<50	<50	<50	<50	<50	<50
Petroleum Hydrocarbons - F4 (C34-C50)	µg/g	2800	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50

Notes:

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-- Chemical not analyzed or criteria not defined.

(1) Ontario Reg 153/04 (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use for Coarse Grained Soils

(2) Grey and bold background indicated parameter concentration greater than the MOE Table 3 Standards

(3) Sample ID on Laboratory Certificates of Analysis is 17-105 SA5

Table 5a: Soil Analytical Results: Petroleum Hydrocarbons and BTEX

Parameter	Unit	MOE Table 3 Standards (R/P/I) [1]	17-04		17-05	17-07				17-09
			26-Apr-2017	26-Apr-2017	3-May-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	3-May-2017
			BH#17-04 SA#4	BH#17-04 SA#7	17-05 SA2	BH#17-07 SA#8	17-07 SA11	17-07 SA12 (Duplicate of 17-07 SA11)	BH#17-07 A.S	17-09 SA1
Sample Depth	m		1.83 - 2.44	3.66 - 4.27	3.05 - 3.66	5.33 - 5.94	7.62 - 8.23	7.62 - 8.23	3.05 - 4.57	0.15 - 0.61
Benzene	µg/g	0.21	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Ethylbenzene	µg/g	2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Xylenes	µg/g	3.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons - F1 (C6-C10)	µg/g	55	<5	<5	<5	<5	<5	<5	<5	<5
Petroleum Hydrocarbons - F2 (C10-C16)	µg/g	98	<10	<10	<10	<10	<10	<10	67	<10
Petroleum Hydrocarbons - F3 (C16-C34)	µg/g	300	<50	<50	<50	<50	<50	<50	130	<50
Petroleum Hydrocarbons - F4 (C34-C50)	µg/g	2800	<50	<50	<50	<50	<50	<50	<50	<50

Notes:

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.

(1) Ontario Reg 153/04 (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use for Coarse Grained Soils

(2) Grey and bold background indicated parameter concentration greater than the MOE Table 3 Standards

(3) Sample ID on Laboratory Certificates of Analysis is 17-105 SA5

Parameter	Unit	MOE Table 3 Standards (R/P/I) [1]	17-101			17-102	17-103	17-104	TP17-1005	TP17-1005A	TP17-1006	TP17-1007
			23-Jun-17	23-Jun-17	23-Jun-17	22-Jun-17	22-Jun-17	26-Jun-17	20-Jul-17	07-Sep-17	20-Jul-17	20-Jul-17
			17-101 SA2	17-101 SA22 (Duplicate of 17-101 SA2)	17-101 SA4	17-102 SA5	17-103 SA3	17-104 SA5[3]	TP17-1005	TP17-1005A-SA1	TP17-1006	TP17-1007
Sample Depth	m		1.52 - 2.13	1.52 - 2.13	3.05 - 3.66	6.10 - 6.71	3.81 - 4.42	6.10 - 6.71	1.95 - 2.55	0 - 1.95	1.30 - 2.30	1.75 - 2.30
Antimony	µg/g	7.5	5.3	5.1	<0.8	<0.8	<0.8	<0.8	3.5	<0.8	3.5	3.2
Arsenic	ug/g	18	14	13	3	5	7	3	8	2	11	10
Barium	ug/g	390	390	353	237	120	124	137	315	104	296	293
Beryllium	ug/g	4	0.6	0.7	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	0.6	0.7
Boron	ug/g	120	8	8	<5	6	8	<5	11	<5	13	12
Boron (Hot Water Soluble)	ug/g	1.5	0.34	0.36	0.22	0.4	0.21	0.29	0.62	0.13	1.12	0.69
Cadmium	ug/g	1.2	0.6	0.6	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	0.7	<0.5
Chromium	ug/g	160	33	38	42	19	17	29	24	26	25	26
Cobalt	ug/g	22	9	9.5	11.3	7.4	9.3	7.2	7.4	6.3	8.8	9.8
Copper	ug/g	140	**176**	**147**	35	22	27	20	89	14	133	126
Lead	ug/g	120	**591**	**508**	11	17	15	11	**306**	6	**434**	**394**
Molybdenum	ug/g	6.9	4.2	3.9	0.5	1.7	3.8	0.7	2.5	<0.5	3.9	3.1
Nickel	ug/g	100	33	36	35	25	33	20	26	14	31	30
Selenium	ug/g	2.4	2	1.6	<0.4	0.5	0.7	<0.4	0.9	<0.4	1.5	1.4
Silver	ug/g	20	1	0.7	<0.2	<0.2	<0.2	<0.2	0.6	<0.2	0.9	0.9
Thallium	ug/g	1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	ug/g	23	0.7	0.7	0.7	1	1.1	0.6	0.7	0.5	1	0.9
Vanadium	ug/g	86	30	34	51	24	23	34	29	31	32	34
Zinc	ug/g	340	**518**	**425**	87	51	39	59	275	39	335	**375**
Chromium VI	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Mercury	ug/g	0.27	**1.15**	**0.85**	<0.10	<0.10	<0.10	<0.10	**0.48**	<0.10	**0.71**	**1.28**
Inorganics												
pH	ug/g	--	--	--	--	--	--	--	--	--	--	--
Electrical Conductivity	ug/g	0.7	--	--	--	--	--	--	--	--	--	--
Sodium Adsorption Ratio	ug/g	5	--	--	--	--	--	--	--	--	--	--

Notes:
Tables should be read in conjunction with the accompanying document.
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-- Chemical not analyzed or criteria not defined.
(1) Ontario Reg 153/04 (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition,Residential/Parkland/Institutional Property Use for Coarse
(2) Grey and bold background indicated paramater concentration greater than the MOE Table 3 Standards
(3) Sample ID on Laboratory Certificates of Analysis is 17-105 SA5

Parameter	Unit	MOE Table 3 Standards (R/P/I) [1]	TP17-1008	TP17-1009	TP17-1010	TP17-1011	TP17-1012	TP17-1013-SA2	TP17-1014	TP17-1016
			20-Jul-17	20-Jul-17	07-Sep-17	07-Sep-17	07-Sep-17	07-Sep-17	07-Sep-17	07-Sep-17
			TP17-1008	TP17-1009	TP17-1010-SA2	TP17-1011-SA2	TP17-1012-SA2	TP17-1013-SA2	TP17-1014-SA2	TP17-1016-SA2
Sample Depth	m		1.80 - 2.20	2.30 - 3.20	1.30 - 2.70	0.90 - 2.10	1.40 - 2.80	1.60 - 2.90	1.50 - 2.13	1.10 - 2.12
Antimony	µg/g	7.5	<0.8	2.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	ug/g	18	4	8	4	2	3	5	1	2
Barium	ug/g	390	133	219	161	229	85	152	58	173
Beryllium	ug/g	4	0.6	0.6	<0.5	0.5	<0.5	<0.5	<0.5	<0.5
Boron	ug/g	120	9	9	5	<5	<5	7	<5	<5
Boron (Hot Water Soluble)	ug/g	1.5	0.67	0.72	0.15	0.17	0.41	0.53	0.3	0.16
Cadmium	ug/g	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	ug/g	160	29	40	28	66	17	27	14	35
Cobalt	ug/g	22	9.1	12	9.6	12.3	6.3	9	4.4	8.8
Copper	ug/g	140	32	88	26	34	16	30	11	20
Lead	ug/g	120	81	**338**	30	8	21	66	4	7
Molybdenum	ug/g	6.9	1.8	2.1	1.6	<0.5	1.1	1.8	<0.5	<0.5
Nickel	ug/g	100	26	27	25	40	17	24	8	20
Selenium	ug/g	2.4	0.6	1.2	0.5	<0.4	<0.4	0.5	<0.4	<0.4
Silver	ug/g	20	<0.2	0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	ug/g	1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	ug/g	23	1.1	0.7	0.9	0.7	1	0.9	0.7	0.5
Vanadium	ug/g	86	40	31	34	53	23	32	21	41
Zinc	ug/g	340	103	272	69	83	41	122	25	56
Chromium VI	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Mercury	ug/g	0.27	0.24	**0.45**	<0.10	<0.10	<0.10	0.11	<0.10	<0.10
Inorganics										
pH	ug/g	--	--	--	--	--	--	--	--	--
Electrical Conductivity	ug/g	0.7	--	--	--	--	--	--	--	--
Sodium Adsorption Ratio	ug/g	5	--	--	--	--	--	--	--	--

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(1) Ontario Reg 153/04 (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use for Coarse
(2) Grey and bold background indicated parameter concentration greater than the MOE Table 3 Standards
(3) Sample ID on Laboratory Certificates of Analysis is 17-105 SA5

Parameter	Unit	MOE Table 3 Standards (R/P/I) [1]	17-01			17-02			17-03		17-04	
			2-May-2017	2-May-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	2-May-2017	2-May-2017	26-Apr-2017	26-Apr-2017
			BH#17-01 SA#7	BH#17-01 SA#17	BH#17-01 SA#24	BH#17-02 SA#5	BH#17-02 SA#22	BH#17-02 SA#26	BH#17-03 SA#2	BH#17-03 SA#10	BH#17-04 SA#4	BH#17-04 SA#7
Sample Depth	m		4.57 - 5.18	12.1 -12.8	18.3 - 18.7	2.43 - 3.05	14.5 - 15.1	18.3 - 18.9	0.76 - 1.37	6.86 - 7.47	1.83 - 2.44	3.66 - 4.27
Antimony	µg/g	7.5	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	ug/g	18	2	2	7	1	1	3	3	<1	2	2
Barium	ug/g	390	188	176	118	126	65	89	197	17	175	193
Beryllium	ug/g	4	0.6	0.6	0.5	<0.5	<0.5	<0.5	0.8	<0.5	0.6	0.7
Boron	ug/g	120	5	6	6	5	<5	11	7	7	6	6
Boron (Hot Water Soluble)	ug/g	1.5	0.31	0.32	0.55	0.26	<0.10	<0.10	0.13	<0.10	0.11	<0.10
Cadmium	ug/g	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	ug/g	160	49	75	31	44	17	23	52	6	78	93
Cobalt	ug/g	22	13.2	13.8	8.6	7.7	4.5	10.2	15.6	1.7	15.3	17
Copper	ug/g	140	22	32	37	19	11	20	29	5	30	37
Lead	ug/g	120	12	9	67	13	3	8	8	2	5	6
Molybdenum	ug/g	6.9	0.5	1.1	1.4	<0.5	0.9	2.1	<0.5	0.6	<0.5	<0.5
Nickel	ug/g	100	29	40	26	21	8	10	33	3	43	48
Selenium	ug/g	2.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver	ug/g	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	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	ug/g	23	0.6	1	1.2	0.6	<0.5	0.6	0.9	<0.5	1	1
Vanadium	ug/g	86	54	64	32	37	19	22	69	8	68	75
Zinc	ug/g	340	83	73	94	46	18	22	90	7	77	86
Chromium VI	ug/g	8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Mercury	ug/g	0.27	<0.10	<0.10	0.16	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Inorganics												
pH	ug/g	--	--	--	--	--	--	--	--	--	--	--
Electrical Conductivity	ug/g	0.7	--	--	--	--	--	--	--	--	--	--
Sodium Adsorption Ratio	ug/g	5	--	--	--	--	--	--	--	--	--	--

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(1) Ontario Reg 153/04 (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition,Residential/Parkland/Institutional Property Use for Coarse
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(3) Sample ID on Laboratory Certificates of Analysis is 17-105 SA5

Parameter	Unit	MOE Table 3 Standards (R/P/I) [1]	17-05	17-07				17-09	TP17-10	TP17-11		TP17-12
			3-May-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	3-May-2017	05/17/2017	05/17/2017	05/17/2017	05/17/2017
			17-05 SA2	BH#17-07 SA#8	17-07 SA11	17-07 SA12 (Duplicate of 17-01 SA11)	BH#17-07 A.S	17-09 SA1	17-10 SA3	17-11 SA2	17-111 SA2 (duplicate of 17-11 SA2)	17-12 SA3
Sample Depth	m		3.05 - 3.66	5.33 - 5.94	7.62 - 8.23	7.62 - 8.23	3.05 - 4.57	0.15 - 0.61	4.0 - 4.5	3.0	3.0	4.5
Antimony	µg/g	7.5	--	<0.8	--	--	<0.8	--	<0.8	<0.8	<0.8	<0.8
Arsenic	ug/g	18	--	3	--	--	3	--	4	3	3	2
Barium	ug/g	390	197	211	20	24	196	112	136	126	135	135
Beryllium	ug/g	4	0.6	0.6	<0.5	<0.5	0.6	<0.5	0.7	0.7	0.6	0.5
Boron	ug/g	120	5	7	<5	<5	6	<5	7	6	6	<5
Boron (Hot Water Soluble)	ug/g	1.5	--	0.19	--	--	0.28	--	0.23	0.22	0.20	0.40
Cadmium	ug/g	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	ug/g	160	68	79	5	6	69	35	35	26	27	38
Cobalt	ug/g	22	15.1	13.2	1.6	1.9	13.3	9	12.8	12.3	11.1	8.4
Copper	ug/g	140	35	31	4	5	31	19	29	22	26	18
Lead	ug/g	120	6	14	1	2	19	6	15	12	13	11
Molybdenum	ug/g	6.9	0.6	0.6	<0.5	<0.5	<0.5	0.5	1.3	0.8	0.9	0.6
Nickel	ug/g	100	38	39	3	3	36	21	34	27	25	22
Selenium	ug/g	2.4	--	<0.4	--	--	<0.4	--	<0.4	<0.4	<0.4	<0.4
Silver	ug/g	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	<0.4	0.6	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	ug/g	23	1.2	0.9	<0.5	<0.5	0.8	0.8	0.7	0.6	0.6	0.7
Vanadium	ug/g	86	65	65	10	12	60	39	39	36	35	43
Zinc	ug/g	340	84	78	7	8	76	50	75	56	53	57
Chromium VI	ug/g	8	--	<0.2	--	--	<0.2	--	<0.2	<0.2	<0.2	<0.2
Mercury	ug/g	0.27	--	<0.10	--	--	<0.10	--	<0.10	<0.10	<0.10	<0.10
Inorganics												
pH	ug/g	--	--	--	--	--	--	--	--	--	--	--
Electrical Conductivity	ug/g	0.7	--	--	--	--	--	--	--	--	--	--
Sodium Adsorption Ratio	ug/g	5	--	--	--	--	--	--	--	--	--	--

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(1) Ontario Reg 153/04 (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition,Residential/Parkland/Institutional Property Use for Coarse
(2) Grey and bold background indicated paramater concentration greater than the MOE Table 3 Standards
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Parameter	Unit	MOE Table 3 Standards (R/P/I) [1]	TP17-13	17-04		17-05	17-07				17-09	19-05
			05/17/2017	26-Apr-2017	26-Apr-2017	3-May-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	3-May-2017	31-07-2019
			17-13 SA3	BH#17-04 SA#4	BH#17-04 SA#7	17-05 SA2	BH#17-07 SA#8	17-07 SA11	17-07 SA12 (Duplicate of 17-01 SA11)	BH#17-07 A.S	17-09 SA1	19-05 SA1
Sample Depth	m		4.0 - 4.7	1.83 - 2.44	3.66 - 4.27	3.05 - 3.66	5.33 - 5.94	7.62 - 8.23	7.62 - 8.23	3.05 - 4.57	0.15 - 0.61	1.0 - 1.5
Antimony	µg/g	7.5	<0.8	<0.8	<0.8	--	<0.8	--	--	<0.8	--	4.7
Arsenic	ug/g	18	2	2	2	--	3	--	--	3	--	11
Barium	ug/g	390	175	175	193	197	211	20	24	196	112	302
Beryllium	ug/g	4	0.6	0.6	0.7	0.6	0.6	<0.5	<0.5	0.6	<0.5	0.5
Boron	ug/g	120	7	6	6	5	7	<5	<5	6	<5	9
Boron (Hot Water Soluble)	ug/g	1.5	0.67	0.11	<0.10	--	0.19	--	--	0.28	--	1.08
Cadmium	ug/g	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	ug/g	160	50	78	93	68	79	5	6	69	35	29
Cobalt	ug/g	22	12.1	15.3	17	15.1	13.2	1.6	1.9	13.3	9	8
Copper	ug/g	140	25	30	37	35	31	4	5	31	19	**152**
Lead	ug/g	120	15	5	6	6	14	1	2	19	6	**456**
Molybdenum	ug/g	6.9	0.9	<0.5	<0.5	0.6	0.6	<0.5	<0.5	<0.5	0.5	3.1
Nickel	ug/g	100	32	43	48	38	39	3	3	36	21	28
Selenium	ug/g	2.4	<0.4	<0.4	<0.4	--	<0.4	--	--	<0.4	--	<0.4
Silver	ug/g	20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.8
Thallium	ug/g	1	<0.4	<0.4	<0.4	<0.4	0.6	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	ug/g	23	1.2	1	1	1.2	0.9	<0.5	<0.5	0.8	0.8	0.6
Vanadium	ug/g	86	55	68	75	65	65	10	12	60	39	31
Zinc	ug/g	340	84	77	86	84	78	7	8	76	50	**400**
Chromium VI	ug/g	8	<0.2	<0.2	<0.2	--	<0.2	--	--	<0.2	--	<0.2
Mercury	ug/g	0.27	<0.10	<0.10	<0.10	--	<0.10	--	--	<0.10	--	**0.7**
Inorganics												
pH	ug/g	--	--	--	--	7.63	--	--	--	--	7.26	--
Electrical Conductivity	ug/g	0.7	--	--	--	0.265	--	--	--	--	0.112	--
Sodium Adsorption Ratio	ug/g	5	--	--	--	0.356	--	--	--	--	0.089	--

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(1) Ontario Reg 153/04 (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition,Residential/Parkland/Institutional Property Use for Coarse
(2) Grey and bold background indicated paramater concentration greater than the MOE Table 3 Standards
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Parameter	Unit	MOE Table 3 Standards (R/P/I) [1]	19-06 31-07-2019 19-06 SA2	19-07 31-07-2019 19-07 SA1	19-08 31-07-2019 19-08 SA1	19-09 31-07-2019 19-09 SA1
Sample Depth	m		2.5 - 2.7	1.3 - 1.5	2.0 - 2.4	1.8 - 2.5
Antimony	µg/g	7.5	2	<0.8	<0.8	<0.8
Arsenic	ug/g	18	7	6	4	2
Barium	ug/g	390	181	129	151	88
Beryllium	ug/g	4	<0.5	<0.5	<0.5	<0.5
Boron	ug/g	120	7	8	8	<5
Boron (Hot Water Soluble)	ug/g	1.5	0.63	0.41	0.65	0.13
Cadmium	ug/g	1.2	<0.5	<0.5	<0.5	<0.5
Chromium	ug/g	160	23	17	17	23
Cobalt	ug/g	22	7.2	10.7	6	7
Copper	ug/g	140	63	21	25	18
Lead	ug/g	120	**169**	23	57	35
Molybdenum	ug/g	6.9	1.7	3.4	0.8	1
Nickel	ug/g	100	21	29	16	19
Selenium	ug/g	2.4	0.5	0.5	<0.4	<0.4
Silver	ug/g	20	0.4	<0.2	<0.2	<0.2
Thallium	ug/g	1	<0.4	<0.4	<0.4	<0.4
Uranium	ug/g	23	0.6	1	<0.5	0.6
Vanadium	ug/g	86	32	28	23	32
Zinc	ug/g	340	172	48	67	49
Chromium VI	ug/g	8	<0.2	<0.2	<0.2	<0.2
Mercury	ug/g	0.27	**0.39**	<0.10	0.14	<0.10
Inorganics						
pH	ug/g	--	--	--	--	--
Electrical Conductivity	ug/g	0.7	--	--	--	--
Sodium Adsorption Ratio	ug/g	5	--	--	--	--

Notes:
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(1) Ontario Reg 153/04 (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition,Residential/Parkland/Institutional Property Use for Coarse
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(3) Sample ID on Laboratory Certificates of Analysis is 17-105 SA5

Table 5C: Soil Analytical Results for Polycyclic Aromatic Hydrocarbons

Parameter	Unit	MOE Table Standards (R/P/I) [1]	17-101			17-102	17-103	17-104	TP17-1005	TP17-1005A	TP17-1006	TP17-1007
			23-Jun-17	23-Jun-17	23-Jun-17	22-Jun-17	22-Jun-17	26-Jun-17	20-Jul-17	07-Sep-17	20-Jul-17	20-Jul-17
			17-101 SA2	17-101 SA22 (Duplicate of 17-101 SA2)	17-101 SA4	17-102 SA5	17-103 SA3	17-104 SA5[3]	TP17-1005	TP17-1005A-SA1	TP17-1006	TP17-1007
Sample Depth	m		1.52 - 2.13	1.52 - 2.13	3.05 - 3.66	6.10 - 6.71	3.81 - 4.42	6.10 - 6.71	1.95 - 2.55	0 - 1.95	1.30 - 2.30	1.75 - 2.30
Naphthalene	µg/g	0.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	0.05	0.07
Acenaphthylene	µg/g	0.15	0.08	0.13	<0.05	<0.05	<0.05	<0.05	0.13	<0.05	0.12	0.12
Acenaphthene	µg/g	7.9	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	0.06	0.08
Fluorene	µg/g	62	0.05	0.05	<0.05	<0.05	<0.05	<0.05	0.09	<0.05	0.09	0.19
Phenanthrene	µg/g	6.2	0.69	0.7	<0.05	<0.05	<0.05	<0.05	1.2	<0.05	1	2.3
Anthracene	µg/g	0.67	0.15	0.16	<0.05	<0.05	<0.05	<0.05	0.34	<0.05	0.34	**0.86**
Fluoranthene	µg/g	0.69	1.5	1.7	0.08	<0.05	<0.05	0.05	**1.9**	<0.05	**2**	**2.7**
Pyrene	µg/g	78	1.3	1.5	0.08	<0.05	<0.05	<0.05	1.7	<0.05	1.8	2.1
Benz(a)anthracene	µg/g	0.5	0.91	**1.1**	<0.05	<0.05	<0.05	<0.05	**1.3**	<0.05	**1.1**	**2.3**
Chrysene	µg/g	7	0.85	1	0.06	<0.05	<0.05	<0.05	1.1	<0.05	1.1	2.1
Benzo(b)fluoranthene	µg/g	0.78	**1.1**	**1.3**	0.11	<0.05	<0.05	<0.05	**0.92**	<0.05	**1.3**	**2.6**
Benzo(k)fluoranthene	µg/g	0.78	0.48	0.53	0.05	<0.05	<0.05	<0.05	0.45	<0.05	0.61	**1.1**
Benzo(a)pyrene	µg/g	0.3	**0.81**	**0.97**	0.05	<0.05	<0.05	<0.05	**0.72**	<0.05	**0.79**	**1.5**
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.41	0.5	<0.05	<0.05	<0.05	<0.05	0.38	<0.05	**0.41**	**0.82**
Dibenz(a,h)anthracene	µg/g	0.1	0.09	**0.13**	<0.05	<0.05	<0.05	<0.05	0.07	<0.05	0.07	**0.13**
Benzo(g,h,i)perylene	µg/g	6.6	0.42	0.5	<0.05	<0.05	<0.05	<0.05	0.41	<0.05	0.47	0.86
2-and 1-methyl Naphthalene	µg/g	0.99 [3]	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	0.06	0.07

Notes:

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-- Chemical not analyzed or criteria not defined.

(1) Ontario Reg 153/04 (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use for Coarse Grained Soils

(2) Grey and bold background indicated parameter concentration greater than the MOE Table 3 Standards

(3) Sample ID on Laboratory Certificates of Analysis is 17-105 SA5

Table 5C: Soil Analytical Results for Polycyclic Aromatic Hydrocarbons

Parameter	Unit	MOE Table Standards (R/P/I) [1]	TP17-1008	TP17-1009	TP17-1010	TP17-1011	TP17-1012	TP17-1013-SA2	TP17-1014	TP17-1016
			20-Jul-17	20-Jul-17	07-Sep-17	07-Sep-17	07-Sep-17	07-Sep-17	07-Sep-17	07-Sep-17
			TP17-1008	TP17-1009	TP17-1010-SA2	TP17-1011-SA2	TP17-1012-SA2	TP17-1013-SA2	TP17-1014-SA2	TP17-1016-SA2
Sample Depth	m		1.80 - 2.20	2.30 - 3.20	1.30 - 2.70	0.90 - 2.10	1.40 - 2.80	1.60 - 2.90	1.50 - 2.13	1.10 - 2.12
Naphthalene	µg/g	0.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05
Fluorene	µg/g	62	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.31	0.46	<0.05	<0.05	0.05	0.78	<0.05	<0.05
Anthracene	µg/g	0.67	0.07	0.13	<0.05	<0.05	<0.05	0.14	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.44	**0.87**	0.06	<0.05	0.07	**1.2**	<0.05	<0.05
Pyrene	µg/g	78	0.39	0.72	0.05	<0.05	0.07	0.99	<0.05	<0.05
Benz(a)anthracene	µg/g	0.5	0.17	0.43	<0.05	<0.05	<0.05	0.45	<0.05	<0.05
Chrysene	µg/g	7	0.2	0.47	<0.05	<0.05	0.05	0.48	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.31	0.71	<0.05	<0.05	0.07	0.59	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.15	0.3	<0.05	<0.05	<0.05	0.22	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.23	**0.55**	<0.05	<0.05	<0.05	**0.41**	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.1	0.26	<0.05	<0.05	<0.05	0.18	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.11	0.26	<0.05	<0.05	<0.05	0.19	<0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	0.99 [3]	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05

Notes:

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-- Chemical not analyzed or criteria not defined.

(1) Ontario Reg 153/04 (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use for Coarse Grained Soils

(2) Grey and bold background indicated paramater concentration greater than the MOE Table 3 Standards

(3) Sample ID on Laboratory Certificates of Analysis is 17-105 SA5

Table 5C: Soil Analytical Results for Polycyclic Aromatic Hydrocarbons

Parameter	Unit	MOE Table Standards (R/P/I) [1]	17-01			17-02			17-03		17-04	
			2-May-2017	2-May-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	2-May-2017	2-May-2017	26-Apr-2017	26-Apr-2017
			BH#17-01 SA#7	BH#17-01 SA#17	BH#17-01 SA#24	BH#17-02 SA#5	BH#17-02 SA#22	BH#17-02 SA#26	BH#17-03 SA#2	BH#17-03 SA#10	BH#17-04 SA#4	BH#17-04 SA#7
Sample Depth	m		4.57 - 5.18	12.1 -12.8	18.3 - 18.7	2.43 - 3.05	14.5 - 15.1	18.3 - 18.9	0.76 - 1.37	6.86 - 7.47	1.83 - 2.44	3.66 - 4.27
Naphthalene	µg/g	0.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	<0.05	<0.05	<0.05	0.22	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	<0.05	<0.05	<0.05	0.26	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	<0.05	<0.05	0.05	1.8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.67	<0.05	<0.05	<0.05	0.51	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	<0.05	<0.05	0.06	**1.8**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/g	78	<0.05	<0.05	0.05	1.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.5	<0.05	<0.05	<0.05	**0.79**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	7	<0.05	<0.05	<0.05	0.67	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	<0.05	<0.05	<0.05	0.73	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	<0.05	<0.05	<0.05	0.35	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	<0.05	<0.05	<0.05	**0.58**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	<0.05	<0.05	<0.05	0.33	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	<0.05	<0.05	<0.05	0.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	0.99 [3]	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Notes:

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(1) Ontario Reg 153/04 (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use for Coarse Grained Soils

(2) Grey and bold background indicated paramater concentration greater than the MOE Table 3 Standards

(3) Sample ID on Laboratory Certificates of Analysis is 17-105 SA5

Table 5C: Soil Analytical Results for Polycyclic Aromatic Hydrocarbons

Parameter	Unit	MOE Table Standards (R/P/I) [1]	17-05	17-07				17-09	TP17-10	TP17-11		TP17-12
			3-May-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	3-May-2017	05/17/2017	05/17/2017	05/17/2017	05/17/2017
			17-05 SA2	BH#17-07 SA#8	17-07 SA11	17-07 SA12 (Duplicate of 17-01 SA11)	BH#17-07 A.S	17-09 SA1	17-10 SA3	17-11 SA2	17-111 SA2 (duplicate of 17-11 SA2)	17-12 SA3
Sample Depth	m		3.05 - 3.66	5.33 - 5.94	7.62 - 8.23	7.62 - 8.23	3.05 - 4.57	0.15 - 0.61	4.0 - 4.5	3.0	3.0	4.5
Naphthalene	µg/g	0.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Acenaphthylene	µg/g	0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	<0.05	<0.05	<0.05	<0.05	0.15	<0.05	0.07	<0.05	0.05	0.17
Anthracene	µg/g	0.67	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07
Fluoranthene	µg/g	0.69	<0.05	0.13	<0.05	<0.05	0.17	<0.05	0.15	0.07	0.11	0.36
Pyrene	µg/g	78	<0.05	0.12	<0.05	<0.05	0.16	<0.05	0.11	0.07	0.05	0.27
Benz(a)anthracene	µg/g	0.5	<0.05	0.08	<0.05	<0.05	0.07	<0.05	0.05	<0.05	0.05	0.12
Chrysene	µg/g	7	<0.05	0.07	<0.05	<0.05	0.07	<0.05	0.06	<0.05	0.07	0.14
Benzo(b)fluoranthene	µg/g	0.78	<0.05	0.1	<0.05	<0.05	0.09	<0.05	0.05	0.06	0.07	0.10
Benzo(k)fluoranthene	µg/g	0.78	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	0.08
Benzo(a)pyrene	µg/g	0.3	<0.05	0.07	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	0.06	0.08
Indeno(1,2,3-cd)pyrene	µg/g	0.38	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	0.06
2-and 1-methyl Naphthalene	µg/g	0.99 [3]	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Notes:

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(1) Ontario Reg 153/04 (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use for Coarse Grained Soils

(2) Grey and bold background indicated paramater concentration greater than the MOE Table 3 Standards

(3) Sample ID on Laboratory Certificates of Analysis is 17-105 SA5

Table 5C: Soil Analytical Results for Polycyclic Aromatic Hydrocarbons

Parameter	Unit	MOE Table Standards (R/P/I) [1]	TP17-13	17-04		17-05	17-07				17-09	19-01
			05/17/2017	26-Apr-2017	26-Apr-2017	3-May-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	3-May-2017	31-Jul-19
			17-13 SA3	BH#17-04 SA#4	BH#17-04 SA#7	17-05 SA2	BH#17-07 SA#8	17-07 SA11	17-07 SA12 (Duplicate of 17-01 SA11)	BH#17-07 A.S	17-09 SA1	19-01 SA3
Sample Depth	m		4.0 - 4.7	1.83 - 2.44	3.66 - 4.27	3.05 - 3.66	5.33 - 5.94	7.62 - 8.23	7.62 - 8.23	3.05 - 4.57	0.15 - 0.61	2.8 - 3.0
Naphthalene	µg/g	0.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.15	<0.05	0.13
Anthracene	µg/g	0.67	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.15	<0.05	<0.05	<0.05	0.13	<0.05	<0.05	0.17	<0.05	0.34
Pyrene	µg/g	78	0.14	<0.05	<0.05	<0.05	0.12	<0.05	<0.05	0.16	<0.05	0.28
Benz(a)anthracene	µg/g	0.5	0.08	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	0.07	<0.05	0.13
Chrysene	µg/g	7	0.07	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	0.07	<0.05	0.17
Benzo(b)fluoranthene	µg/g	0.78	0.07	<0.05	<0.05	<0.05	0.1	<0.05	<0.05	0.09	<0.05	0.19
Benzo(k)fluoranthene	µg/g	0.78	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	0.07	<0.05	0.12
Indeno(1,2,3-cd)pyrene	µg/g	0.38	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07
Dibenz(a,h)anthracene	µg/g	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08
2-and 1-methyl Naphthalene	µg/g	0.99 [3]	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Notes:

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(1) Ontario Reg 153/04 (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use for Coarse Grained Soils

(2) Grey and bold background indicated paramater concentration greater than the MOE Table 3 Standards

(3) Sample ID on Laboratory Certificates of Analysis is 17-105 SA5

Table 5C: Soil Analytical Results for Polycyclic Aromatic Hydrocarbons

Parameter	Unit	MOE Table Standards (R/P/I) [1]	19-02	19-03	19-04	19-05	19-06	19-07	19-08	19-09
			31-Jul-19	31-Jul-19	31-Jul-19	31-Jul-19	31-Jul-19	31-Jul-19	31-Jul-19	31-Jul-19
			19-02 SA3	19-03 SA3	19-04 SA3	19-05 SA1	19-06 SA2	19-07 SA1	19-08 SA1	19-09 SA1
Sample Depth	m		2.9 - 3.5	2.5 - 2.9	3.2 - 3.5	1.0 - 1.5	2.5 - 2.7	1.3 - 1.5	2.0 - 2.4	1.8 - 2.5
Naphthalene	µg/g	0.6	<0.05	<0.05	<0.05	<0.05	0.28	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	<0.05	<0.05	0.06	0.12	0.14	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	<0.05	0.07	<0.05	<0.05	0.14	<0.05	<0.05	<0.05
Fluorene	µg/g	62	<0.05	0.11	<0.05	0.07	0.28	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	<0.05	0.57	0.35	0.66	2	<0.05	<0.05	<0.05
Anthracene	µg/g	0.67	<0.05	0.21	0.09	0.21	0.51	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	<0.05	**0.99**	0.68	**1.5**	**2.2**	0.07	0.1	0.1
Pyrene	µg/g	78	<0.05	0.84	0.55	1.3	1.9	0.06	0.09	0.09
Benz(a)anthracene	µg/g	0.5	<0.05	0.39	0.27	**0.75**	**0.85**	<0.05	<0.05	<0.05
Chrysene	µg/g	7	<0.05	0.43	0.33	0.74	0.89	<0.05	0.05	0.05
Benzo(b)fluoranthene	µg/g	0.78	<0.05	0.52	0.35	**1.1**	**0.89**	<0.05	0.05	0.05
Benzo(k)fluoranthene	µg/g	0.78	<0.05	0.2	0.13	0.38	0.35	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	<0.05	**0.33**	0.25	**0.72**	**0.79**	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	<0.05	0.15	0.12	0.36	0.34	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	<0.05	<0.05	<0.05	0.09	0.09	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	<0.05	0.15	0.12	0.32	0.35	<0.05	<0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	0.99 [3]	<0.05	<0.05	<0.05	<0.05	0.2	<0.05	<0.05	<0.05

Notes:

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

-- Chemical not analyzed or criteria not defined.

(1) Ontario Reg 153/04 (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use for Coarse Grained Soils

(2) Grey and bold background indicated paramater concentration greater than the MOE Table 3 Standards

(3) Sample ID on Laboratory Certificates of Analysis is 17-105 SA5

Table 6a: Groundwater Analytical Results: Petroleum Hydrocarbons and BTEX

Parameter	Units	MOE Table 3 Standards (1) (2)	17-102			17-01			17-02		17-03
			MW17-102	MW17-102-DUP	17-102	MW17-01	17-01	DUP-1 (Field Duplicate of 17-01)	MW17-02	17-02	MW17-03
			27-Jun-17	27-Jun-17	10-Nov-2022	4-May-2017	9-Nov-2022	9-Nov-2022	2-May-2017	10-Nov-2022	3-May-2017
Benzene	ug/L	44	<0.20	<0.20	<0.20	0.24	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	ug/L	18000	<0.20	<0.20	<0.20	0.61	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	ug/L	2300	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Xylenes	ug/L	4200	<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
Petroleum Hydrocarbons - F2 (C10-C16)	ug/L	150	<100	<100	<100	<100	<100	<100	<100	<100	<100
Petroleum Hydrocarbons - F3 (C16-C34)	ug/L	500	<100	<100	<100	<100	<100	<100	<100	<100	<100
Petroleum Hydrocarbons - F4 (C34-C50)	ug/L	500	<100	<100	<100	<100	<100	<100	<100	<100	<100

Notes:

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.

(1) O.Reg 153/04 (2011) Table 3: Full Depth Generic Site Conditions in a Non-Potable Groundwater Condition, All Types of Property Use

(2) Grey and bold background indicated parameter concentration greater than the MOE Table 3 Standards

Table 6a: Groundwater Analytical Results: Petroleum Hydrocarbons and BTEX

Parameter	Units	MOE Table 3 Standards (1) (2)	17-04		17-07		17-09		MW01-2	MW01-5	MW01-6
			MW17-04	17-04	MW17-07	17-07	MW17-09	DUP-01 (Field Duplicate of MW17-09)	MW17-04	MW01-5	MW01-6
			2-May-2017	10-Nov-2022	2-May-2017	10-Nov-2022	4-May-2017	4-May-2017	2-May-2017	3-May-2017	4-May-2017
Benzene	ug/L	44	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	ug/L	18000	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	ug/L	2300	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Xylenes	ug/L	4200	<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
Petroleum Hydrocarbons - F2 (C10-C16)	ug/L	150	<100	<100	<100	<100	<100	<100	<100	<100	<100
Petroleum Hydrocarbons - F3 (C16-C34)	ug/L	500	<100	<100	200	<100	<100	<100	<100	<100	<100
Petroleum Hydrocarbons - F4 (C34-C50)	ug/L	500	<100	<100	<100	<100	<100	<100	<100	<100	<100

Notes:

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.

(1) O.Reg 153/04 (2011) Table 3: Full Depth Generic Site Conditions in a Non-Potable Groundwater Condition, All Types of Property Use

(2) Grey and bold background indicated parameter concentration greater than the MOE Table 3 Standards

Table 6b: Groundwater Analytical Results: Metals

Parameter	Units	MOE Table 3 Standards (1) (2)	17-102	17-01				17-02		17-03
			17-102	MW17-01	MW17-01	17-01	DUP-1 (Field Duplicate of 17-01)	MW17-02	17-02	MW17-03
			10-Nov-2022	03-Apr-17	4-May-2017	9-Nov-2022	9-Nov-2022	2-May-2017	10-Nov-2022	3-May-2017
Antimony	ug/L	20000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	ug/L	1900	<1.0	<1.0	2.1	2.4	2.6	1.2	<1.0	<1.0
Barium	ug/L	29000	65.5	110	57.3	199	185	90.5	95.1	75.6
Beryllium	ug/L	67	<0.50	<0.5	<0.5	<0.50	<0.50	<0.5	<0.50	<0.5
Boron	ug/L	45000	36.5	39.5	32.4	23.0	22.0	24.8	20.9	65.7
Cadmium	ug/L	2.7	<0.20	<0.2	<0.2	0.21	<0.20	<0.2	<0.20	<0.2
Chromium	ug/L	810	<2.0	4.6	<2.0	14.4	13.1	6.2	<2.0	<2.0
Cobalt	ug/L	66	1.00	1.6	0.6	6.22	6.13	1.5	<0.50	<0.5
Copper	ug/L	87	1.1	<1.0	<1.0	24.6	22.6	1	<1.0	2.2
Lead	ug/L	25	0.53	<0.5	<0.5	13.5	13.0	<0.5	<0.50	<0.5
Molybdenum	ug/L	9200	2.37	2.5	22.3	<0.50	<0.50	2.7	1.84	<0.5
Nickel	ug/L	490	1.3	1.7	<1.0	8.7	8.6	4.3	1.4	<1.0
Selenium	ug/L	63	<1.0	<1.0	<1.0	1.5	1.6	<1.0	1.2	<1.0
Silver	ug/L	1.5	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.20	<0.2
Thallium	ug/L	510	<0.30	<0.3	<0.3	<0.30	<0.30	<0.3	<0.30	<0.3
Uranium	ug/L	420	1.72	3.4	2.6	1.49	1.45	1.5	1.29	1.9
Vanadium	ug/L	250	0.50	<0.4	3.6	11.4	11.6	3.1	<0.40	0.5
Zinc	ug/L	1100	<5.0	<5.0	<5.0	25.4	29.3	<5.0	<5.0	<5.0
Mercury	ug/L	0.29	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02
Chromium VI	ug/L	140	<2	<5	<5	<2	<2	<5	<2	<5

Notes:

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 153/04 (2011) Table 3: Full Depth Generic Site Conditions in a Non-Potable Groundwater Condition, All Types of Property Use

(2) Grey and bold background indicated parameter concentration greater than the MOE Table 3 Standards

Parameter	Units	MOE Table 3 Standards (1) (2)	17-04			17-07		17-09		MW01-5	MW01-6
			MW17-04	MW17-04	17-04	MW17-07	17-07	MW17-09	DUP-01 (Field Duplicate of MW17-09)	3-May-2017	4-May-2017
			03-Apr-17	2-May-2017	10-Nov-2022	2-May-2017	10-Nov-2022	4-May-2017	4-May-2017	3-May-2017	4-May-2017
Antimony	ug/L	20000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	ug/L	1900	<1.0	<1.0	<1.0	1.1	2.0	<1.0	<1.0	<1.0	<1.0
Barium	ug/L	29000	112	89.1	141	145	113	252	246	91.4	140
Beryllium	ug/L	67	<0.5	<0.5	<0.50	<0.5	<0.50	<0.5	<0.5	<0.5	<0.5
Boron	ug/L	45000	42.3	19.8	23.8	41.4	39.2	28.3	26.9	24.5	17.1
Cadmium	ug/L	2.7	<0.2	<0.2	<0.20	<0.2	<0.20	<0.2	<0.2	<0.2	<0.2
Chromium	ug/L	810	3.6	9.4	<2.0	12.1	<2.0	<2.0	<2.0	<2.0	2.8
Cobalt	ug/L	66	1.5	2.2	<0.50	9.2	<0.50	0.9	0.9	<0.5	<0.5
Copper	ug/L	87	1.2	<1.0	1.1	<1.0	<1.0	1.2	1.2	1.1	<1.0
Lead	ug/L	25	<0.5	<0.5	<0.50	<0.5	<0.50	<0.5	<0.5	<0.5	<0.5
Molybdenum	ug/L	9200	2.3	1.3	1.27	0.5	<0.50	0.8	0.8	1.1	1.9
Nickel	ug/L	490	1.5	3.2	1.3	5.2	1.2	<1.0	<1.0	<1.0	<1.0
Selenium	ug/L	63	<1.0	3.9	1.3	2.7	<1.0	<1.0	<1.0	<1.0	<1.0
Silver	ug/L	1.5	<0.2	<0.2	<0.20	<0.2	<0.20	<0.2	<0.2	<0.2	<0.2
Thallium	ug/L	510	<0.3	<0.3	<0.30	<0.3	<0.30	<0.3	<0.3	<0.3	<0.3
Uranium	ug/L	420	3.3	1.5	1.02	0.6	<0.50	1	1	0.9	1.7
Vanadium	ug/L	250	1.2	3.1	0.70	3.2	0.58	0.9	1	<0.4	<0.4
Zinc	ug/L	1100	<5.0	<5.0	<5.0	<5.0	<5.0	5.5	<5.0	<5.0	<5.0
Mercury	ug/L	0.29	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Chromium VI	ug/L	140	<5	<5	<2	<5	<2	<5	<5	<5	<5

Notes:

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 153/04 (2011) Table 3: Full Depth Generic Site Conditions in a Non-Potable Groundwater Condition, All Types of Property Use

(2) Grey and bold background indicated parameter concentration greater than the MOE Table 3 Standards

Table 6c: Groundwater Analytical Results: Polycyclic Aromatic Hydrocarbons

Parameter	Units	MOE Table 3 Standards (1) (2)	17-01			17-01			17-02	
			MW17-01	MW17-01	17-01	MW17-01	17-01	DUP-1 (Field Duplicate of 17-01)	MW17-02	17-02
			03-Apr-17	4-May-2017	9-Nov-2022	4-May-2017	9-Nov-2022	9-Nov-2022	2-May-2017	10-Nov-2022
Naphthalene	ug/L	1400	<0.20	<0.20	<0.20	0.56	<0.20	<0.20	<0.20	<0.20
Acenaphthylene	ug/L	1.8	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthene	ug/L	600	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Fluorene	ug/L	400	<0.20	<0.20	<0.20	<0.20	<0.10	<0.20	<0.20	<0.20
Phenanthrene	ug/L	580	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	ug/L	2.4	<0.10	<0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10
Fluoranthene	ug/L	130	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pyrene	ug/L	68	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benz(a)anthracene	ug/L	4.7	<0.20	<0.20	<0.20	<0.20	<0.10	<0.20	<0.20	<0.20
Chrysene	ug/L	1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(b)fluoranthene	ug/L	0.75	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	ug/L	0.4	<0.10	<0.10	<0.10	<0.10	<0.01	<0.10	<0.10	<0.10
Benzo(a)pyrene	ug/L	0.81	<0.01	<0.01	<0.01	<0.01	<0.20	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	ug/L	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	ug/L	0.52	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(g,h,i)perylene	ug/L	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2-and 1-methyl Naphthalene(3)	ug/L	1800	<0.20	<0.20	<0.20	0.24		<0.20	<0.20	<0.20

Notes:

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.

(1) O.Reg 153/04 (2011) Table 3: Full Depth Generic Site Conditions in a Non-Potable Groundwater Condition, All Types of Property Use

(2) Grey and bold background indicated parameter concentration greater than the MOE Table 3 Standards

(3) The methylnaphthalene standards are applicable to both 1-Methylnaphthalene and 2-Methylnaphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.

Table 6c: Groundwater Analytical Results: Polycyclic Aromatic Hydrocarbons

Parameter	Units	MOE Table 3 Standards [1] [2]	17-03	17-04		17-07		17-09		MW01-5	MW01-6
			MW17-03	MW17-04	17-04	MW17-07	17-07	MW17-09	DUP-01 (Field Duplicate of MW17-09)	MW01-5	MW01-6
			3-May-2017	2-May-2017	10-Nov-2022	2-May-2017	10-Nov-2022	4-May-2017	4-May-2017	3-May-2017	4-May-2017
Naphthalene	ug/L	1400	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthylene	ug/L	1.8	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthene	ug/L	600	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Fluorene	ug/L	400	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Phenanthrene	ug/L	580	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	ug/L	2.4	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	ug/L	130	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pyrene	ug/L	68	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benz(a)anthracene	ug/L	4.7	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chrysene	ug/L	1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(b)fluoranthene	ug/L	0.75	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	ug/L	0.4	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	ug/L	0.81	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	ug/L	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	ug/L	0.52	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(g,h,i)perylene	ug/L	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2-and 1-methyl Naphthalene[3]	ug/L	1800	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

Notes:

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.

(1) O.Reg 153/04 (2011) Table 3: Full Depth Generic Site Conditions in a Non-Potable Groundwater Condition, All Types of Property Use

(2) Grey and bold background indicated parameter concentration greater than the MOE Table 3 Standards

(3) The methylnaphthalene standards are applicable to both 1-Methylnaphthalene and 2-Methylnaphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.

Figures

LEGEND

SITE BOUNDARY

0 500 1,000 2,000

1:50,000 METRES

REFERENCE(S)

1. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: UTM ZONE 18 VERTICAL DATUM: CGVD28

CLIENT

TAGGART REALTY MANAGEMENT

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF 3930 RIVERSIDE DRIVE, OTTAWA, ONTARIO

TITLE

KEY PLAN

CONSULTANT

WSP GOLDER

YYYY-MM-DD	2022-12-12
DESIGNED	----
PREPARED	JEM
REVIEWED	SB
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
21482114	0003	0	**1**

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

Path: S:\Clients\Taggart Realty Mgmt\Riverside-Hunt club\09_PRO\21482114_Taggart_GeoEnviro\40_PRO\0003_PhaseTwo_ESA\21482114-0003-HS-0001.mxd

LEGEND

- EXISTING MONITORING WELL LOCATION OBSERVED DURING THE PHASE ONE ESA SITE VISIT
- EXISTING MONITORING WELL LOCATION NOT OBSERVED DURING THE PHASE ONE ESA SITE VISIT
- ROADWAY
- APPROXIMATE LIMIT OF FORMER REMEDIATION
- PHASE ONE SITE
- PHASE ONE STUDY AREA
- APEC 1 (SITE-WIDE)
- LOCATION OF PCA 1

Areas of Potential Environmental Concern ("APEC")

APEC #	Detail	PCA #
1	Importation of Fill Material of Unknown Quality	30

Potentially Contaminating Activity ("PCA")

Location	Detail	PCA #
1 (see legend)	Importation of Fill Material of Unknown Quality – Fill material of unknown quality and origin has been used to backfill the sand and gravel pits formerly located on the Site and adjacent lands north, east, south and southwest of the Site. This fill material reportedly contains construction debris.	30
2	Gasoline and Associated Products Storage in Fixed Tanks – Currently presence of a retail fuel outlet with three associated fuel USTs located on apperoximately 70 m south of the Site at 4000 Riverside Drive.	28

0 35 70 140
1:3,500 METRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N

CLIENT
TAGGART REALTY MANAGEMENT

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF 3930 RIVERSIDE DRIVE, OTTAWA, ONTARIO

TITLE
PHASE ONE ESA PCAs AND APECs

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-12
DESIGNED	----
PREPARED	JEM
REVIEWED	AT
APPROVED	KPH

PROJECT No.	CONTROL	REV.	FIGURE
21482114	0003	0	2

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

PATH: S:\Clients\Taggart_Realty_Mgmt\Riverside+Huntclub\99_PROJ\21482114_Taggart_GeoEnviro\40_PROD\0003_PhaseTwo_ESA\21482114-0003-HS-0002.mxd PRINTED ON: 2022-12-12 AT: 2:02:13 PM

LEGEND

- APPROXIMATE TEST PIT LOCATION
- APPROXIMATE BOREHOLE/MONITORING WELL LOCATION
- APPROXIMATE BOREHOLE LOCATION
- APPROXIMATE MONITORING WELL LOCATION
- APPROXIMATE BOREHOLE LOCATION
- APPROXIMATE TEST PIT LOCATION
- ROADWAY
- APPROXIMATE SITE BOUNDARY
- APPROXIMATE LIMIT OF FORMER REMEDIATION

0 15 30 60

1:1,500 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 MTM 9

CLIENT

TAGGART REALTY MANAGEMENT

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF 3930 RIVERSIDE DRIVE, OTTAWA, ONTARIO

TITLE

INVESTIGATION LOCATIONS

CONSULTANT

WSP GOLDER

YYYY-MM-DD	2022-12-14
DESIGNED	----
PREPARED	JEM
REVIEWED	AT
APPROVED	KPH

PROJECT No.	CONTROL	REV.	FIGURE
21482114	0003	0	3

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

25mm

0

PATH: S:\Clients\Taggart_Realty_Mgmt\Riverside-Hunt club\99_PRO\21482114_Taggart_GeoEnviro\40_PROD\0003_PhaseTwo_ESA\21482114-0003-HS-0003.mxd PRINTED ON: 2022-12-14 AT: 1:42:59 PM

LEGEND

- APPROXIMATE TEST PIT LOCATION
- APPROXIMATE BOREHOLE/MONITORING WELL LOCATION
- APPROXIMATE BOREHOLE LOCATION
- APPROXIMATE MONITORING WELL LOCATION
- APPROXIMATE BOREHOLE LOCATION
- APPROXIMATE TEST PIT LOCATION
- ALL SAMPLES MEET MECP TABLE 3 STANDARDS
- ROADWAY
- PHASE ONE AND PHASE TWO ESA PROPERTY BOUNDARY
- APPROXIMATE LIMIT OF FORMER REMEDIATION

0 15 30 60

1:1,500 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 MTM 9

CLIENT

TAGGART REALTY MANAGEMENT

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF 3930 RIVERSIDE DRIVE, OTTAWA, ONTARIO

TITLE

PHC/BTEX SOIL EXCEEDANCES

CONSULTANT

WSP GOLDER

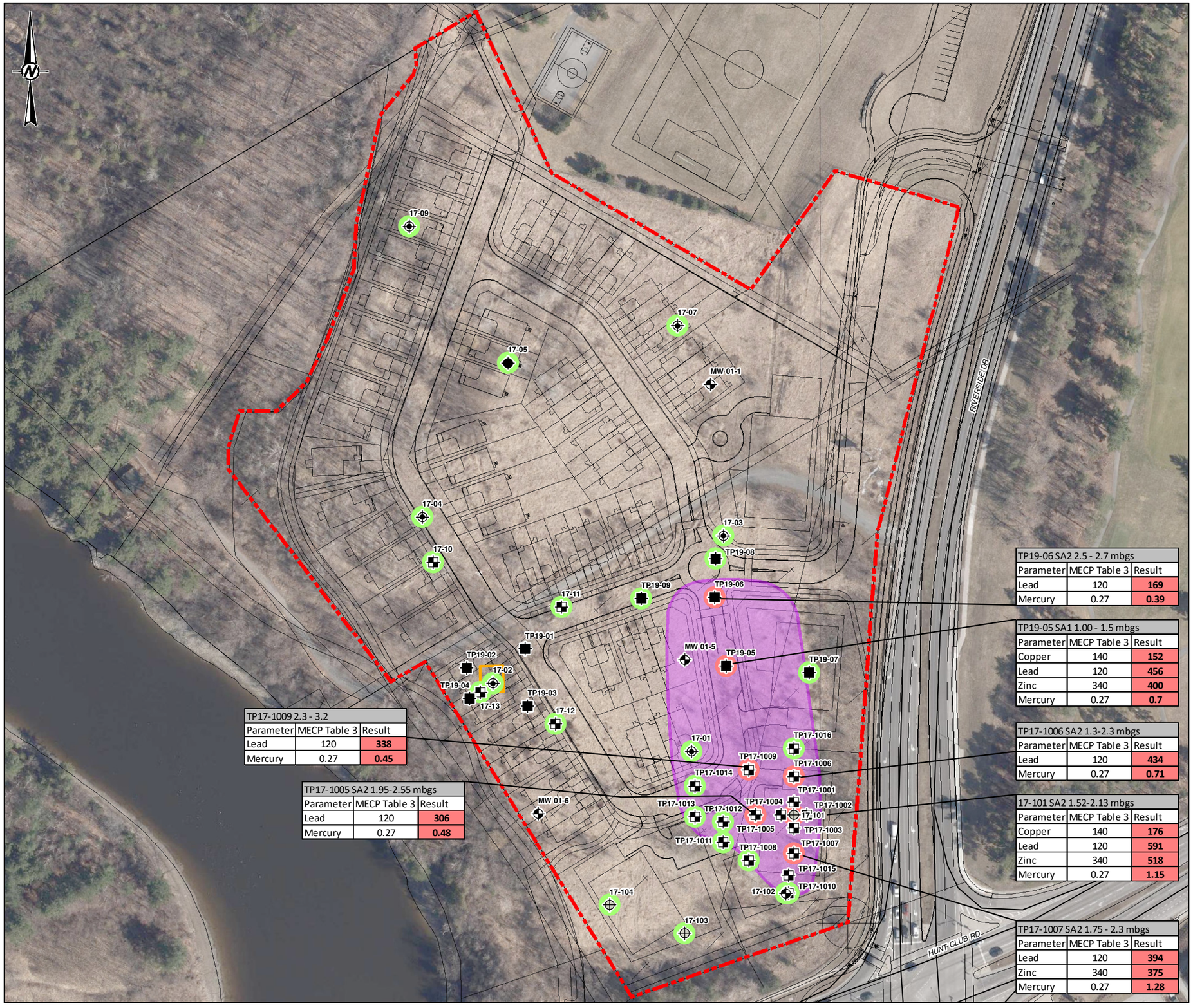
YYYY-MM-DD	2022-12-14
DESIGNED	----
PREPARED	JEM
REVIEWED	AT
APPROVED	KPH

PROJECT No.	CONTROL	REV.	FIGURE
21482114	0003	0	4

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

0 25mm

PATH: S:\Clients\Taggart_Realty_Mgmt\Riverside-Hunt\ab\99_PRO\21482114_Taggart_GeoEnviro\40_PROD\0003_PhaseTwo_ESA\21482114-0003-HS-0004.mxd PRINTED ON: 2022-12-14 AT: 1:43:54 PM



TP19-06 SA2 2.5 - 2.7 mbgs		
Parameter	MECP Table 3	Result
Lead	120	**169**
Mercury	0.27	**0.39**

TP19-05 SA1 1.00 - 1.5 mbgs		
Parameter	MECP Table 3	Result
Copper	140	**152**
Lead	120	**456**
Zinc	340	**400**
Mercury	0.27	**0.7**

TP17-1009 2.3 - 3.2		
Parameter	MECP Table 3	Result
Lead	120	**338**
Mercury	0.27	**0.45**

TP17-1006 SA2 1.3-2.3 mbgs		
Parameter	MECP Table 3	Result
Lead	120	**434**
Mercury	0.27	**0.71**

TP17-1005 SA2 1.95-2.55 mbgs		
Parameter	MECP Table 3	Result
Lead	120	**306**
Mercury	0.27	**0.48**

17-101 SA2 1.52-2.13 mbgs		
Parameter	MECP Table 3	Result
Copper	140	**176**
Lead	120	**591**
Zinc	340	**518**
Mercury	0.27	**1.15**

TP17-1007 SA2 1.75 - 2.3 mbgs		
Parameter	MECP Table 3	Result
Lead	120	**394**
Zinc	340	**375**
Mercury	0.27	**1.28**

LEGEND

- APPROXIMATE TEST PIT LOCATION
- APPROXIMATE BOREHOLE/MONITORING WELL LOCATION
- APPROXIMATE BOREHOLE LOCATION
- APPROXIMATE MONITORING WELL LOCATION
- APPROXIMATE BOREHOLE LOCATION
- APPROXIMATE TEST PIT LOCATION
- ALL SAMPLES MEET MECP TABLE 3 STANDARDS
- ONE OR MORE SAMPLE EXCEEDS MECP TABLE 3 STANDARDS
- ROADWAY
- PHASE ONE AND PHASE TWO ESA PROPERTY BOUNDARY
- APPROXIMATE LIMIT OF FORMER REMEDIATION
- CONFIRMED AREA OF WASTE FILL WITH EXCEEDANCES OF MOE TABLE 3 CONFIRMED BY ANALYSIS AND INFERRED BASED ON FIELD EVIDENCE AND VISUAL DESCRIPTION OF FILL MATERIAL

0 15 30 60

1:1,500 METRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 MTM 9

CLIENT
TAGGART REALTY MANAGEMENT

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF 3930 RIVERSIDE DRIVE, OTTAWA, ONTARIO

TITLE
METALS AND ORP SOIL EXCEEDANCES

CONSULTANT
wsp GOLDER

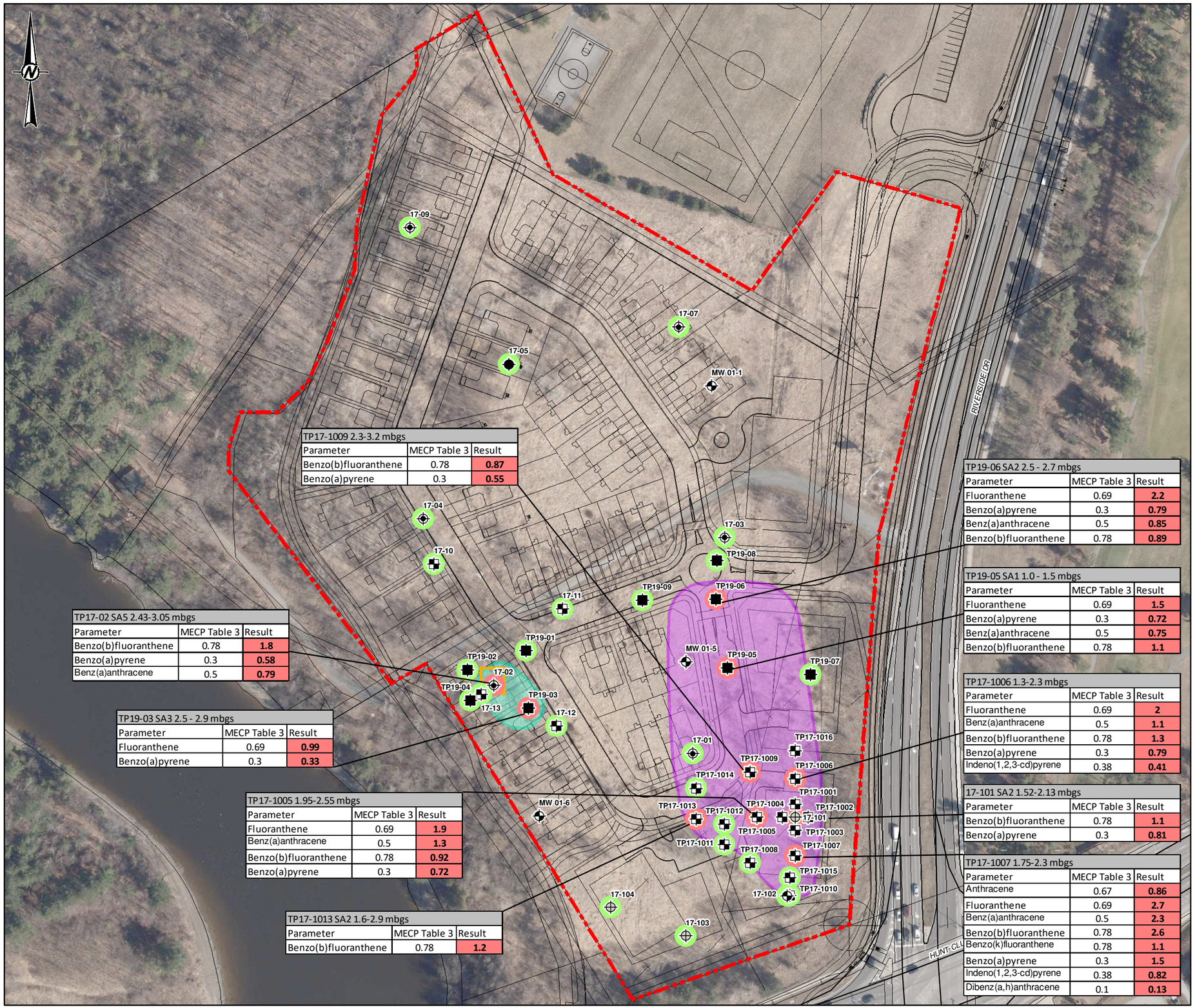
YYYY-MM-DD	2022-12-14
DESIGNED	----
PREPARED	JEM
REVIEWED	AT
APPROVED	KPH

PROJECT No.	CONTROL	REV.	FIGURE
21482114	0003	0	5

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

0 25mm

PATH: S:\Clients\Taggart_Realty_Mgmt\Riverside-Huntclub\99_PRO\21482114_Taggart_GledEnviro\40_PROD\0003_PhaseTwo_ESA\21482114-0003-HS-0005.mxd PRINTED ON: 2022-12-14 AT: 1:46:28 PM



TP17-1009 2.3-3.2 mbgs		
Parameter	MECP Table 3	Result
Benzo(b)fluoranthene	0.78	**0.87**
Benzo(a)pyrene	0.3	**0.55**

TP17-02 SA5 2.43-3.05 mbgs		
Parameter	MECP Table 3	Result
Benzo(b)fluoranthene	0.78	**1.8**
Benzo(a)pyrene	0.3	**0.58**
Benz(a)anthracene	0.5	**0.79**

TP19-03 SA3 2.5 - 2.9 mbgs		
Parameter	MECP Table 3	Result
Fluoranthene	0.69	**0.99**
Benzo(a)pyrene	0.3	**0.33**

TP17-1005 1.95-2.55 mbgs		
Parameter	MECP Table 3	Result
Fluoranthene	0.69	**1.9**
Benz(a)anthracene	0.5	**1.3**
Benzo(b)fluoranthene	0.78	**0.92**
Benzo(a)pyrene	0.3	**0.72**

TP17-1013 SA2 1.6-2.9 mbgs		
Parameter	MECP Table 3	Result
Benzo(b)fluoranthene	0.78	**1.2**

TP19-06 SA2 2.5 - 2.7 mbgs		
Parameter	MECP Table 3	Result
Fluoranthene	0.69	**2.2**
Benzo(a)pyrene	0.3	**0.79**
Benz(a)anthracene	0.5	**0.85**
Benzo(b)fluoranthene	0.78	**0.89**

TP19-05 SA1 1.0 - 1.5 mbgs		
Parameter	MECP Table 3	Result
Fluoranthene	0.69	**1.5**
Benzo(a)pyrene	0.3	**0.72**
Benz(a)anthracene	0.5	**0.75**
Benzo(b)fluoranthene	0.78	**1.1**

TP17-1006 1.3-2.3 mbgs		
Parameter	MECP Table 3	Result
Fluoranthene	0.69	**2**
Benz(a)anthracene	0.5	**1.1**
Benzo(b)fluoranthene	0.78	**1.3**
Benzo(a)pyrene	0.3	**0.79**
Indeno(1,2,3-cd)pyrene	0.38	**0.41**

17-101 SA2 1.52-2.13 mbgs		
Parameter	MECP Table 3	Result
Benzo(b)fluoranthene	0.78	**1.1**
Benzo(a)pyrene	0.3	**0.81**

TP17-1007 1.75-2.3 mbgs		
Parameter	MECP Table 3	Result
Anthracene	0.67	**0.86**
Fluoranthene	0.69	**2.7**
Benz(a)anthracene	0.5	**2.3**
Benzo(b)fluoranthene	0.78	**2.6**
Benzo(k)fluoranthene	0.78	**1.1**
Benzo(a)pyrene	0.3	**1.5**
Indeno(1,2,3-cd)pyrene	0.38	**0.82**
Dibenz(a,h)anthracene	0.1	**0.13**

LEGEND

- APPROXIMATE TEST PIT LOCATION
- APPROXIMATE BOREHOLE/MONITORING WELL LOCATION
- APPROXIMATE BOREHOLE LOCATION
- APPROXIMATE MONITORING WELL LOCATION
- APPROXIMATE BOREHOLE LOCATION
- APPROXIMATE TEST PIT LOCATION
- ALL SAMPLES MEET MECP TABLE 3 STANDARDS
- ONE OR MORE SAMPLE EXCEEDS MECP TABLE 3 STANDARDS
- ROADWAY
- PHASE ONE AND PHASE TWO ESA PROPERTY BOUNDARY
- APPROXIMATE LIMIT OF FORMER REMEDIATION
- CONFIRMED AREA OF WASTE FILL WITH EXCEEDANCES OF MOE TABLE 3 CONFIRMED BY ANALYSIS AND INFERRED BASED ON FIELD EVIDENCE AND VISUAL DESCRIPTION OF FILL MATERIAL
- APPROXIMATE EXTENT OF PAH IMPACTED FILL OVER MOE TABLE 3 STANDARDS

0 15 30 60

1:1,500 METRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 MTM 9

CLIENT
TAGGART REALTY MANAGEMENT

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF 3930 RIVERSIDE DRIVE, OTTAWA, ONTARIO

TITLE
PAH SOIL EXCEEDANCES

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-15
DESIGNED	----
PREPARED	JEM
REVIEWED	AT
APPROVED	KPH

PROJECT No.	CONTROL	REV.	FIGURE
21482114	0003	0	6

LEGEND

- APPROXIMATE TEST PIT LOCATION
- APPROXIMATE BOREHOLE/MONITORING WELL LOCATION
- APPROXIMATE BOREHOLE LOCATION
- APPROXIMATE MONITORING WELL LOCATION
- APPROXIMATE BOREHOLE LOCATION
- APPROXIMATE TEST PIT LOCATION
- ALL SAMPLES MEET MECP TABLE 3 STANDARDS
- ROADWAY
- PHASE ONE AND PHASE TWO ESA PROPERTY BOUNDARY
- APPROXIMATE LIMIT OF FORMER REMEDIATION

0 15 30 60

1:1,500 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 MTM 9

CLIENT

TAGGART REALTY MANAGEMENT

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF 3930 RIVERSIDE DRIVE, OTTAWA, ONTARIO

TITLE

PHC/BTEX, METALS AND ORPS, PAH GROUNDWATER EXCEEDANCES

CONSULTANT

WSP GOLDER

YYYY-MM-DD	2022-12-12
DESIGNED	----
PREPARED	JEM
REVIEWED	AT
APPROVED	KPH

PROJECT No.	CONTROL	REV.	FIGURE
21482114	0003	0	7

LEGEND

- APPROXIMATE BOREHOLE/MONITORING WELL LOCATION
- APPROXIMATE MONITORING WELL LOCATION
- ROADWAY
- APPROXIMATE SITE BOUNDARY
- APPROXIMATE LIMIT OF FORMER REMEDIATION
- 9999 GROUNDWATER ELEVATION, mASL (May 2017)
- GROUNDWATER ELEVATION CONTOUR, mASL
- INTERPRETED GROUNDWATER FLOW DIRECTION

0 15 30 60

1:1,500 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 MTM 9

CLIENT
TAGGART REALTY MANAGEMENT

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PART OF 3930 RIVERSIDE DRIVE, OTTAWA, ONTARIO

TITLE
GROUNDWATER ELEVATIONS AND INTERPRETED GROUNDWATER FLOW DIRECTION

CONSULTANT
wsp GOLDER

YYYY-MM-DD	2022-12-12
DESIGNED	----
PREPARED	JEM
REVIEWED	AT
APPROVED	KPH

PROJECT No.	CONTROL	REV.	FIGURE
21482114	0003	0	8

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

0 25mm

PATH: S:\Clients\Taggart_Realty_Mgmt\Riverside-Hunclub\99_PRO\21482114_Taggart_GeoEnviro\40_PROD\003_PhaseTwo_ESA\21482114-0003-HS-0008.mxd PRINTED ON: 2022-12-12 AT 3:49:02 PM

APPENDIX A

Field Logs

PROJECT: 1670692

RECORD OF BOREHOLE: 17-01

SHEET 1 OF 3

LOCATION: N 5020451.2 ;E 445599.8

BORING DATE: May 2 & 3, 2017

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	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		94.82						
0	Power Auger 200 mm Diam. (Hollow Stem)	FILL - (CL-ML-SM) SILTY CLAY, sandy SILT and SILTY SAND, trace to some gravel; brown and grey, contains sand and gravel layers, trace brick and organics; moist to wet, very loose to dense		0.00	1	GRAB	-	⊕		Native Backfill and Bentonite Mix
1					2	SS	13	⊕		
2					3	SS	38			
3					4	SS	16	⊕		
4					5	SS	8			
5					6	SS		⊕		
6					7	SS	12	⊕		
7					8	SS	9	⊕		
8					9	SS	10	⊕		
9					10	SS	3	⊕		
					11	SS	15			
					12	SS	11	⊕		
				85.68						
		FILL - (ML-CL) sandy SILT, some gravel and silty clay; grey brown and grey, contains asphaltic concrete and organics; moist to wet, loose to compact		9.14	13	SS	8	⊕		
10					14	SS	9			
		CONTINUED NEXT PAGE								

DEPTH SCALE

1 : 50

GOLDER

LOGGED: PAH

CHECKED: KPH

MIS-BHS 001 1670692.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 1670692

RECORD OF BOREHOLE: 17-01

SHEET 2 OF 3

LOCATION: N 5020451.2 ;E 445599.8

BORING DATE: May 2 & 3, 2017

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	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ (ND = Not Detected)	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT PERCENT (Wp, W, Wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
10	Power Auger 200 mm Diam. (Hollow Stem)	FILL - (ML-CL) sandy SILT, some gravel and silty clay; grey brown and grey, contains asphaltic concrete and organics; moist to wet, loose to compact			14	SS	9	⊕			
11					15	SS	5	⊕			
					16	SS	7	⊕			
12					17	SS	20	⊕			
13					18	SS	4	⊕			Native Backfill and Bentonite Mix
				81.10							
		FILL - (ML) sandy SILT, some gravel; dark grey and grey brown, contains silty clay layers, trace organics; non-cohesive, moist to wet, loose to compact		13.72							
14					19	SS	15	⊕			
					20	SS	13	⊕			
15					21	SS	9	⊕			
16					22	SS	19	⊕			
17					23	SS	21	⊕			Bentonite Seal
18					24	SS	21	⊕			
				76.07							
		CONCRETE RUBBLE		18.75							Silica Sand
19				75.47							
		(ML) sandy SILT, some gravel; dark grey and grey brown, contains silty clay layers, contains organics; non-cohesive, wet, dense		19.35							
					25	SS	49				51 mm Diam. PVC #10 Slot Screen
20		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 50

GOLDER

LOGGED: PAH

CHECKED: KPH

MIS-BHS 001 1670692.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 1670692

RECORD OF BOREHOLE: 17-01

SHEET 3 OF 3

LOCATION: N 5020451.2 ;E 445599.8

BORING DATE: May 2 & 3, 2017

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	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 ---								
20	Power Auger 200 mm Diam. (Hollow Stem)	(ML) sandy SILT, some gravel; dark grey and grey brown, contains silty clay layers, contains organics; non-cohesive, wet, dense			25	SS	49	⊕		51 mm Diam. PVC #10 Slot Screen
21										
					26	SS	42	⊕		Silica Sand
				72.87						
22		End of Borehole		21.95						W.L. in Screen at Elev. 78.41 m on May 4, 2017
23										
24										
25										
26										
27										
28										
29										
30										

DEPTH SCALE
1 : 50

GOLDER

LOGGED: PAH
CHECKED: KPH

MIS-BHS 001 1670692.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 1670692

RECORD OF BOREHOLE: 17-02

SHEET 1 OF 2

LOCATION: N 5020479.2 ;E 445522.8

BORING DATE: April 26 & 27, 2017

DATUM: CGVD28

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	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		91.84						
0	Geoprobe Direct Push	FILL - (SP-SM) SAND, fine to medium and SILTY SAND, some gravel, trace organics; brown		0.00	1	DT	-	⊕		Bentonite Seal
					2	DT	-	⊕		
1				90.62						
		FILL - (SM-ML) SILTY SAND, some gravel, trace brick, and sandy SILT, some clay lumps; brown and dark grey; non-cohesive, moist to wet		1.22	3	DT	-	⊕		
2					4	DT	-	⊕		
					5	DT	-	⊕		
3					6	DT	-	⊕		
					7	DT	-	⊕		
4				87.57						
		FILL - (SM-GM) SILTY SAND and GRAVEL, trace concrete fragments; dark grey brown; non-cohesive, moist		4.27	8	DT	-	⊕		
5					9	DT	-	⊕		Native Backfill and Bentonite Mix
				86.35						
		FILL - (SM, CL-ML) SILTY SAND, some gravel, SILTY CLAY and CLAYEY SILT; grey brown and dark grey; non-cohesive, very moist		5.49	10	DT	-	⊕		
6					11	DT	-	⊕		
					12	DT	-	⊕		
7					13	DT	-	⊕		
					14	DT	-			
8					15	DT	-	⊕		
				82.70						
9	Power Auger	FILL - (SM-ML) SILTY SAND and sandy SILT, trace to some gravel; grey brown and brown; non-cohesive, very moist, loose to compact		9.14						
					16	SS	11			
10		*CONTINUED NEXT PAGE*								

DEPTH SCALE

1 : 50

GOLDER

LOGGED: PAH

CHECKED: KPH

MIS-BHS 001 1670692.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 1670692

RECORD OF BOREHOLE: 17-02

SHEET 2 OF 2

LOCATION: N 5020479.2 ;E 445522.8

BORING DATE: April 26 & 27, 2017

DATUM: CGVD28

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80)	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT Wp W Wl (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---											
10	Power Auger 200 mm Diam. (Hollow Stem)	FILL - (SM-ML) SILTY SAND and sandy SILT, trace to some gravel; grey brown and brown; non-cohesive, very moist, loose to compact			16	SS	11	⊕					
11					17	SS	7	⊕					
					18	SS	8	⊕					
12					19	SS	15	⊕					Native Backfill and Bentonite Mix
				79.04									
		FILL - (SP) SAND, fine to medium, trace gravel, some clayey silt lumps; grey brown and brown; non-cohesive, moist, loose		12.80									
13					20	SS	6	⊕					
14					21	SS	6	⊕					
					22	SS	16	⊕					Bentonite Seal
15													Silica Sand
				76.60									
		(SW/GW) SAND and GRAVEL, well graded, sub-rounded, trace fines; brown, contains cobbles; non-cohesive, moist to wet with depth, very dense		15.24	23	SS	18	⊕					
16					24	SS	>50	⊕					
													51 mm Diam. PVC #10 Slot Screen
17					25	SS	55	⊕					
18													
					26	SS	61		133 ⊕				Native Backfill
				72.94									
19		End of Borehole		18.90									W.L. in Screen at Elev. 75.59 m on May 2, 2017
20													

DEPTH SCALE

1 : 50

GOLDER

LOGGED: PAH

CHECKED: KPH

MIS-BHS 001 1670692.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 1670692

RECORD OF BOREHOLE: 17-03

SHEET 1 OF 1

LOCATION: N 5020535.1 ;E 445613.8

BORING DATE: May 2, 2017

DATUM: CGVD28

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	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		94.26									
0	Power Auger 200 mm Diam. (Hollow Stem)	FILL - (CL-ML) SILTY CLAY and sandy SILT, some gravel; grey brown, contains organics; non-cohesive, moist, loose to compact		0.00	1	GRAB	-		155.7 ⊕				
1					2	SS	7		177 ⊕				
					3	SS	15		136 ⊕				Native Backfill
2				92.13									
		FILL - (SM-SP/GP) SILTY SAND to SAND and GRAVEL; grey brown; non-cohesive, moist, compact		2.13	4	SS	23		141.8 ⊕				
3				91.11									Bentonite Seal
		(SP) SAND, fine to medium; brown; non-cohesive, moist, very dense		3.15	5	SS	91		⊕				
				90.60									
		(SP) SAND, fine to medium; brown; non-cohesive, moist to wet with depth, compact		3.66	6	SS	19	⊕					Silica Sand
4													
					7	SS	16		⊕				
5													
					8	SS	24		⊕				
6													
					9	SS	20		⊕				51 mm Diam. PVC #10 Slot Screen
7													
					10	SS	16		⊕				
					11	SS	15	⊕					
8				86.03									
		End of Borehole		8.23									W.L. in Screen at Elev. 87.63 m on May 3, 2017
9													
10													

DEPTH SCALE

1 : 50

GOLDER

LOGGED: PAH

CHECKED: KPH

MIS-BHS 001 1670692.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 1670692

RECORD OF BOREHOLE: 17-04

SHEET 1 OF 2

LOCATION: N 5020544.6 ;E 445496.4

BORING DATE: April 26, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ (ND = Not Detected; 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		88.38							
0	Geoprobe / Direct Push	FILL - (CL-ML) SILTY CLAY and CLAYEY SILT, some fine sand, trace gravel, organics, wood; grey and brown; cohesive, w>PL		0.00	1	DT	-	⊕			
					2	DT	-	⊕			
1					3	DT	-	⊕			
					4	DT	-	⊕			
2											
					5	DT	-	⊕			
3					6	DT	-	⊕			
					7	DT	-	⊕			
4											Native Backfill
					8	DT	-	⊕			
5					9	DT	-	⊕			
		FILL (SM/GM, ML) SILTY SAND and GRAVEL, shalely, and sandy SILT; dark brown to black; non-cohesive, moist		82.89 5.49	10	DT	-	⊕			
6					11	DT	-	⊕			
					12	DT	-	⊕			
7					13	DT	-	⊕			
8				80.30							
		(SP) SAND, fine to medium; brown; non-cohesive, moist		8.08	14	DT	-	⊕			
					15	DT	-	⊕			Bentonite Seal
9				79.24							
		(SW) SAND, fine to coarse, trace gravel; light brown; non-cohesive, moist, dense		9.14	16	DT	-	⊕			Silica Sand
					17	DT	-				
10		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 50

GOLDER

LOGGED: PAH

CHECKED: KPH

MIS-BHS 001 1670692.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 1670692

RECORD OF BOREHOLE: 17-04

SHEET 2 OF 2

LOCATION: N 5020544.6 ;E 445496.4

BORING DATE: April 26, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* (20 40 60 80) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ *ND = Not Detected* (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---								
10	Geoprobe Direct Push	(SW) SAND, fine to coarse, trace gravel; light brown; non-cohesive, moist, dense			17	DT	-	⊕		Silica Sand
					18	DT	-	⊕		
				77.41						
11		(SW) SAND, fine to coarse, trace gravel; brown; non-cohesive, wet, very dense		10.97						
12										51 mm Diam. PVC #10 Slot Screen
				75.58						Native Backfill
13		End of Borehole		12.80						W.L. in Screen at Elev. 77.02 m on May 2, 2017
14										
15										
16										
17										
18										
19										
20										

DEPTH SCALE

1 : 50

GOLDER

LOGGED: PAH

CHECKED: KPH

MIS-BHS 001 1670692.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 1670692

RECORD OF BOREHOLE: 17-05

SHEET 1 OF 1

LOCATION: N 5020604.0 ;E 445531.0

BORING DATE: May 3, 2017

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	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		92.08						
0	Power Auger 200 mm Diam. (Hollow Stem)	FILL - (ML-CL) sandy SILT and CLAYEY SILT, trace to some organics; brown; moist		0.00						
				90.56						
		FILL - (CI/CH) SILTY CLAY, trace gravel; grey, contains sand layers; cohesive, w>PL, soft		1.52	1	GRAB	-	⊕		
1										
2										
3					2	SS	1	⊕		
4										
5					3	SS	1	⊕		
				86.90						
		End of Borehole		5.18						
6										
7										
8										
9										
10										

DEPTH SCALE
1 : 50

GOLDER

LOGGED: PAH
CHECKED: KPH

MIS-BHS 001 1670692.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 1670692

RECORD OF BOREHOLE: 17-07

SHEET 1 OF 1

LOCATION: N 5020617.3 ;E 445597.4

BORING DATE: April 26, 2017

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	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		93.80						
0	Power Auger 200 mm Diam. (Hollow Stem)	FILL - (CL-ML) SILTY CLAY and sandy SILT, some gravel; grey brown, contains cobbles; non-cohesive, moist, loose to compact		0.00	1	GRAB	-	⊕		
1					2	SS	11	⊕		
					3	SS	5	⊕		
2				91.67						
		FILL - (SM) SILTY SAND, fine; grey with clayey silt lumps; non-cohesive, moist, compact		2.13	4	SS	16	⊕		Native Backfill
3					5	SS	12	⊕		
				90.14						
		FILL - (CL/ML) SILTY CLAY and CLAYEY SILT, trace gravel; grey; cohesive, w>PL		3.66	6	SS	4	⊕		
4										
					7	SS	4	⊕		
5										Bentonite Seal
					8	SS	3	⊕		
6										Silica Sand
				87.40	9	SS	6			
		(SP) SAND, fine; brown, contains thin clayey silt seams; non-cohesive, wet, loose to compact		6.40						51 mm Diam. PVC #10 Slot Screen
7					10	SS	6	⊕		
					11	SS	11	⊕		Native Backfill
8				85.57						
		End of Borehole		8.23						W.L. in Screen at Elev. 88.20 m on May 2, 2017
9										
10										

DEPTH SCALE

1 : 50

GOLDER

LOGGED: PAH

CHECKED: KPH

MIS-BHS 001 1670692.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 1670692

RECORD OF BOREHOLE: 17-09

SHEET 1 OF 1

LOCATION: N 5020658.0 ;E 445493.4

BORING DATE: May 3, 2017

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	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		88.49						
0	Power Auger 200 mm Diam. (Hollow Stem)	FILL - (SM/GL-ML) SILTY SAND and CLAYEY SILT mixed, trace organics; brown and grey; non-cohesive, moist, loose		0.00	1	GRAB	-	⊕		Native Backfill and Bentonite Mix
1					2	SS	3	⊕		
				86.90						Bentonite Seal
		(SP) SAND, fine; brown, occasional clayey silt seam; non-cohesive, moist to wet with depth, loose to compact		1.59	3	SS	38	⊕		Silica Sand
2										
					4	SS	4	⊕		
3					5	SS	2	⊕		51 mm Diam. PVC #10 Slot Screen
4					6	SS	11	⊕		
				84.07						
		(SP-CL) layered SAND, fine and SILTY CLAY; brown and grey brown; w~PL, very stiff		4.42						
5					7	SS	14		⊕	
				83.31						
		End of Borehole		5.18						W.L. in Screen at Elev. 84.93 m on May 4, 2017
6										
7										
8										
9										
10										

DEPTH SCALE

1 : 50

GOLDER

LOGGED: PAH

CHECKED: KPH

MIS-BHS 001 1670692.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 1781761

RECORD OF BOREHOLE: 17-101

SHEET 1 OF 2

LOCATION: N 5022014.4 ;E 367989.8

BORING DATE: June 23 and 26, 2017

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		96.26						
0	Power Auger 200 mm Diam. (Hollow Stem)	FILL - (CL-ML) CLAYEY SILT, trace to some organic matter, trace gravel; grey brown, contains deleterious material (brick fragments)		0.00	1	GRAB	-	⊕		
1				94.74						
		FILL - (SM) SILTY SAND; dark brown, contains deleterious material (cinder/ash, trace glass), compact		1.52	2	SS	13	⊕		
2				94.20						
		FILL - (CL, CL-ML) SILTY CLAY and CLAYEY SILT, trace to some sand layers; grey brown; cohesive, w>PL		2.06	3	SS	3	⊕		
3					4	SS	4	⊕		
4										
5					5	SS	4	⊕		
6				90.16						
		FILL - (ML) sandy SILT, some gravel; dark grey to black; non-cohesive, moist, compact		6.10	6	SS	17	⊕		
7				89.25						
		(SW/GW) gravelly SAND and sandy GRAVEL, trace silt; grey; non-cohesive, moist, compact		7.01	7	SS	22	⊕		
8										
9					8	SS	21	⊕		
10		*CONTINUED NEXT PAGE*								

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: PAH

CHECKED: KSL

PROJECT: 1781761

RECORD OF BOREHOLE: 17-101

SHEET 2 OF 2

LOCATION: N 5022014.4 ;E 367989.8

BORING DATE: June 23 and 26, 2017

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ (*ND = Not Detected*) 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)	(SW/GW) gravelly SAND and sandy GRAVEL, trace silt; grey; non-cohesive, moist, compact									
11					9	SS	16	⊕			
12					10	SS	16	⊕			
13											
14					11	SS	23	⊕			
				81.46							
		(SP) SAND, trace gravel, silt and clay; brown; non-cohesive, wet, loose to compact		14.80							
15					12	SS	5	⊕	○	MH	
16					13	SS	13	⊕			
17					14	SS	27				
				78.89							
		Probable Sand		17.37							
18	DCPT AW Rods										
19				77.12							
		End of Borehole DCPT Refusal		19.14							
20											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: PAH

CHECKED: KSL

PROJECT: 1781761

RECORD OF BOREHOLE: 17-102

SHEET 1 OF 2

LOCATION: N 5021983.7 ;E 367986.5

BORING DATE: June 22, 2017

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		97.31						
0	Power Auger 200 mm Diam. (Hollow Stem)	FILL - (ML) CLAYEY SILT, some sand to sandy, trace gravel; brown; non-cohesive, moist, loose		0.00	1	GRAB	-	⊕		Bentonite Seal
1										
2					2	SS	6	⊕		
3					3	SS	4	⊕		
4										
5					4	SS	2	⊕		Native Backfill
6					5	SS	9	⊕		
				90.60						
7		(SP) SAND, trace silt; grey brown; non-cohesive, moist, compact		6.71	6	SS	18	⊕		CHEM
8					7	SS	14	⊕		
9										
10					8	SS	18	⊕		
		CONTINUED NEXT PAGE								

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: PAH

CHECKED: KSL

PROJECT: 1781761

RECORD OF BOREHOLE: 17-102

SHEET 2 OF 2

LOCATION: N 5021983.7 ;E 367986.5

BORING DATE: June 22, 2017

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (20 40 60 80) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---									
10	Power Auger 200 mm Diam. (Hollow Stem)	(SP) SAND, trace silt; grey brown; non-cohesive, moist, compact									
11					9	SS	17	⊕			
				85.73							
		(SP) SAND; grey brown to grey, some silt and clayey silt seams; non-cohesive, moist, compact		11.58							Native Backfill
12					10	SS	16	⊕	○	MH	
13											
14					11	SS	25	⊕			Bentonite Seal
											Silica Sand
15											
					12	SS	26	⊕			
16											
				81.01							
		(SP) SAND, trace silt and gravel; brown; non-cohesive, wet, compact		16.30							38 mm Diam. PVC #10 Slot Screen
17					13	SS	13	⊕			
18											Cave
				79.02							
		End of Borehole		18.29							WL in Screen at Elev. 81.39 m on June 27, 2017
19											
20											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: PAH

CHECKED: KSL

PROJECT: 1781761

RECORD OF BOREHOLE: 17-103

SHEET 1 OF 2

LOCATION: N 5021968.2 ;E 367947.1

BORING DATE: June 22-23, 2017

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ (ND = Not Detected)	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT PERCENT (Wp, W, Wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		95.96							
0	Power Auger 200 mm Diam. (Hollow Stem)	FILL - (ML) CLAYEY SILT, some sand and gravel; dark brown, contains organic matter; non-cohesive, moist		0.00	1	GRAB	-	⊕			
1											
				94.44							
		FILL - (SM/GM) SILTY SAND and GRAVEL; brown; non-cohesive, moist, loose to compact		1.52	2	SS	10	⊕	○	MH	
2											
				93.52							
		FILL - (SM/GM) SILTY SAND and GRAVEL; grey and grey brown, contains boulders; non-cohesive, moist, loose		2.44							
3					3	SS	6	⊕			
4											
					4	SS	4	⊕			
5											
6				89.86							
		(SP) SAND, fine to medium, trace to some silt; grey and brown, contains gravelly layers; non-cohesive, moist, compact to dense		6.10	5	SS	11	⊕			
7					6	SS	48	⊕			
8					7	SS	43	⊕			
					8	SS	19	⊕			
9					9	SS	16	⊕			
				86.21							
	DCPT	Probable Sand		9.75							
10		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: PAH

CHECKED: KSL

MIS-BHS 001 1781761-ENV.GPJ GAL-MIS.GDT 10/16/17 ZS

PROJECT: 1781761

RECORD OF BOREHOLE: 17-103

SHEET 2 OF 2

LOCATION: N 5021968.2 ;E 367947.1

BORING DATE: June 22-23, 2017

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	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* 20 40 60 80 / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ *ND = Not Detected* 20 40 60 80	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} / WATER CONTENT PERCENT Wp W Wl 20 40 60 80	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---								
10	DCPT AW Rods	Probable Sand								
11										
12										
13										
				82.02						
14		End of Borehole DCPT Refusal		13.94						
15										
16										
17										
18										
19										
20										

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: PAH
CHECKED: KSL

PROJECT: 1781761

RECORD OF BOREHOLE: 17-104

SHEET 1 OF 2

LOCATION: N 5021979.4 ;E 367917.8

BORING DATE: June 26, 2017

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		94.94						
0	Power Auger 200 mm Diam. (Hollow Stem)	FILL - (CI/CH) SILTY CLAY; brown, contains organic matter; cohesive, w<PL		0.00	1	GRAB	-	⊕		
1										
				93.42						
		FILL - (CL,CL-ML,SM) SILTY CLAY, CLAYEY SILT and SILTY SAND, some gravel; grey to brown		1.52	2	SS	5	⊕		
2										
3					3	SS	2	⊕		
4										
				90.37						
		FILL - (SM,CL-ML) SILTY SAND, trace gravel; dark grey to brown, contains organic matter (rootlets), sandy silt and silty clay layers, and pieces of wood; moist, very loose to loose		4.57	4	SS	3	⊕		
5										
6					5	SS	3	⊕	○	MH
7										
8					6	SS	4	⊕		
9										
					7	SS	7	⊕		
10		*CONTINUED NEXT PAGE*								

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: PAH

CHECKED: KSL

PROJECT: 1781761

RECORD OF BOREHOLE: 17-104

SHEET 2 OF 2

LOCATION: N 5021979.4 ;E 367917.8

BORING DATE: June 26, 2017

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* (20 40 60 80) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ *ND = Not Detected* (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---								
10	Power Auger 200 mm Diam. (Hollow Stem)	FILL - (SM,CL-ML) SILTY SAND, trace gravel; dark grey to brown, contains organic matter (rootlets), sandy silt and silty clay layers, and pieces of wood; moist, very loose to loose								
11					8	SS	5	⊕		
				83.04						
12		(SP) SAND, trace to some silt, trace gravel; grey brown, contains clayey silt seams; non-cohesive, moist, compact to dense		11.90	9	SS	20	⊕		
13					10	SS	40	⊕		
14					11	SS	46			
				80.61						
	DCPT AW Rods	Probable Sand		14.33						
15										
				79.12						
		End of Borehole DCPT Refusal		15.82						
16										
17										
18										
19										
20										

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: PAH
CHECKED: KSL

MIS-BHS 001 1781761-ENV.GPJ GAL-MIS.GDT 10/16/17 ZS

PROJECT: 1781761

RECORD OF BOREHOLE: TP17-1001

SHEET 1 OF 1

LOCATION: N 5022019.4 ;E 367989.8

BORING DATE: July 20, 2017

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 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	Excavator	FILL - (CL) SILTY CLAY, trace to some sand, trace gravel; brown grey, contains organics; cohesive, w>PL		0.00							
1		FILL - (SM) gravelly SILTY SAND; dark brown, contains cobbles and boulders, brick, ash, glass, ceramic, melted/layered plastic, slag, sour odour; non-cohesive, moist		1.25							
2		FILL - (CL) SILTY CLAY, trace to some sand, trace gravel; grey brown, contains brick, ash; w>PL		2.10							
3		End of Test Pit		2.80							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: RI

CHECKED:

MIS-BHS 001 1781761-ENV.GPJ GAL-MIS.GDT 10/16/17 ZS

PROJECT: 1781761

RECORD OF BOREHOLE: TP17-1002

SHEET 1 OF 1

LOCATION: N 5022014.4 ;E 367994.8

BORING DATE: July 20, 2017

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 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	Excavator	FILL - (CL) SILTY CLAY, trace to some sand, trace gravel; brown grey, contains organics, trace brick, glass; cohesive, w>PL		0.00									
1		FILL - (SW) gravelly SAND, angular; grey (Crushed Stone)		0.92									
		FILL - (SM) gravelly SILTY SAND; dark brown, contains glass, brick, ash, slag, rebar, brush, cobbles and boulders, bone; non-cohesive, moist		1.25									
2		FILL - (CL) SILTY CLAY, trace to some sand, trace gravel; grey brown, contains brick; cohesive, w>PL		2.10									
		End of Test Pit		2.80									
3													
4													
5													
6													
7													
8													
9													
10													

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: RI

CHECKED:

MIS-BHS 001 1781761-ENV.GPJ GAL-MIS.GDT 10/16/17 ZS

PROJECT: 1781761

RECORD OF BOREHOLE: TP17-1003

SHEET 1 OF 1

LOCATION: N 5022009.4 ;E 367989.8

BORING DATE: July 20, 2017

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 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	Excavator	FILL - (CL) SILTY CLAY, trace to some sand, trace gravel; brown grey, contains cobbles; cohesive, w>PL		0.00							
1		FILL - (SM) gravelly SILTY SAND; dark brown, contains cobbles and boulders, glass, brick, coal, slag, metal, burnt garbage, ceramic; non-cohesive, moist		1.10							
2		FILL - (CL) SILTY CLAY, trace to some sand, trace gravel; grey brown; cohesive, w>PL		2.15							
3		End of Test Pit		2.90							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: RI

CHECKED:

MIS-BHS 001 1781761-ENV.GPJ GAL-MIS.GDT 10/16/17 ZS

PROJECT: 1781761

RECORD OF BOREHOLE: TP17-1004

SHEET 1 OF 1

LOCATION: N 5022014.4 ;E 367984.8

BORING DATE: July 20, 2017

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 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	Excavator	FILL - (CL) SILTY CLAY, trace to some sand, trace gravel; brown grey, contains brick, organic matter, cobbles, rock slab; cohesive, w>PL		0.00							
1		FILL - (SM) gravelly SILTY SAND; dark brown, contains cobbles and boulders, wood, brick, ash, slag, glass, bone; non-cohesive, moist		1.40							
2		FILL - (CL) SILTY CLAY, trace to some sand, trace gravel; grey brown, contains brick; cohesive, w>PL		2.35							
		End of Test Pit		2.70							
3											
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: RI

CHECKED:

PROJECT: 1781761

RECORD OF BOREHOLE: TP17-1005

SHEET 1 OF 1

LOCATION: N 5022014.4 ;E 367974.8

BORING DATE: July 20, 2017

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 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	Excavator	FILL - (CL) SILTY CLAY, some sand, trace gravel; grey brown, contains cobbles and boulders, organics; cohesive, w>PL		0.00							
1											
2		FILL - (SM) gravelly SILTY SAND; dark brown, contains cobbles and boulders, brick, ash, slag, ceramic, glass, coal; non-cohesive, moist		1.95							
		FILL - (CL) SILTY CLAY, trace to some sand, trace gravel; grey brown, contains brick; cohesive, w>PL		2.55							
3		End of Test Pit		2.90							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: RI
CHECKED:

MIS-BHS 001 1781761-ENV.GPJ GAL-MIS.GDT 10/16/17 ZS

PROJECT: 1781761

RECORD OF BOREHOLE: TP17-1006

SHEET 1 OF 1

LOCATION: N 5022029.4 ;E 367989.8

BORING DATE: July 20, 2017

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 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	Excavator	FILL - (CL) SILTY CLAY, trace to some sand, trace gravel; brown grey, contains cobbles, brick, organics; cohesive, w>PL		0.00							
1	Excavator	FILL - (SM) gravelly SILTY SAND; dark brown, contains brick, slag, ash, glass, ceramic, wood, cobbles and boulders; non-cohesive, very moist		1.30							
2	Excavator	FILL - (CL) SILTY CLAY, trace to some sand, trace gravel; grey brown, contains brick; cohesive, w>PL		2.30							
3		End of Test Pit		2.80							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: RI

CHECKED:

PROJECT: 1781761

RECORD OF BOREHOLE: TP17-1007

SHEET 1 OF 1

LOCATION: N 5021999.4 ;E 367989.8

BORING DATE: July 20, 2017

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 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	Excavator	FILL - (CL) SILTY CLAY, trace to some sand, trace gravel; brown grey, contains cobbles and boulders, rock slab; cohesive, w>PL		0.00							
1	Excavator	FILL - (ML) gravelly SILTY SAND, trace clay; dark brown, contains wood; non-cohesive, moist		1.35							
2	Excavator	FILL - (SM) gravelly SILTY SAND; dark brown, contains cobbles and boulders, brick, ash, coal/slag, wood; non-cohesive, moist		1.75							
	Excavator	FILL - (CL) SILTY CLAY, trace to some sand, trace gravel; grey brown, contains cobbles, brick; cohesive, w>PL		2.30							
3		End of Test Pit		2.80							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: RI

CHECKED:

MIS-BHS 001 1781761-ENV.GPJ GAL-MIS.GDT 10/16/17 ZS

PROJECT: 1781761

RECORD OF BOREHOLE: TP17-1008

SHEET 1 OF 1

LOCATION: N 5021996.8 ;E 367972.1

BORING DATE: July 20, 2017

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 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	Excavator	FILL - (CL) SILTY CLAY, trace to some sand, trace gravel; brown grey, contains concrete, cobbles and boulders, rock slabs; cohesive, w>PL		0.00							
1											
2		FILL - (ML) sandy CLAYEY SILT, some gravel; brown grey to dark brown, contains organics, cobbles and boulders, wood, brick, ash, mica, metal; cohesive, w>PL		1.80							
		FILL - (ML) gravelly sandy CLAYEY SILT; grey brown, contains wood, asphalt, brick; non-cohesive, moist		2.20							
		End of Test Pit		2.50							
3											
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: RI

CHECKED:

PROJECT: 1781761

RECORD OF BOREHOLE: TP17-1009

SHEET 1 OF 1

LOCATION: N 5022032.1 ;E 367972.1

BORING DATE: July 20, 2017

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 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	Excavator	FILL - (CL) SILTY CLAY, trace to some sand, trace gravel; brown grey to grey brown, contains cobbles and boulders, rock slabs, glass, sand pockets; cohesive, w>PL		0.00							
1											
2		FILL - (SM) gravelly SILTY SAND; dark brown, contains brick, glass, ash, ceramic, rubber tire, wood; non-cohesive, moist		2.30							
3											
		FILL - (SM) clayel gravelly SILTY SAND; grey brown with black organic staining, contains organics, brick, asphalt; non-cohesive, moist		3.20							
		End of Test Pit		3.30							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: RI
CHECKED:

MIS-BHS 001 1781761-ENV.GPJ GAL-MIS.GDT 10/16/17 ZS

PROJECT: 1781761

RECORD OF BOREHOLE: TP17-1010

SHEET 1 OF 1

LOCATION: N 5021984.0 ;E 367987.7

BORING DATE: September 7, 2017

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 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	Excavator	FILL - (CL) SILTY CLAY, trace gravel; brown, contains organic matter, roots, rubble; moist, soft		0.00							
1											
		FILL - (CL) SILTY CLAY, trace gravel; grey, contains organic matter, brick, wood; moist		1.30							
2											
		FILL - (CI) SILTY CLAY, trace gravel; grey; moist, soft		2.70							
3											
		End of Test Pit		3.30							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: SC

CHECKED:

PROJECT: 1781761

RECORD OF BOREHOLE: TP17-1011

SHEET 1 OF 1

LOCATION: N 5022003.8 ;E 367962.1

BORING DATE: September 7, 2017

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 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	Excavator	FILL - (CL) SILTY CLAY, trace gravel; dark grey, contains organic matter; moist		0.00							
1		FILL - (CL) SILTY CLAY, trace gravel; grey, contains cobbles, bricks, asphalt; moist		0.90							
2		FILL - (CL) SILTY CLAY, trace gravel; grey, contains cobbles, wood; moist, firm		2.10							
3		End of Test Pit		3.20							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: SC

CHECKED:

MIS-BHS 001 1781761-ENV.GPJ GAL-MIS.GDT 10/16/17 ZS

PROJECT: 1781761

RECORD OF BOREHOLE: TP17-1012

SHEET 1 OF 1

LOCATION: N 5022011.8 ;E 367962.1

BORING DATE: September 7, 2017

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 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	Excavator	FILL - (CL) SILTY CLAY, trace gravel; dark grey, contains organic matter, roots, wood, cobbles; moist, soft		0.00							
1											
2		FILL - (CL) sandy SILTY CLAY; grey, contains brick, ash, boulders; moist, soft		1.40							
3		FILL - (CI) SILTY CLAY, trace gravel; grey, contains, boulders, bricks; moist, soft		2.80							
		End of Test Pit		3.30							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: SC

CHECKED:

MIS-BHS 001 1781761-ENV.GPJ GAL-MIS.GDT 10/16/17 ZS

PROJECT: 1781761

RECORD OF BOREHOLE: TP17-1013

SHEET 1 OF 1

LOCATION: N 5022013.8 ;E 367951.1

BORING DATE: September 7, 2017

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 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	Excavator	FILL - (CL) SILTY CLAY, trace gravel; grey, contains organic matter, roots; moist, soft		0.00							
1		FILL - (CL) sandy SILTY CLAY, trace gravel; brown, contains cobbles, brick; moist, loose to soft		1.10							
		FILL - (CL) SILTY CLAY, trace gravel; grey, contains wood; moist, soft		1.60							
2											
3		FILL - (CI) SILTY CLAY, trace gravel; grey; moist, firm		2.90							
		End of Test Pit		3.20							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: SC

CHECKED:

MIS-BHS 001 1781761-ENV.GPJ GAL-MIS.GDT 10/16/17 ZS

PROJECT: 1781761

RECORD OF BOREHOLE: TP17-1014

SHEET 1 OF 1

LOCATION: N 5022025.8 ;E 367951.1

BORING DATE: September 7, 2017

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 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	Excavator	FILL - (CL) SILTY CLAY; brown, contains organic matter, roots; moist, soft		0.00							
1											
		FILL - (CL) sandy SILTY CLAY, trace gravel; grey, contains cobbles; moist, soft		1.50							
2											
		FILL - (ML) sandy SILT, trace gravel; grey, contains cobbles, ash; moist, soft		2.30							
3											
		End of Test Pit		3.10							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: SC

CHECKED:

PROJECT: 19126877

RECORD OF BOREHOLE: TP19-01

SHEET 1 OF 1

LOCATION: N 5020492.4 ;E 445535.6

BORING DATE: July 31, 2019

DATUM: Local

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	SAMPLES: TYPE	SAMPLES: 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	Backhoe	TOPSOIL		0.00							
		FILL - SILTY SAND, some cobbles; light brown, contains brick pieces; non-cohesive, dry, loose		0.30							
1		FILL - COBBLES and SILTY SAND, some boulders, flat, angular; brown; non-cohesive, dry, dense		1.25	1	GRAB	-				
2		FILL - SILTY CLAY and COBBLES; dark grey, contains burnt wood, plastic, and brick pieces; non-cohesive, wet, compact		2.50	2	GRAB	-				
					3	GRAB	-				
3		End of Test Pit Refusal		3.00							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

GOLDER

LOGGED: SB

CHECKED: AW

MIS-BHS 001 19126877.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 19126877

RECORD OF BOREHOLE: TP19-02

SHEET 1 OF 1

LOCATION: N 5020485.4 ;E 445512.6

BORING DATE: July 31, 2019

DATUM: Local

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	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, 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	Backhoe	TOPSOIL		0.00							
		FILL - SILTY SAND; light brown; non-cohesive, dry, loose		0.30							
1		FILL - SHALE, weathered, flat, platy; dark grey		0.80							
		SAND, some gravel; light brown, contains natural wood pieces, sticks, rotten logs; non-cohesive, moist, compact		1.40	1	GRAB	-				
2											
					2	GRAB	-				
3					3	GRAB	-				
		End of Test Pit Limit of machine reach		3.50							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

GOLDER

LOGGED: SB

CHECKED: AW

MIS-BHS 001 19126877.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 19126877

RECORD OF BOREHOLE: TP19-03

SHEET 1 OF 1

LOCATION: N 5020470.1 ;E 445536.1

BORING DATE: July 31, 2019

DATUM: Local

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	Backhoe	TOPSOIL		0.00							
		FILL - SILTY SAND and COBBLES, some gravel; light brown, contains concrete; non-cohesive, dry, compact		0.30							
1		FILL - SILTY CLAY, some cobbles, gravel and clay balls, trace boulders; dark brown, contains brick and concrete; non-cohesive, moist, dense		1.00	1	GRAB	-				
2					2	GRAB	-				
		FILL - SILTY CLAY, some cobbles; grey brown, contains wood, lumber, bricks, metal pipe, metal conduit, plastic scraps; non-cohesive, wet, compact		2.50	3	GRAB	-				
3		End of Test Pit Refusal		3.30							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

GOLDER

LOGGED: SB

CHECKED: AW

MIS-BHS 001 19126877.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 19126877

RECORD OF BOREHOLE: TP19-04

SHEET 1 OF 1

LOCATION: N 5020473.5 ;E 445513.5

BORING DATE: July 31, 2019

DATUM: Local

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)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE						SHEAR STRENGTH Cu, kPa: nat V. + Q - ●; rem V. ⊕ U - ○ (20 40 60 80)	WATER CONTENT PERCENT: Wp — W — Wl (20 40 60 80)		
0	Backhoe	TOPSOIL		0.00							
		FILL - SILTY SAND, some cobbles, rounded to angular (slabs of shale); light brown, contains brick, lumps of clay; non-cohesive, dry, compact		0.30							
1											
2					1	GRAB	-				
3					2	GRAB	-				
		FILL - SILTY SAND, some cobbles and shale slabs; dark grey, contains brick, concrete, burnt wood; non-cohesive, moist, compact		3.20	3	GRAB	-				
		End of Test Pit Limit of machine reach		3.50							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

GOLDER

LOGGED: SB

CHECKED: AW

MIS-BHS 001 19126877.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 19126877

RECORD OF BOREHOLE: TP19-05

SHEET 1 OF 1

LOCATION: N 5020484.2 ;E 445614.0

BORING DATE: July 31, 2019

DATUM: Local

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	SAMPLES: TYPE	SAMPLES: 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		TOPSOIL		0.00							
		FILL - SILTY CLAY, trace gravel; grey brown, contains concrete with rebar; non-cohesive, moist to dry, compact		0.30							
1					1	GRAB	-				
	Backhoe	FILL - SILTY SAND, some gravel and cobbles, angular; red brown to dark grey, contains plastic, pottery shards, concrete with rebar, coal, charcoal pieces, PHC odour at 2.5 m depth; non-cohesive, moist, compact		1.50	2	GRAB	-				
2											
					3	GRAB	-				
3											
		End of Test Pit Limit of machine reach		3.80							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

GOLDER

LOGGED: SB

CHECKED: AW

MIS-BHS 001 19126877.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 19126877

RECORD OF BOREHOLE: TP19-06

SHEET 1 OF 1

LOCATION: N 5020511.1 ;E 445609.9

BORING DATE: July 31, 2019

DATUM: Local

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	SAMPLES: TYPE	SAMPLES: 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		TOPSOIL		0.00									
		FILL - SILTY CLAY, some cobbles, trace gravel; grey		0.40									
1	Backhoe	FILL - SILTY CLAY; grey brown, contains asphalt, wood, plastic, glass pieces, shards of pottery, PVC piple, burned wood, charcoal pieces, bricks; non-cohesive, moist, dense		1.20	1	GRAB	-						
2					2	GRAB	-						
3					3	GRAB	-						
		End of Test Pit Terminated in clay fill		3.25									
4													
5													
6													
7													
8													
9													
10													

DEPTH SCALE

1 : 50

GOLDER

LOGGED: SB

CHECKED: AW

MIS-BHS 001 19126877.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 19126877

RECORD OF BOREHOLE: TP19-07

SHEET 1 OF 1

LOCATION: N 5020481.1 ;E 445646.3

BORING DATE: July 31, 2019

DATUM: Local

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	SAMPLES: TYPE	SAMPLES: 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	Backhoe	TOPSOIL		0.00							
		FILL - SILTY CLAY, some cobbles and boulders; dark brown, contains rebar, concrete; non-cohesive, moist, dense		0.20	1	GRAB	-				
1		End of Test Pit Refusal		1.50							
2											
3											
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

GOLDER

LOGGED: SB

CHECKED: AW

MIS-BHS 001 19126877.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 19126877

RECORD OF BOREHOLE: TP19-08

SHEET 1 OF 1

LOCATION: N 5020526.2 ;E 445610.6

BORING DATE: July 31, 2019

DATUM: Local

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. +, rem V. ⊕, Q - ●, 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	Backhoe	TOPSOIL		0.00							
		FILL - SILTY CLAY, some clay nodules and gravel; dark brown; non-cohesive, dry, compact		0.50							
1											
2		FILL - SILTY CLAY; contains concrete, rags and glass		2.00	1	GRAB	-				
3					2	GRAB	-				
		End of Test Pit Refusal		3.20							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

GOLDER

LOGGED: SB

CHECKED: AW

MIS-BHS 001 19126877.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 19126877

RECORD OF BOREHOLE: TP19-09

SHEET 1 OF 1

LOCATION: N 5020511.2 ;E 445581.3

BORING DATE: July 31, 2019

DATUM: Local

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	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, 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	Backhoe	TOPSOIL		0.00									
		FILL - SILTY CLAY, some gravel and cobbles; grey, contains glass bottles, broken glass pieces; non-cohesive, moist, loose		0.30									
1		FILL - SILTY SAND; light brown; non-cohesive, dry, loose		1.60									
		FILL - SILTY CLAY and COBBLES, some shale boulders; grey, contains concrete pieces; non-cohesive, moist, dense		1.80	1	GRAB	-						
2		End of Test Pit Refusal		2.50									
3													
4													
5													
6													
7													
8													
9													
10													

DEPTH SCALE

1 : 50

GOLDER

LOGGED: SB

CHECKED: AW

MIS-BHS 001 19126877.GPJ GAL-MIS.GDT 11/08/19 JEM

PROJECT: 1781761

RECORD OF BOREHOLE: TP17-1015

SHEET 1 OF 1

LOCATION: N 5021991.0 ;E 367987.7

BORING DATE: September 7, 2017

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 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	Excavator	FILL - (CL) SILTY CLAY, trace gravel; grey, contains cobbles, trace bricks, organic matter; moist, soft		0.00							
1											
		FILL - (CL) sandy SILTY CLAY, trace gravel; grey, contains waste material, plastics, ceramics, bricks; moist, soft		1.20							
2											
		FILL - (CI) SILTY CLAY, trace gravel; grey, contains cobbles and boulders; moist, firm		2.50							
3											
		End of Test Pit		3.30							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: SC

CHECKED:

PROJECT: 1781761

RECORD OF BOREHOLE: TP17-1016

SHEET 1 OF 1

LOCATION: N 5022040.4 ;E 367989.8

BORING DATE: September 7, 2017

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: 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	Excavator	FILL - (CL) SILTY CLAY; grey, trace organic matter, roots, wood; moist, soft		0.00							
1		FILL - (CL) sandy SILTY CLAY, trace gravel; brown, contains glass, ceramics, wood, cobbles and boulders		1.10							
2		FILL - (CI) SILTY CLAY, trace gravel; grey, contains cobbles and boulders; moist, firm		2.20							
3		End of Test Pit		2.90							
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: SC

CHECKED:

MIS-BHS 001 1781761-ENV.GPJ GAL-MIS.GDT 10/16/17 ZS

APPENDIX B

Certificates of Analysis

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Alyssa Troke; Keith Holmes

PROJECT: 1670692 Taggart Phase II ESA

AGAT WORK ORDER: 17Z210773

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: May 09, 2017

PAGES (INCLUDING COVER): 10

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES
VERSION 2:Partial report issued May 8/17.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories
5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 17Z210773

PROJECT: 1670692 Taggart Phase II ESA

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2017-05-02

DATE REPORTED: 2017-05-09

SAMPLE DESCRIPTION:				BH#17-02 SA#5	BH#17-02 SA#22	BH#17-02 SA#26	BH#17-04 SA#4	BH#17-04 SA#7	BH#17-07 SA#8	BH#17-07 A.S
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2017-04-26	2017-04-27	2017-04-27	2017-04-26	2017-04-26	2017-04-28	2017-04-28
Parameter	Unit	G / S	RDL	8352975	8352992	8352995	8352998	8353003	8353006	8353010
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	1	1	3	2	2	3	3
Barium	µg/g	390	2	126	65	89	175	193	211	196
Beryllium	µg/g	4	0.5	<0.5	<0.5	<0.5	0.6	0.7	0.6	0.6
Boron	µg/g	120	5	5	<5	11	6	6	7	6
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.26	<0.10	<0.10	0.11	<0.10	0.19	0.28
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	2	44	17	23	78	93	79	69
Cobalt	µg/g	22	0.5	7.7	4.5	10.2	15.3	17.0	13.2	13.3
Copper	µg/g	140	1	19	11	20	30	37	31	31
Lead	µg/g	120	1	13	3	8	5	6	14	19
Molybdenum	µg/g	6.9	0.5	<0.5	0.9	2.1	<0.5	<0.5	0.6	<0.5
Nickel	µg/g	100	1	21	8	10	43	48	39	36
Selenium	µg/g	2.4	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver	µg/g	20	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.6	<0.4
Uranium	µg/g	23	0.5	0.6	<0.5	0.6	1.0	1.0	0.9	0.8
Vanadium	µg/g	86	1	37	19	22	68	75	65	60
Zinc	µg/g	340	5	46	18	22	77	86	78	76
Chromium VI	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

Certified By: Amanjot Bhela

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Certificate of Analysis

AGAT WORK ORDER: 17Z210773

PROJECT: 1670692 Taggart Phase II ESA

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2017-05-02

DATE REPORTED: 2017-05-09

SAMPLE DESCRIPTION:				BH#17-02 SA#5	BH#17-02 SA#22	BH#17-02 SA#26	BH#17-04 SA#4	BH#17-04 SA#7	BH#17-07 SA#8	BH#17-07 A.S
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2017-04-26	2017-04-27	2017-04-27	2017-04-26	2017-04-26	2017-04-28	2017-04-28
Parameter	Unit	G / S	RDL	8352975	8352992	8352995	8352998	8353003	8353006	8353010
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	0.22	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	0.26	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	1.8	<0.05	<0.05	<0.05	<0.05	<0.05	0.15
Anthracene	µg/g	0.67	0.05	0.51	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	1.8	<0.05	<0.05	<0.05	<0.05	0.13	0.17
Pyrene	µg/g	78	0.05	1.4	<0.05	<0.05	<0.05	<0.05	0.12	0.16
Benz(a)anthracene	µg/g	0.5	0.05	0.79	<0.05	<0.05	<0.05	<0.05	0.08	0.07
Chrysene	µg/g	7	0.05	0.67	<0.05	<0.05	<0.05	<0.05	0.07	0.07
Benzo(b)fluoranthene	µg/g	0.78	0.05	0.73	<0.05	<0.05	<0.05	<0.05	0.10	0.09
Benzo(k)fluoranthene	µg/g	0.78	0.05	0.35	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	0.58	<0.05	<0.05	<0.05	<0.05	0.07	0.07
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	0.33	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	0.30	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	24.3	13.2	12.4	30.0	27.5	22.9	19.4
Surrogate	Unit	Acceptable Limits								
Chrysene-d12	%	50-140		68	58	58	61	54	69	58

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

8352975-8353010 Results are based on the dry weight of the soil.
Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z210773

PROJECT: 1670692 Taggart Phase II ESA

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)

DATE RECEIVED: 2017-05-02

DATE REPORTED: 2017-05-09

SAMPLE DESCRIPTION:				BH#17-02 SA#5	BH#17-02 SA#22	BH#17-02 SA#26	BH#17-04 SA#4	BH#17-04 SA#7	BH#17-07 SA#8	BH#17-07 A.S
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2017-04-26	2017-04-27	2017-04-27	2017-04-26	2017-04-26	2017-04-28	2017-04-28
Parameter	Unit	G / S	RDL	8352975	8352992	8352995	8352998	8353003	8353006	8353010
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene Mixture	µg/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10	<10	67
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10	<10	67
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50	<50	<50	<50	130
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50	<50	<50	<50	130
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	24.3	13.2	12.4	30.0	27.5	22.9	19.4
Surrogate	Unit	Acceptable Limits								
Terphenyl	%	60-140		87	79	109	77	66	97	97

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

8352975-8353010 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX and PAH contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.

Certified By: N Popowich

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Guideline Violation

AGAT WORK ORDER: 17Z210773

PROJECT: 1670692 Taggart Phase II ESA

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke; Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
8352975	BH#17-02 SA#5	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.5	0.79
8352975	BH#17-02 SA#5	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.58
8352975	BH#17-02 SA#5	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	1.8

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD
PROJECT: 1670692 Taggart Phase II ESA
SAMPLING SITE:

AGAT WORK ORDER: 17Z210773
ATTENTION TO: Alyssa Troke; Keith Holmes
SAMPLED BY:

Soil Analysis

RPT Date: May 09, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - All Metals (Soil)															
Antimony	8361780		<0.8	<0.8	NA	< 0.8	91%	70%	130%	101%	80%	120%	87%	70%	130%
Arsenic	8361780		5	4	NA	< 1	115%	70%	130%	105%	80%	120%	93%	70%	130%
Barium	8361780		26	23	12.2%	< 2	105%	70%	130%	98%	80%	120%	92%	70%	130%
Beryllium	8361780		<0.5	<0.5	NA	< 0.5	100%	70%	130%	106%	80%	120%	93%	70%	130%
Boron	8361780		8	7	NA	< 5	90%	70%	130%	104%	80%	120%	113%	70%	130%
Boron (Hot Water Soluble)	8361821		1.37	1.44	5.0%	< 0.10	105%	60%	140%	106%	70%	130%	104%	60%	140%
Cadmium	8361780		<0.5	<0.5	NA	< 0.5	105%	70%	130%	99%	80%	120%	88%	70%	130%
Chromium	8361780		8	7	NA	< 2	97%	70%	130%	107%	80%	120%	112%	70%	130%
Cobalt	8361780		4.6	4.1	11.5%	< 0.5	102%	70%	130%	100%	80%	120%	87%	70%	130%
Copper	8361780		28	25	11.3%	< 1	99%	70%	130%	105%	80%	120%	96%	70%	130%
Lead	8361780		14	12	15.4%	< 1	106%	70%	130%	108%	80%	120%	88%	70%	130%
Molybdenum	8361780		0.6	<0.5	NA	< 0.5	101%	70%	130%	102%	80%	120%	91%	70%	130%
Nickel	8361780		8	7	13.3%	< 1	101%	70%	130%	102%	80%	120%	93%	70%	130%
Selenium	8361780		0.9	<0.4	NA	< 0.4	104%	70%	130%	101%	80%	120%	92%	70%	130%
Silver	8361780		<0.2	<0.2	NA	< 0.2	95%	70%	130%	113%	80%	120%	91%	70%	130%
Thallium	8361780		0.8	<0.4	NA	< 0.4	118%	70%	130%	113%	80%	120%	92%	70%	130%
Uranium	8361780		0.5	<0.5	NA	< 0.5	109%	70%	130%	105%	80%	120%	88%	70%	130%
Vanadium	8361780		12	12	0.0%	< 1	104%	70%	130%	105%	80%	120%	108%	70%	130%
Zinc	8361780		77	73	5.3%	< 5	102%	70%	130%	108%	80%	120%	106%	70%	130%
Chromium VI	8361821		<0.2	<0.2	NA	< 0.2	91%	70%	130%	102%	80%	120%	97%	70%	130%
Mercury	8361780		<0.10	<0.10	NA	< 0.10	112%	70%	130%	98%	80%	120%	89%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Amanjot Bhela

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD
PROJECT: 1670692 Taggart Phase II ESA
SAMPLING SITE:

AGAT WORK ORDER: 17Z210773
ATTENTION TO: Alyssa Troke; Keith Holmes
SAMPLED BY:

Trace Organics Analysis

RPT Date: May 09, 2017

PARAMETER	Batch	Sample Id	DUPLICATE Dup #1	Dup #2	RPD	Method Blank	REFERENCE MATERIAL Measured Value	Acceptable Limits Lower	Upper	METHOD BLANK SPIKE Recovery	Acceptable Limits Lower	Upper	MATRIX SPIKE Recovery	Acceptable Limits Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)															
Benzene	8357655		< 0.02	< 0.02	NA	< 0.02	107%	60%	130%	105%	60%	130%	110%	60%	130%
Toluene	8357655		< 0.08	< 0.08	NA	< 0.08	96%	60%	130%	91%	60%	130%	101%	60%	130%
Ethylbenzene	8357655		< 0.05	< 0.05	NA	< 0.05	92%	60%	130%	88%	60%	130%	92%	60%	130%
Xylene Mixture	8357655		< 0.05	< 0.05	NA	< 0.05	104%	60%	130%	111%	60%	130%	115%	60%	130%
F1 (C6 to C10)	8357655		< 5	< 5	NA	< 5	71%	60%	130%	87%	85%	115%	79%	70%	130%
F2 (C10 to C16)	8353010	8353010	67	66	1.5%	< 10	101%	60%	130%	96%	80%	120%	72%	70%	130%
F3 (C16 to C34)	8353010	8353010	130	130	NA	< 50	102%	60%	130%	94%	80%	120%	92%	70%	130%
F4 (C34 to C50)	8353010	8353010	< 50	< 50	NA	< 50	88%	60%	130%	88%	80%	120%	79%	70%	130%
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	8358141		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	92%	50%	140%	91%	50%	140%
Acenaphthylene	8358141		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	87%	50%	140%	88%	50%	140%
Acenaphthene	8358141		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	92%	50%	140%	92%	50%	140%
Fluorene	8358141		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	98%	50%	140%	97%	50%	140%
Phenanthrene	8358141		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	101%	50%	140%	96%	50%	140%
Anthracene	8358141		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	107%	50%	140%	108%	50%	140%
Fluoranthene	8358141		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	100%	50%	140%	106%	50%	140%
Pyrene	8358141		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	100%	50%	140%	98%	50%	140%
Benz(a)anthracene	8358141		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	98%	50%	140%	92%	50%	140%
Chrysene	8358141		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	91%	50%	140%	84%	50%	140%
Benzo(b)fluoranthene	8358141		< 0.05	< 0.05	NA	< 0.05	121%	50%	140%	105%	50%	140%	97%	50%	140%
Benzo(k)fluoranthene	8358141		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	94%	50%	140%	96%	50%	140%
Benzo(a)pyrene	8358141		< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	105%	50%	140%	103%	50%	140%
Indeno(1,2,3-cd)pyrene	8358141		< 0.05	< 0.05	NA	< 0.05	113%	50%	140%	76%	50%	140%	72%	50%	140%
Dibenz(a,h)anthracene	8358141		< 0.05	< 0.05	NA	< 0.05	114%	50%	140%	83%	50%	140%	79%	50%	140%
Benzo(g,h,i)perylene	8358141		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	78%	50%	140%	79%	50%	140%
2-and 1-methyl Naphthalene	8358141		< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	93%	50%	140%	94%	50%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By: N Popowich

AGAT Laboratories

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z210773

PROJECT: 1670692 Taggart Phase II ESA

ATTENTION TO: Alyssa Troke; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS

AGAT Laboratories

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z210773

PROJECT: 1670692 Taggart Phase II ESA

ATTENTION TO: Alyssa Troke; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	ORG-91-5106	EPA SW-846 3541 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Toluene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Ethylbenzene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Xylene Mixture	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34) minus PAHs	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID

AGAT Laboratories

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Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 17Z210773

Cooler Quantity: one - on ice

Arrival Temperatures: 5.8 | 5.6 | 5.2
G - 3.7 | 3.2 | 3.3

Custody Seal Intact: ☐ Yes ☐ No ☒ N/A

Notes:

Report Information:

Company: Golder

Contact: Alyssa Troke/Keith Holmes

Address: 1931 Robertson Rd, Ottawa

Phone: 613-592-9600 Fax:

Reports to be sent to:

1. Email: atroke@golder.com
2. Email: kholmes@golder.com

Regulatory Requirements: ☐ No Regulatory Requirement

(Please check all applicable boxes)

☒ Regulation 153/04
Table 3 *Indicate One*
☐ Ind/Com
☒ Res/Park
☐ Agriculture

Soil Texture *(Check One)*
☒ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ______ *Indicate One*

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
Indicate One

Is this submission for a Record of Site Condition? ☒ Yes ☐ No

Report Guideline on Certificate of Analysis ☒ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

OR Date Required (Rush Surcharges May Apply): May 8, 2017 as per Jeff Jones

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: 1670692 - Taggart Phase II ESA

Site Location:

Sampled By:

AGAT Quote #: PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company:

Contact:

Address:

Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N	Metals and Inorganics	Metal ~~Scan~~ Reg 153 All Metals	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl ☐ CN⁻ ☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ NO₃/NO₂ ☐ Total N ☐ Hg ☐ pH ☐ SAR	Nutrients: ☐ TP ☐ NH₃ ☐ TKN ☐ NO₃ ☐ NO₂ ☐ NO₃/NO₂	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use							
BH#17-02 SA#5	Apr. 26/17		3	S				X						X		X											
BH#17-02 SA#22	Apr. 27/17		↓	↓				X						X		X											
BH#17-02 SA#56	Apr. 27/17		↓	↓				X						X		X											
BH#17-04 SA#4	Apr. 26		↓	↓				X						X		X											
BH#17-04 SA#7	Apr. 26		↓	↓				X						X		X											
BH#17-07 SA#8	Apr. 28		↓	↓				X						X		X											
BH#17-07 A.S	Apr. 28		↓	↓				X						X		X											

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Alyssa Troke Alyssa Troke	May 2/17	9:30	Berthelet [signature]	2 May-17	11h05
[signature] to FedEx	2-May-17	11h00			
			Shanmin [signature]	May 3/17	11:00 am

Page 1 of 1

Nº: T 033160

AGAT Laboratories

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CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Alyssa Troke

PROJECT: 1670692

AGAT WORK ORDER: 17Z210954

TRACE ORGANICS REVIEWED BY: Gyulhan Yalamova, Report Reviewer

WATER ANALYSIS REVIEWED BY: Parvathi Malemath, Data Reviewer

DATE REPORTED: May 09, 2017

PAGES (INCLUDING COVER): 9

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 17Z210954

PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Water)

DATE RECEIVED: 2017-05-02

DATE REPORTED: 2017-05-09

		SAMPLE DESCRIPTION:		MW 17-07	MW 01-2	MW 17-04	MW 17-02
		SAMPLE TYPE:		Water	Water	Water	Water
		DATE SAMPLED:		2017-05-02	2017-05-02	2017-05-02	2017-05-02
Parameter	Unit	G / S	RDL	8354167	8354173	8354181	8354190
Naphthalene	µg/L	1400	0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthylene	µg/L	1.8	0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthene	µg/L	600	0.20	<0.20	<0.20	<0.20	<0.20
Fluorene	µg/L	400	0.20	<0.20	<0.20	<0.20	<0.20
Phenanthrene	µg/L	580	0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	µg/L	2.4	0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	µg/L	130	0.20	<0.20	<0.20	<0.20	<0.20
Pyrene	µg/L	68	0.20	<0.20	<0.20	<0.20	<0.20
Benz(a)anthracene	µg/L	4.7	0.20	<0.20	<0.20	<0.20	<0.20
Chrysene	µg/L	1	0.10	<0.10	<0.10	<0.10	<0.10
Benzo(b)fluoranthene	µg/L	0.75	0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	µg/L	0.4	0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	µg/L	0.81	0.01	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.20	<0.20	<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	µg/L	0.52	0.20	<0.20	<0.20	<0.20	<0.20
Benzo(g,h,i)perylene	µg/L	0.2	0.20	<0.20	<0.20	<0.20	<0.20
2-and 1-methyl Naphthalene	µg/L	1800	0.20	<0.20	<0.20	<0.20	<0.20
Surrogate	Unit	Acceptable Limits					
Chrysene-d12	%	50-140		85	93	60	81

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 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 Textured Soils

8354167-8354190 Note: The result for Benzo(b)Flouranthene is the total of the Benzo(b)&(j)Flouranthene isomers because the isomers co-elute on the GC column.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z210954

PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)

DATE RECEIVED: 2017-05-02

DATE REPORTED: 2017-05-09

		SAMPLE DESCRIPTION:		MW 17-07	MW 01-2	MW 17-04	MW 17-02
		SAMPLE TYPE:		Water	Water	Water	Water
		DATE SAMPLED:		2017-05-02	2017-05-02	2017-05-02	2017-05-02
Parameter	Unit	G / S	RDL	8354167	8354173	8354181	8354190
Benzene	µg/L	44	0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L	18000	0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	µg/L	2300	0.10	<0.10	<0.10	<0.10	<0.10
Xylene Mixture	µg/L	4200	0.20	<0.20	<0.20	<0.20	<0.20
F1 (C6 to C10)	µg/L	750	25	<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25	<25	<25	<25
F2 (C10 to C16)	µg/L	150	100	<100	<100	<100	<100
F2 (C10 to C16) minus Naphthalene	µg/L		100	<100	<100	<100	<100
F3 (C16 to C34)	µg/L	500	100	200	<100	<100	<100
F3 (C16 to C34) minus PAHs	µg/L		100	200	<100	<100	<100
F4 (C34 to C50)	µg/L	500	100	<100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA	NA	NA	NA
Surrogate	Unit	Acceptable Limits					
Terphenyl	%	60-140		85	93	76	90

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 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 Textured Soils

8354167-8354190 The C6-C10 fraction is calculated using Toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX and PAH contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z210954
PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Alyssa Troke
SAMPLED BY:

O. Reg. 153(511) - All Metals (Water)

DATE RECEIVED: 2017-05-02

DATE REPORTED: 2017-05-09

		SAMPLE DESCRIPTION:		MW 17-07	MW 01-2	MW 17-04	MW 17-02
		SAMPLE TYPE:		Water	Water	Water	Water
		DATE SAMPLED:		2017-05-02	2017-05-02	2017-05-02	2017-05-02
Parameter	Unit	G / S	RDL	8354167	8354173	8354181	8354190
Antimony	µg/L	20000	1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	µg/L	1900	1.0	1.1	1.3	<1.0	1.2
Barium	µg/L	29000	2.0	145	98.4	89.1	90.5
Beryllium	µg/L	67	0.5	<0.5	<0.5	<0.5	<0.5
Boron	µg/L	45000	10.0	41.4	26.7	19.8	24.8
Cadmium	µg/L	2.7	0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	810	2.0	12.1	8.5	9.4	6.2
Cobalt	µg/L	66	0.5	9.2	<0.5	2.2	1.5
Copper	µg/L	87	1.0	<1.0	<1.0	<1.0	1.0
Lead	µg/L	25	0.5	<0.5	<0.5	<0.5	<0.5
Molybdenum	µg/L	9200	0.5	0.5	1.0	1.3	2.7
Nickel	µg/L	490	1.0	5.2	2.2	3.2	4.3
Selenium	µg/L	63	1.0	2.7	<1.0	3.9	<1.0
Silver	µg/L	1.5	0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/L	510	0.3	<0.3	<0.3	<0.3	<0.3
Uranium	µg/L	420	0.5	0.6	1.2	1.5	1.5
Vanadium	µg/L	250	0.4	3.2	3.2	3.1	3.1
Zinc	µg/L	1100	5.0	<5.0	<5.0	<5.0	<5.0
Mercury	µg/L	0.29	0.02	<0.02	<0.02	<0.02	<0.02
Chromium VI	µg/L	140	5	<5	<5	<5	<5

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 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 Textured Soils

Certified By:

AGAT Laboratories

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z210954

PROJECT: 1670692

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: May 09, 2017

PARAMETER	Batch	Sample Id	DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
			Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)															
Benzene	8365114		< 0.20	< 0.20	NA	< 0.20	80%	50%	140%	83%	60%	130%	99%	50%	140%
Toluene	8365114		< 0.20	< 0.20	NA	< 0.20	80%	50%	140%	81%	60%	130%	96%	50%	140%
Ethylbenzene	8365114		< 0.10	< 0.10	NA	< 0.10	80%	50%	140%	83%	60%	130%	94%	50%	140%
Xylene Mixture	8365114		< 0.20	< 0.20	NA	< 0.20	83%	50%	140%	91%	60%	130%	100%	50%	140%
F1 (C6 to C10)	8365114		< 25	< 25	NA	< 25	77%	60%	140%	78%	60%	140%	82%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	108%	60%	140%	72%	60%	140%	60%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	110%	60%	140%	72%	60%	140%	87%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	105%	60%	140%	84%	60%	140%	104%	60%	140%
O. Reg. 153(511) - PAHs (Water)															
Naphthalene		TW	< 0.20	< 0.20	NA	< 0.20	90%	50%	140%	92%	50%	140%	91%	50%	140%
Acenaphthylene		TW	< 0.20	< 0.20	NA	< 0.20	95%	50%	140%	87%	50%	140%	88%	50%	140%
Acenaphthene		TW	< 0.20	< 0.20	NA	< 0.20	97%	50%	140%	92%	50%	140%	92%	50%	140%
Fluorene		TW	< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	98%	50%	140%	97%	50%	140%
Phenanthrene		TW	< 0.10	< 0.10	NA	< 0.10	97%	50%	140%	101%	50%	140%	96%	50%	140%
Anthracene		TW	< 0.10	< 0.10	NA	< 0.10	100%	50%	140%	107%	50%	140%	108%	50%	140%
Fluoranthene		TW	< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	100%	50%	140%	106%	50%	140%
Pyrene		TW	< 0.20	< 0.20	NA	< 0.20	101%	50%	140%	100%	50%	140%	98%	50%	140%
Benz(a)anthracene		TW	< 0.20	< 0.20	NA	< 0.20	101%	50%	140%	98%	50%	140%	92%	50%	140%
Chrysene		TW	< 0.10	< 0.10	NA	< 0.10	96%	50%	140%	91%	50%	140%	84%	50%	140%
Benzo(b)fluoranthene		TW	< 0.10	< 0.10	NA	< 0.10	121%	50%	140%	105%	50%	140%	97%	50%	140%
Benzo(k)fluoranthene		TW	< 0.10	< 0.10	NA	< 0.10	102%	50%	140%	94%	50%	140%	96%	50%	140%
Benzo(a)pyrene		TW	< 0.01	< 0.01	NA	< 0.01	110%	50%	140%	105%	50%	140%	103%	50%	140%
Indeno(1,2,3-cd)pyrene		TW	< 0.20	< 0.20	NA	< 0.20	113%	50%	140%	76%	50%	140%	72%	50%	140%
Dibenz(a,h)anthracene		TW	< 0.20	< 0.20	NA	< 0.20	114%	50%	140%	83%	50%	140%	79%	50%	140%
Benzo(g,h,i)perylene		TW	< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	78%	50%	140%	79%	50%	140%
2-and 1-methyl Naphthalene		TW	< 0.20	< 0.20	NA	< 0.20	112%	50%	140%	93%	50%	140%	94%	50%	140%

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.
When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

AGAT Laboratories

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z210954

PROJECT: 1670692

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

Water Analysis

RPT Date: May 09, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - All Metals (Water)															
Antimony	8361453		<1.0	<1.0	NA	< 1.0	98%	70%	130%	92%	80%	120%	91%	70%	130%
Arsenic	8361453		<1.0	<1.0	NA	< 1.0	104%	70%	130%	99%	80%	120%	105%	70%	130%
Barium	8361453		10.7	10.6	0.9%	< 2.0	100%	70%	130%	97%	80%	120%	89%	70%	130%
Beryllium	8361453		<0.5	<0.5	NA	< 0.5	101%	70%	130%	97%	80%	120%	99%	70%	130%
Boron	8361453		<10.0	<10.0	NA	< 10.0	105%	70%	130%	100%	80%	120%	104%	70%	130%
Cadmium	8361453		<0.2	<0.2	NA	< 0.2	104%	70%	130%	98%	80%	120%	97%	70%	130%
Chromium	8361453		<2.0	<2.0	NA	< 2.0	103%	70%	130%	100%	80%	120%	103%	70%	130%
Cobalt	8361453		<0.5	<0.5	NA	< 0.5	102%	70%	130%	95%	80%	120%	94%	70%	130%
Copper	8361453		1.8	1.8	NA	< 1.0	96%	70%	130%	95%	80%	120%	95%	70%	130%
Lead	8361453		<0.5	<0.5	NA	< 0.5	95%	70%	130%	92%	80%	120%	88%	70%	130%
Molybdenum	8361453		<0.5	<0.5	NA	< 0.5	105%	70%	130%	100%	80%	120%	106%	70%	130%
Nickel	8361453		1.5	1.5	NA	< 1.0	107%	70%	130%	102%	80%	120%	104%	70%	130%
Selenium	8361453		<1.0	<1.0	NA	< 1.0	107%	70%	130%	98%	80%	120%	114%	70%	130%
Silver	8361453		<0.2	<0.2	NA	< 0.2	103%	70%	130%	109%	80%	120%	109%	70%	130%
Thallium	8361453		<0.3	<0.3	NA	< 0.3	106%	70%	130%	104%	80%	120%	106%	70%	130%
Uranium	8361453		<0.5	<0.5	NA	< 0.5	102%	70%	130%	92%	80%	120%	91%	70%	130%
Vanadium	8361453		1.4	1.3	NA	< 0.4	103%	70%	130%	98%	80%	120%	104%	70%	130%
Zinc	8361453		<5.0	<5.0	NA	< 5.0	99%	70%	130%	104%	80%	120%	94%	70%	130%
Mercury	8357662		<0.02	<0.02	NA	< 0.02	104%	70%	130%	104%	80%	120%	97%	70%	130%
Chromium VI	8361277		<5	<5	NA	< 5	100%	70%	130%	102%	80%	120%	102%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL (Reporting Limit), the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:

AGAT Laboratories

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z210954

PROJECT: 1670692

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluorene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Phenanthrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene-d12	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzene	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
Toluene	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
Ethylbenzene	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
Xylene Mixture	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
F1 (C6 to C10)	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC/FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5010	MOE PHC E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC/FID
F3 (C16 to C34) minus PAHs	VOL-91-5010	MOE PHC E3421	GC/FID
F4 (C34 to C50)	VOL -91- 5010	MOE PHC- E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z210954

PROJECT: 1670692

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW-846 7470 & 245.1	CVAAS
Chromium VI	INOR-93-6034	SM 3500-Cr B	SPECTROPHOTOMETER

AGAT Laboratories

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Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Report Information:

Company: Golder Associates
Contact: Alyssa Trake
Address: 1931 Robertson Road
Ottawa ON
Phone: 613 592 9600 Fax: 613 592 9607
Reports to be sent to:
1. Email: alyssa_trake@golder.com
2. Email: keith_holmes@golder.com

Project Information:

jecormier@golder.com
Project: 1676692
Site Location: 3930 Riverside Dr.
Sampled By: J. Cormier
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐
Company:
Contact:
Address:
Email:

Regulatory Requirements:

☐ No Regulatory Requirement
(Please check all applicable boxes)

☒ Regulation 153/04
Table 3 *Indicate One*
☐ Ind/Com
☒ Res/Park
☐ Agriculture

Soil Texture *(Check One)*
☒ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm

Region *Indicate One*

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
Indicate One

Is this submission for a **Record of Site Condition?** ☒ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☒ Yes ☐ No

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Laboratory Use Only

Work Order #: 17721095 4
Cooler Quantity: one - once
Arrival Temperatures: 8.1 | 7.5 | 7.4
LT - 6.2 | 5.9 | 6.0
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes:

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):
May 9, 2017
Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI Y/N	O. Reg 153: Metals and Inorganics (All Metals ☐ 153 Metals (excl. Hydrides) ☐ Hydride Metals)	ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr^{6+} ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3+NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use	PHC F1-F4/BTEX	PAH
MW 17-07	May 2, 2017	1120	8	GW	Samples contain silt/ sediment	X													4	X	X
MW 17-2	↓	1210	8	GW		X														X	X
MW 17-04		1240	8	GW		X														X	X
MW 17-02		1400	8	GW		X														X	X

Samples Relinquished By (Print Name and Sign): Jen Cormier	Date: May 2, 2017	Time: 15:04	Samples Received By (Print Name and Sign): [illegible]	Date: 2 May 17	Time: 15h09
Samples Relinquished By (Print Name and Sign): COURIER to FedEx	Date: 2 May 17	Time: 16h00	Samples Received By (Print Name and Sign):	Date:	Time:
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign): Shanmin G	Date: May 3/17	Time: 11:00 am

Page 1 of 1
N°: T 041799

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Date Issued: September 20, 2013

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CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Alyssa Troke

PROJECT: 1670692 - Taggart Phase II ESA

AGAT WORK ORDER: 17Z211435

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Gyulhan Yalamova, Report Reviewer

DATE REPORTED: May 09, 2017

PAGES (INCLUDING COVER): 10

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 17Z211435

PROJECT: 1670692 - Taggart Phase II ESA

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2017-05-03

DATE REPORTED: 2017-05-09

SAMPLE DESCRIPTION:				BH#17-03 SA#2	BH#17-03 SA#10	BH#17-01 SA#7	BH#17-01 SA#17	BH#17-01 SA#24
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2017-05-02	2017-05-02	2017-05-02	2017-05-02	2017-05-02
Parameter	Unit	G / S	RDL	8358139	8358141	8358144	8358147	8358150
Antimony	µg/g		0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g		1	3	<1	2	2	7
Barium	µg/g		2	197	17	188	176	118
Beryllium	µg/g		0.5	0.8	<0.5	0.6	0.6	0.5
Boron	µg/g		5	7	7	5	6	6
Boron (Hot Water Soluble)	µg/g		0.10	0.13	<0.10	0.31	0.32	0.55
Cadmium	µg/g		0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g		2	52	6	49	75	31
Cobalt	µg/g		0.5	15.6	1.7	13.2	13.8	8.6
Copper	µg/g		1	29	5	22	32	37
Lead	µg/g		1	8	2	12	9	67
Molybdenum	µg/g		0.5	<0.5	0.6	0.5	1.1	1.4
Nickel	µg/g		1	33	3	29	40	26
Selenium	µg/g		0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver	µg/g		0.2	<0.2	<0.2	<0.2	<0.2	0.2
Thallium	µg/g		0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	µg/g		0.5	0.9	<0.5	0.6	1.0	1.2
Vanadium	µg/g		1	69	8	54	64	32
Zinc	µg/g		5	90	7	83	73	94
Chromium VI	µg/g		0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Mercury	µg/g		0.10	<0.10	<0.10	<0.10	<0.10	0.16

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By: Amanjot Bhela

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z211435

PROJECT: 1670692 - Taggart Phase II ESA

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - ORPs (Soil)

DATE RECEIVED: 2017-05-03

DATE REPORTED: 2017-05-09

				SAMPLE DESCRIPTION:	BH#17-07 SA#2	BH#17-04 SA#2
				SAMPLE TYPE:	Soil	Soil
				DATE SAMPLED:	2017-04-28	2017-04-26
Parameter	Unit	G / S	RDL		8358137	8358138
pH, 2:1 CaCl2 Extraction	pH Units		NA		7.64	7.68
Electrical Conductivity	mS/cm		0.005		0.376	0.148
Sodium Adsorption Ratio	NA		NA		1.99	0.240

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

8358137-8358138 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract obtained from 2:1 leaching procedure (2 parts extraction fluid:1 part wet soil).

Certified By: Amanjot Bhela

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z211435

PROJECT: 1670692 - Taggart Phase II ESA

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2017-05-03

DATE REPORTED: 2017-05-09

SAMPLE DESCRIPTION:				BH#17-03 SA#2	BH#17-03 SA#10	BH#17-01 SA#7	BH#17-01 SA#17	BH#17-01 SA#24
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2017-05-02	2017-05-02	2017-05-02	2017-05-02	2017-05-02
Parameter	Unit	G / S	RDL	8358139	8358141	8358144	8358147	8358150
Naphthalene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	0.05
Anthracene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	0.06
Pyrene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	0.05
Benz(a)anthracene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-and 1-methyl Naphthalene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	21.0	17.5	25.1	26.6	15.5
Surrogate	Unit	Acceptable Limits						
Chrysene-d12	%	50-140		54	62	55	58	71

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

8358139-8358150 Results are based on the dry weight of the soil.
Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z211435

PROJECT: 1670692 - Taggart Phase II ESA

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)

DATE RECEIVED: 2017-05-03

DATE REPORTED: 2017-05-09

SAMPLE DESCRIPTION:				BH#17-03 SA#2	BH#17-03 SA#10	BH#17-01 SA#7	BH#17-01 SA#17	BH#17-01 SA#24
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2017-05-02	2017-05-02	2017-05-02	2017-05-02	2017-05-02
Parameter	Unit	G / S	RDL	8358139	8358141	8358144	8358147	8358150
Benzene	µg/g		0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g		0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Ethylbenzene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene Mixture	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g		5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g		5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g		10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g		50	<50	<50	<50	<50	65
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50	<50	65
F4 (C34 to C50)	µg/g		50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g		50	NA	NA	NA	NA	NA
Moisture Content	%		0.1	21.0	17.5	25.1	26.6	15.5
Surrogate	Unit	Acceptable Limits						
Terphenyl	%	60-140		65	81	119	102	110

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

8358139-8358150 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX and PAH contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.

Certified By:

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD
AGAT WORK ORDER: 17Z211435
PROJECT: 1670692 - Taggart Phase II ESA
ATTENTION TO: Alyssa Troke
SAMPLING SITE:
SAMPLED BY:

Soil Analysis

RPT Date: May 09, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - ORPs (Soil)															
pH, 2:1 CaCl2 Extraction	8354138		7.33	7.31	0.3%	NA	101%	90%	110%	NA			NA		
Electrical Conductivity	8358137	8358137	0.376	0.369	1.9%	< 0.005	96%	90%	110%	NA			NA		
Sodium Adsorption Ratio	8358137	8358137	1.99	2.01	1.0%	NA	NA			NA			NA		
O. Reg. 153(511) - All Metals (Soil)															
Antimony	8354163		<0.8	<0.8	NA	< 0.8	90%	70%	130%	102%	80%	120%	80%	70%	130%
Arsenic	8354163		3	3	NA	< 1	108%	70%	130%	117%	80%	120%	106%	70%	130%
Barium	8354163		61	64	4.8%	< 2	99%	70%	130%	107%	80%	120%	95%	70%	130%
Beryllium	8354163		<0.5	<0.5	NA	< 0.5	92%	70%	130%	110%	80%	120%	105%	70%	130%
Boron	8354163		6	6	NA	< 5	81%	70%	130%	112%	80%	120%	114%	70%	130%
Boron (Hot Water Soluble)	8354163		<0.10	<0.10	NA	< 0.10	110%	60%	140%	100%	70%	130%	94%	60%	140%
Cadmium	8354163		<0.5	<0.5	NA	< 0.5	106%	70%	130%	103%	80%	120%	93%	70%	130%
Chromium	8354163		19	20	5.1%	< 2	99%	70%	130%	115%	80%	120%	122%	70%	130%
Cobalt	8354163		7.1	6.8	4.3%	< 0.5	93%	70%	130%	107%	80%	120%	96%	70%	130%
Copper	8354163		18	18	0.0%	< 1	91%	70%	130%	117%	80%	120%	86%	70%	130%
Lead	8354163		9	9	0.0%	< 1	101%	70%	130%	110%	80%	120%	96%	70%	130%
Molybdenum	8354163		0.6	0.6	NA	< 0.5	98%	70%	130%	106%	80%	120%	95%	70%	130%
Nickel	8354163		18	17	5.7%	< 1	94%	70%	130%	110%	80%	120%	98%	70%	130%
Selenium	8354163		<0.4	<0.4	NA	< 0.4	81%	70%	130%	108%	80%	120%	106%	70%	130%
Silver	8354163		<0.2	<0.2	NA	< 0.2	94%	70%	130%	119%	80%	120%	98%	70%	130%
Thallium	8354163		<0.4	<0.4	NA	< 0.4	105%	70%	130%	116%	80%	120%	97%	70%	130%
Uranium	8354163		<0.5	<0.5	NA	< 0.5	99%	70%	130%	107%	80%	120%	98%	70%	130%
Vanadium	8354163		26	27	3.8%	< 1	97%	70%	130%	108%	80%	120%	112%	70%	130%
Zinc	8354163		37	36	2.7%	< 5	98%	70%	130%	117%	80%	120%	96%	70%	130%
Chromium VI	8361170		<0.2	<0.2	NA	< 0.2	92%	70%	130%	102%	80%	120%	98%	70%	130%
Mercury	8354163		<0.10	<0.10	NA	< 0.10	100%	70%	130%	100%	80%	120%	105%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Amanjot Bhela

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD
PROJECT: 1670692 - Taggart Phase II ESA
SAMPLING SITE:

AGAT WORK ORDER: 17Z211435
ATTENTION TO: Alyssa Troke
SAMPLED BY:

Trace Organics Analysis

RPT Date: May 09, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)															
Benzene	8365440		< 0.02	< 0.02	NA	< 0.02	79%	60%	130%	111%	60%	130%	115%	60%	130%
Toluene	8365440		< 0.08	< 0.08	NA	< 0.08	76%	60%	130%	118%	60%	130%	115%	60%	130%
Ethylbenzene	8365440		< 0.05	< 0.05	NA	< 0.05	76%	60%	130%	115%	60%	130%	113%	60%	130%
Xylene Mixture	8365440		< 0.05	< 0.05	NA	< 0.05	78%	60%	130%	114%	60%	130%	105%	60%	130%
F1 (C6 to C10)	8365440		< 5	< 5	NA	< 5	71%	60%	130%	88%	85%	115%	92%	70%	130%
F2 (C10 to C16)	8364406		< 10	< 10	NA	< 10	109%	60%	130%	80%	80%	120%	78%	70%	130%
F3 (C16 to C34)	8364406		< 50	< 50	NA	< 50	110%	60%	130%	81%	80%	120%	97%	70%	130%
F4 (C34 to C50)	8364406		< 50	< 50	NA	< 50	98%	60%	130%	101%	80%	120%	102%	70%	130%
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	92%	50%	140%	91%	50%	140%
Acenaphthylene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	87%	50%	140%	88%	50%	140%
Acenaphthene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	92%	50%	140%	92%	50%	140%
Fluorene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	98%	50%	140%	97%	50%	140%
Phenanthrene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	101%	50%	140%	96%	50%	140%
Anthracene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	107%	50%	140%	108%	50%	140%
Fluoranthene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	100%	50%	140%	106%	50%	140%
Pyrene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	100%	50%	140%	98%	50%	140%
Benz(a)anthracene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	98%	50%	140%	92%	50%	140%
Chrysene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	91%	50%	140%	84%	50%	140%
Benzo(b)fluoranthene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	121%	50%	140%	105%	50%	140%	97%	50%	140%
Benzo(k)fluoranthene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	94%	50%	140%	96%	50%	140%
Benzo(a)pyrene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	105%	50%	140%	103%	50%	140%
Indeno(1,2,3-cd)pyrene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	113%	50%	140%	76%	50%	140%	72%	50%	140%
Dibenz(a,h)anthracene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	114%	50%	140%	83%	50%	140%	79%	50%	140%
Benzo(g,h,i)perylene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	78%	50%	140%	79%	50%	140%
2-and 1-methyl Naphthalene	8358141	8358141	< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	93%	50%	140%	94%	50%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z211435

PROJECT: 1670692 - Taggart Phase II ESA

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
pH, 2:1 CaCl2 Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	pH METER
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES

AGAT Laboratories

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z211435

PROJECT: 1670692 - Taggart Phase II ESA

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	ORG-91-5106	EPA SW-846 3541 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Toluene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Ethylbenzene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Xylene Mixture	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34) minus PAHs	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID

AGAT Laboratories

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Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 1772114851

Cooler Quantity: one on ice

Arrival Temperatures: 4.3 | 4.1 | 4.0
5.1 | 5.2 | 6.2

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes:

Report Information:

Company: Golder

Contact: Alyssa Trake / Keith Holmes

Address:

Phone: 613-592-9600 Fax:

Reports to be sent to:

1. Email: atrake@golder.com
2. Email: kholmes@golder.com

Regulatory Requirements: ☐ No Regulatory Requirement

(Please check all applicable boxes)

☒ Regulation 153/04 Table 3 (Indicate One)
☐ Ind/Com
☒ Res/Park
☐ Agriculture

Soil Texture (Check One)
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm

Region (Indicate One)

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other (Indicate One)

Is this submission for a **Record of Site Condition?** ☑ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☒ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

OR Date Required (Rush Surcharges May Apply): May 9/17 as per Jeff Jones

Please provide prior notification for rush TAT

**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: 1670692 - Taggart Phase II ESA

Site Location:

Sampled By:

AGAT Quote #: PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐

Company:

Contact:

Address:

Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Metals and Inorganics	Metal Scan (Reg 153 All Metals)	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN ☐ Cr^{6+} ☐ EC ☐ FOC ☐ NO_3/NO_2 ☐ Total N ☐ Hg ☐ pH ☐ SAR	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4 (BTEX)	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	X (pH, SAR, EC)
BH#17-07 SA#2	Apr. 28/17		1	S																
BH#17-04 SA#2	Apr. 26/17		1																	X
BH#17-03 SA#2	May 2/17		3				X							X		X				
BH#17-03 SA#10			3				X							X		X				
BH#17-01 SA#7			3				X							X		X				
BH#17-01 SA#17			3				X							X		X				
BH#17-01 SA#24			3				X							X		X				
BH#17-01 SA#16			3		HOLD		X							X		X				
BH#17-01 SA#18			3		HOLD		X							X		X				

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Alyssa Trake Alyssa Trake	May 3/17	2:30	Berthelet	3-May-17	14h30
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
CB100 to Fed Ex	3-May-17	16h00	Sima Z	17/5/4	10:47

Page 1 of 1

N°: T 018527

Document ID: DW-78-1511-010

Pink Copy - Client | Yellow Copy - AGAT | White Copy - AGAT

Page 10 of 10

AGAT Laboratories

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CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Alyssa Troke, Keith Holmes

PROJECT: 1670692

AGAT WORK ORDER: 17Z211565

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

WATER ANALYSIS REVIEWED BY: Parvathi Malemath, Data Reviewer

DATE REPORTED: May 09, 2017

PAGES (INCLUDING COVER): 9

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z211565

PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke, Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Water)

DATE RECEIVED: 2017-05-04

DATE REPORTED: 2017-05-09

		SAMPLE DESCRIPTION:		MW 17-03	MW 01-5
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2017-05-03	2017-05-03
Parameter	Unit	G / S	RDL	8358997	8359009
Naphthalene	µg/L	1400	0.20	<0.20	<0.20
Acenaphthylene	µg/L	1.8	0.20	<0.20	<0.20
Acenaphthene	µg/L	600	0.20	<0.20	<0.20
Fluorene	µg/L	400	0.20	<0.20	<0.20
Phenanthrene	µg/L	580	0.10	<0.10	<0.10
Anthracene	µg/L	2.4	0.10	<0.10	<0.10
Fluoranthene	µg/L	130	0.20	<0.20	<0.20
Pyrene	µg/L	68	0.20	<0.20	<0.20
Benz(a)anthracene	µg/L	4.7	0.20	<0.20	<0.20
Chrysene	µg/L	1	0.10	<0.10	<0.10
Benzo(b)fluoranthene	µg/L	0.75	0.10	<0.10	<0.10
Benzo(k)fluoranthene	µg/L	0.4	0.10	<0.10	<0.10
Benzo(a)pyrene	µg/L	0.81	0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.20	<0.20	<0.20
Dibenz(a,h)anthracene	µg/L	0.52	0.20	<0.20	<0.20
Benzo(g,h,i)perylene	µg/L	0.2	0.20	<0.20	<0.20
2-and 1-methyl Naphthalene	µg/L	1800	0.20	<0.20	<0.20
Surrogate	Unit	Acceptable Limits			
Chrysene-d12	%	50-140		102	80

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 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 Textured Soils

8358997-8359009 Note: The result for Benzo(b)Flouranthene is the total of the Benzo(b)&(j)Flouranthene isomers because the isomers co-elute on the GC column.

Certified By: N Popowich

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z211565

PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke, Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)

DATE RECEIVED: 2017-05-04

DATE REPORTED: 2017-05-09

		SAMPLE DESCRIPTION:		MW 17-03	MW 01-5
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2017-05-03	2017-05-03
Parameter	Unit	G / S	RDL	8358997	8359009
Benzene	µg/L	44	0.20	<0.20	<0.20
Toluene	µg/L	18000	0.20	<0.20	<0.20
Ethylbenzene	µg/L	2300	0.10	<0.10	<0.10
Xylene Mixture	µg/L	4200	0.20	<0.20	<0.20
F1 (C6 to C10)	µg/L	750	25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25	<25
F2 (C10 to C16)	µg/L	150	100	<100	<100
F2 (C10 to C16) minus Naphthalene	µg/L		100	<100	<100
F3 (C16 to C34)	µg/L	500	100	<100	<100
F3 (C16 to C34) minus PAHs	µg/L		100	<100	<100
F4 (C34 to C50)	µg/L	500	100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA	NA
Surrogate	Unit	Acceptable Limits			
Terphenyl	%	60-140		60	65

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 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 Textured Soils

8358997-8359009 The C6-C10 fraction is calculated using Toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX and PAH contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.

Certified By: N Popnikolof

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z211565

PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke, Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - All Metals (Water)

DATE RECEIVED: 2017-05-04

DATE REPORTED: 2017-05-09

		SAMPLE DESCRIPTION:		MW 17-03	MW 01-5
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2017-05-03	2017-05-03
Parameter	Unit	G / S	RDL	8358997	8359009
Antimony	µg/L	20000	1.0	<1.0	<1.0
Arsenic	µg/L	1900	1.0	<1.0	<1.0
Barium	µg/L	29000	2.0	75.6	91.4
Beryllium	µg/L	67	0.5	<0.5	<0.5
Boron	µg/L	45000	10.0	65.7	24.5
Cadmium	µg/L	2.7	0.2	<0.2	<0.2
Chromium	µg/L	810	2.0	<2.0	<2.0
Cobalt	µg/L	66	0.5	<0.5	<0.5
Copper	µg/L	87	1.0	2.2	1.1
Lead	µg/L	25	0.5	<0.5	<0.5
Molybdenum	µg/L	9200	0.5	<0.5	1.1
Nickel	µg/L	490	1.0	<1.0	<1.0
Selenium	µg/L	63	1.0	<1.0	<1.0
Silver	µg/L	1.5	0.2	<0.2	<0.2
Thallium	µg/L	510	0.3	<0.3	<0.3
Uranium	µg/L	420	0.5	1.9	0.9
Vanadium	µg/L	250	0.4	0.5	<0.4
Zinc	µg/L	1100	5.0	<5.0	<5.0
Mercury	µg/L	0.29	0.02	<0.02	<0.02
Chromium VI	µg/L	140	5	<5	<5

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 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 Textured Soils

Certified By:

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z211565

PROJECT: 1670692

ATTENTION TO: Alyssa Troke, Keith Holmes

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: May 09, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PAHs (Water)															
Naphthalene		TW	< 0.20	< 0.20	NA	< 0.20	90%	50%	140%	92%	50%	140%	91%	50%	140%
Acenaphthylene		TW	< 0.20	< 0.20	NA	< 0.20	95%	50%	140%	87%	50%	140%	88%	50%	140%
Acenaphthene		TW	< 0.20	< 0.20	NA	< 0.20	97%	50%	140%	92%	50%	140%	92%	50%	140%
Fluorene		TW	< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	98%	50%	140%	97%	50%	140%
Phenanthrene		TW	< 0.10	< 0.10	NA	< 0.10	97%	50%	140%	101%	50%	140%	96%	50%	140%
Anthracene		TW	< 0.10	< 0.10	NA	< 0.10	100%	50%	140%	107%	50%	140%	108%	50%	140%
Fluoranthene		TW	< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	100%	50%	140%	106%	50%	140%
Pyrene		TW	< 0.20	< 0.20	NA	< 0.20	101%	50%	140%	100%	50%	140%	98%	50%	140%
Benz(a)anthracene		TW	< 0.20	< 0.20	NA	< 0.20	101%	50%	140%	98%	50%	140%	92%	50%	140%
Chrysene		TW	< 0.10	< 0.10	NA	< 0.10	96%	50%	140%	91%	50%	140%	84%	50%	140%
Benzo(b)fluoranthene		TW	< 0.10	< 0.10	NA	< 0.10	121%	50%	140%	105%	50%	140%	97%	50%	140%
Benzo(k)fluoranthene		TW	< 0.10	< 0.10	NA	< 0.10	102%	50%	140%	94%	50%	140%	96%	50%	140%
Benzo(a)pyrene		TW	< 0.01	< 0.01	NA	< 0.01	110%	50%	140%	105%	50%	140%	103%	50%	140%
Indeno(1,2,3-cd)pyrene		TW	< 0.20	< 0.20	NA	< 0.20	113%	50%	140%	76%	50%	140%	72%	50%	140%
Dibenz(a,h)anthracene		TW	< 0.20	< 0.20	NA	< 0.20	114%	50%	140%	83%	50%	140%	79%	50%	140%
Benzo(g,h,i)perylene		TW	< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	78%	50%	140%	79%	50%	140%
2-and 1-methyl Naphthalene		TW	< 0.20	< 0.20	NA	< 0.20	112%	50%	140%	93%	50%	140%	94%	50%	140%
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)															
Benzene	8365114		< 0.20	< 0.20	NA	< 0.20	80%	50%	140%	83%	60%	130%	99%	50%	140%
Toluene	8365114		< 0.20	< 0.20	NA	< 0.20	80%	50%	140%	81%	60%	130%	96%	50%	140%
Ethylbenzene	8365114		< 0.10	< 0.10	NA	< 0.10	80%	50%	140%	83%	60%	130%	94%	50%	140%
Xylene Mixture	8365114		< 0.20	< 0.20	NA	< 0.20	83%	50%	140%	91%	60%	130%	100%	50%	140%
F1 (C6 to C10)	8365114		< 25	< 25	NA	< 25	77%	60%	140%	78%	60%	140%	82%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	106%	60%	140%	62%	60%	140%	75%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	106%	60%	140%	80%	60%	140%	82%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	87%	60%	140%	80%	60%	140%	85%	60%	140%

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.
When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

AGAT Laboratories

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z211565

PROJECT: 1670692

ATTENTION TO: Alyssa Troke, Keith Holmes

SAMPLING SITE:

SAMPLED BY:

Water Analysis

RPT Date: May 09, 2017

PARAMETER	Batch	Sample Id	DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
			Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - All Metals (Water)															
Antimony	8363711		1.1	1.3	NA	< 1.0	98%	70%	130%	97%	80%	120%	101%	70%	130%
Arsenic	8363711		<1.0	<1.0	NA	< 1.0	102%	70%	130%	100%	80%	120%	104%	70%	130%
Barium	8363711		9.9	8.8	NA	< 2.0	101%	70%	130%	99%	80%	120%	101%	70%	130%
Beryllium	8363711		<0.5	<0.5	NA	< 0.5	98%	70%	130%	100%	80%	120%	104%	70%	130%
Boron	8363711		<10.0	<10.0	NA	< 10.0	102%	70%	130%	100%	80%	120%	99%	70%	130%
Cadmium	8363711		<0.2	<0.2	NA	< 0.2	100%	70%	130%	98%	80%	120%	107%	70%	130%
Chromium	8363711		<2.0	<2.0	NA	< 2.0	100%	70%	130%	102%	80%	120%	100%	70%	130%
Cobalt	8363711		<0.5	<0.5	NA	< 0.5	99%	70%	130%	99%	80%	120%	94%	70%	130%
Copper	8363711		13.2	12.8	3.1%	< 1.0	100%	70%	130%	102%	80%	120%	92%	70%	130%
Lead	8363711		2.2	2.1	NA	< 0.5	101%	70%	130%	101%	80%	120%	98%	70%	130%
Molybdenum	8363711		0.8	0.8	NA	< 0.5	97%	70%	130%	97%	80%	120%	102%	70%	130%
Nickel	8363711		1.1	1.1	NA	< 1.0	99%	70%	130%	101%	80%	120%	93%	70%	130%
Selenium	8363711		<1.0	<1.0	NA	< 1.0	104%	70%	130%	103%	80%	120%	108%	70%	130%
Silver	8363711		0.2	<0.2	NA	< 0.2	100%	70%	130%	108%	80%	120%	97%	70%	130%
Thallium	8363711		<0.3	<0.3	NA	< 0.3	103%	70%	130%	100%	80%	120%	97%	70%	130%
Uranium	8363711		<0.5	<0.5	NA	< 0.5	99%	70%	130%	98%	80%	120%	102%	70%	130%
Vanadium	8363711		1.5	1.4	NA	< 0.4	100%	70%	130%	101%	80%	120%	101%	70%	130%
Zinc	8363711		40.8	39.9	2.2%	< 5.0	100%	70%	130%	100%	80%	120%	98%	70%	130%
Mercury	8361227		<0.02	<0.02	NA	< 0.02	103%	70%	130%	100%	80%	120%	101%	70%	130%
Chromium VI	8361277		<5	<5	NA	< 5	100%	70%	130%	102%	80%	120%	102%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL (Reporting Limit), the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:

AGAT Laboratories

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z211565

PROJECT: 1670692

ATTENTION TO: Alyssa Troke, Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluorene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Phenanthrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene-d12	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzene	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
Toluene	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
Ethylbenzene	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
Xylene Mixture	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
F1 (C6 to C10)	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC/FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5010	MOE PHC E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC/FID
F3 (C16 to C34) minus PAHs	VOL-91-5010	MOE PHC E3421	GC/FID
F4 (C34 to C50)	VOL -91- 5010	MOE PHC- E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z211565

PROJECT: 1670692

ATTENTION TO: Alyssa Troke, Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW-846 7470 & 245.1	CVAAS
Chromium VI	INOR-93-6034	SM 3500-Cr B	SPECTROPHOTOMETER

AGAT Laboratories

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Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 17Z211565

Cooler Quantity: one - on ice

Arrival Temperatures: 10.1 | 10.8 | 10.0

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes:

Report Information:

Company: Golder Associates Ltd.

Contact: Alyssa Troke

Address: 1931 ROBERTSON ROAD OTTAWA, ON

Phone: 613-592-9600 Fax: 613-592-9601

Reports to be sent to:

1. Email: alyssa_troke@golder.com
2. Email: Keith_holmes@golder.com

Regulatory Requirements:

☐ No Regulatory Requirement

(Please check all applicable boxes)

☒ Regulation 153/04
Table 3 (Indicate One)
☐ Ind/Com
☒ Res/Park
☐ Agriculture

Soil Texture (Check One)
☒ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ____ (Indicate One)

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other ____ (Indicate One)

Is this submission for a Record of Site Condition? ☒ Yes ☐ No

Report Guideline on Certificate of Analysis ☒ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply): MAY 9, 2017

Please provide prior notification for rush TAT

**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project: 1670692

Site Location: 3930 RIVERSIDE DR.

Sampled By: S. BARTER

AGAT Quote #: ____ PO: ____

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company:

Contact:

Address:

Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Y/N)	Metals and Inorganics	☐ All Metals ☐ 153 Metals (excl. Hydrides)	☐ Hydride Metals	ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr6+ ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH3 ☐ TKN ☐ NO3 ☐ NO2 ☐ NO3+NO2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use	PHC F1-F4 / BTEX	Hg	Cr VI	Metals
MW 17-03	MAY 3, 2017	12:10	8	GW	SAMPLES CONTAIN SEDIMENT	Y											X					X	X	X	X
MW 01-5	MAY 3, 2017	4:20	8	GW		Y											X					X	X	X	X

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
SHEILA BARTER [signature]	MAY 3, 17	16:55	L Berthelet [signature]	4-May-17	8h00
CB(?) to FedEx	4-May-17	16h00			

Page 1 of 1

Nº: T 041678

Document ID: DIV-78-1511.015

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Date Issued: September 20, 2016

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CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Keith Holmes

PROJECT: 1670692

AGAT WORK ORDER: 17Z211874

TRACE ORGANICS REVIEWED BY: Gyulhan Yalamova, Report Reviewer

WATER ANALYSIS REVIEWED BY: Parvathi Malemath, Data Reviewer

DATE REPORTED: May 09, 2017

PAGES (INCLUDING COVER): 11

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 17Z211874

PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:3930 Riverside Dr

SAMPLED BY:S Barter

O. Reg. 153(511) - PAHs (Water)

DATE RECEIVED: 2017-05-04

DATE REPORTED: 2017-05-09

SAMPLE DESCRIPTION:				MW01-6	MW17-01	MW17-09	DUP-01
SAMPLE TYPE:				Water	Water	Water	Water
DATE SAMPLED:				2017-05-04	2017-05-04	2017-05-04	2017-05-04
Parameter	Unit	G / S	RDL	8361227	8361229	8361246	8361259
Naphthalene	µg/L	1400	0.20	<0.20	0.56	<0.20	<0.20
Acenaphthylene	µg/L	1.8	0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthene	µg/L	600	0.20	<0.20	<0.20	<0.20	<0.20
Fluorene	µg/L	400	0.20	<0.20	<0.20	<0.20	<0.20
Phenanthrene	µg/L	580	0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	µg/L	2.4	0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	µg/L	130	0.20	<0.20	<0.20	<0.20	<0.20
Pyrene	µg/L	68	0.20	<0.20	<0.20	<0.20	<0.20
Benz(a)anthracene	µg/L	4.7	0.20	<0.20	<0.20	<0.20	<0.20
Chrysene	µg/L	1	0.10	<0.10	<0.10	<0.10	<0.10
Benzo(b)fluoranthene	µg/L	0.75	0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	µg/L	0.4	0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	µg/L	0.81	0.01	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.20	<0.20	<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	µg/L	0.52	0.20	<0.20	<0.20	<0.20	<0.20
Benzo(g,h,i)perylene	µg/L	0.2	0.20	<0.20	<0.20	<0.20	<0.20
2-and 1-methyl Naphthalene	µg/L	1800	0.20	<0.20	0.24	<0.20	<0.20
Surrogate	Unit	Acceptable Limits					
Chrysene-d12	%	50-140		83	68	75	69

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 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 Textured Soils

8361227-8361259 Note: The result for Benzo(b)Flouranthene is the total of the Benzo(b)&(j)Flouranthene isomers because the isomers co-elute on the GC column.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 17Z211874
PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD
SAMPLING SITE:3930 Riverside Dr

ATTENTION TO: Keith Holmes
SAMPLED BY:S Barter

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)

DATE RECEIVED: 2017-05-04

DATE REPORTED: 2017-05-09

		SAMPLE DESCRIPTION:		MW01-6	MW17-01	MW17-09	DUP-01
		SAMPLE TYPE:		Water	Water	Water	Water
		DATE SAMPLED:		2017-05-04	2017-05-04	2017-05-04	2017-05-04
Parameter	Unit	G / S	RDL	8361227	8361229	8361246	8361259
Benzene	µg/L	44	0.20	<0.20	0.24	<0.20	<0.20
Toluene	µg/L	18000	0.20	<0.20	0.61	<0.20	<0.20
Ethylbenzene	µg/L	2300	0.10	<0.10	<0.10	<0.10	<0.10
Xylene Mixture	µg/L	4200	0.20	<0.20	<0.20	<0.20	<0.20
F1 (C6 to C10)	µg/L	750	25	<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25	<25	<25	<25
F2 (C10 to C16)	µg/L	150	100	<100	<100	<100	<100
F2 (C10 to C16) minus Naphthalene	µg/L		100	<100	<100	<100	<100
F3 (C16 to C34)	µg/L	500	100	<100	<100	<100	<100
F3 (C16 to C34) minus PAHs	µg/L		100	<100	<100	<100	<100
F4 (C34 to C50)	µg/L	500	100	<100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA	NA	NA	NA
Surrogate	Unit	Acceptable Limits					
Terphenyl	%	60-140		94	86	74	60

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AGAT WORK ORDER: 17Z211874

PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:3930 Riverside Dr

SAMPLED BY:S Barter

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)

DATE RECEIVED: 2017-05-04

DATE REPORTED: 2017-05-09

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 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 Textured Soils

8361227
The C6-C10 fraction is calculated using Toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX and PAH contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.

8361229
The C6-C10 fraction is calculated using Toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX and PAH contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.

8361246-8361259
The C6-C10 fraction is calculated using Toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX and PAH contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Some sediment was observed in the sample. The whole bottle extraction was performed.

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AGAT WORK ORDER: 17Z211874
PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD
SAMPLING SITE:3930 Riverside Dr

ATTENTION TO: Keith Holmes
SAMPLED BY:S Barter

O. Reg. 153(511) - PHCs F1/BTEX (Water)

DATE RECEIVED: 2017-05-04

DATE REPORTED: 2017-05-09

		SAMPLE DESCRIPTION:		TRIP BLANK
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2017-05-04
Parameter	Unit	G / S	RDL	8361267
Benzene	µg/L	44	0.20	<0.20
Toluene	µg/L	18000	0.20	<0.20
Ethylbenzene	µg/L	2300	0.10	<0.10
Xylene Mixture	µg/L	4200	0.20	<0.20
F1 (C6 to C10)	µg/L	750	25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 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 Textured Soils

8361267 The C6-C10 fraction is calculated using Toluene response factor.
Total C6-C10 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
Extraction and holding times were met for this sample.
NA = Not Applicable

Certified By:

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AGAT WORK ORDER: 17Z211874
PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD
SAMPLING SITE:3930 Riverside Dr

ATTENTION TO: Keith Holmes
SAMPLED BY:S Barter

O. Reg. 153(511) - All Metals (Water)

DATE RECEIVED: 2017-05-04

DATE REPORTED: 2017-05-09

		SAMPLE DESCRIPTION:		MW01-6	MW17-01	MW17-09	DUP-01
		SAMPLE TYPE:		Water	Water	Water	Water
		DATE SAMPLED:		2017-05-04	2017-05-04	2017-05-04	2017-05-04
Parameter	Unit	G / S	RDL	8361227	8361229	8361246	8361259
Antimony	µg/L	20000	1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	µg/L	1900	1.0	<1.0	2.1	<1.0	<1.0
Barium	µg/L	29000	2.0	140	57.3	252	246
Beryllium	µg/L	67	0.5	<0.5	<0.5	<0.5	<0.5
Boron	µg/L	45000	10.0	17.1	32.4	28.3	26.9
Cadmium	µg/L	2.7	0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/L	810	2.0	2.8	<2.0	<2.0	<2.0
Cobalt	µg/L	66	0.5	<0.5	0.6	0.9	0.9
Copper	µg/L	87	1.0	<1.0	<1.0	1.2	1.2
Lead	µg/L	25	0.5	<0.5	<0.5	<0.5	<0.5
Molybdenum	µg/L	9200	0.5	1.9	22.3	0.8	0.8
Nickel	µg/L	490	1.0	<1.0	<1.0	<1.0	<1.0
Selenium	µg/L	63	1.0	<1.0	<1.0	<1.0	<1.0
Silver	µg/L	1.5	0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/L	510	0.3	<0.3	<0.3	<0.3	<0.3
Uranium	µg/L	420	0.5	1.7	2.6	1.0	1.0
Vanadium	µg/L	250	0.4	<0.4	3.6	0.9	1.0
Zinc	µg/L	1100	5.0	<5.0	<5.0	5.5	<5.0
Mercury	µg/L	0.29	0.02	<0.02	<0.02	<0.02	<0.02
Chromium VI	µg/L	140	5	<5	<5	<5	<5

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 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 Textured Soils

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD
PROJECT: 1670692
SAMPLING SITE:3930 Riverside Dr

AGAT WORK ORDER: 17Z211874
ATTENTION TO: Keith Holmes
SAMPLED BY:S Barter

Trace Organics Analysis

RPT Date: May 09, 2017

PARAMETER	Batch	Sample Id	DUPLICATE Dup #1	DUPLICATE Dup #2	DUPLICATE RPD	Method Blank	REFERENCE MATERIAL Measured Value	REFERENCE MATERIAL Acceptable Limits Lower	REFERENCE MATERIAL Acceptable Limits Upper	METHOD BLANK SPIKE Recovery	METHOD BLANK SPIKE Acceptable Limits Lower	METHOD BLANK SPIKE Acceptable Limits Upper	MATRIX SPIKE Recovery	MATRIX SPIKE Acceptable Limits Lower	MATRIX SPIKE Acceptable Limits Upper
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)															
Benzene	8361229	8361229	0.24	0.23	NA	< 0.20	80%	50%	140%	83%	60%	130%	99%	50%	140%
Toluene	8361229	8361229	0.61	0.63	NA	< 0.20	80%	50%	140%	81%	60%	130%	96%	50%	140%
Ethylbenzene	8361229	8361229	< 0.10	< 0.10	NA	< 0.10	80%	50%	140%	83%	60%	130%	94%	50%	140%
Xylene Mixture	8361229	8361229	< 0.20	< 0.20	NA	< 0.20	83%	50%	140%	91%	60%	130%	100%	50%	140%
F1 (C6 to C10)	8361229	8361229	< 25	< 25	NA	< 25	77%	60%	140%	78%	60%	140%	82%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	106%	60%	140%	62%	60%	140%	75%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	106%	60%	140%	80%	60%	140%	82%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	87%	60%	140%	80%	60%	140%	85%	60%	140%
O. Reg. 153(511) - PAHs (Water)															
Naphthalene		TW	< 0.20	< 0.20	NA	< 0.20	90%	50%	140%	92%	50%	140%	91%	50%	140%
Acenaphthylene		TW	< 0.20	< 0.20	NA	< 0.20	95%	50%	140%	87%	50%	140%	88%	50%	140%
Acenaphthene		TW	< 0.20	< 0.20	NA	< 0.20	97%	50%	140%	92%	50%	140%	92%	50%	140%
Fluorene		TW	< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	98%	50%	140%	97%	50%	140%
Phenanthrene		TW	< 0.10	< 0.10	NA	< 0.10	97%	50%	140%	101%	50%	140%	96%	50%	140%
Anthracene		TW	< 0.10	< 0.10	NA	< 0.10	100%	50%	140%	107%	50%	140%	108%	50%	140%
Fluoranthene		TW	< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	100%	50%	140%	106%	50%	140%
Pyrene		TW	< 0.20	< 0.20	NA	< 0.20	101%	50%	140%	100%	50%	140%	98%	50%	140%
Benz(a)anthracene		TW	< 0.20	< 0.20	NA	< 0.20	101%	50%	140%	98%	50%	140%	92%	50%	140%
Chrysene		TW	< 0.10	< 0.10	NA	< 0.10	96%	50%	140%	91%	50%	140%	84%	50%	140%
Benzo(b)fluoranthene		TW	< 0.10	< 0.10	NA	< 0.10	121%	50%	140%	105%	50%	140%	97%	50%	140%
Benzo(k)fluoranthene		TW	< 0.10	< 0.10	NA	< 0.10	102%	50%	140%	94%	50%	140%	96%	50%	140%
Benzo(a)pyrene		TW	< 0.01	< 0.01	NA	< 0.01	110%	50%	140%	105%	50%	140%	103%	50%	140%
Indeno(1,2,3-cd)pyrene		TW	< 0.20	< 0.20	NA	< 0.20	113%	50%	140%	76%	50%	140%	72%	50%	140%
Dibenz(a,h)anthracene		TW	< 0.20	< 0.20	NA	< 0.20	114%	50%	140%	83%	50%	140%	79%	50%	140%
Benzo(g,h,i)perylene		TW	< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	78%	50%	140%	79%	50%	140%
2-and 1-methyl Naphthalene		TW	< 0.20	< 0.20	NA	< 0.20	112%	50%	140%	93%	50%	140%	94%	50%	140%

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.
When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

AGAT Laboratories

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD
PROJECT: 1670692
SAMPLING SITE:3930 Riverside Dr

AGAT WORK ORDER: 17Z211874
ATTENTION TO: Keith Holmes
SAMPLED BY:S Barter

Water Analysis

RPT Date: May 09, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - All Metals (Water)															
Antimony	8361227	8361227	<1.0	<1.0	NA	< 1.0	98%	70%	130%	97%	80%	120%	101%	70%	130%
Arsenic	8361227	8361227	<1.0	<1.0	NA	< 1.0	102%	70%	130%	100%	80%	120%	104%	70%	130%
Barium	8361227	8361227	140	135	3.6%	< 2.0	101%	70%	130%	99%	80%	120%	101%	70%	130%
Beryllium	8361227	8361227	<0.5	<0.5	NA	< 0.5	98%	70%	130%	100%	80%	120%	104%	70%	130%
Boron	8361227	8361227	17.1	16.9	NA	< 10.0	102%	70%	130%	100%	80%	120%	99%	70%	130%
Cadmium	8361227	8361227	<0.2	<0.2	NA	< 0.2	100%	70%	130%	98%	80%	120%	97%	70%	130%
Chromium	8361227	8361227	2.8	2.7	NA	< 2.0	100%	70%	130%	102%	80%	120%	98%	70%	130%
Cobalt	8361227	8361227	<0.5	<0.5	NA	< 0.5	99%	70%	130%	99%	80%	120%	94%	70%	130%
Copper	8361227	8361227	<1.0	<1.0	NA	< 1.0	100%	70%	130%	102%	80%	120%	92%	70%	130%
Lead	8361227	8361227	<0.5	<0.5	NA	< 0.5	101%	70%	130%	101%	80%	120%	98%	70%	130%
Molybdenum	8361227	8361227	1.9	2.2	NA	< 0.5	97%	70%	130%	97%	80%	120%	102%	70%	130%
Nickel	8361227	8361227	<1.0	<1.0	NA	< 1.0	99%	70%	130%	101%	80%	120%	93%	70%	130%
Selenium	8361227	8361227	<1.0	<1.0	NA	< 1.0	104%	70%	130%	103%	80%	120%	108%	70%	130%
Silver	8361227	8361227	<0.2	<0.2	NA	< 0.2	100%	70%	130%	108%	80%	120%	97%	70%	130%
Thallium	8361227	8361227	<0.3	<0.3	NA	< 0.3	103%	70%	130%	100%	80%	120%	97%	70%	130%
Uranium	8361227	8361227	1.7	1.8	NA	< 0.5	99%	70%	130%	98%	80%	120%	102%	70%	130%
Vanadium	8361227	8361227	<0.4	<0.4	NA	< 0.4	100%	70%	130%	101%	80%	120%	101%	70%	130%
Zinc	8361227	8361227	<5.0	<5.0	NA	< 5.0	100%	70%	130%	100%	80%	120%	98%	70%	130%
Mercury	8361227	8361227	<0.02	<0.02	NA	< 0.02	103%	70%	130%	100%	80%	120%	101%	70%	130%
Chromium VI	8361229	8361229	<5	<5	NA	< 5	100%	70%	130%	102%	80%	120%	102%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL (Reporting Limit), the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:

AGAT Laboratories

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FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z211874

PROJECT: 1670692

ATTENTION TO: Keith Holmes

SAMPLING SITE:3930 Riverside Dr

SAMPLED BY:S Barter

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluorene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Phenanthrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene-d12	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzene	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
Toluene	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
Ethylbenzene	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
Xylene Mixture	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
F1 (C6 to C10)	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC/FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5010	MOE PHC E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC/FID
F3 (C16 to C34) minus PAHs	VOL-91-5010	MOE PHC E3421	GC/FID
F4 (C34 to C50)	VOL -91- 5010	MOE PHC- E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
Benzene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Toluene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Ethylbenzene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Xylene Mixture	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F1 (C6 to C10)	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z211874

PROJECT: 1670692

ATTENTION TO: Keith Holmes

SAMPLING SITE:3930 Riverside Dr

SAMPLED BY:S Barter

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW-846 7470 & 245.1	CVAAS
Chromium VI	INOR-93-6034	SM 3500-Cr B	SPECTROPHOTOMETER

AGAT Laboratories

1 blk

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 1772111874.

Cooler Quantity: one - on ice.

Arrival Temperatures: 15.1 | 15.3 | 14.8
LT - 6.9 | 17.4 | 17.7

Custody Seal Intact: ☐ Yes ☐ No ☑ N/A

Notes:

Report Information:

Company: Golder Associates Ltd.
Contact: Alyssa Trohe
Address: 1931 ROBERTSON RD
OTTAWA, ON
Phone: 613-592-9600 Fax: 613-592-9601
Reports to be sent to:
1. Email: atrohe@golder.com
2. Email: khalmes@golder.com

Regulatory Requirements:

☐ No Regulatory Requirement
(Please check all applicable boxes)

☒ Regulation 153/04
Table 3 *Indicate One*
☐ Ind/Com
☒ Res/Park
☐ Agriculture

Soil Texture *(Check One)*
☒ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm

Region _____ *Indicate One*

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other

_____ *Indicate One*

Is this submission for a **Record of Site Condition?** ☒ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☒ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☒ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

OR Date Required (Rush Surcharges May Apply): _____

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: 1670692
Site Location: 3930 RIVERSIDE DR.
Sampled By: S. BARTER
AGAT Quote #: _____ PO: _____
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ NO_3/NO_2 ☐ Total N ☐ Hg ☐ pH ☐ SAR	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4 / BTEX	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	Hg	CrVI	Metals
MW01-6	MAY4	11:00	8	GW	SAMPLES CONTAIN	Y								X		X						X	X	X
MW17-01		12:30	8	GW	SEDIMENT	Y								X		X						X	X	X
MW17-09		13:30	8	GW		Y								X		X						X	X	X
DUP-01		13:30	8	GW	↓	Y								X		X						X	X	X
TRIP BLANK	↓	—	3	W		N								X										

Samples Relinquished By (Print Name and Sign): SHEILA BARTER	Date: MAY 4, 17	Time: 14:30	Samples Received By (Print Name and Sign):	Date: 4-May-17	Time: 14h30
Samples Relinquished By (Print Name and Sign):	Date: 4-May-17	Time: 16h00	Samples Received By (Print Name and Sign):	Date:	Time:
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign): Shaamin May 5/17	Date: 8:55am	Time:

Page 1 of 1

Nº: T 033133

AGAT Laboratories

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CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Keith Holmes; Alyssa Troke

PROJECT: 1670692

AGAT WORK ORDER: 17Z211882

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: May 09, 2017

PAGES (INCLUDING COVER): 10

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z211882

PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes; Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals (Excluding Hydrides) (Soil)

DATE RECEIVED: 2017-05-04

DATE REPORTED: 2017-05-09

		SAMPLE DESCRIPTION:		17-05 SA2	17-09 SA1	17-07 SA11	17-07 SA12
		SAMPLE TYPE:		Soil	Soil	Soil	Soil
		DATE SAMPLED:		2017-05-03	2017-05-03	2017-04-28	2017-04-28
Parameter	Unit	G / S	RDL	8361207	8361208	8361212	8361217
Boron	µg/g	120	5	5	<5	<5	<5
Barium	µg/g	390	2	197	112	20	24
Beryllium	µg/g	4	0.5	0.6	<0.5	<0.5	<0.5
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	2	68	35	5	6
Cobalt	µg/g	22	0.5	15.1	9.0	1.6	1.9
Copper	µg/g	140	1	35	19	4	5
Lead	µg/g	120	1	6	6	1	2
Molybdenum	µg/g	6.9	0.5	0.6	0.5	<0.5	<0.5
Nickel	µg/g	100	1	38	21	3	3
Silver	µg/g	20	0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4	<0.4	<0.4
Uranium	µg/g	23	0.5	1.2	0.8	<0.5	<0.5
Vanadium	µg/g	86	1	65	39	10	12
Zinc	µg/g	340	5	84	50	7	8

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

Certified By: Amanjot Bhela

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z211882

PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes; Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - ORPs (Soil)

DATE RECEIVED: 2017-05-04

DATE REPORTED: 2017-05-09

				SAMPLE DESCRIPTION:	17-05 SA2	17-09 SA1
				SAMPLE TYPE:	Soil	Soil
				DATE SAMPLED:	2017-05-03	2017-05-03
Parameter	Unit	G / S	RDL		8361207	8361208
pH, 2:1 CaCl2 Extraction	pH Units		NA		7.63	7.26
Electrical Conductivity	mS/cm	0.7	0.005		0.265	0.112
Sodium Adsorption Ratio	NA	5	NA		0.356	0.089

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

8361207-8361208 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract obtained from 2:1 leaching procedure (2 parts extraction fluid:1 part wet soil).

Certified By: Amanjot Bhela

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z211882

PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes; Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2017-05-04

DATE REPORTED: 2017-05-09

		SAMPLE DESCRIPTION:		17-05 SA2	17-09 SA1	17-07 SA11	17-07 SA12
		SAMPLE TYPE:		Soil	Soil	Soil	Soil
		DATE SAMPLED:		2017-05-03	2017-05-03	2017-04-28	2017-04-28
Parameter	Unit	G / S	RDL	8361207	8361208	8361212	8361217
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/g	78	0.05	<0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	<0.05	<0.05	<0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05	<0.05
Surrogate	Unit	Acceptable Limits					
Chrysene-d12	%	50-140		74	81	70	72

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

8361207-8361217 Results are based on the dry weight of the soil.
Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By: NPopowich

AGAT Laboratories

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http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 17Z211882

PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes; Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)

DATE RECEIVED: 2017-05-04

DATE REPORTED: 2017-05-09

				SAMPLE DESCRIPTION:	17-05 SA2	17-09 SA1	17-07 SA11	17-07 SA12
				SAMPLE TYPE:	Soil	Soil	Soil	Soil
				DATE SAMPLED:	2017-05-03	2017-05-03	2017-04-28	2017-04-28
Parameter	Unit	G / S	RDL		8361207	8361208	8361212	8361217
Benzene	µg/g	0.21	0.02		<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.08		<0.08	<0.08	<0.08	<0.08
Ethylbenzene	µg/g	2	0.05		<0.05	<0.05	<0.05	<0.05
Xylene Mixture	µg/g	3.1	0.05		<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	55	5		<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5		<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10		<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10		<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50		<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50		<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50		<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50		NA	NA	NA	NA
Moisture Content	%		0.1		27.4	14.0	18.2	20.2
Surrogate	Unit	Acceptable Limits						
Terphenyl	%	60-140			83	79	75	83

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

8361207-8361217 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX and PAH contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.

Certified By: NPopowich

AGAT Laboratories

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TEL (905)712-5100
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http://www.agatlabs.com

Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z211882

PROJECT: 1670692

ATTENTION TO: Keith Holmes; Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

Soil Analysis

RPT Date: May 09, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals (Excluding Hydrides) (Soil)															
Boron	8369441		<5	<5	NA	< 5	78%	70%	130%	100%	80%	120%	82%	70%	130%
Barium	8369441		62	59	5.0%	< 2	103%	70%	130%	99%	80%	120%	102%	70%	130%
Beryllium	8369441		<0.5	<0.5	NA	< 0.5	101%	70%	130%	103%	80%	120%	91%	70%	130%
Cadmium	8369441		<0.5	<0.5	NA	< 0.5	105%	70%	130%	101%	80%	120%	112%	70%	130%
Chromium	8369441		11	10	9.5%	< 2	100%	70%	130%	101%	80%	120%	107%	70%	130%
Cobalt	8369441		4.5	5.2	14.4%	< 0.5	95%	70%	130%	103%	80%	120%	100%	70%	130%
Copper	8369441		11	10	9.5%	< 1	99%	70%	130%	109%	80%	120%	102%	70%	130%
Lead	8369441		6	6	0.0%	< 1	103%	70%	130%	103%	80%	120%	104%	70%	130%
Molybdenum	8369441		<0.5	<0.5	NA	< 0.5	103%	70%	130%	99%	80%	120%	106%	70%	130%
Nickel	8369441		8	10	22.2%	< 1	97%	70%	130%	103%	80%	120%	101%	70%	130%
Silver	8369441		<0.2	<0.2	NA	< 0.2	98%	70%	130%	94%	80%	120%	96%	70%	130%
Thallium	8369441		<0.4	<0.4	NA	< 0.4	108%	70%	130%	97%	80%	120%	98%	70%	130%
Uranium	8369441		0.5	<0.5	NA	< 0.5	111%	70%	130%	98%	80%	120%	101%	70%	130%
Vanadium	8369441		19	18	5.4%	< 1	104%	70%	130%	101%	80%	120%	103%	70%	130%
Zinc	8369441		27	27	0.0%	< 5	104%	70%	130%	113%	80%	120%	120%	70%	130%
O. Reg. 153(511) - ORPs (Soil)															
pH, 2:1 CaCl2 Extraction	8365451		7.32	7.31	0.1%	NA	100%	90%	110%	NA			NA		
Electrical Conductivity	8369441		0.237	0.242	2.1%	< 0.005	95%	90%	110%	NA			NA		
Sodium Adsorption Ratio	8369441		0.759	0.793	4.4%	NA	NA			NA			NA		

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Amanjot Bhela

AGAT Laboratories

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z211882

PROJECT: 1670692

ATTENTION TO: Keith Holmes; Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: May 09, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)															
Benzene	8365440		< 0.02	< 0.02	NA	< 0.02	79%	60%	130%	111%	60%	130%	115%	60%	130%
Toluene	8365440		< 0.08	< 0.08	NA	< 0.08	76%	60%	130%	118%	60%	130%	115%	60%	130%
Ethylbenzene	8365440		< 0.05	< 0.05	NA	< 0.05	76%	60%	130%	115%	60%	130%	113%	60%	130%
Xylene Mixture	8365440		< 0.05	< 0.05	NA	< 0.05	78%	60%	130%	114%	60%	130%	105%	60%	130%
F1 (C6 to C10)	8365440		< 5	< 5	NA	< 5	71%	60%	130%	88%	85%	115%	92%	70%	130%
F2 (C10 to C16)	8364406		< 10	< 10	NA	< 10	109%	60%	130%	80%	80%	120%	78%	70%	130%
F3 (C16 to C34)	8364406		< 50	< 50	NA	< 50	110%	60%	130%	81%	80%	120%	97%	70%	130%
F4 (C34 to C50)	8364406		< 50	< 50	NA	< 50	98%	60%	130%	101%	80%	120%	102%	70%	130%
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	8358141		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	92%	50%	140%	91%	50%	140%
Acenaphthylene	8358141		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	87%	50%	140%	88%	50%	140%
Acenaphthene	8358141		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	92%	50%	140%	92%	50%	140%
Fluorene	8358141		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	98%	50%	140%	97%	50%	140%
Phenanthrene	8358141		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	101%	50%	140%	96%	50%	140%
Anthracene	8358141		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	107%	50%	140%	108%	50%	140%
Fluoranthene	8358141		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	100%	50%	140%	106%	50%	140%
Pyrene	8358141		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	100%	50%	140%	98%	50%	140%
Benz(a)anthracene	8358141		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	98%	50%	140%	92%	50%	140%
Chrysene	8358141		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	91%	50%	140%	84%	50%	140%
Benzo(b)fluoranthene	8358141		< 0.05	< 0.05	NA	< 0.05	121%	50%	140%	105%	50%	140%	97%	50%	140%
Benzo(k)fluoranthene	8358141		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	94%	50%	140%	96%	50%	140%
Benzo(a)pyrene	8358141		< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	105%	50%	140%	103%	50%	140%
Indeno(1,2,3-cd)pyrene	8358141		< 0.05	< 0.05	NA	< 0.05	113%	50%	140%	76%	50%	140%	72%	50%	140%
Dibenz(a,h)anthracene	8358141		< 0.05	< 0.05	NA	< 0.05	114%	50%	140%	83%	50%	140%	79%	50%	140%
Benzo(g,h,i)perylene	8358141		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	78%	50%	140%	79%	50%	140%
2-and 1-methyl Naphthalene	8358141		< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	93%	50%	140%	94%	50%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By: N Popnikolof

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z211882

PROJECT: 1670692

ATTENTION TO: Keith Holmes; Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
pH, 2:1 CaCl2 Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	pH METER
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z211882

PROJECT: 1670692

ATTENTION TO: Keith Holmes; Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Toluene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Ethylbenzene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Xylene Mixture	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34) minus PAHs	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID

1 small blue

AGAT Laboratories

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webearth.agatlabs.com

Laboratory Use Only
Work Order #: 17Z211882
Cooler Quantity: one cooler
Arrival Temperatures: 4.2 | 3.8 | 4.1
LT- 3.8 | 3.7 | 3.2
Custody Seal Intact: ☐Yes ☐No ☐N/A
Notes:

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Report Information:
Company: Golder
Contact: Keith Holmes
Address:
Phone: 592-9600 Fax: 592-9601
Reports to be sent to:
1. Email: kholmes@golder.com
2. Email: atroke@golder.com

Project Information:
Project: 1670692
Site Location:
Sampled By:
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information: Bill To Same: Yes ☐ No ☐
Company:
Contact:
Address:
Email:

Regulatory Requirements: ☐ No Regulatory Requirement
(Please check all applicable boxes)

☒ Regulation 153/04
Table 3 *Indicate One*
☐ Ind/Com
☒ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☒ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region *Indicate One*

☒ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other *Indicate One*

Is this submission for a **Record of Site Condition?** ☐ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)
☒ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions
17-05 SA2	03/05/17	12:00	3	S	
17-09 SA1	03/05/17	12:00	3		
17-08 SA11	28/04/17	12:00	3		
17-07 SA12	28/04/17	12:00	3		

Metals and Inorganics	Metal Scan (153 complete)	Hydride Forming Metals	Client Custom Metals	(Check Applicable) ORPs: ☐B-HWS ☐Cl ☐CN ☐Cr(VI) ☐EC ☐FOC ☐NO2/NO3 ☐Total N ☐Hg ☐pH ☐SAR	Nutrients: ☐TP ☐NH3 ☐TKN ☐NO3 ☐NO2 ☐NO2/NO3	Volatiles: ☐VOC ☐BTEX ☐THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	PH, EC, SAR
	X						X		X						X
	X						X		X						
	X						X		X						
	X						X		X						

Samples Relinquished By (Print Name and Sign): Keith Holmes — Date: 4/05/17 — Time: 3:00
Samples Received By (Print Name and Sign): [illegible] — Date: 4-May-17 — Time: 7:30
Samples Relinquished By (Print Name and Sign): [illegible] — Date: 4-May/17 — Time: 16h02
Samples Received By (Print Name and Sign): Sharmin — Date: May 5 17 — Time: 8:40a

Page 1 of 1
N°: T 018593

Pink Copy - Client | Yellow Copy - AGAT | White Copy - AGAT

AGAT Laboratories

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CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Alyssa Troke; Keith Holmes

PROJECT: 1670692

AGAT WORK ORDER: 17Z216839

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Gyulhan Yalamova, Report Reviewer

DATE REPORTED: May 30, 2017

PAGES (INCLUDING COVER): 10

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

VERSION 2: Partial report excluding PAHs issued on May 29th, 2017.
Complete Report issued May 30, 2017.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z216839

PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2017-05-18

DATE REPORTED: 2017-05-30

		SAMPLE DESCRIPTION:		17-10 SA3	17-11 SA2	17-111 SA2 DUP	17-12 SA3	17-13 SA3
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2017-05-17	2017-05-17	2017-05-17	2017-05-17	2017-05-17
Parameter	Unit	G / S	RDL	8399270	8399278	8399282	8399287	8399289
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	4	3	3	2	2
Barium	µg/g	390	2	136	126	135	135	175
Beryllium	µg/g	4	0.5	0.7	0.7	0.6	0.5	0.6
Boron	µg/g	120	5	7	6	6	<5	7
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.23	0.22	0.20	0.40	0.67
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	2	35	26	27	38	50
Cobalt	µg/g	22	0.5	12.8	12.3	11.1	8.4	12.1
Copper	µg/g	140	1	29	22	26	18	25
Lead	µg/g	120	1	15	12	13	11	15
Molybdenum	µg/g	6.9	0.5	1.3	0.8	0.9	0.6	0.9
Nickel	µg/g	100	1	34	27	25	22	32
Selenium	µg/g	2.4	0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver	µg/g	20	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	µg/g	23	0.5	0.7	0.6	0.6	0.7	1.2
Vanadium	µg/g	86	1	39	36	35	43	55
Zinc	µg/g	340	5	75	56	53	57	84
Chromium VI	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10	<0.10	<0.10

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

Certified By: Amanjot Bhela

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z216839

PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - ORPs (Soil)

DATE RECEIVED: 2017-05-18

DATE REPORTED: 2017-05-30

		SAMPLE DESCRIPTION:		17-10 SA3
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2017-05-17
Parameter	Unit	G / S	RDL	8399270
pH, 2:1 CaCl2 Extraction	pH Units		NA	7.20

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

8399270 pH was determined on the 0.01M CaCl2 extract obtained from 2:1 leaching procedure (2 parts extraction fluid:1 part wet soil).

Certified By: Amanjot Bhela

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Certificate of Analysis

AGAT WORK ORDER: 17Z216839

PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2017-05-18

DATE REPORTED: 2017-05-30

		SAMPLE DESCRIPTION:		17-10 SA3	17-11 SA2	17-111 SA2 DUP	17-12 SA3	17-13 SA3
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2017-05-17	2017-05-17	2017-05-17	2017-05-17	2017-05-17
Parameter	Unit	G / S	RDL	8399270	8399278	8399282	8399287	8399289
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05	0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	0.07	<0.05	0.05	0.17	0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05	<0.05	0.07	<0.05
Fluoranthene	µg/g	0.69	0.05	0.15	0.07	0.11	0.36	0.15
Pyrene	µg/g	78	0.05	0.11	0.07	0.05	0.27	0.14
Benz(a)anthracene	µg/g	0.5	0.05	0.05	<0.05	0.05	0.12	0.08
Chrysene	µg/g	7	0.05	0.06	<0.05	0.07	0.14	0.07
Benzo(b)fluoranthene	µg/g	0.78	0.05	0.05	0.06	0.07	0.10	0.07
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	0.05	<0.05	0.08	0.06
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	0.06	0.08	0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	<0.05	<0.05	0.06	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	<0.05	<0.05	0.05	0.06	<0.05
2-and 1-methyl Naphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	12.8	8.8	9.3	16.0	7.3
Surrogate	Unit	Acceptable Limits						
Chrysene-d12	%	50-140		67	72	70	73	62

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

8399270-8399289 Results are based on the dry weight of the soil.
Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z216839

PROJECT: 1670692

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)

DATE RECEIVED: 2017-05-18

DATE REPORTED: 2017-05-30

		SAMPLE DESCRIPTION:		17-10 SA3	17-11 SA2	17-111 SA2 DUP	17-12 SA3	17-13 SA3
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2017-05-17	2017-05-17	2017-05-17	2017-05-17	2017-05-17
Parameter	Unit	G / S	RDL	8399270	8399278	8399282	8399287	8399289
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene Mixture	µg/g	3.1	0.05	<0.05	0.08	0.06	<0.05	<0.05
F1 (C6 to C10)	µg/g	55	5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA
Moisture Content	%		0.1	12.8	8.8	9.3	16.0	7.3
Surrogate	Unit	Acceptable Limits						
Terphenyl	%	60-140		70	113	108	110	120

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

8399270-8399289 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX and PAH contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.

Certified By:

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD
AGAT WORK ORDER: 17Z216839
PROJECT: 1670692
ATTENTION TO: Alyssa Troke; Keith Holmes
SAMPLING SITE:
SAMPLED BY:

Soil Analysis

RPT Date: May 30, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - All Metals (Soil)															
Antimony	8413959		<0.8	<0.8	NA	< 0.8	108%	70%	130%	99%	80%	120%	98%	70%	130%
Arsenic	8413959		1	1	NA	< 1	114%	70%	130%	94%	80%	120%	97%	70%	130%
Barium	8413959		8	8	NA	< 2	106%	70%	130%	99%	80%	120%	99%	70%	130%
Beryllium	8413959		<0.5	<0.5	NA	< 0.5	110%	70%	130%	105%	80%	120%	106%	70%	130%
Boron	8413959		<5	<5	NA	< 5	79%	70%	130%	99%	80%	120%	99%	70%	130%
Boron (Hot Water Soluble)	8404652		2.57	2.51	2.4%	< 0.10	92%	60%	140%	106%	70%	130%	102%	60%	140%
Cadmium	8413959		<0.5	<0.5	NA	< 0.5	106%	70%	130%	95%	80%	120%	95%	70%	130%
Chromium	8413959		4	4	NA	< 2	102%	70%	130%	96%	80%	120%	93%	70%	130%
Cobalt	8413959		1.7	1.6	NA	< 0.5	101%	70%	130%	94%	80%	120%	100%	70%	130%
Copper	8413959		4	4	NA	< 1	104%	70%	130%	107%	80%	120%	84%	70%	130%
Lead	8413959		3	3	NA	< 1	111%	70%	130%	86%	80%	120%	81%	70%	130%
Molybdenum	8413959		<0.5	<0.5	NA	< 0.5	107%	70%	130%	96%	80%	120%	100%	70%	130%
Nickel	8413959		3	3	NA	< 1	98%	70%	130%	93%	80%	120%	93%	70%	130%
Selenium	8413959		<0.4	<0.4	NA	< 0.4	113%	70%	130%	104%	80%	120%	102%	70%	130%
Silver	8413959		<0.2	<0.2	NA	< 0.2	72%	70%	130%	96%	80%	120%	91%	70%	130%
Thallium	8413959		<0.4	<0.4	NA	< 0.4	92%	70%	130%	105%	80%	120%	106%	70%	130%
Uranium	8413959		<0.5	<0.5	NA	< 0.5	98%	70%	130%	114%	80%	120%	110%	70%	130%
Vanadium	8413959		8	8	0.0%	< 1	91%	70%	130%	91%	80%	120%	93%	70%	130%
Zinc	8413959		26	24	NA	< 5	100%	70%	130%	101%	80%	120%	104%	70%	130%
Chromium VI	8416917		<0.2	<0.2	NA	< 0.2	96%	70%	130%	97%	80%	120%	106%	70%	130%
Mercury	8413959		<0.10	<0.10	NA	< 0.10	108%	70%	130%	102%	80%	120%	92%	70%	130%
O. Reg. 153(511) - ORPs (Soil)															
pH, 2:1 CaCl2 Extraction	8403898		7.84	7.77	0.9%	NA	100%	90%	110%	NA			NA		

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Amanjot Bhela

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z216839

PROJECT: 1670692

ATTENTION TO: Alyssa Troke; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: May 30, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)															
Benzene	8395012		< 0.02	< 0.02	NA	< 0.02	108%	60%	130%	118%	60%	130%	107%	60%	130%
Toluene	8395012		< 0.08	< 0.08	NA	< 0.08	114%	60%	130%	114%	60%	130%	111%	60%	130%
Ethylbenzene	8395012		< 0.05	< 0.05	NA	< 0.05	110%	60%	130%	115%	60%	130%	110%	60%	130%
Xylene Mixture	8395012		< 0.05	< 0.05	NA	< 0.05	105%	60%	130%	111%	60%	130%	110%	60%	130%
F1 (C6 to C10)	8395012		< 5	< 5	NA	< 5	73%	60%	130%	87%	85%	115%	86%	70%	130%
F2 (C10 to C16)	8411686		< 10	< 10	NA	< 10	96%	60%	130%	89%	80%	120%	104%	70%	130%
F3 (C16 to C34)	8411686		< 50	< 50	NA	< 50	91%	60%	130%	92%	80%	120%	110%	70%	130%
F4 (C34 to C50)	8411686		< 50	< 50	NA	< 50	87%	60%	130%	89%	80%	120%	95%	70%	130%
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	8413937		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	114%	50%	140%	122%	50%	140%
Acenaphthylene	8413937		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	90%	50%	140%	91%	50%	140%
Acenaphthene	8413937		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	91%	50%	140%	80%	50%	140%
Fluorene	8413937		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	89%	50%	140%	93%	50%	140%
Phenanthrene	8413937		< 0.05	< 0.05	NA	< 0.05	86%	50%	140%	86%	50%	140%	89%	50%	140%
Anthracene	8413937		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	96%	50%	140%	97%	50%	140%
Fluoranthene	8413937		< 0.05	< 0.05	NA	< 0.05	84%	50%	140%	87%	50%	140%	84%	50%	140%
Pyrene	8413937		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	85%	50%	140%	84%	50%	140%
Benz(a)anthracene	8413937		< 0.05	< 0.05	NA	< 0.05	63%	50%	140%	72%	50%	140%	124%	50%	140%
Chrysene	8413937		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	88%	50%	140%	85%	50%	140%
Benzo(b)fluoranthene	8413937		< 0.05	< 0.05	NA	< 0.05	68%	50%	140%	92%	50%	140%	81%	50%	140%
Benzo(k)fluoranthene	8413937		< 0.05	< 0.05	NA	< 0.05	116%	50%	140%	108%	50%	140%	92%	50%	140%
Benzo(a)pyrene	8413937		< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	106%	50%	140%	91%	50%	140%
Indeno(1,2,3-cd)pyrene	8413937		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	80%	50%	140%	75%	50%	140%
Dibenz(a,h)anthracene	8413937		< 0.05	< 0.05	NA	< 0.05	73%	50%	140%	77%	50%	140%	71%	50%	140%
Benzo(g,h,i)perylene	8413937		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	73%	50%	140%	69%	50%	140%
2-and 1-methyl Naphthalene	8413937		< 0.05	< 0.05	NA	< 0.05	99%	50%	140%	95%	50%	140%	109%	50%	140%

Comments:
When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

AGAT Laboratories

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z216839

PROJECT: 1670692

ATTENTION TO: Alyssa Troke; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
pH, 2:1 CaCl2 Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	pH METER

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z216839

PROJECT: 1670692

ATTENTION TO: Alyssa Troke; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	ORG-91-5106	EPA SW-846 3541 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Toluene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Ethylbenzene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Xylene Mixture	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34) minus PAHs	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID

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Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only
Work Order #: 17Z216839
Cooler Quantity: one - on ice
Arrival Temperatures: 5.2 | 5.6 | 5.0 / 9 | 8.5 | 7.9
Custody Seal Intact: ☐Yes ☐No ☐N/A
Notes:

Report Information:
Company: Golder
Contact: Alyssa Troke / Keith Holmes
Address: 1931 Robertson Rd, Ottawa
Phone: 613-592-9600 Fax:
Reports to be sent to:
1. Email: atroke@golder.com
2. Email: kholmes@golder.com

Project Information:
Project: ~~1622-5104~~ 1670692-
Site Location: Taggart Phase II ESA
Sampled By:
AGAT Quote #: ~~See previous submission~~ PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:
Bill To Same: Yes ☒ No ☐
Company:
Contact:
Address:
Email:

Regulatory Requirements:
☐ No Regulatory Requirement
(Please check all applicable boxes)

☒ Regulation 153/04
Table 3 (Indicate One)
☐ Ind/Com
☒ Res/Park
☐ Agriculture
Soil Texture (Check One)
☒ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region (Indicate One)

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
(Indicate One)

Is this submission for a **Record of Site Condition?** ☒ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☒ Yes ☐ No

Turnaround Time (TAT) Required:
Regular TAT ☐ 5 to 7 Business Days
Rush TAT (Rush Surcharges Apply)
☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day
OR Date Required (Rush Surcharges May Apply):
5 Days
Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*
For 'Same Day' analysis, please contact your AGAT CPM

Sample Matrix Legend
B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Y/N)	O. Reg 153: Metals and Inorganics (All Metals ☐ / 153 Metals (excl. Hydrides) ☐ / Hydride Metals ☐)	ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr^{6+} ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	~~Full Metals Scan~~ Reg. 153 All Metals	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3+NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4 / BTEX	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use
17-10 SA3	May 17/17	—	2	S					X				X		X				
17-11 SA2	↓	—	2	↓					X				X		X				
17-111 SA2 DUP		—	2						X				X		X				
17-12 SA3		—	2						X				X		X				
17-13 SA3		—	2						X				X		X				

Samples Relinquished By (Print Name and Sign): Alyssa Troke / Alyssa Troke	Date: May 18/17	Time: 2:15	Samples Received By (Print Name and Sign): Bethelet Dell	Date: 18-May-17	Time: 14h30
Samples Relinquished By (Print Name and Sign): COB to FedEx	Date: 18 Mar 17	Time: 16h00	Samples Received By (Print Name and Sign): 2 Hurrida 2	Date: May 19	Time: 10:30
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign):	Date:	Time:

Page 1 of 1
N°: T 047056

Document ID: DIV 78-1511.013

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Date Issued: September 20, 2016

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CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
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(613) 592-9600

ATTENTION TO: Alyssa Whiteduck; Keith Holmes

PROJECT: 19126877 - Taggart

AGAT WORK ORDER: 19Z500789

SOIL ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

TRACE ORGANICS REVIEWED BY: Pinkal Patel, Report Reviewer

DATE REPORTED: Aug 14, 2019

PAGES (INCLUDING COVER): 10

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 19Z500789

PROJECT: 19126877 - Taggart

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Whiteduck; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals (Soil)

DATE RECEIVED: 2019-08-02

DATE REPORTED: 2019-08-14

					SAMPLE DESCRIPTION:	19-05 SA1	19-06 SA2	19-07 SA1	19-08 SA1	19-09 SA1
					SAMPLE TYPE:	Soil	Soil	Soil	Soil	Soil
					DATE SAMPLED:	2019-07-31	2019-07-31	2019-07-31	2019-07-31	2019-07-31
Parameter	Unit	G / S: A	G / S: B	RDL		409729	409731	409732	409733	409734
Antimony	µg/g	1.3	7.5	0.8		4.7[A-B]	2.0[A-B]	<0.8[<A]	<0.8[<A]	<0.8[<A]
Arsenic	µg/g	18	18	1		11[<A]	7[<A]	6[<A]	4[<A]	2[<A]
Barium	µg/g	220	390	2		302[A-B]	181[<A]	129[<A]	151[<A]	88[<A]
Beryllium	µg/g	2.5	4	0.5		0.5[<A]	<0.5[<A]	<0.5[<A]	<0.5[<A]	<0.5[<A]
Boron	µg/g	36	120	5		9[<A]	7[<A]	8[<A]	8[<A]	<5[<A]
Boron (Hot Water Soluble)	µg/g	NA	1.5	0.10		1.08[<B]	0.63[<B]	0.41[<B]	0.65[<B]	0.13[<B]
Cadmium	µg/g	1.2	1.2	0.5		<0.5[<A]	<0.5[<A]	<0.5[<A]	<0.5[<A]	<0.5[<A]
Chromium	µg/g	70	160	2		29[<A]	23[<A]	17[<A]	17[<A]	23[<A]
Cobalt	µg/g	21	22	0.5		8.0[<A]	7.2[<A]	10.7[<A]	6.0[<A]	7.0[<A]
Copper	µg/g	92	140	1		152[>B]	63[<A]	21[<A]	25[<A]	18[<A]
Lead	µg/g	120	120	1		456[>B]	169[>B]	23[<A]	57[<A]	35[<A]
Molybdenum	µg/g	2	6.9	0.5		3.1[A-B]	1.7[<A]	3.4[A-B]	0.8[<A]	1.0[<A]
Nickel	µg/g	82	100	1		28[<A]	21[<A]	29[<A]	16[<A]	19[<A]
Selenium	µg/g	1.5	2.4	0.4		<0.4[<A]	0.5[<A]	0.5[<A]	<0.4[<A]	<0.4[<A]
Silver	µg/g	0.5	20	0.2		0.8[A-B]	0.4[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Thallium	µg/g	1	1	0.4		<0.4[<A]	<0.4[<A]	<0.4[<A]	<0.4[<A]	<0.4[<A]
Uranium	µg/g	2.5	23	0.5		0.6[<A]	0.6[<A]	1.0[<A]	<0.5[<A]	0.6[<A]
Vanadium	µg/g	86	86	1		31[<A]	32[<A]	28[<A]	23[<A]	32[<A]
Zinc	µg/g	290	340	5		400[>B]	172[<A]	48[<A]	67[<A]	49[<A]
Chromium VI	µg/g	0.66	8	0.2		<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Mercury	µg/g	0.27	0.27	0.10		0.70[>B]	0.39[>B]	<0.10[<A]	0.14[<A]	<0.10[<A]

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use, B Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

409729-409734 EC was determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio. SAR is a calculated parameter.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: Divine Basily

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Certificate of Analysis

AGAT WORK ORDER: 19Z500789

PROJECT: 19126877 - Taggart

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Whiteduck; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2019-08-02

DATE REPORTED: 2019-08-14

					SAMPLE DESCRIPTION:	19-01 SA3	19-02 SA3	19-03 SA3	19-04 SA3	19-05 SA1	19-06 SA2	19-07 SA1
					SAMPLE TYPE:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
					DATE SAMPLED:	2019-07-31	2019-07-31	2019-07-31	2019-07-31	2019-07-31	2019-07-31	2019-07-31
Parameter	Unit	G / S: A	G / S: B	RDL		409725	409726	409727	409728	409729	409731	409732
Naphthalene	µg/g	0.09	0.6	0.05		<0.05[<A]	<0.05[<A]	<0.05[<A]	<0.05[<A]	<0.05[<A]	0.28[A-B]	<0.05[<A]
Acenaphthylene	µg/g	0.093	0.15	0.05		<0.05[<A]	<0.05[<A]	<0.05[<A]	0.06[<A]	0.12[A-B]	0.14[A-B]	<0.05[<A]
Acenaphthene	µg/g	0.072	7.9	0.05		<0.05[<A]	<0.05[<A]	0.07[<A]	<0.05[<A]	<0.05[<A]	0.14[A-B]	<0.05[<A]
Fluorene	µg/g	0.12	62	0.05		<0.05[<A]	<0.05[<A]	0.11[<A]	<0.05[<A]	0.07[<A]	0.28[A-B]	<0.05[<A]
Phenanthrene	µg/g	0.69	6.2	0.05		0.13[<A]	<0.05[<A]	0.57[<A]	0.35[<A]	0.66[<A]	2.0[A-B]	0.22[<A]
Anthracene	µg/g	0.16	0.67	0.05		<0.05[<A]	<0.05[<A]	0.21[A-B]	0.09[<A]	0.21[A-B]	0.51[A-B]	0.06[<A]
Fluoranthene	µg/g	0.56	0.69	0.05		0.34[<A]	<0.05[<A]	0.99[>B]	0.68[A-B]	1.5[>B]	2.2[>B]	0.47[<A]
Pyrene	µg/g	1	78	0.05		0.28[<A]	<0.05[<A]	0.84[<A]	0.55[<A]	1.3[A-B]	1.9[A-B]	0.41[<A]
Benz(a)anthracene	µg/g	0.36	0.5	0.05		0.13[<A]	<0.05[<A]	0.39[A-B]	0.27[<A]	0.75[>B]	0.85[>B]	0.16[<A]
Chrysene	µg/g	2.8	7	0.05		0.17[<A]	<0.05[<A]	0.43[<A]	0.33[<A]	0.74[<A]	0.89[<A]	0.19[<A]
Benzo(b)fluoranthene	µg/g	0.47	0.78	0.05		0.19[<A]	<0.05[<A]	0.52[A-B]	0.35[<A]	1.1[>B]	1.3[>B]	0.22[<A]
Benzo(k)fluoranthene	µg/g	0.48	0.78	0.05		0.06[<A]	<0.05[<A]	0.20[<A]	0.13[<A]	0.38[<A]	0.35[<A]	0.08[<A]
Benzo(a)pyrene	µg/g	0.3	0.3	0.05		0.12[<A]	<0.05[<A]	0.33[>B]	0.25[<A]	0.72[>B]	0.79[>B]	0.15[<A]
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.38	0.05		0.07[<A]	<0.05[<A]	0.15[<A]	0.12[<A]	0.36[A-B]	0.34[A-B]	0.07[<A]
Dibenz(a,h)anthracene	µg/g	0.1	0.1	0.05		<0.05[<A]	<0.05[<A]	<0.05[<A]	<0.05[<A]	0.09[<A]	0.09[<A]	<0.05[<A]
Benzo(g,h,i)perylene	µg/g	0.68	6.6	0.05		0.08[<A]	<0.05[<A]	0.15[<A]	0.12[<A]	0.32[<A]	0.35[<A]	0.06[<A]
2-and 1-methyl Naphthalene	µg/g	0.59	0.99	0.05		<0.05[<A]	<0.05[<A]	<0.05[<A]	<0.05[<A]	<0.05[<A]	0.20[<A]	<0.05[<A]
Moisture Content	%			0.1		14.8	17.3	22.3	13.6	17.2	12.3	6.2
Surrogate	Unit		Acceptable Limits									
Chrysene-d12	%		50-140			61	81	74	71	71	66	75

Certified By:

AGAT Laboratories

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AGAT WORK ORDER: 19Z500789

PROJECT: 19126877 - Taggart

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Whiteduck; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2019-08-02

DATE REPORTED: 2019-08-14

					SAMPLE DESCRIPTION:	19-08 SA1	19-09 SA1
					SAMPLE TYPE:	Soil	Soil
					DATE SAMPLED:	2019-07-31	2019-07-31
Parameter	Unit	G / S: A	G / S: B	RDL		409733	409734
Naphthalene	µg/g	0.09	0.6	0.05		<0.05[<A]	<0.05[<A]
Acenaphthylene	µg/g	0.093	0.15	0.05		<0.05[<A]	<0.05[<A]
Acenaphthene	µg/g	0.072	7.9	0.05		<0.05[<A]	<0.05[<A]
Fluorene	µg/g	0.12	62	0.05		<0.05[<A]	<0.05[<A]
Phenanthrene	µg/g	0.69	6.2	0.05		<0.05[<A]	<0.05[<A]
Anthracene	µg/g	0.16	0.67	0.05		<0.05[<A]	<0.05[<A]
Fluoranthene	µg/g	0.56	0.69	0.05		0.07[<A]	0.10[<A]
Pyrene	µg/g	1	78	0.05		0.06[<A]	0.09[<A]
Benz(a)anthracene	µg/g	0.36	0.5	0.05		<0.05[<A]	<0.05[<A]
Chrysene	µg/g	2.8	7	0.05		<0.05[<A]	0.05[<A]
Benzo(b)fluoranthene	µg/g	0.47	0.78	0.05		<0.05[<A]	0.05[<A]
Benzo(k)fluoranthene	µg/g	0.48	0.78	0.05		<0.05[<A]	<0.05[<A]
Benzo(a)pyrene	µg/g	0.3	0.3	0.05		<0.05[<A]	<0.05[<A]
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.38	0.05		<0.05[<A]	<0.05[<A]
Dibenz(a,h)anthracene	µg/g	0.1	0.1	0.05		<0.05[<A]	<0.05[<A]
Benzo(g,h,i)perylene	µg/g	0.68	6.6	0.05		<0.05[<A]	<0.05[<A]
2-and 1-methyl Naphthalene	µg/g	0.59	0.99	0.05		<0.05[<A]	<0.05[<A]
Moisture Content	%			0.1		8.0	10.6
Surrogate	Unit		Acceptable Limits				
Chrysene-d12	%		50-140			63	69

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use, B Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

409725-409734 Results are based on the dry weight of the soil.
Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&j)Fluoranthene isomers because the isomers co-elute on the GC column.
2- and 1-Methyl Naphthalene is a calculated parameter. The calculated value is the sum of 2-Methyl Naphthalene and 1-Methyl Naphthalene.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: Pinkal Patel

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Guideline Violation

AGAT WORK ORDER: 19Z500789

PROJECT: 19126877 - Taggart

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Whiteduck; Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
409727	19-03 SA3	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Anthracene	µg/g	0.16	0.21
409727	19-03 SA3	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.36	0.39
409727	19-03 SA3	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.33
409727	19-03 SA3	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.47	0.52
409727	19-03 SA3	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.56	0.99
409727	19-03 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.33
409727	19-03 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	0.99
409728	19-04 SA3	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.56	0.68
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Soil)	Antimony	µg/g	1.3	4.7
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Soil)	Barium	µg/g	220	302
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Soil)	Copper	µg/g	92	152
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Soil)	Lead	µg/g	120	456
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Soil)	Mercury	µg/g	0.27	0.70
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Soil)	Molybdenum	µg/g	2	3.1
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Soil)	Silver	µg/g	0.5	0.8
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Soil)	Sodium Adsorption Ratio	NA	2.4	4.16
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Soil)	Zinc	µg/g	290	400
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Acenaphthylene	µg/g	0.093	0.12
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Anthracene	µg/g	0.16	0.21
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.36	0.75
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.72
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.47	1.1
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.56	1.5
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.36
409729	19-05 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Pyrene	µg/g	1	1.3
409729	19-05 SA1	ON T3 S RPI CT	O. Reg. 153(511) - Metals (Soil)	Copper	µg/g	140	152
409729	19-05 SA1	ON T3 S RPI CT	O. Reg. 153(511) - Metals (Soil)	Lead	µg/g	120	456
409729	19-05 SA1	ON T3 S RPI CT	O. Reg. 153(511) - Metals (Soil)	Mercury	µg/g	0.27	0.70
409729	19-05 SA1	ON T3 S RPI CT	O. Reg. 153(511) - Metals (Soil)	Zinc	µg/g	340	400
409729	19-05 SA1	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.5	0.75
409729	19-05 SA1	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.72
409729	19-05 SA1	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.78	1.1
409729	19-05 SA1	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	1.5
409731	19-06 SA2	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Soil)	Antimony	µg/g	1.3	2.0
409731	19-06 SA2	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Soil)	Lead	µg/g	120	169
409731	19-06 SA2	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Soil)	Mercury	µg/g	0.27	0.39
409731	19-06 SA2	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Acenaphthene	µg/g	0.072	0.14
409731	19-06 SA2	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Acenaphthylene	µg/g	0.093	0.14
409731	19-06 SA2	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Anthracene	µg/g	0.16	0.51
409731	19-06 SA2	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.36	0.85
409731	19-06 SA2	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.79
409731	19-06 SA2	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.47	1.3
409731	19-06 SA2	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.56	2.2

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Guideline Violation

AGAT WORK ORDER: 19Z500789

PROJECT: 19126877 - Taggart

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Whiteduck; Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
409731	19-06 SA2	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Fluorene	µg/g	0.12	0.28
409731	19-06 SA2	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.34
409731	19-06 SA2	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Naphthalene	µg/g	0.09	0.28
409731	19-06 SA2	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Phenanthrene	µg/g	0.69	2.0
409731	19-06 SA2	ON T1 S RPI/ICC	O. Reg. 153(511) - PAHs (Soil)	Pyrene	µg/g	1	1.9
409731	19-06 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals (Soil)	Lead	µg/g	120	169
409731	19-06 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals (Soil)	Mercury	µg/g	0.27	0.39
409731	19-06 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.5	0.85
409731	19-06 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.79
409731	19-06 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.78	1.3
409731	19-06 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	2.2
409732	19-07 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Soil)	Electrical Conductivity	mS/cm	0.57	2.19
409732	19-07 SA1	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Soil)	Molybdenum	µg/g	2	3.4
409732	19-07 SA1	ON T3 S RPI CT	O. Reg. 153(511) - Metals (Soil)	Electrical Conductivity	mS/cm	0.7	2.19

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 19Z500789

PROJECT: 19126877 - Taggart

ATTENTION TO: Alyssa Whiteduck; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

Soil Analysis

RPT Date: Aug 14, 2019			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals (Soil)															
Antimony	424936		<0.8	<0.8	NA	< 0.8	105%	70%	130%	97%	80%	120%	93%	70%	130%
Arsenic	424936		1	1	NA	< 1	107%	70%	130%	95%	80%	120%	102%	70%	130%
Barium	424936		11	11	5.4%	< 2	103%	70%	130%	96%	80%	120%	98%	70%	130%
Beryllium	424936		<0.5	<0.5	NA	< 0.5	73%	70%	130%	104%	80%	120%	109%	70%	130%
Boron	424936		<5	<5	NA	< 5	97%	70%	130%	118%	80%	120%	105%	70%	130%
Boron (Hot Water Soluble)	409764		0.48	0.50	NA	< 0.10	101%	60%	140%	99%	70%	130%	94%	60%	140%
Cadmium	424936		<0.5	<0.5	NA	< 0.5	110%	70%	130%	97%	80%	120%	100%	70%	130%
Chromium	424936		4	4	NA	< 2	96%	70%	130%	90%	80%	120%	90%	70%	130%
Cobalt	424936		1.5	1.5	NA	< 0.5	86%	70%	130%	90%	80%	120%	90%	70%	130%
Copper	424936		3	3	NA	< 1	91%	70%	130%	95%	80%	120%	87%	70%	130%
Lead	424936		2	2	NA	< 1	106%	70%	130%	88%	80%	120%	89%	70%	130%
Molybdenum	424936		<0.5	<0.5	NA	< 0.5	112%	70%	130%	98%	80%	120%	106%	70%	130%
Nickel	424936		3	3	NA	< 1	95%	70%	130%	97%	80%	120%	96%	70%	130%
Selenium	424936		<0.4	<0.4	NA	< 0.4	107%	70%	130%	93%	80%	120%	99%	70%	130%
Silver	424936		<0.2	<0.2	NA	< 0.2	101%	70%	130%	93%	80%	120%	91%	70%	130%
Thallium	424936		<0.4	<0.4	NA	< 0.4	90%	70%	130%	94%	80%	120%	95%	70%	130%
Uranium	424936		<0.5	<0.5	NA	< 0.5	93%	70%	130%	83%	80%	120%	89%	70%	130%
Vanadium	424936		11	12	11.9%	< 1	101%	70%	130%	103%	80%	120%	106%	70%	130%
Zinc	424936		8	8	NA	< 5	102%	70%	130%	100%	80%	120%	105%	70%	130%
Chromium VI	416448		<0.2	<0.2	NA	< 0.2	101%	70%	130%	103%	80%	120%	95%	70%	130%
Mercury	424936		<0.10	<0.10	NA	< 0.10	99%	70%	130%	98%	80%	120%	96%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL
pH duplicates QA acceptance criteria was met relative as stated in Table 5-15 of Analytical Protocol document.

Certified By: Nivine Basily

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD
PROJECT: 19126877 - Taggart
SAMPLING SITE:

AGAT WORK ORDER: 19Z500789
ATTENTION TO: Alyssa Whiteduck; Keith Holmes
SAMPLED BY:

Trace Organics Analysis

RPT Date: Aug 14, 2019			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	409726	409726	< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	89%	50%	140%	67%	50%	140%
Acenaphthylene	409726	409726	< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	92%	50%	140%	81%	50%	140%
Acenaphthene	409726	409726	< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	105%	50%	140%	84%	50%	140%
Fluorene	409726	409726	< 0.05	< 0.05	NA	< 0.05	117%	50%	140%	112%	50%	140%	100%	50%	140%
Phenanthrene	409726	409726	< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	68%	50%	140%	72%	50%	140%
Anthracene	409726	409726	< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	106%	50%	140%	99%	50%	140%
Fluoranthene	409726	409726	< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	99%	50%	140%	105%	50%	140%
Pyrene	409726	409726	< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	100%	50%	140%	107%	50%	140%
Benz(a)anthracene	409726	409726	< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	65%	50%	140%	67%	50%	140%
Chrysene	409726	409726	< 0.05	< 0.05	NA	< 0.05	115%	50%	140%	95%	50%	140%	103%	50%	140%
Benzo(b)fluoranthene	409726	409726	< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	97%	50%	140%	67%	50%	140%
Benzo(k)fluoranthene	409726	409726	< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	112%	50%	140%	108%	50%	140%
Benzo(a)pyrene	409726	409726	< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	84%	50%	140%	86%	50%	140%
Indeno(1,2,3-cd)pyrene	409726	409726	< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	67%	50%	140%	64%	50%	140%
Dibenz(a,h)anthracene	409726	409726	< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	76%	50%	140%	64%	50%	140%
Benzo(g,h,i)perylene	409726	409726	< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	66%	50%	140%	65%	50%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By: Jinkal Patel

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 19Z500789

PROJECT: 19126877 - Taggart

ATTENTION TO: Alyssa Whiteduck; Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS
Moisture Content	ORG-91-5106	EPA SW-846 3541 & 8270D	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270D	GC/MS

AGAT Laboratories

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Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Laboratory Use Only

Work Order #: 19T500789

Cooler Quantity: one - on ice

Arrival Temperatures: 7.6 | 7.1 | 7.5
7.4 | 8 | 7.6

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes: on ice

Report Information:

Company: Golder Associates
Contact: Alyssa Whiteduck / Keith Holmes
Address:
Phone: Fax:
Reports to be sent to:
1. Email: awhiteduck@golder.com
2. Email: kholmes@golder.com

Regulatory Requirements:

☐ No Regulatory Requirement

(Please check all applicable boxes)

☒ Regulation 153/04
Table 1 + 3 (Indicate One)
☐ Ind/Com
☒ Res/Park
☐ Agriculture

Soil Texture (Check One)
☒ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ____ (Indicate One)
☐ MISA

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
____ (Indicate One)

Is this submission for a Record of Site Condition? ☐ Yes ☒ No

Report Guideline on Certificate of Analysis: ☒ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days — 5 Days

Rush TAT (Rush Surcharges Apply)
☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project: 19126877-Taggart
Site Location:
Sampled By:
AGAT Quote #: PO:

Please note: If quotation number is not provided, client will be billed full price for analysis

Invoice Information:

Bill To Same: Yes ☐ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Y / N)	Metals and Inorganics	☐ All Metals ☐ 153 Metals (excl. Hydrides) ☐ Hydride Metals ☐ 153 Metals (incl. Hydrides)	ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr^{6+} ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3+NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	PHCs F1 - F4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use
19-01 SA3	July 31/19		1	S												X				
19-02 SA3			1													X				
19-03 SA3			1													X				
19-04 SA3			1													X				
19-05 SA1			2				X									X				
19-06 SA2			2				X									X				
19-07 SA1			2				X									X				
19-08 SA1			2				X									X				
19-09 SA1			2				X									X				

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Alyssa Whiteduck / [signature]	Aug 2/19	2:00	Obe Anele / [signature]	2019-08-02	16h00
CD / GO to PURO	2019-08-02	16h00	Sima [signature]	19/8/3	11:20

Page 1 of 1

Nº: T074649

AGAT Laboratories

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CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600
ATTENTION TO: Keith Holmes
PROJECT: 21482114
AGAT WORK ORDER: 22Z968500
TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor
WATER ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Lab Manager
DATE REPORTED: Nov 17, 2022
PAGES (INCLUDING COVER): 10
VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*Notes

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.

AGAT Laboratories

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http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 22Z968500

PROJECT: 21482114

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Water)

DATE RECEIVED: 2022-11-10

DATE REPORTED: 2022-11-17

		SAMPLE DESCRIPTION:		17-07	17-04	17-102	17-02	17-01	DUP-1
		SAMPLE TYPE:		Water	Water	Water	Water	Water	Water
		DATE SAMPLED:		2022-11-07 15:00	2022-11-10 13:30	2022-11-10 12:30	2022-11-10 10:30	2022-11-09 15:30	2022-11-09 15:30
Parameter	Unit	G / S	RDL	4517856	4517954	4517955	4517956	4517957	4517958
Naphthalene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthylene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Fluorene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Phenanthrene	µg/L		0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	µg/L		0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pyrene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(a)anthracene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chrysene	µg/L		0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(b)fluoranthene	µg/L		0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	µg/L		0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	µg/L		0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(g,h,i)perylene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2-and 1-methyl Naphthalene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Sediment				NO	NO	NO	NO	NO	NO
Surrogate	Unit	Acceptable Limits							
Naphthalene-d8	%	50-140		64	67	76	83	72	78
Acridine-d9	%	50-140		60	63	73	63	76	75
Terphenyl-d14	%	50-140		103	70	66	70	60	90

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

4517856-4517958 Sediment parameter is comment only based on visual inspection of the sample prior to extraction and is not an accredited test.
Legend: 1 = no sediment present; 2 = sediment present; 3 = sediment present in trace amount
Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.
2- and 1-Methyl Naphthalene is a calculated parameter. The calculated value is the sum of 2-Methyl Naphthalene and 1-Methyl Naphthalene. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 22Z968500

PROJECT: 21482114

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)

DATE RECEIVED: 2022-11-10

DATE REPORTED: 2022-11-17

				SAMPLE DESCRIPTION:	17-07	17-04	17-102	17-02	17-01	DUP-1
				SAMPLE TYPE:	Water	Water	Water	Water	Water	Water
				DATE SAMPLED:	2022-11-07 15:00	2022-11-10 13:30	2022-11-10 12:30	2022-11-10 10:30	2022-11-09 15:30	2022-11-09 15:30
Parameter	Unit	G / S	RDL		4517856	4517954	4517955	4517956	4517957	4517958
Benzene	µg/L		0.20		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L		0.20		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	µg/L		0.10		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
m & p-Xylene	µg/L		0.20		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
o-Xylene	µg/L		0.10		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Xylenes (Total)	µg/L		0.20		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
F1 (C6-C10)	µg/L		25		<25	<25	<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L		25		<25	<25	<25	<25	<25	<25
F2 (C10 to C16)	µg/L		100		<100	<100	<100	<100	<100	<100
F2 (C10 to C16) minus Naphthalene	µg/L		100		<100	<100	<100	<100	<100	<100
F3 (C16 to C34)	µg/L		100		<100	<100	<100	<100	<100	<100
F3 (C16 to C34) minus PAHs	µg/L		100		<100	<100	<100	<100	<100	<100
F4 (C34 to C50)	µg/L		100		<100	<100	<100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L		500		NA	NA	NA	NA	NA	NA
Sediment					1	1	1	1	1	1
Surrogate	Unit	Acceptable Limits								
Toluene-d8	% Recovery	60-140			92.2	88.8	90.5	86.8	91.0	85.0
Terphenyl	% Recovery	60-140			75	77	73	90	85	76

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 22Z968500

PROJECT: 21482114

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)

DATE RECEIVED: 2022-11-10

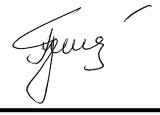
DATE REPORTED: 2022-11-17

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

4517856-4517958 Sediment parameter is comment only based on visual inspection of the sample prior to extraction and is not an accredited test.
Legend: 1 = no sediment present; 2 = sediment present; 3 = sediment present in trace amount
The C6-C10 fraction is calculated using toluene response factor.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
C6–C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX and PAH contributions.
C>10 – C16 (F2- Naphthalene) is a calculated parameter. The calculated value is F2 - Naphthalene.
C>16 - C34 (F3-PAH) is a calculated parameter. The calculated value is F3-PAH (PAH: sum of Phenanthrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-c,d)pyrene and Pyrene).
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



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Certificate of Analysis

AGAT WORK ORDER: 22Z968500

PROJECT: 21482114

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals & Inorganics (Water)

DATE RECEIVED: 2022-11-10

DATE REPORTED: 2022-11-17

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION: 17-07	17-04	17-102	17-02	17-01	DUP-1
				SAMPLE TYPE: Water	Water	Water	Water	Water	Water
				DATE SAMPLED: 2022-11-07 15:00	2022-11-10 13:30	2022-11-10 12:30	2022-11-10 10:30	2022-11-09 15:30	2022-11-09 15:30
				4517856	4517954	4517955	4517956	4517957	4517958
Dissolved Antimony	µg/L		1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic	µg/L		1.0	2.0	<1.0	<1.0	<1.0	2.4	2.6
Dissolved Barium	µg/L		2.0	113	141	65.5	95.1	199	185
Dissolved Beryllium	µg/L		0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Boron	µg/L		10.0	39.2	23.8	36.5	20.9	23.0	22.0
Dissolved Cadmium	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	0.21	<0.20
Dissolved Chromium	µg/L		2.0	<2.0	<2.0	<2.0	<2.0	14.4	13.1
Dissolved Cobalt	µg/L		0.50	<0.50	<0.50	1.00	<0.50	6.22	6.13
Dissolved Copper	µg/L		1.0	<1.0	1.1	1.1	<1.0	24.6	22.6
Dissolved Lead	µg/L		0.50	<0.50	<0.50	0.53	<0.50	13.5	13.0
Dissolved Molybdenum	µg/L		0.50	<0.50	1.27	2.37	1.84	<0.50	<0.50
Dissolved Nickel	µg/L		1.0	1.2	1.3	1.3	1.4	8.7	8.6
Dissolved Selenium	µg/L		1.0	<1.0	1.3	<1.0	1.2	1.5	1.6
Dissolved Silver	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dissolved Thallium	µg/L		0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Dissolved Uranium	µg/L		0.50	<0.50	1.02	1.72	1.29	1.49	1.45
Dissolved Vanadium	µg/L		0.40	0.58	0.70	0.50	<0.40	11.4	11.6
Dissolved Zinc	µg/L		5.0	<5.0	<5.0	<5.0	<5.0	25.4	29.3
Mercury	µg/L		0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
Chromium VI	µg/L		2.000	<2.000	<2.000	<2.000	<2.000	<2.000	<2.000
Cyanide, WAD	µg/L		2	<2	<2	<2	<2	<2	<2
Dissolved Sodium	µg/L		50	94500	145000	280000	191000	190000	169000
Chloride	µg/L		100	153000	247000	440000	328000	304000	300000
Electrical Conductivity	uS/cm		2	1320	1410	2190	1740	1640	1650
pH	pH Units		NA	7.49	7.69	7.73	7.86	7.79	7.78

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

4517856-4517958 Metals analysis completed on a filtered sample.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Amanjot Bhela

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
AMANJOT BHELA
CHEMIST

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z968500

PROJECT: 21482114

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Nov 17, 2022			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)															
Benzene	4510241		<0.20	<0.20	NA	< 0.20	100%	60%	140%	112%	60%	140%	90%	60%	140%
Toluene	4510241		<0.20	<0.20	NA	< 0.20	91%	60%	140%	94%	60%	140%	116%	60%	140%
Ethylbenzene	4510241		<0.10	<0.10	NA	< 0.10	99%	60%	140%	89%	60%	140%	93%	60%	140%
m & p-Xylene	4510241		<0.20	<0.20	NA	< 0.20	100%	60%	140%	109%	60%	140%	100%	60%	140%
o-Xylene	4510241		<0.10	<0.10	NA	< 0.10	103%	60%	140%	84%	60%	140%	94%	60%	140%
F1 (C6-C10)	4510241		<25	<25	NA	< 25	93%	60%	140%	83%	60%	140%	95%	60%	140%
F2 (C10 to C16)	4505516		1930	1640	16.5%	< 100	108%	60%	140%	78%	60%	140%	84%	60%	140%
F3 (C16 to C34)	4505516		<100	<100	NA	< 100	105%	60%	140%	62%	60%	140%	65%	60%	140%
F4 (C34 to C50)	4505516		<100	<100	NA	< 100	105%	60%	140%	74%	60%	140%	96%	60%	140%
O. Reg. 153(511) - PAHs (Water)															
Naphthalene	4483547		<0.20	<0.20	NA	< 0.20	73%	50%	140%	73%	50%	140%	88%	50%	140%
Acenaphthylene	4483547		<0.20	<0.20	NA	< 0.20	84%	50%	140%	77%	50%	140%	80%	50%	140%
Acenaphthene	4483547		<0.20	<0.20	NA	< 0.20	85%	50%	140%	92%	50%	140%	95%	50%	140%
Fluorene	4483547		<0.20	<0.20	NA	< 0.20	89%	50%	140%	71%	50%	140%	72%	50%	140%
Phenanthrene	4483547		<0.10	<0.10	NA	< 0.10	110%	50%	140%	87%	50%	140%	78%	50%	140%
Anthracene	4483547		<0.10	<0.10	NA	< 0.10	106%	50%	140%	84%	50%	140%	85%	50%	140%
Fluoranthene	4483547		<0.20	<0.20	NA	< 0.20	111%	50%	140%	95%	50%	140%	83%	50%	140%
Pyrene	4483547		<0.20	<0.20	NA	< 0.20	100%	50%	140%	102%	50%	140%	71%	50%	140%
Benzo(a)anthracene	4483547		<0.20	<0.20	NA	< 0.20	103%	50%	140%	109%	50%	140%	86%	50%	140%
Chrysene	4483547		<0.10	<0.10	NA	< 0.10	76%	50%	140%	97%	50%	140%	89%	50%	140%
Benzo(b)fluoranthene	4483547		<0.10	<0.10	NA	< 0.10	70%	50%	140%	105%	50%	140%	91%	50%	140%
Benzo(k)fluoranthene	4483547		<0.10	<0.10	NA	< 0.10	99%	50%	140%	106%	50%	140%	81%	50%	140%
Benzo(a)pyrene	4483547		<0.01	<0.01	NA	< 0.01	75%	50%	140%	106%	50%	140%	76%	50%	140%
Indeno(1,2,3-cd)pyrene	4483547		<0.20	<0.20	NA	< 0.20	66%	50%	140%	90%	50%	140%	70%	50%	140%
Dibenz(a,h)anthracene	4483547		<0.20	<0.20	NA	< 0.20	65%	50%	140%	82%	50%	140%	86%	50%	140%
Benzo(g,h,i)perylene	4483547		<0.20	<0.20	NA	< 0.20	68%	50%	140%	100%	50%	140%	83%	50%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD
AGAT WORK ORDER: 22Z968500
PROJECT: 21482114
ATTENTION TO: Keith Holmes
SAMPLING SITE:
SAMPLED BY:

Water Analysis

RPT Date: Nov 17, 2022			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Water)															
Dissolved Antimony	4518169		1.7	1.7	NA	< 1.0	106%	70%	130%	104%	80%	120%	118%	70%	130%
Dissolved Arsenic	4518169		2.3	2.0	NA	< 1.0	101%	70%	130%	101%	80%	120%	103%	70%	130%
Dissolved Barium	4518169		72.8	73.2	0.5%	< 2.0	96%	70%	130%	96%	80%	120%	102%	70%	130%
Dissolved Beryllium	4518169		<0.50	<0.50	NA	< 0.50	114%	70%	130%	112%	80%	120%	115%	70%	130%
Dissolved Boron	4518169		123	115	6.7%	< 10.0	108%	70%	130%	105%	80%	120%	118%	70%	130%
Dissolved Cadmium	4518169		<0.20	<0.20	NA	< 0.20	100%	70%	130%	100%	80%	120%	117%	70%	130%
Dissolved Chromium	4518169		<2.0	<2.0	NA	< 2.0	99%	70%	130%	104%	80%	120%	103%	70%	130%
Dissolved Cobalt	4518169		<0.50	<0.50	NA	< 0.50	95%	70%	130%	102%	80%	120%	102%	70%	130%
Dissolved Copper	4518169		<1.0	<1.0	NA	< 1.0	99%	70%	130%	99%	80%	120%	100%	70%	130%
Dissolved Lead	4518169		<0.50	<0.50	NA	< 0.50	90%	70%	130%	91%	80%	120%	94%	70%	130%
Dissolved Molybdenum	4518169		8.57	8.76	2.2%	< 0.50	101%	70%	130%	108%	80%	120%	111%	70%	130%
Dissolved Nickel	4518169		2.5	1.1	NA	< 1.0	95%	70%	130%	101%	80%	120%	100%	70%	130%
Dissolved Selenium	4518169		<1.0	5.1	NA	< 1.0	100%	70%	130%	98%	80%	120%	106%	70%	130%
Dissolved Silver	4518169		<0.20	<0.20	NA	< 0.20	96%	70%	130%	100%	80%	120%	99%	70%	130%
Dissolved Thallium	4518169		<0.30	<0.30	NA	< 0.30	96%	70%	130%	99%	80%	120%	102%	70%	130%
Dissolved Uranium	4518169		1.09	1.11	NA	< 0.50	98%	70%	130%	99%	80%	120%	106%	70%	130%
Dissolved Vanadium	4518169		<0.40	<0.40	NA	< 0.40	98%	70%	130%	104%	80%	120%	106%	70%	130%
Dissolved Zinc	4518169		<5.0	<5.0	NA	< 5.0	99%	70%	130%	102%	80%	120%	109%	70%	130%
Mercury	4518169		<0.02	<0.02	NA	< 0.02	103%	70%	130%	104%	80%	120%	101%	70%	130%
Chromium VI	4518169		<2.000	<2.000	NA	< 2	105%	70%	130%	104%	80%	120%	102%	70%	130%
Cyanide, WAD	4508573		<2	<2	NA	< 2	99%	70%	130%	103%	80%	120%	96%	70%	130%
Dissolved Sodium	4518169		62000	61000	1.6%	< 50	106%	70%	130%	106%	80%	120%	103%	70%	130%
Chloride	4517856	4517856	153000	151000	1.3%	< 100	95%	70%	130%	98%	80%	120%	NA	70%	130%
Electrical Conductivity	4517498		390	390	0.0%	< 2	103%	90%	110%	NA			NA		
pH	4517498		7.87	7.92	0.6%	NA	98%	90%	110%	NA			NA		

Comments: NA signifies Not Applicable.
Duplicate NA: results are under 5X the RDL and will not be calculated.

Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.

Certified By: Amanjot Bhela

AGAT Laboratories

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z968500

PROJECT: 21482114

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Acenaphthylene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Acenaphthene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Fluorene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Phenanthrene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Anthracene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Fluoranthene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Pyrene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Benzo(a)anthracene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Chrysene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Benzo(b)fluoranthene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Benzo(k)fluoranthene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Benzo(a)pyrene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Dibenz(a,h)anthracene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Benzo(g,h,i)perylene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Naphthalene-d8	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Acridine-d9	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Terphenyl-d14	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Sediment			N/A
Benzene	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
Toluene	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
Ethylbenzene	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
m & p-Xylene	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
o-Xylene	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
Xylenes (Total)	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
F1 (C6-C10)	VOL-91- 5010	modified from MOE PHC-E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	modified from MOE PHC-E3421	P&T GC/FID
Toluene-d8	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID

AGAT Laboratories

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z968500

PROJECT: 21482114

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
F3 (C16 to C34) minus PAHs	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
F4 (C34 to C50)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	modified from MOE PHC-E3421	BALANCE
Terphenyl	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
Water Analysis			
Dissolved Antimony	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Arsenic	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Barium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Beryllium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Boron	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Cadmium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Chromium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Cobalt	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Copper	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Lead	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Molybdenum	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Nickel	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Selenium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Silver	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Thallium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Uranium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Vanadium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Zinc	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS
Chromium VI	INOR-93-6073	modified from SM 3500-CR B	LACHAT FIA
Cyanide, WAD	INOR-93-6052	modified from ON MOECC E3015, SM 4500-CN- I, G-387	TECHNICON AUTO ANALYZER
Dissolved Sodium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP/MS
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE

AGAT Laboratories 1 large Bagged Ice

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Laboratory Use Only

Work Order #: 22Z968500

Cooler Quantity: one-bagged Ice

Arrival Temperatures: 7.1 | 9.3 | 7.3
L.T 7.8 | 5.5 | 5.9

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes: Sent as recieved

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: WSP/Golder
Contact: Keith Holmes
Address: 1931 Robertson Road, Ottawa, ON K2H 5B7
Phone: 613 Fax:
Reports to be sent to:
1. Email: Keith.p.holmes@wsp.com
2. Email:

Regulatory Requirements:

(Please check all applicable boxes)

☒ Regulation 153/04
Table 3 *Indicate One*
☐Ind/Com
☒Res/Park
☐Agriculture
Soil Texture *(Check One)*
☐Coarse
☐Fine

☐ Excess Soils R406
Table ____ *Indicate One*
☐ Regulation 558
☐ CCME

☐ Sewer Use
☐Sanitary ☐Storm
Region
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
Indicate One

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project: 21482114
Site Location:
Sampled By:
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Is this submission for a **Record of Site Condition?** ☐ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☐ No

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company: WSP/Golder
Contact: General Accounting
Address: 1931 Robertson Road
Email: gld.CanadaAccountsPayableInvoices@wsp.com

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI, DOC (Y/N)	O. Reg 153: Metals & Inorganics	O. Reg 153: Metals - ☒CrVI, ☒Hg, ☐HWSB	O. Reg 153: BTEX, F1-F4 PHCs	O. Reg 153: PAHs	PCBs	VOC	Aroclors	O. Reg 558: Landfill Disposal Characterization TCLP: TCLP: ☐M&I ☐VOCs ☐ABNs ☐B(a)P ☐PCBs	O. Reg 406: Excess Soils SPLP Rainwater Leach SPLP: ☐Metals ☐VOCs ☐SVOCs	O. Reg 406: Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Corrosivity: Include Moisture ☐ Sulphide ☐					Potentially Hazardous or High Concentration (Y/N)
17-07	2022/11/07	15:00	13	GW			X	X	X	X												
17-04	2022/11/10	13:30	13	↓			X	X	X	X												
17-102	2022/11/10	12:30	13				X	X	X	X												
17-02	2022/11/10	10:30	13				X	X	X	X												
17-01	2022/11/09	15:30	13				X	X	X	X												
DUP-1	2022/11/09	15:30	13				X	X	X	X												
		AM PM																				
		AM PM																				
		AM PM																				
		AM PM																				
		AM PM																				

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Catie Knoll / C.Knoll	2022/11/10	15:00	C. Griffith	NOV 10 2022	8h30
CG to Ruo	NOV 10 2022	12h00	Sonia Q / Qsayed	14 Nov/22	9:05am

Page ___ of ___

Nº: T - 138288

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CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Alyssa Troke

PROJECT: 1781761

AGAT WORK ORDER: 17Z230674

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

WATER ANALYSIS REVIEWED BY: Parvathi Malemath, Data Reviewer

DATE REPORTED: Jul 06, 2017

PAGES (INCLUDING COVER): 10

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 17Z230674

PROJECT: 1781761

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Water)

DATE RECEIVED: 2017-06-27

DATE REPORTED: 2017-07-06

		SAMPLE DESCRIPTION:		MW 17-102	MW 17-102-DUP
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2017-06-27	2017-06-27
Parameter	Unit	G / S	RDL	8507398	8507402
Naphthalene	µg/L	1400	0.20	<0.20	<0.20
Acenaphthylene	µg/L	1.8	0.20	<0.20	<0.20
Acenaphthene	µg/L	600	0.20	<0.20	<0.20
Fluorene	µg/L	400	0.20	<0.20	<0.20
Phenanthrene	µg/L	580	0.10	<0.10	<0.10
Anthracene	µg/L	2.4	0.10	<0.10	<0.10
Fluoranthene	µg/L	130	0.20	<0.20	<0.20
Pyrene	µg/L	68	0.20	<0.20	<0.20
Benz(a)anthracene	µg/L	4.7	0.20	<0.20	<0.20
Chrysene	µg/L	1	0.10	<0.10	<0.10
Benzo(b)fluoranthene	µg/L	0.75	0.10	<0.10	<0.10
Benzo(k)fluoranthene	µg/L	0.4	0.10	<0.10	<0.10
Benzo(a)pyrene	µg/L	0.81	0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.20	<0.20	<0.20
Dibenz(a,h)anthracene	µg/L	0.52	0.20	<0.20	<0.20
Benzo(g,h,i)perylene	µg/L	0.2	0.20	<0.20	<0.20
2-and 1-methyl Naphthalene	µg/L	1800	0.20	<0.20	<0.20
Surrogate	Unit	Acceptable Limits			
Chrysene-d12	%	50-140		74	78

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 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 Textured Soils

8507398-8507402 Note: The result for Benzo(b)Flouranthene is the total of the Benzo(b)&(j)Flouranthene isomers because the isomers co-elute on the GC column.

Certified By: N Popowkolof

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Certificate of Analysis

AGAT WORK ORDER: 17Z230674

PROJECT: 1781761

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)

DATE RECEIVED: 2017-06-27

DATE REPORTED: 2017-07-06

		SAMPLE DESCRIPTION:		MW 17-102	MW 17-102-DUP
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2017-06-27	2017-06-27
Parameter	Unit	G / S	RDL	8507398	8507402
Benzene	µg/L	44	0.20	<0.20	<0.20
Toluene	µg/L	18000	0.20	<0.20	<0.20
Ethylbenzene	µg/L	2300	0.10	<0.10	<0.10
Xylene Mixture	µg/L	4200	0.20	<0.20	<0.20
F1 (C6 to C10)	µg/L	750	25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25	<25
F2 (C10 to C16)	µg/L	150	100	<100	<100
F2 (C10 to C16) minus Naphthalene	µg/L		100	<100	<100
F3 (C16 to C34)	µg/L	500	100	<100	<100
F3 (C16 to C34) minus PAHs	µg/L		100	<100	<100
F4 (C34 to C50)	µg/L	500	100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA	NA
Surrogate	Unit	Acceptable Limits			
Terphenyl	%	60-140		85	90

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 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 Textured Soils

8507398-8507402 The C6-C10 fraction is calculated using Toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX and PAH contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.

Certified By: N Popnikolof

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Certificate of Analysis

AGAT WORK ORDER: 17Z230674

PROJECT: 1781761

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1/BTEX (Water)

DATE RECEIVED: 2017-06-27

DATE REPORTED: 2017-07-06

		SAMPLE DESCRIPTION:		Trip Blank
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2017-06-22
Parameter	Unit	G / S	RDL	8507410
Benzene	µg/L	44	0.20	<0.20
Toluene	µg/L	18000	0.20	<0.20
Ethylbenzene	µg/L	2300	0.10	<0.10
Xylene Mixture	µg/L	4200	0.20	<0.20
F1 (C6 to C10)	µg/L	750	25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 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 Textured Soils

8507410 The C6-C10 fraction is calculated using Toluene response factor.
Total C6-C10 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
Extraction and holding times were met for this sample.
NA = Not Applicable

Certified By: N Popowich

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z230674

PROJECT: 1781761

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - All Metals, Dissolved (Water)

DATE RECEIVED: 2017-06-27

DATE REPORTED: 2017-07-06

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION: MW 17-102 SAMPLE TYPE: Water DATE SAMPLED: 2017-06-27 8507398	SAMPLE DESCRIPTION: MW 17-102-DUP SAMPLE TYPE: Water DATE SAMPLED: 2017-06-27 8507402
Antimony	µg/L	20000	1.0	<1.0	<1.0
Arsenic	µg/L	1900	1.0	<1.0	<1.0
Barium	µg/L	29000	2.0	110	112
Beryllium	µg/L	67	0.5	<0.5	<0.5
Boron	µg/L	45000	10.0	39.5	42.3
Cadmium	µg/L	2.7	0.2	<0.2	<0.2
Chromium	µg/L	810	2.0	4.6	3.6
Cobalt	µg/L	66	0.5	1.6	1.5
Copper	µg/L	87	1.0	<1.0	1.2
Lead	µg/L	25	0.5	<0.5	<0.5
Molybdenum	µg/L	9200	0.5	2.5	2.3
Nickel	µg/L	490	1.0	1.7	1.5
Selenium	µg/L	63	1.0	<1.0	<1.0
Silver	µg/L	1.5	0.2	<0.2	<0.2
Thallium	µg/L	510	0.3	<0.3	<0.3
Uranium	µg/L	420	0.5	3.4	3.3
Vanadium	µg/L	250	0.4	<0.4	1.2
Zinc	µg/L	1100	5.0	<5.0	<5.0
Mercury	µg/L	0.29	0.02	<0.02	<0.02
Chromium VI	µg/L	140	5	<5	<5

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to 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 Textured Soils

Certified By:

AGAT Laboratories

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TEL (905)712-5100
FAX (905)712-5122
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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z230674

PROJECT: 1781761

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Jul 06, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)															
Benzene	8517379		< 0.20	< 0.20	NA	< 0.20	77%	50%	140%	81%	60%	130%	77%	50%	140%
Toluene	8517379		< 0.20	< 0.20	NA	< 0.20	72%	50%	140%	78%	60%	130%	79%	50%	140%
Ethylbenzene	8517379		< 0.10	< 0.10	NA	< 0.10	71%	50%	140%	76%	60%	130%	72%	50%	140%
Xylene Mixture	8517379		< 0.20	< 0.20	NA	< 0.20	72%	50%	140%	80%	60%	130%	75%	50%	140%
F1 (C6 to C10)	8517379		< 25	< 25	NA	< 25	85%	60%	140%	97%	60%	140%	94%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	93%	60%	140%	71%	60%	140%	65%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	98%	60%	140%	91%	60%	140%	105%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	84%	60%	140%	98%	60%	140%	101%	60%	140%
O. Reg. 153(511) - PAHs (Water)															
Naphthalene	8510318		0.54	0.53	NA	< 0.20	77%	50%	140%	77%	50%	140%	102%	50%	140%
Acenaphthylene	8510318		< 0.20	< 0.20	NA	< 0.20	83%	50%	140%	84%	50%	140%	89%	50%	140%
Acenaphthene	8510318		< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	82%	50%	140%	87%	50%	140%
Fluorene	8510318		< 0.20	< 0.20	NA	< 0.20	87%	50%	140%	87%	50%	140%	92%	50%	140%
Phenanthrene	8510318		0.11	0.11	NA	< 0.10	99%	50%	140%	91%	50%	140%	98%	50%	140%
Anthracene	8510318		< 0.10	< 0.10	NA	< 0.10	90%	50%	140%	103%	50%	140%	98%	50%	140%
Fluoranthene	8510318		< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	94%	50%	140%	93%	50%	140%
Pyrene	8510318		< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	92%	50%	140%	89%	50%	140%
Benz(a)anthracene	8510318		< 0.20	< 0.20	NA	< 0.20	93%	50%	140%	81%	50%	140%	81%	50%	140%
Chrysene	8510318		< 0.10	< 0.10	NA	< 0.10	123%	50%	140%	86%	50%	140%	85%	50%	140%
Benzo(b)fluoranthene	8510318		< 0.10	< 0.10	NA	< 0.10	107%	50%	140%	103%	50%	140%	102%	50%	140%
Benzo(k)fluoranthene	8510318		< 0.10	< 0.10	NA	< 0.10	132%	50%	140%	115%	50%	140%	108%	50%	140%
Benzo(a)pyrene	8510318		< 0.01	< 0.01	NA	< 0.01	116%	50%	140%	104%	50%	140%	109%	50%	140%
Indeno(1,2,3-cd)pyrene	8510318		< 0.20	< 0.20	NA	< 0.20	91%	50%	140%	89%	50%	140%	100%	50%	140%
Dibenz(a,h)anthracene	8510318		< 0.20	< 0.20	NA	< 0.20	86%	50%	140%	107%	50%	140%	98%	50%	140%
Benzo(g,h,i)perylene	8510318		< 0.20	< 0.20	NA	< 0.20	81%	50%	140%	88%	50%	140%	83%	50%	140%
2-and 1-methyl Naphthalene	8510318		0.26	0.30	NA	< 0.20	91%	50%	140%	82%	50%	140%	96%	50%	140%

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.
When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

AGAT Laboratories

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z230674

PROJECT: 1781761

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

Water Analysis

RPT Date: Jul 06, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - All Metals, Dissolved (Water)															
Antimony	8507398	8507398	<1.0	<1.0	NA	< 1.0	100%	70%	130%	101%	80%	120%	102%	70%	130%
Arsenic	8507398	8507398	<1.0	<1.0	NA	< 1.0	103%	70%	130%	101%	80%	120%	104%	70%	130%
Barium	8507398	8507398	110	109	0.9%	< 2.0	99%	70%	130%	100%	80%	120%	99%	70%	130%
Beryllium	8507398	8507398	<0.5	<0.5	NA	< 0.5	107%	70%	130%	96%	80%	120%	100%	70%	130%
Boron	8507398	8507398	39.5	41.0	NA	< 10.0	102%	70%	130%	101%	80%	120%	93%	70%	130%
Cadmium	8507398	8507398	<0.2	<0.2	NA	< 0.2	104%	70%	130%	104%	80%	120%	107%	70%	130%
Chromium	8507398	8507398	4.6	6.7	NA	< 2.0	103%	70%	130%	102%	80%	120%	104%	70%	130%
Cobalt	8507398	8507398	1.6	1.5	NA	< 0.5	109%	70%	130%	109%	80%	120%	105%	70%	130%
Copper	8507398	8507398	<1.0	<1.0	NA	< 1.0	103%	70%	130%	104%	80%	120%	95%	70%	130%
Lead	8507398	8507398	<0.5	<0.5	NA	< 0.5	99%	70%	130%	98%	80%	120%	94%	70%	130%
Molybdenum	8507398	8507398	2.5	2.6	3.9%	< 0.5	101%	70%	130%	99%	80%	120%	97%	70%	130%
Nickel	8507398	8507398	1.7	1.5	NA	< 1.0	101%	70%	130%	101%	80%	120%	93%	70%	130%
Selenium	8507398	8507398	<1.0	<1.0	NA	< 1.0	107%	70%	130%	103%	80%	120%	105%	70%	130%
Silver	8507398	8507398	<0.2	<0.2	NA	< 0.2	104%	70%	130%	105%	80%	120%	90%	70%	130%
Thallium	8507398	8507398	<0.3	<0.3	NA	< 0.3	103%	70%	130%	101%	80%	120%	96%	70%	130%
Uranium	8507398	8507398	3.4	3.2	6.1%	< 0.5	95%	70%	130%	97%	80%	120%	98%	70%	130%
Vanadium	8507398	8507398	<0.4	0.8	NA	< 0.4	103%	70%	130%	102%	80%	120%	103%	70%	130%
Zinc	8507398	8507398	<5.0	<5.0	NA	< 5.0	100%	70%	130%	100%	80%	120%	96%	70%	130%
Mercury	8518746		<0.02	<0.02	NA	< 0.02	100%	70%	130%	103%	80%	120%	102%	70%	130%
Chromium VI	8524297		<5	<5	NA	< 5	101%	70%	130%	103%	80%	120%	100%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL (Reporting Limit), the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:

AGAT Laboratories

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z230674

PROJECT: 1781761

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluorene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Phenanthrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene-d12	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzene	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
Toluene	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
Ethylbenzene	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
Xylene Mixture	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
F1 (C6 to C10)	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC/FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5010	MOE PHC E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC/FID
F3 (C16 to C34) minus PAHs	VOL-91-5010	MOE PHC E3421	GC/FID
F4 (C34 to C50)	VOL -91- 5010	MOE PHC- E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
Benzene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Toluene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Ethylbenzene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Xylene Mixture	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F1 (C6 to C10)	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID

AGAT Laboratories

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z230674

PROJECT: 1781761

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW-846 7470 & 245.1	CVAAS
Chromium VI	INOR-93-6034	SM 3500-Cr B	SPECTROPHOTOMETER

AGAT Laboratories
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Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 17230674

Cooler Quantity: one on ice

Arrival Temperatures: 14.4 | 14.0 | 14.5 / 8.6 | 9.0 | 8.1

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes:

Report Information:

Company: Golder Associates Ltd.
Contact: Alyssa Troke
Address: 1931 ROBERTSON ROAD
OTTAWA, ON K2H 5B7
Phone: 613-592-9600 Fax: 613-592-9601
Reports to be sent to:
1. Email: atroke@golder.com
2. Email: kholmes@golder.com

Regulatory Requirements:

☐ No Regulatory Requirement
(Please check all applicable boxes)

☒ Regulation 153/04
Table 3 (Indicate One)
☐ Ind/Com
☒ Res/Park
☐ Agriculture
Soil Texture (Check One)
☒ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region _____ (Indicate One)

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
_____ (Indicate One)

Is this submission for a **Record of Site Condition?** ☒ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☒ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

5 DAYS - JULY 5th by 5pm

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project: 1670692
Site Location: 3930 RIVERSIDE DR.
Sampled By: S. BARTER
AGAT Quote #: _____ PO: _____
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y / N	Field Filtered - Metals, Hg, CrVI	O. Reg 153: Metals and Inorganics	O. Reg 153: All Metals ☐ 153 Metals (excl. Hydrides)	O. Reg 153: Hydride Metals	O. Reg 153: ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr^{6+} ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3+NO_2	Volatiles: ☐ VOC ☒ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use	Hg	Cr VI	Metals
MW17-102	27/06/17	12:15	8	GW	Sediment may be present - Proceed with analysis.	Y									X	X		X					X	X	X
MW17-102-DUP	27/06/17	12:15	8	GW		Y									X	X		X					X	X	X
TRIP BLANK	27/06/17		3	W		N									X										

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
SHEILA BARTER	27/06/17	13:30		27-June-17	13h42
			Shannon June 28/17		10:55am

Page 1 of 1

N°: T 047057

AGAT Laboratories

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CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Alyssa Troke

PROJECT: 1781761 - CMG/Taggart

AGAT WORK ORDER: 17Z230722

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

DATE REPORTED: Jul 06, 2017

PAGES (INCLUDING COVER): 10

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 17Z230722

PROJECT: 1781761 - CMG/Taggart

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2017-06-27

DATE REPORTED: 2017-07-05

Parameter	Unit	G / S: A	G / S: B	RDL	SAMPLE DESCRIPTION: 17-101 SA2 / SAMPLE TYPE: Soil / DATE SAMPLED: 2017-06-23 / 8507556	17-101 SA22 / Soil / 2017-06-23 / 8507558	17-101 SA4 / Soil / 2017-06-23 / 8507561	17-102 SA5 / Soil / 2017-06-22 / 8507564	17-103 SA3 / Soil / 2017-06-22 / 8507567	17-105 SA5 / Soil / 2017-06-26 / 8507570
Antimony	µg/g	40	7.5	0.8	5.3[<B]	5.1[<B]	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	18	1	14[<A]	13[<A]	3[<A]	5[<A]	7[<A]	3[<A]
Barium	µg/g	670	390	2	390[B]	353[<B]	237[<B]	120[<B]	124[<B]	137[<B]
Beryllium	µg/g	8	4	0.5	0.6[<B]	0.7[<B]	<0.5	<0.5	<0.5	<0.5
Boron	µg/g	120	120	5	8[<A]	8[<A]	<5	6[<A]	8[<A]	<5
Boron (Hot Water Soluble)	µg/g	2	1.5	0.10	0.34[<B]	0.36[<B]	0.22[<B]	0.40[<B]	0.21[<B]	0.29[<B]
Cadmium	µg/g	1.9	1.2	0.5	0.6[<B]	0.6[<B]	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	160	2	33[<A]	38[<A]	42[<A]	19[<A]	17[<A]	29[<A]
Cobalt	µg/g	80	22	0.5	9.0[<B]	9.5[<B]	11.3[<B]	7.4[<B]	9.3[<B]	7.2[<B]
Copper	µg/g	230	140	1	176[B-A]	147[B-A]	35[<B]	22[<B]	27[<B]	20[<B]
Lead	µg/g	120	120	1	591[>B]	508[>B]	11[<A]	17[<A]	15[<A]	11[<A]
Molybdenum	µg/g	40	6.9	0.5	4.2[<B]	3.9[<B]	0.5[<B]	1.7[<B]	3.8[<B]	0.7[<B]
Nickel	µg/g	270	100	1	33[<B]	36[<B]	35[<B]	25[<B]	33[<B]	20[<B]
Selenium	µg/g	5.5	2.4	0.4	2.0[<B]	1.6[<B]	<0.4	0.5[<B]	0.7[<B]	<0.4
Silver	µg/g	40	20	0.2	1.0[<B]	0.7[<B]	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g	3.3	1	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	µg/g	33	23	0.5	0.7[<B]	0.7[<B]	0.7[<B]	1.0[<B]	1.1[<B]	0.6[<B]
Vanadium	µg/g	86	86	1	30[<A]	34[<A]	51[<A]	24[<A]	23[<A]	34[<A]
Zinc	µg/g	340	340	5	518[>B]	425[>B]	87[<A]	51[<A]	39[<A]	59[<A]
Chromium VI	µg/g	8	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Mercury	µg/g	3.9	0.27	0.10	1.15[B-A]	0.85[B-A]	<0.10	<0.10	<0.10	<0.10

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Industrial/Commercial/Community Property Use - Coarse Textured Soils, B Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

Certified By: Amanjot Bhela

AGAT Laboratories

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http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 17Z230722

PROJECT: 1781761 - CMG/Taggart

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2017-06-27

DATE REPORTED: 2017-07-05

					SAMPLE DESCRIPTION:	17-101 SA2	17-101 SA22	17-101 SA4	17-102 SA5	17-103 SA3	17-105 SA5
					SAMPLE TYPE:	Soil	Soil	Soil	Soil	Soil	Soil
					DATE SAMPLED:	2017-06-23	2017-06-23	2017-06-23	2017-06-22	2017-06-22	2017-06-26
Parameter	Unit	G / S: A	G / S: B	RDL		8507556	8507558	8507561	8507564	8507567	8507570
Naphthalene	µg/g	9.6	0.6	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.15	0.05		0.08[<A]	0.13[<A]	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	96	7.9	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	62	0.05		0.05[<A]	0.05[<A]	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	12	6.2	0.05		0.69[<B]	0.70[<B]	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.67	0.05		0.15[<A]	0.16[<A]	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	9.6	0.69	0.05		1.5[B-A]	1.7[B-A]	0.08[<B]	<0.05	<0.05	0.05[<B]
Pyrene	µg/g	96	78	0.05		1.3[<B]	1.5[<B]	0.08[<B]	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.96	0.5	0.05		0.91[B-A]	1.1[>A]	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	9.6	7	0.05		0.85[<B]	1.0[<B]	0.06[<B]	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.96	0.78	0.05		1.1[>A]	1.3[>A]	0.11[<B]	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.96	0.78	0.05		0.48[<B]	0.53[<B]	0.05[<B]	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.3	0.05		0.81[>B]	0.97[>B]	0.05[<A]	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.76	0.38	0.05		0.41[B-A]	0.50[B-A]	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.1	0.05		0.09[<A]	0.13[>B]	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	9.6	6.6	0.05		0.42[<B]	0.50[<B]	<0.05	<0.05	<0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	76	0.99	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%			0.1		19.3	11.8	23.0	7.2	10.5	13.8
Surrogate	Unit	Acceptable Limits									
Chrysene-d12	%	50-140				99	94	97	93	88	75

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Industrial/Commercial/Community Property Use - Coarse Textured Soils, B Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

8507556-8507570 Results are based on the dry weight of the soil.
Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 17Z230722

PROJECT: 1781761 - CMG/Taggart

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)

DATE RECEIVED: 2017-06-27

DATE REPORTED: 2017-07-05

					SAMPLE DESCRIPTION:	17-101 SA2	17-101 SA22	17-101 SA4	17-102 SA5	17-103 SA3	17-105 SA5
					SAMPLE TYPE:	Soil	Soil	Soil	Soil	Soil	Soil
					DATE SAMPLED:	2017-06-23	2017-06-23	2017-06-23	2017-06-22	2017-06-22	2017-06-26
Parameter	Unit	G / S: A	G / S: B	RDL		8507556	8507558	8507561	8507564	8507567	8507570
Benzene	µg/g	0.32	0.21	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	68	2.3	0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Ethylbenzene	µg/g	9.5	2	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene Mixture	µg/g	26	3.1	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	55	55	5		<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	55	5		<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	230	98	10		<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g			10		<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	1700	300	50		110[<B]	90[<B]	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g			50		100	82	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	3300	2800	50		<50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	3300	2800	50		NA	NA	NA	NA	NA	NA
Moisture Content	%			0.1		19.3	11.9	23.0	7.2	10.5	13.8
Surrogate	Unit	Acceptable Limits									
Terphenyl	%	60-140				81	88	74	83	61	91

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Industrial/Commercial/Community Property Use - Coarse Textured Soils, B Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

8507556-8507570 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX and PAH contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.

Certified By:

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Guideline Violation

AGAT WORK ORDER: 17Z230722

PROJECT: 1781761 - CMG/Taggart

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
8507556	17-101 SA2	ON T3 S ICC CT	O. Reg. 153(511) - All Metals (Soil)	Lead	µg/g	120	591
8507556	17-101 SA2	ON T3 S ICC CT	O. Reg. 153(511) - All Metals (Soil)	Zinc	µg/g	340	518
8507556	17-101 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.81
8507556	17-101 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.96	1.1
8507556	17-101 SA2	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Copper	µg/g	140	176
8507556	17-101 SA2	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Lead	µg/g	120	591
8507556	17-101 SA2	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Mercury	µg/g	0.27	1.15
8507556	17-101 SA2	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Zinc	µg/g	340	518
8507556	17-101 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.5	0.91
8507556	17-101 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.81
8507556	17-101 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.78	1.1
8507556	17-101 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	1.5
8507556	17-101 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.41
8507558	17-101 SA22	ON T3 S ICC CT	O. Reg. 153(511) - All Metals (Soil)	Lead	µg/g	120	508
8507558	17-101 SA22	ON T3 S ICC CT	O. Reg. 153(511) - All Metals (Soil)	Zinc	µg/g	340	425
8507558	17-101 SA22	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.96	1.1
8507558	17-101 SA22	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.97
8507558	17-101 SA22	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.96	1.3
8507558	17-101 SA22	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Dibenz(a,h)anthracene	µg/g	0.1	0.13
8507558	17-101 SA22	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Copper	µg/g	140	147
8507558	17-101 SA22	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Lead	µg/g	120	508
8507558	17-101 SA22	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Mercury	µg/g	0.27	0.85
8507558	17-101 SA22	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Zinc	µg/g	340	425
8507558	17-101 SA22	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.5	1.1
8507558	17-101 SA22	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.97
8507558	17-101 SA22	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.78	1.3
8507558	17-101 SA22	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Dibenz(a,h)anthracene	µg/g	0.1	0.13
8507558	17-101 SA22	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	1.7
8507558	17-101 SA22	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.50

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z230722

PROJECT: 1781761 - CMG/Taggart

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

Soil Analysis

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - All Metals (Soil)															
Antimony	8507561	8507561	<0.8	<0.8	NA	< 0.8	107%	70%	130%	102%	80%	120%	89%	70%	130%
Arsenic	8507561	8507561	3	3	NA	< 1	114%	70%	130%	97%	80%	120%	101%	70%	130%
Barium	8507561	8507561	237	244	2.9%	< 2	112%	70%	130%	103%	80%	120%	104%	70%	130%
Beryllium	8507561	8507561	<0.5	<0.5	NA	< 0.5	88%	70%	130%	113%	80%	120%	88%	70%	130%
Boron	8507561	8507561	<5	<5	NA	< 5	98%	70%	130%	110%	80%	120%	85%	70%	130%
Boron (Hot Water Soluble)	8507561	8507561	0.22	0.20	NA	< 0.10	84%	60%	140%	99%	70%	130%	99%	60%	140%
Cadmium	8507561	8507561	<0.5	<0.5	NA	< 0.5	101%	70%	130%	105%	80%	120%	103%	70%	130%
Chromium	8507561	8507561	42	43	2.4%	< 2	83%	70%	130%	99%	80%	120%	83%	70%	130%
Cobalt	8507561	8507561	11.3	11.4	0.9%	< 0.5	81%	70%	130%	103%	80%	120%	81%	70%	130%
Copper	8507561	8507561	35	35	0.0%	< 1	85%	70%	130%	109%	80%	120%	90%	70%	130%
Lead	8507561	8507561	11	11	0.0%	< 1	102%	70%	130%	102%	80%	120%	89%	70%	130%
Molybdenum	8507561	8507561	0.5	0.5	NA	< 0.5	103%	70%	130%	109%	80%	120%	117%	70%	130%
Nickel	8507561	8507561	35	36	2.8%	< 1	92%	70%	130%	106%	80%	120%	92%	70%	130%
Selenium	8507561	8507561	<0.4	0.4	NA	< 0.4	119%	70%	130%	108%	80%	120%	105%	70%	130%
Silver	8507561	8507561	<0.2	<0.2	NA	< 0.2	85%	70%	130%	102%	80%	120%	91%	70%	130%
Thallium	8507561	8507561	<0.4	<0.4	NA	< 0.4	91%	70%	130%	100%	80%	120%	90%	70%	130%
Uranium	8507561	8507561	0.7	0.7	NA	< 0.5	91%	70%	130%	105%	80%	120%	94%	70%	130%
Vanadium	8507561	8507561	51	51	0.0%	< 1	87%	70%	130%	100%	80%	120%	90%	70%	130%
Zinc	8507561	8507561	87	88	1.1%	< 5	97%	70%	130%	115%	80%	120%	102%	70%	130%
Chromium VI	8520721		<0.2	<0.2	NA	< 0.2	97%	70%	130%	100%	80%	120%	101%	70%	130%
Mercury	8507561	8507561	<0.10	<0.10	NA	< 0.10	107%	70%	130%	99%	80%	120%	92%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Amanjot Bhela

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD
PROJECT: 1781761 - CMG/Taggart
SAMPLING SITE:

AGAT WORK ORDER: 17Z230722
ATTENTION TO: Alyssa Troke
SAMPLED BY:

Trace Organics Analysis

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)															
Benzene	8519147		< 0.02	< 0.02	NA	< 0.02	104%	60%	130%	104%	60%	130%	110%	60%	130%
Toluene	8519147		< 0.08	< 0.08	NA	< 0.08	96%	60%	130%	99%	60%	130%	95%	60%	130%
Ethylbenzene	8519147		< 0.05	< 0.05	NA	< 0.05	100%	60%	130%	106%	60%	130%	110%	60%	130%
Xylene Mixture	8519147		< 0.05	< 0.05	NA	< 0.05	99%	60%	130%	102%	60%	130%	115%	60%	130%
F1 (C6 to C10)	8519147		< 5	< 5	NA	< 5	89%	60%	130%	89%	85%	115%	89%	70%	130%
F2 (C10 to C16)	8509490		< 10	< 10	NA	< 10	104%	60%	130%	90%	80%	120%	72%	70%	130%
F3 (C16 to C34)	8509490		< 50	< 50	NA	< 50	103%	60%	130%	83%	80%	120%	71%	70%	130%
F4 (C34 to C50)	8509490		< 50	< 50	NA	< 50	94%	60%	130%	103%	80%	120%	75%	70%	130%
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	8520221		< 0.05	< 0.05	NA	< 0.05	79%	50%	140%	77%	50%	140%	69%	50%	140%
Acenaphthylene	8520221		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	78%	50%	140%	72%	50%	140%
Acenaphthene	8520221		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	77%	50%	140%	71%	50%	140%
Fluorene	8520221		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	81%	50%	140%	77%	50%	140%
Phenanthrene	8520221		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	86%	50%	140%	88%	50%	140%
Anthracene	8520221		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	109%	50%	140%	103%	50%	140%
Fluoranthene	8520221		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	95%	50%	140%	95%	50%	140%
Pyrene	8520221		< 0.05	< 0.05	NA	< 0.05	107%	50%	140%	98%	50%	140%	100%	50%	140%
Benz(a)anthracene	8520221		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	87%	50%	140%	96%	50%	140%
Chrysene	8520221		< 0.05	< 0.05	NA	< 0.05	126%	50%	140%	115%	50%	140%	111%	50%	140%
Benzo(b)fluoranthene	8520221		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	91%	50%	140%	89%	50%	140%
Benzo(k)fluoranthene	8520221		< 0.05	< 0.05	NA	< 0.05	133%	50%	140%	103%	50%	140%	110%	50%	140%
Benzo(a)pyrene	8520221		< 0.05	< 0.05	NA	< 0.05	119%	50%	140%	98%	50%	140%	104%	50%	140%
Indeno(1,2,3-cd)pyrene	8520221		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	84%	50%	140%	87%	50%	140%
Dibenz(a,h)anthracene	8520221		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	88%	50%	140%	93%	50%	140%
Benzo(g,h,i)perylene	8520221		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	72%	50%	140%	84%	50%	140%
2-and 1-methyl Naphthalene	8520221		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	82%	50%	140%	75%	50%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z230722

PROJECT: 1781761 - CMG/Taggart

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS

AGAT Laboratories

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z230722

PROJECT: 1781761 - CMG/Taggart

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	ORG-91-5106	EPA SW-846 3541 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Toluene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Ethylbenzene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Xylene Mixture	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34) minus PAHs	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID

AGAT Laboratories

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Mississauga, Ontario L4Z 1Y2
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Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Report Information:

Company: Golder Associates
Contact: Alyssa Trake / Keith Holmes
Address: 1931 Robertson Road
Ottawa
Phone: 613-592-9600 Fax:
Reports to be sent to:
1. Email: atrake@golder.com
2. Email: kholmes@golder.com

Project Information:

Project: 1781761 - CMG/Taggart
Site Location:
Sampled By:
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐
Company:
Contact:
Address:
Email:

Regulatory Requirements:

☐ No Regulatory Requirement
(Please check all applicable boxes)

☒ Regulation 153/04
Table 3 *Indicate One*
☒ Ind/Com
☒ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☒ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region *Indicate One*

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
Indicate One

Is this submission for a **Record of Site Condition?** ☒ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☒ Yes ☐ No

Laboratory Use Only

Work Order #: 17Z230722
Cooler Quantity: one on ice
Arrival Temperatures: 2.2 | 2.3 | 2.1 | 2.1 | 2.0 | 2.4
Custody Seal Intact: ☐ Yes ☐ No ☒ N/A
Notes:

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

OR Date Required (Rush Surcharges May Apply):
5 Days ! July 5, 5pm
Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Metals and Inorganics	Metals Scan (Reg. 153 All metals)	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ NO_3/NO_2 ☐ Total N ☐ Hg ☐ pH ☐ SAR	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4 / BTEX	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use
17-101 SA2	June 23/17		3	S			X						X		X				
17-101 SA22	↓		↓	↓			X						X		X				
17-101 SA4							X						X		X				
17-102 SA5	June 23/17						X						X		X				
17-103 SA3	" "						X						X		X				
17-105 SA5	June 26/17						X						X		X				

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Alyssa Trake / Alyssa Trake	June 27/17	10:00	Uberthelet	27-June-17	10h30
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Fedex	27-June-17	16h00	Shannon	June 28/17 10:05 a	

Page 1 of 1

N°: T 018597

Pink Copy - Client | Yellow Copy - AGAT | White Copy - AGAT

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CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Alyssa Troke, Keith Holmes

PROJECT: 1781761

AGAT WORK ORDER: 17Z240902

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

DATE REPORTED: Jul 28, 2017

PAGES (INCLUDING COVER): 8

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 17Z240902

PROJECT: 1781761

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke, Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2017-07-24

DATE REPORTED: 2017-07-28

					SAMPLE DESCRIPTION:	TP17-1008	TP17-1009
					SAMPLE TYPE:	Soil	Soil
					DATE SAMPLED:	2017-07-20	2017-07-20
Parameter	Unit	G / S: A	G / S: B	RDL		8582347	8582348
Antimony	µg/g	7.5	40	0.8		<0.8	2.8[<A]
Arsenic	µg/g	18	18	1		4[<A]	8[<A]
Barium	µg/g	390	670	2		133[<A]	219[<A]
Beryllium	µg/g	4	8	0.5		0.6[<A]	0.6[<A]
Boron	µg/g	120	120	5		9[<A]	9[<A]
Boron (Hot Water Soluble)	µg/g	1.5	2	0.10		0.67[<A]	0.72[<A]
Cadmium	µg/g	1.2	1.9	0.5		<0.5	<0.5
Chromium	µg/g	160	160	2		29[<A]	40[<A]
Cobalt	µg/g	22	80	0.5		9.1[<A]	12.0[<A]
Copper	µg/g	140	230	1		32[<A]	88[<A]
Lead	µg/g	120	120	1		81[<A]	338[>B]
Molybdenum	µg/g	6.9	40	0.5		1.8[<A]	2.1[<A]
Nickel	µg/g	100	270	1		26[<A]	27[<A]
Selenium	µg/g	2.4	5.5	0.4		0.6[<A]	1.2[<A]
Silver	µg/g	20	40	0.2		<0.2	0.5[<A]
Thallium	µg/g	1	3.3	0.4		<0.4	<0.4
Uranium	µg/g	23	33	0.5		1.1[<A]	0.7[<A]
Vanadium	µg/g	86	86	1		40[<A]	31[<A]
Zinc	µg/g	340	340	5		103[<A]	272[<A]
Chromium VI	µg/g	8	8	0.2		<0.2	<0.2
Mercury	µg/g	0.27	3.9	0.10		0.24[<A]	0.45[A-B]

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils, B Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Industrial/Commercial/Community Property Use - Coarse Textured Soils

Certified By: Amanjot Bhela

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Certificate of Analysis

AGAT WORK ORDER: 17Z240902

PROJECT: 1781761

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke, Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2017-07-24

DATE REPORTED: 2017-07-28

					SAMPLE DESCRIPTION:	TP17-1008	TP17-1009
					SAMPLE TYPE:	Soil	Soil
					DATE SAMPLED:	2017-07-20	2017-07-20
Parameter	Unit	G / S: A	G / S: B	RDL		8582347	8582348
Naphthalene	µg/g	0.6	9.6	0.05		<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.15	0.05		<0.05	0.08[<A]
Acenaphthene	µg/g	7.9	96	0.05		<0.05	<0.05
Fluorene	µg/g	62	62	0.05		<0.05	<0.05
Phenanthrene	µg/g	6.2	12	0.05		0.31[<A]	0.46[<A]
Anthracene	µg/g	0.67	0.67	0.05		0.07[<A]	0.13[<A]
Fluoranthene	µg/g	0.69	9.6	0.05		0.44[<A]	0.87[A-B]
Pyrene	µg/g	78	96	0.05		0.39[<A]	0.72[<A]
Benz(a)anthracene	µg/g	0.5	0.96	0.05		0.17[<A]	0.43[<A]
Chrysene	µg/g	7	9.6	0.05		0.20[<A]	0.47[<A]
Benzo(b)fluoranthene	µg/g	0.78	0.96	0.05		0.31[<A]	0.71[<A]
Benzo(k)fluoranthene	µg/g	0.78	0.96	0.05		0.15[<A]	0.30[<A]
Benzo(a)pyrene	µg/g	0.3	0.3	0.05		0.23[<A]	0.55[>B]
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.76	0.05		0.10[<A]	0.26[<A]
Dibenz(a,h)anthracene	µg/g	0.1	0.1	0.05		<0.05	0.06[<A]
Benzo(g,h,i)perylene	µg/g	6.6	9.6	0.05		0.11[<A]	0.26[<A]
2-and 1-methyl Naphthalene	µg/g	0.99	76	0.05		<0.05	<0.05
Moisture Content	%			0.1		14.6	12.6
Surrogate	Unit		Acceptable Limits				
Chrysene-d12	%		50-140			54	52

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils, B Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Industrial/Commercial/Community Property Use - Coarse Textured Soils

8582347-8582348 Results are based on the dry weight of the soil.
Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:

AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 17Z240902

PROJECT: 1781761

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke, Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
8582348	TP17-1009	ON T3 S ICC CT	O. Reg. 153(511) - All Metals (Soil)	Lead	µg/g	120	338
8582348	TP17-1009	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.55
8582348	TP17-1009	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Lead	µg/g	120	338
8582348	TP17-1009	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Mercury	µg/g	0.27	0.45
8582348	TP17-1009	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.55
8582348	TP17-1009	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	0.87

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD
AGAT WORK ORDER: 17Z240902
PROJECT: 1781761
ATTENTION TO: Alyssa Troke, Keith Holmes
SAMPLING SITE:
SAMPLED BY:

Soil Analysis

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - All Metals (Soil)															
Antimony	8582348	8582348	2.8	2.7	NA	< 0.8	89%	70%	130%	95%	80%	120%	73%	70%	130%
Arsenic	8582348	8582348	8	8	0.0%	< 1	120%	70%	130%	100%	80%	120%	103%	70%	130%
Barium	8582348	8582348	219	240	9.2%	< 2	100%	70%	130%	98%	80%	120%	98%	70%	130%
Beryllium	8582348	8582348	0.6	<0.5	NA	< 0.5	99%	70%	130%	93%	80%	120%	94%	70%	130%
Boron	8582348	8582348	9	8	NA	< 5	71%	70%	130%	96%	80%	120%	85%	70%	130%
Boron (Hot Water Soluble)	8582348	8582348	0.72	0.67	7.2%	< 0.10	97%	60%	140%	96%	70%	130%	97%	60%	140%
Cadmium	8582348	8582348	< 0.5	0.5	NA	< 0.5	115%	70%	130%	104%	80%	120%	96%	70%	130%
Chromium	8582348	8582348	40	32	22.2%	< 2	94%	70%	130%	101%	80%	120%	102%	70%	130%
Cobalt	8582348	8582348	12.0	11.7	2.5%	< 0.5	107%	70%	130%	104%	80%	120%	99%	70%	130%
Copper	8582348	8582348	88	90	2.2%	< 1	100%	70%	130%	104%	80%	120%	102%	70%	130%
Lead	8582348	8582348	338	268	23.1%	< 1	103%	70%	130%	94%	80%	120%	93%	70%	130%
Molybdenum	8582348	8582348	2.1	1.9	NA	< 0.5	103%	70%	130%	105%	80%	120%	104%	70%	130%
Nickel	8582348	8582348	27	26	3.8%	< 1	114%	70%	130%	106%	80%	120%	97%	70%	130%
Selenium	8582348	8582348	1.2	1.1	NA	< 0.4	107%	70%	130%	95%	80%	120%	88%	70%	130%
Silver	8582348	8582348	0.5	0.5	NA	< 0.2	88%	70%	130%	99%	80%	120%	98%	70%	130%
Thallium	8582348	8582348	< 0.4	<0.4	NA	< 0.4	80%	70%	130%	99%	80%	120%	95%	70%	130%
Uranium	8582348	8582348	0.7	0.7	NA	< 0.5	107%	70%	130%	106%	80%	120%	103%	70%	130%
Vanadium	8582348	8582348	31	29	6.7%	< 1	102%	70%	130%	100%	80%	120%	95%	70%	130%
Zinc	8582348	8582348	272	267	1.9%	< 5	107%	70%	130%	103%	80%	120%	109%	70%	130%
Chromium VI	8588502		<0.2	<0.2	NA	< 0.2	99%	70%	130%	99%	80%	120%	101%	70%	130%
Mercury	8582348	8582348	0.45	0.43	NA	< 0.10	104%	70%	130%	100%	80%	120%	100%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Amanjot Bhela

AGAT Laboratories

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z240902

PROJECT: 1781761

ATTENTION TO: Alyssa Troke, Keith Holmes

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	8589054		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	93%	50%	140%	100%	50%	140%
Acenaphthylene	8589054		< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	98%	50%	140%	106%	50%	140%
Acenaphthene	8589054		< 0.05	< 0.05	NA	< 0.05	108%	50%	140%	94%	50%	140%	102%	50%	140%
Fluorene	8589054		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	97%	50%	140%	107%	50%	140%
Phenanthrene	8589054		< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	105%	50%	140%	116%	50%	140%
Anthracene	8589054		< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	104%	50%	140%	107%	50%	140%
Fluoranthene	8589054		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	106%	50%	140%	115%	50%	140%
Pyrene	8589054		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	105%	50%	140%	114%	50%	140%
Benz(a)anthracene	8589054		< 0.05	< 0.05	NA	< 0.05	75%	50%	140%	86%	50%	140%	96%	50%	140%
Chrysene	8589054		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	107%	50%	140%	113%	50%	140%
Benzo(b)fluoranthene	8589054		< 0.05	< 0.05	NA	< 0.05	126%	50%	140%	118%	50%	140%	123%	50%	140%
Benzo(k)fluoranthene	8589054		< 0.05	< 0.05	NA	< 0.05	131%	50%	140%	120%	50%	140%	117%	50%	140%
Benzo(a)pyrene	8589054		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	94%	50%	140%	115%	50%	140%
Indeno(1,2,3-cd)pyrene	8589054		< 0.05	< 0.05	NA	< 0.05	108%	50%	140%	94%	50%	140%	99%	50%	140%
Dibenz(a,h)anthracene	8589054		< 0.05	< 0.05	NA	< 0.05	119%	50%	140%	106%	50%	140%	112%	50%	140%
Benzo(g,h,i)perylene	8589054		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	86%	50%	140%	90%	50%	140%
2-and 1-methyl Naphthalene	8589054		< 0.05	< 0.05	NA	< 0.05	114%	50%	140%	90%	50%	140%	97%	50%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

AGAT Laboratories

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z240902

PROJECT: 1781761

ATTENTION TO: Alyssa Troke, Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	ORG-91-5106	EPA SW-846 3541 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS

AGAT Laboratories

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Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 17Z240902
Cooler Quantity: one - on ice.
Arrival Temperatures: 7.0 | 7.3 | 8.1
LT - 6.7 | 6.8 | 6.2
Custody Seal Intact: ☐Yes ☐No ☑N/A
Notes:

Report Information:

Company: Golder Associates
Contact: Alyssa Troke / Keith Holmes
Address: 1931 Robertson Road, Ottawa
Phone: 613-592-9600 Fax:
Reports to be sent to:
1. Email: atroke@golder.com
2. Email: kholmes@golder.com

Regulatory Requirements: ☐ No Regulatory Requirement

(Please check all applicable boxes)

☑ Regulation 153/04 — Table 3 (Indicate One): ☑ Ind/Com ☑ Res/Park ☐ Agriculture
Soil Texture (Check One): ☑ Coarse ☐ Fine
☐ Sewer Use: ☐ Sanitary ☐ Storm — Region ____ (Indicate One)
☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other ____ (Indicate One)

Is this submission for a Record of Site Condition? ☑ Yes ☐ No
Report Guideline on Certificate of Analysis: ☑ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days
Rush TAT (Rush Surcharges Apply)
☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day
OR Date Required (Rush Surcharges May Apply): ★ 5 Days!
Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*
For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project:
Site Location:
Sampled By:
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐
Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Analysis columns: Field Filtered - Metals, Hg, CrVI (Y/N); O. Reg 153: Metals and Inorganics; ☐ All Metals ☐ 153 Metals (excl. Hydrides); ☐ Hydride Metals; ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr6+ ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR; ~~Full Metals Scan~~ Reg 153 All Metals; Regulation/Custom Metals; Nutrients: ☐ TP ☐ NH3 ☐ TKN ☐ NO3 ☐ NO2 ☐ NO3+NO2; Volatiles: ☐ VOC ☐ BTEX ☐ THM; CCME Fractions 1 to 4; ABNs; PAHs; PCBs: ☐ Total ☐ Aroclors; Organochlorine Pesticides; TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs; Sewer Use

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered	Reg 153 All Metals	PAHs
TP17-1008	July 24/17	–	1	S	7 Glass in sample		X	X
TP17-1009	↓	–	1	S			X	X

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
Alyssa Troke / Alyssa Troke	July 24/17	10:00	[signature]	24-July-17	11h00
[signature] to FedEx	24-July-17	16h00	Shaumin [signature] July 25/17 10:30		

Page 1 of 1

Nº: T 047093

AGAT Laboratories

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CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Keith Holmes

PROJECT:

AGAT WORK ORDER: 17Z244268

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

DATE REPORTED: Aug 11, 2017

PAGES (INCLUDING COVER): 8

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 17Z244268

PROJECT:

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2017-08-01

DATE REPORTED: 2017-08-11

		SAMPLE DESCRIPTION:		TP17-1005	TP17-1006	TP17-1007
		SAMPLE TYPE:		Soil	Soil	Soil
		DATE SAMPLED:		2017-07-20	2017-07-20	2017-07-20
Parameter	Unit	G / S	RDL	8604285	8604297	8604298
Antimony	µg/g	40	0.8	3.5	3.5	3.2
Arsenic	µg/g	18	1	8	11	10
Barium	µg/g	670	2	315	296	293
Beryllium	µg/g	8	0.5	0.5	0.6	0.7
Boron	µg/g	120	5	11	13	12
Boron (Hot Water Soluble)	µg/g	2	0.10	0.62	1.12	0.69
Cadmium	µg/g	1.9	0.5	0.7	0.7	<0.5
Chromium	µg/g	160	2	24	25	26
Cobalt	µg/g	80	0.5	7.4	8.8	9.8
Copper	µg/g	230	1	89	133	126
Lead	µg/g	120	1	306	434	394
Molybdenum	µg/g	40	0.5	2.5	3.9	3.1
Nickel	µg/g	270	1	26	31	30
Selenium	µg/g	5.5	0.4	0.9	1.5	1.4
Silver	µg/g	40	0.2	0.6	0.9	0.9
Thallium	µg/g	3.3	0.4	<0.4	<0.4	<0.4
Uranium	µg/g	33	0.5	0.7	1.0	0.9
Vanadium	µg/g	86	1	29	32	34
Zinc	µg/g	340	5	275	335	375
Chromium VI	µg/g	8	0.2	<0.2	<0.2	<0.2
Mercury	µg/g	3.9	0.10	0.48	0.71	1.28

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Industrial/Commercial/Community Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By: Amanjot Bhela

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Certificate of Analysis

AGAT WORK ORDER: 17Z244268

PROJECT:

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2017-08-01

DATE REPORTED: 2017-08-11

				SAMPLE DESCRIPTION:	TP17-1005	TP17-1006	TP17-1007
				SAMPLE TYPE:	Soil	Soil	Soil
				DATE SAMPLED:	2017-07-20	2017-07-20	2017-07-20
Parameter	Unit	G / S	RDL		8604285	8604297	8604298
Naphthalene	µg/g	9.6	0.05		0.06	0.05	0.07
Acenaphthylene	µg/g	0.15	0.05		0.13	0.12	0.12
Acenaphthene	µg/g	96	0.05		0.08	0.06	0.08
Fluorene	µg/g	62	0.05		0.09	0.09	0.19
Phenanthrene	µg/g	12	0.05		1.2	1.0	2.3
Anthracene	µg/g	0.67	0.05		0.34	0.34	0.86
Fluoranthene	µg/g	9.6	0.05		1.9	2.0	2.7
Pyrene	µg/g	96	0.05		1.7	1.8	2.1
Benz(a)anthracene	µg/g	0.96	0.05		1.3	1.1	2.3
Chrysene	µg/g	9.6	0.05		1.1	1.1	2.1
Benzo(b)fluoranthene	µg/g	0.96	0.05		0.92	1.3	2.6
Benzo(k)fluoranthene	µg/g	0.96	0.05		0.45	0.61	1.1
Benzo(a)pyrene	µg/g	0.3	0.05		0.72	0.79	1.5
Indeno(1,2,3-cd)pyrene	µg/g	0.76	0.05		0.38	0.41	0.82
Dibenz(a,h)anthracene	µg/g	0.1	0.05		0.07	0.07	0.13
Benzo(g,h,i)perylene	µg/g	9.6	0.05		0.41	0.47	0.86
2-and 1-methyl Naphthalene	µg/g	76	0.05		0.06	0.06	0.07
Moisture Content	%		0.1		13.4	17.4	18.2
Surrogate	Unit	Acceptable Limits					
Chrysene-d12	%	50-140			98	91	87

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Industrial/Commercial/Community Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

8604285-8604298 Results are based on the dry weight of the soil.
Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:

AGAT Laboratories

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Guideline Violation

AGAT WORK ORDER: 17Z244268

PROJECT:

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
8604285	TP17-1005	ON T3 S ICC CT	O. Reg. 153(511) - All Metals (Soil)	Lead	µg/g	120	306
8604285	TP17-1005	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.96	1.3
8604285	TP17-1005	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.72
8604297	TP17-1006	ON T3 S ICC CT	O. Reg. 153(511) - All Metals (Soil)	Lead	µg/g	120	434
8604297	TP17-1006	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.96	1.1
8604297	TP17-1006	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.79
8604297	TP17-1006	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.96	1.3
8604298	TP17-1007	ON T3 S ICC CT	O. Reg. 153(511) - All Metals (Soil)	Lead	µg/g	120	394
8604298	TP17-1007	ON T3 S ICC CT	O. Reg. 153(511) - All Metals (Soil)	Zinc	µg/g	340	375
8604298	TP17-1007	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Anthracene	µg/g	0.67	0.86
8604298	TP17-1007	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.96	2.3
8604298	TP17-1007	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	1.5
8604298	TP17-1007	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.96	2.6
8604298	TP17-1007	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(k)fluoranthene	µg/g	0.96	1.1
8604298	TP17-1007	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Dibenz(a,h)anthracene	µg/g	0.1	0.13
8604298	TP17-1007	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Indeno(1,2,3-cd)pyrene	µg/g	0.76	0.82

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z244268

PROJECT:

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

Soil Analysis

RPT Date: Aug 11, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - All Metals (Soil)															
Antimony	8603795		<0.8	<0.8	NA	< 0.8	101%	70%	130%	100%	80%	120%	105%	70%	130%
Arsenic	8603795		5	5	0.0%	< 1	103%	70%	130%	98%	80%	120%	94%	70%	130%
Barium	8603795		84	83	1.2%	< 2	107%	70%	130%	100%	80%	120%	109%	70%	130%
Beryllium	8603795		0.8	0.7	NA	< 0.5	102%	70%	130%	113%	80%	120%	108%	70%	130%
Boron	8603795		10	10	NA	< 5	99%	70%	130%	111%	80%	120%	105%	70%	130%
Boron (Hot Water Soluble)	8603825		0.25	0.22	NA	< 0.10	119%	60%	140%	100%	70%	130%	105%	60%	140%
Cadmium	8603795		<0.5	<0.5	NA	< 0.5	99%	70%	130%	102%	80%	120%	109%	70%	130%
Chromium	8603795		20	20	0.0%	< 2	98%	70%	130%	91%	80%	120%	99%	70%	130%
Cobalt	8603795		11.0	10.4	5.6%	< 0.5	98%	70%	130%	97%	80%	120%	93%	70%	130%
Copper	8603795		31	32	3.2%	< 1	104%	70%	130%	104%	80%	120%	104%	70%	130%
Lead	8603795		13	13	0.0%	< 1	102%	70%	130%	111%	80%	120%	106%	70%	130%
Molybdenum	8603795		<0.5	<0.5	NA	< 0.5	106%	70%	130%	116%	80%	120%	120%	70%	130%
Nickel	8603795		25	26	3.9%	< 1	104%	70%	130%	102%	80%	120%	94%	70%	130%
Selenium	8603795		<0.4	<0.4	NA	< 0.4	104%	70%	130%	98%	80%	120%	96%	70%	130%
Silver	8603795		<0.2	<0.2	NA	< 0.2	116%	70%	130%	120%	80%	120%	109%	70%	130%
Thallium	8603795		<0.4	<0.4	NA	< 0.4	107%	70%	130%	97%	80%	120%	103%	70%	130%
Uranium	8603795		0.6	0.6	NA	< 0.5	109%	70%	130%	115%	80%	120%	110%	70%	130%
Vanadium	8603795		31	31	0.0%	< 1	108%	70%	130%	102%	80%	120%	97%	70%	130%
Zinc	8603795		70	67	4.4%	< 5	103%	70%	130%	108%	80%	120%	94%	70%	130%
Chromium VI	8603827		<0.2	<0.2	NA	< 0.2	96%	70%	130%	100%	80%	120%	93%	70%	130%
Mercury	8603795		<0.10	<0.10	NA	< 0.10	98%	70%	130%	103%	80%	120%	107%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Amanjot Bhela

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z244268

PROJECT:

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Aug 11, 2017			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	8606319		< 0.05	< 0.05	NA	< 0.05	121%	50%	140%	82%	50%	140%	70%	50%	140%
Acenaphthylene	8606319		< 0.05	< 0.05	NA	< 0.05	120%	50%	140%	80%	50%	140%	69%	50%	140%
Acenaphthene	8606319		< 0.05	< 0.05	NA	< 0.05	119%	50%	140%	77%	50%	140%	76%	50%	140%
Fluorene	8606319		< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	81%	50%	140%	73%	50%	140%
Phenanthrene	8606319		< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	70%	50%	140%	72%	50%	140%
Anthracene	8606319		< 0.05	< 0.05	NA	< 0.05	108%	50%	140%	82%	50%	140%	88%	50%	140%
Fluoranthene	8606319		< 0.05	< 0.05	NA	< 0.05	99%	50%	140%	69%	50%	140%	80%	50%	140%
Pyrene	8606319		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	74%	50%	140%	95%	50%	140%
Benz(a)anthracene	8606319		< 0.05	< 0.05	NA	< 0.05	66%	50%	140%	86%	50%	140%	76%	50%	140%
Chrysene	8606319		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	76%	50%	140%	92%	50%	140%
Benzo(b)fluoranthene	8606319		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	88%	50%	140%	68%	50%	140%
Benzo(k)fluoranthene	8606319		< 0.05	< 0.05	NA	< 0.05	120%	50%	140%	79%	50%	140%	87%	50%	140%
Benzo(a)pyrene	8606319		< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	106%	50%	140%	91%	50%	140%
Indeno(1,2,3-cd)pyrene	8606319		< 0.05	< 0.05	NA	< 0.05	86%	50%	140%	73%	50%	140%	76%	50%	140%
Dibenz(a,h)anthracene	8606319		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	88%	50%	140%	95%	50%	140%
Benzo(g,h,i)perylene	8606319		< 0.05	< 0.05	NA	< 0.05	106%	50%	140%	105%	50%	140%	98%	50%	140%
2-and 1-methyl Naphthalene	8606319		< 0.05	< 0.05	NA	< 0.05	123%	50%	140%	86%	50%	140%	72%	50%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

AGAT Laboratories

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z244268

PROJECT:

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	ORG-91-5106	EPA SW-846 3541 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS

1 small blue

AGAT Laboratories

Short Holding Time
ASAP!

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 17Z244268

Cooler Quantity: One - on ice

Arrival Temperatures: 8.5 | 8.1 | 7.6
LT-3.4 | 2.6 | 2.9

Custody Seal Intact: ☐ Yes ☐ No ☒ N/A

Notes:

Report Information:

Company: Golder Associates
Contact: Alyssa Troke / Keith Holmes
Address: 1931 Robertson Road, Ottawa

Phone: 613-592-9600 Fax:

Reports to be sent to:
1. Email: atroke@golder.com
2. Email: kholmes@golder.com

Regulatory Requirements: ☐ No Regulatory Requirement
(Please check all applicable boxes)

☒ Regulation 153/04
Table 3 (Indicate One)
☒ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture (Check One)
☒ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ____ (Indicate One)

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other ____ (Indicate One)

Is this submission for a Record of Site Condition? ☒ Yes ☐ No

Report Guideline on Certificate of Analysis ☒ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project:
Site Location:
Sampled By:
AGAT Quote #: PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information: Bill To Same: Yes ☒ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Y/N)	O. Reg 153: Metals and Inorganics	☐ All Metals ☐ 153 Metals (excl. Hydrides)	☐ Hydride Metals	ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr6+ ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	Full Metals Scan (Reg 153 all metals)	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH3 ☐ TKN ☐ NO3 ☐ NO2 ☐ NO3+NO2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use
~~TP17-1008~~ TP17-1005	July 2017	–	1	S	* Glass in samples						X						X				
TP17-1006	↓	–	1	S							X						X				
TP17-1007		–	1	S	* Hold time up soon!						X						X				

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
Alyssa Troke / Alyssa Troke	~~Aug~~	2:45	Cberthelet	1-Aug-17	14h45
CB to FedEx 1-Aug	Aug. 1/17	16h00			
			Shawnin	Aug 2/17	9:15am

Page 1 of 1

Nº: T 047094

AGAT Laboratories

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FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Alyssa Troke

PROJECT:

AGAT WORK ORDER: 17Z258030

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Gyulhan Yalamova, Report Reviewer

DATE REPORTED: Sep 15, 2017

PAGES (INCLUDING COVER): 8

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 17Z258030
PROJECT:

CLIENT NAME: GOLDER ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Alyssa Troke
SAMPLED BY:

O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2017-09-08

DATE REPORTED: 2017-09-14

SAMPLE DESCRIPTION:				TP17-1010-SA2	TP17-1011-SA2	TP17-1012-SA2	TP17-1013-SA2	TP17-1014-SA2	TP17-1016-SA2	TP17-1005A-SA1
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2017-09-07	2017-09-07	2017-09-07	2017-09-07	2017-09-07	2017-09-07	2017-09-07
Parameter	Unit	G / S	RDL	8699411	8699412	8699413	8699414	8699415	8699416	8699417
Antimony	µg/g	40	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	4	2	3	5	1	2	2
Barium	µg/g	670	2	161	229	85	152	58	173	104
Beryllium	µg/g	8	0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	µg/g	120	5	5	<5	<5	7	<5	<5	<5
Boron (Hot Water Soluble)	µg/g	2	0.10	0.15	0.17	0.41	0.53	0.30	0.16	0.13
Cadmium	µg/g	1.9	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	2	28	66	17	27	14	35	26
Cobalt	µg/g	80	0.5	9.6	12.3	6.3	9.0	4.4	8.8	6.3
Copper	µg/g	230	1	26	34	16	30	11	20	14
Lead	µg/g	120	1	30	8	21	66	4	7	6
Molybdenum	µg/g	40	0.5	1.6	<0.5	1.1	1.8	<0.5	<0.5	<0.5
Nickel	µg/g	270	1	25	40	17	24	8	20	14
Selenium	µg/g	5.5	0.4	0.5	<0.4	<0.4	0.5	<0.4	<0.4	<0.4
Silver	µg/g	40	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g	3.3	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	µg/g	33	0.5	0.9	0.7	1.0	0.9	0.7	0.5	0.5
Vanadium	µg/g	86	1	34	53	23	32	21	41	31
Zinc	µg/g	340	5	69	83	41	122	25	56	39
Chromium VI	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Mercury	µg/g	3.9	0.10	<0.10	<0.10	<0.10	0.11	<0.10	<0.10	<0.10

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Industrial/Commercial/Community Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By: Amanjot Bhela

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z258030

PROJECT:

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2017-09-08

DATE REPORTED: 2017-09-15

				SAMPLE DESCRIPTION:	TP17-1010-SA2	TP17-1011-SA2	TP17-1012-SA2	TP17-1013-SA2	TP17-1014-SA2	TP17-1016-SA2	TP17-1005A-SA1
				SAMPLE TYPE:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
				DATE SAMPLED:	2017-09-07	2017-09-07	2017-09-07	2017-09-07	2017-09-07	2017-09-07	2017-09-07
Parameter	Unit	G / S	RDL		8699411	8699412	8699413	8699414	8699415	8699416	8699417
Naphthalene	µg/g	9.6	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	96	0.05		<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	12	0.05		<0.05	<0.05	0.05	0.78	<0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05		<0.05	<0.05	<0.05	0.14	<0.05	<0.05	<0.05
Fluoranthene	µg/g	9.6	0.05		0.06	<0.05	0.07	1.2	<0.05	<0.05	<0.05
Pyrene	µg/g	96	0.05		0.05	<0.05	0.07	0.99	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.96	0.05		<0.05	<0.05	<0.05	0.45	<0.05	<0.05	<0.05
Chrysene	µg/g	9.6	0.05		<0.05	<0.05	0.05	0.48	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.96	0.05		<0.05	<0.05	0.07	0.59	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.96	0.05		<0.05	<0.05	<0.05	0.22	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05		<0.05	<0.05	<0.05	0.41	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.76	0.05		<0.05	<0.05	<0.05	0.18	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	9.6	0.05		<0.05	<0.05	<0.05	0.19	<0.05	<0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	76	0.05		<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1		12.4	26.3	12.6	13.4	14.4	17.3	14.9
Surrogate	Unit	Acceptable Limits									
Chrysene-d12	%	50-140			73	67	69	70	83	68	69

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Industrial/Commercial/Community Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

8699411-8699417 Results are based on the dry weight of the soil.
Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:

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Guideline Violation

AGAT WORK ORDER: 17Z258030

PROJECT:

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Alyssa Troke

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
8699414	TP17-1013-SA2	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.41

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z258030

PROJECT:

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

Soil Analysis

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - All Metals (Soil)															
Antimony	8710127		<0.8	<0.8	NA	< 0.8	73%	70%	130%	104%	80%	120%	96%	70%	130%
Arsenic	8710127		2	2	NA	< 1	113%	70%	130%	107%	80%	120%	115%	70%	130%
Barium	8710127		36	35	2.8%	< 2	106%	70%	130%	102%	80%	120%	102%	70%	130%
Beryllium	8710127		<0.5	<0.5	NA	< 0.5	96%	70%	130%	105%	80%	120%	91%	70%	130%
Boron	8710127		<5	<5	NA	< 5	76%	70%	130%	112%	80%	120%	88%	70%	130%
Boron (Hot Water Soluble)	8710127		<0.10	<0.10	NA	< 0.10	100%	60%	140%	98%	70%	130%	105%	60%	140%
Cadmium	8710127		<0.5	<0.5	NA	< 0.5	101%	70%	130%	95%	80%	120%	100%	70%	130%
Chromium	8710127		8	8	NA	< 2	107%	70%	130%	106%	80%	120%	108%	70%	130%
Cobalt	8710127		3.3	3.4	3.0%	< 0.5	102%	70%	130%	103%	80%	120%	101%	70%	130%
Copper	8710127		7	7	0.0%	< 1	96%	70%	130%	111%	80%	120%	99%	70%	130%
Lead	8710127		4	4	NA	< 1	100%	70%	130%	104%	80%	120%	94%	70%	130%
Molybdenum	8710127		<0.5	<0.5	NA	< 0.5	94%	70%	130%	97%	80%	120%	106%	70%	130%
Nickel	8710127		5	6	18.2%	< 1	96%	70%	130%	102%	80%	120%	96%	70%	130%
Selenium	8710127		<0.4	<0.4	NA	< 0.4	108%	70%	130%	97%	80%	120%	103%	70%	130%
Silver	8710127		<0.2	<0.2	NA	< 0.2	79%	70%	130%	91%	80%	120%	85%	70%	130%
Thallium	8710127		<0.4	<0.4	NA	< 0.4	98%	70%	130%	101%	80%	120%	93%	70%	130%
Uranium	8710127		<0.5	<0.5	NA	< 0.5	95%	70%	130%	104%	80%	120%	95%	70%	130%
Vanadium	8710127		14	14	0.0%	< 1	106%	70%	130%	98%	80%	120%	101%	70%	130%
Zinc	8710127		20	19	NA	< 5	101%	70%	130%	107%	80%	120%	108%	70%	130%
Chromium VI	8706961		<0.2	<0.2	NA	< 0.2	99%	70%	130%	103%	80%	120%	105%	70%	130%
Mercury	8710127		<0.10	<0.10	NA	< 0.10	102%	70%	130%	106%	80%	120%	101%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: Amanjot Bhela

AGAT Laboratories

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CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z258030

PROJECT:

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	8712214		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	101%	50%	140%	77%	50%	140%
Acenaphthylene	8712214		< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	94%	50%	140%	76%	50%	140%
Acenaphthene	8712214		< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	94%	50%	140%	72%	50%	140%
Fluorene	8712214		< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	94%	50%	140%	75%	50%	140%
Phenanthrene	8712214		< 0.05	< 0.05	NA	< 0.05	117%	50%	140%	90%	50%	140%	75%	50%	140%
Anthracene	8712214		< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	84%	50%	140%	77%	50%	140%
Fluoranthene	8712214		< 0.05	< 0.05	NA	< 0.05	118%	50%	140%	85%	50%	140%	79%	50%	140%
Pyrene	8712214		< 0.05	< 0.05	NA	< 0.05	117%	50%	140%	85%	50%	140%	80%	50%	140%
Benz(a)anthracene	8712214		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	73%	50%	140%	75%	50%	140%
Chrysene	8712214		< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	80%	50%	140%	79%	50%	140%
Benzo(b)fluoranthene	8712214		< 0.05	< 0.05	NA	< 0.05	118%	50%	140%	81%	50%	140%	74%	50%	140%
Benzo(k)fluoranthene	8712214		< 0.05	< 0.05	NA	< 0.05	124%	50%	140%	96%	50%	140%	85%	50%	140%
Benzo(a)pyrene	8712214		< 0.05	< 0.05	NA	< 0.05	114%	50%	140%	92%	50%	140%	81%	50%	140%
Indeno(1,2,3-cd)pyrene	8712214		< 0.05	< 0.05	NA	< 0.05	114%	50%	140%	72%	50%	140%	63%	50%	140%
Dibenz(a,h)anthracene	8712214		< 0.05	< 0.05	NA	< 0.05	119%	50%	140%	81%	50%	140%	68%	50%	140%
Benzo(g,h,i)perylene	8712214		< 0.05	< 0.05	NA	< 0.05	108%	50%	140%	78%	50%	140%	64%	50%	140%
2-and 1-methyl Naphthalene	8712214		< 0.05	< 0.05	NA	< 0.05	120%	50%	140%	103%	50%	140%	79%	50%	140%

Comments:
When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 17Z258030

PROJECT:

ATTENTION TO: Alyssa Troke

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	ORG-91-5106	EPA SW-846 3541 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS

1 | cooler blue

AGAT Laboratories
5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Report Information:

Company: GOLDER ASSOCIATES
Contact: ALYSSA TRCKE / KEITH HOLMES
Address: 1931 ROBERTSON ROAD, OTTAWA
Phone: 613-592-9600 Fax:
Reports to be sent to:
1. Email: atrcke@golder.com
2. Email: kholmes@golder.com

Project Information:

Project:
Site Location:
Sampled By:
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☐ No ☐
Company:
Contact:
Address:
Email:

Regulatory Requirements: ☐ No Regulatory Requirement

(Please check all applicable boxes)

☒ Regulation 153/04
Table 3 (Indicate One)
☒ Ind/Com
☐ Res/Park
☐ Agriculture

Soil Texture (Check One)
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region (Indicate One)

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
(Indicate One)

Is this submission for a Record of Site Condition? ☒ Yes ☐ No

Report Guideline on Certificate of Analysis ☒ Yes ☐ No

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Laboratory Use Only

Work Order #: 17225803O
Cooler Quantity: one-on ice
Arrival Temperatures: 11.2 | 11.5 | 11.0
5.8 | 5.3 | 5.8
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes:

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

✱ 5 DAYS

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Y/N)	O. Reg 153: Metals and Inorganics (☐ All Metals ☐ 153 Metals (excl. Hydrides) ☐ Hydride Metals; ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr^{6+} ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR)	O. Reg 153: ~~Full Metals Scan~~ ALL METALS	Regulation/Custom Metals (Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3+NO_2)	Volatiles: ☐ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use
TP17-1010-SA2	17/09/07	-	01	SOIL				X					X			
TP17-1011-SA2		-	01					X					X			
TP17-1012-SA2		-	01					X					X			
TP17-1013-SA2		-	01					X					X			
TP17-1014-SA2		-	01					X					X			
TP17-1016-SA2		-	01					X					X			
TP17-1005A-SA1		-	01													

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
SHIHAN CHOWDHURY / [signature]	17/09/08	1030 HRS	[signature]	8-Sep-17	14h25
UBRS to Puro	8-Sep-17	16h00	Prachi	9/8/17	9:32
	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
			Samples Received By (Print Name and Sign)		

Page 1 of 1

N°: T 041797

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