



**FINAL REPORT**

## Phase Two Environmental Site Assessment

*864 Lady Ellen Place, Ottawa, Ontario*

Submitted to:

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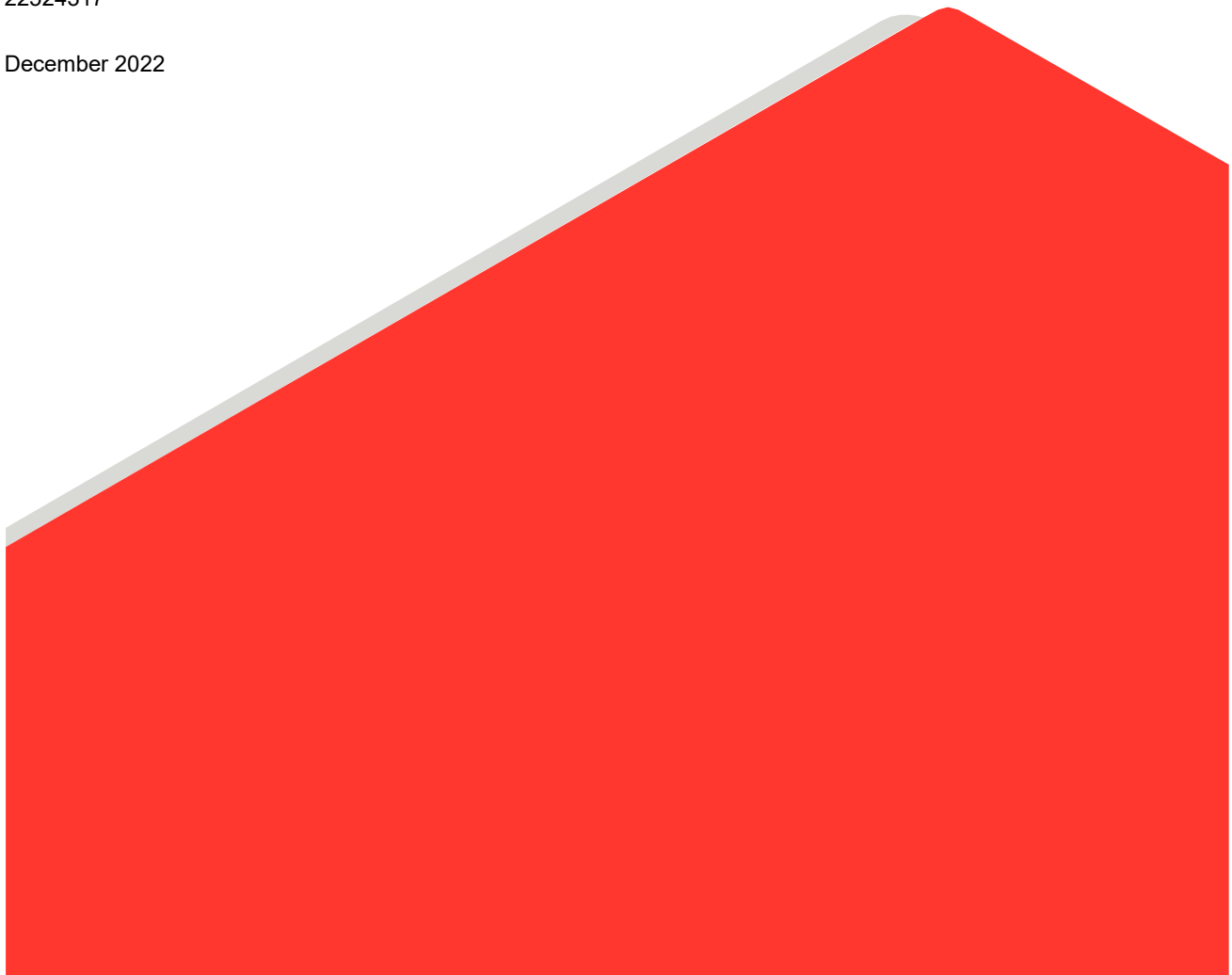
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## 1.0 EXECUTIVE SUMMARY

Golder Associates Ltd. (“Golder”) was retained by Access Property Developments (the “Client”) to conduct a Phase Two Environmental Site Assessment (“Phase Two ESA”) of the property located at 864 Lady Ellen Place in Ottawa, Ontario (the “Site” or the “Phase Two Property”). The location of the Phase Two Property is provided in Figure 1 – Key Plan.

Golder previously completed a Phase One ESA for the Site, the results of which were documented in the report titled “*Phase One Environmental Site Assessment, 864 Lady Ellen Place, Ottawa, Ontario*”, dated December 7<sup>th</sup>, 2022. Based on the findings of the Phase One ESA 16 Areas of Potential Environmental Concern (“APECs”) were identified for the Site.

The analytical results from the sampling and analysis program indicates that the reported concentrations of trichloroethylene (TCE) and Chloroform in groundwater as well as hydrocarbons, Electrical Conductivity (EC) and Sodium Absorption Rate in soil at the Phase Two Property do not meet the applicable Ministry of Environment, Conservation and Parks (“MECP”) Table 3 site condition standards for commercial use with coarse textured soil in a non-potable groundwater setting (“MECP Table 3 Standards”)<sup>1</sup>. The reported concentrations of all other parameters tested in soil and groundwater were below the Table 3 Standards.

Given the presence of TCE and chloroform in groundwater greater than the MECP Table 3 Standards, a potential risk was identified with the presence of volatiles in groundwater as a potential source of vapours into future site building(s). As such a soil vapour sampling program was conducted to evaluate this potential. Based on the results of the soil vapour assessment due diligence risk analysis (DDRA), potential risks from vapour intrusion from VOC impacted groundwater were deemed to be low. The results of the soil DDRA were based on a single round of soil vapour sampling; it is general practice to conduct at least two rounds of soil vapour sampling in order to account for seasonal effects.

## 2.0 INTRODUCTION

### 2.1 Site Description

Golder was retained by Access Property Developments to conduct a Phase Two Environmental Site Assessment (“Phase Two ESA”) of the following property:

**Table A: Phase Two Property Area**

Municipal Address	864 Lady Ellen Place
Size of the Phase Two Property	1.35 hectares

The location of the Phase Two Property along with property boundary is provided in Figure 1 provided in Appendix A.

### 2.2 Property Ownership

Previous Owners and property description are described below:

**Table B: Property Ownership**

Year(s)	Owner’s Name	Description of Property Use
Prior to 1959	Donald David Johannsen	Undeveloped
1959 to Present	J.L. Richards	Office building and parking

<sup>1</sup> Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, Ministry of the Environment, April 15, 2011 (PIBS# 7382e01)

## 2.3 Current and Proposed Future Uses

The Phase Two Property is currently developed with one two-storey commercial building, reportedly constructed in 1959. The proposed future use of the Phase Two Property remains commercial. The proposed new building

footprint is provided in Figure 5 – Site Plan located in Appendix A.

## 2.4 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 MECP document “*Soil, Groundwater 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 Phase Two Property and all other properties located, in whole or in part, within 250 metres of the Phase Two Property 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 potable water.
- The Phase Two Property 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 groundwater.
- More than two thirds of the soil materials are considered to be coarse textured (Section 6.4).
- The closest water body is the Ottawa River, located 2.1 kilometres (“km”) Northwest of the Phase Two Property.
- No features have been identified at the Phase Two Property that would meet the conditions of an environmentally sensitive site, as described in Section 41.
- The intended use for the Phase Two Property is commercial.
- The overburden thickness is greater than 2 metres over more than one-third of the Phase Two Property. The reported depth to water is greater than 3 metres over the entire Phase Two Property.

Accordingly, soil and groundwater results were compared to the Ministry of Environment, Conservation and Parks (“MECP”) Table 3 site condition standards for commercial use with coarse textured soil in a non potable groundwater setting (“MECP Table 3 Standards”).

## 3.0 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 due diligence report for the new building. The objectives of this Phase Two ESA were achieved by:

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



### 3.1 Physical Setting

The nearest surface water body is the Ottawa River, located 2.1 km east of the Phase Two Property. There are no areas of natural significance within the Phase One Study area. Land uses surrounding the Site consisted of community, residential and commercial land uses.

Soil at the Site consists primarily of till plain deposits of silt and clay; and limestone bedrock. The physiography of the soils is till plains. Borehole records for the Site from previous environmental studies indicate the overburden is primarily fill materials overlying sand and gravel till. Fill materials were interpreted to consist of re-worked native soils and the depth of transition between fill and native materials varied. Fill materials were interpreted to extend to 3.05 metres below ground surface (“mbgs”) at the locations investigated. The top of bedrock was encountered at depths of approximately 3.2 – 5 m on Site and is limestone with dolostone beds part of the Gull River formation.

Local groundwater was anticipated to flow towards the northwest based on previously completed subsurface investigations. Groundwater elevations collected in 2022 indicated groundwater flow towards the east. Dewatering activities have previously been linked with groundwater flow direction change on other sites. Regional groundwater is anticipated to flow in a northwest direction towards the Ottawa River. Groundwater elevations and contours are provided on Figure 6.

The topography of the Phase Two Property and surrounding areas is generally flat. There is a manhole located at the bottom of the lightly sloped used parking which acts as a surface water drainage feature on the Site.

### 3.2 Past Investigations

#### 3.2.1 Phase One ESA

Golder conducted a Phase One ESA entitled, “*ONTARIO REGULATION 153/04 PHASE ONE ENVIRONMENTAL SITE ASSESSMENT UPDATE FOR 864 LADY ELLEN PLACE, OTTAWA, ONTARIO*”, dated December 7<sup>th</sup> 2022, to assess the likelihood of soil and/or groundwater contamination resulting from historical 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 APECs identified in the 2022 Phase One ESA are summarized in the following table:

**Table C: List of APECs from 2022 Phase One**

Area of Potential Environmental Concern	Location of APEC on Phase One Property	Potentially Contaminating Activity	Contaminants of Potential Concern	Media Potentially Impacted
APEC 1: PCA ID #10 - Former auto service garage located approximately 200m southwest of the Site.	Western portion of the Site	PCA 10: Commercial Autobody Shops	PHC, BTEX, VOC	Groundwater
APEC 2: PCA ID #11.1 – Former and current auto service garage with associated ASTs and USTs located approximately 90m southwest of the Site.	Western portion of the Site	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks	PHC, BTEX, VOC	Groundwater
APEC 3: PCA ID #11.2 – Former and current auto service garage with	Western portion of the Site	PCA 10: Commercial Autobody Shops PCA	PHC, BTEX, VOC	Groundwater

Area of Potential Environmental Concern	Location of APEC on Phase One Property	Potentially Contaminating Activity	Contaminants of Potential Concern	Media Potentially Impacted
associated ASTs and USTs located approximately 90m southwest of the Site.				
APEC 4: PCA ID #12.1 - Former and current auto service garage with associated ASTs located approximately 180m southwest of the Site.	Western portion of the Site	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks	PHC, BTEX, VOC	Groundwater
APEC 5: PCA ID #12.2 - Former and current auto service garage with associated ASTs located approximately 180m southwest of the Site.	Western portion of the Site	PCA 10: Commercial Autobody Shops	PHC, BTEX, VOC	Groundwater
APEC 6: PCA ID #13.1 - Former heating oil tank located approximately 75m southeast from the Site.	Southeastern portion of the Site	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks	VOC	Groundwater
APEC 7: PCA ID #13.2 - Former commercial printing located approximately 75m southeast from the Site.	Southeastern portion of the Site	PCA 31: Ink Manufacturing, Processing and Bulk Storage	VOC	Groundwater
APEC 8: PCA ID #14.1 – Various former activities including cosmetics manufacturing, located adjacent to the site to the east.	Eastern portion of the Site	PCA 13: Cosmetics Manufacturing, Processing and Bulk Storage	VOC	Groundwater
APEC 9: PCA ID #14.2 – Various former activities including an industrial diesel-powered backup generator, located adjacent to the site to the east.	Eastern portion of the Site	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks	VOC	Groundwater
APEC 10: PCA ID #14.3 – Various former activities including commercial printing located adjacent to the site to the east.	Eastern portion of the Site	PCA 31: Ink Manufacturing, Processing and Bulk Storage	VOC	Groundwater
APEC 11: PCA ID #16 - Former manufacturing, including a spray booth, welding, and lead furnaces, located approximately 100m southwest of the Site.	Western portion of the Site	PCA 33: Metal Treatment, Coating, Plating and Finishing	Metals, VOC	Groundwater

Area of Potential Environmental Concern	Location of APEC on Phase One Property	Potentially Contaminating Activity	Contaminants of Potential Concern	Media Potentially Impacted
APEC 12: PCA ID #17.1 - Former commercial printing located approximately 45 m south of the Site.	Western portion of the Site	31. Ink Manufacturing, Processing and Bulk Storage	PHC, BTEX, VOC	Groundwater
APEC 13: PCA ID #17.2 - Former warehouse with truck storage at the rear of the building located approximately 45 m south of the Site.	Western portion of the Site	PCA 28: Gasoline and Associated Products Storage in Fixed Tank	PHC, BTEX, VOC	Groundwater
APEC 14: PCA ID #18 – Former commercial printing and equipment sale, located adjacent to the south of the Site.	Southeastern portion of the Site	PCA 31: Ink Manufacturing, Processing and Bulk Storage	VOC	Groundwater
APEC 15: PCA ID #20 - Former truck transport industry located adjacent to the west of the Site.	Western portion of the Site	PCA 11: Commercial Trucking and Container Terminals	VOC, PHC, BTEX	Groundwater
APEC 16: PCA ID #20 - Former industrial chemical industry located adjacent to the west of the Site.	Western portion of the Site	PCA 8: Chemical Manufacturing, Processing and Bulk Storage	VOC, PHC, BTEX	Groundwater

This report was prepared by the Qualified Person and will be relied upon for the Phase Two investigation. Figure 3 – Areas Of Potential Environmental Concern located in Appendix A demonstrates the locations of each APEC.

## 4.0 SCOPE OF THE INVESTIGATION

### 4.1 Overview of Site Investigation

The Phase Two ESA investigation activities were completed between July 10<sup>th</sup> and November 10<sup>th</sup> 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 the drilling of three environmental boreholes, each completed as groundwater monitoring wells, all of which were used for groundwater sampling at the Site. The rationale for the selected location of the boreholes was based on the location of the APECs provided in Figure 3. The locations of the boreholes and monitoring wells are provided in Figure 5. The monitoring well construction details are presented in Table 1.

- **Soil Sampling:** Soil samples were collected on July 18<sup>th</sup> and 19<sup>th</sup>, 2022 from the boreholes. Selected soil samples were submitted for chemical analysis of each of the following: petroleum hydrocarbons (“PHCs”), Benzene Toluene Ethylbenzene Xylene (“BTEX”), volatile organic compounds (“VOCs”), polycyclic aromatic hydrocarbons (“PAHs”), metals, hydride-forming metals, hexavalent chromium and mercury.
- **Groundwater Monitoring and Sampling:** Groundwater samples were collected on July 22<sup>nd</sup> and on August 17<sup>th</sup>, 2022. The July 22<sup>nd</sup> event sampled the three new monitoring wells installed as part of this Phase Two ESA and the August 17<sup>th</sup> event sampled the existing wells. The groundwater samples collected from the 2022 wells were submitted for analysis of each of the following: PHCs, BTEX, VOCs, metals, hydride-forming metals, hexavalent chromium and mercury and existing monitoring wells were sampled and analysed for F1-BTEX and VOCs.
- **Surveying:** An elevation survey for the existing boreholes and monitoring wells was previously completed. The 2022 wells were surveyed using a R10 Trimble unit with a horizontal accuracy of 0.02m and vertical accuracy of 0.03m.
- **Reporting:** Golder compiled and assessed the field and laboratory results from the above noted activities into this report.

The Phase Two ESA investigation was carried out in 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.

There were no impediments or access limitations that in the opinion of the Qualified Person (“QP”) would affect the conclusions of this Phase Two ESA report.

## 4.2 Media Investigated

To address the potential environmental issues identified in the Phase One ESA, the Phase Two ESA field program included sampling of subsurface soil and of groundwater from boreholes and monitoring wells completed into shallow bedrock at the Site. No sediment was present at the Site and therefore no sediment sampling was completed. Summaries of media investigated as well as analytical analysis performed are provided in Tables 3 and 4.

## 4.3 Phase One Conceptual Site Model

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

- The Site is an irregular shaped parcel that covers an area of approximately 1.35 hectares (3.35 acres) that is located immediately south of the Trans-Canada Highway (ON 417). The Site consists of a commercial office building, occupied by J.L. Richards, on the western portion (the “Site Building”), and paved parking areas on the north and central portions of the Site. The eastern portion of the Site consists of gravel covered area used as parking lot and snow storage. Based on the earliest available aerial image from 1928, the Site was undeveloped until at least 1958 before construction of the Site Building in 1959.
- There are records of six monitoring wells installed on Site between 2013 –2019. Three of the six wells were observed at the time of the Site visit. None of these wells are used for water supply and potable water is provided to the Site and Study Area by the City of Ottawa.
- The nearest permanent watercourse is the Ottawa River located approximately 2km north of the Site.
- No areas of natural and scientific interest (ANSI) are known to be located on the Site or on the Phase One Study Area.

- At the time of the Phase One ESA, the surrounding properties within the Phase One Study Area included:
  - West: Commercial land uses including office buildings, restaurants and warehouses.
  - North: Bounded by ON 417 at a higher elevation followed by commercial land uses including office buildings and storage warehouse buildings. A portion of land immediately northwest of the Site consists of a Hydro One Easement for high-voltage overhead cables.
  - South: Commercial land uses including office buildings and printing businesses.
  - East: Large government office building followed by residential homes and an auto service garage.
- Thirty-four (34) Potentially Contaminating Activities (PCAs) were identified at twenty (20) different locations in the Phase One Study Area, none of which were on the Phase One Property, as shown on Figure 2. Based on site characteristics and the locations of the off-Site PCAs, a total of sixteen (16) Areas of Potential Environmental Concern (“APECs”) were identified for the Phase One Property as shown on Figure 3.
- Utility connections to the building include water, sewer, electrical, natural gas, cable and telephone. Storm sewers were observed during the site reconnaissance in the parking areas.
- Soil at the Site consists primarily of till plain deposits of silt and clay; and limestone bedrock. The physiography of the soils is till plains. Borehole records for the Site from previous environmental studies indicate the overburden is primarily fill materials overlying sand and gravel till. Fill materials were interpreted to consist of re-worked native soils, therefore the depth of transition between fill and native materials was difficult to determine. Fill materials were interpreted to extend to, at the very deepest, 3.05 mbgs. The top of bedrock was encountered at a depth of approximately 3.2 – 5 m on Site and is limestone with dolostone beds part of the Gull River formation.
- Local groundwater was anticipated to flow towards the northeast based on previously completed subsurface investigations that evaluated groundwater flow direction based on water levels measured in groundwater monitoring wells. Regional groundwater is anticipated to flow in a northwest direction towards the Ottawa River. During the 2022 Phase Two ESA, groundwater was inferred to flow towards the east.

## 4.4 Impediments

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

## 5.0 INVESTIGATION METHOD

### 5.1 General

The following sections describe the field investigation methodology employed during the Phase Two ESA. The field work was conducted between July 10<sup>th</sup> and November 10<sup>th</sup> 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.

## 5.2 Drilling

### 5.2.1 Environmental Drilling

On July 18<sup>th</sup> and 19<sup>th</sup>, 2022, three environmental boreholes (BH22-03, BH22-05, and BH22-06) were advanced to depths of 5.5-7.3 metres below ground surface (“mbgs”). Borehole locations are provided in Figure 5. A description of the quality assurance/quality control measures taken to minimize the potential for cross-contamination between sampling locations is provided in Section 5.13.1.

Boreholes were advanced by George Downing Estate Drilling, (“Downing”) using a CME 55 truck mount drill rig. During borehole drilling activities, overburden soil samples were collected using split spoon soil sampling equipment and augered using 108 mm outside diameter (“OD”) solid stem augers. Once bedrock was reached, bedrock cores were collected using a diamond tipped rock core barrel.

- Split-spoon: 0.61 m (2 foot) long, 5.08 cm (2 inch) diameter stainless steel split spoon sampling system at 0.76 m long intervals. Split-spoons were decontaminated between sample locations.

### 5.2.2 Soil Vapour Drilling

On November 10<sup>th</sup>, two soil vapor probes (SVP-22-1 and SVP-22-2) were advanced and installed to depths of 1.8 and 2.4 metres below ground surface (“mbgs”) respectively. Vapor probe locations are provided in Figure 5.

A description of the quality assurance/quality control measures taken to minimize the potential for cross-contamination between sampling locations is provided in Section 5.13.2 Vapor probes were advanced and installed by Strata Drilling Group, (“Strata”) using a GEOPROBE® Model 54LT Direct Push Machine.

## 5.3 Soil: Sampling

Soil samples were collected during drilling were placed into laboratory-prepared container with minimal headspace and stored in a cooler for potential laboratory analysis. Soil samples collected for volatile analysis were field preserved using methanol. Field screening, consisting of the soil description, and noting the presence of any staining, odour and/or debris were noted whilst filling the jars. A photoionization detector (RKI Eagle) calibrated to 100 parts per million (“ppm”) isobutylene was used to measure the total organic vapour concentration in the headspace of the jar.

One soil sample representing inferred “worst-case” conditions at each sampling location was selected for laboratory analysis based on the field headspace screening measurements, visual observations (e.g., staining, discoloration and/or free product, if any), and olfactory observations (if any). 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 3.

Geologic descriptions, visual and olfactory observations, and results of field headspace measurements are presented on the field logs in Appendix C.

## 5.4 Field Screening Measurements

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

**Table D: Field Screening Measurement Of Sample Headspace**

Equipment	Parameters Detected	Detection Limit	Precision	Accuracy	Calibration Standard
RKI Eagle 2	Combustible gas	0-50,000 ppm	NA	±5%	Hexane (100 ppm)
RKI Eagle 2	Total organic vapour	0-2,000 ppm	NA	±5%	Isobutylene (100 ppm)

Instruments were rented from Maxim environmental services with a record of calibration.

## 5.5 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 0.3 m above the well screen. The monitoring well was sealed with bentonite from the top of the sand pack and completed with a flush mount protective well casing. The riser pipes were sealed with a J-plug. A description of the quality assurance/quality control measures taken to minimize the potential for cross-contamination between sampling locations is provided in Section 5.13.1.

Following drilling, the monitoring wells were developed on July 20<sup>th</sup>, 2022 by removing ten well volumes, using dedicated Waterra® pumps (tubing with foot valves). During monitoring well development, qualitative observations were made of water colour, clarity, and the presence or absence of any hydrocarbon sheen or odours.

## 5.6 Groundwater: Field Measurements for Water Quality Parameters

Groundwater indicator parameters including temperature, pH, conductivity, oxidation-reduction potential (“ORP”) and dissolved oxygen were measured prior to sampling to ensure adequate well development and purging. A Horiba U-52 water quality meter was used to measure groundwater quality during monitoring well development and groundwater sampling. The instrument was rented from Maxim environmental services with a certificate of calibration provided.

## 5.7 Groundwater: Sampling

Each monitoring well was purged prior to sample collection. During purging, qualitative observations were made of water colour, clarity, and the presence of hydrocarbon sheen or odour. Low flow purging was completed and deemed complete upon field parameter stabilization. Groundwater sampling was carried out on July 22, 2022 and August 17<sup>th</sup>, 2022.

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 4.

## 5.8 Sediment: Sampling

No sediment samples were collected as part of this investigation.

## 5.9 Soil Vapour: Sampling

Soil vapour probes were purged prior to sample collection. Prior to purging, an initial reading was taken from the probe using an RKI GX-6000 PID capable of reading parts per billion (ppb). During the purge, performance testing was completed on the probe. Soil Vapour performance and leak testing is described in Section 15.13.2. Soil vapour sampling was carried out on November 10<sup>th</sup>, 2022.

## 5.10 Analytical Testing

The contact information for the analytical laboratory: Bureau Veritas, 100-36 Antares Dr., Nepean, Ontario, K2E 7W5 (Katie Szozda, 613-408-5043).

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 MECP.

## 5.11 Residue Management Procedures

All residues produced during the investigation (e.g., soil cuttings from drilling, groundwater from well development purging, wash water from equipment decontamination) were placed in sealed drums and stored at the Phase Two Property for disposal by a MECP licenced waste hauler.

## 5.12 Elevation Surveying

Elevations were determined using a Trimble R10 satellite receiver with horizontal accuracy of 0.02m and vertical accuracy of 0.03m. No benchmark was used.

### 5.12.1.1 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 samples at a minimum frequency of one duplicate for every ten samples.
- The collection of at least one trip blank for sampling events that include the analysis of volatile compounds (e.g. PHC F1, THMs, VOCs, BTEX) in groundwater.
- Calibration of field equipment was performed by the rental store and provided proof with a certificate of calibration.
- Soil and groundwater samples were handled and stored in accordance with the sample collection and preservation requirement of the MECP "*Protocol for Analytical Methods Used in the Assessment of Properties Under Part XV.1 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., Alconox) and, if necessary, an appropriate desorbing wash solution; and thoroughly rinsed with analyte-free deionized 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.



Below is a summary of the primary and duplicate samples.

**Table E: Parent Sample With Duplicate Sample**

Date	Media	Sample ID	Duplicate ID	Trip Blanks
July 19, 2022	Soil	BH22-03_SA1, BH22-05_SA1, BH22-06_SA1 (3 samples)	22-05_SA1 (Dup-1)	NA
July 22, 2022	Groundwater	22-03, 22-05, 22-06 (3 samples)	DUP1 (22-05)	Trip Blank
August 17, 2022	Groundwater	13-02, 18-03, 19-01, 19-02 (4 samples)	DUP-1 (19-02)	NA
November 10, 2022	Soil Vapours	SVP 22-1, SVP22-2 (2 Samples)	DUP-1 (SVP22-2)	NA

### 5.12.2 Vapour Probe Performance and Leak Testing

A leak testing program was implemented to assess whether there may be an introduction of atmospheric air into the soil vapour probes during the sampling program. Leak testing was conducted on probes prior to sampling. The leak test was performed by applying a tracer compound (helium) in a plastic shroud surrounding the probe assembly at the ground surface; a soil gas sample from the probe was then analyzed for helium.

In order to leak test, the soil vapour kit inlet barb was connected to the vapour probe by running a hose through a small hole in the top of the plastic shroud. The vapour probe valve was opened, and the helium analyzer was connected to a second small hole in the top of the shroud. Next, the shroud was slowly filled with ultra-pure helium gas until the measured concentration stabilized (to a minimum of 20%). The sampling pump was then turned on and allowed to run for approximately five minutes. A Tedlar sampling bag was then connected and filled to between 20-50% and analyzed using the helium analyzer. Helium concentrations in the sample bag below 2% of the concentration in the shroud were considered acceptable.

Performance testing was conducted on all probes that were leak tested. The purpose of the performance testing was to verify that an acceptable soil gas flow rate and vacuum could be achieved, and to confirm sampling flow rate for collection of samples for laboratory analysis. Flow and vacuum may vary depending on soil moisture and soil type. A vacuum test from approximately 0 to 2.5 kilopascals (kPa) indicates that soil vapour is readily able to penetrate through the soil and be collected effectively from the probe. The vapour probe was connected to the inlet barb on the soil vapour sampling kit. The pump was turned on and flow was adjusted to approximately 100-200 mL/min for all probes. Once the vacuum/flow stabilized, the readings were recorded.

The leak and performance test results for probes sampled were considered acceptable. The results for all probes are presented in Table F below.

**Table F: Vapour Probe Performance and Leak Detection Testing**

Vapour Probe	Sample Date	Performance Test (flow rate LPM) >0.005 LPM acceptable	Helium in Shroud (%) [>10% target]	Helium in Bag (%) <2% acceptable
SVP-22-1	11-Oct-22	0.1	21.5	0
SVP-22-2	11-Oct-22	0.1	25	0

**Notes:** LPM = litres per minute; N/A = not available

## 6.0 REVIEW AND EVALUATION

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

### 6.1 Geology

The soil conditions encountered during the test pitting and borehole drilling programs are presented in the field logs (Appendix C). The following presents a summary of the subsurface soil conditions encountered during the investigation.

In general, the subsurface stratigraphy within the area of the investigation consists of either a pavement structure or topsoil, both of which having a thickness of around 50 to 100mm. The fill present on Site is interpreted to be reworked native material making it difficult to determine when the fill layer ends. Fill with various proportions of silt, sand and gravel was encountered everywhere on site with a depth of between 0.7 to 1.5 mbgs. Boreholes 22-03 was underlain by was layer of silty clay (weathered crust) with a depth of 1-2.3 mbgs. This was underlain with glacial till until bedrock. Boreholes 22-05 and 22-06 had glacial till below the fill until bedrock was reached.

Based on the soil conditions encountered in the boreholes, the native sandy glacial till is considered to be an unconfined aquifer.

### 6.2 Groundwater: Elevations and Flow Direction

All existing 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 affect the conclusions of the Phase Two ESA.

The bottom of the four existing shallow groundwater monitoring well screens were installed at elevations ranging from approximately 1.5 to 7.6 mbgs. The location and depth of the screens for the three new monitoring wells (22-03, 22-05 and 22-06) were selected based on the issues being investigated and were installed to straddle the water table. A summary of the monitoring well construction details are presented in Table 1. Water levels were taken with an interface probe with the advantage of monitoring for free phase product. No evidence of petroleum hydrocarbon free product or sheen in groundwater was observed.

The elevations of the potentiometric surface at each monitoring well are summarized in Table 2. Groundwater elevations ranged from 72.36 to 74.07 metres above sea level ("masl") (3.26 to 5.04 mbgs) on July 22, 2022 and August 17, 2022. Based on the interpreted groundwater elevation contours presented in Figure 4, the inferred direction of groundwater flow is to the east.

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 a sewer within the central portion of the Site in addition to a large watermain located on the east of the site. The presence of subsurface utilities and structures at the Site are not expected to act as preferential pathways promoting the migration of COC as the structures are located outside the APECs

### 6.3 Coarse Soil Texture

Based on field observations soil at the Phase Two Property is considered to be coarse-textured.

## 6.4 Soil: Field Screening

The results of headspace vapour measurements are presented on the field logs in Appendix B. Combustible gas vapour ranged from 5 to 145 ppm (highest reading measured at BH22-6 between 0 to 0.61 mbgs) and organic vapour measurements were below the PID detection limit of 1ppm at each sample.

## 6.5 Soil: Quality

The reported concentrations of all contaminants of potential concern in soil met the applicable site condition standards with the exception of gravimetric F4 at sample 22-03 SA1 (0-0.61) and EC/SAR at 22-05 SA1. Due to the lack of PHCs elsewhere on site, no evidence of field impacts and discussion with BVL where their chemist inferred the chromatograph was potentially representative of asphalt, the exceedance is inferred to be a contamination with asphaltic origins. The exceedance at 22-03 is not considered to be an exceedance given that it is associated with application of salt in the parking lot for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both on-Site. Furthermore, based on information gathered during the 2022 Phase One ESA, Golder understands that the Site is not used, and has never been used, for manufacturing, processing or bulk storage of salt. As such, as per Section 49.1 of O.Reg. 153/04, as amended, that the concentrations of electrical conductivity and sodium adsorption ratio in soil is not considered exceedances above the applicable site conditions standards. Submitted samples for laboratory analysis can be found in table 3 and analytical results for soil are summarized in Tables 5a to 5e.

## 6.6 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 4. The analytical results for groundwater samples are summarized in Tables 6a to 6d. Certificates of analysis are provided in Appendix D.

The reported concentrations of all groundwater samples met the applicable MECP Table 3 Standards with the exception of chloroform in the sample collected from monitoring well 13-02 and TCE in the samples collected from monitoring wells 18-03 and 19-02.

In addition to the numerical standards, the MECP sets out aesthetic standards relating to the presence of petroleum hydrocarbon product. 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. Monitoring for free phase product was conducted during groundwater sample collection. No evidence of free product or sheen in groundwater was observed.

## 6.7 Sediment: Quality

No sediment samples were collected as part of this investigation.

## 6.8 Soil Vapour: Quality

Soil vapour results were compared to soil vapour screening levels (SVSLs). The SVSLs were calculated by dividing the applicable commercial/industrial Health-Based Indoor Air Criteria (HBIAC) (MOECC, 2016) by an applicable commercial/industrial attenuation factor (0.004) that accounts for the attenuation that occurs from soil vapour to indoor air through subslab foundation (MOE, 2013). In the absence of an HBIAC, the MECP Air Contaminants Benchmarks (ACBs) (MOECC, 2018) were used with the same attenuation factor applied.

COCs in soil vapour were identified using the following approach:

- Parameters that exceeded their applicable screening values were retained as COCs.

- Parameters measured above the detection limit for which no screening values are available were retained as COCs.
- Parameters which were not measured above the limit of detection, but whose detection limits exceeded the screening value, were evaluated on a case-by-case basis.
- Parameters which did not measure above the detection limit for which screening values are unavailable were not retained as COCs.

The soil vapour results are shown in Table 7. Based on the screening approach outlined above, no COCs were identified in soil vapour.

As all parameters met their respective SVSL, risks to human receptors in a future building scenario from the indoor air inhalation pathway is not expected. It is noted that if the results are from a single round of soil vapour sampling; it is general practice to conduct at least two rounds of soil vapour sampling in order to account for seasonal effects.

## 6.9 Data Quality Review

The quality assurance assessment of the field duplicate sample results was conducted according to the MECP document “*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”). A summary of the data quality review findings is presented in Appendix D. Based on this review, the analytical data generated during the investigation are valid and representative and may be used in this Phase Two ESA without further qualification.

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 A(iii).

## 6.10 Phase Two Conceptual Site Model

The Phase Two conceptual site model is presented in the following sections. The location of the Phase Two Property is provided in Figure 1.

### POTENTIAL SOURCES OF CONTAMINATION

#### *Potentially Contaminating Activities*

Based on the information obtained as part of the Phase One ESA, the following potentially contaminating activities (“PCAs”) were identified. The location of each PCA is provided in Figure 2:

**Table G: List of PCAs Presented as APECs**

Potentially Contaminating Activity	Information Source	Rationale for Potential Contribution of the PCA to an APEC
Commercial Autobody Shops – Former auto service garage.	2022 Phase One ESA	Based on the up- to cross-gradient location of this PCA to the Site, and the nature of impacts associated with this PCA which may migrate through groundwater, the presence of this PCA may impact the Phase One Property.
Gasoline and Associated Products Storage in Fixed Tanks	2022 Phase One ESA	Based on the up- to cross-gradient location of this PCA to the Site, and the nature of impacts associated with this PCA which may migrate through groundwater, the presence of this PCA may impact the Phase One Property.

Potentially Contaminating Activity	Information Source	Rationale for Potential Contribution of the PCA to an APEC
Commercial Autobody Shops – Former gasoline service station and auto service garage with associated ASTs and USTs.	2022 Phase One ESA	Based on the up- to cross-gradient location of this PCA to the Site, and the nature of impacts associated with this PCA which may migrate through groundwater, the presence of this PCA may impact the Phase One Property.
Gasoline and Associated Products Storage in Fixed Tanks	2022 Phase One ESA	Based on the up-gradient location of this PCA to the Site, and the nature of impacts associated with this PCA which may migrate through groundwater, the presence of this PCA may impact the Phase One Property.
Commercial Autobody Shops – Former gasoline service station and auto service garage with associated ASTs and USTs.	2022 Phase One ESA	Based on the up-gradient location of this PCA to the Site, and the nature of impacts associated with this PCA which may migrate through groundwater, the presence of this PCA may impact the Phase One Property.
Gasoline and Associated Products Storage in Fixed Tanks	2022 Phase One ESA	While this PCA is located cross-gradient, given its proximity to the Site, as well as reported VOC impacts to groundwater on Site, this PCA is considered to contribute to an APEC on Site.
Ink Manufacturing, Processing and Bulk Storage – Former heating oil tank, and former commercial printing.	2022 Phase One ESA	While this PCA is located cross-gradient, given its proximity to the Site, as well as reported VOC impacts to groundwater on Site, this PCA is considered to contribute to an APEC on Site.
Cosmetics Manufacturing	2022 Phase One ESA	While this PCA is located down-gradient, given its proximity to the Site, as well as reported VOC impacts to groundwater on Site, this PCA is considered to contribute to an APEC on Site.
Gasoline and Associated Products Storage in Fixed Tanks.	2022 Phase One ESA	While this PCA is located down-gradient, given its proximity to the Site, as well as reported VOC impacts to groundwater on Site, this PCA is considered to contribute to an APEC on Site.
Ink Manufacturing, Processing and Bulk Storage – Various former activities including cosmetics manufacturing, commercial printing, and an industrial diesel-powered backup generator.	2022 Phase One ESA	While this PCA is located down-gradient, given its proximity to the Site, as well as reported VOC impacts to groundwater on Site, this PCA is considered to contribute to an APEC on Site.
Metal Treatment, Coating, Plating and Finishing – Former manufacturing, including a spray booth, welding, and lead furnaces.	2022 Phase One ESA	Based on the up- to cross-gradient location of this PCA to the Site, and its proximity to Site, the presence of this PCA may impact the Phase One Property.
Ink Manufacturing, Processing and Bulk Storage – Former warehouse with truck storage at the rear of the building, and former commercial printing.	2022 Phase One ESA	While this PCA is located cross-gradient, given its proximity to the Site, as well as reported VOC impacts to groundwater on Site, this PCA is considered to contribute to an APEC on Site.

Potentially Contaminating Activity	Information Source	Rationale for Potential Contribution of the PCA to an APEC
Gasoline and Associated Products Storage in Fixed Tanks	2022 Phase One ESA	While this PCA is located cross-gradient, given its proximity to the Site, as well as reported VOC impacts to groundwater on Site, this PCA is considered to contribute to an APEC on Site.
Ink Manufacturing, Processing and Bulk Storage – Former commercial printing and equipment sale, located adjacent to the south of the Site.	2022 Phase One ESA	While this PCA is located cross-gradient, given its proximity to the Site, as well as reported VOC impacts to groundwater on Site, this PCA is considered to contribute to an APEC on Site.
Commercial Trucking and Container Terminals – Former truck transport industry and industrial chemical industry located adjacent to the west of the Site.	2022 Phase One ESA	Based on the up- to cross-gradient location of this PCA to the Site, and its proximity to Site, the presence of this PCA may impact the Phase One Property.
Chemical Manufacturing, Processing and Bulk Storage	2022 Phase One ESA	Based on the up- to cross-gradient location of this PCA to the Site, and its proximity to Site, the presence of this PCA may impact the Phase One Property.

## Areas of Potential Environmental Concern

A summary of the APECs identified at the Phase One Property is provided in the following table. The location of each APEC is presented in Figure 3.

**Table H: List of APECs With Potential Contaminant And Potentially Affected Media**

Area of Potential Environmental Concern	Location of APEC on Phase One Property	Potentially Contaminating Activity	Contaminants of Potential Concern	Media Potentially Impacted
APEC 1: PCA ID #10 - Former auto service garage located approximately 200m southwest of the Site.	Western portion of the Site	PCA 10: Commercial Autobody Shops	PHC, BTEX, VOC	Groundwater
APEC 2: PCA ID #11.1 – Former and current auto service garage with associated ASTs and USTs located approximately 90m southwest of the Site.	Western portion of the Site	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks	PHC, BTEX, VOC	Groundwater
APEC 3: PCA ID #11.2 – Former and current auto service garage with associated ASTs and USTs located approximately 90m southwest of the Site.	Western portion of the Site	PCA 10: Commercial Autobody Shops PCA	PHC, BTEX, VOC	Groundwater
APEC 4: PCA ID #12.1 - Former and current auto service garage with associated ASTs located	Western portion of the Site	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks	PHC, BTEX, VOC	Groundwater

Area of Potential Environmental Concern	Location of APEC on Phase One Property	Potentially Contaminating Activity	Contaminants of Potential Concern	Media Potentially Impacted
approximately 180m southwest of the Site.				
APEC 5: PCA ID #12.2 - Former and current auto service garage with associated ASTs located approximately 180m southwest of the Site.	Western portion of the Site	PCA 10: Commercial Autobody Shops	PHC, BTEX, VOC	Groundwater
APEC 6: PCA ID #13.1 - Former heating oil tank located approximately 75m southeast from the Site.	Southeastern portion of the Site	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks	VOC	Groundwater
APEC 7: PCA ID #13.2 - Former commercial printing located approximately 75m southeast from the Site.	Southeastern portion of the Site	PCA 31: Ink Manufacturing, Processing and Bulk Storage	VOC	Groundwater
APEC 8: PCA ID #14.1 – Various former activities including cosmetics manufacturing, located adjacent to the site to the east.	Eastern portion of the Site	PCA 13: Cosmetics Manufacturing, Processing and Bulk Storage	VOC	Groundwater
APEC 9: PCA ID #14.2 – Various former activities including an industrial diesel-powered backup generator, located adjacent to the site to the east.	Eastern portion of the Site	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks	VOC	Groundwater
APEC 10: PCA ID #14.3 – Various former activities including commercial printing located adjacent to the site to the east.	Eastern portion of the Site	PCA 31: Ink Manufacturing, Processing and Bulk Storage	VOC	Groundwater
APEC 11: PCA ID #16 - Former manufacturing, including a spray booth, welding, and lead furnaces, located approximately 100m southwest of the Site.	Western portion of the Site	PCA 33: Metal Treatment, Coating, Plating and Finishing	Metals, VOC	Groundwater
APEC 12: PCA ID #17.1 - Former commercial printing located approximately 45 m south of the Site.	Western portion of the Site	31. Ink Manufacturing, Processing and Bulk Storage	PHC, BTEX, VOC	Groundwater
APEC 13: PCA ID #17.2 - Former warehouse with truck storage at the rear of the building located approximately 45 m south of the Site.	Western portion of the Site	PCA 28: Gasoline and Associated Products Storage in Fixed Tank	PHC, BTEX, VOC	Groundwater
APEC 14: PCA ID #18 – Former commercial printing and	Southeastern portion of the Site	PCA 31: Ink Manufacturing,	VOC	Groundwater

Area of Potential Environmental Concern	Location of APEC on Phase One Property	Potentially Contaminating Activity	Contaminants of Potential Concern	Media Potentially Impacted
equipment sale, located adjacent to the south of the Site.		Processing and Bulk Storage		
APEC 15: PCA ID #20 - Former truck transport industry located adjacent to the west of the Site.	Western portion of the Site	PCA 11: Commercial Trucking and Container Terminals	VOC, PHC, BTEX	Groundwater
APEC 16: PCA ID #20 - Former industrial chemical industry located adjacent to the west of the Site.	Western portion of the Site	PCA 8: Chemical Manufacturing, Processing and Bulk Storage	VOC, PHC, BTEX	Groundwater

A summary of the investigation for each APEC is provided in the following sections.

- APEC 1** The investigation included the Installation of Monitoring well 22-05 and resampling of 19-01 with analysis of VOC, PHC, BTEX. The reported concentrations of all COCs were below the applicable site condition standards.
- APEC 2** The investigation included the Installation of Monitoring well 22-05 and resampling of 19-01 with analysis of VOC, PHC, BTEX. The reported concentrations of all COCs were below the applicable site condition standards.
- APEC 3** The investigation included the Installation of Monitoring well 22-05 and resampling of 19-01 with analysis of VOC, PHC, BTEX. The reported concentrations of all COCs were below the applicable site condition standards.
- APEC 4** The investigation included the Installation of Monitoring well 22-05 and resampling of 19-01 with analysis of VOC, PHC, BTEX. The reported concentrations of all COCs were below the applicable site condition standards.
- APEC 5** The investigation included the Installation of Monitoring well 22-05 and resampling of 19-01 with analysis of VOC, PHC, BTEX. The reported concentrations of all COCs were below the applicable site condition standards.
- APEC 6** Previous investigation indicated contamination of TCE in well 19-02. The 2022 investigation included the Installation of monitoring well 22-06 and resampling of 18-03 and 19-02 with analysis for VOC. The reported concentrations of all COCs were below the applicable site condition standards with the exception of TCE in 18-03 and 19-02.
- APEC 7** Previous investigation indicated contamination of TCE in well 19-02. The 2022 investigation included the Installation of Monitoring well 22-06 and resampling of 18-03 and 19-02 with analysis of VOC. The reported concentrations of all COCs were below the applicable site condition standards with the exception of TCE in 18-03 and 19-02.
- APEC 8** Previous investigation indicated contamination of TCE in well 19-02. The 2022 investigation included the Installation of Monitoring well 22-03, 22-06 and resampling of 18-03 and 19-02 with analysis of VOC. The reported concentrations of all COCs were below the applicable site condition standards with the exception of TCE in 18-03 and 19-02.



- APEC 9** Previous investigation indicated contamination of TCE in well 19-02. The 2022 investigation included the Installation of Monitoring well 22-03, 22-06 and resampling of 18-03 and 19-02 with analysis of VOC. The reported concentrations of all COCs were below the applicable site condition standards with the exception of TCE in 18-03 and 19-02.
- APEC 10** Previous investigation indicated contamination of TCE in well 19-02. The 2022 investigation included the Installation of Monitoring well 22-03, 22-06 and resampling of 18-03 and 19-02 with analysis of VOC. The reported concentrations of all COCs were below the applicable site condition standards with the exception of TCE in 18-03 and 19-02.
- APEC 11** The investigation included the Installation of Monitoring well 22-05 and resampling of 19-01 with analysis of Metals in well 22-05 and VOC in both wells. The reported concentrations of all COCs were below the applicable site condition standards.
- APEC 12** The investigation included the Installation of Monitoring well 22-05 and resampling of 19-01 with analysis of VOC, PHC, BTEX. The reported concentrations of all COCs were below the applicable site condition standards.
- APEC 13** The investigation included the Installation of Monitoring well 22-05 and resampling of 19-01 with analysis of VOC, PHC, BTEX. The reported concentrations of all COCs were below the applicable site condition standards.
- APEC 14** Previous investigation indicated contamination of TCE in well 19-02. The 2022 investigation included the Installation of Monitoring well 22-03, 22-06 and resampling of 18-03 and 19-02 with analysis of VOC. The reported concentrations of all COCs were below the applicable site condition standards with the exception of TCE in 18-03 and 19-02.
- APEC 15** The investigation included the Installation of Monitoring well 22-05 and resampling of 19-01 with analysis of VOC, PHC, BTEX. The reported concentrations of all COCs were below the applicable site condition standards.
- APEC 16** The investigation included the Installation of Monitoring well 22-05 and resampling of 19-01 with analysis of VOC, PHC, BTEX. The reported concentrations of all COCs were below the applicable site condition standards.

Given the presence of TCE and chloroform in groundwater greater than the MECP Table 3 Standards at APECs 6, 7, 8, 9,10 and 14 a potential risk was identified with the presence of volatiles in groundwater as a potential source of vapours into future site building(s). As such a soil vapour sampling program was conducted to evaluate this potential. Based on the results of the soil vapour assessment due diligence risk analysis (DDRA), potential risks from vapour intrusion from VOC impacted groundwater were deemed to be low. The results of the soil DDRA were based on a single round of soil vapour sampling; it is general practice to conduct at least two rounds of soil vapour sampling in order to account for seasonal effects.

### **Subsurface Structures and Utilities**

Underground utility drawings available for the Phase Two Property indicated a Sewer line passing through the centre of the Site and a water main on the eastern boundary of the Site. The presence of subsurface utilities and structures at the Site are not expected to act as preferential pathways promoting the migration of COCs as the water table is not inferred to intercept buried utilities and subsurface structures at the Phase Two Property and no COCs are present in groundwater exceeding the Site condition standards.

Potable water in the vicinity of the Site is provided by municipal water distribution and the water is obtained from the river located over 2km North of the Site. The Site and surrounding area are serviced with hydro and telecommunication.

The site building is a two-storey building located in the southwest portion of the building. The depth and location of building foundations and footings are unknown. Future site plan considerations indicate the current building will be removed and two new buildings will be built on Site without basements.

## **PHYSICAL SETTING**

### **Stratigraphy**

Fill material was encountered after the topsoil or Asphalt material for most boreholes. Some boreholes had some layers of silty clay although fill material is the predominant material on site. The fill materials encountered at the Phase Two Property predominantly consisted of variable sands and gravel. Bedrock was encountered during the Phase Two ESA at a variable depths of between 4 and 7mbgs.

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

### **Depth to Bedrock**

Bedrock was encountered during the Phase Two investigation at a variable depth of 4 to 5.6 mbgs.

### **Hydrogeological Characteristics**

The regional groundwater flow direction is expected to be towards the Ottawa River to the northwest. Groundwater in the immediate vicinity of the Phase Two Property, inferred to be to the east. Previous reports indicate the groundwater to flow towards the northwest. Figure 6 shows groundwater elevations and the interpreted groundwater flow direction.

### **Depth to Groundwater**

The depth to the water table ranged from 3.27 to 4.16 mbgs in July and August 2022.

## **SITE CONDITION STANDARDS**

### **Environmentally Sensitive Areas**

An area of natural significance is not located within 30 meters of the Phase Two Property. Accordingly, Section 41 of the Regulation does not apply to the Phase Two Property.

### **Shallow Soil Property or Water Body**

Overburden thickness at the Site extends to the depth of drilling of below 5mbgs and the reported depth to bedrock is between 5 mbgs. The property does not include all or part of a water body and is not adjacent to a water body or include land that is within 30 metres of a water body. Accordingly, Section 43.1 of the Regulation does not apply to the Phase Two Property.

### **Proposed Buildings and Other Structures**

Renovations or modifications to the Site building are proposed. Currently, there is no intention to use the Phase Two Property for residential purposes and its current use will continue. The location of any proposed commercial buildings and other structures is known and located on Figure 5.

## **DELINEATION OF CONTAMINANT IMPACTS**

### ***APEC Where Contaminants are Present at a Concentration Above the Applicable Site Condition Standard***

The reported concentrations of all soil and groundwater samples submitted for analysis with the exception of soil sample 22-03 SA1 and groundwater samples collected from 13-02, 18-03 and 19-02 indicate that with the exception of APECs 6, 7 and 14, soil and groundwater quality meets the applicable site condition standards.

### ***Contaminant Distribution***

PHC F4 (gravimetric) impacts were identified at soil sample 22-03 SA1 and VOC impacts were identified at groundwater samples collected from monitoring wells 13-02, 18-03 and 19-02. Delineation was not completed as part of this Phase Two ESA.

### ***Potential Reason for Discharge into the Environment at the Site***

No discharge of contaminants have occurred on, in or under the Phase Two property which has resulted in impacts at concentrations greater than the applicable site condition standards.

### ***Contaminant Migration***

Groundwater samples collected from 18-03 and 19-02 are inferred to have migrated from the south of the Site from off-site APECs. Dissolved phase VOCs present in groundwater would likely migrate along the direction of groundwater flow, inferred to be towards the east in 2022.

### ***Meteorological and Climatic Considerations***

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.

### ***Soil Vapour Intrusion Pathways***

The depth of future building foundations and footings are unknown; however, there is no basement. Groundwater contamination was present below proposed building footings. Soil vapour probes were installed, and samples were sent for analysis of VOCs. Soil vapour results were compared to soil vapour screening levels (SVSLs). The SVSLs were calculated by dividing the applicable commercial/industrial Health-Based Indoor Air Criteria (HBIAC) (MOECC, 2016) by an applicable commercial/industrial attenuation factor (0.004) that accounts for the attenuation that occurs from soil vapour to indoor air through subslab foundation (MOE, 2013). In the absence of an HBIAC, the MECP Air Contaminants Benchmarks (ACBs) (MOECC, 2018) were used with the same attenuation factor applied. No contaminants were present at concentrations greater than the derived standards.

## **POTENTIAL EXPOSURE PATHWAYS AND RECEPTORS**

The Site is developed with one two-storey commercial building. The proposed future use of the Site remains commercial. Surrounding land uses are community, residential, and commercial.

The Site is highly developed and considered to provide poor quality habitat for ecological receptors. No surface water bodies are located on-Site; the nearest off-Site water body is located over 2.1 km away.

No soil exceedances attributable to APECs were identified at the Site (see section 6.5 for full discussion). A few exceedances of TCE were identified in groundwater (section 6.6). One round of soil vapour sampling has been completed at the Site (section 6.8); based on these results, soil vapour intrusion is unlikely to be a concern.

Potential release and transport mechanisms and exposure pathways for human and ecological receptors are summarized in Figure 16 and 17, respectively.

The following receptors and exposure pathways were considered operable:

### Human Health

- Inhalation of vapour in outdoor air sourced from groundwater and exposure by a subsurface worker, outdoor worker, and site visitor; and,
- Inhalation of vapour in trench air sourced from groundwater and exposure by a subsurface worker.

### Ecological Health

- Inhalation of vapour in outdoor air sourced from groundwater by mammals & birds; and,
- Stem and foliar uptake of vapours sourced from groundwater by plants.

## 7.0 CONCLUSIONS

The Phase Two ESA investigated the 14 APECs identified in the 2022 Phase One ESA.

Based on the results of the soil and groundwater samples submitted as part of this Phase Two ESA, the reported groundwater results were above standards for TCE (two monitoring wells) and chloroform (one monitoring well). Given the presence of TCE and chloroform in groundwater greater than the MECP Table 3 Standards a potential risk was identified with the presence of volatiles in groundwater as a potential source of vapours into future site building(s). As such a soil vapour sampling program was conducted to evaluate this potential. Based on the results of the soil vapour assessment due diligence risk analysis (DDRA), potential risks from vapour intrusion from VOC impacted groundwater were deemed to be low. The results of the soil DDRA were based on a single round of soil vapour sampling; it is general practice to conduct at least two rounds of soil vapour sampling in order to account for seasonal effects.

During site re-development, confirmatory sampling around monitoring well 22-03 where one shallow PHC F4 (gravimetric) exceedances was identified, limited additional sampling is recommended.

## 8.0 REFERENCES

Geotechnical Investigation Proposed New Office Building - Phase I, Golder, Ontario, March 2019

MOE (Ontario Ministry of Environment). 2013. Draft Technical Guidance: Soil Vapour Intrusion Assessment. September 2013. PIBS #8477.

MOECC (Ministry of Environment and Climate Change), 2016. Modified Generic Risk Assessment Approved Model, November 1, 2016. Queen's Printer for Ontario, 2016.

Ontario Ministry of the Environment, Conservation and Parks (MECP), 2018. Ontario Air Contaminants Benchmark (ACB) List: Standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants. Version 2.0 - April 2018.

Phase I Environmental Site Assessment 864 Lady Ellen Place Ottawa, Ontario, Golder, Ontario, May 2013

Phase II Environmental Site Assessment 864 Lady Ellen Place Ottawa, Ontario, Golder, Ontario, September 2013

Phase One Environmental Site Assessment, Golder, Ontario, December 2022

Phase One Environmental Site Assessment, Golder, Ontario, May 2019

Phase Two Environmental Site Assessment, Golder, Ontario, December 2019

## 9.0 LIMITATIONS

This report was prepared for the exclusive use of Access Property Development. 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.

## 10.0 SIGNATURES

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

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

## Signature Page

### Golder Associates Ltd.



Philippe Chevette, BEng  
*Environmental Consultant*



Paul Hurst, PEng, MASc  
*Principal, Environmental Engineer*

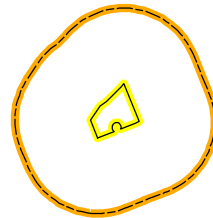
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**APPENDIX A**

**Figures**



**LEGEND**

-  PHASE ONE PROPERTY BOUNDARY
-  PHASE ONE STUDY AREA (250 m RADIUS)



**NOTE(S)**

1. PHASE ONE PROPERTY CENTROID COORDINATES = 441843.38 E, 5025406.73 N.
2. PHASE ONE PROPERTY BOUNDARY AREA = 1.45 HECTARES.

**REFERENCE(S)**

1. BASE MAP SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
2. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 1983 COORDINATE SYSTEM: UTM ZONE 18N.

CLIENT

J.L.RICHARDS & ASSOCIATES LTD.

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
864 LADY ELLEN PLACE, OTTAWA, ONTARIO

TITLE

**KEY PLAN**

CONSULTANT

YYYY-MM-DD 2022-12-20

DESIGNED CW

PREPARED MG

REVIEWED PC

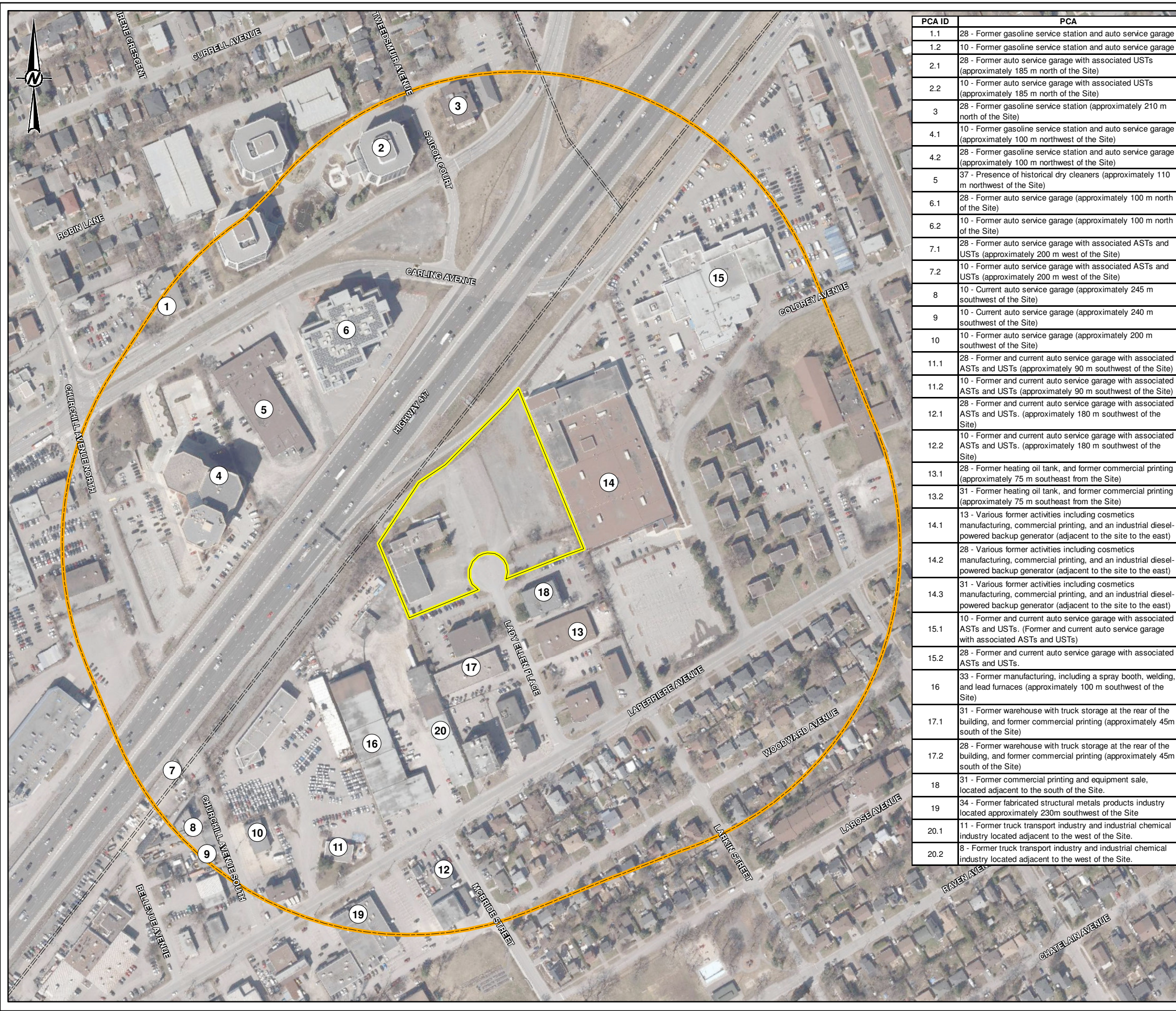
APPROVED PH

PROJECT NO.  
22524317

CONTROL  
0003

REV.  
0

FIGURE  
1



PCA ID	PCA
1.1	28 - Former gasoline service station and auto service garage
1.2	10 - Former gasoline service station and auto service garage
2.1	28 - Former auto service garage with associated USTs (approximately 185 m north of the Site)
2.2	10 - Former auto service garage with associated USTs (approximately 185 m north of the Site)
3	28 - Former gasoline service station (approximately 210 m north of the Site)
4.1	10 - Former gasoline service station and auto service garage (approximately 100 m northwest of the Site)
4.2	28 - Former gasoline service station and auto service garage (approximately 100 m northwest of the Site)
5	37 - Presence of historical dry cleaners (approximately 110 m northwest of the Site)
6.1	28 - Former auto service garage (approximately 100 m north of the Site)
6.2	10 - Former auto service garage (approximately 100 m north of the Site)
7.1	28 - Former auto service garage with associated ASTs and USTs (approximately 200 m west of the Site)
7.2	10 - Former auto service garage with associated ASTs and USTs (approximately 200 m west of the Site)
8	10 - Current auto service garage (approximately 245 m southwest of the Site)
9	10 - Current auto service garage (approximately 240 m southwest of the Site)
10	10 - Former auto service garage (approximately 200 m southwest of the Site)
11.1	28 - Former and current auto service garage with associated ASTs and USTs (approximately 90 m southwest of the Site)
11.2	10 - Former and current auto service garage with associated ASTs and USTs (approximately 90 m southwest of the Site)
12.1	28 - Former and current auto service garage with associated ASTs and USTs. (approximately 180 m southwest of the Site)
12.2	10 - Former and current auto service garage with associated ASTs and USTs. (approximately 180 m southwest of the Site)
13.1	28 - Former heating oil tank, and former commercial printing (approximately 75 m southeast from the Site)
13.2	31 - Former heating oil tank, and former commercial printing (approximately 75 m southeast from the Site)
14.1	13 - Various former activities including cosmetics manufacturing, commercial printing, and an industrial diesel-powered backup generator (adjacent to the site to the east)
14.2	28 - Various former activities including cosmetics manufacturing, commercial printing, and an industrial diesel-powered backup generator (adjacent to the site to the east)
14.3	31 - Various former activities including cosmetics manufacturing, commercial printing, and an industrial diesel-powered backup generator (adjacent to the site to the east)
15.1	10 - Former and current auto service garage with associated ASTs and USTs. (Former and current auto service garage with associated ASTs and USTs)
15.2	28 - Former and current auto service garage with associated ASTs and USTs.
16	33 - Former manufacturing, including a spray booth, welding, and lead furnaces (approximately 100 m southwest of the Site)
17.1	31 - Former warehouse with truck storage at the rear of the building, and former commercial printing (approximately 45m south of the Site)
17.2	28 - Former warehouse with truck storage at the rear of the building, and former commercial printing (approximately 45m south of the Site)
18	31 - Former commercial printing and equipment sale, located adjacent to the south of the Site.
19	34 - Former fabricated structural metals products industry located approximately 230m southwest of the Site
20.1	11 - Former truck transport industry and industrial chemical industry located adjacent to the west of the Site.
20.2	8 - Former truck transport industry and industrial chemical industry located adjacent to the west of the Site.

**LEGEND**

- UTILITY LINE
- PHASE ONE PROPERTY BOUNDARY
- PHASE ONE STUDY AREA (250 M RADIUS)

0 50 100  
1:3,000 METRES

**NOTE(S)**

- PHASE ONE PROPERTY CENTROID COORDINATES = 441843.38 E, 5025406.73 N.
- PHASE ONE PROPERTY BOUNDARY AREA = 1.45 HECTARES.

**REFERENCE(S)**

- BASE DATA - LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2022
- BASE IMAGERY
- PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 1983 COORDINATE SYSTEM: UTM ZONE 18N.

CLIENT  
J.L.RICHARDS & ASSOCIATES LTD.

PROJECT  
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
864 LADY ELLEN PLACE, OTTAWA, ONTARIO

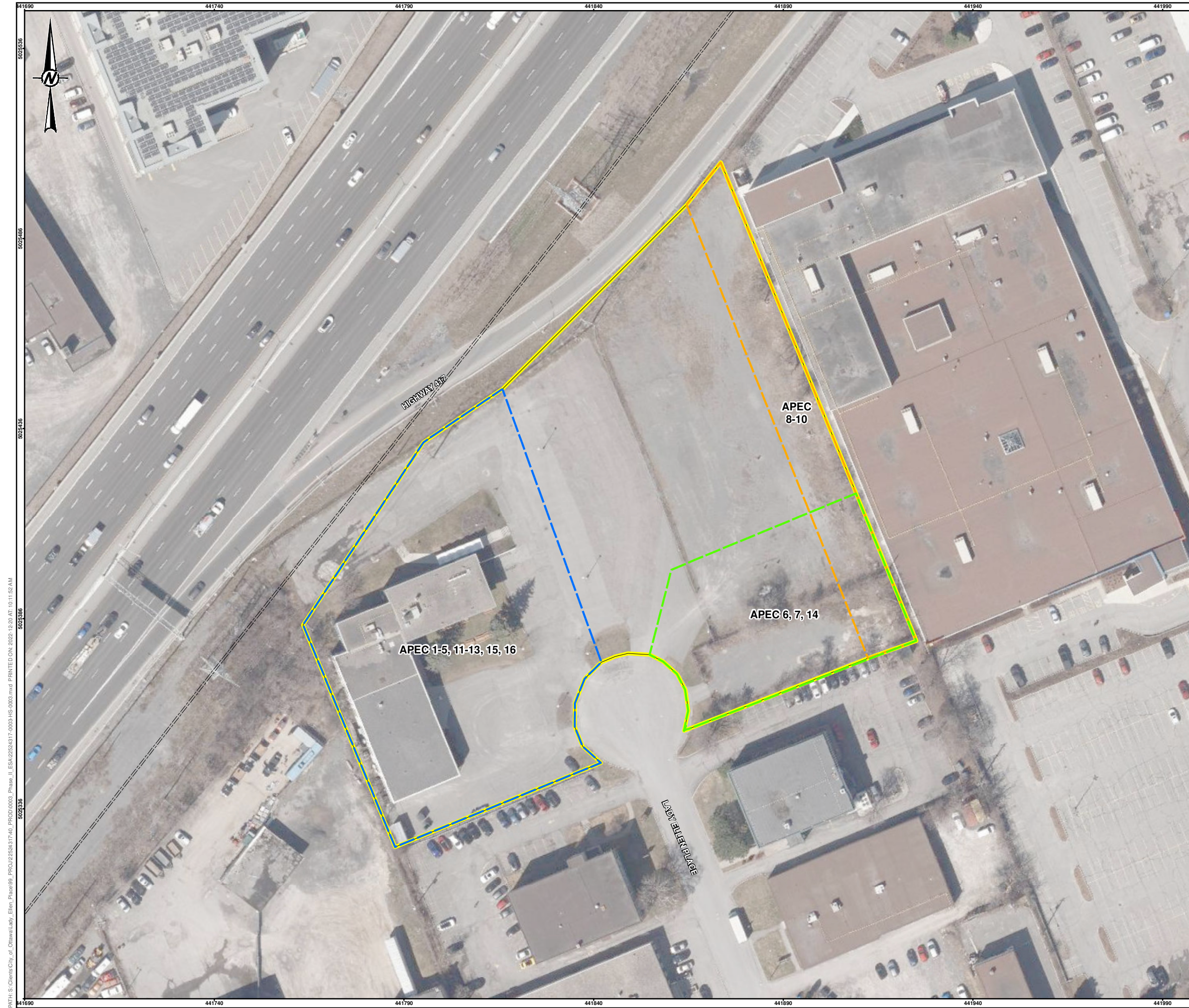
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CONSULTANT	YYYY-MM-DD	2022-12-20
DESIGNED	CW	
PREPARED	MG	
REVIEWED	CP	
APPROVED	PH	

PROJECT NO. 22524317 CONTROL 0003 REV. 0 FIGURE 2

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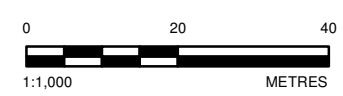
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**LEGEND**

- UTILITY LINE
- APEC 1-5, 11-13, 15, 16
- APEC 6, 7, 14
- APEC 8-10
- PHASE ONE PROPERTY BOUNDARY

APEC ID	Potentially Contaminating Activity
APEC 1	PCA ID 10: 10 - Commercial Autobody Shops
APEC 2	PCA ID 11.1: 28 - Gasoline and Associated Products Storage in Fixed Tanks
APEC 3	PCA ID 11.2: 10 - Commercial Autobody Shops
APEC 4	PCA ID 12.1: 28 - Gasoline and Associated Products Storage in Fixed Tanks
APEC 5	PCA ID 12.2: 10 - Commercial Autobody Shops
APEC 6	PCA ID 13.1: 28 - Gasoline and Associated Products Storage in Fixed Tanks
APEC 7	PCA ID 13.2: 31 - Ink Manufacturing, Processing and Bulk Storage
APEC 8	PCA ID 14.1: 13 - Cosmetics Manufacturing, Processing and Bulk Storage
APEC 9	PCA ID 14.2: 28 - Gasoline and Associated Products Storage in Fixed Tanks
APEC 10	PCA ID 14.3: 31 - Ink Manufacturing, Processing and Bulk Storage
APEC 11	PCA ID 16: 33 - Metal Treatment, Coating, Plating and Finishing
APEC 12	PCA ID 17.1: 31 - Ink Manufacturing, Processing and Bulk Storage
APEC 13	PCA ID 17.2: 28 - Gasoline and Associated Products Storage in Fixed Tanks
APEC 14	PCA ID 18: 31 - Ink Manufacturing, Processing and Bulk Storage
APEC 15	PCA ID 20: 20 - Explosives and Ammunition Manufacturing, Production and Bulk Storage
APEC 16	PCA ID 20: 8 - Chemical Manufacturing, Processing and Bulk Storage



**NOTE(S)**

1. PHASE ONE PROPERTY CENTROID COORDINATES = 441843.38 E, 5025406.73 N.
2. PHASE ONE PROPERTY BOUNDARY AREA = 1.45 HECTARES.
3. SEE FIGURE 2A FOR PCA LOCATIONS AND DESCRIPTIONS

**REFERENCE(S)**

1. BASE DATA - LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2022
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CLIENT  
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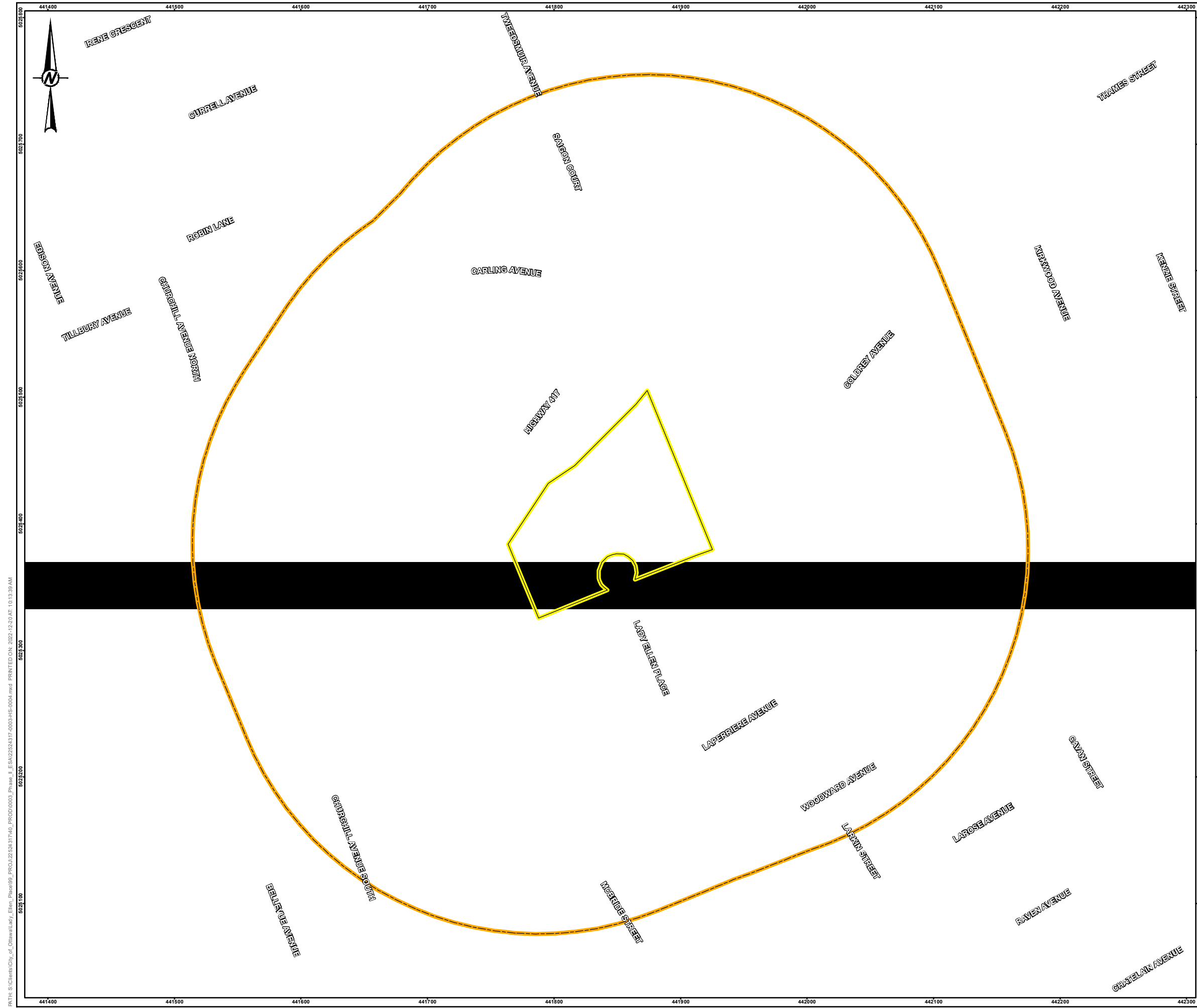
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PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
864 LADY ELLEN PLACE, OTTAWA, ONTARIO

TITLE  
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	PREPARED	MG
	REVIEWED	CP
	APPROVED	PH

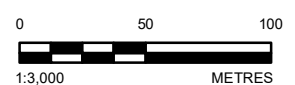
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**LEGEND**

- UTILITY LINE
- WATERCOURSE
- WATERBODY
- WETLAND
- PROVINCIALY SIGNIFICANT WETLAND
- SIGNIFICANT ECOLOGICAL AREA
- ANSI, EARTH SCIENCE
- ANSI, LIFE SCIENCE
- CANDIDATE ANSI, EARTH SCIENCE
- CANDIDATE ANSI, LIFE SCIENCE
- PHASE ONE PROPERTY BOUNDARY
- PHASE ONE STUDY AREA (250 m RADIUS)



**NOTE(S)**

1. PHASE ONE PROPERTY CENTROID COORDINATES = 441843.38 E, 5025406.73 N.
2. PHASE ONE PROPERTY BOUNDARY AREA = 1.45 HECTARES.
3. NO AREAS OF NATURAL SIGNIFICANCE APPARENT WITHIN THE STUDY AREA.

**REFERENCE(S)**

1. BASE DATA - LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2022
2. BASE IMAGERY SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

CLIENT  
**J.L.RICHARDS & ASSOCIATES LTD.**

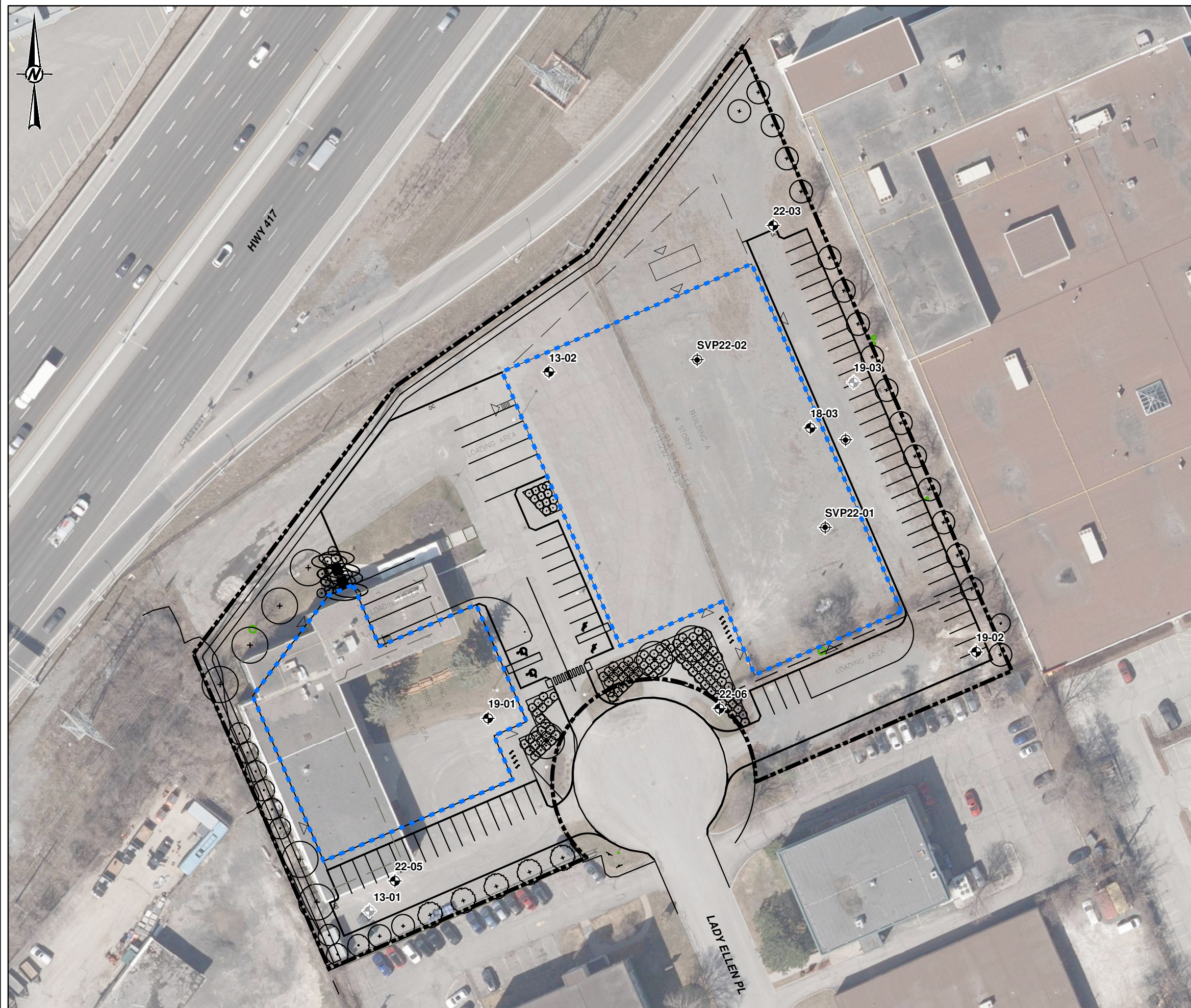
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**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 864 LADY ELLEN PLACE, OTTAWA, ONTARIO**

TITLE  
**TOPOGRAPHIC MAP AND AREAS OF NATURAL SIGNIFICANCE**

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DESIGNED	CW	
PREPARED	MG	
REVIEWED	CP	
APPROVED	PH	

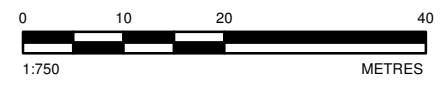
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SCALE 1:25,000

- LEGEND**
- MONITORING WELL LOCATION
  - MONITORING WELL LOCATION (DESTROYED OR INACCESSIBLE)
  - SOIL VAPOUR PROBE LOCATION
  - PROPOSED BUILDING FOOTPRINT
  - SITE BOUNDARY



**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  
**ACCESS PROPERTY DEVELOPMENT**

PROJECT  
**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
864 LADY ELLEN PLACE, OTTAWA, ONTARIO**

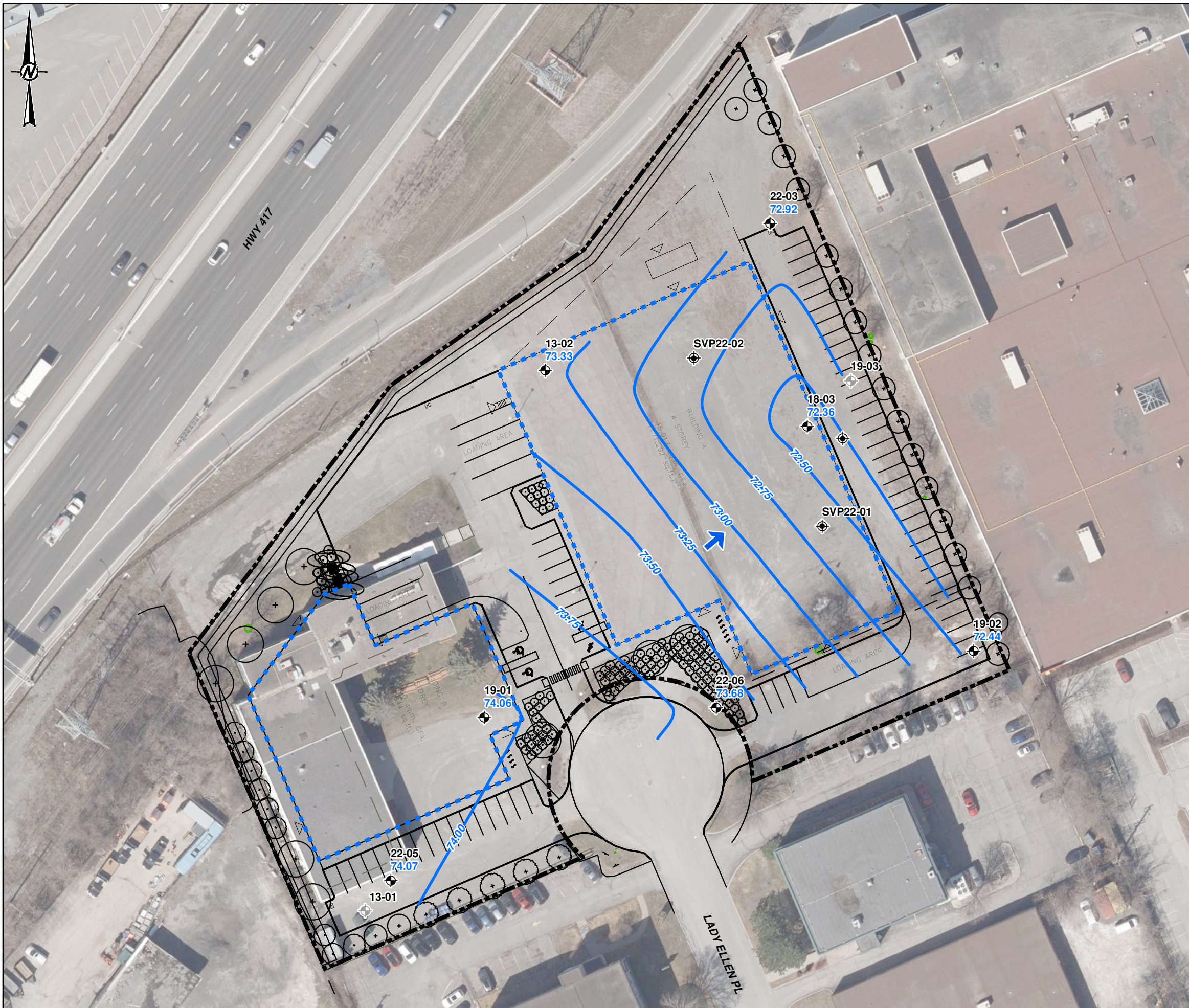
TITLE  
**SITE PLAN**

CONSULTANT	YYYY-MM-DD	2022-12-20
	DESIGNED	----
	PREPARED	JEM
	REVIEWED	CP
	APPROVED	PH

PROJECT NO. 22524317 CONTROL 0003 REV. 0 FIGURE 5

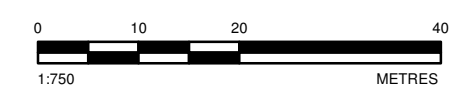
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**LEGEND**

- MONITORING WELL LOCATION
- MONITORING WELL LOCATION (DESTROYED OR INACCESSIBLE)
- SOIL VAPOUR PROBE LOCATION
- PROPOSED BUILDING FOOTPRINT
- SITE BOUNDARY
- 99.99 GROUNDWATER ELEVATION, mASL (AUGUST 17 & 22, 2022)
- GROUNDWATER ELEVATION CONTOUR, mASL
- INTERPRETED GROUNDWATER FLOW DIRECTION



**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  
ACCESS PROPERTY DEVELOPMENT

PROJECT  
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
864 LADY ELLEN PLACE, OTTAWA, ONTARIO

TITLE  
**GROUNDWATER ELEVATIONS AND INTERPRETED  
GROUNDWATER FLOW DIRECTION**

CONSULTANT	YYYY-MM-DD	2022-12-20
	DESIGNED	----
	PREPARED	JEM
	REVIEWED	CP
	APPROVED	PH

PROJECT NO.	CONTROL	REV.	FIGURE
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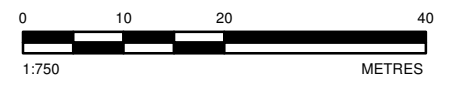
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Sample Date	<b>MECP Table 3</b>	19-July-2022
Sample Depth (mbgs)	<b>Standards (I/C/C)</b>	0-0.61
Parameters Analyzed		PHCs and BTEX
<b>Gravimetric F4</b>	3300 µg/g	6200

Sample ID		<b>22-06 SA1</b>
Sample Date	<b>MECP Table 3</b>	19-July-2022
Sample Depth (mbgs)	<b>Standards (I/C/C)</b>	0-0.61
Parameters Analyzed		PHCs and BTEX
Sample complies with MECP Table 3 Standards (I/C/C) for PHCs and BTEX		

Sample ID		<b>22-05 SA1</b>	<b>DUP-1</b>
Sample Date	<b>MECP Table 3</b>	20-July-2022	
Sample Depth (mbgs)	<b>Standards (I/C/C)</b>	0.15-0.76	
Parameters Analyzed		PHCs and BTEX	
Sample complies with MECP Table 3 Standards (I/C/C) for PHCs and BTEX			

**LEGEND**

- MONITORING WELL LOCATION
- SOIL VAPOUR PROBE LOCATION
- ALL SAMPLES MEET MECP TABLE 3 STANDARDS
- ONE OR MORE SAMPLE EXCEEDS MECP TABLE 3 STANDARDS
- PROPOSED BUILDING FOOTPRINT
- SITE BOUNDARY



**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  
**ACCESS PROPERTY DEVELOPMENT**

PROJECT  
**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
864 LADY ELLEN PLACE, OTTAWA, ONTARIO**

TITLE  
**SOIL EXCEEDANCES - PHCs**

CONSULTANT	YYYY-MM-DD	2022-12-20
<b>GOLDER</b>	DESIGNED	----
	PREPARED	JEM
	REVIEWED	CP
	APPROVED	PH

PROJECT NO.	CONTROL	REV.	FIGURE
22524317	0003	0	7

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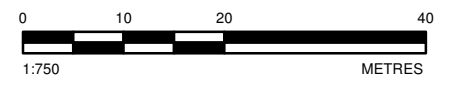


Sample ID	MECP Table	22-03 SA1
Sample Date	3 Standards	19-July-2022
Sample Depth (mbgs)	(I/C/C)	0-0.61
Parameters Analyzed		VOCs
Sample complies with MECP Table 3 Standards (I/C/C) for VOCs		

Sample ID	MECP Table	22-06 SA1
Sample Date	3 Standards	19-July-2022
Sample Depth (mbgs)	(I/C/C)	0-0.61
Parameters Analyzed		VOCs
Sample complies with MECP Table 3 Standards (I/C/C) for VOCs		

Sample ID	MECP Table	22-05 SA1	DUP-1
Sample Date	3 Standards	20-July-2022	20-July-2022
Sample Depth (mbgs)	(I/C/C)	0.15-0.76	Field duplicate of SA1
Parameters Analyzed		VOCs	
Sample complies with MECP Table 3 Standards (I/C/C) for VOCs			

- LEGEND**
- MONITORING WELL LOCATION
  - SOIL VAPOUR PROBE LOCATION
  - ALL SAMPLES MEET MECP TABLE 3 STANDARDS
  - PROPOSED BUILDING FOOTPRINT
  - SITE BOUNDARY



**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**  
ACCESS PROPERTY DEVELOPMENT

**PROJECT**  
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
864 LADY ELLEN PLACE, OTTAWA, ONTARIO

**TITLE**  
SOIL EXCEEDANCES - VOCs

CONSULTANT	YYYY-MM-DD	2022-12-20
	DESIGNED	----
	PREPARED	JEM
	REVIEWED	CP
	APPROVED	PH

PROJECT NO.	CONTROL	REV.	FIGURE
22524317	0003	0	8

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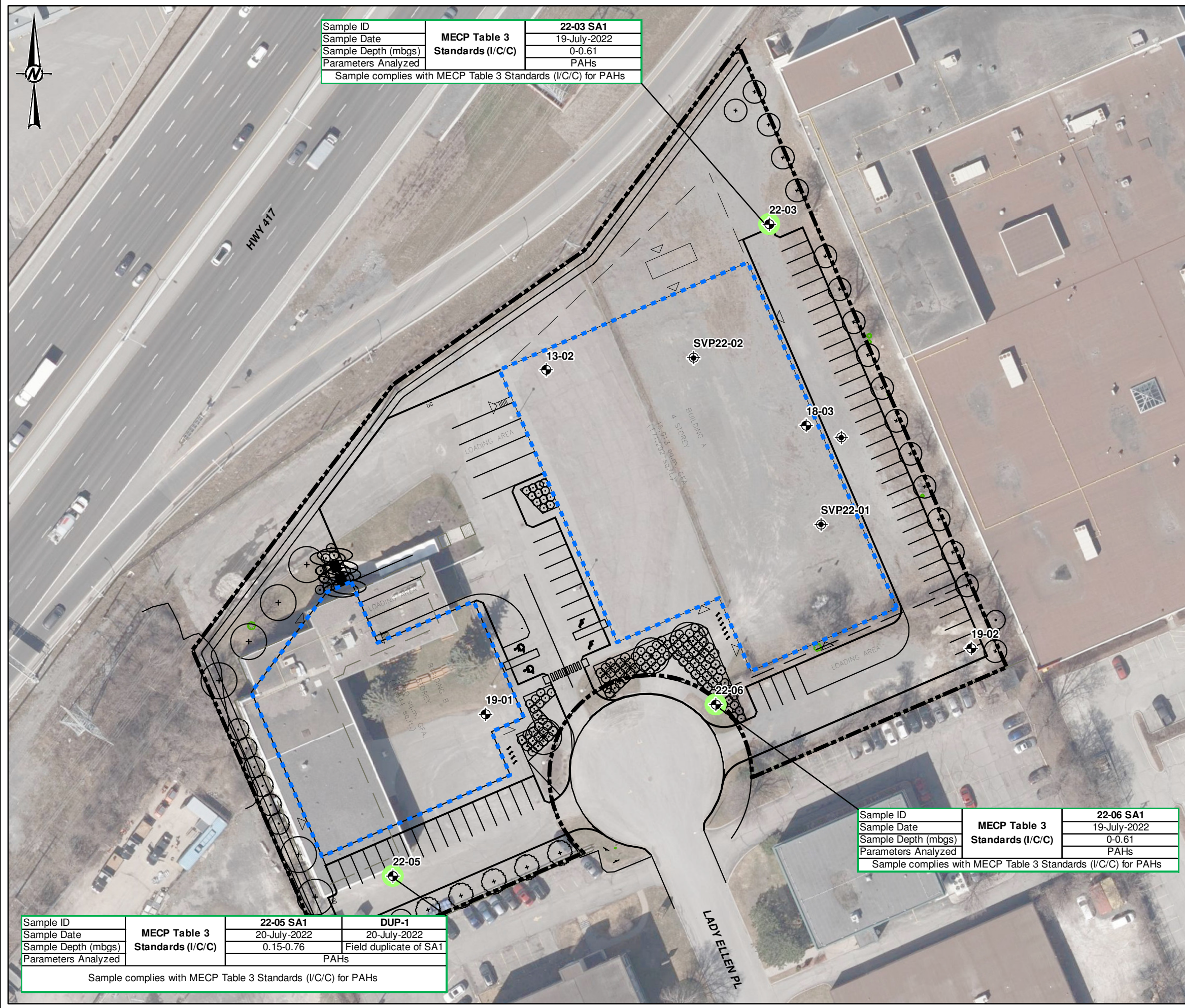
25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



Sample ID	MECP Table 3	22-03 SA1
Sample Date		19-July-2022
Sample Depth (mbgs)	Standards (I/C/C)	0-0.61
Parameters Analyzed		PAHs
Sample complies with MECP Table 3 Standards (I/C/C) for PAHs		

**LEGEND**

- MONITORING WELL LOCATION
- SOIL VAPOUR PROBE LOCATION
- ALL SAMPLES MEET MECP TABLE 3 STANDARDS
- PROPOSED BUILDING FOOTPRINT
- SITE BOUNDARY



Sample ID	MECP Table 3	22-05 SA1	DUP-1
Sample Date		20-July-2022	20-July-2022
Sample Depth (mbgs)	Standards (I/C/C)	0.15-0.76	Field duplicate of SA1
Parameters Analyzed		PAHs	
Sample complies with MECP Table 3 Standards (I/C/C) for PAHs			

Sample ID	MECP Table 3	22-06 SA1
Sample Date		19-July-2022
Sample Depth (mbgs)	Standards (I/C/C)	0-0.61
Parameters Analyzed		PAHs
Sample complies with MECP Table 3 Standards (I/C/C) for PAHs		

**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  
**ACCESS PROPERTY DEVELOPMENT**

PROJECT  
**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
864 LADY ELLEN PLACE, OTTAWA, ONTARIO**

TITLE  
**SOIL EXCEEDANCES - PAHs**

CONSULTANT	YYYY-MM-DD	2022-12-20
	DESIGNED	----
	PREPARED	JEM
	REVIEWED	CP
	APPROVED	PH

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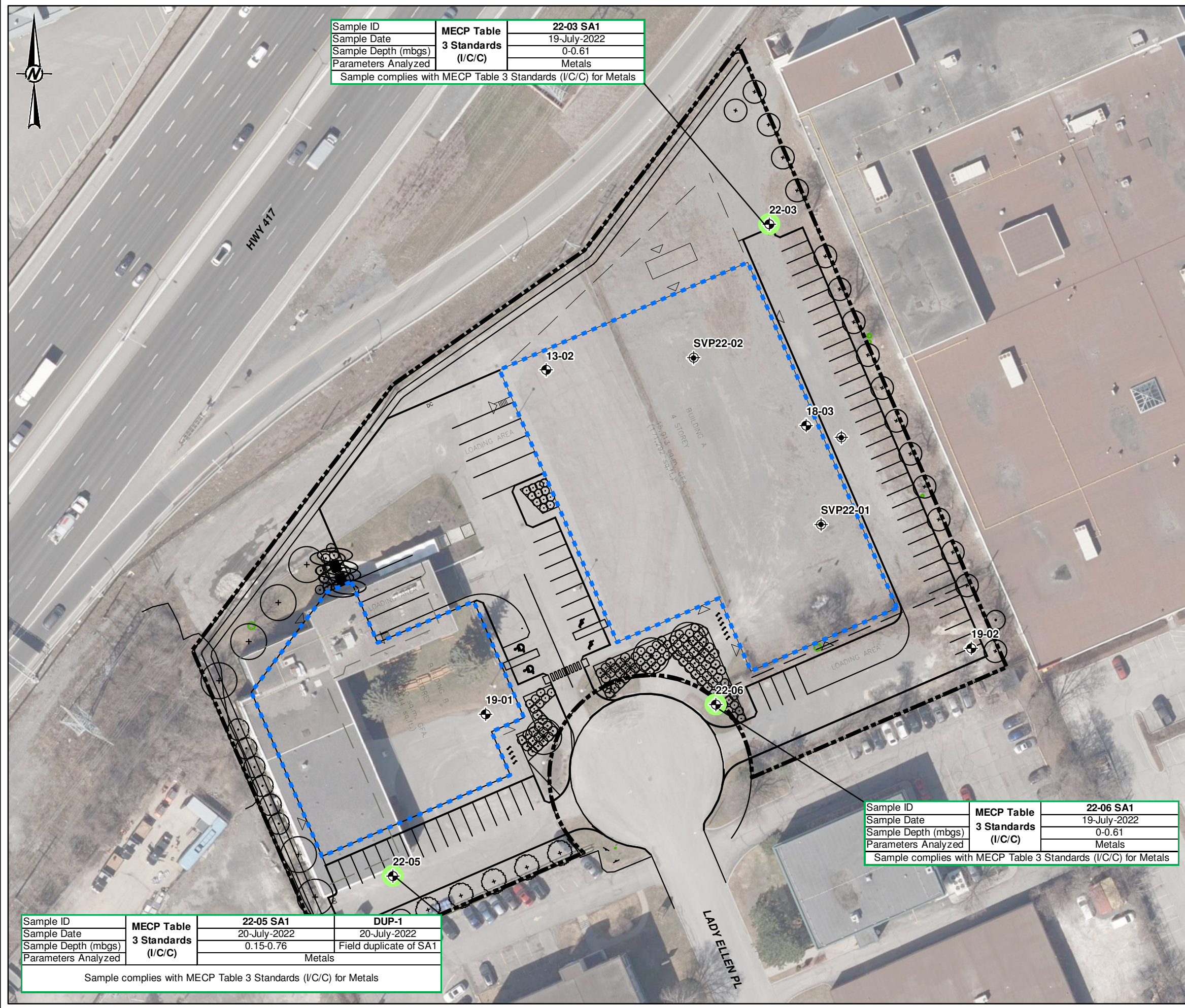
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



Sample ID	MECP Table	22-03 SA1
Sample Date	3 Standards	19-July-2022
Sample Depth (mbgs)	(I/C/C)	0-0.61
Parameters Analyzed		Metals
Sample complies with MECP Table 3 Standards (I/C/C) for Metals		

**LEGEND**

- MONITORING WELL LOCATION
- SOIL VAPOUR PROBE LOCATION
- ALL SAMPLES MEET MECP TABLE 3 STANDARDS
- PROPOSED BUILDING FOOTPRINT
- SITE BOUNDARY



Sample ID	MECP Table	22-05 SA1	DUP-1
Sample Date	3 Standards	20-July-2022	20-July-2022
Sample Depth (mbgs)	(I/C/C)	0.15-0.76	Field duplicate of SA1
Parameters Analyzed		Metals	
Sample complies with MECP Table 3 Standards (I/C/C) for Metals			

Sample ID	MECP Table	22-06 SA1
Sample Date	3 Standards	19-July-2022
Sample Depth (mbgs)	(I/C/C)	0-0.61
Parameters Analyzed		Metals
Sample complies with MECP Table 3 Standards (I/C/C) for Metals		

**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  
ACCESS PROPERTY DEVELOPMENT

PROJECT  
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
864 LADY ELLEN PLACE, OTTAWA, ONTARIO

TITLE  
SOIL EXCEEDANCES - METALS

CONSULTANT	YYYY-MM-DD	2022-12-20
<b>GOLDER</b>	DESIGNED	----
	PREPARED	JEM
	REVIEWED	CP
	APPROVED	PH

PROJECT NO.	CONTROL	REV.	FIGURE
22524317	0003	0	10

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Sample ID	MECEP Table 3	22-03 SA1
Sample Date	Standards (I/C/C)	19-July-2022
Sample Depth (mbgs)		0-0.61
Parameters Analyzed		ORP
Sample complies with MECEP Table 3 Standards (I/C/C) for ORP		

Sample ID	MECEP Table 3	22-06 SA1
Sample Date	Standards (I/C/C)	19-July-2022
Sample Depth (mbgs)		0-0.61
Parameters Analyzed		ORP
Sample complies with MECEP Table 3 Standards (I/C/C) for ORP		

Sample ID	MECEP Table 3	22-05 SA1	DUP-1
Sample Date	Standards (I/C/C)	20-July-2022	20-July-2022
Sample Depth (mbgs)		0.15-0.76	Field duplicate of SA1
Parameters Analyzed		ORP	
Conductivity (ms/cm)	1.4		1.7 *
Sodium Adsorption Ratio	12		26 *

**LEGEND**

- MONITORING WELL LOCATION
- SOIL VAPOUR PROBE LOCATION
- ALL SAMPLES MEET MECEP TABLE 3 STANDARDS
- ONE OR MORE SAMPLES EXCEED MECEP TABLE 3 STANDARDS
- PROPOSED BUILDING FOOTPRINT
- SITE BOUNDARY



**NOTE(S)**  
 1. ALL LOCATIONS ARE APPROXIMATE  
 2. \* NOT CONSIDERED AN EXCEEDANCE DUE TO THE APPLICATION OF SALT FOR VEHICULAR AND PEDESTRIAN SAFETY PURPOSES DURING SNOW AND/OR ICE

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

CLIENT  
**ACCESS PROPERTY DEVELOPMENT**

PROJECT  
**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 864 LADY ELLEN PLACE, OTTAWA, ONTARIO**

TITLE  
**SOIL EXCEEDANCES - ORPs**

CONSULTANT	YYYY-MM-DD	2022-12-20
	DESIGNED	----
	PREPARED	JEM
	REVIEWED	CP
	APPROVED	PH

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Parameter	MECP Table 3 Standards	13-02 17-Aug-22
Parameters analyzed		PHC F1, BTEX
Screen Interval (mbgs)		2.60 - 4.10
Water Depth (mbgs)		3.27
Samples comply with MECP Table 3 Standards for PHCs and BTEX		

Parameter	MECP Table 3 Standards	22-03 22-Jul-22
Parameters analyzed		PHCs, BTEX
Screen Interval (mbgs)		3.51 - 5.03
Water Depth (mbgs)		3.99
Samples comply with MECP Table 3 Standards for PHCs and BTEX		

Parameter	MECP Table 3 Standards	18-03 17-Aug-22
Parameters analyzed		PHC F1, BTEX
Screen Interval (mbgs)		1.52 - 4.56
Water Depth (mbgs)		3.67
Samples comply with MECP Table 3 Standards for PHCs and BTEX		

Parameter	MECP Table 3 Standards	22-06 22-Jul-22
Parameters analyzed		PHCs, BTEX
Screen Interval (mbgs)		4.12 - 5.64
Water Depth (mbgs)		4.16
Samples comply with MECP Table 3 Standards for PHCs and BTEX		

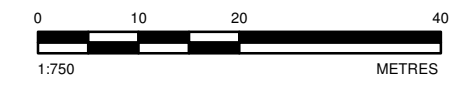
Parameter	MECP Table 3 Standards	19-02 22-Aug-17	DUP-1 22-Aug-17
Parameters analyzed		PHC F1, BTEX	
Screen Interval (mbgs)		1.98 - 5.03	Field duplicate of 19-02
Water Depth (mbgs)		3.98	
Samples comply with MECP Table 3 Standards for PHCs and BTEX			

Parameter	MECP Table 3 Standards	22-05 22-Jul-22	DUP1 22-Jul-22
Parameters analyzed		PHCs, BTEX	
Screen Interval (mbgs)		3.07 - 6.12	Field duplicate of 22-05
Water Depth (mbgs)		3.99	
Samples comply with MECP Table 3 Standards for PHCs and BTEX			

Parameter	MECP Table 3 Standards	19-01 17-Aug-22
Parameters analyzed		PHC F1, BTEX
Screen Interval (mbgs)		1.52 - 4.57
Water Depth (mbgs)		3.38
Samples comply with MECP Table 3 Standards for PHCs and BTEX		

**LEGEND**

- MONITORING WELL LOCATION
- SOIL VAPOUR PROBE LOCATION
- ALL SAMPLES MEET MECP TABLE 3 STANDARDS
- PROPOSED BUILDING FOOTPRINT
- SITE BOUNDARY



**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**  
ACCESS PROPERTY DEVELOPMENT

**PROJECT**  
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
864 LADY ELLEN PLACE, OTTAWA, ONTARIO

**TITLE**  
GROUNDWATER EXCEEDANCES - PHCs

CONSULTANT	YYYY-MM-DD	2022-12-20
	DESIGNED	----
	PREPARED	JEM
	REVIEWED	CP
	APPROVED	PH

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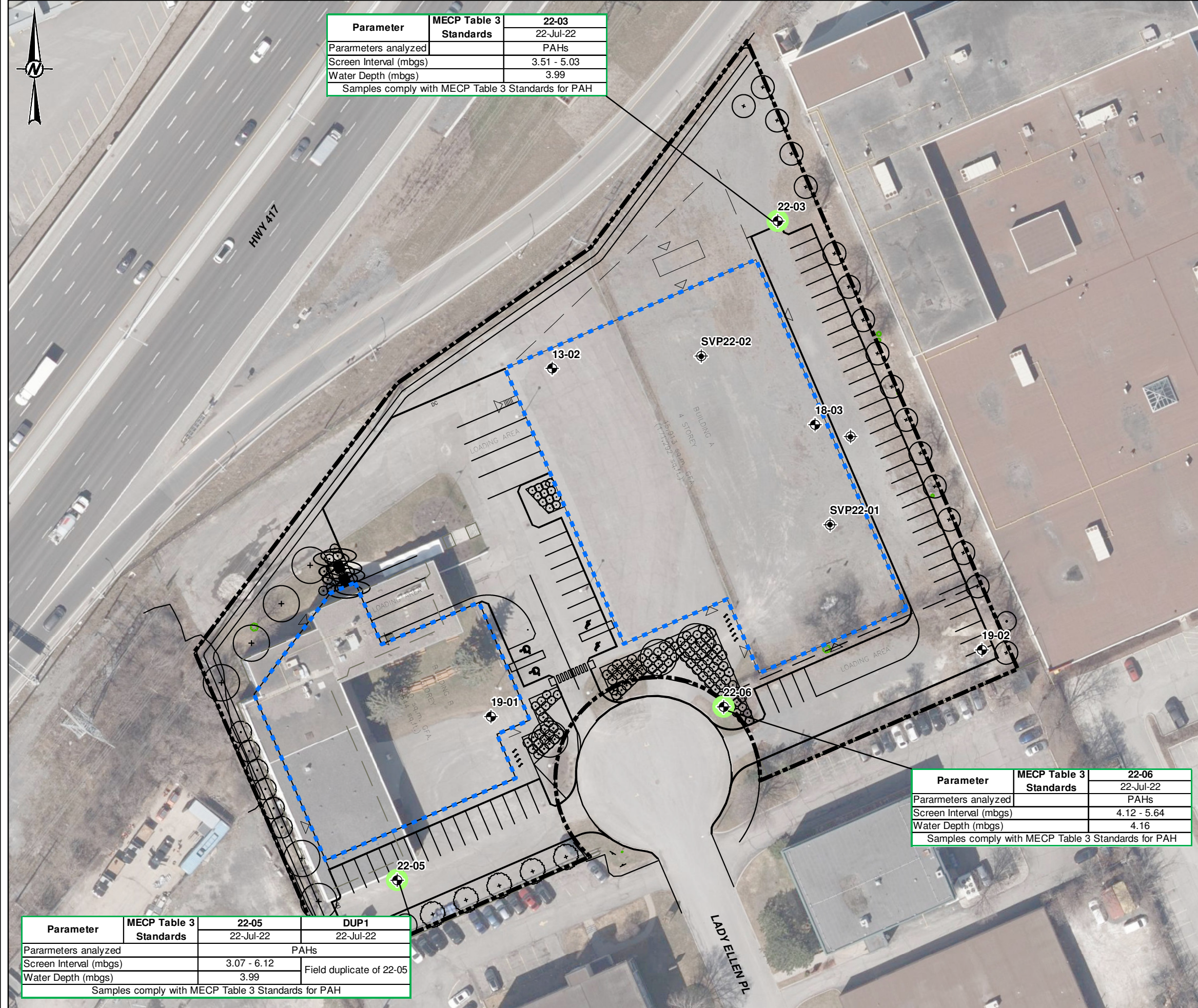
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Parameter	MECP Table 3 Standards	22-03
		22-Jul-22
Parameters analyzed		PAHs
Screen Interval (mbgs)		3.51 - 5.03
Water Depth (mbgs)		3.99
Samples comply with MECP Table 3 Standards for PAH		

**LEGEND**

- MONITORING WELL LOCATION
- SOIL VAPOUR PROBE LOCATION
- ALL SAMPLES MEET MECP TABLE 3 STANDARDS
- PROPOSED BUILDING FOOTPRINT
- SITE BOUNDARY



**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**  
ACCESS PROPERTY DEVELOPMENT

**PROJECT**  
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
864 LADY ELLEN PLACE, OTTAWA, ONTARIO

**TITLE**  
GROUNDWATER EXCEEDANCES - PAHs

CONSULTANT	YYYY-MM-DD	2022-12-20
	DESIGNED	----
	PREPARED	JEM
	REVIEWED	CP
	APPROVED	PH

PROJECT NO.	CONTROL	REV.	FIGURE
22524317	0003	0	13

Parameter	MECP Table 3 Standards	22-05	DUP1
		22-Jul-22	22-Jul-22
Parameters analyzed		PAHs	
Screen Interval (mbgs)		3.07 - 6.12	
Water Depth (mbgs)		3.99	Field duplicate of 22-05
Samples comply with MECP Table 3 Standards for PAH			

Parameter	MECP Table 3 Standards	22-06
		22-Jul-22
Parameters analyzed		PAHs
Screen Interval (mbgs)		4.12 - 5.64
Water Depth (mbgs)		4.16
Samples comply with MECP Table 3 Standards for PAH		

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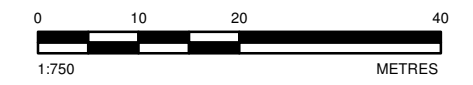
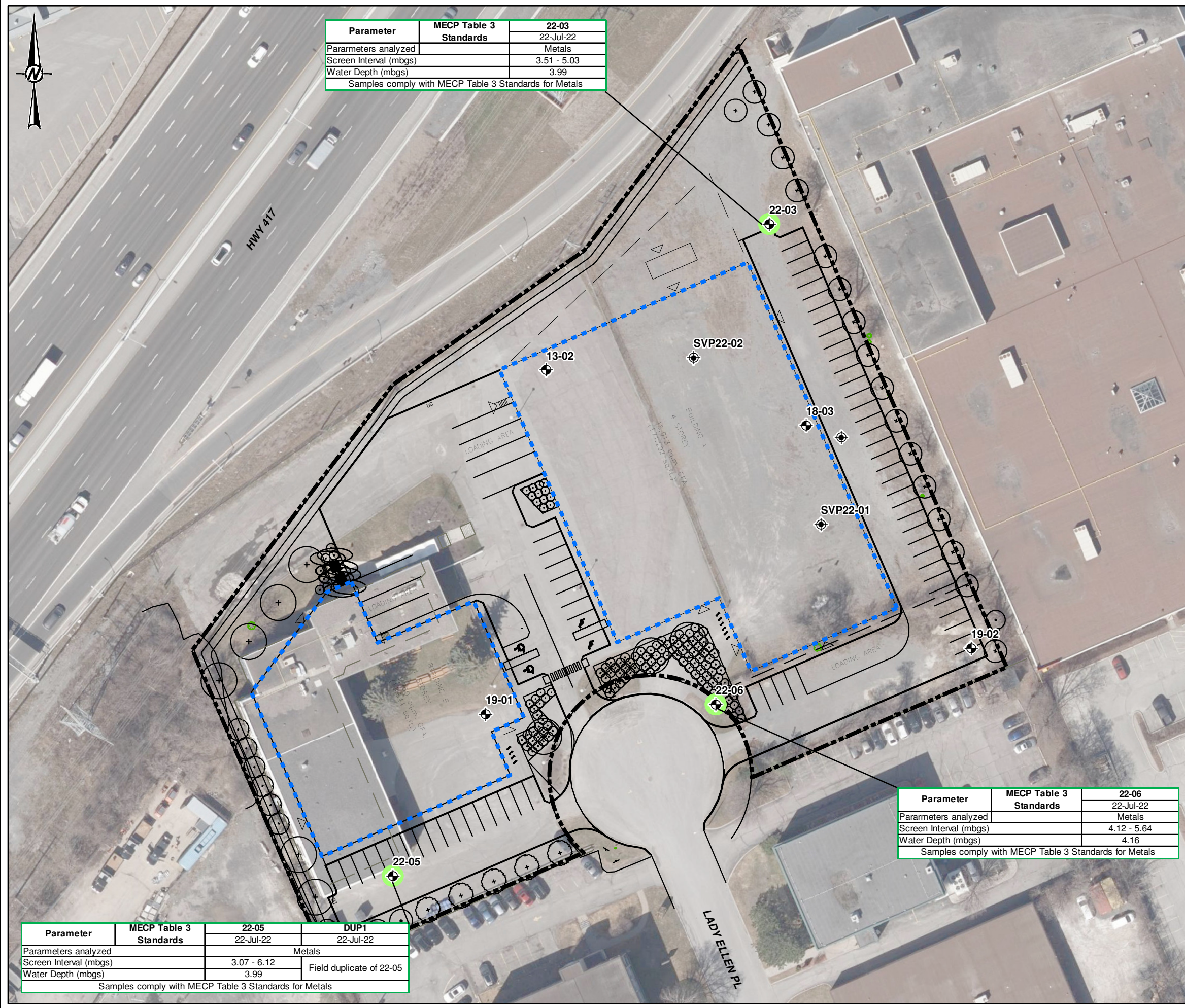
25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



Parameter	MECP Table 3 Standards	22-03
Parameters analyzed		22-Jul-22
Screen Interval (mbgs)		Metals
Water Depth (mbgs)		3.51 - 5.03
Water Depth (mbgs)		3.99
Samples comply with MECP Table 3 Standards for Metals		

**LEGEND**

- MONITORING WELL LOCATION
- SOIL VAPOUR PROBE LOCATION
- ALL SAMPLES MEET MECP TABLE 3 STANDARDS
- PROPOSED BUILDING FOOTPRINT
- SITE BOUNDARY



**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**  
ACCESS PROPERTY DEVELOPMENT

**PROJECT**  
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
864 LADY ELLEN PLACE, OTTAWA, ONTARIO

**TITLE**  
GROUNDWATER EXCEEDANCES - METALS

CONSULTANT	YYYY-MM-DD	2022-12-20
<b>GOLDER</b>	DESIGNED	----
	PREPARED	JEM
	REVIEWED	CP
	APPROVED	PH

Parameter	MECP Table 3 Standards	22-05	DUP1
Parameters analyzed		22-Jul-22	22-Jul-22
Screen Interval (mbgs)		Metals	
Water Depth (mbgs)		3.07 - 6.12	Field duplicate of 22-05
Water Depth (mbgs)		3.99	
Samples comply with MECP Table 3 Standards for Metals			

Parameter	MECP Table 3 Standards	22-06
Parameters analyzed		22-Jul-22
Screen Interval (mbgs)		Metals
Water Depth (mbgs)		4.12 - 5.64
Water Depth (mbgs)		4.16
Samples comply with MECP Table 3 Standards for Metals		

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



Parameter	MECP Table 3 Standards	13-02
Parameters analyzed		17-Aug-22
Screen Interval (mbgs)		VOCs
Water Depth (mbgs)		2.60 - 4.10
Chloroform	2.4	3.27

Parameter	MECP Table 3 Standards	22-03
Parameters analyzed		22-Jul-22
Screen Interval (mbgs)		VOCs
Water Depth (mbgs)		3.51 - 5.03
Samples comply with MECP Table 3 Standards (I/C/C) for VOCs		

Parameter	MECP Table 3 Standards	19-01
Parameters analyzed		17-Aug-22
Screen Interval (mbgs)		VOCs
Water Depth (mbgs)		1.52 - 4.57
Samples comply with MECP Table 3 Standards (I/C/C) for VOCs		

Parameter	MECP Table 3 Standards	18-03
Parameters analyzed		17-Aug-22
Screen Interval (mbgs)		VOCs
Water Depth (mbgs)		1.52 - 4.56
Trichloroethylene	1.6 µg/g	3.67
		2.5

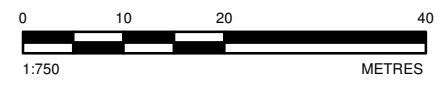
Parameter	MECP Table 3 Standards	19-02	DUP-1
Parameters analyzed		22-Aug-17	22-Aug-17
Screen Interval (mbgs)		VOCs	VOCs
Water Depth (mbgs)		1.98 - 5.03	Field duplicate of 19-02
Trichloroethylene	1.6 µg/g	3.98	5.6
		5.7	

Parameter	MECP Table 3 Standards	22-06
Parameters analyzed		22-Jul-22
Screen Interval (mbgs)		VOCs
Water Depth (mbgs)		4.12 - 5.64
Water Depth (mbgs)		4.16
Samples comply with MECP Table 3 Standards for VOCs		

Parameter	MECP Table 3 Standards	22-05	DUP1
Parameters analyzed		22-Jul-22	22-Jul-22
Screen Interval (mbgs)		VOCs	VOCs
Water Depth (mbgs)		3.07 - 6.12	Field duplicate of 22-05
Water Depth (mbgs)		3.99	
Samples comply with MECP Table 3 Standards (I/C/C) for VOCs			

**LEGEND**

- MONITORING WELL LOCATION
- SOIL VAPOUR PROBE LOCATION
- ALL SAMPLES MEET MECP TABLE 3 STANDARDS
- ONE OR MORE SAMPLES EXCEED MECP TABLE 3 STANDARDS
- PROPOSED BUILDING FOOTPRINT
- SITE BOUNDARY



**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**  
ACCESS PROPERTY DEVELOPMENT

**PROJECT**  
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
864 LADY ELLEN PLACE, OTTAWA, ONTARIO

**TITLE**  
GROUNDWATER EXCEEDANCES - VOCs

CONSULTANT	YYYY-MM-DD	2022-12-20
<b>GOLDER</b>	DESIGNED	----
	PREPARED	JEM
	REVIEWED	CP
	APPROVED	PH

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



Conceptual Site Model for Human Receptors  
864 Lady Ellen Place, Ottawa, Ontario

FIGURE 16 CSM-1

Contaminant Source	Contaminant Release Mechanism	Environmental Transport and Residency Media	Exposure Pathway	On-Site Human Receptors				Off-Site Human Receptors				
				Site Visitor	Indoor Workers	Outdoor Workers	Subsurface Workers	Resident	Indoor Workers	Outdoor Workers	Subsurface Workers	
Impacted Soil	Root Uptake	Garden Produce	Ingestion	●	●	●	●	●	●	●	●	
			Soil	Ingestion and Skin Contact	●	●	●	●	●	●	●	●
	Volatilization	Indoor Air	Inhalation	●	●	●	●	●	●	●	●	
			Skin contact	●	●	●	●	●	●	●	●	
		Outdoor Air	Inhalation	●	●	●	●	●	●	●	●	
			Skin contact	●	●	●	●	●	●	●	●	
		Trench Air	Inhalation	●	●	●	●	●	●	●	●	
			Skin contact	●	●	●	●	●	●	●	●	
	Erosion	Outdoor Air	Soil Inhalation	●	●	●	●	●	●	●	●	
	Impacted Groundwater	LEACHING	Groundwater	Ingestion and Skin Contact	●	●	●	●	●	●	●	●
				Volatilization	Indoor Air	Inhalation	●	●	●	●	●	●
		Skin contact	●			●	●	●	●	●	●	●
		Outdoor Air	Inhalation	✓	●	✓	✓	●	●	●	●	
			Skin contact	✓	●	✓	✓	●	●	●	●	
Trench Air		Inhalation	●	●	●	✓	●	●	●	●		
		Skin contact	●	●	●	✓	●	●	●	●		

✓ Exposure pathway is complete.  
● Exposure pathway is incomplete.

Date: December 2022

Project Number: 22524317

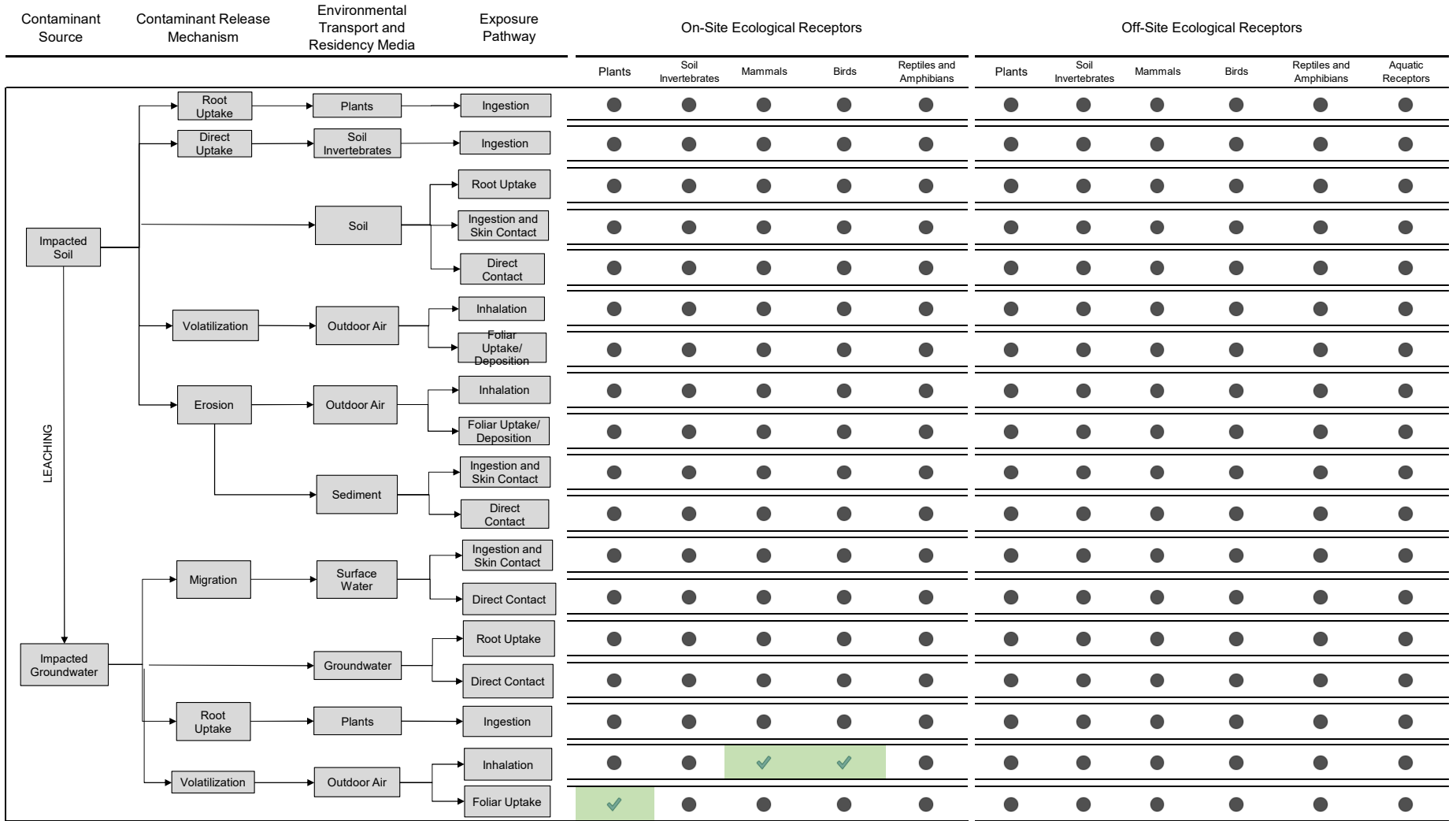


CAD: KL

CKD:

Conceptual Site Model for Ecological Receptors  
864 Lady Ellen Place, Ottawa, Ontario

FIGURE 17 CSM-2



✓ Exposure pathway is complete.  
● Exposure pathway is incomplete.

Date: December 2022

Project Number: 22524317



CAD: KL

CKD:

**APPENDIX B**

**Tables**

**Table 1: Groundwater Monitoring Well Construction Details**

Monitoring Well ID	Ground Surface Elevation (mASL)	Top of Pipe Elevation (mASL)	Borehole Depth (mbgs)	Screen Interval (mbgs)	Screened Media	Date of well Completion
13-01	78.17	78.02	4.2	2.7 - 4.2	Sandy Gravel	26-Aug-13
13-02	76.67	76.60	4.1	2.6 - 4.1	Sand and Gravel	26-Aug-13
18-03	77.09	77.13	7.6	6.0 - 7.6	Limestone bedrock	04-Jan-19
19-01	77.56	77.44	4.6	1.5 - 4.6	Sandy silt and silty sand	11-Jun-19
19-02	77.59	77.47	5.0	2.0 - 5.1	Sand, Sandy silt, and silty sand	11-Jun-19
19-03	77.16	77.08	3.2	1.7 - 3.2	Clay, silty sand, silt	11-Jun-19
22-03	76.92	not surveyed	5.7	3.5 - 5.0	Dolostone Bedrock	19-Jul-22
22-05	78.06	not surveyed	7.2	3.1 - 6.1	Dolostone Bedrock	20-Jul-22
22-06	77.84	not surveyed	6.5	4.1 - 5.6	Silty Sand Glacial till	19-Jul-22

**Notes:**

mASL- metres above sea level

mbgs-metres below ground surface

No evidence of free product was observed during well development or sampling events.

Based on the findings of the assessment conducted in 2022, well 13-01 was destroyed and unuseable and well 19-03 was dry at construction and decommissioned.

Surveying was not completed on top of pipe for 2022 series, therefore no elevation is given.

**Table 2: Groundwater Level and Elevations**

Monitoring Well	Ground Surface Elevation (mASL)	Top of Pipe Elevation (mASL)	Depth to Groundwater (mbTOP)	Groundwater Elevation (mASL)	Date of Measurement
13-02	76.67	76.60	3.27	73.33	17-Aug-22
18-03	77.13	77.09	4.73	72.36	17-Aug-22
19-01	77.56	77.44	3.38	74.06	17-Aug-22
19-02	77.59	77.47	5.04	72.44	17-Aug-22
22-03	76.92	-	4.00	72.92	22-Jul-22
22-05	78.06	-	3.99	74.07	22-Jul-22
22-06	77.84	-	4.16	73.68	22-Jul-22

mbgs- metres below ground surface

mASL- metres above sea level

n/a - water levels not measured

No evidence of free product was observed during any elevation or sampling events.

Surveying was not completed for the top of pipe of 2022 well series, therefore no elevation is given

Location	Soil Samples Analyzed	Parameters Analyzed	MECP Table 3 Exceedances <sup>(1)</sup>
22-03	22-03 SA1 (0-0.61)	PHCs, BTEX, PAHs, Metals, VOC, ORP	Gravitational F4
22-05	22-05 SA1 (0-0.61)	PHCs, BTEX, PAHs, Metals, VOC, ORP	-
DUP-1	DUP-1	PHCs, BTEX, PAHs, Metals, VOC, ORP	EC/SAR
22-06	22-06 SA1 (0-0.61)	PHCs, BTEX, PAHs, Metals, VOC, ORP	-

(1) MECP Table 3 Standards: Table 3- Full Depth Generic Site Condition Standards for Soils in a Non-Potable Ground Water Condition, Industrial/Commercial Property Use, Coarse Grained Soils; as per Ontario Regulation 153/04 (2011) under the Environmental Protection Act of the Ministry of the Environment, Conservation and Parks (MECP)

PHCs: Petroleum Hydrocarbons (F1-F4)

PAHs: Polycyclic Aromatic Hydrocarbons

VOC: Volatile Organic Compounds

BTEX: Benzene, Toluene, Ethylbenzene, and Xylene

Monitoring Well ID	Water Levels (mbtop)	Screen Interval (mbgs)	Groundwater Samples Submitted for Analysis	Analytical Parameters	MECP Table 3 Exceedances <sup>(1)</sup>
13-02	3.27	2.6 - 4.1	13-02	PHC-F1, BTEX, VOCs	Chloroform
18-03	4.73	6.0 - 7.6	18-03	PHC-F1, BTEX, VOCs	Trichloroethylene
19-01	3.380	1.5 - 4.6	19-01	PHC-F1, BTEX, VOCs	None
19-02	5.035	2.0 - 5.1	19-02/ Duplicate analysis (DUP 1)	PHC-F1, BTEX, VOCs	Trichloroethylene (Both)
22-03	3.995	3.5 - 5.0	22-03	PHCs, BTEX, VOCs, PAHs, Metals	None
22-05	3.99	3.1 - 6.1	22-05, duplicate analysis (DUP 1)	PHCs, BTEX, VOCs, PAHs, Metals	None
22-06	4.155	4.1 - 5.6	22-06	PHCs, BTEX, VOCs, PAHs, Metals	None
Trip Blank	N/A	N/A	Trip Blank	PHCs, BTEX, VOCs, PAHs, Metals	None

(1) MECP Table 3 Standards: Table 3- Full Depth Generic Site Condition Standards for Soils in a Non-Potable Ground Water Condition, All Types of Property Use, Coarse Grained Soils; as per Ontario Regulation 153/04 (2011) under the Environmental Protection Act of the Ministry of the Environment, Conservation and Parks (MECP)

VOCs: Volatile Organic Compounds

PHCs: Petroleum Hydrocarbons (F1-F4)

BTEX: Benzene, Toluene, Ethylbenzene, and Xylene

PAHs: Polycyclic Aromatic Hydrocarbons

Borehole Location Sample Date Sample ID Sample Depth (mbgs)	MECP Table 3 Standard (I/C/C) <sup>(1)</sup> (ug/g)	22-03		22-05		22-06
		19-Jul-22	20-Jul-22	20-Jul-22	19-Jul-22	
		22-03 SA1	22-05 SA1	DUP1	21-06 SA1	
		0 - 0.61	0.15 - 0.76	0.15 - 0.76	0 - 0.61	
<b>BTEX</b>						
Benzene	0.32	-	-	-	-	-
Toluene	68	-	-	-	-	-
Ethylbenzene	9.5	-	-	-	-	-
Xylenes, Total	26	-	-	-	-	-
<b>Petroleum Hydrocarbons</b>						
PHC - F1 (C6-C10)	55	<10	<10	<10	<10	<10
PHC - F2 (C10-C16)	230	<10	<10	<10	<10	<10
PHC - F3 (C16-C34)	1700	170	<50	< 50	< 50	< 50
PHC - F4 (C34-C50)	3300	830	< 50	< 50	< 50	< 50
F4 Gravimetric	3300	<b>6200</b>	-	-	-	-

**Footnotes:**

Tables should be read in conjunction with the accompanying document.

< value = Indicates parameter not detected above laboratory method detection limit.

n/a = Chemical not analyzed or criteria not defined.

Grey background indicates exceedances above MECP Table 3 standards.

(1) MECP Table 3 Standards: Table 3- Full Depth Generic Site Condition Standards for Soils in a Non-Potable Ground Water Condition, Industrial/ Commercial Property Use, Coarse Grained Soils; as per Ontario Regulation 153/04 (2011) under the Environmental Protection Act of the Ministry of the Environment, Conservation and Parks (MECP)



Table 5B: Summary of Soil Analytical Results- Polycyclic Aromatic Hydrocarbons (PAHs)

Borehole Location Sample Date Sample ID Sample Depth (mbgs)	MECP Table 3 Standard (I/C/C) <sup>(1)</sup> (ug/g)	22-03		22-05		22-06
		19-Jul-22	20-Jul-22	20-Jul-22	19-Jul-22	
		22-03 SA1	22-05 SA1	DUP1	21-06 SA1	
		0 - 0.61	0.15 - 0.76	0.15 - 0.76	0 - 0.61	
Acenaphthene	96	0.085	<0.0050	<0.0050	0.017	
Acenaphthylene	0.15	<0.050	<0.0050	<0.0050	<0.0050	
Anthracene	0.67	0.27	<0.0050	<0.0050	0.057	
Benzo(a)anthracene	0.97	0.58	<0.0050	<0.0050	0.14	
Benzo(a)pyrene	0.81	0.49	<0.0050	<0.0050	0.11	
Benzo(b/j)fluoranthene	0.96	0.63	<0.0050	<0.0050	0.14	
Benzo(ghi)perylene	9.6	0.32	<0.0050	<0.0050	0.066	
Benzo(k)fluoranthene	0.4	0.25	<0.0050	<0.0050	0.054	
Chrysene	9.6	0.48	<0.0050	<0.0050	0.11	
Dibenzo(a,h)anthracene	0.1	0.084	<0.0050	<0.0050	0.019	
Fluoranthene	9.6	1.5	<0.0050	<0.0050	0.29	
Fluorene	62	0.12	<0.0050	<0.0050	0.019	
Indeno(1,2,3-cd)pyrene	0.76	0.3	<0.0050	<0.0050	0.062	
Naphthalene	9.6	<0.050	<0.0050	<0.0050	<0.0050	
Phenanthrene	12	1.1	0.0074	<0.0050	0.21	
Pyrene	96	1.1	<0.0050	<0.0050	0.21	
Methylnaphthalene, 2-(1-)	76	<0.050	<0.0050	<0.0050	<0.0050	

Tables should be read in conjunction with the accompanying document.

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n/a = Chemical not analyzed or criteria not defined.

Grey background indicates exceedances above MECP Table 3 standards.

(1) MECP Table 3 Standards: Table 3- Full Depth Generic Site Condition Standards for Soils in a Non-Potable Ground Water Condition, Industrial/ Commercial Property Use, Coarse Grained Soils; as per Ontario Regulation 153/04 (2011) under the Environmental Protection Act of the Ministry of the Environment, Conservation and Parks (MECP)

Borehole Location Sample Date Sample ID Sample Depth (mbgs)	Unit	MECP Table 3 Standard (I/C/C) <sup>(1)</sup> (ug/g)	22-03		22-05		22-06
			19-Jul-22	20-Jul-22	20-Jul-22	19-Jul-22	
			22-03 SA1	22-05 SA1	DUP1	21-06 SA1	
			0 - 0.61	0.15 - 0.76	0.15 - 0.76	0 - 0.61	
<b>Metals</b>							
Antimony		40	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic		18	1.7	<1.0	1.2	1.5	1.5
Barium		670	95	28	120	130	130
Beryllium		8	0.23	<0.20	0.43	0.35	0.35
Cadmium		2	0.11	<0.10	0.12	0.18	0.18
Chromium		160	12	8	21	20	20
Cobalt		80	5	4.3	6.7	6.7	6.7
Copper		230	12	8.2	11	13	13
Lead		120	19	3.8	6.8	16	16
Mercury		4	<0.050	<0.050	<0.050	0.073	0.073
Molybdenum		40	0.79	<0.50	<0.50	0.75	0.75
Nickel		270	12	6.9	14	13	13
Selenium		5.5	<0.50	<0.50	<0.50	<0.50	<0.50
Silver		40	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium		3	0.14	0.08	0.19	0.14	0.14
Vanadium		86	29	18	27	29	29
Zinc		340	39	11	26	42	42
Boron (Total)		120	7.5	<5.0	9.7	5.8	5.8
Uranium		33	0.59	0.53	0.56	0.96	0.96

< value = Indicates parameter not detected above laboratory method detection limit.

n/a = Chemical not analyzed or criteria not defined.

Grey background w. bold highlighting indicates exceedances above MECP Table 3 standards.

(1) MECP Table 3 Standards: Table 3- Full Depth Generic Site Condition Standards for Soils in a Non-Potable Ground Water Condition, Industrial/ Commercial Property Use, Coarse Grained Soils; as per Ontario Regulation 153/04 (2011) under the Environmental Protection Act of the Ministry of the Environment, Conservation and Parks (MECP)

Borehole Location Sample Date Sample ID Sample Depth (mbgs)	MECP Table 3 Standard (I/C/C) ( <sup>1</sup> ) (ug/g)	22-03		22-05		22-06
		19-Jul-22	20-Jul-22	20-Jul-22	19-Jul-22	
		22-03 SA1	22-05 SA1	DUP1	21-06 SA1	
		0 - 0.61	0.15 - 0.76	0.15 - 0.76	0 - 0.61	
<b>VOCs</b>						
Acetone	16	<0.49	<0.49	<0.49	<0.49	<0.49
Bromodichloromethane	18	<0.040	<0.040	<0.040	<0.040	<0.040
Bromoform	0.61	<0.040	<0.040	<0.040	<0.040	<0.040
Bromomethane	0.05	<0.040	<0.040	<0.040	<0.040	<0.040
Carbon Tetrachloride	0.21	<0.040	<0.040	<0.040	<0.040	<0.040
Chlorobenzene	2.4	<0.040	<0.040	<0.040	<0.040	<0.040
Chloroform	0.47	<0.040	<0.040	<0.040	<0.040	<0.040
Dibromochloromethane	13	<0.040	<0.040	<0.040	<0.040	<0.040
1,2-Dichlorobenzene	6.8	<0.040	<0.040	<0.040	<0.040	<0.040
1,3-Dichlorobenzene	9.6	<0.040	<0.040	<0.040	<0.040	<0.040
1,4-Dichlorobenzene	0.2	<0.040	<0.040	<0.040	<0.040	<0.040
1,1-Dichloroethane	17	<0.040	<0.040	<0.040	<0.040	<0.040
1,2-Dichloroethane	0.05	<0.049	<0.049	<0.049	<0.049	<0.049
1,1-Dichloroethylene	0.06	<0.040	<0.040	<0.040	<0.040	<0.040
Cis-1,2-Dichloroethylene	55	<0.040	<0.040	<0.040	<0.040	<0.040
Trans-1,2-Dichloroethylene	1.3	<0.040	<0.040	<0.040	<0.040	<0.040
1,2-Dichloropropane	0.16	<0.040	<0.040	<0.040	<0.040	<0.040
Ethylene Dibromide	0.05	<0.040	<0.040	<0.040	<0.040	<0.040
Methyl Ethyl Ketone	70	<0.40	<0.40	<0.40	<0.40	<0.40
Methylene Chloride	1.6	<0.049	<0.049	<0.049	<0.049	<0.049
Styrene	34	<0.040	<0.040	<0.040	<0.040	<0.040
1,1,1,2-Tetrachloroethane	0.087	<0.040	<0.040	<0.040	<0.040	<0.040
1,1,2,2-Tetrachloroethane	0.05	<0.040	<0.040	<0.040	<0.040	<0.040
Tetrachloroethylene	4.5	<0.040	<0.040	<0.040	<0.040	<0.040
1,1,1-Trichloroethane	6.4	<0.040	<0.040	<0.040	<0.040	<0.040
1,1,2-Trichloroethane	0.05	<0.040	<0.040	<0.040	<0.040	<0.040
Trichloroethylene	4	<0.010	<0.010	<0.010	<0.010	<0.010
Vinyl Chloride	0.032	<0.019	<0.019	<0.019	<0.019	<0.019
Dichlorodifluoromethane	16	<0.040	<0.040	<0.040	<0.040	<0.040
Dioxane, 1,4-	1.8	-	-	-	-	-
Hexane(n)	46	<0.040	<0.040	<0.040	<0.040	<0.040
Trichlorofluoromethane	4	<0.040	<0.040	<0.040	<0.040	<0.040
1,3-Dichloropropene (cis + trans)	0.18	<0.050	<0.050	<0.050	<0.050	<0.050

< value = Indicates parameter not detected above laboratory method detection limit.

n/a = Chemical not analyzed or criteria not defined.

Grey background w. bold highlighting indicates exceedances above MECP Table 3 standards.

(1) MECP Table 3 Standards: Table 3- Full Depth Generic Site Condition Standards for Soils in a Non-Potable Ground Water Condition, Industrial/ Commercial Property Use, Coarse Grained Soils; as per Ontario Regulation 153/04 (2011) under the Environmental Protection Act of the Ministry of the Environment, Conservation and Parks (MECP)

Borehole Location Sample Date Sample ID  Sample Depth (mbgs)	MECP Table 3 Standard (I/C/C) <sup>(1)</sup> (ug/g)	22-03		22-05		22-06
		19-Jul-22	20-Jul-22	20-Jul-22	19-Jul-22	
		22-03 SA1	22-05 SA1	DUP1	21-06 SA1	
		0 - 0.61	0.15 - 0.76	0.15 - 0.76	0 - 0.61	
<b>Metals</b>						
Boron (Hot Water Soluble)	2	0.19	0.33	0.34	0.36	
Chromium VI	8	<0.18	<0.18	0.19	<0.18	
pH (pH Units)	-	7.92	8.04	7.95	7.39	
Conductivity (ms/cm)	1.4	0.16	0.39	<b>1.7</b>	0.24	
Sodium Adsorption Ratio	12	0.29	8.1	<b>26</b>	1.4	
Cyanide, Free	0.05	0.02	<0.01	<0.01	<0.01	
Chloride	-	-	-	-	-	

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n/a = Chemical not analyzed or criteria not defined.

Grey background w. bold highlighting indicates exceedances above MECP Table 3 standards.

(1) MECP Table 3 Standards: Table 3- Full Depth Generic Site Condition Standards for Soils in a Non-Potable Ground Water Condition, Industrial/ Commercial Property Use, Coarse Grained Soils; as per Ontario Regulation 153/04 (2011) under the Environmental Protection Act of the Ministry of the Environment, Conservation and Parks (MECP)

Sample Location	MECP Table 3 Standard <sup>(1)</sup> (µg/L)	13-02	18-03	19-01	19-02		22-03	22-05		22-06	Trip Blank	
Sample ID		13-02	18-03	19-01	19-02	DUP-1	22-03	22-05	DUP1	22-06	Trip Blank	
Sample Date		17-Aug-22	17-Aug-22	17-Aug-22	17-Aug-22	17-Aug-22	22-Jul-22	22-Jul-22	22-Jul-22	22-Jul-22	22-Jul-22	22-Jul-22
Water Levels (mbgs)		3.27	3.67	3.38	3.98	3.98	3.99	3.99	3.99	4.16	-	
<b>BTEX</b>												
Benzene	44	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	
Toluene	18000	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Ethylbenzene	2300	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Xylenes, Total	4200	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
<b>Petroleum Hydrocarbons</b>												
F1 (C6 to C10) minus BTEX	750	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	
F2 (C10 to C16)	150	-	-	-	-	-	<100	<100	<100	<100	<100	
F3 (C16 to C34)	500	-	-	-	-	-	<100	<100	<100	<100	<100	
F4 (C34 to C50)	500	-	-	-	-	-	<100	<100	<100	<100	<100	
Reached Baseline at C50	NV	-	-	-	-	-	Yes	Yes	Yes	Yes	Yes	
Gravimetric Heavy Hydrocarbons	500	-	-	-	-	-	NA	NA	NA	NA	NA	

**Footnotes:**

Tables should be read in conjunction with the accompanying document.

< value = Indicates parameter not detected above laboratory method detection limit.

n/a = Chemical not analyzed or criteria not defined.

Water levels taken before sampling

**Exceedance of Table 3 Standards**

(1) MECP Table 3 Standards: Table 3- Full Depth Generic Site Condition Standards for Ground Water in a Non-Potable Ground Water Condition, All Types of Property Use, Coarse Grained Soils; as per Ontario Regulation 153/04 (2011) under the Environmental Protection Act of the Ministry of the Environment, Conservation and Parks (MECP)

**Table 6B: Groundwater Analytical Results-  
Polycyclic Aromatic Hydrocarbons (PAHs)**

Sample Location Sample ID Sample Date Water Levels (mbgs)	MECP Table 3 Standard <sup>(1)</sup> (µg/L)	22-03	22-05		22-06	Trip Blank
		22-03	22-05	DUP1	22-06	Trip Blank
		22-Jul-22	22-Jul-22	22-Jul-22	22-Jul-22	22-Jul-22
		3.99	3.99	3.99	4.16	-
Acenaphthene	600	<0.050	<0.050	<0.050	<0.050	<0.050
Acenaphthylene	1.8	<0.050	<0.050	<0.050	<0.050	<0.050
Anthracene	2.4	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(a)anthracene	4.7	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(a)pyrene	0.81	<0.0090	<0.0090	<0.0090	<0.0090	<0.0090
Benzo(b/j)fluoranthene	0.75	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(ghi)perylene	0.2	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(k)fluoranthene	0.4	<0.050	<0.050	<0.050	<0.050	<0.050
Chrysene	1	<0.050	<0.050	<0.050	<0.050	<0.050
Dibenzo(a,h)anthracene	0.52	<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	130	<0.050	<0.050	<0.050	<0.050	<0.050
Fluorene	400	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	0.2	<0.050	<0.050	<0.050	<0.050	<0.050
Naphthalene	1400	<0.050	<0.050	<0.050	<0.050	<0.050
Phenanthrene	580	<0.030	<0.030	<0.030	<0.030	<0.030
Pyrene	68	<0.050	<0.050	<0.050	<0.050	<0.050
Methylnaphthalene, 2-(1-)	1800	-	-	-	-	-

**Footnotes:**

Tables should be read in conjunction with the accompanying document.

< value = Indicates parameter not detected above laboratory method detection limit.

Water level collected on same day

n/a = Chemical not analyzed or criteria not defined.

**Exceedance of Table 3 Standards**

(1) MECP Table 3 Standards: Table 3- Full Depth Generic Site Condition Standards for Ground Water in a Non-Potable Ground Water Condition, All Types of Property Use, Coarse Grained Soils; as per Ontario Regulation 153/04 (2011) under the Environmental Protection Act of the Ministry of the Environment, Conservation and Parks (MECP)

Sample Location Sample ID Sample Date Water Levels (mbgs)	MECP Table 3 Standard <sup>(1)</sup> (µg/L)	22-03	22-05		22-06	Trip Blank
		22-03	22-05	DUP1	22-06	Trip Blank
		22-Jul-22	22-Jul-22	22-Jul-22	22-Jul-22	22-Jul-22
		3.99	3.99	3.99	4.16	-
Antimony	20000	<0.50	<0.50	<0.50	<0.50	<0.50
Arsenic	1900	<1.0	<1.0	<1.0	<1.0	<1.0
Barium	29000	220	360	360	350	<2.0
Beryllium	67	<0.40	<0.40	<0.40	<0.40	<0.40
Boron	45000	62	91	92	77	<10
Cadmium	2.7	<0.090	<0.090	<0.090	<0.090	<0.090
Chromium	810	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium VI	140	-	-	-	-	-
Cobalt	66	<0.50	0.95	1	4.8	<0.50
Copper	87	5.4	0.95	1.2	<0.90	<0.90
Lead	25	<0.50	<0.50	<0.50	<0.50	<0.50
Mercury	0.29	-	-	-	-	-
Molybdenum	9200	0.99	1.3	1.3	1.2	<0.50
Nickel	490	1.5	3.5	3.7	4.7	<1.0
Sodium	2,300,000	260,000	470,000	450,000	440,000	<100
Selenium	63	<2.0	<2.0	<2.0	<2.0	<2.0
Silver	1.5	<0.090	<0.090	0.15	<0.090	<0.090
Thallium	510	<0.050	0.057	0.053	<0.050	<0.050
Vanadium	250	<0.50	<0.50	<0.50	<0.50	<0.50
Zinc	1100	<5.0	<5.0	<5.0	<5.0	<5.0
Cyanide, Free	66	-	-	-	-	-
Uranium	420	1.5	0.47	0.48	1.3	<0.10

**Footnotes:**

Tables should be read in conjunction with the accompanying document.

< value = Indicates parameter not detected above laboratory method detection limit.

Water level collected on same day

n/a = Chemical not analyzed or criteria not defined.

**Exceedance of Table 3 Standards**

(1) MECP Table 3 Standards: Table 3- Full Depth Generic Site Condition Standards for Ground Water in a Non-Potable Ground Water Condition, All Types of Property Use, Coarse Grained Soils; as per Ontario Regulation 153/04 (2011) under the Environmental Protection Act of the Ministry of the Environment, Conservation and Parks (MECP)

Table 6D: Groundwater Analytical Results-  
VOCs (Volatile organic compounds)

Sample Location	MECP Table 3 Standard <sup>(1)</sup> (µg/L)	13-02	18-03	19-01	19-02		22-03	22-05		22-06	Trip Blank
Sample ID		13-02	18-03	19-01	19-02	DUP-1	22-03	22-05	DUP1	22-06	Trip Blank
Sample Date		17-Aug-22	17-Aug-22	17-Aug-22	17-Aug-22	17-Aug-26	22-Jul-22	22-Jul-22	22-Jul-22	22-Jul-22	22-Jul-22
Water Levels (mbgs)		3.27	3.67	3.38	3.98	3.98	3.99	3.99	3.99	4.16	-
Acetone	130000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Bromodichloromethane	85000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	380	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	5.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	0.79	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	630	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	2.4	<b>2.6</b>	<0.20	<0.20	<0.20	<0.20	<0.20	0.59	0.52	<0.20	<0.20
Dibromochloromethane	82000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	4600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	9600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethane	320	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	3	3	<0.20	<0.20
1,2-Dichloroethane	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.48	0.46	<0.20	<0.20
Cis-1,2-Dichloroethylene	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trans-1,2-Dichloroethylene	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	16	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cis-1,3-Dichloropropylene	NV	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Trans-1,3-Dichloropropylene	NV	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Ethylene Dibromide	0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Methyl Ethyl Ketone	470000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methylene Chloride	610	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Methyl Isobutyl Ketone	140000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl-t-Butyl Ether	190	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Styrene	1300	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	3.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	640	<0.20	0.48	<0.20	0.93	0.89	0.32	9.6	9.2	<0.20	<0.20
1,1,2-Trichloroethane	4.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	1.6	<0.20	<b>2.5</b>	<0.20	<b>5.7</b>	<b>5.6</b>	0.86	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dichlorodifluoromethane	4400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dioxane, 1,4-	1900000	-	-	-	-	-	-	-	-	-	-
Hexane(n)	51	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	2500	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichloropropene (cis + trans)	5.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

**Footnotes:**

Tables should be read in conjunction with the accompanying document.

< value = Indicates parameter not detected above laboratory method detection limit.

Water level collected on same day

n/a = Chemical not analyzed or criteria not defined.

**Exceedance of Table 3 Standards**

(1) MECP Table 3 Standards: Table 3- Full Depth Generic Site Condition Standards for Ground Water in a Non-Potable Ground Water Condition, All Types of Property Use, Coarse Grained Soils; as per Ontario Regulation 153/04 (2011) under the Environmental Protection Act of the Ministry of the Environment, Conservation and Parks (MECP)



Bureau Veritas ID			UGU743	UGU744	UGU745
Sampling Date			2022-11-10	2022-11-10	2022-11-10
COC Number			41365	41365	41365
Calculated Parameters	UNITS	SVSL <sup>(1,2)</sup>	SVP-22-1/SN10854	SVP-22-2/SN1221	DUP 1/SN6822
					SVP-22-2
1,1,1,2-Tetrachloroethane	µg/m <sup>3</sup>	120.79	<0.69	<0.69	<0.69
1,1,1-Trichloroethane	µg/m <sup>3</sup>	178775.51	<0.55	8.32	7.67
1,1,2,2-Tetrachloroethane	µg/m <sup>3</sup>	15.41	<0.69	<0.69	<0.69
1,1,2-Trichloroethane	µg/m <sup>3</sup>	55.87	<0.55	<0.55	<0.55
1,1-Dichloroethane	µg/m <sup>3</sup>	29497.96	<0.40	<0.40	<0.40
1,1-Dichloroethylene	µg/m <sup>3</sup>	12514.29	<0.40	<0.40	<0.40
1,2,4-Trichlorobenzene	µg/m <sup>3</sup>	1430.20	<3.7	<3.7	<3.7
1,2,4-Trimethylbenzene	µg/m <sup>3</sup>	55000.00	<2.5	<2.5	<2.5
1,2-Dichlorobenzene	µg/m <sup>3</sup>	107265.31	<0.60	<0.60	<0.60
1,2-Dichloroethane	µg/m <sup>3</sup>	34.38	<0.40	<1.2	<1.2
1,2-Dichloropropane	µg/m <sup>3</sup>	715.10	<0.46	<0.46	<0.46
1,2-Dichlorotetrafluoroethane	µg/m <sup>3</sup>	17500000.00	<1.2	<2.8	<2.8
1,3,5-Trimethylbenzene	µg/m <sup>3</sup>	55000.00	<2.5	<2.5	<2.5
1,3-Butadiene	µg/m <sup>3</sup>	500.00	<1.8	<8.0	<8.0
1,3-Dichlorobenzene	µg/m <sup>3</sup>	223.47	<2.4	<2.4	<2.4
1,4-Dichlorobenzene	µg/m <sup>3</sup>	223.47	<0.60	<0.60	<0.60
1,4-Dioxane	µg/m <sup>3</sup>	643591.84	<3.6	<3.6	<3.6
2,2,4-Trimethylpentane	µg/m <sup>3</sup>	446938.78	<0.93	<1.4	<1.4
2-propanol	µg/m <sup>3</sup>	1825000.00	<2.5	<2.5	<2.5
2-Propanone	µg/m <sup>3</sup>	2145306.12	<19	31.3	29.2
4-ethyltoluene	µg/m <sup>3</sup>	NV	<2.5	<2.5	<2.5
Benzene	µg/m <sup>3</sup>	406.31	5.56	43.3	39.3
Benzyl chloride	µg/m <sup>3</sup>	NV	<2.6	<2.6	<2.6
Bromodichloromethane	µg/m <sup>3</sup>	NV	<1.3	<1.3	<1.3
Bromoform	µg/m <sup>3</sup>	13750.00	<2.1	<2.1	<2.1
Bromomethane	µg/m <sup>3</sup>	893.88	<0.39	<0.39	<0.39
Carbon Disulfide	µg/m <sup>3</sup>	82500.00	30.4	4.2	3.9
Carbon Tetrachloride	µg/m <sup>3</sup>	357.55	<0.63	<0.63	<0.63
Chlorobenzene	µg/m <sup>3</sup>	178775.51	<0.46	<0.46	<0.46
Chloroethane	µg/m <sup>3</sup>	1400000.00	<0.79	<0.79	<0.79
Chloroform	µg/m <sup>3</sup>	17877.55	<0.49	5.37	4.85
Chloromethane	µg/m <sup>3</sup>	80000.00	<0.62	<0.62	<0.62
cis-1,2-Dichloroethylene	µg/m <sup>3</sup>	26816.33	<0.40	<0.40	<0.40
cis-1,3-Dichloropropene	µg/m <sup>3</sup>	223.47	<0.45	<0.45	<0.45
Cyclohexane	µg/m <sup>3</sup>	1525000.00	7.97	<14	<14
Dibromochloromethane	µg/m <sup>3</sup>	NV	<1.7	<1.7	<1.7
Dichlorodifluoromethane (FREON 12)	µg/m <sup>3</sup>	12500000.00	2.59	10.3	10
Ethanol (ethyl alcohol)	µg/m <sup>3</sup>	4750000.00	<1.9	4.4	6.1
Ethyl Acetate	µg/m <sup>3</sup>	4750000.00	<3.6	<3.6	<3.6
Ethylbenzene	µg/m <sup>3</sup>	178775.51	<0.43	5.76	5.29
Ethylene Dibromide	µg/m <sup>3</sup>	1.49	<0.77	<0.77	<0.77
Heptane	µg/m <sup>3</sup>	2750000.00	7	55.7	50.8
Hexachlorobutadiene	µg/m <sup>3</sup>	40.63	<5.3	<5.3	<5.3
Hexane	µg/m <sup>3</sup>	446938.78	15.2	503	460
Methyl Butyl Ketone (2-Hexanone)	µg/m <sup>3</sup>	NV	<4.1	<4.1	<4.1
Methyl Ethyl Ketone (2-Butanone)	µg/m <sup>3</sup>	250686.81	<2.9	5.62	5.68
Methyl Isobutyl Ketone	µg/m <sup>3</sup>	150412.09	<0.82	<1.2	<1.2
Methyl t-butyl ether (MTBE)	µg/m <sup>3</sup>	3437.99	<0.72	<0.72	<0.72
Methylene Chloride(Dichloromethane)	µg/m <sup>3</sup>	38864.24	<2.1	<2.1	<2.1
Naphthalene	µg/m <sup>3</sup>	661.47	<1.0	<1.0	<1.0
o-Xylene	µg/m <sup>3</sup>	NV	0.56	8.08	7.48
p+m-Xylene	µg/m <sup>3</sup>	NV	1.43	19.4	17.8
Propene	µg/m <sup>3</sup>	1000000.00	77.2	311	294
Styrene	µg/m <sup>3</sup>	46481.63	<0.43	<0.43	<0.43
Tetrachloroethylene	µg/m <sup>3</sup>	3437.99	<0.68	<0.68	<0.68
Tetrahydrofuran	µg/m <sup>3</sup>	23250000.00	<1.2	<1.2	<1.2
Toluene	µg/m <sup>3</sup>	893877.55	8.66	19.7	18.6
Total Xylenes	µg/m <sup>3</sup>	125142.86	2	27.5	25.3
trans-1,2-Dichloroethylene	µg/m <sup>3</sup>	10726.53	<0.40	<0.40	<0.40
trans-1,3-Dichloropropene	µg/m <sup>3</sup>	223.47	<0.45	<0.45	<0.45
Trichloroethylene	µg/m <sup>3</sup>	218.02	<0.54	<0.54	<0.54
Trichlorofluoromethane (FREON 11)	µg/m <sup>3</sup>	1500000.00	<1.1	<1.1	<1.1
Trichlorotrifluoroethane	µg/m <sup>3</sup>	475000.00	<1.2	<1.2	<1.2
Vinyl Acetate	µg/m <sup>3</sup>	NV	<0.70	<0.70	<0.70
Vinyl Bromide	µg/m <sup>3</sup>	NV	<0.87	<0.87	<0.87
Vinyl Chloride	µg/m <sup>3</sup>	101.58	<0.26	<0.26	<0.26

**Notes:**

$\mu\text{g}/\text{m}^3$  = microgram per cubic metre; NV = no value; < = less than reportable detection limit

(1) Soil Vapour Screening Level (SVSL) calculated as the MOECC (2016) Industrial Health Based Indoor Air Criteria (HBIAC) divided by a conservative commercial attenuation factor of 0.004 (MOE, 2013)

(2) In the absence of MOECC (2016) HBIAC, Ontario Air Contaminant Benchmarks (ACBs) for 24 hour averaging period and health effects were used (MECP, 2018), unless otherwise stated. ACBs adjusted with the applicable attenuation factor for each scenario

<b>14</b>	= Concentration above Soil Vapour Screening Level
<b>14</b>	= Minimum detection limit above Soil Vapour Screening Level
<b>14</b>	= Detected concentration with no available Soil Vapour Screening Level

**References:**

Ontario Ministry of the Environment (MOE), 2013. Draft Technical Guidance Soil Vapour Intrusion Assessment. PIBS #8477. Dated September 2013.

Ontario Ministry of the Environment and Climate Change (MOECC), 2016. Approved Model, November 1, 2016. Queen's Printer for Ontario, 2016. PIBS 7381e01

Ontario Ministry of the Environment, Conservation and Parks (MECP), 2018. Ontario Air Contaminants Benchmark (ACB) List: Standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants. Version 2.0 - April 2018.

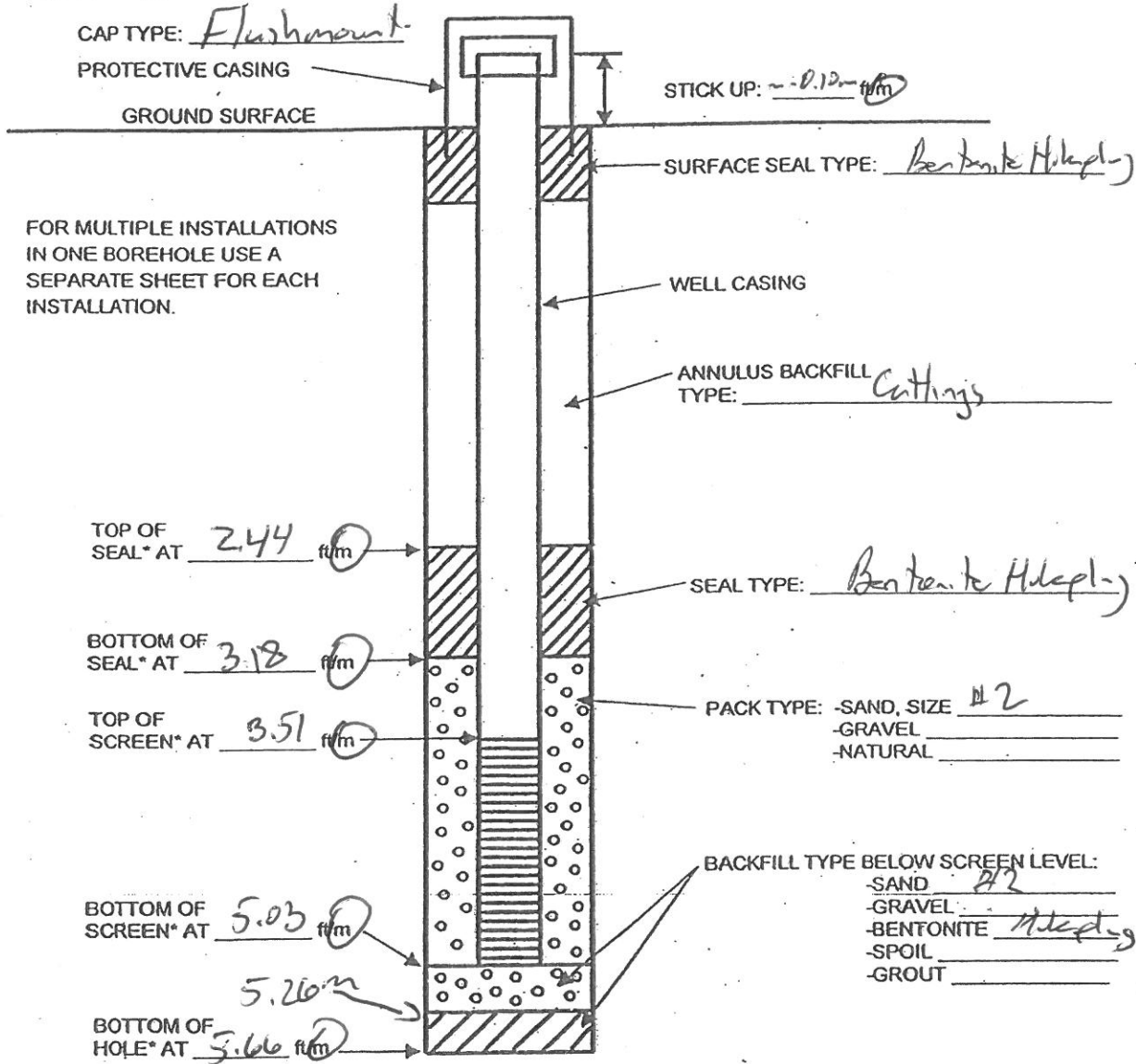
**APPENDIX C**

**Field Logs**

# WELL INSTRUMENTATION LOG

SHORT TITLE: 864 Lady Ellen      BOREHOLE NO.: 22-03  
 PROJECT NO.: 22524317      DATE COMPLETED: July 19, 22  
 CLIENT: \_\_\_\_\_      DRILLING METHOD: 8" Power Auger / NA Rotary Drill  
 LOCATION: NE Corner of Property line      SUPERVISOR: R. Ireland

GPS 18N 441877E, 5025473N.



FOR MULTIPLE INSTALLATIONS IN ONE BOREHOLE USE A SEPARATE SHEET FOR EACH INSTALLATION.

SCREEN TYPE:  continuous slot     perforated     machine slot     other: \_\_\_\_\_

SCREEN MATERIAL:  stainless steel     Pvc plastic     other: \_\_\_\_\_

SCREEN LENGTH: 1.52 f/m      SCREEN DIAMETER: 3.2 in/cm      SCREEN SLOT SIZE: \_\_\_\_\_

WELL CASING MATERIAL: \_\_\_\_\_      WELL CASING DIAMETER: 3.2 in/cm

HOLE DIAMETER: 20 mm / 7.6 cm      JOINT TYPE:  Flush Threaded     Glued     Coupled     Welded

DEVELOPMENT: METHOD: None      DURATION: \_\_\_\_\_

# FIELD BOREHOLE LOG

Job No 22524317 Job Name 864 Lady Ellen / Offham Date 5/19/2022 Borehole No. 22-03  
 BH Location NE Property line Elevation \_\_\_\_\_ (Obtained From \_\_\_\_\_) Datum \_\_\_\_\_  
 BH Coordinates Lat 41°18'17.77E Long 50°25'47.3N Contractor Dawing Driller Marc  
 Weather / Temperature +25°C Sunny Type of Rig CRS 55 Truck mount  
 Hammer Type (circle): Automatic Safety(rope/cathead) Half-Weight(manual) Hammer Wt 140 lbs. Drop 30 Inches

SAMPLE CONDITIONS		AS - AUGER SAMPLE	SS - SPLIT-SPOON SAMPLER	RC - ROCK CORE	WH - WEIGHT OF HAMMER
	DISTURBED	CS - CHUNK SAMPLE	DO - DRIVE OPEN	SA - SAMPLE	WR - WEIGHT OF RODS
	FAIR	WS - WASHED SAMPLE	TO - THIN-WALLED, OPEN	CA - CASING	PH - PRESSURE, HYDRAULIC
	GOOD	DS - DENISON SAMPLE	TP - THIN-WALLED, PISTON	WL - WATER LEVEL	PM - PRESSURE, MANUAL
	LOST	FS - FOIL SAMPLE	ST - SLOTTED TUBE	V - IN-SITU VANE SHEAR TEST	

METHOD	CASING	SOIL STRATIGRAPHY				SAMPLES					*SAMPLE DESCRIPTIONS & BORING NOTES		
		DESCRIPTION	DEPTH	BLOWS/ft	DEPTH	*Group Symbol	COND.	TYPE	No.	RECOV.	FORCE	START TIME	DEPTH OF HOLE
												DEPTH TO W.L.	DEPTH OF CASING
		Ground Surface	0.0'	(0.0m)	0							ENVIRO	(0-0.61m)
		TOP SOIL (5m) SILTY SAND, trace gravel; dark brown, organic matter; non-cohesive, moist, compact	0.17'	(0.05m)								HE-118L (ppm) SA#1 2" SS 0-2'	
		FILL (5m) gravelly SILTY SAND, angular, grey, non-cohesive, moist, compact.	1.0'	(0.30m)								VUSSB. (0-0.5m) grav, deb, e.m., n.c., m, compact.	
		FILL (5m) gravelly SILTY SAND, brown to dark brown, asphalt fragments, possible ash; non-cohesive, moist, compact.	2.0'	(0.61m)								85/0 (0.5-0.8m) m, compact.	
		TOP SOIL/FILL (5m) SILTY SAND, trace gravel, dark brown to black, organic matter, rootlets; non-cohesive, moist, compact.	3.08'	(0.94m)								10/10 (0.8-1.0m) m, compact.	
		(CL/CH) SILTY CLAY to CLAY, trace sand, greyish brown, highly fissured (weathered crust); cohesive, w/Plin, very stiff	5.0'	(1.52m)								SA#2 2" SS 2.5-4.5'	(0.10-1.37m)
		(5m) gravelly SILTY SAND, trace Chy; greyish brown, cobbles/boulders (TILL); non-cohesive, moist, very dense.	7.5'	(2.29m)								3.08-5' TOPSOIL (5m) (5.5m) trace grav, deb-bulk, e.m., n.c., m, compact.	
			10.25'	(3.13m)								SA#3 2" SS 5-7' (1.52-2.13m)	
												SA#4 2" SS 7.5-8.83'	
												SA#5 2" SS 10-10.15'	
												SA#6 2" SS 10.15-10.25'	
												SA#7 2" SS 10.25-10.33'	
												SA#8 2" SS 10.33-10.35'	
												SA#9 2" SS 10.35-10.37'	
												SA#10 2" SS 10.37-10.38'	
												SA#11 2" SS 10.38-10.39'	
												SA#12 2" SS 10.39-10.40'	
												SA#13 2" SS 10.40-10.41'	
												SA#14 2" SS 10.41-10.42'	
												SA#15 2" SS 10.42-10.43'	
												SA#16 2" SS 10.43-10.44'	
												SA#17 2" SS 10.44-10.45'	
												SA#18 2" SS 10.45-10.46'	
												SA#19 2" SS 10.46-10.47'	
												SA#20 2" SS 10.47-10.48'	
												SA#21 2" SS 10.48-10.49'	
												SA#22 2" SS 10.49-10.50'	
												SA#23 2" SS 10.50-10.51'	
												SA#24 2" SS 10.51-10.52'	
												SA#25 2" SS 10.52-10.53'	
												SA#26 2" SS 10.53-10.54'	
												SA#27 2" SS 10.54-10.55'	
												SA#28 2" SS 10.55-10.56'	
												SA#29 2" SS 10.56-10.57'	
												SA#30 2" SS 10.57-10.58'	
												SA#31 2" SS 10.58-10.59'	
												SA#32 2" SS 10.59-11.00'	

**SPECIAL NOTES** (GROUNDWATER CONDITIONS etc.)

FINISH TIME \_\_\_\_\_ HOURS PRODUCTIVE \_\_\_\_\_  
 HOURS STANDBY \_\_\_\_\_ HOURS DELAYED \_\_\_\_\_  
 DEPTH OF HOLE \_\_\_\_\_ DEPTH OF CASING \_\_\_\_\_  
 DEPTH TO WATER LEVEL \_\_\_\_\_  
 ENGINEER / TECHNICIAN R. Ireland

\*Note:  Soil descriptions in accordance with GAL Soil Description System  
 Soil descriptions in accordance with \_\_\_\_\_



JOB No. 22524317  
 BOREHOLE No. 22-03  
 DEPTH 0.0 TO 3.13m

Pg 1/2

RECORD OF ROCK CORE DRILLING AND TESTING - DRILL HOLE NO.

22-03 Pg 2/2

Job No: 22524317 Job Name: 864 Lady Ellen / OT. Start Date: July 14, 22 End Date: July 19, 22  
 Northing: 5025473N Inclination: 90° Logger: R. Ireland  
 Easting: 18 N 441877 E Azimuth: N/A Drilling Contractor: Rainey Drillers: Musc  
 Elevation: \_\_\_\_\_ Stick Up: 0.25m casing at 3.10m Rods/Bit: NA Rod / A/O Bit

Depth (m)	ROCK TYPE Description: Weathering State, Structure, Colour, Grain Size, Porosity, Strength, ROCK TYPE (Formation Name), Other Information	CORE RECOVERY DATA					STRENGTH		DISCONTINUITY DATA					Jr	Ja	Fracture/Joint Condition (Jcon)	Fault Breccia/Gouge	Broken/Lost Core			
		Interval No. and Depth (from - to) (m)	% Water Return/Colour	TCR m/m	SCR m/m	RQD m/m	Fractures per 0.25 m	Field Strength Index	Field Weathering Index	Fracture Depth (m)	Type & Number (#)	Discontinuity Description									
												Orientation DIP With Respect to Core Axis	Surface						Infill/Coating		
Shape	Roughness	Character	Type	Thickness (mm)																	
0.00																					
1																					
2																					
3																					
4	Slightly to moderately weathered thin to medium bedded, medium grey, fine grained, faintly porous, medium strong, Downwash, with interlamination and interbeds of shale.	Run #1 3.13-4.17	100% 0	85 104	49 104	54 104	7 11	123 122	will will	3.18 BD 3.22 BD								3.13 3.18 3.20 3.24			
5		Run #2 4.17-5.10	0	115 149	80 141	76 141	24 21	123 123	will will	3.60 BD 3.60 to 3.84 m. OX.	clay seam Pilled core barrel							4.26 4.70			
6	End of borehole. open hole water level -4.10m -3.95m.	5.10-5.26		77	54	51	3			3.60 to 3.84 m. OX.								5.11 5.15 5.26 5.31			
7		5.26 to 5.10m								4.17 BD 4.22 BD	clay seam										
8	Holeply-Bentonite #2 Silica Sand (1.52m) 5' - 1.25' (3.2m) bc Screen Bentonite Holeply cuttings Bentonite Holeply Silica Sand Flushment Installed.	17.25 to 18.58								5.15 BD											
9		10.42 to 17.25								5.11 BD	Si Sa Seam										
10										5.30 BD											

<b>Shape:</b> PL: Planar CU: Curved UN: Undulating ST: Stepped IR: Irregular	<b>Roughness:</b> K: Slickensided PO: Polished SM: Smooth RO: Rough VR: Very Rough	<b>Infilling Type:</b> Phyllosilicates Bt: Biotite Pg: Phlogopite Ch: Chlorite Cl: Clay Sr: Sericite	<b>Mineral Precipitate/Cement</b> Ca: Calcite Ep: Epidote Fe: Iron Mn: Manganese Gy: Gypsum	<b>Physical</b> M: Silt Sa: Sand Gr: Gravel Br: Broken Go: Gouge	<b>Joint Roughness (Jr):</b> Discontinuous: 4.0 Wavy and Rough: 3.0 Wavy and Smooth: 2.0 Planar/Rough or Wavy/Slickensided: 1.5 Planar/smooth OR Filled: 1.0 Planar/Slickensided: 0.5	<b>Joint Alteration (Ja):</b> Unfilled or Coated: Healed Fractures: 0.75 Staining only: 1 Slightly altered walls: 2 Silty/sandy (Decomposing): 3 Clay (Disintegrating): 4	<b>Filled:</b> Sand/Crushed Rock < 5mm: 4 Sand/Crushed Rock > 5mm: 5 Cement/Non-softening: 6 Soft Clays/Low friction: 8 Hydrating Clays/Chlorite: 12 Cement/Non-softening: 10 Soft Clays/Low friction: 15 Hydrating Clays/Chlorite: 20
---	---	--	--	---	---	---	--

<b>Type:</b> Fracture: FR Bedding: BD Joint: JN Foliation: FO Fault: FLT Cleavage: CL Vein: VN Brkn Core: BC Open Vein: VNO Contact: CON Open Contact: CONO	<b>Infilling/Coating Character:</b> Clean: - Staining Only: SO Slightly Altered: SA Continuous Coating <= 1 mm: CC Discontinuous Coating <= 2 mm: DC Continuous Infill > 1 mm: IN
---	---

22-03  
22524317

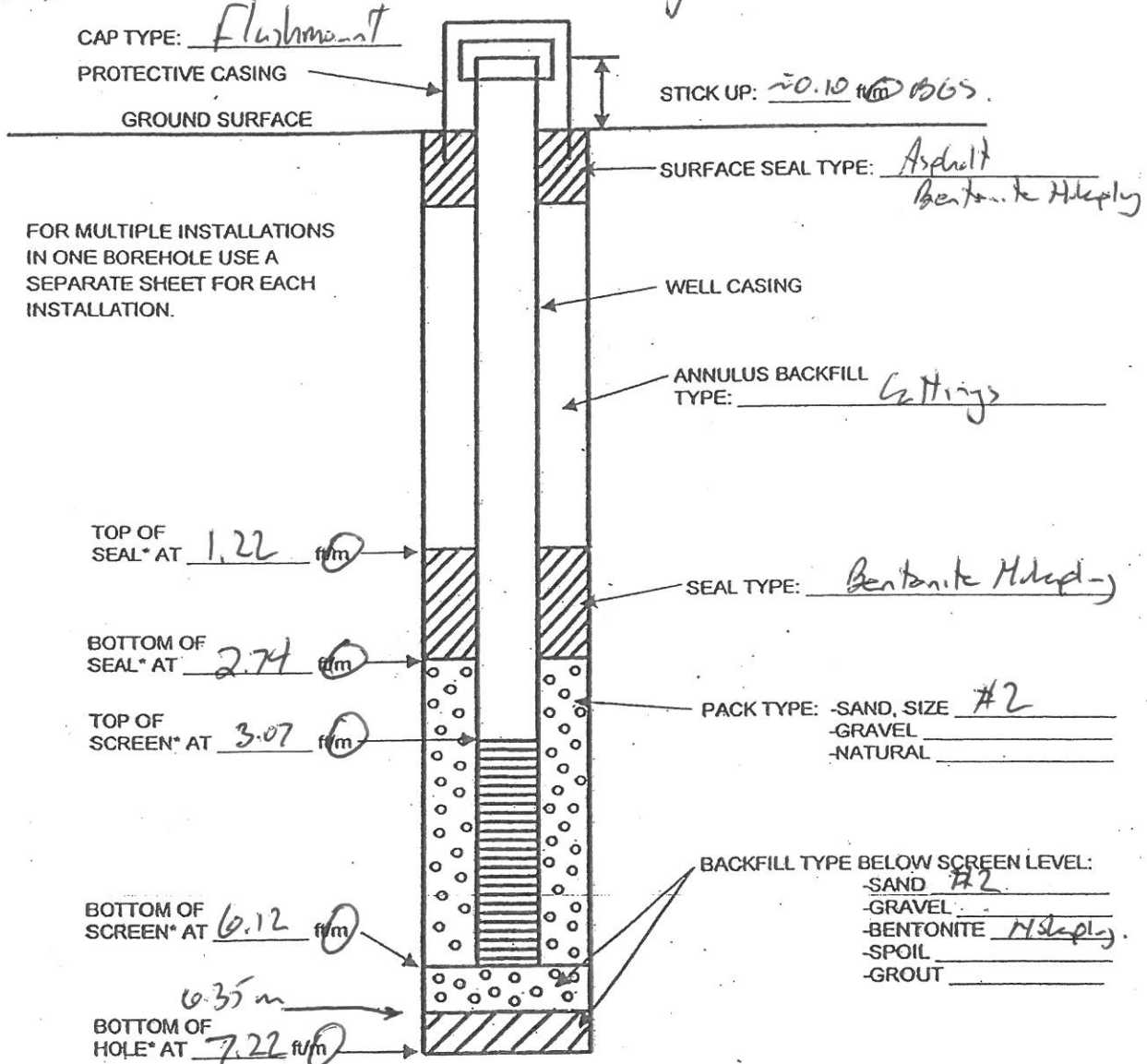
# WELL INSTRUMENTATION LOG

SHORT TITLE: 864 Lady Ellen  
 PROJECT NO.: 22524317  
 CLIENT: \_\_\_\_\_  
 LOCATION: South side of Existing Bld.

BOREHOLE NO.: 22-05  
 DATE COMPLETED: July 20, 22  
 DRILLING METHOD: 8" Power Auger / OA Rotary Drill  
 SUPERVISOR: R. Richard

GPS: 120 441798E, 5025338N

Tag # A202100



SCREEN TYPE:  continuous slot  perforated  machine slot  other: \_\_\_\_\_

SCREEN MATERIAL:  stainless steel  PVC plastic  other: \_\_\_\_\_

SCREEN LENGTH: 3.05 f/m SCREEN DIAMETER: 3.2 in/cm SCREEN SLOT SIZE: \_\_\_\_\_

WELL CASING MATERIAL: PVC Plastic WELL CASING DIAMETER: 3.2 cm in/cm

HOLE DIAMETER: 7.6 cm in/cm JOINT TYPE:  Flush Threaded  Glued  Coupled  Welded

DEVELOPMENT: METHOD: None DURATION: \_\_\_\_\_

# FIELD BOREHOLE LOG

Job No. 22-524317 Job Name 864 Lady Ellen / Off Date July 20, 22 Borehole No. 22-05  
 BH Location South side of Existing Bldg Elevation \_\_\_\_\_ (Obtained From \_\_\_\_\_) Datum \_\_\_\_\_  
 BH Coordinates Lat 441748E Long 5025332N Contractor Downing Driller Mure  
 Weather / Temperature Sunny w/ clouds, Hot, Humid Type of Rig LINE 55 Trackmount  
 Hammer Type (circle): Automatic Safety (rope/cathead) \_\_\_\_\_ Half-Weight (manual) \_\_\_\_\_ Hammer Wt 140 lbs. Drop 30 Inches

**SAMPLE CONDITIONS**

AS - AUGER SAMPLE	SS - SPLIT-SPOON SAMPLER	RC - ROCK CORE	WH - WEIGHT OF HAMMER
CS - CHUNK SAMPLE	DO - DRIVE OPEN	SA - SAMPLE	WR - WEIGHT OF RODS
WS - WASHED SAMPLE	TO - THIN-WALLED, OPEN	CA - CASING	PH - PRESSURE, HYDRAULIC
DS - DENISON SAMPLE	TP - THIN-WALLED, PISTON	WL - WATER LEVEL	PM - PRESSURE, MANUAL
FS - FOIL SAMPLE	ST - SLOTTED TUBE	V - IN-SITU VANE SHEAR TEST	



METHOD	CASING	SOIL STRATIGRAPHY		BLOWS/ft.	DEPTH	SAMPLES					*SAMPLE DESCRIPTIONS & BORING NOTES			
		DESCRIPTION	DEPTH			*Group Symbol	COND.	TYPE	No.	RECOV.	FORCE	START TIME	DEPTH OF HOLE	
		Ground Surface - Asphalt concrete	0.0		0							ENVIRO	10-0.12m	0-0.33 Asphalt concrete
		Asphalt concrete	0.3		0.3							HEX 1/8"	2" SS	0.5-2.5' (0.15-0.76m)
		Fill (sm) gravelly SAND, trace silt, angular, gray, non-cohesive, moist, loose	1.42		1.42	SW	SS	2	12	3		UVSS	0.33-1.42	Fill (sm) gravelly SAND, trace silt, angular, gray, non-cohesive, moist, loose
		Fill (sp) SAND, fine to medium, some silt; brown; non-cohesive, moist, loose	3		2	SP	SS	24	24	33		SS/0	1.42-3	Fill (sp) SAND, fine to medium, some silt; brown; non-cohesive, moist, loose
		Fill (sm) gravelly SILTY SAND, trace clay; dark brown; cobbles; non-cohesive, moist to wet, very loose	4		4	ML	SS	2	29	11		UVSS	3-4	Fill (sm) gravelly SAND, trace silt, angular, gray, non-cohesive, moist, loose
		(Med) Sandy CLAYEY SILT, trace gravel; dark brown; organic matter; cohesive; w/Pl. Firm to stiff	5		5							SS/0	4.0-4.5	(Med) Sandy CLAYEY SILT, trace gravel; dark brown; organic matter; cohesive; w/Pl. Firm to stiff
		(sm/Gm) gravelly SILTY SAND to silty sandy GRAVEL; brown to gray brown; cobbles; boulders (black Till?); non-cohesive, moist, very dense	6		6	GM	SS	3	18	28		UVSS	6.5-7	(sm/Gm) gravelly SILTY SAND to silty sandy GRAVEL; brown to gray brown; cobbles; boulders (black Till?); non-cohesive, moist, very dense
			8		8	GM	SS	4	14	37		UVSS	7-8	
			10		10	GM	SS	5	13	18		UVSS	8-10	
			12		12							SS/0	10-11	
			14		14							SS/0	11-12	
			16		16							SS/0	12-13	
			18		18							SS/0	13-14	
			12.75' (3.89m)		12.75'							SS/0	14-15	

200mm Power Auger  
108mm ID Hollow Stem

Continued on pg 2  
Back Log.  
Back Side of this Page

**SPECIAL NOTES** (GROUNDWATER CONDITIONS etc.)

FINISH TIME \_\_\_\_\_ HOURS PRODUCTIVE \_\_\_\_\_  
 HOURS STANDBY \_\_\_\_\_ HOURS DELAYED \_\_\_\_\_  
 DEPTH OF HOLE \_\_\_\_\_ DEPTH OF CASING \_\_\_\_\_  
 DEPTH TO WATER LEVEL \_\_\_\_\_  
 ENGINEER / TECHNICIAN R. Ireland

Continued on pg 2  
Back Log.  
Back side of this Page



\*Note:  Soil descriptions in accordance with GAL Soil Description System  
 Soil descriptions in accordance with \_\_\_\_\_

JOB No. 21524317  
 BOREHOLE No. BH22-05  
 DEPTH 0.0 TO 3.89  
 Pg 1/2



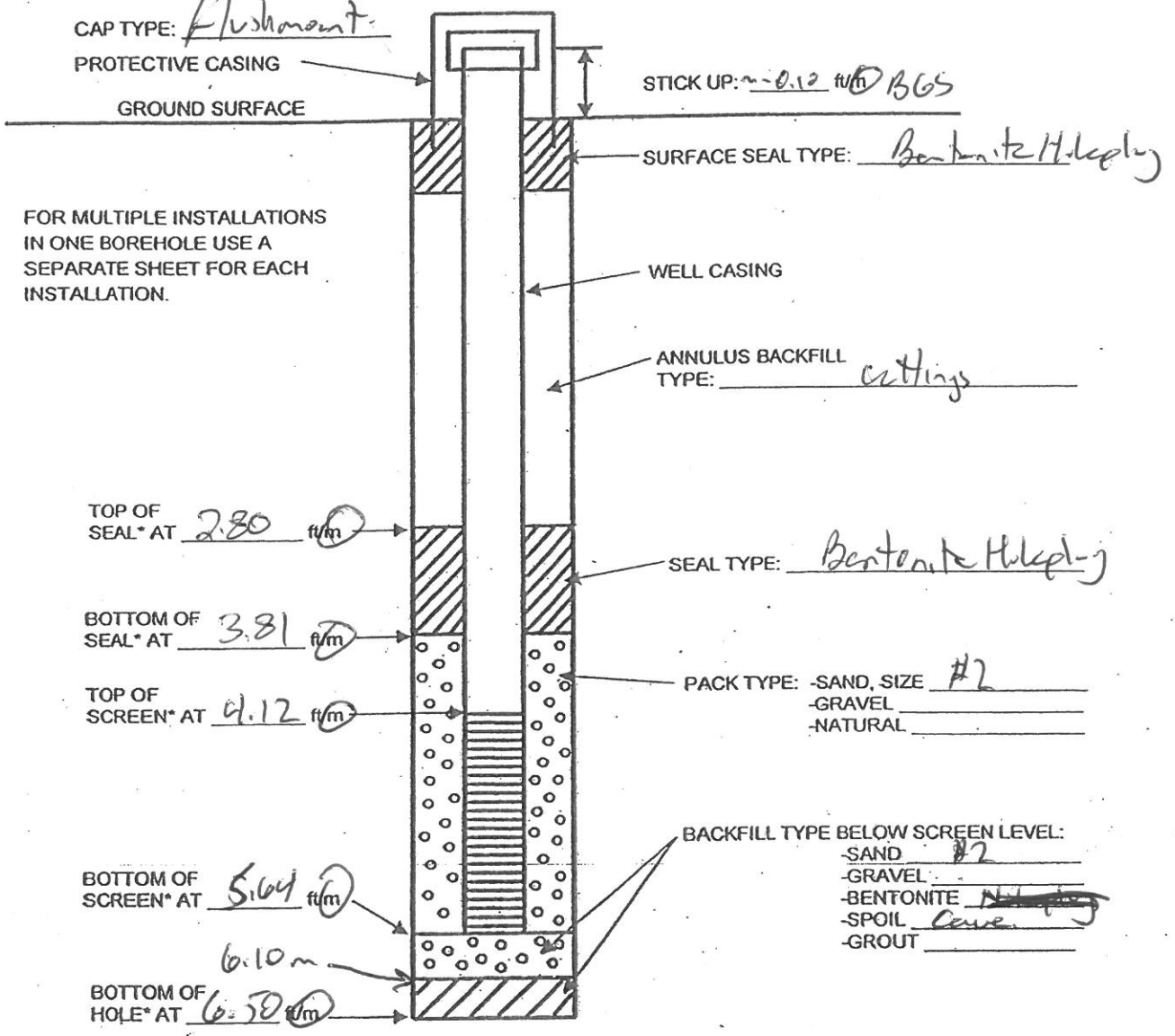


# WELL INSTRUMENTATION LOG

SHORT TITLE: 804 Lady Ellen  
 PROJECT NO.: 22524317  
 CLIENT: \_\_\_\_\_  
 LOCATION: South side of property

BOREHOLE NO.: 22-06  
 DATE COMPLETED: July 19, 22  
 DRILLING METHOD: 8" Power Auger  
 SUPERVISOR: R. Ireland

GPS 18N 441866E, 5025374N.



FOR MULTIPLE INSTALLATIONS IN ONE BOREHOLE USE A SEPARATE SHEET FOR EACH INSTALLATION.

SCREEN TYPE:  continuous slot  perforated  machine slot  other: \_\_\_\_\_

SCREEN MATERIAL:  stainless steel  plastic  other: \_\_\_\_\_

SCREEN LENGTH: 1.52 ft/m SCREEN DIAMETER: 3.2 in/cm SCREEN SLOT SIZE: \_\_\_\_\_

WELL CASING MATERIAL: Pvc Plastic WELL CASING DIAMETER: 3.2 in/cm

HOLE DIAMETER: 20 in/cm JOINT TYPE:  Flush Threaded  Glued  Coupled  Welded

DEVELOPMENT: METHOD: None DURATION: \_\_\_\_\_

# FIELD BOREHOLE LOG

Job No. 22524317 Job Name 804 Lady Ellen / Ottawa Date July 19, 22 Borehole No. 22-06  
 BH Location South Island Property Elevation \_\_\_\_\_ (Obtained From \_\_\_\_\_) Datum \_\_\_\_\_  
 BH Coordinates Lat 44°18'06"E Long 50°25'37"W Contractor Downing Driller Marc  
 Weather / Temperature Sunny, H.T. +30°C Type of Rig CME SS - Truckmount  
 Hammer Type (circle): Automatic Safety(rope/cathead) \_\_\_\_\_ Half-Weight(manual) \_\_\_\_\_ Hammer Wt 140 lbs. Drop 30 Inches

<b>SAMPLE CONDITIONS</b>	AS - AUGER SAMPLE	SS - SPLIT-SPOON SAMPLER	RC - ROCK CORE	WH - WEIGHT OF HAMMER
<b>DISTURBED</b>	CS - CHUNK SAMPLE	DO - DRIVE OPEN	SA - SAMPLE	WR - WEIGHT OF RODS
<b>FAIR</b>	WS - WASHED SAMPLE	TO - THIN-WALLED, OPEN	CA - CASING	PH - PRESSURE, HYDRAULIC
<b>GOOD</b>	DS - DENISON SAMPLE	TP - THIN-WALLED, PISTON	WL - WATER LEVEL	PM - PRESSURE, MANUAL
<b>LOST</b>	FS - FOIL SAMPLE	ST - SLOTTED TUBE	V - IN-SITU VANE SHEAR TEST	

METHOD	CASING	SOIL STRATIGRAPHY			SAMPLES					*SAMPLE DESCRIPTIONS & BORING NOTES			
		DESCRIPTION	DEPTH	BLOWS/ft	DEPTH	*Group Symbol	COND.	TYPE	No.	RECOV.	FORCE	START TIME	DEPTH OF HOLE
		Ground Surface	0.0'	0.0m	0								
		Fill (sm) gravelly SILTY SAND; trace gravel; dark brown to black; organic matter; rootlets; non-cohesive, moist, loose.	0.33'	0.10m	3	SM	24	SS	1	20	10	13:45	0.33-0.23 Fill (sm) gravelly SILTY SAND, organic matter, rootlets, non-cohesive, moist, loose.
		Fill (sm) gravelly SILTY SAND; angular; grey; non-cohesive, moist, compact.	1.42'	0.45m	2	SM	24	SS	2	24	10	13:55	0.23-1.42 Fill (sm) SILTY SAND, trace gravel, dark brown, organic matter, rootlets; non-cohesive, moist, compact.
		Fill (sm) gravelly SILTY SAND; brown, organic matter, rootlets; non-cohesive, moist, compact.	2.42'	0.76m	2	SM	24	SS	2	24	10	14:15	1.42-2.42 (Fill/topsoil) (sm) SILTY SAND, trace gravel; dark brown, organic matter, rootlets; non-cohesive, moist, compact.
		Fill (topsoil) (sm) SILTY SAND, trace gravel; dark brown, organic matter, rootlets; non-cohesive, moist, compact.	3.5'	1.07m	2	SM	24	SS	2	24	10	14:30	2.42-3.5 (sm) gravelly SILTY SAND, trace clay; brown, cobbles, boulders (Till); non-cohesive, moist, compact to dense.
		(sm) gravelly SILTY SAND, trace clay; brown, cobbles, boulders (Till); non-cohesive, moist, compact to dense.	3.5'	1.07m	2	SM	24	SS	4	24	19	13:35	3.5-4.5 (sm) gravelly SILTY SAND, trace clay; brown, cobbles, boulders (Till); non-cohesive, moist, compact to dense.
		(sm) gravelly SILTY SAND, trace clay; brownish grey, cobbles, boulders (Till); non-cohesive, moist to wet, compact to dense.	5.34'	1.63m	2	SM	24	SS	5	24	14	13:45	4.5-5.34 (sm) gravelly SILTY SAND, trace clay; brownish grey, cobbles, boulders (Till); non-cohesive, moist to wet, compact to dense.
		Continued on pg 2	17.5'	5.34m	2	SM	24	SS	8	24	19	18:55	5.34-17.5 (sm) gravelly SILTY SAND, trace clay; brownish grey, cobbles, boulders (Till); non-cohesive, moist to wet, compact to dense.

**SPECIAL NOTES** (GROUNDWATER CONDITIONS etc.)

FINISH TIME \_\_\_\_\_ HOURS PRODUCTIVE \_\_\_\_\_  
 HOURS STANDBY \_\_\_\_\_ HOURS DELAYED \_\_\_\_\_  
 DEPTH OF HOLE \_\_\_\_\_ DEPTH OF CASING \_\_\_\_\_  
 DEPTH TO WATER LEVEL \_\_\_\_\_  
 ENGINEER / TECHNICIAN R. Ireland

SA# 8 2" SS 17.5 to 17.5' (5.34-5.34m)  
 No Advancement, no recovery  
 Spear returned @ 17.5' - Poss. bldg.  
 Continued on pg 2

\*Note:  Soil descriptions in accordance with GAL Soil Description System



JOB No. 22524317  
 BOREHOLE No. 22-06  
 DEPTH 0.0 TO 5.34m

# FIELD BOREHOLE LOG

Job No. 22524317 Job Name 204 Lady Ellen / Offshore  
 BH Location South Street Property 120 411800E 305374N Elevation (Obtained from Datum)  
 BH Coordinates 120 411800E 305374N Contractor Downey Trucking  
 Weather / Temperature Sunny, Hot, 70°F Type of Rig 3510  
 Hammer Type (circle): Automatic Safety(rope/cathod) Half-Weight(manual) Hammer Wt 140 lbs. Drop 30 Inches

**SAMPLE CONDITIONS**

AS - AUGER SAMPLE	RC - ROCK CORE	WH - WEIGHT OF HAMMER
CS - CHUNK SAMPLE	SA - SAMPLE	WR - WEIGHT OF RODS
WS - WASHED SAMPLE	CA - CASING	PH - PRESSURE, HYDRAULIC
DS - DENISON SAMPLE	WL - WATER LEVEL	PM - PRESSURE, MANUAL
FS - FOIL SAMPLE	ST - SLOTTED TUBE	V - IN-SITU VANE SHEAR TEST

METHOD	CASING	SOIL STRATIGRAPHY		DEPTH	BLOWS/ FT	DEPTH	*Group Symbol	COND.	TYPE	No.	RECOV.	FORCE	SAMPLES		*SAMPLE DESCRIPTIONS & BORING NOTES	
		DEPTH	DESCRIPTION										START TIME	DEPTH TO W.L.	DEPTH OF HOLE	DEPTH OF CASING
20mm Bauer-Auger	Denison 17 1/2" dia	17.5'	Cont med fine sand	17.5		17.5	GM									Center from logs
		18'	(SM) granly SILT SAND, (S.3m) trace clay, gray brown heavy, cobbles, boulders (TIII) non-adhesive, moist touch	18		18	GM									Auger 20" - V.H. 6.2m
		20'	(SM) SILT SAND fine brown, trace gray; non-cohesive, wet, moist dense	20		20	GM									Auger 20" - V.H. 6.42m
		21.33'		21.33		21.33	GM									Auger 20" - V.H. 6.48m
		22'		22		22	GM									Auger 20" - V.H. 6.50m
		24'		24		24	GM									Water table @ 4.82m
		26'		26		26	GM									Core 20 - 21.33' (6.10-6.50m)
		28'		28		28	GM									Core 20 - 21.33' (6.10-6.50m)
		28'		28		28	GM									Core 20 - 21.33' (6.10-6.50m)

**SPECIAL NOTES** (GROUNDWATER CONDITIONS etc.)

FINISH TIME \_\_\_\_\_ HOURS PRODUCTIVE \_\_\_\_\_ HOURS DELAYED \_\_\_\_\_

DEPTH OF HOLE \_\_\_\_\_ DEPTH OF CASING \_\_\_\_\_

DEPTH TO WATER LEVEL \_\_\_\_\_ ENGINEER / TECHNICIAN \_\_\_\_\_

Job No. 22524317 Date July 19, 2012 Borehole No. 22-06

Job Name 204 Lady Ellen / Offshore

Driller M. \_\_\_\_\_

Weather / Temperature Sunny, Hot, 70°F

Hammer Type (circle): Automatic Safety(rope/cathod) Half-Weight(manual) Hammer Wt 140 lbs. Drop 30 Inches

**APPENDIX D**

**Certificates of Analysis**



Your Project #: 22524317  
 Site Location: 864 LADYELLEN  
 Your C.O.C. #: 889132-01-01

**Attention: Paul Hurst**

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

**Report Date: 2022/08/02**  
 Report #: R7235871  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C2K8778**

**Received: 2022/07/25, 13:00**

Sample Matrix: Water  
 # Samples Received: 5

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Methylnaphthalene Sum (1)	5	N/A	2022/07/30	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	5	N/A	2022/07/29		EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	5	2022/07/29	2022/07/29	CAM SOP-00316	CCME PHC-CWS m
Dissolved Metals by ICPMS (1)	5	N/A	2022/07/27	CAM SOP-00447	EPA 6020B m
PAH Compounds in Water by GC/MS (SIM) (1)	5	2022/07/29	2022/07/29	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs (1)	2	N/A	2022/07/28	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds and F1 PHCs (1)	3	N/A	2022/07/29	CAM SOP-00230	EPA 8260C m

**Remarks:**

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd, Mississauga, ON, L5N 2L8

(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.



Your Project #: 22524317  
Site Location: 864 LADYELLEN  
Your C.O.C. #: 889132-01-01

**Attention: Paul Hurst**

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

**Report Date: 2022/08/02**  
Report #: R7235871  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C2K8778**

**Received: 2022/07/25, 13:00**

Encryption Key

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

Katherine Szozda, Project Manager

Email: Katherine.Szozda@bureauveritas.com

Phone# (613)274-0573 Ext:7063633

=====  
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.  
For Service Group specific validation please refer to the Validation Signature Page.



BUREAU  
VERITAS

Bureau Veritas Job #: C2K8778  
Report Date: 2022/08/02

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADYELLEN  
Sampler Initials: P.C

**O.REG 153 DISSOLVED ICPMS METALS (WATER)**

Bureau Veritas ID		TGS046	TGS047	TGS048	TGS049	TGS050		
Sampling Date		2022/07/22 05:38	2022/07/22 04:30	2022/07/22 05:05	2022/07/22	2022/07/22 04:13		
COC Number		889132-01-01	889132-01-01	889132-01-01	889132-01-01	889132-01-01		
	UNITS	22-03	22-05	22-06	TRIP BLANK	DUP1	RDL	QC Batch

Metals								
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8130774
Dissolved Arsenic (As)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8130774
Dissolved Barium (Ba)	ug/L	220	360	350	<2.0	360	2.0	8130774
Dissolved Beryllium (Be)	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8130774
Dissolved Boron (B)	ug/L	62	91	77	<10	92	10	8130774
Dissolved Cadmium (Cd)	ug/L	<0.090	<0.090	<0.090	<0.090	<0.090	0.090	8130774
Dissolved Chromium (Cr)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	8130774
Dissolved Cobalt (Co)	ug/L	<0.50	0.95	4.8	<0.50	1.0	0.50	8130774
Dissolved Copper (Cu)	ug/L	5.4	0.95	<0.90	<0.90	1.2	0.90	8130774
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8130774
Dissolved Molybdenum (Mo)	ug/L	0.99	1.3	1.2	<0.50	1.3	0.50	8130774
Dissolved Nickel (Ni)	ug/L	1.5	3.5	4.7	<1.0	3.7	1.0	8130774
Dissolved Selenium (Se)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8130774
Dissolved Silver (Ag)	ug/L	<0.090	<0.090	<0.090	<0.090	0.15	0.090	8130774
Dissolved Sodium (Na)	ug/L	260000	470000	440000	<100	450000	100	8130774
Dissolved Thallium (Tl)	ug/L	<0.050	0.057	<0.050	<0.050	0.053	0.050	8130774
Dissolved Uranium (U)	ug/L	1.5	0.47	1.3	<0.10	0.48	0.10	8130774
Dissolved Vanadium (V)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8130774
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	8130774

RDL = Reportable Detection Limit  
QC Batch = Quality Control Batch





BUREAU  
VERITAS

Bureau Veritas Job #: C2K8778  
Report Date: 2022/08/02

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADYELLEN  
Sampler Initials: P.C

**O.REG 153 PAHS (WATER)**

Bureau Veritas ID		TGS046	TGS047			TGS047		
Sampling Date		2022/07/22 05:38	2022/07/22 04:30			2022/07/22 04:30		
COC Number		889132-01-01	889132-01-01			889132-01-01		
	UNITS	22-03	22-05	RDL	QC Batch	22-05 Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>								
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	0.071	8130419			
<b>Polyaromatic Hydrocarbons</b>								
Acenaphthene	ug/L	<0.050	<0.050	0.050	8137736	<0.050	0.050	8137736
Acenaphthylene	ug/L	<0.050	<0.050	0.050	8137736	<0.050	0.050	8137736
Anthracene	ug/L	<0.050	<0.050	0.050	8137736	<0.050	0.050	8137736
Benzo(a)anthracene	ug/L	<0.050	<0.050	0.050	8137736	<0.050	0.050	8137736
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	0.0090	8137736	<0.0090	0.0090	8137736
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	0.050	8137736	<0.050	0.050	8137736
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	0.050	8137736	<0.050	0.050	8137736
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	8137736	<0.050	0.050	8137736
Chrysene	ug/L	<0.050	<0.050	0.050	8137736	<0.050	0.050	8137736
Dibenzo(a,h)anthracene	ug/L	<0.050	<0.050	0.050	8137736	<0.050	0.050	8137736
Fluoranthene	ug/L	<0.050	<0.050	0.050	8137736	<0.050	0.050	8137736
Fluorene	ug/L	<0.050	<0.050	0.050	8137736	<0.050	0.050	8137736
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	8137736	<0.050	0.050	8137736
1-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	8137736	<0.050	0.050	8137736
2-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	8137736	<0.050	0.050	8137736
Naphthalene	ug/L	<0.050	<0.050	0.050	8137736	<0.050	0.050	8137736
Phenanthrene	ug/L	<0.030	<0.030	0.030	8137736	<0.030	0.030	8137736
Pyrene	ug/L	<0.050	<0.050	0.050	8137736	<0.050	0.050	8137736
<b>Surrogate Recovery (%)</b>								
D10-Anthracene	%	104	108		8137736	99		8137736
D14-Terphenyl (FS)	%	98	107		8137736	98		8137736
D8-Acenaphthylene	%	98	100		8137736	92		8137736
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate								



BUREAU  
VERITAS

Bureau Veritas Job #: C2K8778  
Report Date: 2022/08/02

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADYELLEN  
Sampler Initials: P.C

### O.REG 153 PAHS (WATER)

Bureau Veritas ID		TGS048	TGS049	TGS050		
Sampling Date		2022/07/22 05:05	2022/07/22	2022/07/22 04:13		
COC Number		889132-01-01	889132-01-01	889132-01-01		
	UNITS	22-06	TRIP BLANK	DUP1	RDL	QC Batch
<b>Calculated Parameters</b>						
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	<0.071	0.071	8130419
<b>Polyaromatic Hydrocarbons</b>						
Acenaphthene	ug/L	<0.050	<0.050	<0.050	0.050	8137736
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	0.050	8137736
Anthracene	ug/L	<0.050	<0.050	<0.050	0.050	8137736
Benzo(a)anthracene	ug/L	<0.050	<0.050	<0.050	0.050	8137736
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	<0.0090	0.0090	8137736
Benzo(b,j)fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	8137736
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	0.050	8137736
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	8137736
Chrysene	ug/L	<0.050	<0.050	<0.050	0.050	8137736
Dibenzo(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	0.050	8137736
Fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	8137736
Fluorene	ug/L	<0.050	<0.050	<0.050	0.050	8137736
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	0.050	8137736
1-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	0.050	8137736
2-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	0.050	8137736
Naphthalene	ug/L	<0.050	<0.050	<0.050	0.050	8137736
Phenanthrene	ug/L	<0.030	<0.030	<0.030	0.030	8137736
Pyrene	ug/L	<0.050	<0.050	<0.050	0.050	8137736
<b>Surrogate Recovery (%)</b>						
D10-Anthracene	%	94	105	99		8137736
D14-Terphenyl (FS)	%	91	96	85		8137736
D8-Acenaphthylene	%	87	99	95		8137736
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						



BUREAU  
VERITAS

Bureau Veritas Job #: C2K8778  
Report Date: 2022/08/02

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADYELLEN  
Sampler Initials: P.C

**O.REG 153 VOCS BY HS & F1-F4 (WATER)**

Bureau Veritas ID		TGS046	TGS047			TGS047		
Sampling Date		2022/07/22 05:38	2022/07/22 04:30			2022/07/22 04:30		
COC Number		889132-01-01	889132-01-01			889132-01-01		
	UNITS	22-03	22-05	RDL	QC Batch	22-05 Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>								
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	0.50	8130420			
<b>Volatile Organics</b>								
Acetone (2-Propanone)	ug/L	<10	<10	10	8130826			
Benzene	ug/L	<0.17	<0.17	0.17	8130826			
Bromodichloromethane	ug/L	<0.50	<0.50	0.50	8130826			
Bromoform	ug/L	<1.0	<1.0	1.0	8130826			
Bromomethane	ug/L	<0.50	<0.50	0.50	8130826			
Carbon Tetrachloride	ug/L	<0.20	<0.20	0.20	8130826			
Chlorobenzene	ug/L	<0.20	<0.20	0.20	8130826			
Chloroform	ug/L	<0.20	0.59	0.20	8130826			
Dibromochloromethane	ug/L	<0.50	<0.50	0.50	8130826			
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	8130826			
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	8130826			
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	8130826			
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	1.0	8130826			
1,1-Dichloroethane	ug/L	<0.20	3.0	0.20	8130826			
1,2-Dichloroethane	ug/L	<0.50	<0.50	0.50	8130826			
1,1-Dichloroethylene	ug/L	<0.20	0.48	0.20	8130826			
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	8130826			
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	8130826			
1,2-Dichloropropane	ug/L	<0.20	<0.20	0.20	8130826			
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	0.30	8130826			
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	0.40	8130826			
Ethylbenzene	ug/L	<0.20	<0.20	0.20	8130826			
Ethylene Dibromide	ug/L	<0.20	<0.20	0.20	8130826			
Hexane	ug/L	<1.0	<1.0	1.0	8130826			
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	2.0	8130826			
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	10	8130826			
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	5.0	8130826			
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	0.50	8130826			
Styrene	ug/L	<0.50	<0.50	0.50	8130826			
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	8130826			
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	8130826			
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate								



**O.REG 153 VOCs BY HS & F1-F4 (WATER)**

Bureau Veritas ID		TGS046	TGS047			TGS047		
Sampling Date		2022/07/22 05:38	2022/07/22 04:30			2022/07/22 04:30		
COC Number		889132-01-01	889132-01-01			889132-01-01		
	UNITS	22-03	22-05	RDL	QC Batch	22-05 Lab-Dup	RDL	QC Batch
Tetrachloroethylene	ug/L	<0.20	<0.20	0.20	8130826			
Toluene	ug/L	<0.20	<0.20	0.20	8130826			
1,1,1-Trichloroethane	ug/L	0.32	9.6	0.20	8130826			
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	0.50	8130826			
Trichloroethylene	ug/L	0.86	<0.20	0.20	8130826			
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	0.50	8130826			
Vinyl Chloride	ug/L	<0.20	<0.20	0.20	8130826			
p+m-Xylene	ug/L	<0.20	<0.20	0.20	8130826			
o-Xylene	ug/L	<0.20	<0.20	0.20	8130826			
Total Xylenes	ug/L	<0.20	<0.20	0.20	8130826			
F1 (C6-C10)	ug/L	<25	<25	25	8130826			
F1 (C6-C10) - BTEX	ug/L	<25	<25	25	8130826			
<b>F2-F4 Hydrocarbons</b>								
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	100	8137728	<100	100	8137728
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	200	8137728	<200	200	8137728
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	200	8137728	<200	200	8137728
Reached Baseline at C50	ug/L	Yes	Yes		8137728	Yes		8137728
<b>Surrogate Recovery (%)</b>								
o-Terphenyl	%	105	105		8137728	104		8137728
4-Bromofluorobenzene	%	90	88		8130826			
D4-1,2-Dichloroethane	%	113	110		8130826			
D8-Toluene	%	97	97		8130826			
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate								



BUREAU  
VERITAS

Bureau Veritas Job #: C2K8778  
Report Date: 2022/08/02

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADYELLEN  
Sampler Initials: P.C

**O.REG 153 VOCs BY HS & F1-F4 (WATER)**

Bureau Veritas ID		TGS048	TGS049	TGS050		
Sampling Date		2022/07/22 05:05	2022/07/22	2022/07/22 04:13		
COC Number		889132-01-01	889132-01-01	889132-01-01		
	UNITS	22-06	TRIP BLANK	DUP1	RDL	QC Batch
<b>Calculated Parameters</b>						
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	<0.50	0.50	8130420
<b>Volatile Organics</b>						
Acetone (2-Propanone)	ug/L	<10	<10	<10	10	8130826
Benzene	ug/L	<0.17	<0.17	<0.17	0.17	8130826
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	0.50	8130826
Bromoform	ug/L	<1.0	<1.0	<1.0	1.0	8130826
Bromomethane	ug/L	<0.50	<0.50	<0.50	0.50	8130826
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	0.20	8130826
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	0.20	8130826
Chloroform	ug/L	<0.20	<0.20	0.52	0.20	8130826
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	0.50	8130826
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	8130826
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	8130826
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	8130826
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	1.0	8130826
1,1-Dichloroethane	ug/L	<0.20	<0.20	3.0	0.20	8130826
1,2-Dichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	8130826
1,1-Dichloroethylene	ug/L	<0.20	<0.20	0.46	0.20	8130826
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	0.50	8130826
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	0.50	8130826
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	0.20	8130826
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	0.30	8130826
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	0.40	8130826
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	0.20	8130826
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	0.20	8130826
Hexane	ug/L	<1.0	<1.0	<1.0	1.0	8130826
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	2.0	8130826
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	10	8130826
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	5.0	8130826
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	<0.50	0.50	8130826
Styrene	ug/L	<0.50	<0.50	<0.50	0.50	8130826
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	8130826
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	8130826
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						



O.REG 153 VOCS BY HS & F1-F4 (WATER)

Bureau Veritas ID		TGS048	TGS049	TGS050		
Sampling Date		2022/07/22 05:05	2022/07/22	2022/07/22 04:13		
COC Number		889132-01-01	889132-01-01	889132-01-01		
	UNITS	22-06	TRIP BLANK	DUP1	RDL	QC Batch
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	8130826
Toluene	ug/L	<0.20	<0.20	<0.20	0.20	8130826
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	9.2	0.20	8130826
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	8130826
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	8130826
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	0.50	8130826
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	0.20	8130826
p+m-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	8130826
o-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	8130826
Total Xylenes	ug/L	<0.20	<0.20	<0.20	0.20	8130826
F1 (C6-C10)	ug/L	<25	<25	<25	25	8130826
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	25	8130826
<b>F2-F4 Hydrocarbons</b>						
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	100	8137728
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	200	8137728
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	200	8137728
Reached Baseline at C50	ug/L	Yes	Yes	Yes		8137728
<b>Surrogate Recovery (%)</b>						
o-Terphenyl	%	90	94	102		8137728
4-Bromofluorobenzene	%	89	89	88		8130826
D4-1,2-Dichloroethane	%	114	111	115		8130826
D8-Toluene	%	95	97	97		8130826
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						



BUREAU  
VERITAS

Bureau Veritas Job #: C2K8778  
Report Date: 2022/08/02

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADYELLEN  
Sampler Initials: P.C

### TEST SUMMARY

**Bureau Veritas ID:** TGS046  
**Sample ID:** 22-03  
**Matrix:** Water

**Collected:** 2022/07/22  
**Shipped:**  
**Received:** 2022/07/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8130419	N/A	2022/07/30	Automated Statchk
1,3-Dichloropropene Sum	CALC	8130420	N/A	2022/07/29	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8137728	2022/07/29	2022/07/29	Dennis Ngondou
Dissolved Metals by ICPMS	ICP/MS	8130774	N/A	2022/07/27	Daniel Teclu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	8137736	2022/07/29	2022/07/29	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8130826	N/A	2022/07/28	Jett Wu

**Bureau Veritas ID:** TGS047  
**Sample ID:** 22-05  
**Matrix:** Water

**Collected:** 2022/07/22  
**Shipped:**  
**Received:** 2022/07/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8130419	N/A	2022/07/30	Automated Statchk
1,3-Dichloropropene Sum	CALC	8130420	N/A	2022/07/29	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8137728	2022/07/29	2022/07/29	Dennis Ngondou
Dissolved Metals by ICPMS	ICP/MS	8130774	N/A	2022/07/27	Daniel Teclu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	8137736	2022/07/29	2022/07/29	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8130826	N/A	2022/07/28	Jett Wu

**Bureau Veritas ID:** TGS047 Dup  
**Sample ID:** 22-05  
**Matrix:** Water

**Collected:** 2022/07/22  
**Shipped:**  
**Received:** 2022/07/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8137728	2022/07/29	2022/07/29	Dennis Ngondou
PAH Compounds in Water by GC/MS (SIM)	GC/MS	8137736	2022/07/29	2022/07/29	Mitesh Raj

**Bureau Veritas ID:** TGS048  
**Sample ID:** 22-06  
**Matrix:** Water

**Collected:** 2022/07/22  
**Shipped:**  
**Received:** 2022/07/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8130419	N/A	2022/07/30	Automated Statchk
1,3-Dichloropropene Sum	CALC	8130420	N/A	2022/07/29	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8137728	2022/07/29	2022/07/29	Dennis Ngondou
Dissolved Metals by ICPMS	ICP/MS	8130774	N/A	2022/07/27	Daniel Teclu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	8137736	2022/07/29	2022/07/29	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8130826	N/A	2022/07/29	Jett Wu

**Bureau Veritas ID:** TGS049  
**Sample ID:** TRIP BLANK  
**Matrix:** Water

**Collected:** 2022/07/22  
**Shipped:**  
**Received:** 2022/07/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8130419	N/A	2022/07/30	Automated Statchk
1,3-Dichloropropene Sum	CALC	8130420	N/A	2022/07/29	Automated Statchk



BUREAU  
VERITAS

Bureau Veritas Job #: C2K8778  
Report Date: 2022/08/02

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADYELLEN  
Sampler Initials: P.C

### TEST SUMMARY

**Bureau Veritas ID:** TGS049  
**Sample ID:** TRIP BLANK  
**Matrix:** Water

**Collected:** 2022/07/22  
**Shipped:**  
**Received:** 2022/07/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8137728	2022/07/29	2022/07/29	Dennis Ngonda
Dissolved Metals by ICPMS	ICP/MS	8130774	N/A	2022/07/27	Daniel Teclu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	8137736	2022/07/29	2022/07/29	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8130826	N/A	2022/07/29	Jett Wu

**Bureau Veritas ID:** TGS050  
**Sample ID:** DUP1  
**Matrix:** Water

**Collected:** 2022/07/22  
**Shipped:**  
**Received:** 2022/07/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8130419	N/A	2022/07/30	Automated Statchk
1,3-Dichloropropene Sum	CALC	8130420	N/A	2022/07/29	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8137728	2022/07/29	2022/07/29	Dennis Ngonda
Dissolved Metals by ICPMS	ICP/MS	8130774	N/A	2022/07/27	Daniel Teclu
PAH Compounds in Water by GC/MS (SIM)	GC/MS	8137736	2022/07/29	2022/07/29	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8130826	N/A	2022/07/29	Jett Wu





BUREAU  
VERITAS

Bureau Veritas Job #: C2K8778  
Report Date: 2022/08/02

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADYELLEN  
Sampler Initials: P.C

### GENERAL COMMENTS

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

Package 1	9.0°C
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**Results relate only to the items tested.**



BUREAU  
VERITAS

Bureau Veritas Job #: C2K8778

Report Date: 2022/08/02

### QUALITY ASSURANCE REPORT

Golder Associates Ltd

Client Project #: 22524317

Site Location: 864 LADYELLEN

Sampler Initials: P.C

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8130826	4-Bromofluorobenzene	2022/07/28	99	70 - 130	99	70 - 130	92	%		
8130826	D4-1,2-Dichloroethane	2022/07/28	109	70 - 130	108	70 - 130	110	%		
8130826	D8-Toluene	2022/07/28	104	70 - 130	104	70 - 130	97	%		
8137728	o-Terphenyl	2022/07/29	103	60 - 130	103	60 - 130	102	%		
8137736	D10-Anthracene	2022/07/29	96	50 - 130	101	50 - 130	102	%		
8137736	D14-Terphenyl (FS)	2022/07/29	93	50 - 130	98	50 - 130	99	%		
8137736	D8-Acenaphthylene	2022/07/29	90	50 - 130	95	50 - 130	94	%		
8130774	Dissolved Antimony (Sb)	2022/07/27	104	80 - 120	100	80 - 120	<0.50	ug/L	NC	20
8130774	Dissolved Arsenic (As)	2022/07/27	97	80 - 120	98	80 - 120	<1.0	ug/L	NC	20
8130774	Dissolved Barium (Ba)	2022/07/27	99	80 - 120	100	80 - 120	<2.0	ug/L	1.4	20
8130774	Dissolved Beryllium (Be)	2022/07/27	95	80 - 120	102	80 - 120	<0.40	ug/L	NC	20
8130774	Dissolved Boron (B)	2022/07/27	97	80 - 120	101	80 - 120	<10	ug/L	0.22	20
8130774	Dissolved Cadmium (Cd)	2022/07/27	100	80 - 120	99	80 - 120	<0.090	ug/L	NC	20
8130774	Dissolved Chromium (Cr)	2022/07/27	94	80 - 120	95	80 - 120	<5.0	ug/L	NC	20
8130774	Dissolved Cobalt (Co)	2022/07/27	95	80 - 120	99	80 - 120	<0.50	ug/L	5.5	20
8130774	Dissolved Copper (Cu)	2022/07/27	95	80 - 120	96	80 - 120	<0.90	ug/L	2.2	20
8130774	Dissolved Lead (Pb)	2022/07/27	93	80 - 120	97	80 - 120	<0.50	ug/L	NC	20
8130774	Dissolved Molybdenum (Mo)	2022/07/27	103	80 - 120	100	80 - 120	<0.50	ug/L	2.6	20
8130774	Dissolved Nickel (Ni)	2022/07/27	94	80 - 120	96	80 - 120	<1.0	ug/L	2.7	20
8130774	Dissolved Selenium (Se)	2022/07/27	97	80 - 120	98	80 - 120	<2.0	ug/L	NC	20
8130774	Dissolved Silver (Ag)	2022/07/27	96	80 - 120	100	80 - 120	<0.090	ug/L	14	20
8130774	Dissolved Sodium (Na)	2022/07/27	NC	80 - 120	97	80 - 120	<100	ug/L	2.3	20
8130774	Dissolved Thallium (Tl)	2022/07/27	97	80 - 120	99	80 - 120	<0.050	ug/L	1.8	20
8130774	Dissolved Uranium (U)	2022/07/27	101	80 - 120	99	80 - 120	<0.10	ug/L	1.6	20
8130774	Dissolved Vanadium (V)	2022/07/27	97	80 - 120	96	80 - 120	<0.50	ug/L	NC	20
8130774	Dissolved Zinc (Zn)	2022/07/27	92	80 - 120	96	80 - 120	<5.0	ug/L	2.1	20
8130826	1,1,1,2-Tetrachloroethane	2022/07/28	107	70 - 130	101	70 - 130	<0.50	ug/L	NC	30
8130826	1,1,1-Trichloroethane	2022/07/28	107	70 - 130	104	70 - 130	<0.20	ug/L	NC	30
8130826	1,1,2,2-Tetrachloroethane	2022/07/28	111	70 - 130	100	70 - 130	<0.50	ug/L	NC	30
8130826	1,1,2-Trichloroethane	2022/07/28	113	70 - 130	105	70 - 130	<0.50	ug/L	NC	30
8130826	1,1-Dichloroethane	2022/07/28	105	70 - 130	101	70 - 130	<0.20	ug/L	NC	30
8130826	1,1-Dichloroethylene	2022/07/28	108	70 - 130	106	70 - 130	<0.20	ug/L	NC	30



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Bureau Veritas Job #: C2K8778

Report Date: 2022/08/02

### QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd

Client Project #: 22524317

Site Location: 864 LADYELLEN

Sampler Initials: P.C

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8130826	1,2-Dichlorobenzene	2022/07/28	104	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
8130826	1,2-Dichloroethane	2022/07/28	107	70 - 130	101	70 - 130	<0.50	ug/L	NC	30
8130826	1,2-Dichloropropane	2022/07/28	106	70 - 130	101	70 - 130	<0.20	ug/L	NC	30
8130826	1,3-Dichlorobenzene	2022/07/28	103	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
8130826	1,4-Dichlorobenzene	2022/07/28	119	70 - 130	111	70 - 130	<0.50	ug/L	NC	30
8130826	Acetone (2-Propanone)	2022/07/28	115	60 - 140	105	60 - 140	<10	ug/L	NC	30
8130826	Benzene	2022/07/28	99	70 - 130	95	70 - 130	<0.17	ug/L	NC	30
8130826	Bromodichloromethane	2022/07/28	108	70 - 130	103	70 - 130	<0.50	ug/L	NC	30
8130826	Bromoform	2022/07/28	108	70 - 130	98	70 - 130	<1.0	ug/L	NC	30
8130826	Bromomethane	2022/07/28	112	60 - 140	109	60 - 140	<0.50	ug/L	NC	30
8130826	Carbon Tetrachloride	2022/07/28	103	70 - 130	101	70 - 130	<0.20	ug/L	NC	30
8130826	Chlorobenzene	2022/07/28	103	70 - 130	97	70 - 130	<0.20	ug/L	NC	30
8130826	Chloroform	2022/07/28	107	70 - 130	103	70 - 130	<0.20	ug/L	NC	30
8130826	cis-1,2-Dichloroethylene	2022/07/28	106	70 - 130	102	70 - 130	<0.50	ug/L	NC	30
8130826	cis-1,3-Dichloropropene	2022/07/28	96	70 - 130	90	70 - 130	<0.30	ug/L	NC	30
8130826	Dibromochloromethane	2022/07/28	107	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
8130826	Dichlorodifluoromethane (FREON 12)	2022/07/28	138	60 - 140	134	60 - 140	<1.0	ug/L	NC	30
8130826	Ethylbenzene	2022/07/28	93	70 - 130	90	70 - 130	<0.20	ug/L	NC	30
8130826	Ethylene Dibromide	2022/07/28	107	70 - 130	97	70 - 130	<0.20	ug/L	NC	30
8130826	F1 (C6-C10) - BTEX	2022/07/28					<25	ug/L	NC	30
8130826	F1 (C6-C10)	2022/07/28	94	60 - 140	91	60 - 140	<25	ug/L	NC	30
8130826	Hexane	2022/07/28	107	70 - 130	106	70 - 130	<1.0	ug/L	NC	30
8130826	Methyl Ethyl Ketone (2-Butanone)	2022/07/28	112	60 - 140	102	60 - 140	<10	ug/L	NC	30
8130826	Methyl Isobutyl Ketone	2022/07/28	113	70 - 130	104	70 - 130	<5.0	ug/L	NC	30
8130826	Methyl t-butyl ether (MTBE)	2022/07/28	98	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
8130826	Methylene Chloride(Dichloromethane)	2022/07/28	108	70 - 130	103	70 - 130	<2.0	ug/L	NC	30
8130826	o-Xylene	2022/07/28	96	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
8130826	p+m-Xylene	2022/07/28	95	70 - 130	91	70 - 130	<0.20	ug/L	NC	30
8130826	Styrene	2022/07/28	107	70 - 130	102	70 - 130	<0.50	ug/L	NC	30
8130826	Tetrachloroethylene	2022/07/28	95	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
8130826	Toluene	2022/07/28	94	70 - 130	90	70 - 130	<0.20	ug/L	NC	30
8130826	Total Xylenes	2022/07/28					<0.20	ug/L	NC	30



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Bureau Veritas Job #: C2K8778

Report Date: 2022/08/02

### QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd

Client Project #: 22524317

Site Location: 864 LADYELLEN

Sampler Initials: P.C

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8130826	trans-1,2-Dichloroethylene	2022/07/28	106	70 - 130	103	70 - 130	<0.50	ug/L	NC	30
8130826	trans-1,3-Dichloropropene	2022/07/28	106	70 - 130	98	70 - 130	<0.40	ug/L	NC	30
8130826	Trichloroethylene	2022/07/28	105	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
8130826	Trichlorofluoromethane (FREON 11)	2022/07/28	110	70 - 130	109	70 - 130	<0.50	ug/L	NC	30
8130826	Vinyl Chloride	2022/07/28	96	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
8137728	F2 (C10-C16 Hydrocarbons)	2022/07/29	102	60 - 130	102	60 - 130	<100	ug/L	NC	30
8137728	F3 (C16-C34 Hydrocarbons)	2022/07/29	103	60 - 130	104	60 - 130	<200	ug/L	NC	30
8137728	F4 (C34-C50 Hydrocarbons)	2022/07/29	105	60 - 130	104	60 - 130	<200	ug/L	NC	30
8137736	1-Methylnaphthalene	2022/07/29	63	50 - 130	84	50 - 130	<0.050	ug/L	NC	30
8137736	2-Methylnaphthalene	2022/07/29	55	50 - 130	75	50 - 130	<0.050	ug/L	NC	30
8137736	Acenaphthene	2022/07/29	78	50 - 130	90	50 - 130	<0.050	ug/L	NC	30
8137736	Acenaphthylene	2022/07/29	79	50 - 130	91	50 - 130	<0.050	ug/L	NC	30
8137736	Anthracene	2022/07/29	94	50 - 130	98	50 - 130	<0.050	ug/L	NC	30
8137736	Benzo(a)anthracene	2022/07/29	99	50 - 130	102	50 - 130	<0.050	ug/L	NC	30
8137736	Benzo(a)pyrene	2022/07/29	94	50 - 130	97	50 - 130	<0.0090	ug/L	NC	30
8137736	Benzo(b/j)fluoranthene	2022/07/29	96	50 - 130	99	50 - 130	<0.050	ug/L	NC	30
8137736	Benzo(g,h,i)perylene	2022/07/29	94	50 - 130	98	50 - 130	<0.050	ug/L	NC	30
8137736	Benzo(k)fluoranthene	2022/07/29	94	50 - 130	101	50 - 130	<0.050	ug/L	NC	30
8137736	Chrysene	2022/07/29	101	50 - 130	105	50 - 130	<0.050	ug/L	NC	30
8137736	Dibenzo(a,h)anthracene	2022/07/29	80	50 - 130	82	50 - 130	<0.050	ug/L	NC	30
8137736	Fluoranthene	2022/07/29	107	50 - 130	110	50 - 130	<0.050	ug/L	NC	30
8137736	Fluorene	2022/07/29	85	50 - 130	93	50 - 130	<0.050	ug/L	NC	30
8137736	Indeno(1,2,3-cd)pyrene	2022/07/29	92	50 - 130	96	50 - 130	<0.050	ug/L	NC	30
8137736	Naphthalene	2022/07/29	58	50 - 130	74	50 - 130	<0.050	ug/L	NC	30
8137736	Phenanthrene	2022/07/29	98	50 - 130	101	50 - 130	<0.030	ug/L	NC	30



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VERITAS

Bureau Veritas Job #: C2K8778

Report Date: 2022/08/02

### QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd

Client Project #: 22524317

Site Location: 864 LADYELLEN

Sampler Initials: P.C

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8137736	Pyrene	2022/07/29	105	50 - 130	108	50 - 130	<0.050	ug/L	NC	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).



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Bureau Veritas Job #: C2K8778  
Report Date: 2022/08/02

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADYELLEN  
Sampler Initials: P.C

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in black ink, appearing to read 'A. Hamanov', written over a horizontal line.

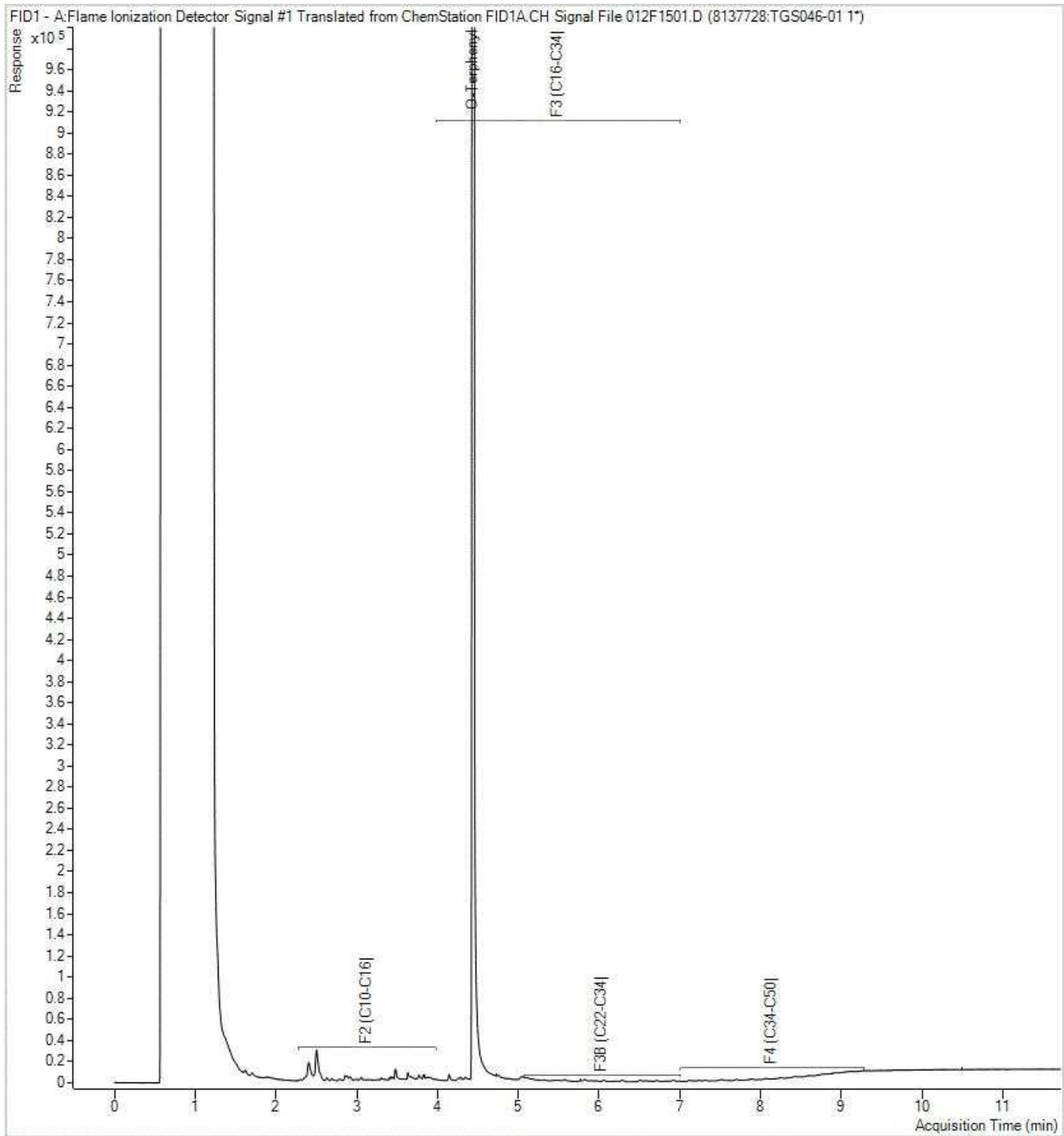
Anastassia Hamanov, Scientific Specialist

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



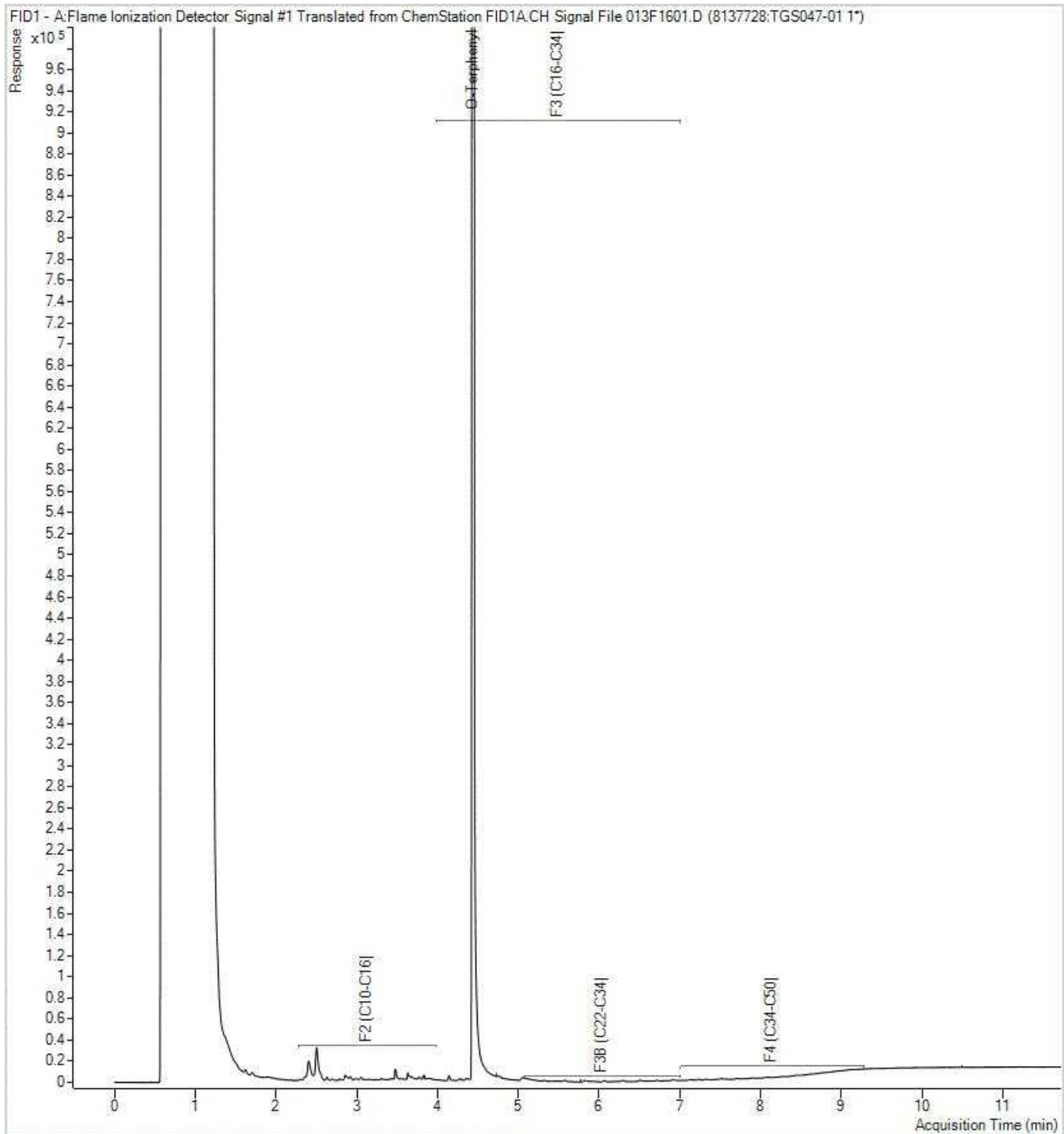
Petroleum Hydrocarbons F2-F4 in Water Chromatogram



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

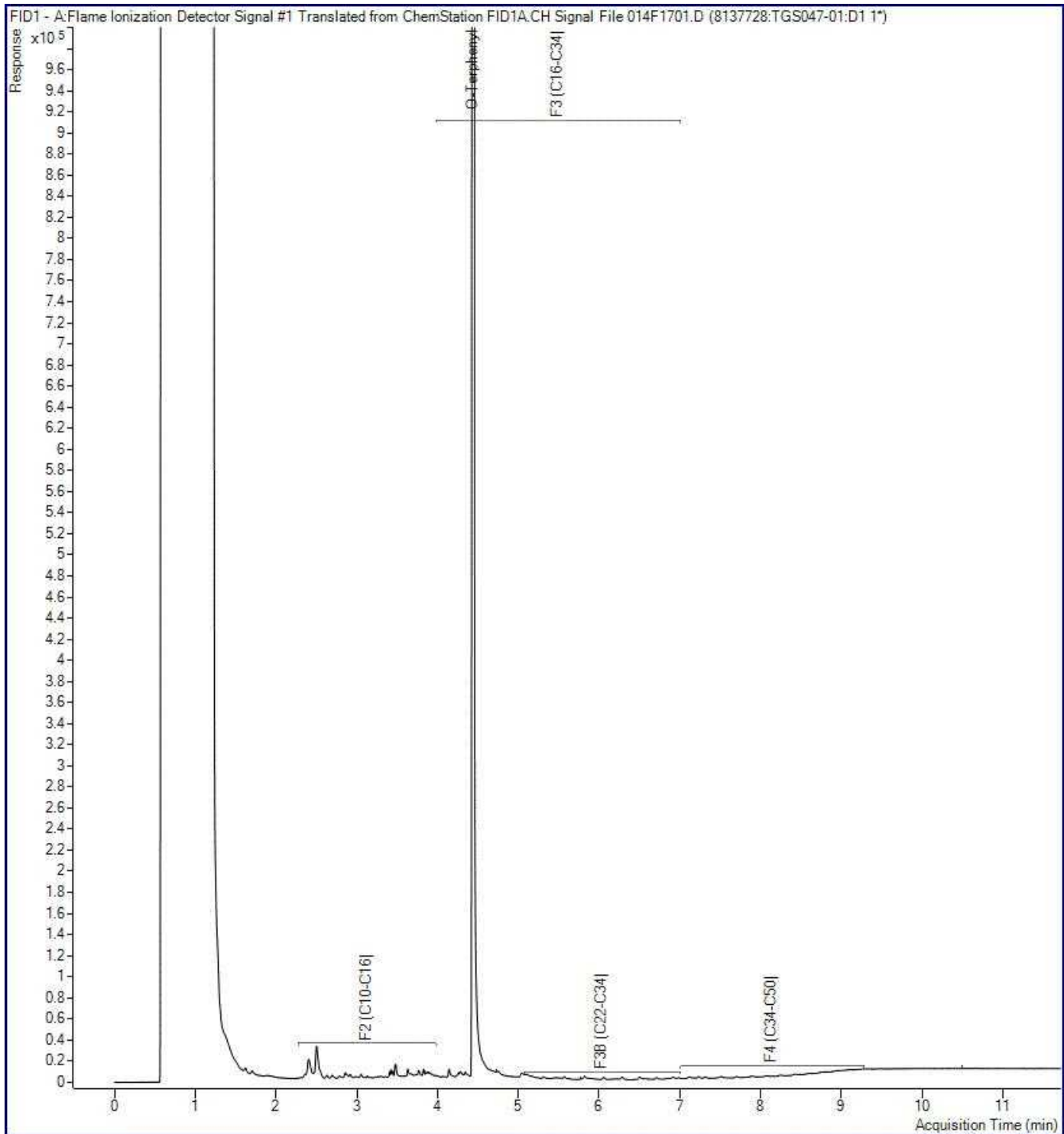


Petroleum Hydrocarbons F2-F4 in Water Chromatogram



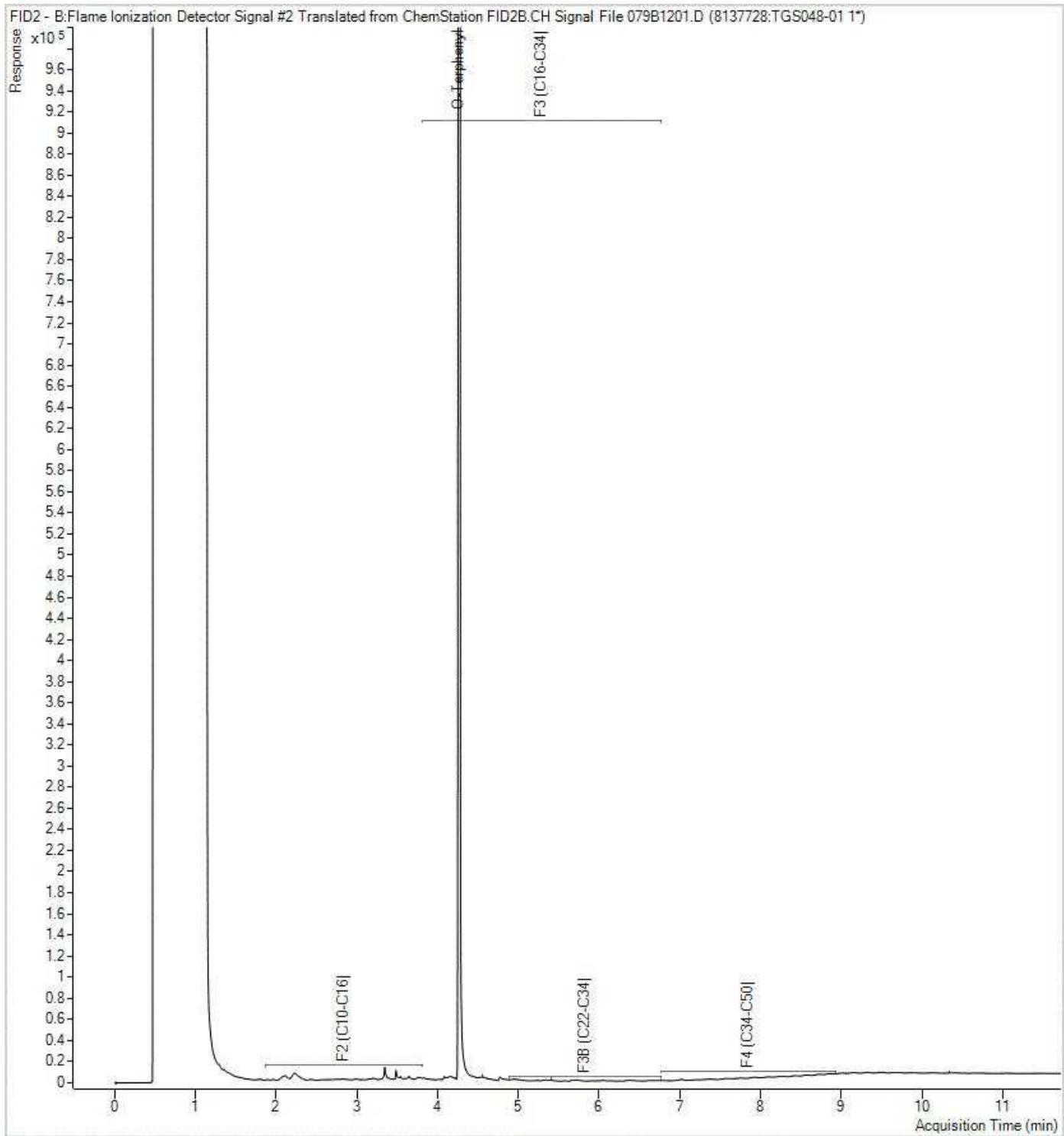
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



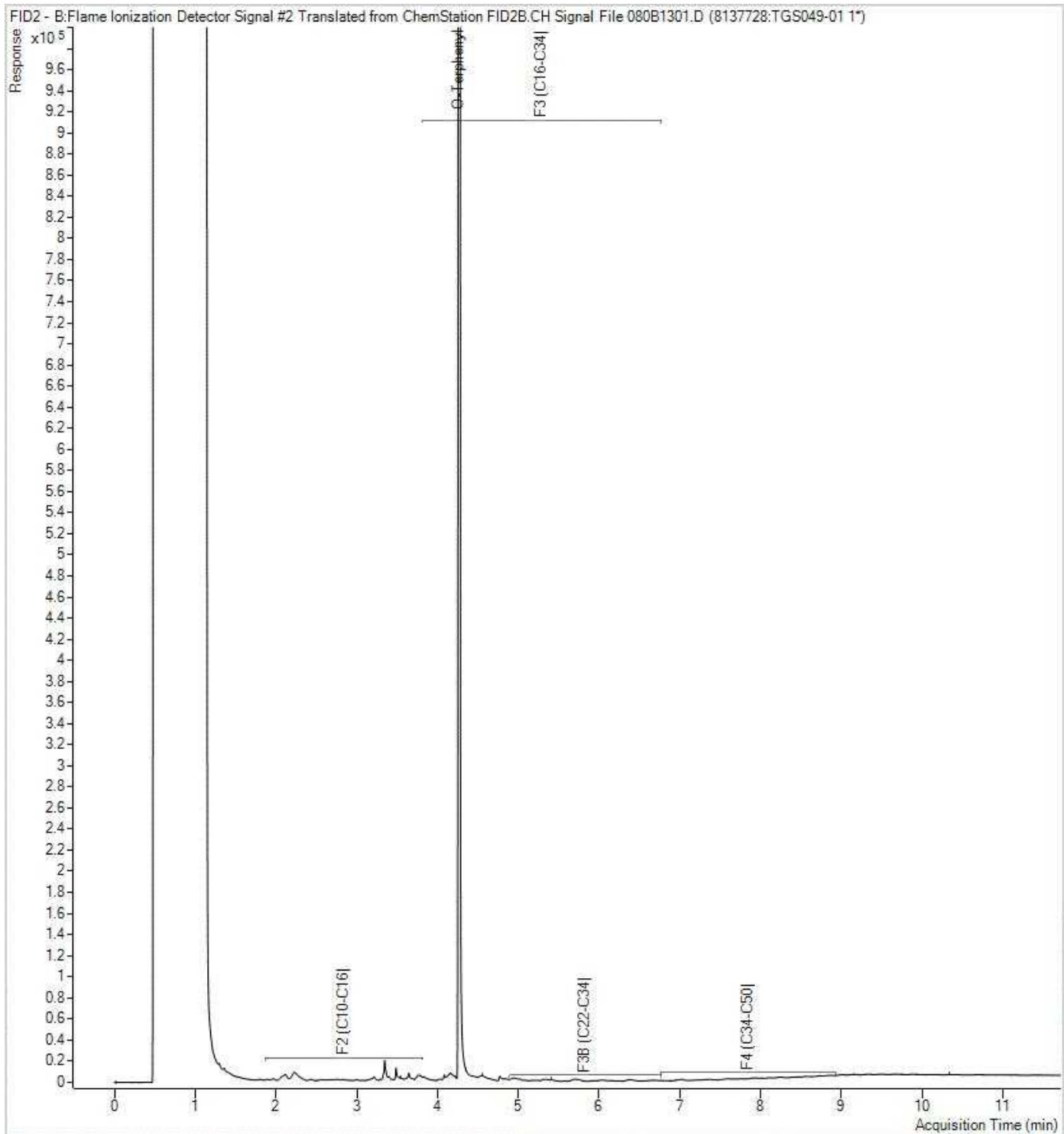
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



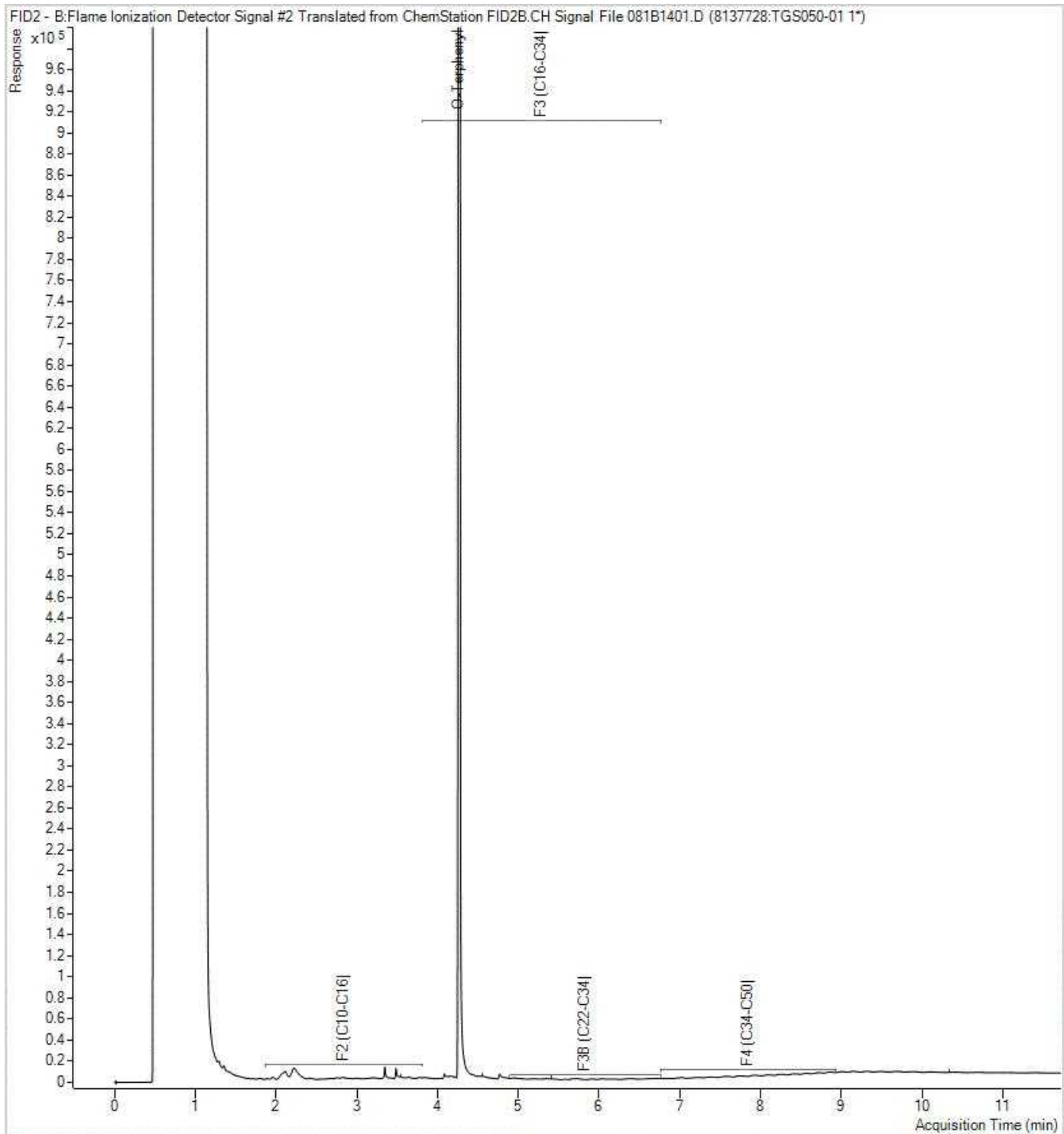
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



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

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



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



Your Project #: 22524317  
 Site#: OTTAWA  
 Site Location: 864 LADY ELLEN PLACE  
 Your C.O.C. #: n/a

**Attention: Phil Chevette**

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

**Report Date: 2022/08/05**  
 Report #: R7240548  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C2L3250**

**Received: 2022/07/28, 09:00**

Sample Matrix: Soil  
 # Samples Received: 4

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Methylnaphthalene Sum (1)	4	N/A	2022/08/03	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron (1)	4	2022/08/03	2022/08/03	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum (1)	4	N/A	2022/08/02		EPA 8260C m
Free (WAD) Cyanide (1)	4	2022/08/03	2022/08/03	CAM SOP-00457	OMOE E3015 m
Conductivity (1)	4	2022/08/03	2022/08/03	CAM SOP-00414	OMOE E3530 v1 m
Hexavalent Chromium in Soil by IC (1, 2)	4	2022/08/02	2022/08/04	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydrocarbons F2-F4 in Soil (1, 3)	4	2022/08/02	2022/08/02	CAM SOP-00316	CCME CWS m
F4G (CCME Hydrocarbons Gravimetric) (1)	1	2022/08/04	2022/08/04	CAM SOP-00316	CCME PHC-CWS m
Acid Extractable Metals by ICPMS (1)	1	2022/08/02	2022/08/02	CAM SOP-00447	EPA 6020B m
Acid Extractable Metals by ICPMS (1)	1	2022/08/02	2022/08/03	CAM SOP-00447	EPA 6020B m
Acid Extractable Metals by ICPMS (1)	2	2022/08/03	2022/08/03	CAM SOP-00447	EPA 6020B m
Moisture (1)	4	N/A	2022/07/29	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	4	2022/08/02	2022/08/03	CAM SOP-00318	EPA 8270D m
pH CaCl2 EXTRACT (1)	3	2022/08/02	2022/08/02	CAM SOP-00413	EPA 9045 D m
pH CaCl2 EXTRACT (1)	1	2022/08/03	2022/08/03	CAM SOP-00413	EPA 9045 D m
Sieve, 75um (1)	2	N/A	2022/08/03	CAM SOP-00467	ASTM D1140 -17 m
Sodium Adsorption Ratio (SAR) (1)	2	N/A	2022/08/03	CAM SOP-00102	EPA 6010C
Sodium Adsorption Ratio (SAR) (1)	2	N/A	2022/08/04	CAM SOP-00102	EPA 6010C
Volatile Organic Compounds and F1 PHCs (1)	4	N/A	2022/07/30	CAM SOP-00230	EPA 8260C m

**Remarks:**

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless



Your Project #: 22524317  
Site#: OTTAWA  
Site Location: 864 LADY ELLEN PLACE  
Your C.O.C. #: n/a

**Attention: Phil Chevette**

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

**Report Date: 2022/08/05**  
Report #: R7240548  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C2L3250**

**Received: 2022/07/28, 09:00**

otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8

(2) Soils are reported on a dry weight basis unless otherwise specified.

(3) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

**Encryption Key**

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

Katherine Szoza, Project Manager

Email: Katherine.Szoza@bureauveritas.com

Phone# (613)274-0573 Ext:7063633

=====  
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



BUREAU  
VERITAS

Bureau Veritas Job #: C2L3250  
Report Date: 2022/08/05

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADY ELLEN PLACE  
Sampler Initials: R.I

**O.REG 153 METALS & INORGANICS PKG (SOIL)**

<b>Bureau Veritas ID</b>		THQ633		THQ634			THQ634		
<b>Sampling Date</b>		2022/07/19 11:00		2022/07/20 09:00			2022/07/20 09:00		
<b>COC Number</b>		n/a		n/a			n/a		
	<b>UNITS</b>	<b>22-03 SA1</b>	<b>QC Batch</b>	<b>22-05 SA1</b>	<b>RDL</b>	<b>QC Batch</b>	<b>22-05 SA1 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>									
Sodium Adsorption Ratio	N/A	0.29 (1)	8139183	8.1		8139183			
<b>Inorganics</b>									
Conductivity	mS/cm	0.16	8143827	0.39	0.002	8143825			
Available (CaCl2) pH	pH	7.92	8142036	8.04		8142036			
WAD Cyanide (Free)	ug/g	0.02	8143946	<0.01	0.01	8143946	<0.01	0.01	8143946
Chromium (VI)	ug/g	<0.18	8142989	<0.18	0.18	8142989			
<b>Metals</b>									
Hot Water Ext. Boron (B)	ug/g	0.19	8144077	0.33	0.050	8144144			
Acid Extractable Antimony (Sb)	ug/g	<0.20	8143929	<0.20	0.20	8142019			
Acid Extractable Arsenic (As)	ug/g	1.7	8143929	<1.0	1.0	8142019			
Acid Extractable Barium (Ba)	ug/g	95	8143929	28	0.50	8142019			
Acid Extractable Beryllium (Be)	ug/g	0.23	8143929	<0.20	0.20	8142019			
Acid Extractable Boron (B)	ug/g	7.5	8143929	<5.0	5.0	8142019			
Acid Extractable Cadmium (Cd)	ug/g	0.11	8143929	<0.10	0.10	8142019			
Acid Extractable Chromium (Cr)	ug/g	12	8143929	8.0	1.0	8142019			
Acid Extractable Cobalt (Co)	ug/g	5.0	8143929	4.3	0.10	8142019			
Acid Extractable Copper (Cu)	ug/g	12	8143929	8.2	0.50	8142019			
Acid Extractable Lead (Pb)	ug/g	19	8143929	3.8	1.0	8142019			
Acid Extractable Molybdenum (Mo)	ug/g	0.79	8143929	<0.50	0.50	8142019			
Acid Extractable Nickel (Ni)	ug/g	12	8143929	6.9	0.50	8142019			
Acid Extractable Selenium (Se)	ug/g	<0.50	8143929	<0.50	0.50	8142019			
Acid Extractable Silver (Ag)	ug/g	<0.20	8143929	<0.20	0.20	8142019			
Acid Extractable Thallium (Tl)	ug/g	0.14	8143929	0.080	0.050	8142019			
Acid Extractable Uranium (U)	ug/g	0.59	8143929	0.53	0.050	8142019			
Acid Extractable Vanadium (V)	ug/g	29	8143929	18	5.0	8142019			
Acid Extractable Zinc (Zn)	ug/g	39	8143929	11	5.0	8142019			
Acid Extractable Mercury (Hg)	ug/g	<0.050	8143929	<0.050	0.050	8142019			

RDL = Reportable Detection Limit  
 QC Batch = Quality Control Batch  
 Lab-Dup = Laboratory Initiated Duplicate  
 (1) Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.





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Bureau Veritas Job #: C2L3250  
Report Date: 2022/08/05

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADY ELLEN PLACE  
Sampler Initials: R.I

**O.REG 153 METALS & INORGANICS PKG (SOIL)**

Bureau Veritas ID		THQ635		THQ636		
Sampling Date		2022/07/19 13:00		2022/07/20 09:00		
COC Number		n/a		n/a		
	UNITS	22-06 SA1	QC Batch	DUP 1	RDL	QC Batch
<b>Calculated Parameters</b>						
Sodium Adsorption Ratio	N/A	1.4	8139183	26		8139183
<b>Inorganics</b>						
Conductivity	mS/cm	0.24	8143827	1.7	0.002	8143825
Available (CaCl2) pH	pH	7.39	8144435	7.95		8142036
WAD Cyanide (Free)	ug/g	<0.01	8143946	<0.01	0.01	8143946
Chromium (VI)	ug/g	<0.18	8142989	0.19	0.18	8142989
<b>Metals</b>						
Hot Water Ext. Boron (B)	ug/g	0.36	8144077	0.34	0.050	8144144
Acid Extractable Antimony (Sb)	ug/g	<0.20	8143929	<0.20	0.20	8142019
Acid Extractable Arsenic (As)	ug/g	1.5	8143929	1.2	1.0	8142019
Acid Extractable Barium (Ba)	ug/g	130	8143929	120	0.50	8142019
Acid Extractable Beryllium (Be)	ug/g	0.35	8143929	0.43	0.20	8142019
Acid Extractable Boron (B)	ug/g	5.8	8143929	9.7	5.0	8142019
Acid Extractable Cadmium (Cd)	ug/g	0.18	8143929	0.12	0.10	8142019
Acid Extractable Chromium (Cr)	ug/g	20	8143929	21	1.0	8142019
Acid Extractable Cobalt (Co)	ug/g	6.7	8143929	6.7	0.10	8142019
Acid Extractable Copper (Cu)	ug/g	13	8143929	11	0.50	8142019
Acid Extractable Lead (Pb)	ug/g	16	8143929	6.8	1.0	8142019
Acid Extractable Molybdenum (Mo)	ug/g	0.75	8143929	<0.50	0.50	8142019
Acid Extractable Nickel (Ni)	ug/g	13	8143929	14	0.50	8142019
Acid Extractable Selenium (Se)	ug/g	<0.50	8143929	<0.50	0.50	8142019
Acid Extractable Silver (Ag)	ug/g	<0.20	8143929	<0.20	0.20	8142019
Acid Extractable Thallium (Tl)	ug/g	0.14	8143929	0.19	0.050	8142019
Acid Extractable Uranium (U)	ug/g	0.96	8143929	0.56	0.050	8142019
Acid Extractable Vanadium (V)	ug/g	29	8143929	27	5.0	8142019
Acid Extractable Zinc (Zn)	ug/g	42	8143929	26	5.0	8142019
Acid Extractable Mercury (Hg)	ug/g	0.073	8143929	<0.050	0.050	8142019
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						



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Bureau Veritas Job #: C2L3250  
Report Date: 2022/08/05

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADY ELLEN PLACE  
Sampler Initials: R.I

**O.REG 153 PAHS (SOIL)**

Bureau Veritas ID		THQ633		THQ634	THQ635	THQ636		
Sampling Date		2022/07/19 11:00		2022/07/20 09:00	2022/07/19 13:00	2022/07/20 09:00		
COC Number		n/a		n/a	n/a	n/a		
	<b>UNITS</b>	<b>22-03 SA1</b>	<b>RDL</b>	<b>22-05 SA1</b>	<b>22-06 SA1</b>	<b>DUP 1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>								
Methylnaphthalene, 2-(1-)	ug/g	<0.071	0.071	<0.0071	<0.0071	<0.0071	0.0071	8139176
<b>Polyaromatic Hydrocarbons</b>								
Acenaphthene	ug/g	0.085	0.050	<0.0050	0.017	<0.0050	0.0050	8142856
Acenaphthylene	ug/g	<0.050	0.050	<0.0050	<0.0050	<0.0050	0.0050	8142856
Anthracene	ug/g	0.27	0.050	<0.0050	0.057	<0.0050	0.0050	8142856
Benzo(a)anthracene	ug/g	0.58	0.050	<0.0050	0.14	<0.0050	0.0050	8142856
Benzo(a)pyrene	ug/g	0.49	0.050	<0.0050	0.11	<0.0050	0.0050	8142856
Benzo(b/j)fluoranthene	ug/g	0.63	0.050	<0.0050	0.14	<0.0050	0.0050	8142856
Benzo(g,h,i)perylene	ug/g	0.32	0.050	<0.0050	0.066	<0.0050	0.0050	8142856
Benzo(k)fluoranthene	ug/g	0.25	0.050	<0.0050	0.054	<0.0050	0.0050	8142856
Chrysene	ug/g	0.48	0.050	<0.0050	0.11	<0.0050	0.0050	8142856
Dibenzo(a,h)anthracene	ug/g	0.084	0.050	<0.0050	0.019	<0.0050	0.0050	8142856
Fluoranthene	ug/g	1.5	0.050	<0.0050	0.29	<0.0050	0.0050	8142856
Fluorene	ug/g	0.12	0.050	<0.0050	0.019	<0.0050	0.0050	8142856
Indeno(1,2,3-cd)pyrene	ug/g	0.30	0.050	<0.0050	0.062	<0.0050	0.0050	8142856
1-Methylnaphthalene	ug/g	<0.050	0.050	<0.0050	<0.0050	<0.0050	0.0050	8142856
2-Methylnaphthalene	ug/g	<0.050	0.050	0.0051	<0.0050	<0.0050	0.0050	8142856
Naphthalene	ug/g	<0.050	0.050	<0.0050	<0.0050	<0.0050	0.0050	8142856
Phenanthrene	ug/g	1.1	0.050	0.0074	0.21	<0.0050	0.0050	8142856
Pyrene	ug/g	1.1	0.050	<0.0050	0.21	<0.0050	0.0050	8142856
<b>Surrogate Recovery (%)</b>								
D10-Anthracene	%	87		89	88	91		8142856
D14-Terphenyl (FS)	%	77		83	86	88		8142856
D8-Acenaphthylene	%	80		80	85	85		8142856
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								



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Bureau Veritas Job #: C2L3250  
Report Date: 2022/08/05

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADY ELLEN PLACE  
Sampler Initials: R.I

### O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Bureau Veritas ID		THQ633		THQ634		THQ635		
Sampling Date		2022/07/19 11:00		2022/07/20 09:00		2022/07/19 13:00		
COC Number		n/a		n/a		n/a		
	UNITS	22-03 SA1	QC Batch	22-05 SA1	QC Batch	22-06 SA1	RDL	QC Batch
<b>Inorganics</b>								
Moisture	%	3.2	8139654	9.2	8139595	4.6	1.0	8139654
<b>Calculated Parameters</b>								
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	8138038	<0.050	8138038	<0.050	0.050	8138038
<b>Volatile Organics</b>								
Acetone (2-Propanone)	ug/g	<0.49	8140331	<0.49	8140331	<0.49	0.49	8140331
Benzene	ug/g	<0.0060	8140331	<0.0060	8140331	<0.0060	0.0060	8140331
Bromodichloromethane	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
Bromoform	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
Bromomethane	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
Carbon Tetrachloride	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
Chlorobenzene	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
Chloroform	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
Dibromochloromethane	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
1,2-Dichlorobenzene	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
1,3-Dichlorobenzene	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
1,4-Dichlorobenzene	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
Dichlorodifluoromethane (FREON 12)	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
1,1-Dichloroethane	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
1,2-Dichloroethane	ug/g	<0.049	8140331	<0.049	8140331	<0.049	0.049	8140331
1,1-Dichloroethylene	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
cis-1,2-Dichloroethylene	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
trans-1,2-Dichloroethylene	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
1,2-Dichloropropane	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
cis-1,3-Dichloropropene	ug/g	<0.030	8140331	<0.030	8140331	<0.030	0.030	8140331
trans-1,3-Dichloropropene	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
Ethylbenzene	ug/g	<0.010	8140331	<0.010	8140331	<0.010	0.010	8140331
Ethylene Dibromide	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
Hexane	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
Methylene Chloride(Dichloromethane)	ug/g	<0.049	8140331	<0.049	8140331	<0.049	0.049	8140331
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.40	8140331	<0.40	8140331	<0.40	0.40	8140331
Methyl Isobutyl Ketone	ug/g	<0.40	8140331	<0.40	8140331	<0.40	0.40	8140331
Methyl t-butyl ether (MTBE)	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
Styrene	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								



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Bureau Veritas Job #: C2L3250  
Report Date: 2022/08/05

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADY ELLEN PLACE  
Sampler Initials: R.I

**O.REG 153 VOCs BY HS & F1-F4 (SOIL)**

Bureau Veritas ID		THQ633		THQ634		THQ635		
Sampling Date		2022/07/19 11:00		2022/07/20 09:00		2022/07/19 13:00		
COC Number		n/a		n/a		n/a		
	UNITS	22-03 SA1	QC Batch	22-05 SA1	QC Batch	22-06 SA1	RDL	QC Batch
1,1,1,2-Tetrachloroethane	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
1,1,2,2-Tetrachloroethane	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
Tetrachloroethylene	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
Toluene	ug/g	<0.020	8140331	<0.020	8140331	<0.020	0.020	8140331
1,1,1-Trichloroethane	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
1,1,2-Trichloroethane	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
Trichloroethylene	ug/g	<0.010	8140331	<0.010	8140331	<0.010	0.010	8140331
Trichlorofluoromethane (FREON 11)	ug/g	<0.040	8140331	<0.040	8140331	<0.040	0.040	8140331
Vinyl Chloride	ug/g	<0.019	8140331	<0.019	8140331	<0.019	0.019	8140331
p+m-Xylene	ug/g	<0.020	8140331	<0.020	8140331	<0.020	0.020	8140331
o-Xylene	ug/g	<0.020	8140331	<0.020	8140331	<0.020	0.020	8140331
Total Xylenes	ug/g	<0.020	8140331	<0.020	8140331	<0.020	0.020	8140331
F1 (C6-C10)	ug/g	<10	8140331	<10	8140331	<10	10	8140331
F1 (C6-C10) - BTEX	ug/g	<10	8140331	<10	8140331	<10	10	8140331
<b>F2-F4 Hydrocarbons</b>								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	8141689	<10	8141689	<10	10	8141689
F3 (C16-C34 Hydrocarbons)	ug/g	170	8141689	<50	8141689	<50	50	8141689
F4 (C34-C50 Hydrocarbons)	ug/g	830	8141689	<50	8141689	<50	50	8141689
Reached Baseline at C50	ug/g	No	8141689	Yes	8141689	Yes		8141689
<b>Surrogate Recovery (%)</b>								
o-Terphenyl	%	79	8141689	85	8141689	86		8141689
4-Bromofluorobenzene	%	96	8140331	95	8140331	96		8140331
D10-o-Xylene	%	85	8140331	85	8140331	89		8140331
D4-1,2-Dichloroethane	%	105	8140331	103	8140331	105		8140331
D8-Toluene	%	96	8140331	95	8140331	98		8140331
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								



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Bureau Veritas Job #: C2L3250  
Report Date: 2022/08/05

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADY ELLEN PLACE  
Sampler Initials: R.I

### O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Bureau Veritas ID		THQ636		
Sampling Date		2022/07/20 09:00		
COC Number		n/a		
	UNITS	DUP 1	RDL	QC Batch
<b>Inorganics</b>				
Moisture	%	19	1.0	8139595
<b>Calculated Parameters</b>				
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	8138038
<b>Volatile Organics</b>				
Acetone (2-Propanone)	ug/g	<0.49	0.49	8140331
Benzene	ug/g	<0.0060	0.0060	8140331
Bromodichloromethane	ug/g	<0.040	0.040	8140331
Bromoform	ug/g	<0.040	0.040	8140331
Bromomethane	ug/g	<0.040	0.040	8140331
Carbon Tetrachloride	ug/g	<0.040	0.040	8140331
Chlorobenzene	ug/g	<0.040	0.040	8140331
Chloroform	ug/g	<0.040	0.040	8140331
Dibromochloromethane	ug/g	<0.040	0.040	8140331
1,2-Dichlorobenzene	ug/g	<0.040	0.040	8140331
1,3-Dichlorobenzene	ug/g	<0.040	0.040	8140331
1,4-Dichlorobenzene	ug/g	<0.040	0.040	8140331
Dichlorodifluoromethane (FREON 12)	ug/g	<0.040	0.040	8140331
1,1-Dichloroethane	ug/g	<0.040	0.040	8140331
1,2-Dichloroethane	ug/g	<0.049	0.049	8140331
1,1-Dichloroethylene	ug/g	<0.040	0.040	8140331
cis-1,2-Dichloroethylene	ug/g	<0.040	0.040	8140331
trans-1,2-Dichloroethylene	ug/g	<0.040	0.040	8140331
1,2-Dichloropropane	ug/g	<0.040	0.040	8140331
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	8140331
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	8140331
Ethylbenzene	ug/g	<0.010	0.010	8140331
Ethylene Dibromide	ug/g	<0.040	0.040	8140331
Hexane	ug/g	<0.040	0.040	8140331
Methylene Chloride(Dichloromethane)	ug/g	<0.049	0.049	8140331
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.40	0.40	8140331
Methyl Isobutyl Ketone	ug/g	<0.40	0.40	8140331
Methyl t-butyl ether (MTBE)	ug/g	<0.040	0.040	8140331
Styrene	ug/g	<0.040	0.040	8140331
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				



O.REG 153 VOCS BY HS & F1-F4 (SOIL)

Bureau Veritas ID		THQ636		
Sampling Date		2022/07/20 09:00		
COC Number		n/a		
	UNITS	DUP 1	RDL	QC Batch
1,1,1,2-Tetrachloroethane	ug/g	<0.040	0.040	8140331
1,1,2,2-Tetrachloroethane	ug/g	<0.040	0.040	8140331
Tetrachloroethylene	ug/g	<0.040	0.040	8140331
Toluene	ug/g	<0.020	0.020	8140331
1,1,1-Trichloroethane	ug/g	<0.040	0.040	8140331
1,1,2-Trichloroethane	ug/g	<0.040	0.040	8140331
Trichloroethylene	ug/g	<0.010	0.010	8140331
Trichlorofluoromethane (FREON 11)	ug/g	<0.040	0.040	8140331
Vinyl Chloride	ug/g	<0.019	0.019	8140331
p+m-Xylene	ug/g	<0.020	0.020	8140331
o-Xylene	ug/g	<0.020	0.020	8140331
Total Xylenes	ug/g	<0.020	0.020	8140331
F1 (C6-C10)	ug/g	<10	10	8140331
F1 (C6-C10) - BTEX	ug/g	<10	10	8140331
<b>F2-F4 Hydrocarbons</b>				
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	8141689
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	8141689
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	8141689
Reached Baseline at C50	ug/g	Yes		8141689
<b>Surrogate Recovery (%)</b>				
o-Terphenyl	%	81		8141689
4-Bromofluorobenzene	%	95		8140331
D10-o-Xylene	%	88		8140331
D4-1,2-Dichloroethane	%	105		8140331
D8-Toluene	%	96		8140331
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				



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Bureau Veritas Job #: C2L3250  
Report Date: 2022/08/05

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADY ELLEN PLACE  
Sampler Initials: R.I

### RESULTS OF ANALYSES OF SOIL

<b>Bureau Veritas ID</b>		THQ633	THQ634		
<b>Sampling Date</b>		2022/07/19 11:00	2022/07/20 09:00		
<b>COC Number</b>		n/a	n/a		
	<b>UNITS</b>	<b>22-03 SA1</b>	<b>22-05 SA1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Miscellaneous Parameters</b>					
Grain Size	%	COARSE	COARSE	N/A	8143062
Sieve - #200 (<0.075mm)	%	48	31	1	8143062
Sieve - #200 (>0.075mm)	%	52	69	1	8143062
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



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Bureau Veritas Job #: C2L3250  
Report Date: 2022/08/05

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADY ELLEN PLACE  
Sampler Initials: R.I

### PETROLEUM HYDROCARBONS (CCME)

<b>Bureau Veritas ID</b>		THQ633		
<b>Sampling Date</b>		2022/07/19 11:00		
<b>COC Number</b>		n/a		
	<b>UNITS</b>	<b>22-03 SA1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>F2-F4 Hydrocarbons</b>				
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	6200	100	8146439
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				





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### TEST SUMMARY

**Bureau Veritas ID:** THQ633  
**Sample ID:** 22-03 SA1  
**Matrix:** Soil

**Collected:** 2022/07/19  
**Shipped:**  
**Received:** 2022/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8139176	N/A	2022/08/03	Automated Statchk
Hot Water Extractable Boron	ICP	8144077	2022/08/03	2022/08/03	Indira HarryPaul
1,3-Dichloropropene Sum	CALC	8138038	N/A	2022/08/02	Automated Statchk
Free (WAD) Cyanide	TECH	8143946	2022/08/03	2022/08/03	Kruti Jitesh Patel
Conductivity	AT	8143827	2022/08/03	2022/08/03	Roya Fathitil
Hexavalent Chromium in Soil by IC	IC/SPEC	8142989	2022/08/02	2022/08/04	Sousan Besharatlou
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8141689	2022/08/02	2022/08/02	Agnieszka Brzuzy-Snopko
F4G (CCME Hydrocarbons Gravimetric)	BAL	8146439	2022/08/04	2022/08/04	Rashmi Dubey
Acid Extractable Metals by ICPMS	ICP/MS	8143929	2022/08/03	2022/08/03	Medhat Nasr
Moisture	BAL	8139654	N/A	2022/07/29	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8142856	2022/08/02	2022/08/03	Mitesh Raj
pH CaCl2 EXTRACT	AT	8142036	2022/08/02	2022/08/02	Taslina Aktar
Sieve, 75um	SIEV	8143062	N/A	2022/08/03	Min Yang
Sodium Adsorption Ratio (SAR)	CALC/MET	8139183	N/A	2022/08/04	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8140331	N/A	2022/07/30	Anna Gabrielyan

**Bureau Veritas ID:** THQ634  
**Sample ID:** 22-05 SA1  
**Matrix:** Soil

**Collected:** 2022/07/20  
**Shipped:**  
**Received:** 2022/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8139176	N/A	2022/08/03	Automated Statchk
Hot Water Extractable Boron	ICP	8144144	2022/08/03	2022/08/03	Gagandeep Rai
1,3-Dichloropropene Sum	CALC	8138038	N/A	2022/08/02	Automated Statchk
Free (WAD) Cyanide	TECH	8143946	2022/08/03	2022/08/03	Kruti Jitesh Patel
Conductivity	AT	8143825	2022/08/03	2022/08/03	Roya Fathitil
Hexavalent Chromium in Soil by IC	IC/SPEC	8142989	2022/08/02	2022/08/04	Sousan Besharatlou
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8141689	2022/08/02	2022/08/02	Agnieszka Brzuzy-Snopko
Acid Extractable Metals by ICPMS	ICP/MS	8142019	2022/08/02	2022/08/02	Viviana Canzonieri
Moisture	BAL	8139595	N/A	2022/07/29	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8142856	2022/08/02	2022/08/03	Mitesh Raj
pH CaCl2 EXTRACT	AT	8142036	2022/08/02	2022/08/02	Taslina Aktar
Sieve, 75um	SIEV	8143062	N/A	2022/08/03	Min Yang
Sodium Adsorption Ratio (SAR)	CALC/MET	8139183	N/A	2022/08/03	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8140331	N/A	2022/07/30	Anna Gabrielyan

**Bureau Veritas ID:** THQ634 Dup  
**Sample ID:** 22-05 SA1  
**Matrix:** Soil

**Collected:** 2022/07/20  
**Shipped:**  
**Received:** 2022/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	TECH	8143946	2022/08/03	2022/08/03	Kruti Jitesh Patel



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Sampler Initials: R.I

### TEST SUMMARY

**Bureau Veritas ID:** THQ635  
**Sample ID:** 22-06 SA1  
**Matrix:** Soil

**Collected:** 2022/07/19  
**Shipped:**  
**Received:** 2022/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8139176	N/A	2022/08/03	Automated Statchk
Hot Water Extractable Boron	ICP	8144077	2022/08/03	2022/08/03	Indira HarryPaul
1,3-Dichloropropene Sum	CALC	8138038	N/A	2022/08/02	Automated Statchk
Free (WAD) Cyanide	TECH	8143946	2022/08/03	2022/08/03	Kruti Jitesh Patel
Conductivity	AT	8143827	2022/08/03	2022/08/03	Roya Fathitil
Hexavalent Chromium in Soil by IC	IC/SPEC	8142989	2022/08/02	2022/08/04	Sousan Besharatlou
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8141689	2022/08/02	2022/08/02	Agnieszka Brzuzy-Snopko
Acid Extractable Metals by ICPMS	ICP/MS	8143929	2022/08/03	2022/08/03	Medhat Nasr
Moisture	BAL	8139654	N/A	2022/07/29	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8142856	2022/08/02	2022/08/03	Mitesh Raj
pH CaCl2 EXTRACT	AT	8144435	2022/08/03	2022/08/03	Taslina Aktar
Sodium Adsorption Ratio (SAR)	CALC/MET	8139183	N/A	2022/08/04	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8140331	N/A	2022/07/30	Anna Gabrielyan

**Bureau Veritas ID:** THQ636  
**Sample ID:** DUP 1  
**Matrix:** Soil

**Collected:** 2022/07/20  
**Shipped:**  
**Received:** 2022/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8139176	N/A	2022/08/03	Automated Statchk
Hot Water Extractable Boron	ICP	8144144	2022/08/03	2022/08/03	Gagandeep Rai
1,3-Dichloropropene Sum	CALC	8138038	N/A	2022/08/02	Automated Statchk
Free (WAD) Cyanide	TECH	8143946	2022/08/03	2022/08/03	Kruti Jitesh Patel
Conductivity	AT	8143825	2022/08/03	2022/08/03	Roya Fathitil
Hexavalent Chromium in Soil by IC	IC/SPEC	8142989	2022/08/02	2022/08/04	Sousan Besharatlou
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8141689	2022/08/02	2022/08/02	Agnieszka Brzuzy-Snopko
Acid Extractable Metals by ICPMS	ICP/MS	8142019	2022/08/02	2022/08/03	Viviana Canzonieri
Moisture	BAL	8139595	N/A	2022/07/29	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8142856	2022/08/02	2022/08/03	Mitesh Raj
pH CaCl2 EXTRACT	AT	8142036	2022/08/02	2022/08/02	Taslina Aktar
Sodium Adsorption Ratio (SAR)	CALC/MET	8139183	N/A	2022/08/03	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8140331	N/A	2022/07/30	Anna Gabrielyan



### GENERAL COMMENTS

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

Package 1	2.7°C
Package 2	5.3°C

Sample THQ633 [22-03 SA1] : PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

**Results relate only to the items tested.**



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### QUALITY ASSURANCE REPORT

Golder Associates Ltd

Client Project #: 22524317

Site Location: 864 LADY ELLEN PLACE

Sampler Initials: R.I

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8140331	4-Bromofluorobenzene	2022/07/30	99	60 - 140	99	60 - 140	96	%				
8140331	D10-o-Xylene	2022/07/30	97	60 - 130	96	60 - 130	84	%				
8140331	D4-1,2-Dichloroethane	2022/07/30	103	60 - 140	103	60 - 140	101	%				
8140331	D8-Toluene	2022/07/30	102	60 - 140	102	60 - 140	97	%				
8141689	o-Terphenyl	2022/08/02	73	60 - 130	77	60 - 130	78	%				
8142856	D10-Anthracene	2022/08/02	93	50 - 130	96	50 - 130	92	%				
8142856	D14-Terphenyl (FS)	2022/08/02	96	50 - 130	96	50 - 130	93	%				
8142856	D8-Acenaphthylene	2022/08/02	91	50 - 130	94	50 - 130	91	%				
8139595	Moisture	2022/07/29							3.6	20		
8139654	Moisture	2022/07/29							2.6	20		
8140331	1,1,1,2-Tetrachloroethane	2022/07/30	95	60 - 140	96	60 - 130	<0.040	ug/g	NC	50		
8140331	1,1,1-Trichloroethane	2022/07/30	99	60 - 140	98	60 - 130	<0.040	ug/g	NC	50		
8140331	1,1,2,2-Tetrachloroethane	2022/07/30	94	60 - 140	92	60 - 130	<0.040	ug/g	NC	50		
8140331	1,1,2-Trichloroethane	2022/07/30	103	60 - 140	104	60 - 130	<0.040	ug/g	NC	50		
8140331	1,1-Dichloroethane	2022/07/30	94	60 - 140	92	60 - 130	<0.040	ug/g	NC	50		
8140331	1,1-Dichloroethylene	2022/07/30	98	60 - 140	97	60 - 130	<0.040	ug/g	NC	50		
8140331	1,2-Dichlorobenzene	2022/07/30	94	60 - 140	93	60 - 130	<0.040	ug/g	NC	50		
8140331	1,2-Dichloroethane	2022/07/30	94	60 - 140	93	60 - 130	<0.049	ug/g	NC	50		
8140331	1,2-Dichloropropane	2022/07/30	94	60 - 140	94	60 - 130	<0.040	ug/g	NC	50		
8140331	1,3-Dichlorobenzene	2022/07/30	95	60 - 140	94	60 - 130	<0.040	ug/g	NC	50		
8140331	1,4-Dichlorobenzene	2022/07/30	110	60 - 140	109	60 - 130	<0.040	ug/g	NC	50		
8140331	Acetone (2-Propanone)	2022/07/30	105	60 - 140	102	60 - 140	<0.49	ug/g	NC	50		
8140331	Benzene	2022/07/30	92	60 - 140	90	60 - 130	<0.0060	ug/g	2.6	50		
8140331	Bromodichloromethane	2022/07/30	102	60 - 140	101	60 - 130	<0.040	ug/g	NC	50		
8140331	Bromoform	2022/07/30	96	60 - 140	96	60 - 130	<0.040	ug/g	NC	50		
8140331	Bromomethane	2022/07/30	99	60 - 140	97	60 - 140	<0.040	ug/g	NC	50		
8140331	Carbon Tetrachloride	2022/07/30	95	60 - 140	95	60 - 130	<0.040	ug/g	NC	50		
8140331	Chlorobenzene	2022/07/30	95	60 - 140	95	60 - 130	<0.040	ug/g	NC	50		
8140331	Chloroform	2022/07/30	98	60 - 140	96	60 - 130	<0.040	ug/g	NC	50		
8140331	cis-1,2-Dichloroethylene	2022/07/30	97	60 - 140	95	60 - 130	<0.040	ug/g	NC	50		
8140331	cis-1,3-Dichloropropene	2022/07/30	102	60 - 140	99	60 - 130	<0.030	ug/g	NC	50		
8140331	Dibromochloromethane	2022/07/30	104	60 - 140	104	60 - 130	<0.040	ug/g	NC	50		



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### QUALITY ASSURANCE REPORT(CONT'D)

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Site Location: 864 LADY ELLEN PLACE

Sampler Initials: R.I

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8140331	Dichlorodifluoromethane (FREON 12)	2022/07/30	97	60 - 140	104	60 - 140	<0.040	ug/g	NC	50		
8140331	Ethylbenzene	2022/07/30	89	60 - 140	89	60 - 130	<0.010	ug/g	NC	50		
8140331	Ethylene Dibromide	2022/07/30	95	60 - 140	95	60 - 130	<0.040	ug/g	NC	50		
8140331	F1 (C6-C10) - BTEX	2022/07/30					<10	ug/g	NC	30		
8140331	F1 (C6-C10)	2022/07/30	87	60 - 140	90	80 - 120	<10	ug/g	NC	30		
8140331	Hexane	2022/07/30	95	60 - 140	94	60 - 130	<0.040	ug/g	2.8	50		
8140331	Methyl Ethyl Ketone (2-Butanone)	2022/07/30	96	60 - 140	93	60 - 140	<0.40	ug/g	NC	50		
8140331	Methyl Isobutyl Ketone	2022/07/30	103	60 - 140	99	60 - 130	<0.40	ug/g	NC	50		
8140331	Methyl t-butyl ether (MTBE)	2022/07/30	90	60 - 140	89	60 - 130	<0.040	ug/g	NC	50		
8140331	Methylene Chloride(Dichloromethane)	2022/07/30	102	60 - 140	100	60 - 130	<0.049	ug/g	NC	50		
8140331	o-Xylene	2022/07/30	89	60 - 140	90	60 - 130	<0.020	ug/g	NC	50		
8140331	p+m-Xylene	2022/07/30	95	60 - 140	95	60 - 130	<0.020	ug/g	2.0	50		
8140331	Styrene	2022/07/30	99	60 - 140	99	60 - 130	<0.040	ug/g	NC	50		
8140331	Tetrachloroethylene	2022/07/30	88	60 - 140	89	60 - 130	<0.040	ug/g	NC	50		
8140331	Toluene	2022/07/30	86	60 - 140	86	60 - 130	<0.020	ug/g	0.84	50		
8140331	Total Xylenes	2022/07/30					<0.020	ug/g	2.0	50		
8140331	trans-1,2-Dichloroethylene	2022/07/30	99	60 - 140	97	60 - 130	<0.040	ug/g	NC	50		
8140331	trans-1,3-Dichloropropene	2022/07/30	109	60 - 140	107	60 - 130	<0.040	ug/g	NC	50		
8140331	Trichloroethylene	2022/07/30	101	60 - 140	100	60 - 130	<0.010	ug/g	NC	50		
8140331	Trichlorofluoromethane (FREON 11)	2022/07/30	94	60 - 140	94	60 - 130	<0.040	ug/g	NC	50		
8140331	Vinyl Chloride	2022/07/30	86	60 - 140	87	60 - 130	<0.019	ug/g	NC	50		
8141689	F2 (C10-C16 Hydrocarbons)	2022/08/02	83	60 - 130	91	80 - 120	<10	ug/g	NC	30		
8141689	F3 (C16-C34 Hydrocarbons)	2022/08/02	82	60 - 130	89	80 - 120	<50	ug/g	NC	30		
8141689	F4 (C34-C50 Hydrocarbons)	2022/08/02	78	60 - 130	85	80 - 120	<50	ug/g	NC	30		
8142019	Acid Extractable Antimony (Sb)	2022/08/02	111	75 - 125	99	80 - 120	<0.20	ug/g	NC	30		
8142019	Acid Extractable Arsenic (As)	2022/08/02	108	75 - 125	102	80 - 120	<1.0	ug/g	NC	30		
8142019	Acid Extractable Barium (Ba)	2022/08/02	115	75 - 125	98	80 - 120	<0.50	ug/g	15	30		
8142019	Acid Extractable Beryllium (Be)	2022/08/02	107	75 - 125	97	80 - 120	<0.20	ug/g	NC	30		
8142019	Acid Extractable Boron (B)	2022/08/02	105	75 - 125	99	80 - 120	<5.0	ug/g	NC	30		
8142019	Acid Extractable Cadmium (Cd)	2022/08/02	108	75 - 125	98	80 - 120	<0.10	ug/g	NC	30		
8142019	Acid Extractable Chromium (Cr)	2022/08/02	112	75 - 125	103	80 - 120	<1.0	ug/g	7.7	30		
8142019	Acid Extractable Cobalt (Co)	2022/08/02	111	75 - 125	103	80 - 120	<0.10	ug/g	3.3	30		



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### QUALITY ASSURANCE REPORT(CONT'D)

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Site Location: 864 LADY ELLEN PLACE

Sampler Initials: R.I

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8142019	Acid Extractable Copper (Cu)	2022/08/02	107	75 - 125	101	80 - 120	<0.50	ug/g	5.0	30		
8142019	Acid Extractable Lead (Pb)	2022/08/02	109	75 - 125	103	80 - 120	<1.0	ug/g	16	30		
8142019	Acid Extractable Mercury (Hg)	2022/08/02	92	75 - 125	89	80 - 120	<0.050	ug/g	NC	30		
8142019	Acid Extractable Molybdenum (Mo)	2022/08/02	112	75 - 125	101	80 - 120	<0.50	ug/g	NC	30		
8142019	Acid Extractable Nickel (Ni)	2022/08/02	106	75 - 125	101	80 - 120	<0.50	ug/g	11	30		
8142019	Acid Extractable Selenium (Se)	2022/08/02	107	75 - 125	102	80 - 120	<0.50	ug/g	NC	30		
8142019	Acid Extractable Silver (Ag)	2022/08/02	106	75 - 125	101	80 - 120	<0.20	ug/g	NC	30		
8142019	Acid Extractable Thallium (Tl)	2022/08/02	109	75 - 125	103	80 - 120	<0.050	ug/g	17	30		
8142019	Acid Extractable Uranium (U)	2022/08/02	110	75 - 125	103	80 - 120	<0.050	ug/g	26	30		
8142019	Acid Extractable Vanadium (V)	2022/08/02	111	75 - 125	103	80 - 120	<5.0	ug/g	9.1	30		
8142019	Acid Extractable Zinc (Zn)	2022/08/02	102	75 - 125	99	80 - 120	<5.0	ug/g	12	30		
8142036	Available (CaCl2) pH	2022/08/02			100	97 - 103			0.14	N/A		
8142856	1-Methylnaphthalene	2022/08/02	119	50 - 130	117	50 - 130	<0.0050	ug/g	4.0	40		
8142856	2-Methylnaphthalene	2022/08/02	109	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40		
8142856	Acenaphthene	2022/08/02	107	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40		
8142856	Acenaphthylene	2022/08/02	97	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40		
8142856	Anthracene	2022/08/02	102	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40		
8142856	Benzo(a)anthracene	2022/08/02	114	50 - 130	111	50 - 130	<0.0050	ug/g	NC	40		
8142856	Benzo(a)pyrene	2022/08/02	105	50 - 130	107	50 - 130	<0.0050	ug/g	NC	40		
8142856	Benzo(b,j)fluoranthene	2022/08/02	105	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40		
8142856	Benzo(g,h,i)perylene	2022/08/02	106	50 - 130	113	50 - 130	<0.0050	ug/g	NC	40		
8142856	Benzo(k)fluoranthene	2022/08/02	111	50 - 130	112	50 - 130	<0.0050	ug/g	NC	40		
8142856	Chrysene	2022/08/02	112	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40		
8142856	Dibenzo(a,h)anthracene	2022/08/02	113	50 - 130	118	50 - 130	<0.0050	ug/g	NC	40		
8142856	Fluoranthene	2022/08/02	116	50 - 130	110	50 - 130	<0.0050	ug/g	NC	40		
8142856	Fluorene	2022/08/02	106	50 - 130	103	50 - 130	<0.0050	ug/g	NC	40		
8142856	Indeno(1,2,3-cd)pyrene	2022/08/02	102	50 - 130	109	50 - 130	<0.0050	ug/g	NC	40		
8142856	Naphthalene	2022/08/02	98	50 - 130	94	50 - 130	<0.0050	ug/g	2.4	40		
8142856	Phenanthrene	2022/08/02	105	50 - 130	101	50 - 130	<0.0050	ug/g	6.8	40		
8142856	Pyrene	2022/08/02	114	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40		
8142989	Chromium (VI)	2022/08/04	3.8 (1)	70 - 130	94	80 - 120	<0.18	ug/g	NC (2)	35		
8143062	Sieve - #200 (<0.075mm)	2022/08/02							0.49	20	58	53 - 58



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### QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd

Client Project #: 22524317

Site Location: 864 LADY ELLEN PLACE

Sampler Initials: R.I

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8143062	Sieve - #200 (>0.075mm)	2022/08/02							4.4	20	42	42 - 47
8143825	Conductivity	2022/08/03			99	90 - 110	<0.002	mS/cm	2.4	10		
8143827	Conductivity	2022/08/03			99	90 - 110	<0.002	mS/cm	0.32	10		
8143929	Acid Extractable Antimony (Sb)	2022/08/03	97	75 - 125	99	80 - 120	<0.20	ug/g	NC	30		
8143929	Acid Extractable Arsenic (As)	2022/08/03	109	75 - 125	100	80 - 120	<1.0	ug/g	8.5	30		
8143929	Acid Extractable Barium (Ba)	2022/08/03	NC	75 - 125	98	80 - 120	<0.50	ug/g	6.1	30		
8143929	Acid Extractable Beryllium (Be)	2022/08/03	104	75 - 125	96	80 - 120	<0.20	ug/g	4.3	30		
8143929	Acid Extractable Boron (B)	2022/08/03	105	75 - 125	96	80 - 120	<5.0	ug/g	7.6	30		
8143929	Acid Extractable Cadmium (Cd)	2022/08/03	107	75 - 125	100	80 - 120	<0.10	ug/g	NC	30		
8143929	Acid Extractable Chromium (Cr)	2022/08/03	NC	75 - 125	102	80 - 120	<1.0	ug/g	4.5	30		
8143929	Acid Extractable Cobalt (Co)	2022/08/03	108	75 - 125	102	80 - 120	<0.10	ug/g	2.9	30		
8143929	Acid Extractable Copper (Cu)	2022/08/03	105	75 - 125	101	80 - 120	<0.50	ug/g	1.8	30		
8143929	Acid Extractable Lead (Pb)	2022/08/03	107	75 - 125	102	80 - 120	<1.0	ug/g	4.0	30		
8143929	Acid Extractable Mercury (Hg)	2022/08/03	100	75 - 125	93	80 - 120	<0.050	ug/g				
8143929	Acid Extractable Molybdenum (Mo)	2022/08/03	110	75 - 125	100	80 - 120	<0.50	ug/g	NC	30		
8143929	Acid Extractable Nickel (Ni)	2022/08/03	NC	75 - 125	101	80 - 120	<0.50	ug/g	4.5	30		
8143929	Acid Extractable Selenium (Se)	2022/08/03	108	75 - 125	101	80 - 120	<0.50	ug/g	NC	30		
8143929	Acid Extractable Silver (Ag)	2022/08/03	108	75 - 125	100	80 - 120	<0.20	ug/g	NC	30		
8143929	Acid Extractable Thallium (Tl)	2022/08/03	106	75 - 125	103	80 - 120	<0.050	ug/g	7.9	30		
8143929	Acid Extractable Uranium (U)	2022/08/03	111	75 - 125	101	80 - 120	<0.050	ug/g	0.86	30		
8143929	Acid Extractable Vanadium (V)	2022/08/03	NC	75 - 125	102	80 - 120	<5.0	ug/g	8.1	30		
8143929	Acid Extractable Zinc (Zn)	2022/08/03	NC	75 - 125	104	80 - 120	<5.0	ug/g	2.0	30		
8143946	WAD Cyanide (Free)	2022/08/03	97	75 - 125	96	80 - 120	<0.01	ug/g	NC	35		
8144077	Hot Water Ext. Boron (B)	2022/08/03	97	75 - 125	95	75 - 125	<0.050	ug/g	0.084	40		
8144144	Hot Water Ext. Boron (B)	2022/08/03	NC	75 - 125	107	75 - 125	<0.050	ug/g	3.3	40		
8144435	Available (CaCl2) pH	2022/08/03			100	97 - 103			0.25	N/A		



BUREAU  
VERITAS

Bureau Veritas Job #: C2L3250

Report Date: 2022/08/05

### QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd

Client Project #: 22524317

Site Location: 864 LADY ELLEN PLACE

Sampler Initials: R.I

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8146439	F4G-sg (Grav. Heavy Hydrocarbons)	2022/08/04	109	65 - 135	101	65 - 135	<100	ug/g	0	50		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The sample was re-analyzed with the same results.

(2) Detection limits were adjusted for high moisture content





BUREAU  
VERITAS

Bureau Veritas Job #: C2L3250  
Report Date: 2022/08/05

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADY ELLEN PLACE  
Sampler Initials: R.I

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

---

Anastassia Hamanov, Scientific Specialist

---

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



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Phone: 905-817-5700 Fax 905-817-5719 Toll Free: 800-563-6266

CHAIN OF CUSTODY RECORD  
ENV COC - 00014v2

Page 1 of 1

Invoice Information		Invoice to (requires report) <input type="checkbox"/>		Report Information (if differs from invoice)				Project Information					
Company:	Golder - WSP			Company:					Quotation #:				
Contact Name:	Philippe Chevette			Contact Name:					P.O. #/ APER:				
Street Address:	1931 Robertson Rd.			Street Address:					Project #:	22524317			
City:	Ottawa	Prov:	ON	City:					Site #:				
Phone:	613-297-9555			Phone:					Site Location:	864 Lady Ellen Place			
Email:	Philippe.Chevette@wsp.com			Email:					Site Location Province:	Ottawa, ON			
Copies:	Winia.L.Gallare@wsp.com			Copies:					Sampled By:	Rob Iskand			

28-Jul-22 09:00

Katherine Szozda



C2L3250

ENVIRONMENTAL VERITAS

**Regulatory Criteria**

REG 153  
 Table 1  
 Table 2  
 Table 3  
 Table

Res/Park   
 Ind/Comm   
 Agri/other

Med/Fine   
 Course   
 For RSC

OTHER  
 CCME  
 Reg 40s, Table  
 Reg 558\*  
 Sanitary Sewer Bylaw  
 Storm Sewer Bylaw  
 MISA  
 PWQO  
 Other: Municipality

Include Criteria on Certificate of Analysis (check if yes):

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

Sample Identification	Date Sampled			Time (24hr)		Matrix	FIELD PRESERVED	FIELD FILTRATION REQUIRED	LAB FILTRATION REQUIRED	OTHER: F1	F2: PAH	METS	Reg 153 metals and inorganics	Reg 153 PCBs metals	Reg 153 metals	Reg 153 metals, (SVS, B)	# OF CONTAINERS SUBMITTED	DO NOT ANALYZE
	YY	MM	DD	HH	MM													
1 22-03 SAI	22	07	19	11	00	Soil	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	4	
2 22-05 SAI	22	07	20	09	00	Soil	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	4	
3 22-06 SAI	22	07	19	13	00	Soil	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	4	
4 DUP 1	22	07	20	09	00	Soil	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	4	
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		

**Regular Turnaround Time (TAT)**  
 5 to 7 Day  10 Day

**Rush Turnaround Time (TAT)**  
 Success fees apply  
 Same Day  1 Day  
 2 Day  3 Day  
 4 Day **WSP agreement**

Date Required: YY MM DD  
 Comments: Please email if questions  
 ↓

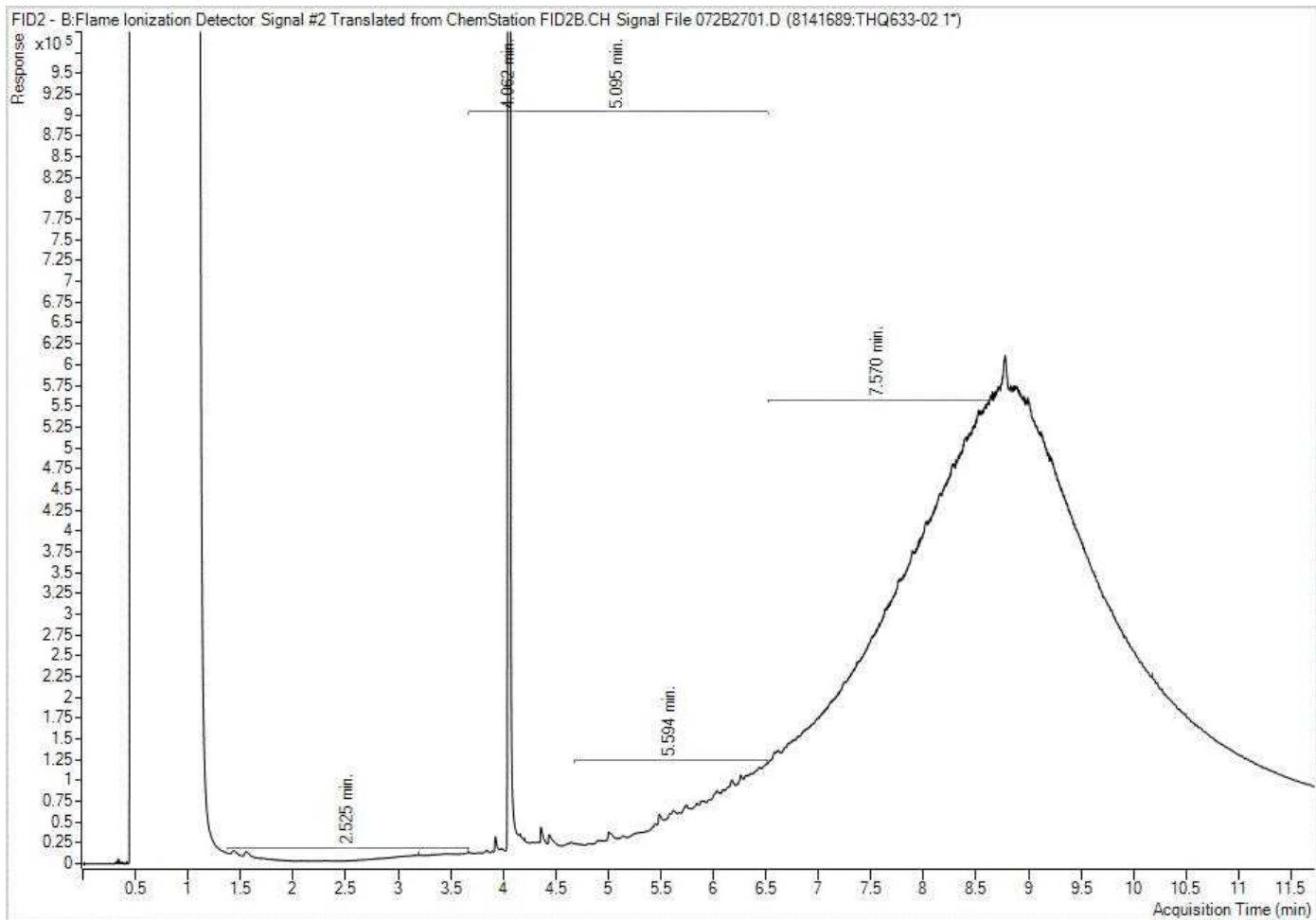
RECEIVED IN OTTAWA

RUSH

\*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

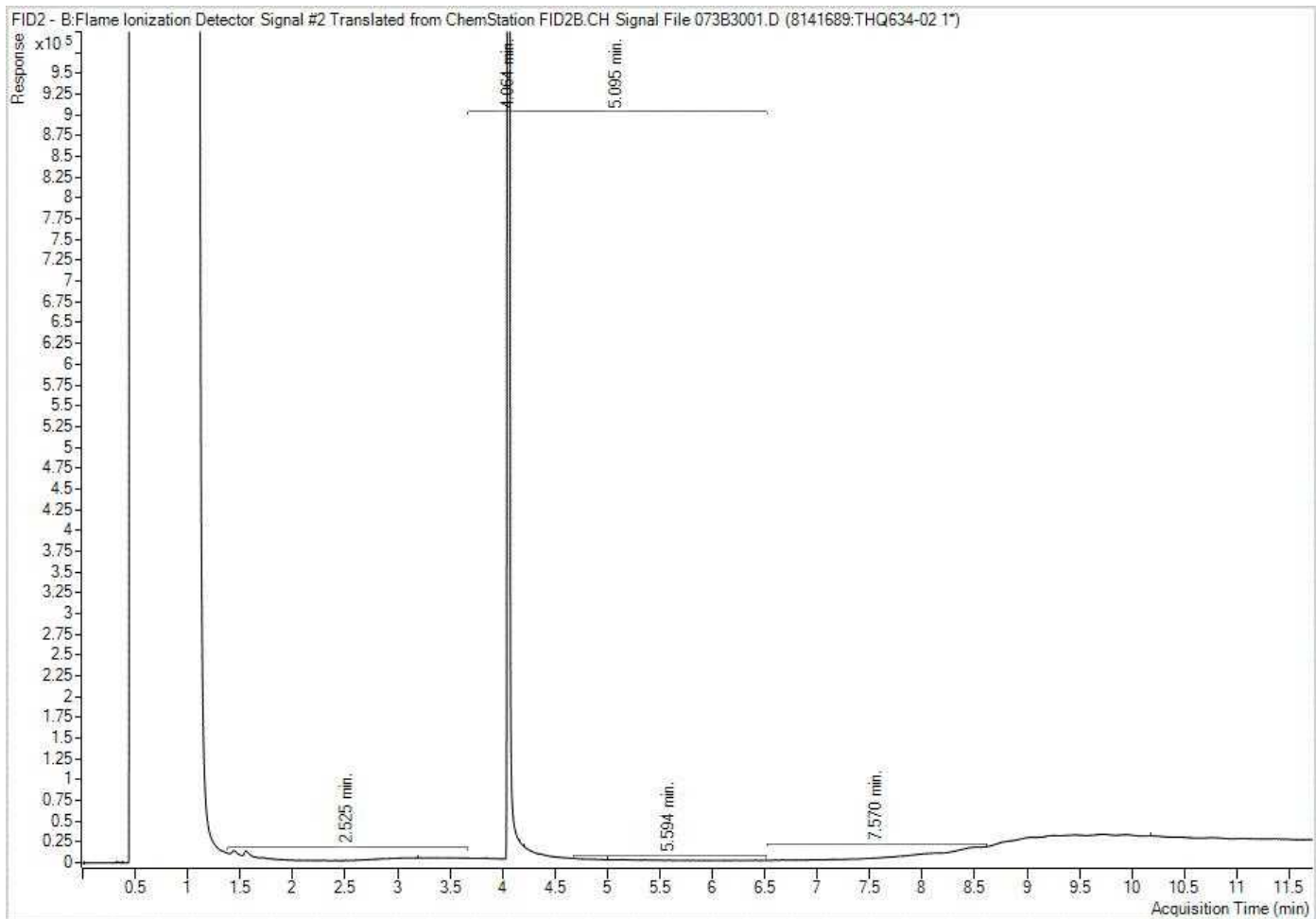
LAB USE ONLY		Yes	No	°C	LAB USE ONLY		Yes	No	°C	LAB USE ONLY		Yes	No	°C	Temperature reading by:			
Seal present	✓		3		3	2	Seal present	✓			4	6	6			Seal present	✓	
Seal intact	✓						Seal intact	✓								Seal intact	✓	
Cooling media present	✓					Cooling media present	✓					Cooling media present	✓					
Relinquished by: (Signature/Print)		Date			Time		Received by: (Signature/Print)		Date			Time		Special instructions				
Philippe Chevette		YY	MM	DD	HH	MM	Kun Jung		YY	MM	DD	HH	MM					
		22	07	27	19	56	24 TRIM		2022	07	28	09	00					
									2022	07	29	08	00					

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



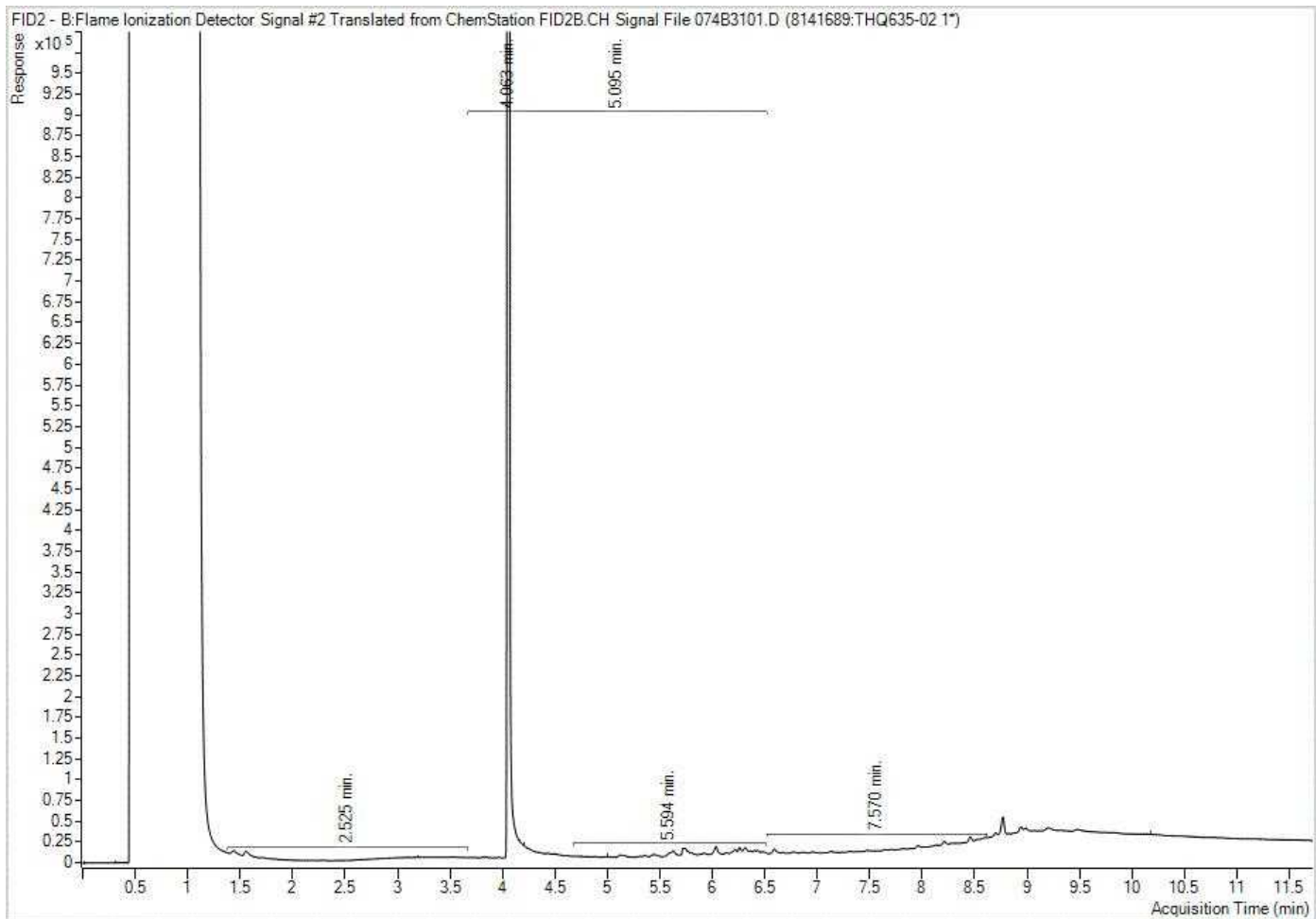
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



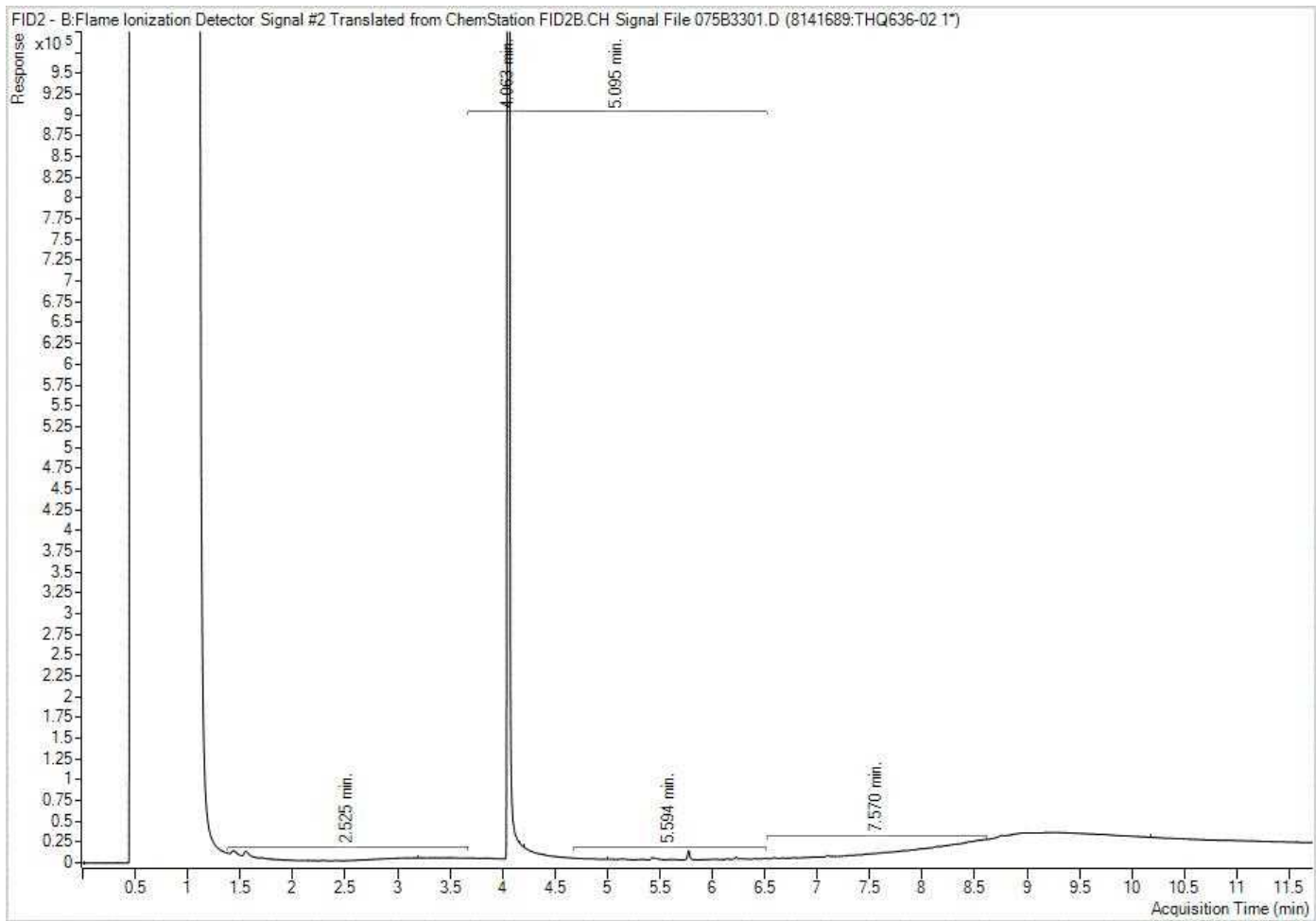
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

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



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

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



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



**BUREAU  
VERITAS**

Bureau Veritas Job #: C2L3250  
Report Date: 2022/08/05

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: 864 LADY ELLEN PLACE  
Sampler Initials: R.I

**Exceedance Summary Table – Reg153/04 T3-GW-C  
Result Exceedances**

<b>Sample ID</b>	<b>Bureau Veritas ID</b>	<b>Parameter</b>	<b>Criteria</b>	<b>Result</b>	<b>DL</b>	<b>UNITS</b>
No Exceedances						
The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.						



Your Project #: 22524317  
 Site Location: PROPERTY DEVELOPMENT LADY ELLEN PLACE  
 Your C.O.C. #: 892848-01-01

**Attention: Phil Chevette**

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

**Report Date: 2022/11/28**  
 Report #: R7406755  
 Version: 2 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**BUREAU VERITAS JOB #: C2N6099**

**Received: 2022/08/18, 09:00**

Sample Matrix: Ground Water  
 # Samples Received: 5

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
1,3-Dichloropropene Sum	5	N/A	2022/08/24		EPA 8260C m
Volatile Organic Compounds and F1 PHCs	5	N/A	2022/08/24	CAM SOP-00230	EPA 8260C m

**Remarks:**

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.





Your Project #: 22524317  
Site Location: PROPERTY DEVELOPMENT LADY ELLEN PLACE  
Your C.O.C. #: 892848-01-01

**Attention: Phil Chevette**

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

**Report Date: 2022/11/28**  
Report #: R7406755  
Version: 2 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**BUREAU VERITAS JOB #: C2N6099**

**Received: 2022/08/18, 09:00**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:  
Katherine Szozda, Project Manager  
Email: Katherine.Szozda@bureauveritas.com  
Phone# (613)274-0573 Ext:7063633

=====

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BUREAU  
VERITAS

Bureau Veritas Job #: C2N6099

Report Date: 2022/11/28

Golder Associates Ltd

Client Project #: 22524317

Site Location: PROPERTY DEVELOPMENT LADY ELLEN PLACE

Sampler Initials: PC

### VOLATILE ORGANICS BY GC/MS (GROUND WATER)

Bureau Veritas ID		TML428	TML429	TML430	TML431	TML432		
Sampling Date		2022/08/17 14:20	2022/08/17 16:50	2022/08/17 15:22	2022/08/17 16:09	2022/08/17 16:51		
COC Number		892848-01-01	892848-01-01	892848-01-01	892848-01-01	892848-01-01		
	UNITS	19-01	19-02	13-02	18-03	DUP-1	RDL	QC Batch

Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8176718
Volatile Organics								
Acetone (2-Propanone)	ug/L	<10	<10	<10	<10	<10	10	8178592
Benzene	ug/L	<0.17	<0.17	<0.17	<0.17	<0.17	0.17	8178592
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8178592
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8178592
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8178592
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8178592
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8178592
Chloroform	ug/L	<0.20	<0.20	2.6	<0.20	<0.20	0.20	8178592
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8178592
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8178592
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8178592
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8178592
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8178592
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8178592
1,2-Dichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8178592
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8178592
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8178592
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8178592
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8178592
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	8178592
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8178592
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8178592
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8178592
Hexane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8178592
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8178592
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	<10	<10	10	8178592
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	8178592
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8178592
Styrene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8178592

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch



**VOLATILE ORGANICS BY GC/MS (GROUND WATER)**

Bureau Veritas ID		TML428	TML429	TML430	TML431	TML432		
Sampling Date		2022/08/17 14:20	2022/08/17 16:50	2022/08/17 15:22	2022/08/17 16:09	2022/08/17 16:51		
COC Number		892848-01-01	892848-01-01	892848-01-01	892848-01-01	892848-01-01		
	<b>UNITS</b>	<b>19-01</b>	<b>19-02</b>	<b>13-02</b>	<b>18-03</b>	<b>DUP-1</b>	<b>RDL</b>	<b>QC Batch</b>
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8178592
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8178592
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8178592
Toluene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8178592
1,1,1-Trichloroethane	ug/L	<0.20	0.93	<0.20	0.48	0.89	0.20	8178592
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8178592
Trichloroethylene	ug/L	<0.20	5.7	<0.20	2.5	5.6	0.20	8178592
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8178592
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8178592
p+m-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8178592
o-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8178592
Total Xylenes	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8178592
F1 (C6-C10)	ug/L	<25	<25	<25	<25	<25	25	8178592
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	<25	<25	25	8178592
<b>Surrogate Recovery (%)</b>								
4-Bromofluorobenzene	%	86	86	86	86	85		8178592
D4-1,2-Dichloroethane	%	118	116	116	116	116		8178592
D8-Toluene	%	100	101	101	102	102		8178592
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								



BUREAU  
VERITAS

Bureau Veritas Job #: C2N6099  
Report Date: 2022/11/28

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: PROPERTY DEVELOPMENT LADY ELLEN PLACE  
Sampler Initials: PC

### TEST SUMMARY

**Bureau Veritas ID:** TML428  
**Sample ID:** 19-01  
**Matrix:** Ground Water

**Collected:** 2022/08/17  
**Shipped:**  
**Received:** 2022/08/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	8176718	N/A	2022/08/24	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8178592	N/A	2022/08/24	Jett Wu

**Bureau Veritas ID:** TML429  
**Sample ID:** 19-02  
**Matrix:** Ground Water

**Collected:** 2022/08/17  
**Shipped:**  
**Received:** 2022/08/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	8176718	N/A	2022/08/24	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8178592	N/A	2022/08/24	Jett Wu

**Bureau Veritas ID:** TML430  
**Sample ID:** 13-02  
**Matrix:** Ground Water

**Collected:** 2022/08/17  
**Shipped:**  
**Received:** 2022/08/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	8176718	N/A	2022/08/24	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8178592	N/A	2022/08/24	Jett Wu

**Bureau Veritas ID:** TML431  
**Sample ID:** 18-03  
**Matrix:** Ground Water

**Collected:** 2022/08/17  
**Shipped:**  
**Received:** 2022/08/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	8176718	N/A	2022/08/24	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8178592	N/A	2022/08/24	Jett Wu

**Bureau Veritas ID:** TML432  
**Sample ID:** DUP-1  
**Matrix:** Ground Water

**Collected:** 2022/08/17  
**Shipped:**  
**Received:** 2022/08/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	8176718	N/A	2022/08/24	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8178592	N/A	2022/08/24	Jett Wu



### GENERAL COMMENTS

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

Package 1	2.3°C
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Revised Report (2022/11/28): Sample ID changed to 18-03 from 13-03 per client request

**Results relate only to the items tested.**



BUREAU  
VERITAS

Bureau Veritas Job #: C2N6099

Report Date: 2022/11/28

### QUALITY ASSURANCE REPORT

Golder Associates Ltd

Client Project #: 22524317

Site Location: PROPERTY DEVELOPMENT LADY ELLEN PLACE

Sampler Initials: PC

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8178592	4-Bromofluorobenzene	2022/08/23	91	70 - 130	91	70 - 130	86	%		
8178592	D4-1,2-Dichloroethane	2022/08/23	116	70 - 130	117	70 - 130	113	%		
8178592	D8-Toluene	2022/08/23	105	70 - 130	105	70 - 130	101	%		
8178592	1,1,1,2-Tetrachloroethane	2022/08/23	96	70 - 130	100	70 - 130	<0.50	ug/L	NC	30
8178592	1,1,1-Trichloroethane	2022/08/23	94	70 - 130	99	70 - 130	<0.20	ug/L	NC	30
8178592	1,1,2,2-Tetrachloroethane	2022/08/23	107	70 - 130	114	70 - 130	<0.50	ug/L	NC	30
8178592	1,1,2-Trichloroethane	2022/08/23	120	70 - 130	125	70 - 130	<0.50	ug/L	NC	30
8178592	1,1-Dichloroethane	2022/08/23	103	70 - 130	108	70 - 130	<0.20	ug/L	NC	30
8178592	1,1-Dichloroethylene	2022/08/23	106	70 - 130	111	70 - 130	<0.20	ug/L	NC	30
8178592	1,2-Dichlorobenzene	2022/08/23	96	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
8178592	1,2-Dichloroethane	2022/08/23	104	70 - 130	110	70 - 130	<0.50	ug/L	NC	30
8178592	1,2-Dichloropropane	2022/08/23	104	70 - 130	110	70 - 130	<0.20	ug/L	NC	30
8178592	1,3-Dichlorobenzene	2022/08/23	95	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
8178592	1,4-Dichlorobenzene	2022/08/23	110	70 - 130	114	70 - 130	<0.50	ug/L	NC	30
8178592	Acetone (2-Propanone)	2022/08/23	117	60 - 140	122	60 - 140	<10	ug/L	NC	30
8178592	Benzene	2022/08/23	95	70 - 130	99	70 - 130	<0.17	ug/L	NC	30
8178592	Bromodichloromethane	2022/08/23	104	70 - 130	110	70 - 130	<0.50	ug/L	NC	30
8178592	Bromoform	2022/08/23	95	70 - 130	101	70 - 130	<1.0	ug/L	NC	30
8178592	Bromomethane	2022/08/23	96	60 - 140	100	60 - 140	<0.50	ug/L	NC	30
8178592	Carbon Tetrachloride	2022/08/23	90	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
8178592	Chlorobenzene	2022/08/23	96	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
8178592	Chloroform	2022/08/23	103	70 - 130	108	70 - 130	<0.20	ug/L	NC	30
8178592	cis-1,2-Dichloroethylene	2022/08/23	100	70 - 130	104	70 - 130	<0.50	ug/L	NC	30
8178592	cis-1,3-Dichloropropene	2022/08/23	88	70 - 130	92	70 - 130	<0.30	ug/L	NC	30
8178592	Dibromochloromethane	2022/08/23	98	70 - 130	103	70 - 130	<0.50	ug/L	NC	30
8178592	Dichlorodifluoromethane (FREON 12)	2022/08/23	106	60 - 140	115	60 - 140	<1.0	ug/L	NC	30
8178592	Ethylbenzene	2022/08/23	91	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
8178592	Ethylene Dibromide	2022/08/23	98	70 - 130	103	70 - 130	<0.20	ug/L	NC	30
8178592	F1 (C6-C10) - BTEX	2022/08/23					<25	ug/L	NC	30
8178592	F1 (C6-C10)	2022/08/23	97	60 - 140	87	60 - 140	<25	ug/L	NC	30
8178592	Hexane	2022/08/23	103	70 - 130	109	70 - 130	<1.0	ug/L	NC	30



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Bureau Veritas Job #: C2N6099

Report Date: 2022/11/28

### QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd

Client Project #: 22524317

Site Location: PROPERTY DEVELOPMENT LADY ELLEN PLACE

Sampler Initials: PC

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8178592	Methyl Ethyl Ketone (2-Butanone)	2022/08/23	117	60 - 140	125	60 - 140	<10	ug/L	NC	30
8178592	Methyl Isobutyl Ketone	2022/08/23	111	70 - 130	126	70 - 130	<5.0	ug/L	NC	30
8178592	Methyl t-butyl ether (MTBE)	2022/08/23	91	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
8178592	Methylene Chloride(Dichloromethane)	2022/08/23	107	70 - 130	112	70 - 130	<2.0	ug/L	NC	30
8178592	o-Xylene	2022/08/23	91	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
8178592	p+m-Xylene	2022/08/23	91	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
8178592	Styrene	2022/08/23	97	70 - 130	102	70 - 130	<0.50	ug/L	NC	30
8178592	Tetrachloroethylene	2022/08/23	86	70 - 130	88	70 - 130	<0.20	ug/L	NC	30
8178592	Toluene	2022/08/23	100	70 - 130	104	70 - 130	<0.20	ug/L	NC	30
8178592	Total Xylenes	2022/08/23					<0.20	ug/L	NC	30
8178592	trans-1,2-Dichloroethylene	2022/08/23	97	70 - 130	102	70 - 130	<0.50	ug/L	NC	30
8178592	trans-1,3-Dichloropropene	2022/08/23	95	70 - 130	99	70 - 130	<0.40	ug/L	NC	30
8178592	Trichloroethylene	2022/08/23	95	70 - 130	99	70 - 130	<0.20	ug/L	NC	30
8178592	Trichlorofluoromethane (FREON 11)	2022/08/23	94	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
8178592	Vinyl Chloride	2022/08/23	94	70 - 130	99	70 - 130	<0.20	ug/L	NC	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).



BUREAU  
VERITAS

Bureau Veritas Job #: C2N6099  
Report Date: 2022/11/28

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: PROPERTY DEVELOPMENT LADY ELLEN PLACE  
Sampler Initials: PC

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

\_\_\_\_\_  
Anastassia Hamanov, Scientific Specialist

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by {0}, {1} responsible for {2} {3} laboratory operations.







Your Project #: 22524317  
 Site Location: LADY ELLEN PARK  
 Your C.O.C. #: 41365

**Attention: Phil Chevette**

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

**Report Date: 2022/11/17**  
 Report #: R7392205  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C2X1275**

**Received: 2022/11/11, 09:00**

Sample Matrix: Air  
 # Samples Received: 3

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Canister Pressure (TO-15)	3	N/A	2022/11/14	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (ug/m3)	3	N/A	2022/11/16	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	3	N/A	2022/11/14	BRL SOP-00304	EPA TO-15 m

**Remarks:**

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO15. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO15 on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Bureau Veritas for a period of 5 calendar days or as contractually agreed from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.



Your Project #: 22524317  
Site Location: LADY ELLEN PARK  
Your C.O.C. #: 41365

**Attention: Phil Chevette**

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

**Report Date: 2022/11/17**  
Report #: R7392205  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C2X1275**

**Received: 2022/11/11, 09:00**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:  
Cristina (Maria) Bacchus, Project Manager  
Email: maria.bacchus@bureauveritas.com  
Phone# (905)817-5763

=====

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.



BUREAU  
VERITAS

Bureau Veritas Job #: C2X1275  
Report Date: 2022/11/17

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: LADY ELLEN PARK  
Sampler Initials: PC

### RESULTS OF ANALYSES OF AIR

<b>Bureau Veritas ID</b>		UGU743	UGU744	UGU745	
<b>Sampling Date</b>		2022/11/10	2022/11/10	2022/11/10	
<b>COC Number</b>		41365	41365	41365	
	<b>UNITS</b>	<b>SVP-22-1/SN10854</b>	<b>SVP-22-2/SN1221</b>	<b>DUP 1/SN6822</b>	<b>QC Batch</b>
<b>Volatile Organics</b>					
Pressure on Receipt	psig	(-3.1)	(-4.0)	(-3.0)	8344399
QC Batch = Quality Control Batch					



BUREAU  
VERITAS

Bureau Veritas Job #: C2X1275  
Report Date: 2022/11/17

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: LADY ELLEN PARK  
Sampler Initials: PC

### VOLATILE ORGANICS BY GC/MS (AIR)

Bureau Veritas ID		UGU743		UGU744	UGU745		
Sampling Date		2022/11/10		2022/11/10	2022/11/10		
COC Number		41365		41365	41365		
	UNITS	SVP-22-1/SN10854	RDL	SVP-22-2/SN1221	DUP 1/SN6822	RDL	QC Batch
<b>Volatile Organics</b>							
Dichlorodifluoromethane (FREON 12)	ppbv	0.52	0.20	2.09	2.03	0.20	8344129
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<0.40	<0.40	0.40	8344129
Chloromethane	ppbv	<0.30	0.30	<0.30	<0.30	0.30	8344129
Vinyl Chloride	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
Chloroethane	ppbv	<0.30	0.30	<0.30	<0.30	0.30	8344129
1,3-Butadiene	ppbv	<0.80	0.80	<3.6	<3.6	3.6	8344129
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<0.20	<0.20	0.20	8344129
Ethanol (ethyl alcohol)	ppbv	<1.0	1.0	2.4	3.2	1.0	8344129
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<0.15	<0.15	0.15	8344129
2-propanol	ppbv	<1.0	1.0	<1.0	<1.0	1.0	8344129
2-Propanone	ppbv	<8.0	8.0	13.2	12.3	0.60	8344129
Methyl Ethyl Ketone (2-Butanone)	ppbv	<1.0	1.0	1.90	1.93	0.20	8344129
Methyl Isobutyl Ketone	ppbv	<0.20	0.20	<0.30	<0.30	0.30	8344129
Methyl Butyl Ketone (2-Hexanone)	ppbv	<1.0	1.0	<1.0	<1.0	1.0	8344129
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.20	<0.20	0.20	8344129
Ethyl Acetate	ppbv	<1.0	1.0	<1.0	<1.0	1.0	8344129
1,1-Dichloroethylene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
cis-1,2-Dichloroethylene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
trans-1,2-Dichloroethylene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
Methylene Chloride(Dichloromethane)	ppbv	<0.60	0.60	<0.60	<0.60	0.60	8344129
Chloroform	ppbv	<0.10	0.10	1.10	0.99	0.10	8344129
Carbon Tetrachloride	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
1,1-Dichloroethane	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
1,2-Dichloroethane	ppbv	<0.10	0.10	<0.30	<0.30	0.30	8344129
Ethylene Dibromide	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
1,1,1-Trichloroethane	ppbv	<0.10	0.10	1.52	1.41	0.10	8344129
1,1,2-Trichloroethane	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
1,1,2,2-Tetrachloroethane	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
cis-1,3-Dichloropropene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
trans-1,3-Dichloropropene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
1,2-Dichloropropane	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
Bromomethane	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							



BUREAU  
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Bureau Veritas Job #: C2X1275  
Report Date: 2022/11/17

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: LADY ELLEN PARK  
Sampler Initials: PC

### VOLATILE ORGANICS BY GC/MS (AIR)

Bureau Veritas ID		UGU743		UGU744	UGU745		
Sampling Date		2022/11/10		2022/11/10	2022/11/10		
COC Number		41365		41365	41365		
	UNITS	SVP-22-1/SN10854	RDL	SVP-22-2/SN1221	DUP 1/SN6822	RDL	QC Batch
Bromoform	ppbv	<0.20	0.20	<0.20	<0.20	0.20	8344129
Bromodichloromethane	ppbv	<0.20	0.20	<0.20	<0.20	0.20	8344129
Dibromochloromethane	ppbv	<0.20	0.20	<0.20	<0.20	0.20	8344129
Trichloroethylene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
Tetrachloroethylene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
Benzene	ppbv	1.74	0.10	13.5	12.3	0.10	8344129
Toluene	ppbv	2.30	0.10	5.23	4.94	0.10	8344129
Ethylbenzene	ppbv	<0.10	0.10	1.33	1.22	0.10	8344129
p+m-Xylene	ppbv	0.33	0.20	4.47	4.10	0.20	8344129
o-Xylene	ppbv	0.13	0.10	1.86	1.72	0.10	8344129
Styrene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
4-ethyltoluene	ppbv	<0.50	0.50	<0.50	<0.50	0.50	8344129
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<0.50	<0.50	0.50	8344129
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<0.50	<0.50	0.50	8344129
Chlorobenzene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
Benzyl chloride	ppbv	<0.50	0.50	<0.50	<0.50	0.50	8344129
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<0.40	<0.40	0.40	8344129
1,4-Dichlorobenzene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
1,2-Dichlorobenzene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
1,2,4-Trichlorobenzene	ppbv	<0.50	0.50	<0.50	<0.50	0.50	8344129
Hexachlorobutadiene	ppbv	<0.50	0.50	<0.50	<0.50	0.50	8344129
Hexane	ppbv	4.32	0.20	143	130	0.20	8344129
Heptane	ppbv	1.71	0.30	13.6	12.4	0.30	8344129
Cyclohexane	ppbv	2.32	0.20	<4.0	<4.0	4.0	8344129
Tetrahydrofuran	ppbv	<0.40	0.40	<0.40	<0.40	0.40	8344129
1,4-Dioxane	ppbv	<1.0	1.0	<1.0	<1.0	1.0	8344129
Naphthalene	ppbv	<0.20	0.20	<0.20	<0.20	0.20	8344129
Total Xylenes	ppbv	0.46	0.30	6.33	5.83	0.30	8344129
1,1,1,2-Tetrachloroethane	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
Vinyl Bromide	ppbv	<0.20	0.20	<0.20	<0.20	0.20	8344129
Propene	ppbv	44.9	0.50	180	171	0.50	8344129
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.30	<0.30	0.30	8344129
Carbon Disulfide	ppbv	9.77	0.50	1.35	1.25	0.50	8344129
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							



BUREAU  
VERITAS

Bureau Veritas Job #: C2X1275  
Report Date: 2022/11/17

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: LADY ELLEN PARK  
Sampler Initials: PC

### VOLATILE ORGANICS BY GC/MS (AIR)

Bureau Veritas ID		UGU743		UGU744	UGU745		
Sampling Date		2022/11/10		2022/11/10	2022/11/10		
COC Number		41365		41365	41365		
	UNITS	SVP-22-1/SN10854	RDL	SVP-22-2/SN1221	DUP 1/SN6822	RDL	QC Batch
Vinyl Acetate	ppbv	<0.20	0.20	<0.20	<0.20	0.20	8344129
Surrogate Recovery (%)							
Bromochloromethane	%	92		95	103		8344129
D5-Chlorobenzene	%	85		95	101		8344129
Difluorobenzene	%	92		96	105		8344129
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							



BUREAU  
VERITAS

Bureau Veritas Job #: C2X1275  
Report Date: 2022/11/17

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: LADY ELLEN PARK  
Sampler Initials: PC

### CALCULATED VOLATILE ORGANICS (AIR)

Bureau Veritas ID		UGU743		UGU744	UGU745		
Sampling Date		2022/11/10		2022/11/10	2022/11/10		
COC Number		41365		41365	41365		
	UNITS	SVP-22-1/SN10854	RDL	SVP-22-2/SN1221	DUP 1/SN6822	RDL	QC Batch
<b>Calculated Parameters</b>							
Dichlorodifluoromethane (FREON 12)	ug/m3	2.59	0.99	10.3	10.0	0.99	8340429
1,2-Dichlorotetrafluoroethane	ug/m3	<1.2	1.2	<2.8	<2.8	2.8	8340429
Chloromethane	ug/m3	<0.62	0.62	<0.62	<0.62	0.62	8340429
Vinyl Chloride	ug/m3	<0.26	0.26	<0.26	<0.26	0.26	8340429
Chloroethane	ug/m3	<0.79	0.79	<0.79	<0.79	0.79	8340429
1,3-Butadiene	ug/m3	<1.8	1.8	<8.0	<8.0	8.0	8340429
Trichlorofluoromethane (FREON 11)	ug/m3	<1.1	1.1	<1.1	<1.1	1.1	8340429
Ethanol (ethyl alcohol)	ug/m3	<1.9	1.9	4.4	6.1	1.9	8340429
Trichlorotrifluoroethane	ug/m3	<1.2	1.2	<1.2	<1.2	1.2	8340429
2-propanol	ug/m3	<2.5	2.5	<2.5	<2.5	2.5	8340429
2-Propanone	ug/m3	<19	19	31.3	29.2	1.4	8340429
Methyl Ethyl Ketone (2-Butanone)	ug/m3	<2.9	2.9	5.62	5.68	0.59	8340429
Methyl Isobutyl Ketone	ug/m3	<0.82	0.82	<1.2	<1.2	1.2	8340429
Methyl Butyl Ketone (2-Hexanone)	ug/m3	<4.1	4.1	<4.1	<4.1	4.1	8340429
Methyl t-butyl ether (MTBE)	ug/m3	<0.72	0.72	<0.72	<0.72	0.72	8340429
Ethyl Acetate	ug/m3	<3.6	3.6	<3.6	<3.6	3.6	8340429
1,1-Dichloroethylene	ug/m3	<0.40	0.40	<0.40	<0.40	0.40	8340429
cis-1,2-Dichloroethylene	ug/m3	<0.40	0.40	<0.40	<0.40	0.40	8340429
trans-1,2-Dichloroethylene	ug/m3	<0.40	0.40	<0.40	<0.40	0.40	8340429
Methylene Chloride(Dichloromethane)	ug/m3	<2.1	2.1	<2.1	<2.1	2.1	8340429
Chloroform	ug/m3	<0.49	0.49	5.37	4.85	0.49	8340429
Carbon Tetrachloride	ug/m3	<0.63	0.63	<0.63	<0.63	0.63	8340429
1,1-Dichloroethane	ug/m3	<0.40	0.40	<0.40	<0.40	0.40	8340429
1,2-Dichloroethane	ug/m3	<0.40	0.40	<1.2	<1.2	1.2	8340429
Ethylene Dibromide	ug/m3	<0.77	0.77	<0.77	<0.77	0.77	8340429
1,1,1-Trichloroethane	ug/m3	<0.55	0.55	8.32	7.67	0.55	8340429
1,1,2-Trichloroethane	ug/m3	<0.55	0.55	<0.55	<0.55	0.55	8340429
1,1,2,2-Tetrachloroethane	ug/m3	<0.69	0.69	<0.69	<0.69	0.69	8340429
cis-1,3-Dichloropropene	ug/m3	<0.45	0.45	<0.45	<0.45	0.45	8340429
trans-1,3-Dichloropropene	ug/m3	<0.45	0.45	<0.45	<0.45	0.45	8340429
1,2-Dichloropropane	ug/m3	<0.46	0.46	<0.46	<0.46	0.46	8340429
Bromomethane	ug/m3	<0.39	0.39	<0.39	<0.39	0.39	8340429
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							





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VERITAS

Bureau Veritas Job #: C2X1275  
Report Date: 2022/11/17

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: LADY ELLEN PARK  
Sampler Initials: PC

### CALCULATED VOLATILE ORGANICS (AIR)

Bureau Veritas ID		UGU743		UGU744	UGU745		
Sampling Date		2022/11/10		2022/11/10	2022/11/10		
COC Number		41365		41365	41365		
	UNITS	SVP-22-1/SN10854	RDL	SVP-22-2/SN1221	DUP 1/SN6822	RDL	QC Batch
Bromoform	ug/m3	<2.1	2.1	<2.1	<2.1	2.1	8340429
Bromodichloromethane	ug/m3	<1.3	1.3	<1.3	<1.3	1.3	8340429
Dibromochloromethane	ug/m3	<1.7	1.7	<1.7	<1.7	1.7	8340429
Trichloroethylene	ug/m3	<0.54	0.54	<0.54	<0.54	0.54	8340429
Tetrachloroethylene	ug/m3	<0.68	0.68	<0.68	<0.68	0.68	8340429
Benzene	ug/m3	5.56	0.32	43.3	39.3	0.32	8340429
Toluene	ug/m3	8.66	0.38	19.7	18.6	0.38	8340429
Ethylbenzene	ug/m3	<0.43	0.43	5.76	5.29	0.43	8340429
p+m-Xylene	ug/m3	1.43	0.87	19.4	17.8	0.87	8340429
o-Xylene	ug/m3	0.56	0.43	8.08	7.48	0.43	8340429
Styrene	ug/m3	<0.43	0.43	<0.43	<0.43	0.43	8340429
4-ethyltoluene	ug/m3	<2.5	2.5	<2.5	<2.5	2.5	8340429
1,3,5-Trimethylbenzene	ug/m3	<2.5	2.5	<2.5	<2.5	2.5	8340429
1,2,4-Trimethylbenzene	ug/m3	<2.5	2.5	<2.5	<2.5	2.5	8340429
Chlorobenzene	ug/m3	<0.46	0.46	<0.46	<0.46	0.46	8340429
Benzyl chloride	ug/m3	<2.6	2.6	<2.6	<2.6	2.6	8340429
1,3-Dichlorobenzene	ug/m3	<2.4	2.4	<2.4	<2.4	2.4	8340429
1,4-Dichlorobenzene	ug/m3	<0.60	0.60	<0.60	<0.60	0.60	8340429
1,2-Dichlorobenzene	ug/m3	<0.60	0.60	<0.60	<0.60	0.60	8340429
1,2,4-Trichlorobenzene	ug/m3	<3.7	3.7	<3.7	<3.7	3.7	8340429
Hexachlorobutadiene	ug/m3	<5.3	5.3	<5.3	<5.3	5.3	8340429
Hexane	ug/m3	15.2	0.70	503	460	0.70	8340429
Heptane	ug/m3	7.0	1.2	55.7	50.8	1.2	8340429
Cyclohexane	ug/m3	7.97	0.69	<14	<14	14	8340429
Tetrahydrofuran	ug/m3	<1.2	1.2	<1.2	<1.2	1.2	8340429
1,4-Dioxane	ug/m3	<3.6	3.6	<3.6	<3.6	3.6	8340429
Naphthalene	ug/m3	<1.0	1.0	<1.0	<1.0	1.0	8340429
Total Xylenes	ug/m3	2.0	1.3	27.5	25.3	1.3	8340429
1,1,1,2-Tetrachloroethane	ug/m3	<0.69	0.69	<0.69	<0.69	0.69	8340429
Vinyl Bromide	ug/m3	<0.87	0.87	<0.87	<0.87	0.87	8340429
Propene	ug/m3	77.2	0.86	311	294	0.86	8340429
2,2,4-Trimethylpentane	ug/m3	<0.93	0.93	<1.4	<1.4	1.4	8340429
Carbon Disulfide	ug/m3	30.4	1.6	4.2	3.9	1.6	8340429
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							



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Bureau Veritas Job #: C2X1275  
Report Date: 2022/11/17

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: LADY ELLEN PARK  
Sampler Initials: PC

### CALCULATED VOLATILE ORGANICS (AIR)

Bureau Veritas ID		UGU743		UGU744	UGU745		
Sampling Date		2022/11/10		2022/11/10	2022/11/10		
COC Number		41365		41365	41365		
	UNITS	SVP-22-1/SN10854	RDL	SVP-22-2/SN1221	DUP 1/SN6822	RDL	QC Batch
Vinyl Acetate	ug/m3	<0.70	0.70	<0.70	<0.70	0.70	8340429
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							



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Bureau Veritas Job #: C2X1275  
Report Date: 2022/11/17

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: LADY ELLEN PARK  
Sampler Initials: PC

### TEST SUMMARY

**Bureau Veritas ID:** UGU743  
**Sample ID:** SVP-22-1/SN10854  
**Matrix:** Air

**Collected:** 2022/11/10  
**Shipped:**  
**Received:** 2022/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Canister Pressure (TO-15)	PRES	8344399	N/A	2022/11/14	Nicholas Smith
Volatile Organics in Air (ug/m3)	GC/MS	8340429	N/A	2022/11/16	Automated Statchk
Volatile Organics in Air (TO-15)	GC/MS	8344129	N/A	2022/11/14	Nicholas Smith

**Bureau Veritas ID:** UGU744  
**Sample ID:** SVP-22-2/SN1221  
**Matrix:** Air

**Collected:** 2022/11/10  
**Shipped:**  
**Received:** 2022/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Canister Pressure (TO-15)	PRES	8344399	N/A	2022/11/14	Nicholas Smith
Volatile Organics in Air (ug/m3)	GC/MS	8340429	N/A	2022/11/16	Automated Statchk
Volatile Organics in Air (TO-15)	GC/MS	8344129	N/A	2022/11/14	Nicholas Smith

**Bureau Veritas ID:** UGU745  
**Sample ID:** DUP 1/SN6822  
**Matrix:** Air

**Collected:** 2022/11/10  
**Shipped:**  
**Received:** 2022/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Canister Pressure (TO-15)	PRES	8344399	N/A	2022/11/14	Nicholas Smith
Volatile Organics in Air (ug/m3)	GC/MS	8340429	N/A	2022/11/16	Automated Statchk
Volatile Organics in Air (TO-15)	GC/MS	8344129	N/A	2022/11/14	Nicholas Smith



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Bureau Veritas Job #: C2X1275  
Report Date: 2022/11/17

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: LADY ELLEN PARK  
Sampler Initials: PC

### GENERAL COMMENTS

Sample UGU743 [SVP-22-1/SN10854] : Increased DL for 1,3-butadiene, 2-propanone and 2-butanone due to interference.

Sample UGU744 [SVP-22-2/SN1221] : Increased DL for 1,2-dichlorodifluoromethane, 1,3-butadiene, 1,2-dichloroethane, cyclohexane, 2,2,4-trimethylpentane and methyl isobutyl ketone due to interference.

Sample UGU745 [DUP 1/SN6822] : Increased DL for 1,2-dichlorodifluoromethane, 1,3-butadiene, 1,2-dichloroethane, cyclohexane, 2,2,4-trimethylpentane and methyl isobutyl ketone due to interference.

**Results relate only to the items tested.**



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Bureau Veritas Job #: C2X1275

Report Date: 2022/11/17

### QUALITY ASSURANCE REPORT

Golder Associates Ltd

Client Project #: 22524317

Site Location: LADY ELLEN PARK

Sampler Initials: PC

QC Batch	Parameter	Date	SPIKED BLANK		Method Blank	
			% Recovery	QC Limits	Value	UNITS
8344129	Bromochloromethane	2022/11/14	113	60 - 140	101	%
8344129	D5-Chlorobenzene	2022/11/14	110	60 - 140	90	%
8344129	Difluorobenzene	2022/11/14	112	60 - 140	99	%
8344129	1,1,1,2-Tetrachloroethane	2022/11/14	101	70 - 130	<0.10	ppbv
8344129	1,1,1-Trichloroethane	2022/11/14	101	70 - 130	<0.10	ppbv
8344129	1,1,2,2-Tetrachloroethane	2022/11/14	92	70 - 130	<0.10	ppbv
8344129	1,1,2-Trichloroethane	2022/11/14	102	70 - 130	<0.10	ppbv
8344129	1,1-Dichloroethane	2022/11/14	98	70 - 130	<0.10	ppbv
8344129	1,1-Dichloroethylene	2022/11/14	100	70 - 130	<0.10	ppbv
8344129	1,2,4-Trichlorobenzene	2022/11/14	89	70 - 130	<0.50	ppbv
8344129	1,2,4-Trimethylbenzene	2022/11/14	104	70 - 130	<0.50	ppbv
8344129	1,2-Dichlorobenzene	2022/11/14	94	70 - 130	<0.10	ppbv
8344129	1,2-Dichloroethane	2022/11/14	97	70 - 130	<0.10	ppbv
8344129	1,2-Dichloropropane	2022/11/14	102	70 - 130	<0.10	ppbv
8344129	1,2-Dichlorotetrafluoroethane	2022/11/14	94	70 - 130	<0.17	ppbv
8344129	1,3,5-Trimethylbenzene	2022/11/14	97	70 - 130	<0.50	ppbv
8344129	1,3-Butadiene	2022/11/14	103	70 - 130	<0.50	ppbv
8344129	1,3-Dichlorobenzene	2022/11/14	98	70 - 130	<0.40	ppbv
8344129	1,4-Dichlorobenzene	2022/11/14	96	70 - 130	<0.10	ppbv
8344129	1,4-Dioxane	2022/11/14	102	70 - 130	<1.0	ppbv
8344129	2,2,4-Trimethylpentane	2022/11/14	106	70 - 130	<0.20	ppbv
8344129	2-propanol	2022/11/14	106	70 - 130	<1.0	ppbv
8344129	2-Propanone	2022/11/14	95	70 - 130	<0.60	ppbv
8344129	4-ethyltoluene	2022/11/14	106	70 - 130	<0.50	ppbv
8344129	Benzene	2022/11/14	98	70 - 130	<0.10	ppbv
8344129	Benzyl chloride	2022/11/14	117	70 - 130	<0.50	ppbv
8344129	Bromodichloromethane	2022/11/14	97	70 - 130	<0.20	ppbv
8344129	Bromoform	2022/11/14	103	70 - 130	<0.20	ppbv
8344129	Bromomethane	2022/11/14	101	70 - 130	<0.10	ppbv
8344129	Carbon Disulfide	2022/11/14	108	70 - 130	<0.50	ppbv
8344129	Carbon Tetrachloride	2022/11/14	102	70 - 130	<0.10	ppbv



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Bureau Veritas Job #: C2X1275

Report Date: 2022/11/17

### QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd

Client Project #: 22524317

Site Location: LADY ELLEN PARK

Sampler Initials: PC

QC Batch	Parameter	Date	SPIKED BLANK		Method Blank	
			% Recovery	QC Limits	Value	UNITS
8344129	Chlorobenzene	2022/11/14	97	70 - 130	<0.10	ppbv
8344129	Chloroethane	2022/11/14	99	70 - 130	<0.30	ppbv
8344129	Chloroform	2022/11/14	100	70 - 130	<0.10	ppbv
8344129	Chloromethane	2022/11/14	92	70 - 130	<0.30	ppbv
8344129	cis-1,2-Dichloroethylene	2022/11/14	99	70 - 130	<0.10	ppbv
8344129	cis-1,3-Dichloropropene	2022/11/14	109	70 - 130	<0.10	ppbv
8344129	Cyclohexane	2022/11/14	98	70 - 130	<0.20	ppbv
8344129	Dibromochloromethane	2022/11/14	105	70 - 130	<0.20	ppbv
8344129	Dichlorodifluoromethane (FREON 12)	2022/11/14	98	70 - 130	<0.20	ppbv
8344129	Ethanol (ethyl alcohol)	2022/11/14	98	70 - 130	<1.0	ppbv
8344129	Ethyl Acetate	2022/11/14	105	70 - 130	<1.0	ppbv
8344129	Ethylbenzene	2022/11/14	105	70 - 130	<0.10	ppbv
8344129	Ethylene Dibromide	2022/11/14	107	70 - 130	<0.10	ppbv
8344129	Heptane	2022/11/14	105	70 - 130	<0.30	ppbv
8344129	Hexachlorobutadiene	2022/11/14	87	70 - 130	<0.50	ppbv
8344129	Hexane	2022/11/14	100	70 - 130	<0.20	ppbv
8344129	Methyl Butyl Ketone (2-Hexanone)	2022/11/14	108	70 - 130	<1.0	ppbv
8344129	Methyl Ethyl Ketone (2-Butanone)	2022/11/14	100	70 - 130	<0.20	ppbv
8344129	Methyl Isobutyl Ketone	2022/11/14	106	70 - 130	<0.20	ppbv
8344129	Methyl t-butyl ether (MTBE)	2022/11/14	95	70 - 130	<0.20	ppbv
8344129	Methylene Chloride(Dichloromethane)	2022/11/14	94	70 - 130	<0.60	ppbv
8344129	Naphthalene	2022/11/14	94	70 - 130	<0.20	ppbv
8344129	o-Xylene	2022/11/14	105	70 - 130	<0.10	ppbv
8344129	p+m-Xylene	2022/11/14	105	70 - 130	<0.20	ppbv
8344129	Propene	2022/11/14	98	70 - 130	<0.50	ppbv
8344129	Styrene	2022/11/14	107	70 - 130	<0.10	ppbv
8344129	Tetrachloroethylene	2022/11/14	101	70 - 130	<0.10	ppbv
8344129	Tetrahydrofuran	2022/11/14	98	70 - 130	<0.40	ppbv
8344129	Toluene	2022/11/14	104	70 - 130	<0.10	ppbv
8344129	Total Xylenes	2022/11/14	105	70 - 130	<0.30	ppbv
8344129	trans-1,2-Dichloroethylene	2022/11/14	103	70 - 130	<0.10	ppbv



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Bureau Veritas Job #: C2X1275

Report Date: 2022/11/17

### QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd

Client Project #: 22524317

Site Location: LADY ELLEN PARK

Sampler Initials: PC

QC Batch	Parameter	Date	SPIKED BLANK		Method Blank	
			% Recovery	QC Limits	Value	UNITS
8344129	trans-1,3-Dichloropropene	2022/11/14	112	70 - 130	<0.10	ppbv
8344129	Trichloroethylene	2022/11/14	101	70 - 130	<0.10	ppbv
8344129	Trichlorofluoromethane (FREON 11)	2022/11/14	101	70 - 130	<0.20	ppbv
8344129	Trichlorotrifluoroethane	2022/11/14	98	70 - 130	<0.15	ppbv
8344129	Vinyl Acetate	2022/11/14	105	70 - 130	<0.20	ppbv
8344129	Vinyl Bromide	2022/11/14	108	70 - 130	<0.20	ppbv
8344129	Vinyl Chloride	2022/11/14	97	70 - 130	<0.10	ppbv

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



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Bureau Veritas Job #: C2X1275  
Report Date: 2022/11/17

Golder Associates Ltd  
Client Project #: 22524317  
Site Location: LADY ELLEN PARK  
Sampler Initials: PC

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

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Melanie Mabini, Team Leader

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