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Phase Two Environmental Site Assessment
Creekside 2 Subdivision -
2770 Eagleson Road, Village of Richmond
Ottawa, Ontario

GEMTEC Project: 61899.04

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Submitted to:

Cardel Group of Companies
301 Moodie Drive, Suite 100
Ottawa, Ontario
K2H 9C4

Phase Two Environmental Site Assessment
Creekside 2 Subdivision -
2770 Eagleson Road, Village of Richmond
Ottawa, Ontario

July 24, 2023
GEMTEC Project: 61899.04

experience • knowledge • integrity

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July 24, 2023

File: 61899.04 – Rev0

Cardel Group of Companies
301 Moodie Drive, Suite 100
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Attention: Tyler Ferguson, Land Manager

Re: Phase Two Environmental Site Assessment
Creekside 2 Subdivision
2770 Eagleson Road – Village of Richmond, Ottawa, Ontario

Enclosed is GEMTEC Consulting Engineers and Scientists Limited's Phase Two Environmental Site Assessment (ESA) report for the above-noted project. The Phase Two ESA and reporting was based on the original scope of work presented in our proposal dated March 8, 2023. This report was prepared by Connor Shaw, B.E.Sc., and reviewed by Sherry Eaton, M.Sc., P.Geo., PMP, QP_{ESA}.

We trust this information is sufficient for your current needs. If you have any questions or require further information, please contact the undersigned.

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Environmental Scientist

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Senior Environmental Consultant

CS/SE/af

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EXECUTIVE SUMMARY

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Cardel Group of Companies to carry out a Phase Two Environmental Site Assessment (ESA) for the property located at 2770 Eagleson Road in Ottawa, Ontario, hereafter referred to as the "Phase Two Property" or "Site". It is understood that this Phase Two ESA is required to support a site plan application (SPA).

GEMTEC previously completed a Phase One ESA for the Site, the results of which were documented in the report titled *"Phase One Environmental Site Assessment, Creekside 2 Subdivision, 2770 Eagleson Road, Ottawa, Ontario",* dated February 2023. Based on the findings of the Phase One ESA, GEMTEC completed this Phase Two ESA investigation.

Utility locates were completed prior to the drilling program. On April 20, 2023, five boreholes (BH23-01 to BH23-05) and eleven manually advanced holes (GS23-01 to GS23-11) were advanced to a maximum depth of 4.57 metres below ground surface (mbgs). One borehole BH23-01 was advanced as a monitoring well. Monitoring wells (BH/MW20-01 and BH/MW20-03) from GEMTEC's 2020 hydrogeological and geotechnical investigation were utilized to determine hydrogeological features and groundwater quality for the Site.

Soil and groundwater results were compared to Ministry of the Environment, Conservation, and Parks (MECP) Table 2 Residential/Parkland/Institutional (RPI) Site Condition Standards (SCS) for fine to medium textured soil. All soil and groundwater samples are considered to have met the Table 2 RPI SCS.

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1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Cardel Group of Companies (Cardel) to carry out a Phase Two Environmental Site Assessment (ESA) for the property located at 2770 Eagleson Road in Ottawa, Ontario, hereafter referred to as the "Phase Two Property" or "Site".

GEMTEC previously completed a Phase One ESA for the Site, the results of which were documented in the report titled *"Phase One Environmental Site Assessment, Creekside 2 Subdivision, 2770 Eagleson Road, Ottawa, Ontario",* dated February 2023. Based on the findings of the Phase One ESA, GEMTEC completed this Phase Two ESA investigation. This Phase Two ESA was completed in general accordance with the requirements for Phase Two ESAs as defined in Part VII and Schedule E of Ontario Regulation 153/04 (O.Reg. 153/04). It is GEMTEC's understanding that the filing of a Record of Site Condition (RSC) is not required.

The Site's approximate boundaries and location are provided on Figure A.1, Appendix A.

1.1 Site Description

The Site has an area of approximately 56 acres and is located at 2770 Eagleson Road in Ottawa, Ontario. Based on the available aerial photographs, the Phase Two Property has been used for agricultural operations since prior to 1959. Currently, the Site consists of a vacant agricultural field with one small storage shed in the southeast corner. Current and historical land use in the Phase One study area was predominately rural residential/commercial with community right of way (i.e., roadways).

The legal description for the property is:

- PART LOT 27, CONCESSION 4, GOULBOURN, PART 1 PLAN 4R31078; CITY OF OTTAWA. PIN 04448-0240 (LT).
- PART OF LOT 26, CONCESSION 4, GOULBOURN, PARTS 4, 5 AND 7 PLAN 4R27894, SAVE AND EXCEPT 4M1621; SUBJECT TO AN EASEMENT OVER PART 4 PLAN 4R27894 IN FAVOUR OF PART OF LOT 26, CONCESSION 4, GOULBOURN, PART 1 PLAN 4R25979 EXCEPT PARTS 1 AND 2 PLAN 4R27030 AS IN OC1738973; SUBJECT TO AN EASEMENT OVER PART 5 PLAN 4R27894, SAVE AND EXCEPT 4M1621 AS IN N510155; CITY OF OTTAWA. PIN 04448-0300 (LT).

The Site is currently owned by Cardel Group of Companies (1470424 Ontario Inc.).

The Site location and Site features are shown on Figure A.1 and Figure A.2, Appendix A.

1.2 Current and Proposed Future Uses

Currently the Phase Two Property is operated agriculturally. The proposed future use is to convert the Site into a residential subdivision.

1.3 Applicable Site Condition Standards

The analytical results of the samples collected for this Phase Two ESA were compared to the following standards:

- Table 2 Generic Site Condition Standards in a Potable Ground Water Condition for residential / parkland / institutional property use and fine to medium soil texture, as presented in the Ministry of the Environment, Conservation, and Parks (MECP) document "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011.

The applicable site condition standards were selected based on the following rationale:

- The Site is currently agricultural and the proposed future land use is residential.
- Nearby residential properties rely on groundwater as the source of potable water.
- Based on grain size curves prepared in conjunction with the geotechnical investigation for the Site, the soil texture is considered fine to medium.
- An unnamed creek runs along the western boundary of the Site. As all areas of potential environmental concern (APECs) were located further than 30 m away from the unnamed creek, Table 2 RPI SCS was deemed acceptable.
- No features have been identified at the Phase Two Property that would meet the conditions of an environmentally sensitive site.
- The pH of soil at the Site is greater than 5 and less than 9.
- The overburden thickness is greater than 2 metres for more than one-third of the Phase Two Property. The measured depth to water at the Site ranged from 1.27 metre to 2.58 metres below ground surface (mbgs). The shallow depth of groundwater was not considered significant when selecting the applicable site condition standards given the site conditions (i.e., no volatile contaminants were identified, potable water is obtained from a deep screened well).

2.0 BACKGROUND INFORMATION

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

The objectives of the Phase Two ESA were to obtain information about environmental conditions in the soil and groundwater on, in or under the Site. The objectives of this Phase Two ESA were achieved by:

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

2.1 Physical Setting

The Site has a relatively flat topography and is at an elevation of approximately 96 metres above sea level. Surficial and bedrock geology maps of the Ottawa area were reviewed with Google imagery. Based on the review, overburden in the vicinity of the Site generally consists of fine textured glaciomarine deposits with silt & clay and minor sand & gravel with a thickness of approximately 10 to 15 metres (ESRI, 2016). Bedrock is mapped as primarily dolostone and sandstone from the Beekermantown Group (ESRI, 2016).

Groundwater flow often reflects topographic features and typically flows towards nearby lakes, rivers, and wetland areas. Based on hydrogeological features, it is anticipated that local shallow groundwater would flow to the south/southwest towards the Jock River and unnamed creek that runs along the western boundary of the Site. Based on the findings of this Phase Two ESA, shallow groundwater was interpreted to flow towards the southwest.

No provincially significant wetlands (PSWs) or areas of natural and scientific interest (ANSIs) were identified on the Site or within the study area.

2.2 Past Investigations

One historical report was available to GEMTEC for review.

2.2.1 Phase One Environmental Site Assessment

GEMTEC conducted a Phase One ESA titled *"Phase One Environmental Site Assessment, Creekside 2 Subdivision, 2770 Eagleson Road, Ottawa, Ontario",* dated February 2023, 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. Based on this review, three potentially contaminating activities (PCAs) were identified resulting in one area of potential environmental concern at the Site.

Figure A.3, Appendix A indicates the location of the PCAs and Figure A.4, Appendix A indicates the location of the APECs. The APECs identified in the Phase One ESA (GEMTEC, 2023) are summarized in the table below.

APEC #	Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One property	Potentially Contaminating Activity	Location of PCA (On-site and / or off-site)	Contaminants of Potential Concern (COPC)	Media potentially impacted (groundwater, soil and / or sediments)
1	Historical, large-scale pesticide use across the Site is inferred given the size of the Site and since the majority of the Site was used for agricultural purposes. Based on the interview, the Site representative confirmed that pesticides had been used at the Site. No further details regarding pesticide use were provided.	Site wide	40. Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	On the Phase One Property	OCPs, metals, hydride forming metals	Soil
2	Fill material of unknown origin and construction debris observed on southeast portion of the Site, adjacent to the former offsite landscaping company operations.	Southeast portion of the Site	30. Importation of Fill Material of Unknown Quality	On the Phase One Property	Metal, hydride forming metals, ORP, PHCs, BTEX, PAHs	Soil

APEC #	Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One property	Potentially Contaminating Activity	Location of PCA (On-site and / or off-site)	Contaminants of Potential Concern (COPC)	Media potentially impacted (groundwater, soil and / or sediments)
3	From aerial photographs, the property at 5831 Perth Street is located adjacent south of the Site and commercial activities can be seen as early as 1991. Aerials suggest that the property was historically used to sell agricultural machinery as recently as 2011. Property formerly used for equipment and vehicle servicing. Aerial photographs and a review of Google Imagery indicate that the property was used as an RV and automotive repair shop as recently as 2019. Aerial photographs show vehicles parked along the property boundary adjacent to the Site. A used vehicle dealership under construction was noted on the property during the site recon.	South portion of the Site	OT 2. Equipment and Vehicle Servicing	Off-site at 5831 Perth Street	Metals, hydride forming metals, ORP, PHCs, PAHs, VOCs	Soil and groundwater

Notes:
ORP – Other Regulated Parameters consisting of electrical conductivity (EC), sodium adsorption ration (SAR), pH, hexavalent chromium (CrVI), cyanide (CN)
PHC F1-F4 – Petroleum Hydrocarbons F1 to F4
BTEX – Benzene, Toluene, Ethylbenzene, Xylenes
PAHs – Polycyclic Aromatic Hydrocarbons
OCPs – Organochlorine Pesticides
VOCs – Volatile Organic Compounds

3.0 SCOPE OF THE INVESTIGATION

3.1 Overview of the Site Investigation

The Phase Two ESA investigation activities were completed between April 2023 and May 2023 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 borehole locations.
- **Sampling and Analysis Plan (SAP)**: Preparation of a SAP to document the purpose, rationale, number and location of samples to be recovered as part of the Phase Two investigation. A copy of the SAP is provided in Appendix B.
- **Borehole Advancement and Monitoring Well Installation**: The borehole drilling and monitoring well installation program included the drilling of five boreholes. One borehole was advanced as a groundwater monitoring well. The rationale for the selected location of the boreholes is provided in the SAP provided in Appendix B. The locations of the boreholes and monitoring well are provided in Figure A.5, Appendix A. The monitoring well construction details and water levels are presented in Table A.1 and A.2, Appendix A.
- **Soil Sampling**: Soil samples were collected on April 4 and 25, 2023 from the boreholes and manually advanced holes (via shovel). Selected soil samples were submitted for chemical analysis of one or more of the following:
    - Metals and other regulated parameters (ORP);
    - Organochlorine Pesticides (OCPs);
    - Petroleum hydrocarbon (PHC) fractions F1 to F4;
    - Volatile organic compounds (VOCs); and/or,
    - Polycyclic aromatic hydrocarbons (PAHs).
- **Groundwater Monitoring and Sampling**: Groundwater samples were collected from the on-Site groundwater monitoring wells on May 25, 2023. Groundwater samples were collected from the newly installed monitoring well and MW20-01 on Site that was installed during GEMTEC's 2020 geotechnical and hydrogeological investigation. Groundwater samples were submitted for analysis of one or more of the following:
    - PHC F1 to F4; and,
    - VOCs.
- **Surveying**: An elevation survey for boreholes and monitoring wells was completed.
- **Reporting**: GEMTEC compiled and assessed the field and laboratory results from the above noted activities into this report.

The Phase Two investigation was carried out in general accordance with GEMTEC's standard operating procedures, which conform to the requirements of O. Reg. 153/04.

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.

3.2 Media Investigated

To address the potential environmental issues identified in the Phase One ESA, the Phase Two ESA field program included sampling of subsurface soil and groundwater from boreholes, hand dug holes, and monitoring wells completed within the overburden at the Site. The SAP outlines the rationale for the field investigation activities carried out at the Site and the associated methodologies used to meet the objectives of this Phase Two ESA.

3.3 Phase One ESA Conceptual Site Model

The following key features (as required by O.Reg. 153/04) are presented in Figures A.1, A.2, and A.3:

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

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

- The Phase One property is located at 2770 Eagleson Road in the Village of Richmond in Ottawa, Ontario. The Site is approximately 56 acres in size and has one small storage shed in the southeast corner. At the time of the Site reconnaissance, the Site was a vacant agricultural field.
- Previous uses of the Site include agricultural operations. Aerial photographs indicate that the Site was used for agricultural operations prior to 1959.
- Current surrounding land uses include agricultural, commercial, and residential.
- The Site and nearby developed properties are serviced with natural gas, hydro, and municipal sewers. Groundwater is used as the source of potable water in the study area.
- The Site is at an elevation of approximately 96 metres above sea level. Based on Site observations, the Site and study are relatively flat.
- Surficial soil conditions consist of silt & clay and minor sand and gravel.
- Bedrock is mapped as primarily dolostone and sandstone from the Beekermantown Group. Based on water well records for the area of the Site, bedrock was encountered at a depth of approximately 10 metres below ground surface (m bgs).
- Shallow groundwater in the vicinity of the Site is reported to range from roughly 1.36 m to 2.6 m bgs based on water well reports for the area of the Site.
- Shallow groundwater direction is interpreted to be in a south/southwesterly direction.

- No areas of natural and scientific interest were identified on the Site or within the study area.
- A small unnamed creek is present along the western portion of the Site. The Jock River is located approximately 100 meters south of the Site.
- Based on the review of records, the interview and the Site reconnaissance completed as part of the Phase One ESA, GEMTEC identified seven PCAs resulting in three APECs on the Site. These APECs include:
    - APEC 1 – Historical, large-scale application of pesticides on the Site. COPCs include OCPs and metals with the potential for impacts in soil;
    - APEC 2 – Fill material of unknown origin was identified on Site. COPCs include M&I, PHCs, BTEX, and PAHs with potential for impacts in soil; and,
    - APEC 3 – Former equipment and vehicle servicing business identified adjacent south of the Site. COPCs include M&I, PHCs, PAHs, and VOCs with potential for impacts in soil and groundwater.

3.4 Deviations from Sampling and Analysis Plan

An SAP is provided in Appendix B. The SAP outlines the rationale for the field investigation activities carried out at the Site and the associated methodologies used to meet the objectives of this Phase Two ESA. The SAP covers the activities undertaken during the Phase Two ESA. The only deviation from the SAP was that a VOC travel blank and field blank were not submitted. It is the Qualified Person's opinion that this deviation would not affect the outcome of the Phase Two ESA.

3.5 Impediments

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

4.0 INVESTIGATION METHOD

4.1 General

The following sections describe the field investigation methodology employed during the Phase Two ESA. The field work was conducted between April 4, 2023, and May 25, 2023.

Prior to initiating the field work, GEMTEC 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. Additionally, prior to the drilling program, GEMTEC completed public and private utility clearances.

4.2 Borehole Drilling

On April 25, 2023, five boreholes (BH23-01, BH23-02, BH23-03, BH23-04, and BH23-05) were advanced to depths ranging from 1.52 to 4.57 below ground surface (mbgs). Borehole locations

are provided in Figure A.4, Appendix A. A description of the quality assurance/quality control measures taken to minimize the potential for cross-contamination between sampling locations is provided in Section 5.12.

All boreholes were advanced by Strata Soil Drilling (Strata) using a track mounted 7822DT geoprobe. During drilling, a macro core soil sampling system utilizing direct push technology with solid stem augers and disposable 5.71 cm (2-1/4 inch) PVC tube liners, which fit inside a 6.26 cm (3-1/4 inch) outer stainless steel tube was used to sample the overburden soil. The macro core soil samples were obtained at regular depth intervals and logged in the field noting subsurface conditions.

4.3 Soil: Sampling

On April 4, 2023, eleven shallow soil samples (GS23-01 to GS23-11) were collected from across the Site using a shovel. The samples were collected from approximately 0 – 0.15 mbgs. Sample locations are provided in Figure A.4, Appendix A. A description of the quality assurance/quality control measures taken to minimize the potential for cross-contamination between sampling locations is provided in Section 5.12.

Soil samples collected from the boreholes were split in the field into two components. One component was placed into laboratory-prepared container with minimal headspace and stored in a cooler for potential laboratory analysis. The second component was placed inside a plastic bag for field screening, consisting of the soil description, and noting the presence of any staining, odour and/or debris. A gas detector (RKI Eagle 2) calibrated to 100 parts per million (ppm) isobutylene and hexane was used to measure the total organic vapour and combustible gas concentrations in the headspace in the sealed plastic bag.

As per the SAP, soil samples at each sampling location were 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 A.3.

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

4.4 Soil: Field Screening

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

Equipment	Parameters Detected	Detection Limit	Precision	Accuracy	Calibration Standard
RKI Eagle 2	Combustible gas	0-50,000 ppm	NA	±5%	Hexane (1650 ppm)
	Total organic vapour	0-2,000 ppm	NA	±5%	Isobutylene (100 ppm)

The RKI Eagle 2 was calibrated by GEMTEC daily prior to field use.

The results of soil headspace screening measurements are provided in the Record of Borehole Logs in Appendix C.

4.5 Groundwater: Monitoring Well Installation

Groundwater monitoring wells were installed by Strata 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 monument-style protective well casing. The riser pipes were sealed with a J-plug. The monitoring well construction details are presented in Table A.1, Appendix A.

A description of the quality assurance/quality control measures taken to minimize the potential for cross-contamination between sampling locations is provided in Section 4.12.

4.6 Groundwater: Field Measurements for Water Quality Parameters

Groundwater indicator parameters including temperature, pH and conductivity were measured prior to sampling to ensure adequate well development and purging. A Horiba Multi parameter meter was used to measure groundwater quality during groundwater sampling. This instrument was calibrated by Maxim Environmental and/or using factory supplied solutions for electrical conductivity (1413 micro Siemens per centimetre (µS/cm)) and pH (4.01 pH and 7.01 pH) parameters. Specifications for the water quality metre are summarized in the following table:

Parameter	Measurement Range	Precision	Accuracy
pH	0.00 to 14.00 pH	0.01 pH	±0.2 pH
Conductivity	0.00 to 200 mS/cm	0.01 mS/cm	± 0.5%
Temperature	-5 to 45 ºC	0.1 ºC	± 0.15 ºC

4.7 Groundwater: Development, Purging and Sampling

Following drilling, the monitoring wells were developed on April 26, 2023, by removing one to three well volumes at which point the wells became dry using dedicated Waterra® pumps (tubing with foot valves) or until water quality parameters stabilize. During monitoring well development, qualitative observations were made of water colour, clarity, and the presence or absence of any hydrocarbon sheen or odours.

The monitoring wells were purged prior to sample collection using a GeoPump peristaltic pump with samples collected upon stabilization of field parameters (i.e., pH, temperature, conductivity, dissolved oxygen and redox potential) which was generally obtained for two to three consecutive readings. During purging and sampling, qualitative observations were made of water colour, clarity, and the presence of hydrocarbon sheen or odour. The depth to water in each well was measured using an electronic water level tape prior to purging.

Groundwater samples were placed in laboratory-prepared containers and stored on ice 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 A.4, Appendix A.

4.8 Laboratory Analytical Program

The contact information for the analytical laboratory is as follows:

- ALS Laboratories (ALS), 190 Colonnade Road South, Nepean, ON K2E 7J6. (Costas Farassoglou, 613-225-8279).

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.

4.9 Surveying

Elevation of monitoring well locations were surveyed using a Trimble R10 global positioning system. The coordinates of the boreholes are referenced to NAD83 (CSRS) Epoch 2010, vertical network CGVD28 and are considered to be accurate within the tolerance of the instrument.

4.10 Quality Assurance / Quality Control Program

GEMTEC'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.
- Initial calibration of field equipment was performed at the start of each field day, with a daily check of calibration, as needed, using a standard of known concentration.
- 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.I of the Environmental Protection Act", July 1, 2011. Samples were collected directly into pre-cleaned, laboratory-supplied sample containers with the appropriate preservative for the analyte group. Upon collection, samples were placed in insulated coolers with ice for storage and transport to the analytical laboratory under chain-of-custody.
- Dedicated sampling equipment (tubing and footvalves) and clean disposable Nitrile™ gloves were used at each sampling location to prevent cross-contamination. All non-dedicated sampling equipment (e.g., water level meters, split spoons) was decontaminated between sampling locations. Sampling equipment in contact with soil, groundwater, or sediment was cleaned by mechanical means; washed with a phosphate-free, laboratory-grade detergent (e.g., Alconox powder) and, if necessary, an appropriate desorbing wash solution; and thoroughly rinsed with analyte-free water.
- Detailed field records documenting the methods and circumstances of collection for each field sample were prepared at the time of sample collection. Each sample was assigned a unique sample identification number recorded in the field notes, along with the date and time of sample collection, the sample matrix, and the requested analyses.
- The submission of samples to the analytical laboratory in accordance with standard chain of custody procedures.

Below is a summary of the primary and duplicate samples.

Date	Media	Sample ID	Duplicate ID
April 4, 2023	Soil	GS23-01 SA1	GS23-01 SA101
April 25, 2023	Soil	BH23-01 SA1	BH23-01 SA101
May 25, 2022	Groundwater	MW23-1	MW23-101

5.0 REVIEW AND EVALUATION

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

5.1 Geology

The soil conditions encountered during the borehole drilling program are presented in the Record of Borehole Logs provided in Appendix C, as well as on cross section figures provided in Figure A.6 and Figure A.7, Appendix A. The location of the section lines are indicated on Figure A.5, Appendix A.

In general and based on observations from BH23-01 and the previously completed geotechnical boreholes, the subsurface soil conditions encountered across the majority of the site generally consisted top soil (with thickness ranging from about 50 to 200 mm), underlain by native silty clay which extended to depths ranging from about 2.6 to 8.4 m bgs. A deposit of glacial till was encountered below the silty clay at some geotechnical borehole locations and generally extended beyond the depth of investigation. In the vicinity of APEC 2, at the southeast portion of the Site, surface fill material was encountered comprised of silty sand and gravel to depths ranging from 0.33 to 0.64 m bgs underlain by native silty clay and sandy silt that extended beyond the depth of investigation. The boreholes were advanced to depths ranging from 1.52 of 4.57 mbgs.

5.2 Groundwater: Elevations and Flow Direction

The groundwater monitoring well installed as part of the Phase Two ESA field program (BH/MW23-01) and two wells (BH/MW20-01 and BH/MW20-03) installed for GEMTEC's 2020 geotechnical and hydrogeological 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 location and depth of the screen for the monitoring well installed for the purpose of the Phase Two ESA was selected based on the issue being investigated and was installed to straddle the anticipated water table based on conditions observed during drilling. The well screens were located within native silty clay. A summary of the monitoring well construction details are presented in Table A.1, Appendix A.

Water levels measured in the monitoring wells ranged from 0.66 m to 1.98 m bgs on the May 25, 2023 monitoring event. The ground surface and top pipe at each well location were surveyed using a Trimble R10 global positioning system. The coordinates of the boreholes are referenced to NAD83 (CSRS) Epoch 2010, vertical network CGVD28 and are considered to be accurate within the tolerance of the instrument. Water level measurements and elevations are summarized in Table A.2, Appendix A.

Groundwater elevations ranged from 90.69 to 92.63 m above sea level (masl) on May 25, 2023. Based on the interpreted groundwater elevation contours presented in Figure A.5, Appendix A, the inferred direction of shallow groundwater flow is generally to the southwest.

Seasonal fluctuation in water levels on the Site should be expected. Considering only one monitoring event was conducted, 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. At the time of groundwater sample collection on May 25, 2023, the measured water level at MW20-01B intersected the well screen. The water level at MW23-01 was slightly above the respective well screen interval. The presence of the water table above the well screen interval is not considered to affect the conclusions of this Phase Two ESA given the observations during drilling, results of the field screening, and the results of the analytical testing.

Utility locates completed prior to the drilling did not indicate any utilities on the Site. Based on this, buried services are not considered to have not facilitated the migration of contaminants at the Site.

5.3 Groundwater: Hydraulic Gradients

The average horizontal hydraulic gradient was estimated for shallow groundwater conditions based on water levels measured on May 25, 2023, and the inferred groundwater contours are presented in Figure A.5, Appendix A. The average horizontal hydraulic gradient for shallow groundwater conditions was 0.0018 m/m.

Vertical hydraulic gradient for shallow groundwater conditions were not calculated as nested monitoring wells were not installed at the Site.

5.4 Soil Texture

Based on grain size curves prepared in conjunction with the geotechnical investigation for the Site, the soil texture is considered fine to medium. Copies of the grain size curves are provided in Appendix C.

5.5 Soil: Field Screening

Headspace vapour measurements were conducted on the soil samples collected from each of the boreholes advanced at the Site. The results of headspace vapour measurements are presented in table below and on the Record of Borehole Logs in Appendix C.

Borehole	Vapour readings (ppm HEX; ppm IBL)	Depth of samples
BH23-01	Hex: 40 to 50 ppm; IBL: 0 ppm	0 – 3.05 m bgs

Borehole	Vapour readings (ppm HEX; ppm IBL)	Depth of samples
BH23-02	Hex: 0 to 40 ppm; IBL: 0 ppm	0.10 – 1.52 m bgs
BH23-03	Hex: 0 to 5 ppm; IBL: 0-7 ppm	0.05-1.52 m bgs
BH23-04	Hex: 0 to 5 ppm; IBL: 0-7 ppm	0.05-1.52 m bgs
BH23-05	Hex: 0 to 15 ppm; IBL: 0 ppm	0-1.52 m bgs

Although elevated Hex readings were identified, analysis of samples from at and near to these depths for PHCs and VOCs did not identify any detectable concentrations. Additionally, no VOCs were detected in groundwater sampled from these locations.

5.6 Soil: Quality

Table A.3, Appendix A provides a summary of the soil samples submitted for analysis and the associated test parameters. The analytical results of soil samples are presented in Tables A.5, Appendix A. Figures A.8 to A.11, Appendix A illustrate the soil sample results by location. Laboratory Certificates of Analysis for the soil samples are included in Appendix D.

Soil sampling at the Site was completed by hand on April 4, 2023, and during borehole advancement on April 25, 2023. The soil samples were submitted to ALS for analysis of one or more of the following parameters: metals, OCPs, ORP, PHCs, VOCs and/or PAHs.

A summary of the number of soil samples analyzed and the number of soil samples exceeding the Table 2 Standards is provided below. Further discussion regarding the detected concentrations and their interpretation as exceedances is provided below.

Parameter	Number of soil samples analyzed (including duplicates)	Number of soil samples exceeding the Table 2 Standards
Metals	18 (16 plus two duplicates)	Vanadium – BH 23-01 SA1 and duplicate sample BH23-01 SA101. See comment below.
ORP (EC, SAR, pH, CrVI, CN))	6 (5 plus one duplicate)	EC – BH23-02 SA1, BH23-04 SA1, BH23-05 SA2. See comment below. SAR – BH23-02 SA1, BH23-04 SA1, BH23-05 SA2. See comment below. pH – within acceptable range
PHC F1 to F4	6 (5 plus one duplicate)	0

Parameter	Number of soil samples analyzed (including duplicates)	Number of soil samples exceeding the Table 2 Standards
VOCs	6 (5 plus one duplicate)	0
PAHs	6 (5 plus one duplicate)	0
OCPs	12 (11 plus one duplicate)	0

Note:
Sample BH23-01 SA101 was a duplicate of BH23-01 SA1

With regards to the detected vanadium concentrations, these are inferred to be naturally occurring. Specifically, as per Sterling et al., 2017, geo-regional background concentrations of vanadium in Champlain Sea sediments are often above the established MECP site condition standards for soil. Based on this and since the samples with elevated vanadium (i.e., BH23-01 SA1 and associated duplicate) are considered to be Champlain Sea sediments, GEMTEC considers the detected concentrations to be naturally occurring and are not considered an exceedance of the Table 2 Standards.

With regards to the EC and SAR concentrations, these are considered to be related to the application of de-icing salt for vehicle and pedestrian safety associated with the nearby roadway and former adjacent landscaping business. Therefore, as per Section 49.1 of O.Reg. 153/04, it is the Qualified Person's opinion that the site conditions standards for EC and SAR are not exceeded.

5.7 Groundwater: Quality

Monitoring well construction details are summarized in Table A.1, Appendix A and a summary of groundwater samples submitted for laboratory analysis is provided in Table A.4, Appendix A. The analytical results for groundwater samples are summarized in Table A.7, Appendix A. Figure A.12, Appendix A illustrates the groundwater sample results by location. Laboratory certificates of analysis for groundwater are provided in Appendix D.

Groundwater sampling at the Site was completed on May 25, 2023. The groundwater samples were submitted to ALS for analysis of the following parameters: PHCs and VOCs.

A summary of the number of groundwater samples analyzed and number of samples exceeding the Table 2 Standards is provided below:

Parameter	Number of groundwater samples analyzed (including duplicate sample)	Number of groundwater samples exceeding the Table 2 Standards
PHC F1 to F4	3 samples (2 plus one duplicate)	0
VOCs	3 samples (2 plus one duplicate)	0

5.8 Sediment: Quality

No sediment samples were collected as part of this investigation.

5.9 Quality Assurance and Quality Control Results

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").

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

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

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

The analytical results of the primary and duplicate soil and groundwater samples indicated a satisfactory correlation between the primary and duplicate samples and were within the 30 percent recommended control limit in the Analytical Protocol.

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 D.

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

6.0 PHASE TWO CONCEPTUAL SITE MODEL

The Phase Two ESA conceptual site model (CSM) is presented in the following sections.

The Phase Two CSM was prepared in accordance with Schedule E, Part V, Table 1, Section 6, Sub-heading (x) of Ontario Regulation 153/04 (O. Reg. 153/04) and is described in the text below and in the following figures:

Figure A.1 Phase Two Property and Phase One Study Area.
Figure A.2 Potentially Contaminating Activities.
Figure A.3 Areas of Potential Environmental Concern.
Figure A.4 APECs and Test Locations.
Figure A.5 Groundwater Elevations – May 25, 2023.
Figure A.6 Geologic Cross Section A – A'.
Figure A.7 Geologic Cross Section B - B'.
Figure A.8 Soil Analytical Results – Metals and Hydride Forming Metals.
Figure A.9 Soil Analytical Results – Metals and Organochlorine Pesticides.
Figure A.10 Soil Analytical Results – ORP.
Figure A.11 Soil Analytical Results – Petroleum Hydrocarbons, Polycyclic Aromatic Hydrocarbons, Volatile Organic Compounds.
Figure A.12 Groundwater Analytical Results – Petroleum Hydrocarbons and Volatile Organic Compounds.

6.1 Property Description and History

The Site has an area of approximately 56 acres and is located at 2770 Eagleson Road in Ottawa, Ontario. At the time of the Site reconnaissance, the Phase One Property consisted of a vacant agricultural field. A small three sided shed was noted at the south-east corner of the Site where operations from the adjacent landscaping business encroached onto the Site.

The Site is currently unoccupied and was previously used for agricultural purposes. The proposed future land use is residential. The Phase One Property is not serviced.

The Phase Two Property and associated Phase One ESA study area are shown on Figure A.1, Appendix A.

The legal description of the Site consists of:

- PART LOT 27, CONCESSION 4, GOULBOURN, PART 1 PLAN 4R31078; CITY OF OTTAWA. PIN 04448-0240 (LT).
- PART OF LOT 26, CONCESSION 4, GOULBOURN, PARTS 4, 5 AND 7 PLAN 4R27894, SAVE AND EXCEPT 4M1621; SUBJECT TO AN EASEMENT OVER PART 4 PLAN 4R27894 IN FAVOUR OF PART OF LOT 26, CONCESSION 4, GOULBOURN, PART 1 PLAN 4R25979 EXCEPT PARTS 1 AND 2 PLAN 4R27030 AS IN OC1738973; SUBJECT TO AN EASEMENT OVER PART 5 PLAN 4R27894, SAVE AND EXCEPT 4M1621 AS IN N510155; CITY OF OTTAWA. PIN 04448-0300 (LT).

The Site is presently owned by Cardel Group of Companies (1470424 Ontario Inc.). The contact person for the Site at the time of this reporting is Tyler Ferguson, Land Manager with Cardel Group of Companies.

6.2 Previous Investigation

The following lists the previous environmental reports available for the Site. The Phase One ESA formed the basis for completing this Phase Two ESA.

- Phase One Environmental Site Assessment, Creekside 2 Subdivision, 2770 Eagleson Road, Village of Richmond, Ottawa, Ontario", prepared by GEMTEC, dated February 2023 (2023 Phase One ESA).

6.3 Potentially Contaminating Activities

The potentially contaminating activities (PCAs) identified via the 2023 Phase One ESA are summarized in Table below. Figure A.2 indicates the location of the PCAs.

PCA #	Address/ Location	PCA ID	Distance from Site	Description
1	2770 Eagleson Drive	40. Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	On-Site	Historical, large-scale pesticide use across the Site is inferred given the size of the Site and since the majority of the Site was used for agricultural purposes. Based on the interview, the Site representative confirmed that pesticides had been used at the Site. No further details regarding pesticide use were provided.
2	2770 Eagleson Drive	30. Importation of Fill Material of Unknown Quality	On-Site	Fill material of unknown origin and construction debris observed on southeast portion of the Site, adjacent to the off-site landscaping company operations.
3	5789 Perth Street	28. Gasoline and Associated Products Storage in Fixed Tanks	75 m southeast	The property is listed as a service station for gasoline, oil and natural gas. Records noted that three gasoline USTs, one diesel UST, and one diesel AST (all single wall) were active as of August 2007. An additional record noted a double wall diesel AST was installed in 2009.
4	Corner of Eagleson and Perth Street	OT 1. Spill	115 m southeast	A City of Ottawa forcemain break in 2004 resulted in a 200 m^3 spill of raw, unchlorinated sewage. Environmental impact was noted as possible.
5	3440 Eagleson Road	OT 1. Spill	140 meters southeast	Listed as a pesticide vendor.

PCA #	Address/ Location	PCA ID	Distance from Site	Description
6	5911 Perth Street	40. Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	50 meters southwest	A 100 litre spill of diesel fuel was reported in the parking lot in 2018.
7	5873 Perth Street	OT 1. Spill	205 meters southwest	A fuel oil spill of unknown volume was reported in 2011. Environmental impact was noted.
8	5831 Perth Street	OT 2. Equipment and Vehicle Servicing	Adjacent south of the Site	From aerial photographs, the property is located adjacent south of the Site and commercial activities can be seen as early as 1991. Aerials suggest that the property was historically used to sell agricultural machinery as recently as 2011. Property formerly used for equipment and vehicle servicing. Aerial photographs and a review of Google Imagery indicate that the property was used as an RV and automotive repair shop as recently as 2019. Aerial photographs show vehicles parked along the property boundary adjacent to the Site. A used vehicle dealership under construction was noted on the property during the site recon.

6.4 Areas of Potential Environmental Concern

The areas of potential environmental concern (APECs) identified based on the PCAs and as set out in the 2023 Phase One ESA are summarized in the Table below. Figure A.3 indicates the location of the APECs.

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or Sediment)
APEC 1 – Historical pesticide use on the Site.	Site wide	40. Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	On-Site	OCPs, metals, hydride forming metals	Soil
APEC 2 – Fill material of unknown origin	Located in the southeast portion of the Site	30. Importation of Fill Material of Unknown Quality	On-Site	Metals, hydride forming metals, ORP, PHCs, BTEX, PAHs	Soil
APEC 3 – Equipment and Vehicle Servicing Business	South portion of the Site	OT 2. Equipment and Vehicle Servicing	Adjacent south of the Site	Metals, hydride forming meals, ORP, PHCs, PAHs, VOCs	Soil and groundwater

Notes:

ORP – Other Regulated Parameters consisting of electrical conductivity (EC), sodium adsorption ration (SAR), pH, hexavalent chromium (CrVI), cyanide (CN)
PHC F1-F4 – Petroleum Hydrocarbons F1 to F4
BTEX – Benzene, Toluene, Ethylbenzene, Xylenes
PAHs – Polycyclic Aromatic Hydrocarbons
OCPs – Organochlorine Pesticides
VOCs – Volatile Organic Compounds

6.5 APEC 1 – Historical Large Scale Pesticide Use

Based on the Phase One ESA, large scale application of pesticides is expected across the Site from historical agricultural activities. The Site representative was unsure of the exact pesticides that were utilized on-Site. The COPCs are metals and OCPs in soil.

This APEC was investigated as part of this Phase Two ESA through manually advanced holes via shovel (GS23-01 to GS23-11). The samples were collected from approximately 0 – 0.15 mbgs. Eleven soil samples (GS23-01 to GS23-11) were submitted for analysis of metals and OCPs. Based on a comparison to the applicable standards, no exceedances were identified.

6.6 APEC 2 – Fill Material of Unknown Origin

Based on the Phase One ESA, potential fill material of unknown origin was observed on the southeast portion of the Site adjacent to the offsite landscaping company. The COPCs are metals, ORPs, BTEX, and PAHs in soil.

This APEC was investigated through the advancement of 4 boreholes (BH23-02, BH23-03, BH23-04, and BH23-05). The boreholes were advanced on the southeast portion of the Site to a depth of 1.52 mbgs. Elevated concentrations with respect to the applicable Table 2 RPI SCS were noted for SAR and EC at BH23-02, BH23-04, and BH23-05. With regards to these EC and SAR concentrations, they are considered to be related to the application of de-icing salt for vehicle and pedestrian safety associated with the nearby roadway and former adjacent landscaping business. Therefore, as per Section 49.1 of O.Reg. 153/04, it is the Qualified Person's opinion that the site conditions standards for EC and SAR are not exceeded.

6.7 APEC 3 – Equipment and Vehicle Servicing Business

Based on the Phase One ESA, a former vehicle servicing business and current used vehicle dealership was noted adjacent to the south portion of the Site. The COPCs are metals, ORPs, PHCs, and VOCs in soil and groundwater.

This APEC was investigated at test location BH/MW23-01 and BH/MW20-01. No exceedances were identified in any of the soil or groundwater samples submitted with the exception of vanadium exceedance in soil at BH23-01 (i.e., sample SA1 and associated duplicate). With regards to the detected vanadium concentrations, this are inferred to be naturally occurring. Specifically, as per Sterling et al., 2017, geo-regional background concentrations of vanadium in Champlain Sea sediments are often above the established MECP site condition standards for soil. Based on this and since the samples with elevated vanadium are considered to be Champlain Sea sediments, GEMTEC considers the detected concentrations to be naturally occurring and are not considered an exceedance of the Table 2 Standards.

6.8 Subsurface Structures and Utilities

Buried utility service locates were completed prior to the drilling program indicated no public buried utility services at the Site. No underground utility drawings were provided for review. Underground utilities are also inferred to be present in the general vicinity of the neighbouring properties.

Given the conditions encountered during drilling and the lab results, buried services are not considered to have facilitated the migration of contaminants at the Site.

6.9 Physical Setting

Topography

Topographic mapping available through the City of Ottawa's interactive mapping tool geoOttawa was reviewed to determine topographic features in the vicinity of the Site.

The elevation of the Site approximately 96 metres above sea level and is relatively flat (geoOttawa, n.d.).

Stratigraphy - Boreholes

In general and based on observations from BH23-01 and the previously completed geotechnical boreholes, the subsurface soil conditions encountered across the majority of the site generally consisted of topsoil (with thickness ranging from about 50 to 200 mm), underlain by native silty clay which extended to depths ranging from about 2.6 to 8.4 m bgs. A deposit of glacial till was encountered below the silty clay at some geotechnical borehole locations and generally extended beyond the depth of investigation. In the vicinity of APEC 2, at the southeast portion of the Site, surface fill material was encountered comprised of silty sand and gravel to depths ranging from 0.33 to 0.64 m bgs underlain by native silty clay and sandy silt that extended beyond the depth of investigation. The boreholes were advanced to depths ranging from 1.52 of 4.57 mbgs.

Depth to Bedrock

The MECP well records indicate that bedrock anticipated to be at least 13 m bgs.

Hydrogeological Characteristics

Based on the topography of the study area, it is expected that the local shallow groundwater flow will trend southwest towards the unnamed creek on the west boundary of the Site.

Based on the interpreted groundwater elevation contours for water level measured on May 25, 2023, the inferred direction of shallow groundwater flow is generally to the southwest.

The average horizontal hydraulic gradient for shallow groundwater conditions measured on May 25, 2023 was 0.0018 m/m. Vertical hydraulic gradient for shallow groundwater conditions were not calculated as nesting monitoring wells were not installed at the Site.

Depth to Groundwater

Water levels measured in the monitoring wells ranged from 0.66 m to 1.98 m bgs on the May 25, 2023 monitoring event. Groundwater elevations ranged from 90.69 m to 92.63 m above sea level (m asl) on May 25, 2022.

Environmentally Sensitive Areas

No areas of natural significance were identified on the Site or within the Phase Two Study Area.

Shallow Soil Property or Water Body

Overburden soil at the Site extended beyond the depth of investigation (i.e., beyond 4.57 m bgs). An unnamed creek runs along the western boundary of the Site. As all areas of potential environmental concern (APECs) were located further than 30 m away from the unnamed creek, Table 2 RPI SCS was deemed acceptable.

Imported Soil

Imported fill material was noted on the southeast portion of the Site adjacent to the offsite landscaping company. Samples BH23-02 SA1, BH23-03 SA1, and BH23-04 SA1 were taken from the layer of fill material and submitted for analysis of metals, ORPs, PAHs, PHCs and BTEX. No exceedances were noted with the exception of EC and SAR.

6.10 Site Condition Standards

The analytical results of the samples collected for this Phase Two ESA were compared to the Table 2 generic site condition standards (residential property use, fine to medium soil texture) presented in the MECP document “Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act”, dated April 15, 2011. The applicable site condition standards were selected based on the following rationale:

- The Site is currently agricultural and the proposed future land use is residential.
- Nearby residential properties rely on groundwater as the source of potable water.
- Based on grain size curves prepared in conjunction with the geotechnical investigation for the Site, the soil texture is considered fine to medium.

- An unnamed creek runs along the western boundary of the Site. As all areas of potential environmental concern (APECs) were located further than 30 m away from the unnamed creek, Table 2 RPI SCS was deemed acceptable.
- No features have been identified at the Phase Two Property that would meet the conditions of an environmentally sensitive site.
- The pH of soil at the Site is greater than 5 and less than 9.
- The overburden thickness is greater than 2 metres for more than one-third of the Phase Two Property. The measured depth to water at the Site ranged from 1.27 metre to 2.58 metres below ground surface (mbgs). The shallow depth of groundwater was not considered significant when selecting the applicable site condition standards given the site conditions (i.e., no volatile contaminants were identified, potable water is obtained from a deep screened well).

6.11 Contaminated Media

Based on the findings of this Phase Two ESA, no contaminated media (i.e., soil and groundwater) were identified.

6.12 Contaminants Exceeding Applicable Standards at the Site

As noted above, elevated concentrations with respect to the applicable Table 2 RPI SCS were noted for SAR and EC at BH23-02, BH23-04, and BH23-05. With regards to these EC and SAR concentrations, they are considered to be related to the application of de-icing salt for vehicle and pedestrian safety associated with the nearby roadway and former adjacent landscaping business. Therefore, as per Section 49.1 of O.Reg. 153/04, it is the Qualified Person's opinion that the site conditions standards for EC and SAR are not exceeded.

Vanadium exceedances were identified in soil at BH23-01 (i.e., Sample SA1 and associated duplicate). With regards to the detected vanadium concentrations, these are inferred to be naturally occurring. Specifically, as per Sterling et al., 2017, geo-regional background concentrations of vanadium in Champlain Sea sediments are often above the established MECP site condition standards for soil. Based on this and since the samples with elevated vanadium are considered to be Champlain Sea sediments, GEMTEC considers the detected concentrations to be naturally occurring and are not considered an exceedance of the Table 2 Standards.

6.13 Description of Areas of Contamination on the Property

As discussed above, no areas of contamination were identified on the Phase Two Property.

6.14 Potential Influence of Utilities on Contaminant Migration

Given the conditions encountered during drilling, the lab results and the lack of utilities at the site, buried services are not considered to have facilitated the migration of contaminants at the Site.

6.15 Contaminant Migration

Based on the findings of this Phase Two ESA, no contaminated media (i.e., soil and groundwater) were identified.

6.16 Meteorological and Climatic Considerations

Seasonal fluctuation in water levels on the Site should be expected. Considering one groundwater 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. As noted above, no contaminated media (i.e., soil and groundwater) were identified.

6.17 Cross Sections – Lateral and Vertical Distribution of Contaminants

Representative geologic cross-sections are presented in Figures A.6 and A.7, Appendix A. As no contaminated media (i.e., soil and groundwater) were identified, cross sections indicating the distribution of contaminants were not required.

6.18 Potential Exposure Pathways and Receptors

Based on the Site characterization data collected, no exposure pathways were deemed relevant for the Phase One Property.

7.0 CONCLUSIONS

The Phase Two ESA investigated the APECs identified in the 2023 Phase One ESA.

Based on the results of the soil and groundwater samples submitted as part of this Phase Two ESA, no exceedances to the applicable site conditions standards for the Site were identified. As such, no further work is recommended at this time.

8.0 REFERENCES

Ontario Ministry of the Environment (MOE). Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act. April 15, 2011.

Ontario Regulation 153/04: Records of Site Condition

Phase One Environmental Site Assessment, 2770 Eagleson Road, Creekside 2 Subdivision, Village of Richmond, Ontario, prepared by GEMTEC, dated February 2023.

Stirling, Sean. Elevated Background Metal Concentrations in Champlain Sea Clay – Ottawa Region. (N.D.). GEO Ottawa 2017.

9.0 LIMITATION OF LIABILITY

This report was prepared for the exclusive use of Cardel Group of Companies. This report may not be relied upon by any other person or entity without the express written consent of GEMTEC and Cardel Group of Companies. Nothing in this report is intended to provide a legal opinion. 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. GEMTEC 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 investigation undertaken by GEMTEC with respect to this report and any conclusions or recommendations made in this report reflect the best judgements of GEMTEC based on the site conditions observed during the investigations undertaken at the date(s) identified in the report and on the information available at the time the report was prepared. This report has been prepared for the application noted and it is based, in part, on visual observations made at the site, subsurface investigations at discrete locations and depths and laboratory analyses of specific chemical parameters and material during a specific time interval, all as described in the report. Unless otherwise stated, the findings contained in this report cannot be extrapolated or extended to previous or future site conditions, portions of the site that were unavailable for direct investigation, subsurface locations on the site that were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Chemical parameters other than those addressed by the investigation described in this report may exist in soil and groundwater elsewhere on the site.

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.

Should new information become available during future work, including excavations, borings or other studies, GEMTEC should be requested to review the information and, if necessary, re-assess the conclusions presented herein.

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 CLOSURE

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 this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact our office.

Regards,

GEMTEC Consulting Engineers and Scientists Limited

Connor Shaw, B.E.Sc.
Environmental Scientist

Sherry Eaton, M.Sc., P.Geo., PMP, QP_{ESA}
Senior Environmental Consultant

APPENDIX A

Figures and Tables

LEGEND

- APPROXIMATE SITE BOUNDARY
- **STUDY AREA** (250 m RADIUS AROUND THE SITE BOUNDARY)

BASEMAP NOTES

1. Coordinate system: NAD83, UTM ZONE 18N.
2. Contains information licensed under the Open Government Licence – Ontario.
3. Maps Data: Google, @2023 CNES / Airbus, First Base Solutions, Maxar Technologies.
4. Geographic dataset source: Ontario GeoHub.

SCALE 1:7500

0 150 300 450m

DRAWING
PHASE TWO PROPERTY AND
PHASE ONE STUDY AREA

CLIENT
CARDEL GROUP OF COMPANIES

PROJECT
PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
CREEKSIDE 2 DEVELOPMENT
2770 EAGLESON ROAD
OTTAWA, ONTARIO

DRAWN BY	CHECKED BY
S.L.	C.S.
PROJECT NO.	REVISION NO.
61899.04	0
DATE	FIGURE NO.
JUNE 2023	**FIGURE A.1**

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LEGEND

APPROXIMATE SITE BOUNDARY

STUDY AREA
(250 m RADIUS AROUND THE SITE BOUNDARY)

POTENTIALLY CONTAMINATING ACTIVITIES

28	Gasoline and Associated Products Storage in Fixed Tanks
30	Importation of Fill Material of Unknown Quality
40	Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage, and Large-Scale Applications

OTHER

OT1	Spill
OT2	Equipment and Vehicle Servicing

BASEMAP NOTES

1. Coordinate system: NAD83, UTM ZONE 18N.
2. Contains information licensed under the Open Government Licence – Ontario.
3. Maps Data: Google, @2023 CNES / Airbus, First Base Solutions, Maxar Technologies.
4. Geographic dataset source: Ontario GeoHub.

SCALE 1:7500

0 150 300 450m

DRAWING
POTENTIALLY CONTAMINATING ACTIVITIES

CLIENT
CARDEL GROUP OF COMPANIES

PROJECT
PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
CREEKSIDE 2 DEVELOPMENT
2770 EAGLESON ROAD
OTTAWA, ONTARIO

DRAWN BY	CHECKED BY
S.L.	C.S.
PROJECT NO.	REVISION NO.
61899.04	0
DATE	FIGURE NO.
JUNE 2023	**FIGURE A.2**

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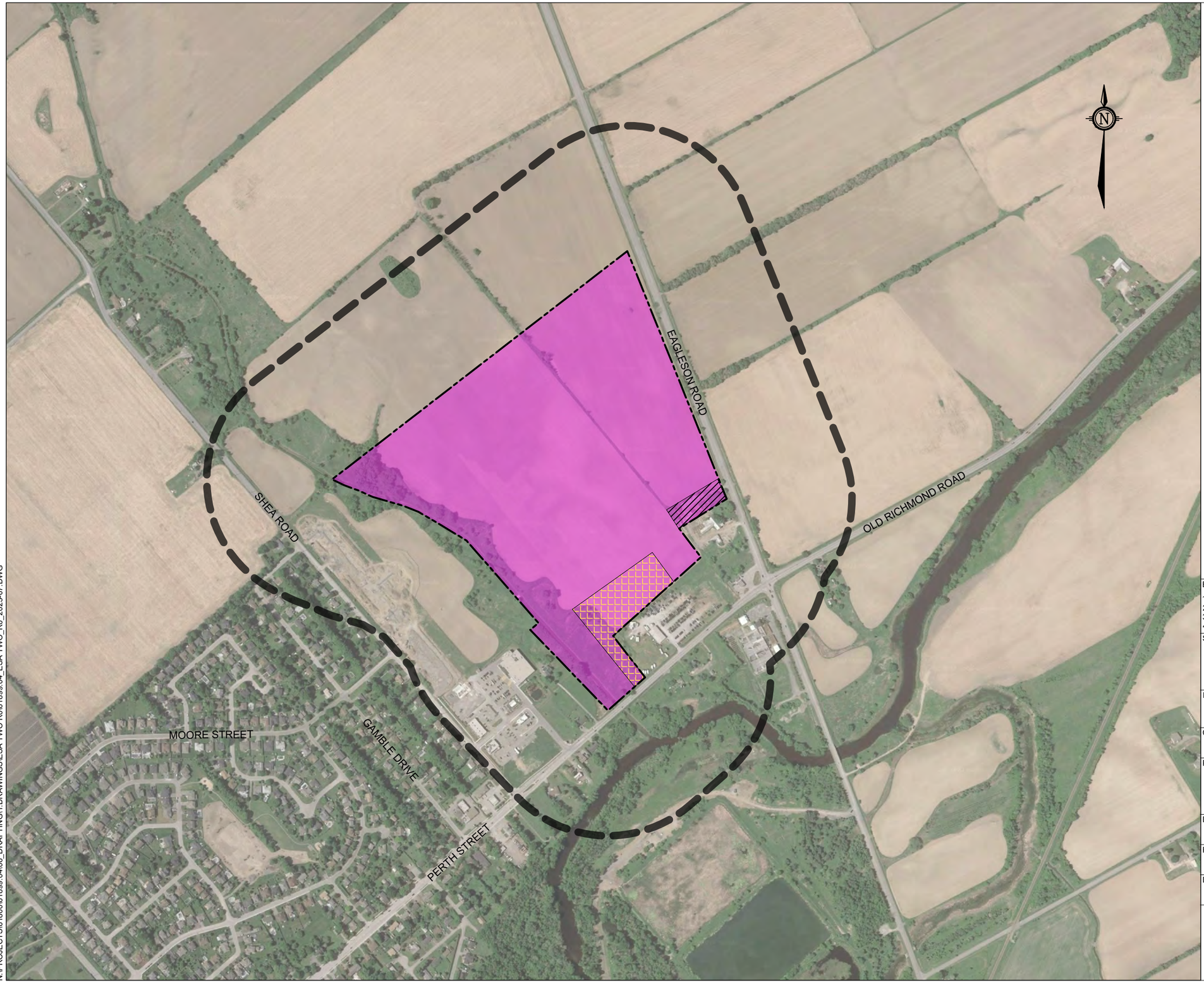

LEGEND

APPROXIMATE SITE BOUNDARY

STUDY AREA
(250 m RADIUS AROUND THE SITE BOUNDARY)

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

APEC 1:
Historical Pesticide Use On Site

APEC 2:
Fill Material of Unknown Origin

APEC 3:
Equipment and Vehicle Servicing Business

BASEMAP NOTES

1. Coordinate system: NAD83, UTM ZONE 18N.
2. Contains information licensed under the Open Government Licence – Ontario.
3. Maps Data: Google, @2023 CNES / Airbus, First Base Solutions, Maxar Technologies.
4. Geographic dataset source: Ontario GeoHub.

SCALE 1:7500

0 150 300 450m

DRAWING
AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

CLIENT
CARDEL GROUP OF COMPANIES

PROJECT
PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
CREEKSIDE 2 DEVELOPMENT
2770 EAGLESON ROAD
OTTAWA, ONTARIO

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S.L.	C.S.
PROJECT NO.	REVISION NO.
61899.04	0
DATE	FIGURE NO.
JUNE 2023	**FIGURE A.3**

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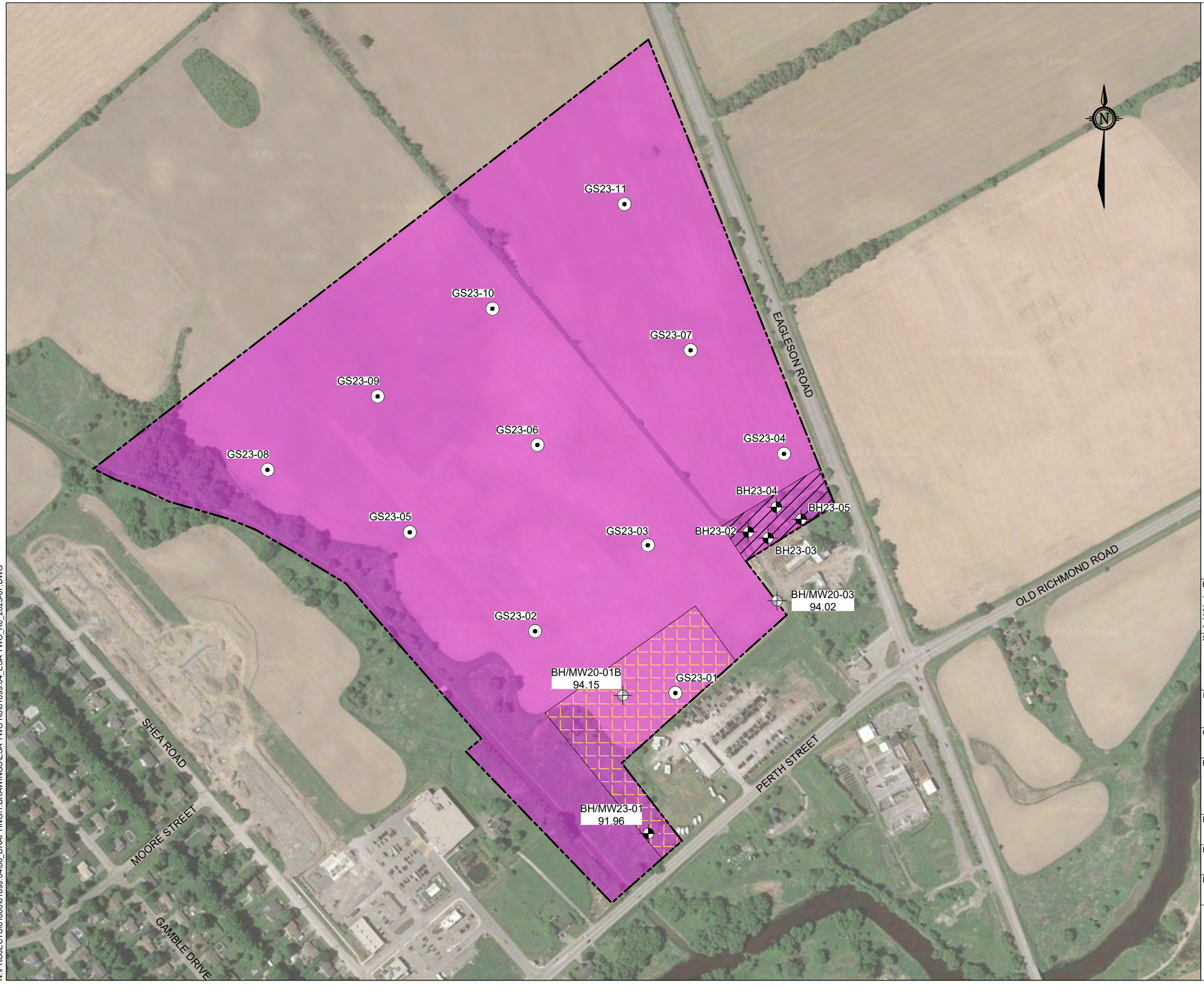

LEGEND

BH/ MW/ SA # — BOREHOLE/ MONITORING WELL SAMPLE ID

XXX.XX — GROUND SURFACE ELEVATION, IN METRES GEODETIC DATUM

BOREHOLE LOCATION
(current investigation by GEMTEC)

MONITROING WELL/ BOREHOLE LOCATION
(from GEMTEC's 2020 geotechnical investigation)

SAMPLING LOCATION

APPROXIMATE SITE BOUNDARY

STUDY AREA
(250 m RADIUS AROUND THE SITE BOUNDARY)

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

APEC 1:
Historical Pesticide Use On Site

APEC 2:
Fill Material of Unknown Origin

APEC 3:
Equipment and Vehicle Servicing Business

BASEMAP NOTES

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4. Geographic dataset source: Ontario GeoHub.

SCALE 1:4000

0 80 160 240m

DRAWING
APECS AND TEST LOCATIONS

CLIENT
CARDEL GROUP OF COMPANIES

PROJECT
PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
CREEKSIDE 2 DEVELOPMENT
2770 EAGLESON ROAD
OTTAWA, ONTARIO

DRAWN BY	CHECKED BY
S.L.	C.S.
PROJECT NO.	REVISION NO.
61899.04	0
DATE	FIGURE NO.
JUNE 2023	**FIGURE A.4**

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LEGEND

- **BH/ MW/ SA #** ← BOREHOLE/ MONITORING WELL SAMPLE ID
- **XXX.XX** ← GROUND WATER ELEVATION, IN METRES (from May 25, 2023)
- **BOREHOLE LOCATION** (current investigation by GEMTEC)
- **MONITROING WELL/ BOREHOLE LOCATION** (from GEMTEC's 2020 geotechnical investigation)
- **SAMPLING LOCATION**
- **APPROXIMATE SITE BOUNDARY**
- 91.6 — **MAJOR GROUNDWATER CONTOURS, METRES**
- **MINOR GROUNDWATER CONTOURS, METRES**
- **INFERRED GROUNDWATER FLOW DIRECTION**
- A — A' **GEOLOGIC CROSS SECTION**

BASEMAP NOTES

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4. Geographic dataset source: Ontario GeoHub.

SCALE 1:4000

0 80 160 240m

DRAWING
GROUNDWATER ELEVATIONS (MAY 25, 2023)

CLIENT
CARDEL GROUP OF COMPANIES

PROJECT
PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
CREEKSIDE 2 DEVELOPMENT
2770 EAGLESON ROAD
OTTAWA, ONTARIO

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JUNE 2023	**FIGURE A.5**

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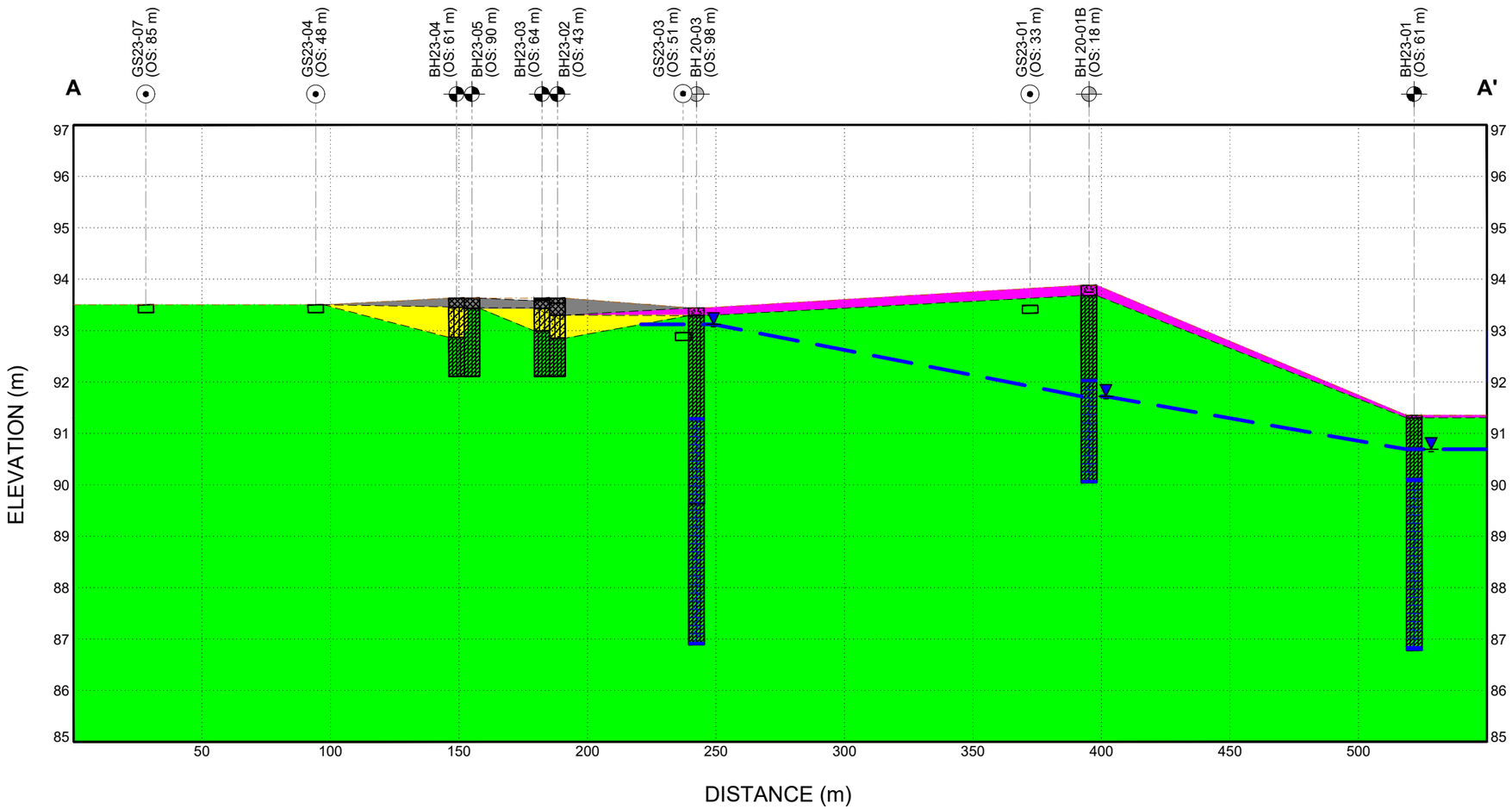

LEGEND

BH/ MW/ SA # ← BOREHOLE/ MONITORING WELL SAMPLE ID

XXX.XX ← GROUND SURFACE ELEVATION, IN METRES GEODETIC DATUM

BOREHOLE LOCATION
(current investigation by GEMTEC)

MONITROING WELL/ BOREHOLE LOCATION
(from GEMTEC's 2020 geotechnical investigation)

SAMPLING LOCATION

GROUNDWATER LEVEL

OS — **OFFSET FROM SECTION LINE**

INFERRED GROUND SURFACE

INFERRED STATIGRAPHY

INFERRED GROUNDWATER LEVEL

STRATIGRAPHY

- TOPSOIL
- ASPHALTIC CONCRETE
- FILL MATERIAL
- SANDY SILT
- SILTY CLAY

MONITORING WELL SCREEN

NOTE:

Elevation data from grab sample locations (GS23-01 etc.) and BH23-02, BH23-03, BH23-04, and BH23-05 is approximated based on nearby survey locations from GEMTEC's 2020 Geotechnical Investigation on the Site

HORIZONTAL SCALE

1:2000

0 40 80 120m

VERTICAL SCALE

20X VERTICAL EXAGGERATION

DRAWING

GEOLOGIC CROSS SECTION A - A'

CLIENT

CARDEL GROUP OF COMPANIES

PROJECT

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
CREEKSIDE 2 DEVELOPMENT
2770 EAGLESON ROAD
OTTAWA, ONTARIO

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DATE	FIGURE NO.
JUNE 2023	**FIGURE A.6**

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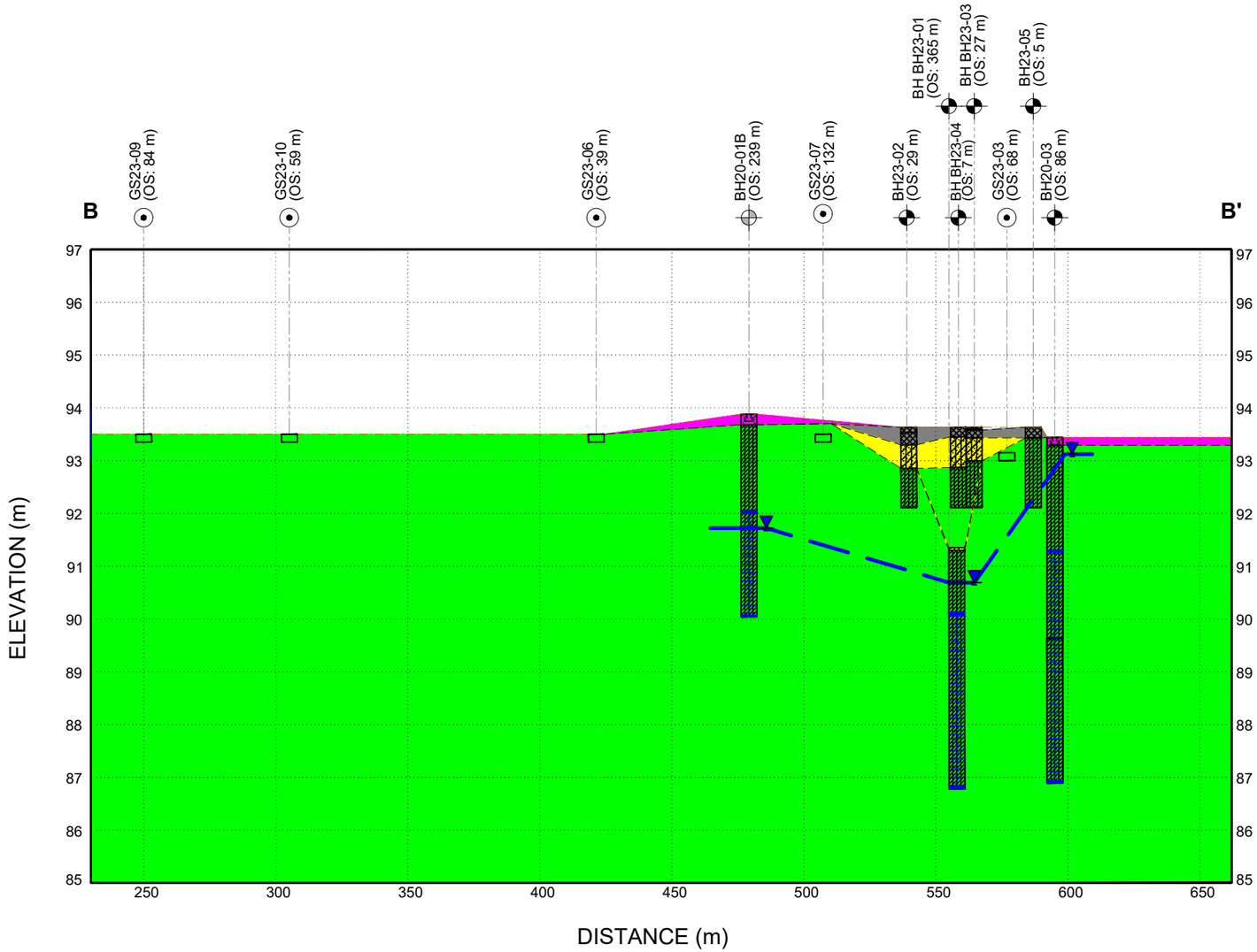

LEGEND

BH/ MW/ SA # ← BOREHOLE/ MONITORING WELL SAMPLE ID

XXX.XX ← GROUND SURFACE ELEVATION, IN METRES GEODETIC DATUM

BOREHOLE LOCATION
(current investigation by GEMTEC)

MONITROING WELL/ BOREHOLE LOCATION
(from GEMTEC's 2020 geotechnical investigation)

SAMPLING LOCATION

GROUNDWATER LEVEL

OS — **OFFSET FROM SECTION LINE**

INFERRED GROUND SURFACE

INFERRED STATIGRAPHY

INFERRED GROUNDWATER LEVEL

STRATIGRAPHY

- TOPSOIL
- ASPHALTIC CONCRETE
- FILL MATERIAL
- SANDY SILT
- SILTY CLAY

MONITORING WELL SCREEN

NOTE:

Elevation data from grab sample locations (GS23-01 etc.) and BH23-02, BH23-03, BH23-04, and BH23-05 is approximated based on nearby survey locations from GEMTEC's 2020 Geotechnical Investigation on the Site

HORIZONTAL SCALE

1:2000

0 40 80 120m

VERTICAL SCALE

20X VERTICAL EXAGGERATION

DRAWING

GEOLOGIC CROSS SECTION B - B'

CLIENT

CARDEL GROUP OF COMPANIES

PROJECT

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
CREEKSIDE 2 DEVELOPMENT
2770 EAGLESON ROAD
OTTAWA, ONTARIO

DRAWN BY	CHECKED BY
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PROJECT NO.	REVISION NO.
61899.04	0
DATE	FIGURE NO.
JUNE 2023	**FIGURE 7**

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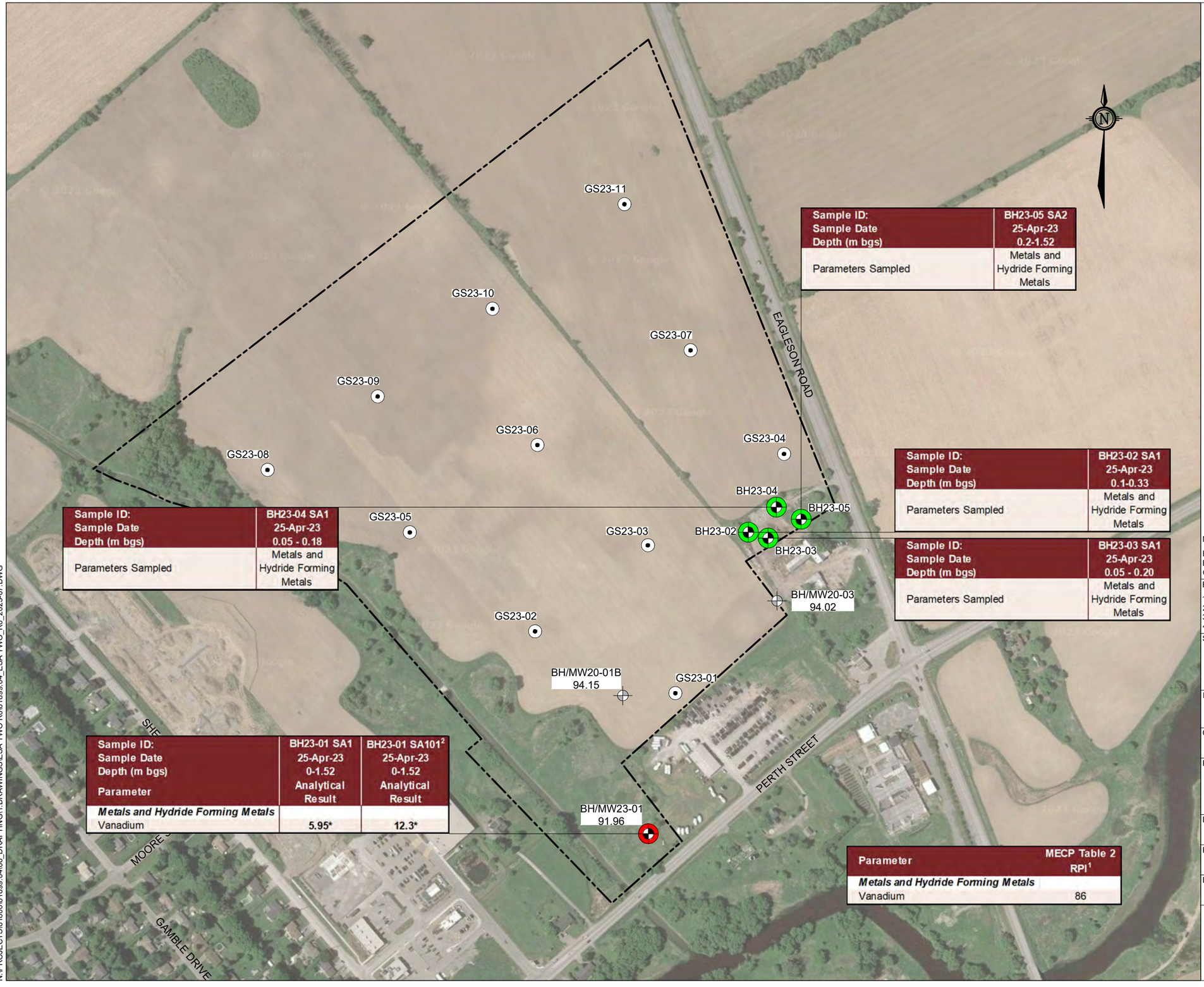

Sample ID:	BH23-05 SA2
Sample Date	25-Apr-23
Depth (m bgs)	0.2-1.52
Parameters Sampled	Metals and Hydride Forming Metals

Sample ID:	BH23-02 SA1
Sample Date	25-Apr-23
Depth (m bgs)	0.1-0.33
Parameters Sampled	Metals and Hydride Forming Metals

Sample ID:	BH23-04 SA1
Sample Date	25-Apr-23
Depth (m bgs)	0.05 - 0.18
Parameters Sampled	Metals and Hydride Forming Metals

Sample ID:	BH23-03 SA1
Sample Date	25-Apr-23
Depth (m bgs)	0.05 - 0.20
Parameters Sampled	Metals and Hydride Forming Metals

Sample ID:	BH23-01 SA1	BH23-01 SA101[2]
Sample Date	25-Apr-23	25-Apr-23
Depth (m bgs)	0-1.52	0-1.52
Parameter	Analytical Result	Analytical Result
Metals and Hydride Forming Metals		
Vanadium	5.95*	12.3*

Parameter	MECP Table 2 RPI[1]
Metals and Hydride Forming Metals	
Vanadium	86

LEGEND

BH/ MW/ SA # — BOREHOLE/ MONITORING WELL SAMPLE ID

XXX.XX — GROUND WATER ELEVATION, IN METRES (from May 25, 2023)

BOREHOLE LOCATION (current investigation by GEMTEC)

MONITROING WELL/ BOREHOLE LOCATION (from GEMTEC's 2020 geotechnical investigation)

SAMPLING LOCATION

LOCATION SAMPLED AND EXCEEDS TABLE 2 RPI SCS

LOCATION SAMPLED AND MEETS TABLE 2 RPI SCS

APPROXIMATE SITE BOUNDARY

Notes:

1 - MECP Table 2 RPI SCS: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for fine to medium textured soil for Residential/Parkland/Institutional Property Use

2 - BH23-01 SA101 is a duplicate samples of BH23-01 SA1

Bold - Exceeds MECP Table 2 RPI SCS

* - Vanadium exceedance is attributed to geo-regional background concentrations of vanadium in Champlain Sea sediments being above the established MECP Site Condition Standards (Striling et al., 2017). As such, GEMTEC considers the detected concentrations to be naturally occuring and are not considered an exceedance of the Table 2 Standards.

NOTE:

Elevation data from grab sample locations (GS23-01 etc.) and BH23-02, BH23-03, BH23-04, and BH23-05 is approximated based on nearby survey locations from GEMTEC's 2020 Geotechnical Investigation on the Site

BASEMAP NOTES

1. Coordinate system: NAD83, UTM ZONE 18N.
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3. Maps Data: Google, @2023 CNES / Airbus, First Base Solutions, Maxar Technologies.
4. Geographic dataset source: Ontario GeoHub.

SCALE 1:4000

0 80 160 240m

DRAWING

SOIL ANALYTICAL RESULTS METALS AND HYDRIDE FORMING METALS

CLIENT

CARDEL GROUP OF COMPANIES

PROJECT

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
CREEKSIDE 2 DEVELOPMENT
2770 EAGLESON ROAD
OTTAWA, ONTARIO

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PROJECT NO.	REVISION NO.
61899.04	0
DATE	FIGURE NO.
JUNE 2023	**FIGURE A.8**

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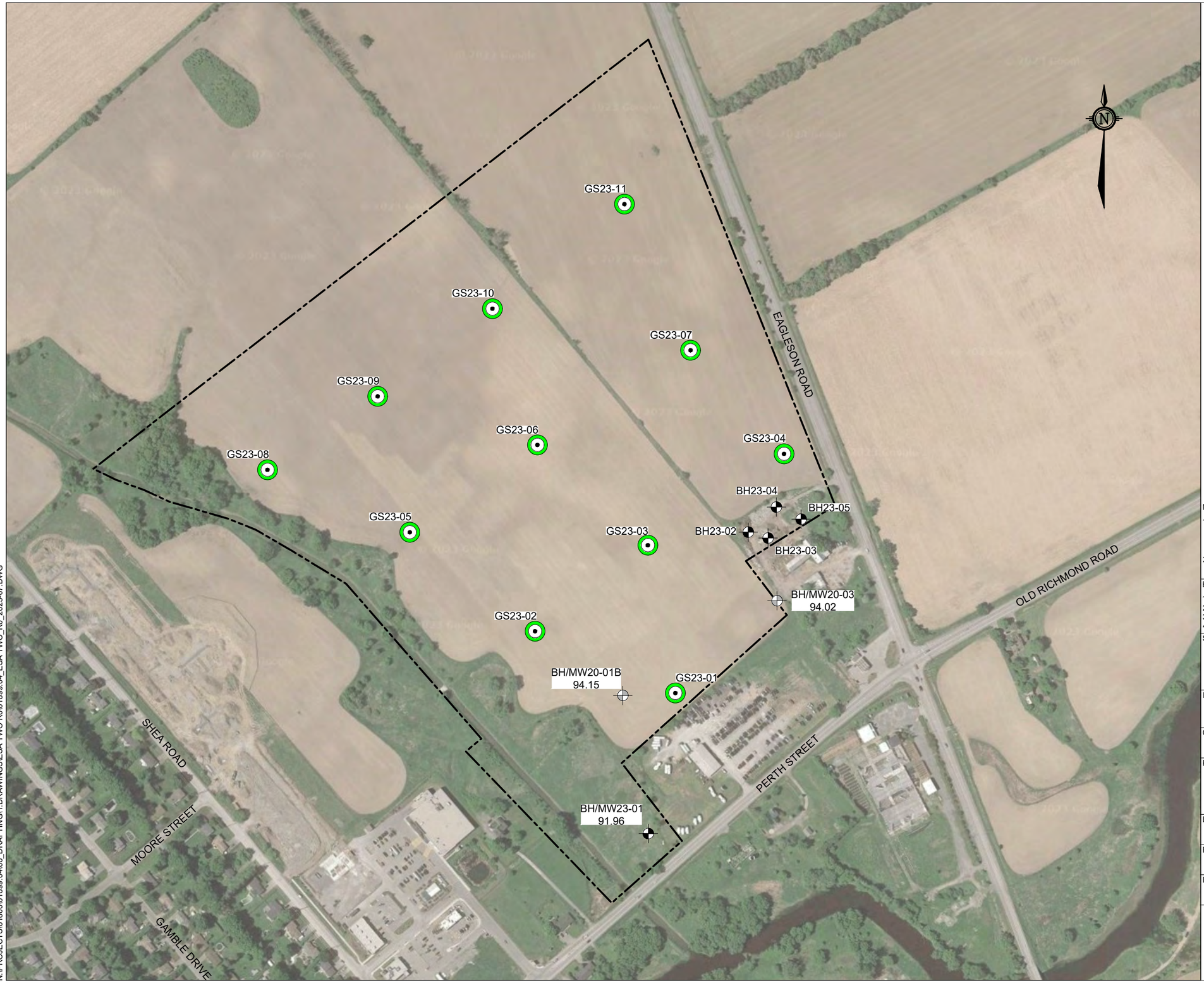

LEGEND

BH/ MW/ SA # — BOREHOLE/ MONITORING WELL SAMPLE ID

XXX.XX — GROUND WATER ELEVATION, IN METRES (from May 25, 2023)

BOREHOLE LOCATION (current investigation by GEMTEC)

MONITROING WELL/ BOREHOLE LOCATION (from GEMTEC's 2020 geotechnical investigation)

SAMPLING LOCATION

LOCATION SAMPLED AND EXCEEDS TABLE 2 RPI SCS

LOCATION SAMPLED AND MEETS TABLE 2 RPI SCS

APPROXIMATE SITE BOUNDARY

NOTE:

1. Elevation data from grab sample locations (GS23-01 etc.) and BH23-02, BH23-03, BH23-04, and BH23-05 is approximated based on nearby survey locations from GEMTEC's 2020 Geotechnical Investigation on the Site
2. All grab samples (GS) submitted for metals and organochlorine pesticides were collected from 0-0.15 meters below ground surface on April 4, 2023

BASEMAP NOTES

1. Coordinate system: NAD83, UTM ZONE 18N.
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3. Maps Data: Google, @2023 CNES / Airbus, First Base Solutions, Maxar Technologies.
4. Geographic dataset source: Ontario GeoHub.

SCALE 1:4000

0 80 160 240m

DRAWING
SOIL ANALYTICAL RESULTS
METALS AND ORGANOCHLORINE PESTICIDES

CLIENT
CARDEL GROUP OF COMPANIES

PROJECT
PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
CREEKSIDE 2 DEVELOPMENT
2770 EAGLESON ROAD
OTTAWA, ONTARIO

DRAWN BY	CHECKED BY
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PROJECT NO.	REVISION NO.
61899.04	0
DATE	FIGURE NO.
JUNE 2023	**FIGURE A.9**

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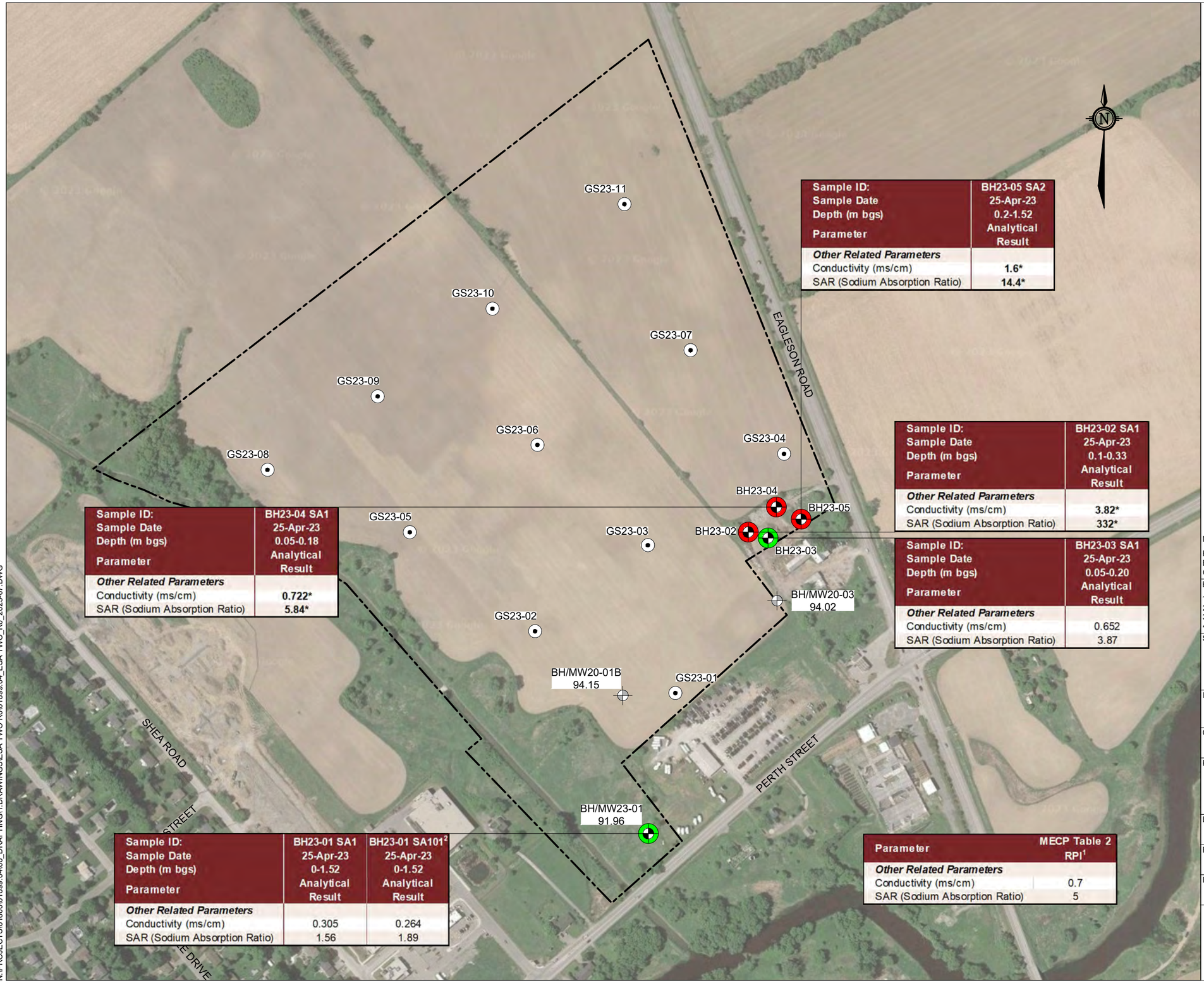

Sample ID:	BH23-05 SA2
Sample Date	25-Apr-23
Depth (m bgs)	0.2-1.52
Parameter	Analytical Result
Other Related Parameters	
Conductivity (ms/cm)	**1.6***
SAR (Sodium Absorption Ratio)	**14.4***

Sample ID:	BH23-02 SA1
Sample Date	25-Apr-23
Depth (m bgs)	0.1-0.33
Parameter	Analytical Result
Other Related Parameters	
Conductivity (ms/cm)	**3.82***
SAR (Sodium Absorption Ratio)	**332***

Sample ID:	BH23-04 SA1
Sample Date	25-Apr-23
Depth (m bgs)	0.05-0.18
Parameter	Analytical Result
Other Related Parameters	
Conductivity (ms/cm)	**0.722***
SAR (Sodium Absorption Ratio)	**5.84***

Sample ID:	BH23-03 SA1
Sample Date	25-Apr-23
Depth (m bgs)	0.05-0.20
Parameter	Analytical Result
Other Related Parameters	
Conductivity (ms/cm)	0.652
SAR (Sodium Absorption Ratio)	3.87

Sample ID:	BH23-01 SA1	BH23-01 SA101[2]
Sample Date	25-Apr-23	25-Apr-23
Depth (m bgs)	0-1.52	0-1.52
Parameter	Analytical Result	Analytical Result
Other Related Parameters		
Conductivity (ms/cm)	0.305	0.264
SAR (Sodium Absorption Ratio)	1.56	1.89

Parameter	MECP Table 2 RPI[1]
Other Related Parameters	
Conductivity (ms/cm)	0.7
SAR (Sodium Absorption Ratio)	5

LEGEND

BH/ MW/ SA # — BOREHOLE/ MONITORING WELL SAMPLE ID

XXX.XX — GROUND WATER ELEVATION, IN METRES (from May 25, 2023)

BOREHOLE LOCATION (current investigation by GEMTEC)

MONITROING WELL/ BOREHOLE LOCATION (from GEMTEC's 2020 geotechnical investigation)

SAMPLING LOCATION

LOCATION SAMPLED AND EXCEEDS TABLE 2 RPI SCS

LOCATION SAMPLED AND MEETS TABLE 2 RPI SCS

APPROXIMATE SITE BOUNDARY

Notes:

1 - MECP Table 2 RPI SCS: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for fine to medium textured soil for Residential/Parkland/Institutional Property Use

2 - BH23-01 SA101 is a duplicate sample of BH23-01 SA1

Bold - Exceeds MECP Table 2 RPI SCS

* - Salt related exceedance is attributed to de-icing procedures for the safety of vehicular or pedestrian traffic. It is the Qualified Person's opinion that the EC and SAR SCS are not exceeded.

NOTE:

Elevation data from grab sample locations (GS23-01 etc.) and BH23-02, BH23-03, BH23-04, and BH23-05 is approximated based on nearby survey locations from GEMTEC's 2020 Geotechnical Investigation on the Site

BASEMAP NOTES

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4. Geographic dataset source: Ontario GeoHub.

SCALE 1:4000

0 80 160 240m

DRAWING

SOIL ANALYTICAL RESULTS - ORP

CLIENT

CARDEL GROUP OF COMPANIES

PROJECT

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
CREEKSIDE 2 DEVELOPMENT
2770 EAGLESON ROAD
OTTAWA, ONTARIO

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61899.04	0
DATE	FIGURE NO.
JUNE 2023	**FIGURE A.10**

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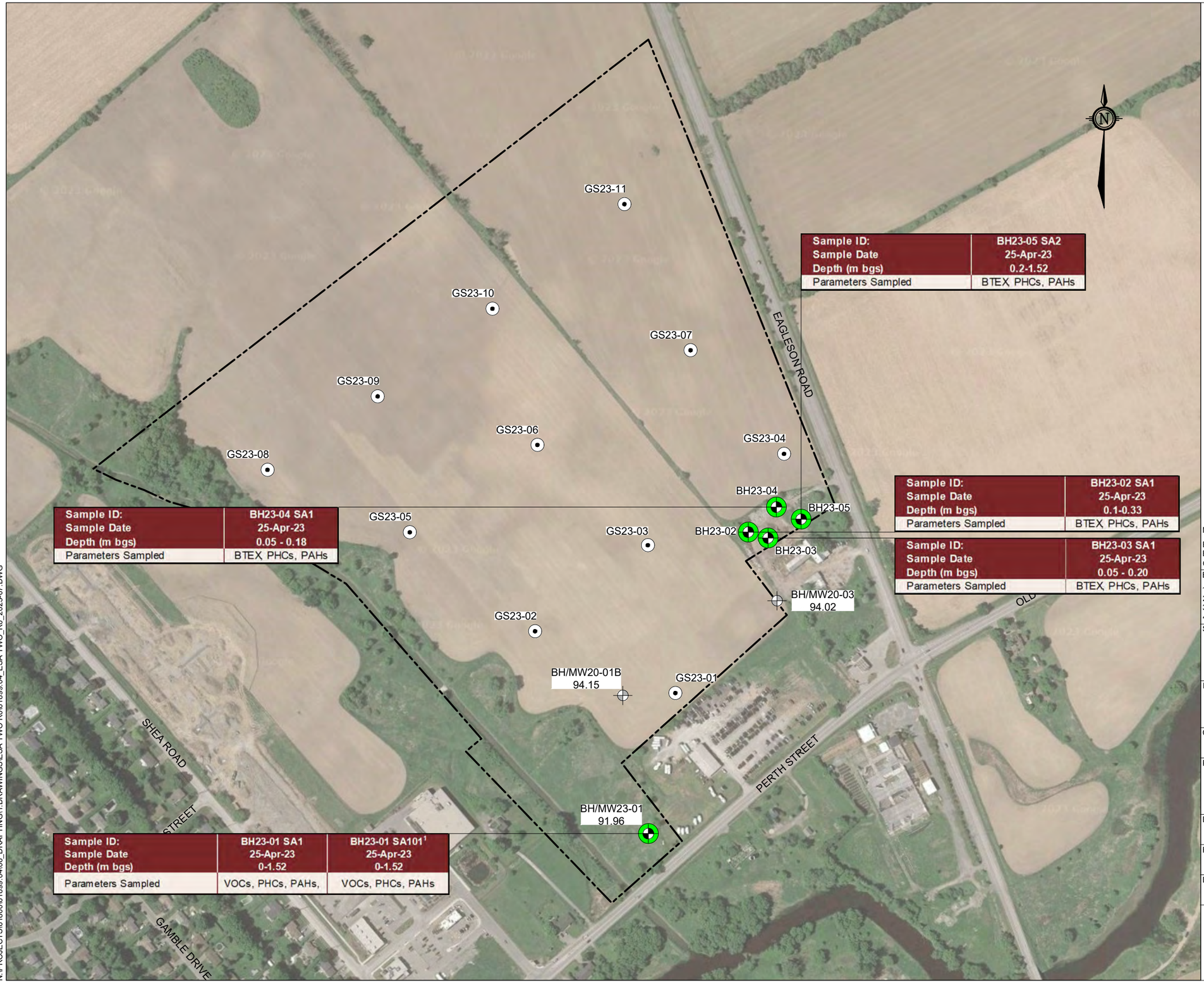

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LEGEND

- **BH/ MW/ SA #** — BOREHOLE/ MONITORING WELL SAMPLE ID
- **XXX.XX** — GROUND WATER ELEVATION, IN METRES (from May 25, 2023)
- **BOREHOLE LOCATION** (current investigation by GEMTEC)
- **MONITROING WELL/ BOREHOLE LOCATION** (from GEMTEC's 2020 geotechnical investigation)
- **SAMPLING LOCATION**
- **LOCATION SAMPLED AND EXCEEDS TABLE 2 RPI SCS**
- **LOCATION SAMPLED AND MEETS TABLE 2 RPI SCS**
- **APPROXIMATE SITE BOUNDARY**

Notes:

1 - BH23-01 SA101 is a duplicate sample of BH23-01 SA1

m bgs - meters below ground surface

NOTE:

Elevation data from grab sample locations (GS23-01 etc.) and BH23-02, BH23-03, BH23-04, and BH23-05 is approximated based on nearby survey locations from GEMTEC's 2020 Geotechnical Investigation on the Site

BASEMAP NOTES

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4. Geographic dataset source: Ontario GeoHub.

SCALE 1:4000

0 80 160 240m

DRAWING

SOIL ANALYTICAL RESULTS - PETROLEUM HYDROCARBONS, POLYCYCLIC AROMATIC HYDROCARBONS, VOLATILE ORGANIC COMPOUNDS

CLIENT

CARDEL GROUP OF COMPANIES

PROJECT

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
CREEKSIDE 2 DEVELOPMENT
2770 EAGLESON ROAD
OTTAWA, ONTARIO

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JUNE 2023	**FIGURE A.11**

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LEGEND

BH/ MW/ SA # — BOREHOLE/ MONITORING WELL SAMPLE ID

XXX.XX — GROUND WATER ELEVATION, IN METRES (from May 25, 2023)

BOREHOLE LOCATION (current investigation by GEMTEC)

MONITROING WELL/ BOREHOLE LOCATION (from GEMTEC's 2020 geotechnical investigation)

SAMPLING LOCATION

LOCATION SAMPLED AND EXCEEDS TABLE 2 RPI SCS

LOCATION SAMPLED AND MEETS TABLE 2 RPI SCS

APPROXIMATE SITE BOUNDARY

Notes:

m bgs - meters below ground surface

NOTE:

Elevation data from grab sample locations (GS23-01 etc.) and BH23-02, BH23-03, BH23-04, and BH23-05 is approximated based on nearby survey locations from GEMTEC's 2020 Geotechnical Investigation on the Site

BASEMAP NOTES

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3. Maps Data: Google, @2023 CNES / Airbus, First Base Solutions, Maxar Technologies.
4. Geographic dataset source: Ontario GeoHub.

SCALE 1:4000

0 80 160 240m

DRAWING GROUNDWATER ANALYTICAL RESULTS PETROLEUM HYDROCARBONS AND VOLATILE ORGANIC COMPOUNDS

CLIENT CARDEL GROUP OF COMPANIES

PROJECT PHASE TWO ENVIRONMENTAL SITE ASSESSMENT CREEKSIDE 2 DEVELOPMENT 2770 EAGLESON ROAD OTTAWA, ONTARIO

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61899.04	0
DATE	FIGURE NO.
JUNE 2023	**FIGURE A.12**

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TABLE A.1
SUMMARY OF MONITORING WELL CONSTRUCTION DETAILS
2770 Eagleson Road, Ottawa, Ontario

Location ID	Installation Date	Installed by	Borehole Depth (mbgs)	Monitoring Well Depth (mbgs)	Well Diameter (mm)	Screen Length (m)	Top of Screen (m bgs)	Bottom of Screen (m bgs)	Lithology at Screen Interval
BH/MW20-01B	16-Jul-20	CCC	3.84	3.84	51	1.52	2.32	3.84	Native silty clay
BH/MW20-03	17-Jul-20	CCC	6.55	4.00	51	1.52	2.48	4.00	Native silty clay
BH/MW23-01	25-Apr-23	Strata	4.57	4.57	51	3.05	1.52	4.57	Native silty clay

Notes

mm = millimetres

m - metres

mbgs = metres below ground surface

TABLE A.2
WATER LEVEL MEASUREMENTS AND ELEVATIONS
2770 Eagleson Road, Ottawa, Ontario

Location ID	Groundsurface Elevation (m asl)	Top of Pipe Elevation (m asl)	Date of Monitoring	Depth to Water (m btop)	Depth to Groundwater (m bgs)	Groundwater Elevation (m asl)
BH/MW20-01B	93.55	94.15	25-May-23	2.59	1.98	91.57
BH/MW20-03	93.39	94.02	25-May-23	1.39	0.76	92.63
BH/MW23-01	91.35	91.96	25-May-23	1.27	0.66	90.69

Notes:
m asl = metre above sea level
m bgs = metres below ground surface
m btop - metres below top of pipe

TABLE A.3
SUMMARY OF SOIL SAMPLES SUBMITTED FOR ANALYSIS
2770 Eagleson Road, Ottawa, Ontario

Location ID	Sample ID	Date	Sample Depth (mbgs)	Headspace Screening Result (HEX / IBL, ppm)	Soil Description	Analyses Completed
BH23-01	BH23-01 SA1	25-Apr-23	0 - 1.52	40/0	Native, silty clay	metals, ORP, PHC, VOC, PAHs
	BH23-01 SA101	25-Apr-23	0 - 1.52	50/0	Native, silty clay	metals, ORP, PHC, VOC, PAHs
BH22-02	BH23-02 SA1	25-Apr-23	0.1 - 0.33	40/0	Fill, silty sand with gravel	metals, ORP, PHC, BTEX, PAHs
BH23-03	BH23-03 SA1	25-Apr-23	0.05 - 0.20	0/0	Fill, silty sand with gravel	metals, ORP, PHC, BTEX, PAHs
BH23-04	BH23-04 SA1	25-Apr-23	0.05 - 0.18	5/7	Fill, silty sand with gravel	metals, ORP, PHC, BTEX, PAHs
BH23-05	BH23-05 SA2	25-Apr-23	0.2 - 1.52	5/7	Native, silty clay	metals, ORP, PHC, BTEX, PAHs
GS23-01	GS23-1	04-Apr-23	0 - 0.15	NA	Native, silty clay	metals, OCPs
	GS23-101	04-Apr-23	0 - 0.15	NA	Native, silty clay	metals, OCPs
GS23-02	GS23-02	04-Apr-23	0 - 0.15	NA	Native, silty clay	metals, OCPs
GS23-03	GS23-03	04-Apr-23	0 - 0.15	NA	Native, silty clay	metals, OCPs
GS23-04	GS23-04	04-Apr-23	0 - 0.15	NA	Native, silty clay	metals, OCPs
GS23-05	GS23-05	04-Apr-23	0 - 0.15	NA	Native, silty clay	metals, OCPs
GS23-06	GS23-06	04-Apr-23	0 - 0.15	NA	Native, silty clay	metals, OCPs
GS23-07	GS23-07	04-Apr-23	0 - 0.15	NA	Native, silty clay	metals, OCPs
GS23-08	GS23-08	04-Apr-23	0 - 0.15	NA	Native, silty clay	metals, OCPs
GS23-09	GS23-09	04-Apr-23	0 - 0.15	NA	Native, silty clay	metals, OCPs
GS23-10	GS23-10	04-Apr-23	0 - 0.15	NA	Native, silty clay	metals, OCPs
GS23-11	GS23-11	04-Apr-23	0 - 0.15	NA	Native, silty clay	metals, OCPs

Notes:

m bgs = metres below ground surface

metals = O.Reg. 153/04 metals and hydride forming metals

ORP = other regulated parameters

PHC = petroleum hydrocarbons

VOC = volatile organic compounds

PAH = polycyclic aromatic hydrocarbons

BTEX =benzene, toluene, ethylbenzene, xylene

OCP = organochlorine pesticides

ppm = parts per million

TABLE A.4
SUMMARY OF GROUNDWATER SAMPLES SUBMITTED FOR ANALYSIS
2770 Eagleson Road, Ottawa, Ontario

Location ID	Sample ID	Sampling Date	Well Depth (mbgs)	Screen Interval (m bgs)		Groundwater Sampling Field			Analyses Completed
						Temperature (deg cel.)	pH	Turbidity (NTU)	
BH20-01B	BH20-01	25-May-23	3.84	3.05	4.00	11.1	7.85	4.5	PHC, VOCs
BH/MW23-01	MW23-1	25-May-23	4.57	1.52	4.57	17.60	7.66	34.3	PHC, VOCs
	MW23-101	25-May-23							PHC, VOCs

Notes:
mbgs = meters below ground surface
PHC = petroleum hydrocarbons
VOCs = volatile organic compounds

TABLE A.5
Soil Analytical Results - Metals and OCPs
Phase Two Environmental Site Assessment
2770 Eagleson Road
Ottawa, Ontario

Parameter	Units	MDL	MECP Table 2 RPI SCS[1]	Sample ID:	GS 23-01	GS 23-101	GS 23-02	GS 23-03	GS 23-04	GS 23-05
				Laboratory Sample ID:	WT2308433-001	WT2308433-002	WT2308433-003	WT2308433-004	WT2308433-005	WT2308433-006
				Date Sampled (dd/mm/yyyy):	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023
				Sample Depth (mbgs):	0-0.15	0-0.15	0-0.15	0-0.15	0-0.15	0-0.15
Metals										
Antimony	mg/kg	0.10	7.5		<0.10	<0.10	<0.10	<0.10	<0.10	0.11
Arsenic	mg/kg	0.10	18		4.00	3.99	4.16	3.36	3.04	4.59
Barium	mg/kg	0.50	390		155	148	162	113	130	191
Beryllium	mg/kg	0.10	5		0.78	0.77	0.82	0.71	0.68	1.04
Boron	mg/kg	5.0	120		9.3	9.0	7.7	6.9	6.6	10.8
Cadmium	mg/kg	0.020	1.2		0.132	0.141	0.147	0.142	0.139	0.212
Chromium	mg/kg	0.50	160		38.8	38.3	40.6	34.1	33.4	48.5
Cobalt	mg/kg	0.10	22		11.8	11.7	12.3	10.0	8.19	14.3
Copper	mg/kg	0.50	180		18.2	18.1	17.5	14.8	13.3	21.7
Lead	mg/kg	0.50	120		9.69	9.67	10.5	11.4	9.86	12.3
Molybdenum	mg/kg	0.10	6.9		0.58	0.65	0.57	0.55	0.43	0.68
Nickel	mg/kg	0.50	130		22.3	22.5	21.9	17.4	16.8	26.6
Selenium	mg/kg	0.20	2.4		<0.20	0.21	0.21	0.22	<0.20	0.26
Silver	mg/kg	0.10	25		<0.10	<0.10	<0.10	<0.10	<0.10	0.11
Thallium	mg/kg	0.050	1		0.201	0.192	0.200	0.165	0.162	0.259
Uranium	mg/kg	0.050	23		0.746	0.710	0.838	0.939	0.956	1.08
Vanadium	mg/kg	0.20	86		59.1	58.2	60.1	52.6	48.7	69.7
Zinc	mg/kg	2.0	340		69.8	70.9	74.7	66.0	66.7	91.2
Organochlorine Pesticides										
Aldrin	mg/kg	0.020	0.05		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane, cis- (alpha)	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane, total	mg/kg	0.030	0.05		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Chlordane, trans- (gamma)	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
DDD, 2,4'-	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
DDD, 4,4'-	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
DDD, total	mg/kg	0.030	3.3		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
DDE, 2,4'-	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
DDE, 4,4'-	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
DDE, total	mg/kg	0.030	0.33		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
DDT, 2,4'-	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
DDT, 4,4'-	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
DDT, total	mg/kg	0.030	1.4		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Dieldrin	mg/kg	0.020	0.05		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan, alpha-	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan, beta-	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan, total	mg/kg	0.030	0.04		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Endrin	mg/kg	0.020	0.04		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor	mg/kg	0.020	0.15		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor epoxide	mg/kg	0.020	0.05		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene	mg/kg	0.010	0.52		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	mg/kg	0.010	0.014		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorocyclohexane, gamma-	mg/kg	0.010	0.063		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	mg/kg	0.010	0.071		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	mg/kg	0.020	0.13		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020

Notes:
MDL - Method Detection Limit
'mbgs' - metres below ground surface
'NS' - No Standard/ Guideline
< - Non-Detect Sample
RPI - Residential / Parkland / Institutional
1 -MECP Table 2 RPI SCS: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for fine to medium grain Soil for Residential/Parkland/Institutional Property Use
Bold - Exceeds MECP SCS Table 2 RPI SCS

TABLE A.5
Soil Analytical Results - Metals and OCPs
Phase Two Environmental Site Assessment
2770 Eagleson Road
Ottawa, Ontario

Parameter	Units	MDL	MECP Table 2 RPI SCS[1]	Sample ID:	GS 23-06	GS 23-07	GS 23-08	GS 23-09	GS 23-10	GS 23-11
				Laboratory Sample ID:	WT2308433-007	WT2308433-008	WT2308433-009	WT2308433-010	WT2308433-011	WT2308433-012
				Date Sampled (dd/mm/yyyy):	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023
				Sample Depth (mbgs):	0-0.15	0-0.15	0-0.15	0-0.15	0-0.15	0-0.15
Metals										
Antimony	mg/kg	0.10	7.5		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic	mg/kg	0.10	18		4.52	3.11	3.43	3.53	3.92	3.36
Barium	mg/kg	0.50	390		174	105	129	120	146	119
Beryllium	mg/kg	0.10	5		0.97	0.59	0.66	0.65	0.77	0.61
Boron	mg/kg	5.0	120		10.3	8.1	7.2	9.4	9.1	8.5
Cadmium	mg/kg	0.020	1.2		0.249	0.209	0.203	0.240	0.233	0.215
Chromium	mg/kg	0.50	160		45.0	30.0	34.8	34.6	38.2	31.6
Cobalt	mg/kg	0.10	22		14.1	7.50	10.5	9.00	10.9	8.06
Copper	mg/kg	0.50	180		21.5	15.6	17.6	18.3	18.4	17.4
Lead	mg/kg	0.50	120		11.8	8.60	9.43	9.65	10.7	9.17
Molybdenum	mg/kg	0.10	6.9		0.60	0.40	0.46	0.45	0.52	0.39
Nickel	mg/kg	0.50	130		25.8	15.7	19.5	17.9	20.1	16.6
Selenium	mg/kg	0.20	2.4		0.23	0.25	0.22	0.33	0.30	0.28
Silver	mg/kg	0.10	25		0.11	0.11	<0.10	0.12	0.11	0.11
Thallium	mg/kg	0.050	1		0.243	0.143	0.177	0.163	0.180	0.155
Uranium	mg/kg	0.050	23		1.04	1.11	1.02	1.34	1.22	1.21
Vanadium	mg/kg	0.20	86		66.0	47.1	51.1	53.2	57.6	48.8
Zinc	mg/kg	2.0	340		89.2	67.2	73.9	75.4	78.0	74.0
Organochlorine Pesticides										
Aldrin	mg/kg	0.020	0.05		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane, cis- (alpha)	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane, total	mg/kg	0.030	0.05		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Chlordane, trans- (gamma)	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
DDD, 2,4'-	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
DDD, 4,4'-	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
DDD, total	mg/kg	0.030	3.3		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
DDE, 2,4'-	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
DDE, 4,4'-	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
DDE, total	mg/kg	0.030	0.33		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
DDT, 2,4'-	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
DDT, 4,4'-	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
DDT, total	mg/kg	0.030	1.4		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Dieldrin	mg/kg	0.020	0.05		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan, alpha-	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan, beta-	mg/kg	0.020	NS		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan, total	mg/kg	0.030	0.04		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Endrin	mg/kg	0.020	0.04		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor	mg/kg	0.020	0.15		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor epoxide	mg/kg	0.020	0.05		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene	mg/kg	0.010	0.52		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	mg/kg	0.010	0.014		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorocyclohexane, gamma-	mg/kg	0.010	0.063		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	mg/kg	0.010	0.071		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	mg/kg	0.020	0.13		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020

Notes:
MDL - Method Detection Limit
'mbgs' - metres below ground surface
'NS' - No Standard/ Guideline
< - Non-Detect Sample
RPI - Residential / Parkland / Institutional
1 -MECP Table 2 RPI SCS: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for fine to medium grain Soil for Residential/Parkland/Institutional Property Use
Bold - Exceeds MECP SCS Table 2 RPI SCS

TABLE A.6
Soil Analytical Results - Metals, Hydride Forming Metals, Other Related Paramters, Polcyclic Aromatic Hydrocarbons, Volatile Organic Compounds, and Petroleum Hydrocarbons
Phase Two ESA
2770 Eagleson Road
Ottawa, Ontario

Parameter	Units	MDL	MECP Table 2 RPI SCS[1]	Sample ID:	BH23-01 SA1	BH23-01 SA101	BH23-02 SA1	BH23-03 SA1	BH23-04 SA1	BH23-05 SA2
				Laboratory Sample ID:	WT2310622-001	WT2310622-002	WT2310622-003	WT2310622-004	WT2310622-005	WT2310622-006
				Date Sampled (dd/mm/yyyy):	25/04/2023	25/04/2023	25/04/2023	25/04/2023	25/04/2023	25/04/2023
				Sample Depth (mbgs):	0-1.52	0-1.52	0.1-0.33	0.05-0.20	0.05-0.18	0.2-1.52
Metals, Hydride Forming Metals, and Other Related Parameters										
Antimony	mg/kg	0.10	7.5		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic	mg/kg	0.10	18		5.60	5.20	4.12	4.72	3.38	5.31
Barium	mg/kg	0.50	390		278	270	200	261	168	216
Beryllium	mg/kg	0.10	5		1.05	1.00	0.89	0.98	0.76	0.99
Boron	mg/kg	5.0	120		15.0	14.8	12.6	10.8	9.8	13.4
Boron, hot water soluble	mg/kg	0.10	1.5		<0.40	0.24	0.96	0.46	1.10	0.52
Cadmium	mg/kg	0.020	1.2		0.131	0.096	0.086	0.278	0.205	0.089
Chromium	mg/kg	0.50	160		67.2	66.6	50.0	53.0	40.8	56.8
Cobalt	mg/kg	0.10	22		21.9	19.3	14.8	17.0	11.2	18.5
Copper	mg/kg	0.50	180		39.2	38.7	21.5	23.5	20.6	26.0
Lead	mg/kg	0.50	120		9.02	8.56	8.02	9.88	9.92	9.38
Mercury	mg/kg	0.0050	1.8		0.0110	0.0114	0.0274	0.0279	0.0425	0.0193
Molybdenum	mg/kg	0.10	6.9		0.49	0.37	0.39	0.85	0.64	0.52
Nickel	mg/kg	0.50	130		47.2	42.9	28.0	34.7	21.4	31.6
Selenium	mg/kg	0.20	2.4		<0.20	<0.20	<0.20	0.23	0.24	<0.20
Silver	mg/kg	0.10	25		<0.10	<0.10	<0.10	0.11	0.14	<0.10
Thallium	mg/kg	0.050	1		0.327	0.304	0.245	0.249	0.188	0.280
Uranium	mg/kg	0.050	23		0.604	0.614	0.677	0.886	0.933	0.652
Vanadium	mg/kg	0.20	86		**94.4**	**91.9**	69.8	79.3	61.9	79.7
Zinc	mg/kg	2.0	340		96.2	95.4	66.7	91.7	87.9	81.4
Conductivity (1:2 leachate)	mS/cm	0.005	0.7		0.305	0.264	**3.82**	0.652	**0.722**	**1.60**
pH (1:2 soil:CaCl2-aq)	pH units	0.1	5 to 9		7.18	7.16	7.83	6.97	6.69	8.17
Sodium adsorption ratio [SAR]	-	0.1	5		1.56	1.89	**332**	3.87	**5.84**	**14.4**
Chromium, hexavalent [Cr VI]	mg/kg	0.1	10		0.33	0.25	0.12	<0.10	<0.10	0.40
Cyanide, weak acid dissociable	mg/kg	0.05	0.051		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	mg/kg	0.05	29		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Acenaphthylene	mg/kg	0.05	0.17		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Anthracene	mg/kg	0.05	0.74		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benz(a)anthracene	mg/kg	0.05	0.63		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(a)pyrene	mg/kg	0.05	0.3		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(b+j)fluoranthene	mg/kg	0.05	0.78		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(g,h,i)perylene	mg/kg	0.05	7.8		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(k)fluoranthene	mg/kg	0.05	0.78		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chrysene	mg/kg	0.05	7.8		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibenz(a,h)anthracene	mg/kg	0.05	0.1		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	mg/kg	0.05	0.69		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluorene	mg/kg	0.05	69		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno(1,2,3-c,d)pyrene	mg/kg	0.05	0.48		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methylnaphthalene, 1-	mg/kg	0.03	NS		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Methylnaphthalene, 1+2-	mg/kg	0.042	3.4		<0.042	<0.042	<0.042	<0.042	<0.042	<0.042
Methylnaphthalene, 2-	mg/kg	0.03	NS		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Naphthalene	mg/kg	0.05	0.75		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Phenanthrene	mg/kg	0.1	7.8		<0.100	<0.050	<0.050	<0.050	<0.050	<0.050
Pyrene	mg/kg	0.05	78		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

TABLE A.6
Soil Analytical Results - Metals, Hydride Forming Metals, Other Related Paramters, Polcyclic Aromatic Hydrocarbons, Volatile Organic Compounds, and Petroleum Hydrocarbons
Phase Two ESA
2770 Eagleson Road
Ottawa, Ontario

			Sample ID:	BH23-01 SA1	BH23-01 SA101	BH23-02 SA1	BH23-03 SA1	BH23-04 SA1	BH23-05 SA2
			Laboratory Sample ID:	WT2310622-001	WT2310622-002	WT2310622-003	WT2310622-004	WT2310622-005	WT2310622-006
			Date Sampled (dd/mm/yyyy):	25/04/2023	25/04/2023	25/04/2023	25/04/2023	25/04/2023	25/04/2023
			Sample Depth (mbgs):	0-1.52	0-1.52	0.1-0.33	0.05-0.20	0.05-0.18	0.2-1.52
Parameter	Units	MDL	MECP Table 2 RPI SCS[1]						
Volatile Organic Compounds									
Acetone	mg/kg	0.5	28	<0.50	<0.50	NA	NA	NA	NA
Benzene	mg/kg	0.005	0.17	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Bromodichloromethane	mg/kg	0.05	1.5	<0.050	<0.050	NA	NA	NA	NA
Bromoform	mg/kg	0.05	0.26	<0.050	<0.050	NA	NA	NA	NA
Bromomethane	mg/kg	0.05	0.05	<0.050	<0.050	NA	NA	NA	NA
BTEX, total	mg/kg	0.1	NS	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Carbon tetrachloride	mg/kg	0.05	0.12	<0.050	<0.050	NA	NA	NA	NA
Chlorobenzene	mg/kg	0.05	2.7	<0.050	<0.050	NA	NA	NA	NA
Chloroform	mg/kg	0.05	0.05	<0.050	<0.050	NA	NA	NA	NA
Dibromochloromethane	mg/kg	0.05	2.9	<0.050	<0.050	NA	NA	NA	NA
Dibromoethane, 1,2-	mg/kg	0.05	NS	<0.050	<0.050	NA	NA	NA	NA
Dichlorobenzene, 1,2-	mg/kg	0.05	1.7	<0.050	<0.050	NA	NA	NA	NA
Dichlorobenzene, 1,3-	mg/kg	0.05	6	<0.050	<0.050	NA	NA	NA	NA
Dichlorobenzene, 1,4-	mg/kg	0.05	0.097	<0.050	<0.050	NA	NA	NA	NA
Dichlorodifluoromethane	mg/kg	0.05	25	<0.050	<0.050	NA	NA	NA	NA
Dichloroethane, 1,1-	mg/kg	0.05	0.6	<0.050	<0.050	NA	NA	NA	NA
Dichloroethane, 1,2-	mg/kg	0.05	0.05	<0.050	<0.050	NA	NA	NA	NA
Dichloroethylene, 1,1-	mg/kg	0.05	0.05	<0.050	<0.050	NA	NA	NA	NA
Dichloroethylene, cis-1,2-	mg/kg	0.05	2.5	<0.050	<0.050	NA	NA	NA	NA
Dichloroethylene, trans-1,2-	mg/kg	0.05	0.75	<0.050	<0.050	NA	NA	NA	NA
Dichloromethane	mg/kg	0.045	NS	<0.045	<0.045	NA	NA	NA	NA
Dichloropropane, 1,2-	mg/kg	0.05	0.085	<0.050	<0.050	NA	NA	NA	NA
Dichloropropylene, cis+trans-1,3-	mg/kg	0.05	NS	<0.050	<0.050	NA	NA	NA	NA
Dichloropropylene, cis-1,3-	mg/kg	0.03	NS	<0.030	<0.030	NA	NA	NA	NA
Dichloropropylene, trans-1,3-	mg/kg	0.03	NS	<0.030	<0.030	NA	NA	NA	NA
Ethylbenzene	mg/kg	0.015	1.6	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Hexane, n-	mg/kg	0.05	34	<0.050	<0.050	NA	NA	NA	NA
Methyl ethyl ketone [MEK]	mg/kg	0.5	44	<0.50	<0.50	NA	NA	NA	NA
Methyl isobutyl ketone [MIBK]	mg/kg	0.5	4.3	<0.50	<0.50	NA	NA	NA	NA
Methyl-tert-butyl ether [MTBE]	mg/kg	0.04	1.4	<0.040	<0.040	NA	NA	NA	NA
Styrene	mg/kg	0.05	2.2	<0.050	<0.050	NA	NA	NA	NA
Tetrachloroethane, 1,1,1,2-	mg/kg	0.05	0.05	<0.050	<0.050	NA	NA	NA	NA
Tetrachloroethane, 1,1,2,2-	mg/kg	0.05	0.05	<0.050	<0.050	NA	NA	NA	NA
Tetrachloroethylene	mg/kg	0.05	2.3	<0.050	<0.050	NA	NA	NA	NA
Toluene	mg/kg	0.05	6	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethane, 1,1,1-	mg/kg	0.05	3.4	<0.050	<0.050	NA	NA	NA	NA
Trichloroethane, 1,1,2-	mg/kg	0.05	0.05	<0.050	<0.050	NA	NA	NA	NA
Trichloroethylene	mg/kg	0.01	0.52	<0.010	<0.010	NA	NA	NA	NA
Trichlorofluoromethane	mg/kg	0.05	5.8	<0.050	<0.050	NA	NA	NA	NA
Vinyl chloride	mg/kg	0.02	0.022	<0.020	<0.020	NA	NA	NA	NA
Xylene, m+p-	mg/kg	0.03	NS	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Xylene, o-	mg/kg	0.03	NS	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Xylenes, total	mg/kg	0.05	25	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Petroleum Hydrocarbons									
F1 (C6-C10)	mg/kg	5	65	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F1-BTEX	mg/kg	5	NS	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	mg/kg	10	150	<10	<10	<10	<10	<10	<10
F3 (C16-C34)	mg/kg	50	1300	<50	<50	<50	<50	74	<50
F4 (C34-C50)	mg/kg	50	5600	<50	<50	<50	<50	190	<50
F4G-sg	mg/kg	-	NS	NA	NA	NA	NA	620	NA

Notes:
MDL - Method Detection Limit
'mbgs' - metres below ground surface
'NS' - No Standard/ Guideline
'<' - Non-Detect Sample
NA - Not analyzed
RPI - Residential / Parkland / Institutional
1 -MECP Table 2 RPI SCS: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for fine to medium grain Soil for Residential/Parkland/Institutional Property Use
Bold - Exceeds MECP SCS Table 2 RPI SCS

TABLE A.7
Groundwater Analytical Results - Volatile Organic Compounds, and Petroleum Hydrocarbons
Phase Two Environmental Site Assessment
2770 Eagleson Road
Ottawa, Ontario

Parameter	Units	MDL	MECP Table 2 SCS[1]	Sample ID:	BH20-01	MW23-1	MW23-101
				Laboratory Sample ID:	WT2314661-001	WT2314661-002	WT2314661-003
				Date Sampled (dd/mm/yyyy):	25/05/2023	25/05/2023	25/05/2023
				Screen Interval (mbgs):	2.32-3.84	1.52-4.57	1.52-4.57
Petroleum Hydrocarbons							
F1 (C6-C10)	µg/L	25	750		<25	<25	<25
F1-BTEX	µg/L	25	750		<25	<25	<25
F2 (C10-C16)	µg/L	100	150		<100	<100	<100
F3 (C16-C34)	µg/L	250	500		<250	<250	<250
F4 (C34-C50)	µg/L	250	500		<250	<250	<250
Volatile Organic Compounds							
Acetone	µg/L	20	2700		<20	<20	<20
Benzene	µg/L	0.5	5		<0.50	<0.50	<0.50
Bromodichloromethane	µg/L	0.5	16		<0.50	<0.50	<0.50
Bromoform	µg/L	0.5	25		<0.50	<0.50	<0.50
Bromomethane	µg/L	0.5	0.89		<0.50	<0.50	<0.50
BTEX, total	µg/L	1	NS		<1.0	<1.0	<1.0
Carbon tetrachloride	µg/L	0.2	5		<0.20	<0.20	<0.20
Chlorobenzene	µg/L	0.5	30		<0.50	<0.50	<0.50
Chloroform	µg/L	0.5	22		<0.50	<0.50	<0.50
Dibromochloromethane	µg/L	0.5	25		<0.50	<0.50	<0.50
Dibromoethane, 1,2-	µg/L	0.2	NS		<0.20	<0.20	<0.20
Dichlorobenzene, 1,2-	µg/L	0.5	3		<0.50	<0.50	<0.50
Dichlorobenzene, 1,3-	µg/L	0.5	59		<0.50	<0.50	<0.50
Dichlorobenzene, 1,4-	µg/L	0.5	1		<0.50	<0.50	<0.50
Dichlorodifluoromethane	µg/L	0.5	590		<0.50	<0.50	<0.50
Dichloroethane, 1,1-	µg/L	0.5	5		<0.50	<0.50	<0.50
Dichloroethane, 1,2-	µg/L	0.5	5		<0.50	<0.50	<0.50
Dichloroethylene, 1,1-	µg/L	0.5	14		<0.50	<0.50	<0.50
Dichloroethylene, cis-1,2-	µg/L	0.5	17		<0.50	<0.50	<0.50
Dichloroethylene, trans-1,2-	µg/L	0.5	17		<0.50	<0.50	<0.50
Dichloromethane	µg/L	1	50		<1.0	<1.0	<1.0
Dichloropropane, 1,2-	µg/L	0.5	5		<0.50	<0.50	<0.50
Dichloropropylene, cis+trans-1,3-	µg/L	0.5	0.5		<0.50	<0.50	<0.50
Dichloropropylene, cis-1,3-	µg/L	0.3	NS		<0.30	<0.30	<0.30
Dichloropropylene, trans-1,3-	µg/L	0.3	NS		<0.30	<0.30	<0.30
Ethylbenzene	µg/L	0.5	2.4		<0.50	<0.50	<0.50
Hexane, n-	µg/L	0.5	520		<0.50	<0.50	<0.50
Methyl ethyl ketone [MEK]	µg/L	20	1800		<20	<20	<20
Methyl isobutyl ketone [MIBK]	µg/L	20	640		<20	<20	<20
Methyl-tert-butyl ether [MTBE]	µg/L	0.5	15		<0.50	<0.50	<0.50
Styrene	µg/L	0.5	5.4		<0.50	<0.50	<0.50
Tetrachloroethane, 1,1,1,2-	µg/L	0.5	1.1		<0.50	<0.50	<0.50
Tetrachloroethane, 1,1,2,2-	µg/L	0.5	1		<0.50	<0.50	<0.50
Tetrachloroethylene	µg/L	0.5	17		<0.50	<0.50	<0.50
Toluene	µg/L	0.5	24		<0.50	<0.50	<0.50
Trichloroethane, 1,1,1-	µg/L	0.5	200		<0.50	<0.50	<0.50
Trichloroethane, 1,1,2-	µg/L	0.5	5		<0.50	<0.50	<0.50
Trichloroethylene	µg/L	0.5	5		<0.50	<0.50	<0.50
Trichlorofluoromethane	µg/L	0.5	150		<0.50	<0.50	<0.50
Vinyl chloride	µg/L	0.5	1.7		<0.50	<0.50	<0.50
Xylene, m+p-	µg/L	0.4	NS		<0.40	<0.40	<0.40
Xylene, o-	µg/L	0.3	NS		<0.30	<0.30	<0.30
Xylenes, total	µg/L	0.5	300		<0.50	<0.50	<0.50

Notes:
MDL - Method Detection Limit
'mbgs' - metres below ground surface
'NS' - No Standard/ Guideline
'<' - Non-Detect Sample
1 -MECP Table 2 Full Depth Generic Site Condition Standards in a Potable Ground Water Condition with fine to medium grain soils for Potable Ground Water for All Types of Property Use

APPENDIX B

Sampling and Analysis Plan

GEMTEC Consulting Engineers and Scientists Limited
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Ottawa, ON, Canada
K2K 2A9

613.836.1422
ottawa@GEMTEC.ca
www.GEMTEC.ca

April 2023 File: 61899.04

Re: Sampling and Analysis Plan
Phase Two Environmental Site Assessment
Creekside 2 Subdivision, 2770 Eagleson Road, Village of Richmond
Ottawa, Ontario

Objective

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Cardel Group of Companies to carry out a Phase Two Environmental Site Assessment (ESA) for the property located at 2770 Eagleson Road in Ottawa, Ontario, hereafter referred to as the "Phase Two Property" or "Site". It is understood that this Phase Two ESA is required in support of redevelopment and associated planning-related approvals.

The intent of the current investigation is to complete a subsurface investigation for the above noted property (herein referred to as the "Site") as part of a Phase Two Environmental Site Assessment (ESA).

The general objectives of the scope of work are to determine the location and concentration of contaminants in the Site soil and groundwater, to obtain information about environmental conditions, and to determine if the applicable site condition standards are met at the time of the assessment.

Background

GEMTEC previously completed a Phase One ESA for the site, the results of which were documented in the report titled "Phase One Environmental Site Assessment, Creekside 2 Subdivision, 2770 Eagleson Road, Ottawa, Ontario", dated February 22, 2023. Based on the findings of the Phase One ESA, GEMTEC completed this Phase Two ESA investigation.

The Phase Two ESA will focus on the following areas of potential environmental concern (APEC):

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or Sediment)
APEC 1 – Historical pesticide use on the Site.	Site wide	40. Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	On-Site	OCPs, metals	Soil
APEC 2 – Fill material of unknown origin	Located in the southeast portion of the Site	30. Importation of Fill Material of Unknown Quality	On-Site	M&I, PHCs, BTEX, PAHs	Soil
APEC 3 – Equipment and Vehicle Servicing Business	South portion of the Site	OT 2. Equipment and Vehicle Servicing	Adjacent south of the Site	M&I, PHCs, PAHs, VOCs	Soil and groundwater

Notes:
OCPs – Organochlorine Pesticides
M&I – Metals and Inorganics
PHCs – petroleum hydrocarbon fractions F1 to F4
VOCs – volatile organic compounds
PAHs – polycyclic aromatic hydrocarbons

GENERAL REQUIREMENTS

- Follow standard operating procedures;
- Complete a Daily Log for every day of field work. Use standard field forms;
- Initial calibration of field equipment should be performed at the start of each field day, with a daily check of calibration using a standard of known concentration (i.e., RKI Eagle 2);
- Clean disposable Nitrile™ gloves will be used at each sampling location to prevent cross-contamination;
- All non-dedicated sampling equipment (e.g., water level meters, split spoons) will be decontaminated between sampling locations. Sampling equipment in contact with soil, groundwater, or sediment will be: cleaned with a brush; washed with a laboratory-grade detergent solution (e.g., phosphate-free AlcoNox) and thoroughly rinsed with analyte-free water.
- Please let the Project manager know if the schedule is going off-track.

BOREHOLE DRILLING

- Drilling scheduled for April 4, 2023 to advanced 4 boreholes (BH23-1, BH23-2, BH23-3, BH23-4). BH23-1 is to be advanced to the water table (assume 4 metres below ground surface (mbgs)) and BH23-2 to BH23-4 are to be advanced to native soils (assume 1 mbgs).
- Confirm that every borehole location has been cleared by the private locator.
- At each drilling location soil samples will be collected in the following frequency: every 2-2.5 ft down to targeted depth and/or until the water table is encountered. Once the water table is identified, call PM to confirm well installation.
- Screen soil samples for field evidence of potential impact, including odour, visible staining, debris and headspace organic vapour (organics) and combustible gas (hexane) concentrations at the same frequency of jarring (i.e. every 2-2.5 ft) using an RKI Eagle 2 gas detector, calibrated to both hexane (hydrocarbons) and isobutylene (organics).
- Record soil stratigraphy and observations on soil type, presence/absence of debris and passive odour on “Record of Borehole Logs”
- In addition to the soil samples collected from the boreholes, 10 surficial soil samples will be collected from across the Site by hand.
- The table below provides a summary of the sampling and analytical program. Submit samples to ALS Labs following the chain of custody procedures provided below.

Borehole ID	Rationale	Borehole Depth (m)	Soil Analysis	Duplicate Soil Samples
BH/MW23-1	APEC 3 – Equipment and Vehicle Servicing Business	4 m (depends on depth to water table)	M&I, PHCs, PAHs, VOCs	M&I, PHCs, PAHs, VOCs
BH23-2	APEC 2 – Fill material of unknown origin	1 m (depends on depth to native soils)	M&I, PHCs, BTEX, PAHs	
BH23-3	APEC 2 – Fill material of unknown origin	1 m (depends on depth to native soils)	M&I, PHCs, BTEX, PAHs	
BH23-3	APEC 2 – Fill material of unknown origin	1 m (depends on depth to native soils)	M&I, PHCs, BTEX, PAHs	

Borehole ID	Rationale	Borehole Depth (m)	Soil Analysis	Duplicate Soil Samples
GS23-01	APEC 1 – Historical pesticide use on the Site.	0.10 m	OCPs, metals	OCPs, metals
GS23-02	APEC 1 – Historical pesticide use on the Site.	0.10 m	OCPs, metals	
GS23-03	APEC 1 – Historical pesticide use on the Site.	0.10 m	OCPs, metals	
GS23-04	APEC 1 – Historical pesticide use on the Site.	0.10 m	OCPs, metals	
GS23-05	APEC 1 – Historical pesticide use on the Site.	0.10 m	OCPs, metals	
GS23-06	APEC 1 – Historical pesticide use on the Site.	0.10 m	OCPs, metals	
GS23-07	APEC 1 – Historical pesticide use on the Site.	0.10 m	OCPs, metals	
GS23-08	APEC 1 – Historical pesticide use on the Site.	0.10 m	OCPs, metals	
GS23-09	APEC 1 – Historical pesticide use on the Site.	0.10 m	OCPs, metals	
GS23-10	APEC 1 – Historical pesticide use on the Site.	0.10 m	OCPs, metals	

- For well installation: 2 inch inside diameter (ID) Schedule 40 polyvinyl chloride (PVC) casing and 2 inch ID Schedule 40 PVC well screens (1.5 metres in length, #10 slot size); sand pack surrounding each screen will be #00N. GEMTEC plans to install one monitoring (MW23-01) that will be completed at ground surface with a monument casing set in concrete and sealed with a PVC j-plug. The remainder of the groundwater monitoring program will be carried out with wells installed by GEMTEC during the 2022 geotechnical and hydrogeological investigation.
- Mark the reference point at the top of well pipe with a small notch. Install Waterra tubing and foot valve in each new monitoring well.
- Develop monitoring wells in accordance with standard operating procedure. Use Waterra for well development. Record development information on standard field form.
- Well construction details for shallow wells required for the Phase Two ESA are provided in the table below.

Monitoring Well ID	Depth of screen base (m bgs)	Screen length (ft)	Well diameter (inch)	Protective Casing Type
BH/MW23-1	Set screen to straddle water table	10	2	Monument

Test locations are as shown on the figure attached to this document below:

GROUNDWATER MONITORING

- This work to be scheduled following drilling activity .
- Collect a round of water level measurements from the monitoring wells (MW23-01 and MW20-02 & MW 20-6 (already installed on Site)) using the water level meter.
- Develop well by purging 10x volume of the well utilizing the waterra tubing and check valve.
- Purge the wells using a peristaltic pump prior to sampling following the GEMTEC SOP. Use the multi-parameter meter to assess stability. Record the purging on the standard field form. The multi-parameter meter should be initially calibrated by the equipment supplier. Check calibration to known pH, conductivity, ORP and DO concentration prior to use. Collect groundwater samples from monitoring wells using low flow sampling following the GEMTEC SOP.
- Samples are to be collected as outlined below.
- Samples do not need to be submitted on the day of sampling provided you keep them on ice during the day and/or refrigerate them overnight (i.e., keep them cold from collection to submission). If the samples cannot be submitted on the day of sampling, they need to be submitted by the following day.

- Collect quality assurance samples as indicated below. The duplicate groundwater samples should be labelled in a manner in which the laboratory cannot readily identify the sample as a duplicate, especially if there are a small number of primary groundwater samples to be collected.
- Ensure the Trip Blank is brought to Site with you and stored on ice in the lab-supplied cooler. Keep the trip blank vials with the groundwater samples collected.
- Collect a field blank during the sampling program, as per below.
- Please call Mike or Sherry if you see or suspect that there is odour, sheen or product in any monitoring well.
- Use the "GEMTEC Water Sampling form" form to collect all data during groundwater sampling.

Well ID	Field Parameter Measurements	Groundwater Analyses to be Requested	QA/QC samples
BH/MW23-01	pH; EC; temp; DO; ORP, Conductivity, turbidity	PHCs, VOCs	1 VOC field blank 1 VOC travel blank
BH/MW20-02	pH; EC; temp; DO; ORP, Conductivity, turbidity	PHCs, VOCs	1 duplicate

CHAIN-OF-CUSTODY

- Prior to any sample submission to the laboratory, please send a copy/ picture of the chain-of-custody to Sherry for review.
- Relevant project and invoice details for the chain-of-custody are noted in Table below.

Chain-of-Custody Item	Information
Analytical Laboratory	ALS Labs
Generic Site Condition Standards	MECP, Table 1, RPIICC, coarse textured soil (to be confirmed prior to reporting)
Use Record of Site Condition analytical procedures?	yes
Turn-around Time	Regular (5-7 days)
Reporting Contact	connor.shaw@gemtec.ca

MANAGEMENT OF INVESTIGATION DERIVED WASTE

- Waste soil and water are to be discharged to the ground surface unless there is evidence of impact (staining, odour). If impacts are noted, cutting and water are to be contained in metal/plastic drums or buckets (with lids).
- Drums are to be labelled for waste management purposes, project number, date and drum contents (soil, purge water).
- Store drums at an on-site location that is as secure as possible from public access.
- Record inventory of waste containers on Daily Log.

SPECIAL INSTRUCTIONS

- Please prepare a field log for all the boreholes.
- At the end of the field program, scan all project related notes and place in job folder as soon as possible. Scan field notes at resolution and contrast settings that ensure the scanned documents are easily legible.
    - Save field notes (including daily logs, field forms, field logs, calibration records, and chain of custody documents)
    - Sort pages in the .pdf document by form type and in chronological order with daily logs at the front to simplify review.
    - Send the field note package to Mike and Sherry for review and comment.

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experience • knowledge • integrity

civil	civil
geotechnical	géotechnique
environmental	environnement
structural	structures
field services	surveillance de chantier
materials testing	service de laboratoire des matériaux

expérience • connaissance • intégrité

APPENDIX C

Borehole Logs and Grain Size Curves

ABBREVIATIONS AND TERMINOLOGY USED ON RECORDS OF BOREHOLES AND TEST PITS

SAMPLE TYPES	
AS	Auger sample
CA	Casing sample
CS	Chunk sample
BS	Borros piston sample
GS	Grab sample
MS	Manual sample
RC	Rock core
SS	Split spoon sampler
ST	Slotted tube
TO	Thin-walled open shelby tube
TP	Thin-walled piston shelby tube
WS	Wash sample

SOIL TESTS	
w	Water content
PL, w_p	Plastic limit
LL, w_L	Liquid limit
C	Consolidation (oedometer) test
D_R	Relative density
DS	Direct shear test
G_S	Specific gravity
M	Sieve analysis for particle size
MH	Combined sieve and hydrometer (H) analysis
MPC	Modified Proctor compaction test
SPC	Standard Proctor compaction test
OC	Organic content test
UC	Unconfined compression test
γ	Unit weight

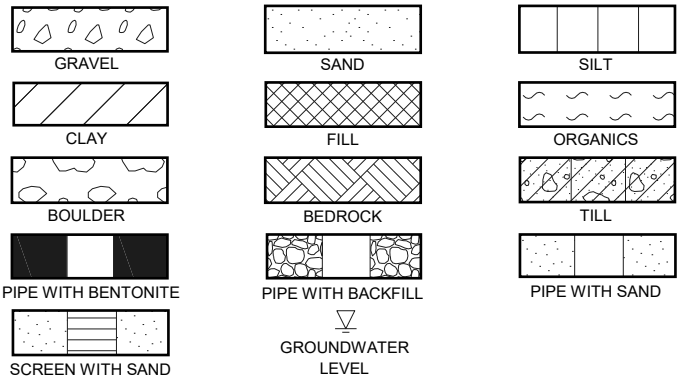
PENETRATION RESISTANCE

Standard Penetration Resistance, N
The number of blows by a 63.5 kg (140 lb) hammer dropped 760 millimetres (30 in.) required to drive a 50 mm split spoon sampler for a distance of 300 mm (12 in.). For split spoon samples where less than 300 mm of penetration was achieved, the number of blows is reported over the sampler penetration in mm.

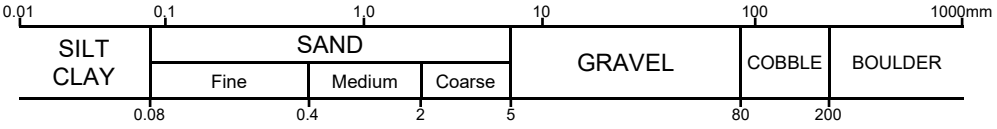
Dynamic Penetration Resistance
The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive a 50 mm (2 in.) diameter 60° cone attached to 'A' size drill rods for a distance of 300 mm (12 in.).

WH	Sampler advanced by static weight of hammer and drill rods
WR	Sampler advanced by static weight of drill rods
PH	Sampler advanced by hydraulic pressure from drill rig
PM	Sampler advanced by manual pressure

COHESIONLESS SOIL Compactness		COHESIVE SOIL Consistency	
SPT N-Values	**Description**	**Cu, kPa**	**Description**
0-4	Very Loose	0-12	Very Soft
4-10	Loose	12-25	Soft
10-30	Compact	25-50	Firm
30-50	Dense	50-100	Stiff
>50	Very Dense	100-200	Very Stiff
		>200	Hard

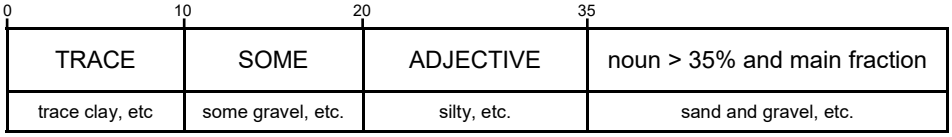


GRAIN SIZE



DESCRIPTIVE TERMINOLOGY

(Based on the CANFEM 4th Edition)



RECORD OF BOREHOLE 20-01B

CLIENT: Cardel Homes
PROJECT: Geotechnical & Hydrogeological Investigation
JOB#: 61899.04
LOCATION: See Site Plan, Figure 1

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Jul 16 2020

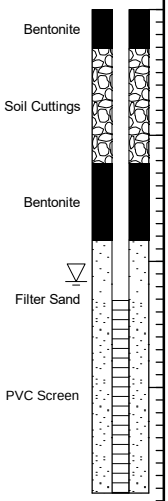
DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m
0	Power Auger / Hollow Stem Auger (210mm OD)	Ground Surface		93.88				
		TOPSOIL		93.68 / 0.20				
1		Stiff to very stiff, grey brown SILTY CLAY, with sand seams (WEATHERED CRUST)						
2								
3								
				90.04				
4		End of borehole Soil stratigraphy inferred from BH 20-1A		3.84				
5								
6								
7								
8								
9								
10								
11								
12								

SAMPLES

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: + NATURAL ⊕ REMOULDED
WATER CONTENT, %: W_P — W — W_L
10 20 30 40 50 60 70 80 90

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION



GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
20-09-30	2.2 ▽	91.7

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LOGGED: ML
CHECKED: WAM

RECORD OF BOREHOLE 20-03

CLIENT: Cardel Homes
PROJECT: Geotechnical & Hydrogeological Investigation
JOB#: 61899.04
LOCATION: See Site Plan, Figure 1

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Jul 17 2020

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	Power Auger	Ground Surface		93.44					MH	Above Ground Protector & Bentonite
		TOPSOIL		93.29 / 0.15	1	SS	150	6		
		Stiff to very stiff, grey brown SILTY CLAY, trace sand seams (WEATHERED CRUST)			2	SS	405	6		Soil Cuttings
1										
					3	SS	510	3		Bentonite
2										
					4	SS	610	5		Filter Sand
3										
					5	SS	610	6		PVC Screen
	Hollow Stem Auger (210mm OD)			89.63 / 3.81						
4		Stiff, grey SILTY CLAY			6	SS	610	WH		
					7	SS	610	WH		
5										Soil Cuttings
					8	SS	610	WH		
6										
		End of borehole		86.89 / 6.55						
7										
8										
9										
10										
11										
12										

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: + NATURAL ⊕ REMOULDED
WATER CONTENT, % W_P W W_L
10 20 30 40 50 60 70 80 90

GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
20-09-30	0.3 ▽	93.1

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LOGGED: ML
CHECKED: WAM

GEO - BOREHOLE LOG 61899.04_BOREHOLE LOGS_R0_2020-07-17.GPJ GEMTEC 2018.GDT 12-2-20

RECORD OF BOREHOLE 23-01

CLIENT: Cardel Group of Companies
PROJECT: Phase Two Environmental Site Assessment
JOB#: 61899.04
LOCATION: See Figure A.1, Borehole Layout Plan

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Apr 25 2023

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLE DATA: NUMBER	TYPE	RECOVERY (mm)	BLOWS/0.3m	LABORATORY ANALYSES	COMBUSTIBLE VAPOUR CONCENTRATION (ppm)	ODOUR	TPH (mg/kg)	MONITORING WELL INSTALLATION AND NOTES
		Ground Surface		91.35									
0		TOPSOIL		91.30 / 0.05									Monument style protective casing
		Brown SILTY CLAY			1	CA	1016		BH23-01 SA1 and Duplicate BH23-01 SA101: M&I, PAHs, VOCs, PHC F1-F4	40/0			Bentonite
1													Filter sand
2					2	CA	1346			50/0			
3													PVC Screen
4					3	CA	1422						
		End of Borehole		86.78 / 4.57									

GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEVATION (m)
May. 25/23	0.66 ▽	90.69

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LOGGED: CS
CHECKED: SE

ENV - BOREHOLE LOG 61899.04_BHLOGS_05-03-2023.GPJ GEMTEC 2018.GDT 6/14/23

RECORD OF BOREHOLE 23-02

CLIENT: Cardel Group of Companies
PROJECT: Phase Two Environmental Site Assessment
JOB#: 61899.04
LOCATION: See Figure A.1, Borehole Layout Plan

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Apr 25 2023

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. DEPTH (m)	SAMPLE DATA: NUMBER	SAMPLE DATA: TYPE	SAMPLE DATA: RECOVERY (mm)	SAMPLE DATA: BLOWS/0.3m	SAMPLE DATA: LABORATORY ANALYSES	COMBUSTIBLE VAPOUR CONCENTRATION (ppm)	ODOUR	TPH (mg/kg)	MONITORING WELL INSTALLATION AND NOTES
		Ground Surface											
0		Crushed asphalt and gravel (FILL)				CA							
		Brown silty sand with gravel (FILL)		0.10	1	CA			BH23-02 SA1: M&I, PAHs, VOCs, PHC F1-F4	40/0			
		Grey SANDY SILT		0.33									Backfilled with bentonite
1		Grey SILTY CLAY		0.78		CA				0/0			
		End of Borehole		1.52									

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Consulting Engineers and Scientists

LOGGED: CS
CHECKED: SE

ENV - BOREHOLE LOG 61899.04_BHLOGS_05-03-2023.GPJ GEMTEC 2018.GDT 6/14/23

RECORD OF BOREHOLE 23-03

CLIENT: Cardel Group of Companies
PROJECT: Phase Two Environmental Site Assessment
JOB#: 61899.04
LOCATION: See Figure A.1, Borehole Layout Plan

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Apr 25 2023

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLE DATA: NUMBER	SAMPLE DATA: TYPE	SAMPLE DATA: RECOVERY (mm)	SAMPLE DATA: BLOWS/0.3m	SAMPLE DATA: LABORATORY ANALYSES	COMBUSTIBLE VAPOUR CONCENTRATION (ppm)	ODOUR	TPH (mg/kg)	MONITORING WELL INSTALLATION AND NOTES
		Ground Surface											
0		ASPHALT		0.05	1	CA			BH23-03 SA1: M&I, PAHs, VOCs, PHC F1-F4	5/7			
		Brown silty sand with gravel (FILL)		0.20		CA							
		Brown SANDY SILT											
		Grey SILTY CLAY		0.64		CA				0/0			Backfilled with bentonite
1		End of Borehole		1.52									

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LOGGED: CS
CHECKED: SE

ENV - BOREHOLE LOG 61899.04_BHLOGS_05-03-2023.GPJ GEMTEC 2018.GDT 6/14/23

RECORD OF BOREHOLE 23-04

CLIENT: Cardel Group of Companies
PROJECT: Phase Two Environmental Site Assessment
JOB#: 61899.04
LOCATION: See Figure A.1, Borehole Layout Plan

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Apr 25 2023

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. DEPTH (m)	SAMPLE DATA: NUMBER	SAMPLE DATA: TYPE	SAMPLE DATA: RECOVERY (mm)	SAMPLE DATA: BLOWS/0.3m	SAMPLE DATA: LABORATORY ANALYSES	COMBUSTIBLE VAPOUR CONCENTRATION (ppm)	ODOUR	TPH (mg/kg)	MONITORING WELL INSTALLATION AND NOTES
		Ground Surface											
0		Brown silty sand with gravel (FILL)			1	CA			BH23-04 SA1: M&I, PAHs, VOCs, PHC F1-F4	5/7			
		Brown SANDY SILT		0.18		CA							
1		Grey SILTY CLAY		0.76		CA				0/0			Backfilled with bentonite
		End of Borehole		1.52									

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Consulting Engineers and Scientists

LOGGED: CS
CHECKED: SE

ENV - BOREHOLE LOG 61899.04_BHLOGS_05-03-2023.GPJ GEMTEC 2018.GDT 6/14/23

RECORD OF BOREHOLE 23-05

CLIENT: Cardel Group of Companies
PROJECT: Phase Two Environmental Site Assessment
JOB#: 61899.04
LOCATION: See Figure A.1, Borehole Layout Plan

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Apr 25 2023

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLE DATA: NUMBER	SAMPLE DATA: TYPE	SAMPLE DATA: RECOVERY (mm)	SAMPLE DATA: BLOWS/0.3m	SAMPLE DATA: LABORATORY ANALYSES	COMBUSTIBLE VAPOUR CONCENTRATION (ppm)	ODOUR	TPH (mg/kg)	MONITORING WELL INSTALLATION AND NOTES
		Ground Surface											
0		Brown silty sand with gravel, concrete (FILL)				CA				10/0			
		Grey SILTY CLAY		0.20	1	CA			BH23-05 SA2: M&I, PAHs, VOCs, PHC F1-F4	15/0			Backfilled with bentonite
1		End of Borehole		1.52									

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LOGGED: CS
CHECKED: SE

ENV - BOREHOLE LOG 61899.04_BHLOGS_05-03-2023.GPJ GEMTEC 2018.GDT 6/14/23

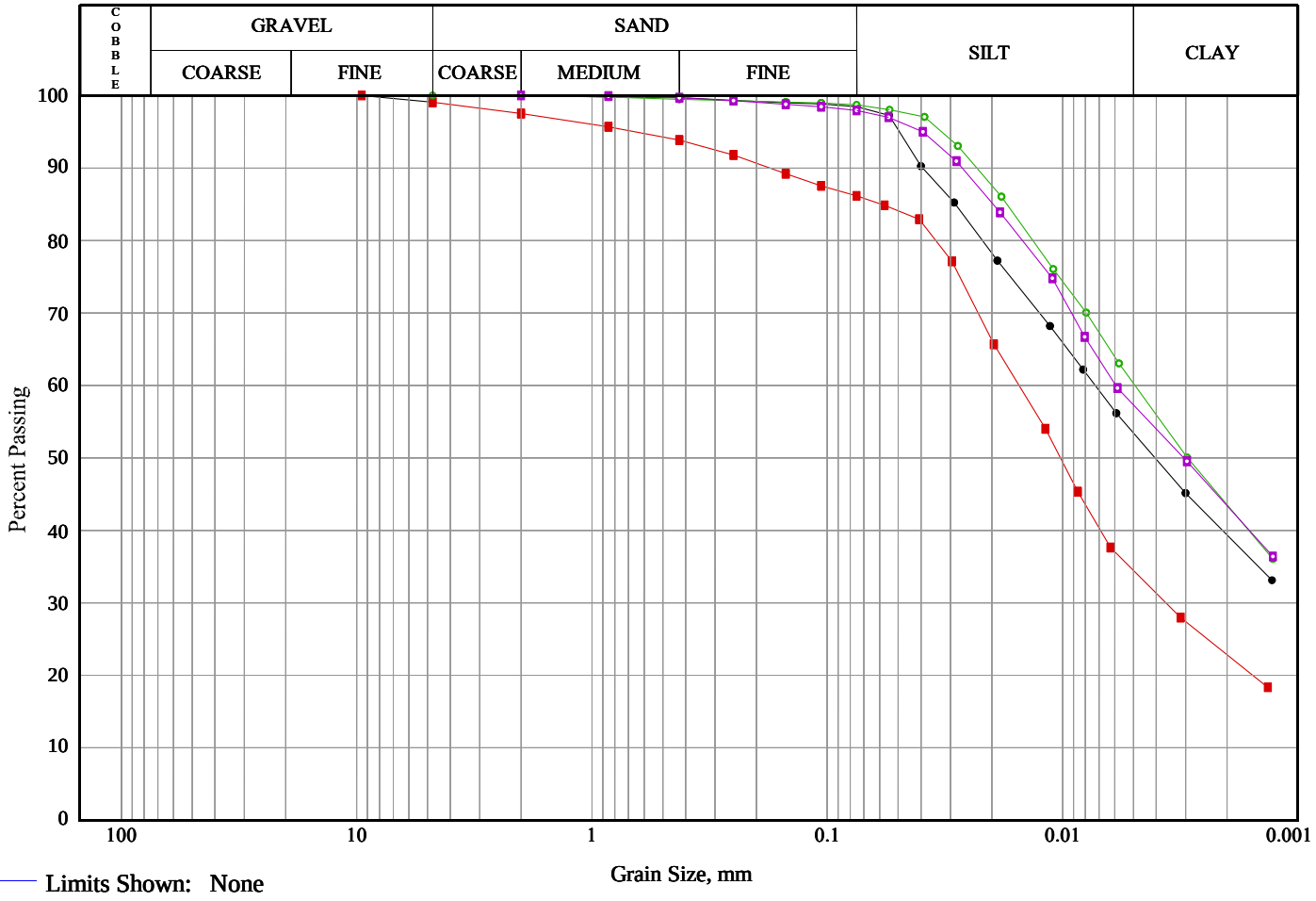
GEMTEC
Consulting Engineers and Scientists

Client: Cardel Homes

Project: Geotechnical Investigation, Proposed Residential Develo

Project #: 6189904

Soils Grading Chart



Limits Shown: None

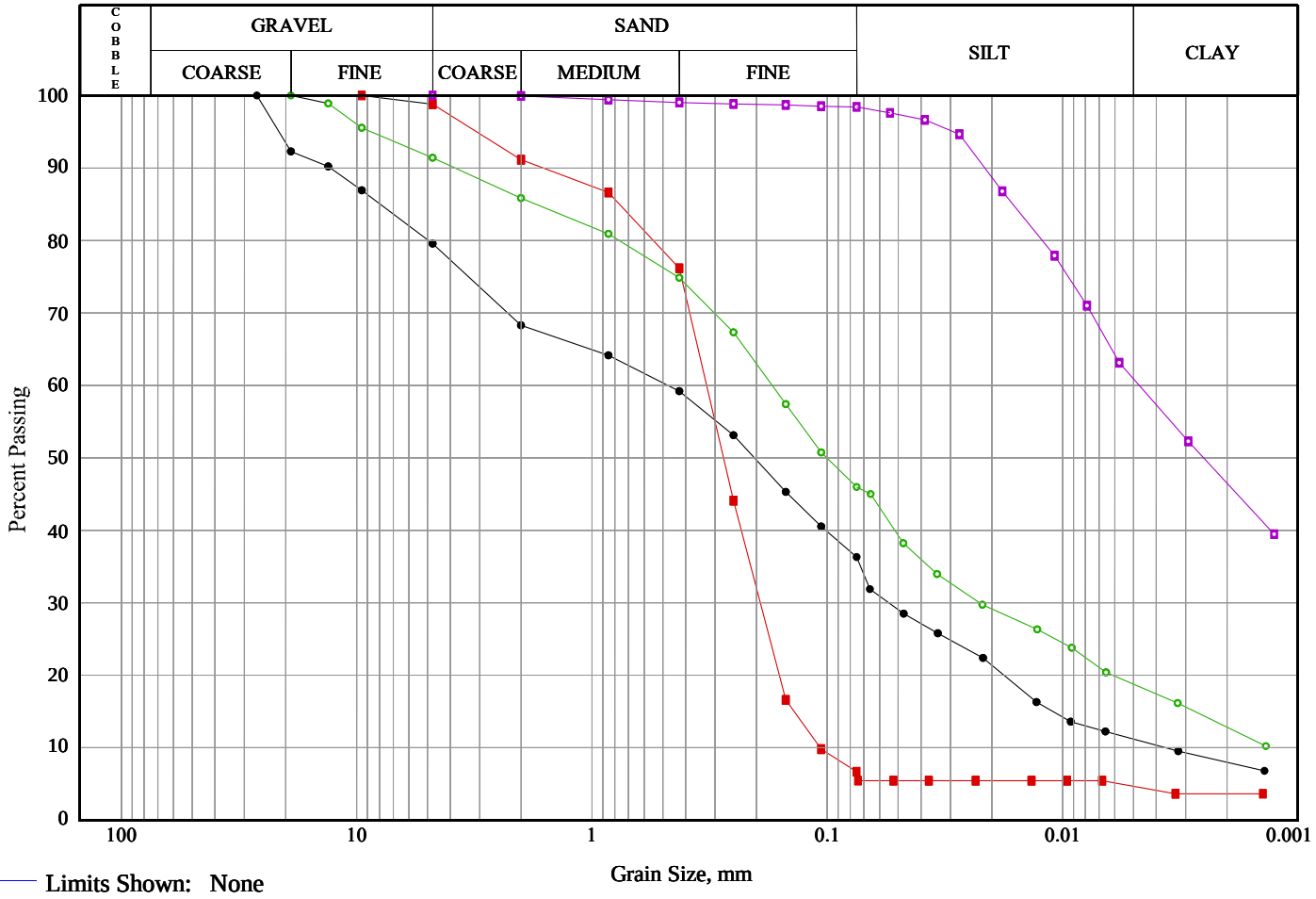
Line Symbol	Sample	Borehole/ Test Pit	Sample Number	Depth	% Cob.+ Gravel	% Sand	% Silt	% Clay
●	Weathered Silty Clay Crust	20-06	SA 2	0.76-1.37	0.0	1.5	45.0	53.4
■	Clayey Silt	20-11	SA 7	4.57-5.18	0.9	12.9	51.7	34.5
○	Weathered Silty Clay Crust	20-13	SA 3	1.52-2.13	0.0	1.3	38.4	60.3
□	Weathered Silty Clay Crust	20-14	SA 3	1.52-2.13	0.0	2.1	40.6	57.3

Line Symbol	CanFEM Classification	USCS Symbol	D_{10}	D_{15}	D_{30}	D_{50}	D_{60}	D_{85}	% 5-75µm
●	Clay and silt , trace sand	CL	---	---	---	0.00	0.01	0.03	45.0
■	Clayey silt , some sand , trace gravel	N/A	---	---	0.00	0.01	0.02	0.06	51.7
○	Clay and silt , trace sand	CL	---	---	---	0.00	0.00	0.02	38.4
□	Clay and silt , trace sand	CL	---	---	---	0.00	0.01	0.02	40.6

GEMTEC
Consulting Engineers and Scientists

Client:	Cardel Homes
Project:	Geotechnical Investigation, Proposed Residential Develo
Project #:	6189904

Soils Grading Chart



Limits Shown: None

Line Symbol	Sample	Borehole/ Test Pit	Sample Number	Depth	% Cob.+ Gravel	% Sand	% Silt	% Clay
	Glacial Till	20-15	SA 5	3.05-3.66	20.4	43.3	25.1	11.2
	Sand	20-15	SA 8	5.45-5.94	1.2	92.2	2.0	4.7
	Glacial Till	20-19	SA 5	3.05-3.66	8.6	45.5	27.2	18.7
	Weathered Silty Clay Crust	20-20	SA 3	1.52-2.13	0.0	1.6	37.5	60.9

Line Symbol	CanFEM Classification	USCS Symbol	D_{10}	D_{15}	D_{30}	D_{50}	D_{60}	D_{85}	% 5-75µm
	Gravelly silty sand , some clay	N/A	0.00	0.01	0.05	0.20	0.48	7.94	25.1
	Sand , trace gravel, trace silt, trace clay	N/A	0.11	0.14	0.19	0.28	0.33	0.76	2.0
	Silty sand , some clay , trace gravel	N/A	---	0.00	0.02	0.10	0.17	1.73	27.2
	Clay and silt , trace sand	CL	---	---	---	0.00	0.00	0.02	37.5

APPENDIX D

Laboratory Certificates of Analysis

CERTIFICATE OF ANALYSIS

Work Order	: **WT2314661**	Page	: 1 of 5
Client	: **Gemtec Consulting Engineers and Scientists Limited**	Laboratory	: Waterloo - Environmental
Contact	: Connor Shaw	Account Manager	: Costas Farassoglou
Address	: 142 Industrial Drive Petawawa ON Canada K8H 2W8	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: ----	Telephone	: 613 225 8279
Project	: 61899.04	Date Samples Received	: 25-May-2023 15:45
PO	: ----	Date Analysis Commenced	: 29-May-2023
C-O-C number	: ----	Issue Date	: 05-Jun-2023 14:22
Sampler	: Adrian Williams		
Site	: ----		
Quote number	: SOA - 2022		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Andrea Armstrong	Department Manager - Air Quality and Volatiles	VOC, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
µg/L	micrograms per litre

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	BH20-1	MW23-1	MW23-101	----	----
					Client sampling date / time	25-May-2023 12:00	25-May-2023 12:00	25-May-2023 12:00	----	----
						WT2314661-001	WT2314661-002	WT2314661-003	--------	--------
						Result	Result	Result	----	----
Volatile Organic Compounds										
Acetone	67-64-1	E611D/WT	20	µg/L		<20	<20	<20	----	----
Benzene	71-43-2	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Bromodichloromethane	75-27-4	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Bromoform	75-25-2	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Bromomethane	74-83-9	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Carbon tetrachloride	56-23-5	E611D/WT	0.20	µg/L		<0.20	<0.20	<0.20	----	----
Chlorobenzene	108-90-7	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Chloroform	67-66-3	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Dibromochloromethane	124-48-1	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Dibromoethane, 1,2-	106-93-4	E611D/WT	0.20	µg/L		<0.20	<0.20	<0.20	----	----
Dichlorobenzene, 1,2-	95-50-1	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Dichlorobenzene, 1,3-	541-73-1	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Dichlorobenzene, 1,4-	106-46-7	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Dichlorodifluoromethane	75-71-8	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Dichloroethane, 1,1-	75-34-3	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Dichloroethane, 1,2-	107-06-2	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Dichloroethylene, 1,1-	75-35-4	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Dichloroethylene, cis-1,2-	156-59-2	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Dichloroethylene, trans-1,2-	156-60-5	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Dichloromethane	75-09-2	E611D/WT	1.0	µg/L		<1.0	<1.0	<1.0	----	----
Dichloropropane, 1,2-	78-87-5	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Dichloropropylene, cis+trans-1,3-	542-75-6	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D/WT	0.30	µg/L		<0.30	<0.30	<0.30	----	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D/WT	0.30	µg/L		<0.30	<0.30	<0.30	----	----
Ethylbenzene	100-41-4	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Hexane, n-	110-54-3	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Methyl ethyl ketone [MEK]	78-93-3	E611D/WT	20	µg/L		<20	<20	<20	----	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D/WT	20	µg/L		<20	<20	<20	----	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID: BH20-1	MW23-1	MW23-101	----	----
					Client sampling date / time: 25-May-2023 12:00	25-May-2023 12:00	25-May-2023 12:00	----	----
					WT2314661-001	WT2314661-002	WT2314661-003	--------	--------
					Result	Result	Result	----	----
Volatile Organic Compounds									
Styrene	100-42-5	E611D/WT	0.50	µg/L	<0.50	<0.50	<0.50	----	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D/WT	0.50	µg/L	<0.50	<0.50	<0.50	----	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D/WT	0.50	µg/L	<0.50	<0.50	<0.50	----	----
Tetrachloroethylene	127-18-4	E611D/WT	0.50	µg/L	<0.50	<0.50	<0.50	----	----
Toluene	108-88-3	E611D/WT	0.50	µg/L	<0.50	<0.50	<0.50	----	----
Trichloroethane, 1,1,1-	71-55-6	E611D/WT	0.50	µg/L	<0.50	<0.50	<0.50	----	----
Trichloroethane, 1,1,2-	79-00-5	E611D/WT	0.50	µg/L	<0.50	<0.50	<0.50	----	----
Trichloroethylene	79-01-6	E611D/WT	0.50	µg/L	<0.50	<0.50	<0.50	----	----
Trichlorofluoromethane	75-69-4	E611D/WT	0.50	µg/L	<0.50	<0.50	<0.50	----	----
Vinyl chloride	75-01-4	E611D/WT	0.50	µg/L	<0.50	<0.50	<0.50	----	----
Xylene, m+p-	179601-23-1	E611D/WT	0.40	µg/L	<0.40	<0.40	<0.40	----	----
Xylene, o-	95-47-6	E611D/WT	0.30	µg/L	<0.30	<0.30	<0.30	----	----
Xylenes, total	1330-20-7	E611D/WT	0.50	µg/L	<0.50	<0.50	<0.50	----	----
BTEX, total	----	E611D/WT	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Hydrocarbons									
F1 (C6-C10)	----	E581.F1-L/WT	25	µg/L	<25	<25	<25	----	----
F2 (C10-C16)	----	E601.SG/WT	100	µg/L	<100	<100	<100	----	----
F3 (C16-C34)	----	E601.SG/WT	250	µg/L	<250	<250	<250	----	----
F4 (C34-C50)	----	E601.SG/WT	250	µg/L	<250	<250	<250	----	----
F1-BTEX	----	EC580/WT	25	µg/L	<25	<25	<25	----	----
Hydrocarbons, total (C6-C50)	----	EC581SG/WT	240	µg/L	<370	<370	<370	----	----
Chromatogram to baseline at nC50	n/a	E601.SG/WT	-	-	YES	YES	YES	----	----
Hydrocarbons Surrogates									
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601.SG/WT	1.0	%	80.4	83.6	79.1	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.F1-L/WT	1.0	%	105	96.5	98.8	----	----
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611D/WT	1.0	%	101	99.6	101	----	----
Difluorobenzene, 1,4-	540-36-3	E611D/WT	1.0	%	98.5	98.1	98.5	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2314661**	Page	: 1 of 6
Client	: **Gemtec Consulting Engineers and Scientists Limited**	Laboratory	: Waterloo - Environmental
Contact	: Connor Shaw	Account Manager	: Costas Farassoglou
Address	: 142 Industrial Drive Petawawa ON Canada K8H 2W8	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: 613 225 8279
Project	: 61899.04	Date Samples Received	: 25-May-2023 15:45
PO	: ----	Issue Date	: 05-Jun-2023 14:22
C-O-C number	: ----		
Sampler	: Adrian Williams		
Site	: ----		
Quote number	: SOA - 2022		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) BH20-1	E581.F1-L	25-May-2023	29-May-2023	----	----		29-May-2023	14 days	4 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) MW23-1	E581.F1-L	25-May-2023	29-May-2023	----	----		29-May-2023	14 days	4 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) MW23-101	E581.F1-L	25-May-2023	29-May-2023	----	----		29-May-2023	14 days	4 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) [ON MECP] BH20-1	E601.SG	25-May-2023	31-May-2023	40 days	6 days	✓	05-Jun-2023	40 days	5 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) [ON MECP] MW23-1	E601.SG	25-May-2023	31-May-2023	40 days	6 days	✓	05-Jun-2023	40 days	5 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) [ON MECP] MW23-101	E601.SG	25-May-2023	31-May-2023	40 days	6 days	✓	05-Jun-2023	40 days	5 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) BH20-1	E611D	25-May-2023	29-May-2023	----	----		29-May-2023	14 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
MW23-1	E611D	25-May-2023	29-May-2023	----	----		29-May-2023	14 days	4 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
MW23-101	E611D	25-May-2023	29-May-2023	----	----		29-May-2023	14 days	4 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	959169	1	5	20.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	959168	2	20	10.0	5.0	✓
Laboratory Control Samples (LCS)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	959169	1	5	20.0	5.0	✓
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	963255	1	14	7.1	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	959168	1	20	5.0	5.0	✓
Method Blanks (MB)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	959169	1	5	20.0	5.0	✓
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	963255	1	14	7.1	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	959168	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	959169	1	5	20.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	959168	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L Waterloo - Environmental	Water	CCME PHC in Soil - Tier 1 (mod)	CCME Fraction 1 (F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG Waterloo - Environmental	Water	CCME PHC in Soil - Tier 1 (mod)	Sample extracts are subjected to in-situ silica gel treatment prior to analysis by GC-FID for CCME hydrocarbon fractions (F2-F4). Sample extracts are analyzed by GC-FID for CCME hydrocarbon fractions (F2-F4), as per the CCME Analytical Methods Guidance Manual (2016)
VOCs (Eastern Canada List) by Headspace GC-MS	E611D Waterloo - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
F1-BTEX	EC580 Waterloo - Environmental	Water	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
SUM F1 to F4 where F2-F4 is SG treated	EC581SG Waterloo - Environmental	Water	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CCME Fraction F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50), where F2-F4 have been treated with silica gel. F4G-sg is not used within this calculation due to overlap with other fractions.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Preparation for Headspace Analysis	EP581 Waterloo - Environmental	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 Waterloo - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **WT2314661**	Page	: 1 of 10
Client	: Gemtec Consulting Engineers and Scientists Limited	Laboratory	: Waterloo - Environmental
Contact	: Connor Shaw	Account Manager	: Costas Farassoglou
Address	: 142 Industrial Drive Petawawa ON Canada K8H 2W8	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: 613 225 8279
Project	: 61899.04	Date Samples Received	: 25-May-2023 15:45
PO	: ----	Date Analysis Commenced	: 29-May-2023
C-O-C number	: ----	Issue Date	: 05-Jun-2023 14:25
Sampler	: Adrian Williams		
Site	: ----		
Quote number	: SOA - 2022		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Andrea Armstrong	Department Manager - Air Quality and Volatiles	Waterloo VOC, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Volatile Organic Compounds (QC Lot: 959168)											
WT2314220-001	Anonymous	Dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
WT2314220-001	Anonymous	Acetone	67-64-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Hexane, n-	110-54-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 959168) - continued											
WT2314220-001	Anonymous	Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 959169)											
WT2314220-001	Anonymous	F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	<25	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 959168)						
Acetone	67-64-1	E611D	20	µg/L	<20	----
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	----
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	<0.50	----
Bromoform	75-25-2	E611D	0.5	µg/L	<0.50	----
Bromomethane	74-83-9	E611D	0.5	µg/L	<0.50	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	<0.20	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	<0.50	----
Chloroform	67-66-3	E611D	0.5	µg/L	<0.50	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	<0.50	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	<0.20	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	<0.50	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	<0.50	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	<0.50	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	<0.30	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	<0.30	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	<0.50	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	<0.50	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	<0.50	----
Styrene	100-42-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 959168) - continued						
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	<0.50	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	<0.50	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 959169)						
F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	----
Hydrocarbons (QCLot: 963255)						
F2 (C10-C16)	----	E601.SG	100	µg/L	<100	----
F3 (C16-C34)	----	E601.SG	250	µg/L	<250	----
F4 (C34-C50)	----	E601.SG	250	µg/L	<250	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 959168)									
Acetone	67-64-1	E611D	20	µg/L	100 µg/L	104	70.0	130	----
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	97.2	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	100 µg/L	97.8	70.0	130	----
Bromoform	75-25-2	E611D	0.5	µg/L	100 µg/L	92.7	70.0	130	----
Bromomethane	74-83-9	E611D	0.5	µg/L	100 µg/L	111	60.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	100 µg/L	110	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	100 µg/L	96.2	70.0	130	----
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	99.2	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	100 µg/L	97.8	70.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	100 µg/L	94.3	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	97.5	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	100 µg/L	99.2	60.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	100 µg/L	96.2	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	100 µg/L	97.5	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	100 µg/L	95.6	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	94.5	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	100 µg/L	96.1	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	105	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	100 µg/L	91.1	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	100 µg/L	87.9	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	87.3	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	97.7	70.0	130	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	100 µg/L	97.2	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	100 µg/L	96.4	70.0	130	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	100 µg/L	84.9	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	100 µg/L	98.5	70.0	130	----
Styrene	100-42-5	E611D	0.5	µg/L	100 µg/L	93.9	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	100 µg/L	94.8	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	97.0	70.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	114	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	97.3	70.0	130	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 959168) - continued									
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	100 µg/L	96.5	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	100 µg/L	95.3	70.0	130	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	104	70.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	100 µg/L	108	60.0	140	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	100 µg/L	95.2	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	102	70.0	130	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	96.6	70.0	130	----
Hydrocarbons (QCLot: 959169)									
F1 (C6-C10)	----	E581.F1-L	25	µg/L	2000 µg/L	96.3	80.0	120	----
Hydrocarbons (QCLot: 963255)									
F2 (C10-C16)	----	E601.SG	100	µg/L	4613.474 µg/L	97.8	70.0	130	----
F3 (C16-C34)	----	E601.SG	250	µg/L	6464.481 µg/L	99.3	70.0	130	----
F4 (C34-C50)	----	E601.SG	250	µg/L	4040.361 µg/L	105	70.0	130	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 959168)										
TY2304346-001	Anonymous	Acetone	67-64-1	E611D	107 µg/L	100 µg/L	107	60.0	140	----
		Benzene	71-43-2	E611D	96.2 µg/L	100 µg/L	96.2	60.0	140	----
		Bromodichloromethane	75-27-4	E611D	98.0 µg/L	100 µg/L	98.0	60.0	140	----
		Bromoform	75-25-2	E611D	89.9 µg/L	100 µg/L	89.9	60.0	140	----
		Bromomethane	74-83-9	E611D	108 µg/L	100 µg/L	108	60.0	140	----
		Carbon tetrachloride	56-23-5	E611D	106 µg/L	100 µg/L	106	60.0	140	----
		Chlorobenzene	108-90-7	E611D	93.8 µg/L	100 µg/L	93.8	60.0	140	----
		Chloroform	67-66-3	E611D	98.7 µg/L	100 µg/L	98.7	60.0	140	----
		Dibromochloromethane	124-48-1	E611D	98.7 µg/L	100 µg/L	98.7	60.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	94.6 µg/L	100 µg/L	94.6	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	95.4 µg/L	100 µg/L	95.4	60.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	94.7 µg/L	100 µg/L	94.7	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	96.9 µg/L	100 µg/L	96.9	60.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	89.7 µg/L	100 µg/L	89.7	60.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	95.4 µg/L	100 µg/L	95.4	60.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	98.7 µg/L	100 µg/L	98.7	60.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	92.2 µg/L	100 µg/L	92.2	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	94.2 µg/L	100 µg/L	94.2	60.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	93.3 µg/L	100 µg/L	93.3	60.0	140	----
		Dichloromethane	75-09-2	E611D	105 µg/L	100 µg/L	105	60.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	91.1 µg/L	100 µg/L	91.1	60.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	86.1 µg/L	100 µg/L	86.1	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	84.7 µg/L	100 µg/L	84.7	60.0	140	----
		Ethylbenzene	100-41-4	E611D	93.9 µg/L	100 µg/L	93.9	60.0	140	----
		Hexane, n-	110-54-3	E611D	93.8 µg/L	100 µg/L	93.8	60.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	103 µg/L	100 µg/L	103	60.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	89 µg/L	100 µg/L	89.2	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	96.8 µg/L	100 µg/L	96.8	60.0	140	----
		Styrene	100-42-5	E611D	91.6 µg/L	100 µg/L	91.6	60.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	92.9 µg/L	100 µg/L	92.9	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	101 µg/L	100 µg/L	101	60.0	140	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 959168) - continued										
TY2304346-001	Anonymous	Tetrachloroethylene	127-18-4	E611D	108 µg/L	100 µg/L	108	60.0	140	----
		Toluene	108-88-3	E611D	93.6 µg/L	100 µg/L	93.6	60.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	92.2 µg/L	100 µg/L	92.2	60.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	97.0 µg/L	100 µg/L	97.0	60.0	140	----
		Trichloroethylene	79-01-6	E611D	101 µg/L	100 µg/L	101	60.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	103 µg/L	100 µg/L	103	60.0	140	----
		Vinyl chloride	75-01-4	E611D	90.1 µg/L	100 µg/L	90.1	60.0	140	----
		Xylene, m+p-	179601-23-1	E611D	196 µg/L	200 µg/L	98.2	60.0	140	----
		Xylene, o-	95-47-6	E611D	93.8 µg/L	100 µg/L	93.8	60.0	140	----
Hydrocarbons (QCLot: 959169)										
WT2314220-001	Anonymous	F1 (C6-C10)	----	E581.F1-L	1770 µg/L	2000 µg/L	88.4	60.0	140	----

CHAIN OF CUSTODY RECORD

ALS TECHNICHEM (M) SDN BHD
Wisma ALS, 21, Jalan Astaka U8/84,
Seksyen U8, Bukit Jelutong,
40150 Shah Alam, Selangor.
Tel:603-78458257 Fax:603-78458258

COMPANY: GEMTEC

PROJECT: 61899.04

PURCHASE ORDER NO.:

QUOTATION NO:

FOR LAB USE ONLY

LAB BATCH NO..

ADDRESS: 32 Steacie Drive
Ottawa

CONTACT NAME: Connor Shaw

PHONE: 613-585-3121 FAX:

SEND REPORT TO: Connor.Shaw@gemtec.ca

SEND INVOICE TO: above ↑

ANALYSIS REQUIRED

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	NO.	PHC	VOC	REMARKS
BH 20-3	GW	May25	12:00	G	4	x	x	
MW 23-1	GW	↓	12:00	G	4	x	x	
MW23-101	GW	↓	12:00	G	4	x	x	

Environmental Division
Waterloo
Work Order Reference
WT2314661

Telephone : +1 519 886 6910

Sampled by: Adrian Williams

Shipped Via:

Consignment No.:

Relinquished by: Simon Mallory Print Name	Date: MAY 25 Time: 3:45	Received by: THEO Print Name	Date: 5/25/23 Time: 3:45	**COMMENTS / SPECIAL HANDLING**
Relinquished by: Print Name	Date: Time:	Received by: TS Print Name	Date: 5/29/23 Time: 1030am	WT2314661
Received by Lab: Print Name	Date: Time:	**Container Type & Preservatives Codes**: P=Plastic; G=Glass; V=Vial; J=Jar; HN=Nitric acid preserved; HC=Hydrochloric acid preserved; HS=Sulfuric acid preserved; ST=Sterile bottle; B=Sodium hydroxide preserved; Z=Zinc acetate preserved; E=EDTA preserved.		

6.6° 5.4° 07° 5.5°

OR-660
VW-141

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CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **WT2310622**	Page	: 1 of 14
Client	: **Gemtec Consulting Engineers and Scientists Limited**	Laboratory	: Waterloo - Environmental
Contact	: Connor Shaw	Account Manager	: Costas Farassoglou
Address	: 142 Industrial Drive Petawawa ON Canada K8H 2W8	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: 613 225 8279
Project	: 61899.04	Date Samples Received	: 26-Apr-2023 14:45
PO	: ----	Date Analysis Commenced	: 28-Apr-2023
C-O-C number	: ----	Issue Date	: 08-May-2023 10:02
Sampler	: CLIENT		
Site	: ----		
Quote number	: SOA - 2022		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Andrea Armstrong	Department Manager - Air Quality and Volatiles	VOC, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Niral Patel		Centralized Prep, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Metals, Waterloo, Ontario

Summary of Guideline Breaches by Sample

SampleID/Client ID	Matrix	Analyte	Analyte Summary	Guideline	Category	Result	Limit
BH23-01 SA1	Soil/Solid	Barium		ON153/04	T1-RPIICC	278 mg/kg	220 mg/kg
	Soil/Solid	Cobalt		ON153/04	T1-RPIICC	21.9 mg/kg	21 mg/kg
	Soil/Solid	Vanadium		ON153/04	T1-RPIICC	94.4 mg/kg	86 mg/kg
BH23-01 SA101	Soil/Solid	Barium		ON153/04	T1-RPIICC	270 mg/kg	220 mg/kg
	Soil/Solid	Vanadium		ON153/04	T1-RPIICC	91.9 mg/kg	86 mg/kg
BH23-02 SA1	Soil/Solid	Conductivity (1:2 leachate)		ON153/04	T1-RPIICC	3.82 mS/cm	0.57 mS/cm
	Soil/Solid	Sodium adsorption ratio [SAR]		ON153/04	T1-RPIICC	332 -	2.4 -
BH23-03 SA1	Soil/Solid	Conductivity (1:2 leachate)		ON153/04	T1-RPIICC	0.652 mS/cm	0.57 mS/cm
	Soil/Solid	Sodium adsorption ratio [SAR]		ON153/04	T1-RPIICC	3.87 -	2.4 -
	Soil/Solid	Barium		ON153/04	T1-RPIICC	261 mg/kg	220 mg/kg
BH23-04 SA1	Soil/Solid	Conductivity (1:2 leachate)		ON153/04	T1-RPIICC	0.722 mS/cm	0.57 mS/cm
	Soil/Solid	Sodium adsorption ratio [SAR]		ON153/04	T1-RPIICC	5.84 -	2.4 -
	Soil/Solid	F4 (C34-C50)		ON153/04	T1-RPIICC	190 mg/kg	120 mg/kg
	Soil/Solid	F4G-sg		ON153/04	T1-RPIICC	620 mg/kg	120 mg/kg
BH23-05 SA2	Soil/Solid	Conductivity (1:2 leachate)		ON153/04	T1-RPIICC	1.60 mS/cm	0.57 mS/cm
	Soil/Solid	Sodium adsorption ratio [SAR]		ON153/04	T1-RPIICC	14.4 -	2.4 -

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.
Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
%	percent
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
mS/cm	millisiemens per centimetre
pH units	pH units

>: greater than.
<: less than.
Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).
For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

Sample Comments

Sample	Client Id	*Comment*
WT2310622-001	BH23-01 SA1	RRR:Detection limit raised due to potential carryover from previous sample.

Qualifiers

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLIS	Detection Limit Adjusted due to insufficient sample.
FR8	As per applicable reference method(s), soil:water ratio for Fixed Ratio Leach was modified to 1:8 due to high soil organic content.
RRR	Refer to report comments for issues regarding this analysis.

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Unit	Client sample ID	BH23-01 SA1	BH23-01 SA101	BH23-02 SA1	BH23-03 SA1	BH23-04 SA1	BH23-05 SA2	----
			Sampling date/time	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	----
			Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	----
			WT2310622-001	WT2310622-002	WT2310622-003	WT2310622-004	WT2310622-005	WT2310622-006	--------	
Physical Tests										
Conductivity (1:2 leachate)	----	mS/cm	0.305	0.264	3.82 DLHC	0.652	0.722	1.60	----	
Moisture	----	%	20.9	27.4	19.3	19.1	20.8	22.8	----	
pH (1:2 soil:CaCl2-aq)	----	pH units	7.18	7.16	7.83	6.97	6.69	8.17	----	
Cyanides										
Cyanide, weak acid dissociable	----	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----	
Fixed-Ratio Extractables										
Calcium, soluble ion content	7440-70-2	mg/L	13.2	8.86	37.0 DLHC	21.5	18.5	18.5	----	
Magnesium, soluble ion content	7439-95-4	mg/L	6.33	4.28	<10.0 DLHC	5.30	3.63	15.9	----	
Sodium, soluble ion content	17341-25-2	mg/L	27.5	27.4	7340 DLHC	77.3	105	349	----	
Sodium adsorption ratio [SAR]	----	-	1.56	1.89	332 DLHC	3.87	5.84	14.4	----	
Metals										
Antimony	7440-36-0	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----	
Arsenic	7440-38-2	mg/kg	5.60	5.20	4.12	4.72	3.38	5.31	----	
Barium	7440-39-3	mg/kg	278	270	200	261	168	216	----	
Beryllium	7440-41-7	mg/kg	1.05	1.00	0.89	0.98	0.76	0.99	----	
Boron	7440-42-8	mg/kg	15.0	14.8	12.6	10.8	9.8	13.4	----	
Boron, hot water soluble	7440-42-8	mg/kg	<0.40 DLIS, FR8	0.24	0.96	0.46	1.10	0.52	----	
Cadmium	7440-43-9	mg/kg	0.131	0.096	0.086	0.278	0.205	0.089	----	
Chromium	7440-47-3	mg/kg	67.2	66.6	50.0	53.0	40.8	56.8	----	
Cobalt	7440-48-4	mg/kg	21.9	19.3	14.8	17.0	11.2	18.5	----	
Copper	7440-50-8	mg/kg	39.2	38.7	21.5	23.5	20.6	26.0	----	
Lead	7439-92-1	mg/kg	9.02	8.56	8.02	9.88	9.92	9.38	----	
Mercury	7439-97-6	mg/kg	0.0110	0.0114	0.0274	0.0279	0.0425	0.0193	----	
Molybdenum	7439-98-7	mg/kg	0.49	0.37	0.39	0.85	0.64	0.52	----	
Nickel	7440-02-0	mg/kg	47.2	42.9	28.0	34.7	21.4	31.6	----	
Selenium	7782-49-2	mg/kg	<0.20	<0.20	<0.20	0.23	0.24	<0.20	----	
Silver	7440-22-4	mg/kg	<0.10	<0.10	<0.10	0.11	0.14	<0.10	----	
Thallium	7440-28-0	mg/kg	0.327	0.304	0.245	0.249	0.188	0.280	----	

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Unit	Client sample ID	BH23-01 SA1	BH23-01 SA101	BH23-02 SA1	BH23-03 SA1	BH23-04 SA1	BH23-05 SA2	----
			Sampling date/time	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	----
			Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	----
				WT2310622-001	WT2310622-002	WT2310622-003	WT2310622-004	WT2310622-005	WT2310622-006	--------
Metals										
Uranium	7440-61-1	mg/kg		0.604	0.614	0.677	0.886	0.933	0.652	----
Vanadium	7440-62-2	mg/kg		94.4	91.9	69.8	79.3	61.9	79.7	----
Zinc	7440-66-6	mg/kg		96.2	95.4	66.7	91.7	87.9	81.4	----
Speciated Metals										
Chromium, hexavalent [Cr VI]	18540-29-9	mg/kg		0.33	0.25	0.12	<0.10	<0.10	0.40	----
Volatile Organic Compounds										
Acetone	67-64-1	mg/kg		<0.50	<0.50	----	----	----	----	----
Benzene	71-43-2	mg/kg		----	----	<0.0050	<0.0050	<0.0050	<0.0050	----
Benzene	71-43-2	mg/kg		<0.0050	<0.0050	----	----	----	----	----
Bromodichloromethane	75-27-4	mg/kg		<0.050	<0.050	----	----	----	----	----
Bromoform	75-25-2	mg/kg		<0.050	<0.050	----	----	----	----	----
Bromomethane	74-83-9	mg/kg		<0.050	<0.050	----	----	----	----	----
Carbon tetrachloride	56-23-5	mg/kg		<0.050	<0.050	----	----	----	----	----
Chlorobenzene	108-90-7	mg/kg		<0.050	<0.050	----	----	----	----	----
Chloroform	67-66-3	mg/kg		<0.050	<0.050	----	----	----	----	----
Dibromochloromethane	124-48-1	mg/kg		<0.050	<0.050	----	----	----	----	----
Dibromoethane, 1,2-	106-93-4	mg/kg		<0.050	<0.050	----	----	----	----	----
Dichlorobenzene, 1,2-	95-50-1	mg/kg		<0.050	<0.050	----	----	----	----	----
Dichlorobenzene, 1,3-	541-73-1	mg/kg		<0.050	<0.050	----	----	----	----	----
Dichlorobenzene, 1,4-	106-46-7	mg/kg		<0.050	<0.050	----	----	----	----	----
Dichlorodifluoromethane	75-71-8	mg/kg		<0.050	<0.050	----	----	----	----	----
Dichloroethane, 1,1-	75-34-3	mg/kg		<0.050	<0.050	----	----	----	----	----
Dichloroethane, 1,2-	107-06-2	mg/kg		<0.050	<0.050	----	----	----	----	----
Dichloroethylene, 1,1-	75-35-4	mg/kg		<0.050	<0.050	----	----	----	----	----
Dichloroethylene, cis-1,2-	156-59-2	mg/kg		<0.050	<0.050	----	----	----	----	----
Dichloroethylene, trans-1,2-	156-60-5	mg/kg		<0.050	<0.050	----	----	----	----	----
Dichloromethane	75-09-2	mg/kg		<0.045	<0.045	----	----	----	----	----
Dichloropropane, 1,2-	78-87-5	mg/kg		<0.050	<0.050	----	----	----	----	----
Dichloropropylene, cis+trans-1,3-	542-75-6	mg/kg		<0.050	<0.050	----	----	----	----	----
Dichloropropylene, cis-1,3-	10061-01-5	mg/kg		<0.030	<0.030	----	----	----	----	----

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Unit	Client sample ID	BH23-01 SA1	BH23-01 SA101	BH23-02 SA1	BH23-03 SA1	BH23-04 SA1	BH23-05 SA2	----
			Sampling date/time	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	----
			Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	----
				WT2310622-001	WT2310622-002	WT2310622-003	WT2310622-004	WT2310622-005	WT2310622-006	--------
Volatile Organic Compounds										
Dichloropropylene, trans-1,3-	10061-02-6	mg/kg		<0.030	<0.030	----	----	----	----	----
Ethylbenzene	100-41-4	mg/kg		----	----	<0.015	<0.015	<0.015	<0.015	----
Ethylbenzene	100-41-4	mg/kg		<0.015	<0.015	----	----	----	----	----
Hexane, n-	110-54-3	mg/kg		<0.050	<0.050	----	----	----	----	----
Methyl ethyl ketone [MEK]	78-93-3	mg/kg		<0.50	<0.50	----	----	----	----	----
Methyl isobutyl ketone [MIBK]	108-10-1	mg/kg		<0.50	<0.50	----	----	----	----	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	mg/kg		<0.040	<0.040	----	----	----	----	----
Styrene	100-42-5	mg/kg		<0.050	<0.050	----	----	----	----	----
Tetrachloroethane, 1,1,1,2-	630-20-6	mg/kg		<0.050	<0.050	----	----	----	----	----
Tetrachloroethane, 1,1,2,2-	79-34-5	mg/kg		<0.050	<0.050	----	----	----	----	----
Tetrachloroethylene	127-18-4	mg/kg		<0.050	<0.050	----	----	----	----	----
Toluene	108-88-3	mg/kg		----	----	<0.050	<0.050	<0.050	<0.050	----
Toluene	108-88-3	mg/kg		<0.050	<0.050	----	----	----	----	----
Trichloroethane, 1,1,1-	71-55-6	mg/kg		<0.050	<0.050	----	----	----	----	----
Trichloroethane, 1,1,2-	79-00-5	mg/kg		<0.050	<0.050	----	----	----	----	----
Trichloroethylene	79-01-6	mg/kg		<0.010	<0.010	----	----	----	----	----
Trichlorofluoromethane	75-69-4	mg/kg		<0.050	<0.050	----	----	----	----	----
Vinyl chloride	75-01-4	mg/kg		<0.020	<0.020	----	----	----	----	----
Xylene, m+p-	179601-23-1	mg/kg		----	----	<0.030	<0.030	<0.030	<0.030	----
Xylene, m+p-	179601-23-1	mg/kg		<0.030	<0.030	----	----	----	----	----
Xylene, o-	95-47-6	mg/kg		----	----	<0.030	<0.030	<0.030	<0.030	----
Xylene, o-	95-47-6	mg/kg		<0.030	<0.030	----	----	----	----	----
Xylenes, total	1330-20-7	mg/kg		----	----	<0.050	<0.050	<0.050	<0.050	----
Xylenes, total	1330-20-7	mg/kg		<0.050	<0.050	----	----	----	----	----
BTEX, total	----	mg/kg		----	----	<0.10	<0.10	<0.10	<0.10	----
BTEX, total	----	mg/kg		<0.10	<0.10	----	----	----	----	----
Hydrocarbons										
F1 (C6-C10)	----	mg/kg		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	----
F2 (C10-C16)	----	mg/kg		<10	<10	<10	<10	<10	<10	----
F2-Naphthalene	----	mg/kg		<25	<25	<25	<25	<25	<25	----

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Unit	Client sample ID	BH23-01 SA1	BH23-01 SA101	BH23-02 SA1	BH23-03 SA1	BH23-04 SA1	BH23-05 SA2	----
			Sampling date/time	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	----
			Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	----
				WT2310622-001	WT2310622-002	WT2310622-003	WT2310622-004	WT2310622-005	WT2310622-006	--------
Hydrocarbons										
F3 (C16-C34)	----	mg/kg		<50	<50	<50	<50	74	<50	----
F3-PAH	n/a	mg/kg		<50	<50	<50	<50	74	<50	----
F4 (C34-C50)	----	mg/kg		<50	<50	<50	<50	190	<50	----
F4G-sg	----	mg/kg		----	----	----	----	620	----	----
F1-BTEX	----	mg/kg		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	----
Hydrocarbons, total (C6-C50)	----	mg/kg		<80	<80	<80	<80	264	<80	----
Chromatogram to baseline at nC50	n/a	-		YES	YES	YES	YES	NO	YES	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	%		91.0	90.9	87.1	95.3	91.0	93.0	----
Dichlorotoluene, 3,4-	95-75-0	%		66.7	97.1	82.3	92.7	104	76.6	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	%		----	----	82.2	90.3	103	77.7	----
Bromofluorobenzene, 4-	460-00-4	%		94.0	97.4	----	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	%		----	----	105	116	133	100	----
Difluorobenzene, 1,4-	540-36-3	%		102	105	----	----	----	----	----
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	83-32-9	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
Acenaphthylene	208-96-8	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
Anthracene	120-12-7	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
Benz(a)anthracene	56-55-3	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
Benzo(a)pyrene	50-32-8	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
Benzo(b+j)fluoranthene	n/a	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
Benzo(g,h,i)perylene	191-24-2	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
Benzo(k)fluoranthene	207-08-9	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
Chrysene	218-01-9	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
Dibenz(a,h)anthracene	53-70-3	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
Fluoranthene	206-44-0	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
Fluorene	86-73-7	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
Indeno(1,2,3-c,d)pyrene	193-39-5	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Unit	Client sample ID	BH23-01 SA1	BH23-01 SA101	BH23-02 SA1	BH23-03 SA1	BH23-04 SA1	BH23-05 SA2	----
			Sampling date/time	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	----
			Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	----
				WT2310622-001	WT2310622-002	WT2310622-003	WT2310622-004	WT2310622-005	WT2310622-006	--------
Polycyclic Aromatic Hydrocarbons										
Methylnaphthalene, 1-	90-12-0	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	----
Methylnaphthalene, 1+2-	----	mg/kg		<0.042	<0.042	<0.042	<0.042	<0.042	<0.042	----
Methylnaphthalene, 2-	91-57-6	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	----
Naphthalene	91-20-3	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
Phenanthrene	85-01-8	mg/kg		<0.100 RRR	<0.050	<0.050	<0.050	<0.050	<0.050	----
Pyrene	129-00-0	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
Phthalate Esters										
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
Diethyl phthalate	84-66-2	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
Dimethyl phthalate	131-11-3	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
Semi-Volatile Organics										
Biphenyl	92-52-4	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
bis(2-Chloro-1-methylethyl) ether	108-60-1	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
bis(2-Chloroethyl) ether	111-44-4	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
Chloroaniline, 4-	106-47-8	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
Dichlorobenzidine, 3,3'-	91-94-1	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
Dinitrotoluene, 2,4-	121-14-2	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
Dinitrotoluene, 2,4 + 2,6-	n/a	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	----
Dinitrotoluene, 2,6-	606-20-2	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
Trichlorobenzene, 1,2,4-	120-82-1	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	----
Semi-Volatile Organics Surrogates										
Fluorobiphenyl, 2-	321-60-8	%		76.5	76.3	73.9	81.5	72.3	75.1	----
Nitrobenzene-d5	4165-60-0	%		83.3	81.6	78.5	86.6	80.6	80.6	----
Terphenyl-d14, p-	1718-51-0	%		84.0	83.3	80.4	89.9	83.7	80.8	----
Chlorinated Phenolics										
Chlorophenol, 2-	95-57-8	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
Dichlorophenol, 2,4-	120-83-2	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
Pentachlorophenol [PCP]	87-86-5	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
Trichlorophenol, 2,4,5-	95-95-4	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Unit	Client sample ID	BH23-01 SA1	BH23-01 SA101	BH23-02 SA1	BH23-03 SA1	BH23-04 SA1	BH23-05 SA2	----
			Sampling date/time	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	----
			Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	----
				WT2310622-001	WT2310622-002	WT2310622-003	WT2310622-004	WT2310622-005	WT2310622-006	--------
Chlorinated Phenolics										
Trichlorophenol, 2,4,6-	88-06-2	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
Non-Chlorinated Phenolics										
Dimethylphenol, 2,4-	105-67-9	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
Dinitrophenol, 2,4-	51-28-5	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	----
Phenol	108-95-2	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	----
Phenolics Surrogates										
Tribromophenol, 2,4,6-	118-79-6	%		71.8	72.1	71.4	86.1	76.6	77.0	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

Summary of Guideline Limits

Analyte	CAS Number	Unit	ON153/04 T1-RPIICC
Physical Tests			
Conductivity (1:2 leachate)	----	mS/cm	0.57 mS/cm
Moisture	----	%	
pH (1:2 soil:CaCl2-aq)	----	pH units	
Cyanides			
Cyanide, weak acid dissociable	----	mg/kg	0.051 mg/kg
Fixed-Ratio Extractables			
Calcium, soluble ion content	7440-70-2	mg/L	
Magnesium, soluble ion content	7439-95-4	mg/L	
Sodium adsorption ratio [SAR]	----	-	2.4 -
Sodium, soluble ion content	17341-25-2	mg/L	
Metals			
Antimony	7440-36-0	mg/kg	1.3 mg/kg
Arsenic	7440-38-2	mg/kg	18 mg/kg
Barium	7440-39-3	mg/kg	220 mg/kg
Beryllium	7440-41-7	mg/kg	2.5 mg/kg
Boron, hot water soluble	7440-42-8	mg/kg	
Boron	7440-42-8	mg/kg	36 mg/kg
Cadmium	7440-43-9	mg/kg	1.2 mg/kg
Chromium	7440-47-3	mg/kg	70 mg/kg
Cobalt	7440-48-4	mg/kg	21 mg/kg
Copper	7440-50-8	mg/kg	92 mg/kg
Lead	7439-92-1	mg/kg	120 mg/kg
Mercury	7439-97-6	mg/kg	0.27 mg/kg
Molybdenum	7439-98-7	mg/kg	2 mg/kg
Nickel	7440-02-0	mg/kg	82 mg/kg
Selenium	7782-49-2	mg/kg	1.5 mg/kg
Silver	7440-22-4	mg/kg	0.5 mg/kg
Thallium	7440-28-0	mg/kg	1 mg/kg
Uranium	7440-61-1	mg/kg	2.5 mg/kg
Vanadium	7440-62-2	mg/kg	86 mg/kg
Zinc	7440-66-6	mg/kg	290 mg/kg
Speciated Metals			
Chromium, hexavalent [Cr VI]	18540-29-9	mg/kg	0.66 mg/kg
Volatile Organic Compounds			
Acetone	67-64-1	mg/kg	0.5 mg/kg
Benzene	71-43-2	mg/kg	0.02 mg/kg
Bromodichloromethane	75-27-4	mg/kg	0.05 mg/kg

Analyte	CAS Number	Unit	ON153/04 T1-RPIICC
Volatile Organic Compounds - Continued			
Bromoform	75-25-2	mg/kg	**0.05 mg/kg**
Bromomethane	74-83-9	mg/kg	**0.05 mg/kg**
BTEX, total	----	mg/kg	
Carbon tetrachloride	56-23-5	mg/kg	**0.05 mg/kg**
Chlorobenzene	108-90-7	mg/kg	**0.05 mg/kg**
Chloroform	67-66-3	mg/kg	**0.05 mg/kg**
Dibromochloromethane	124-48-1	mg/kg	**0.05 mg/kg**
Dibromoethane, 1,2-	106-93-4	mg/kg	**0.05 mg/kg**
Dichlorobenzene, 1,2-	95-50-1	mg/kg	**0.05 mg/kg**
Dichlorobenzene, 1,3-	541-73-1	mg/kg	**0.05 mg/kg**
Dichlorobenzene, 1,4-	106-46-7	mg/kg	**0.05 mg/kg**
Dichlorodifluoromethane	75-71-8	mg/kg	**0.05 mg/kg**
Dichloroethane, 1,1-	75-34-3	mg/kg	**0.05 mg/kg**
Dichloroethane, 1,2-	107-06-2	mg/kg	**0.05 mg/kg**
Dichloroethylene, 1,1-	75-35-4	mg/kg	**0.05 mg/kg**
Dichloroethylene, cis-1,2-	156-59-2	mg/kg	**0.05 mg/kg**
Dichloroethylene, trans-1,2-	156-60-5	mg/kg	**0.05 mg/kg**
Dichloromethane	75-09-2	mg/kg	**0.05 mg/kg**
Dichloropropane, 1,2-	78-87-5	mg/kg	**0.05 mg/kg**
Dichloropropylene, cis+trans-1,3-	542-75-6	mg/kg	**0.05 mg/kg**
Dichloropropylene, cis-1,3-	10061-01-5	mg/kg	
Dichloropropylene, trans-1,3-	10061-02-6	mg/kg	
Ethylbenzene	100-41-4	mg/kg	**0.05 mg/kg**
Hexane, n-	110-54-3	mg/kg	**0.05 mg/kg**
Methyl ethyl ketone [MEK]	78-93-3	mg/kg	**0.5 mg/kg**
Methyl isobutyl ketone [MIBK]	108-10-1	mg/kg	**0.5 mg/kg**
Methyl-tert-butyl ether [MTBE]	1634-04-4	mg/kg	**0.05 mg/kg**
Styrene	100-42-5	mg/kg	**0.05 mg/kg**
Tetrachloroethane, 1,1,1,2-	630-20-6	mg/kg	**0.05 mg/kg**
Tetrachloroethane, 1,1,2,2-	79-34-5	mg/kg	**0.05 mg/kg**
Tetrachloroethylene	127-18-4	mg/kg	**0.05 mg/kg**
Toluene	108-88-3	mg/kg	**0.2 mg/kg**
Trichloroethane, 1,1,1-	71-55-6	mg/kg	**0.05 mg/kg**
Trichloroethane, 1,1,2-	79-00-5	mg/kg	**0.05 mg/kg**
Trichloroethylene	79-01-6	mg/kg	**0.05 mg/kg**
Trichlorofluoromethane	75-69-4	mg/kg	**0.25 mg/kg**
Vinyl chloride	75-01-4	mg/kg	**0.02 mg/kg**
Xylene, m+p-	179601-23-1	mg/kg	
Xylene, o-	95-47-6	mg/kg	

Analyte	CAS Number	Unit	ON153/04 T1-RPIICC
Volatile Organic Compounds - Continued			
Xylenes, total	1330-20-7	mg/kg	**0.05 mg/kg**
Hydrocarbons			
Chromatogram to baseline at nC50	n/a	-	
F1 (C6-C10)	----	mg/kg	**25 mg/kg**
F1-BTEX	----	mg/kg	**25 mg/kg**
F2 (C10-C16)	----	mg/kg	**10 mg/kg**
F2-Naphthalene	----	mg/kg	
F3 (C16-C34)	----	mg/kg	**240 mg/kg**
F3-PAH	n/a	mg/kg	
F4 (C34-C50)	----	mg/kg	**120 mg/kg**
F4G-sg	----	mg/kg	**120 mg/kg**
Hydrocarbons, total (C6-C50)	----	mg/kg	
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	83-32-9	mg/kg	**0.072 mg/kg**
Acenaphthylene	208-96-8	mg/kg	**0.093 mg/kg**
Anthracene	120-12-7	mg/kg	**0.16 mg/kg**
Benz(a)anthracene	56-55-3	mg/kg	**0.36 mg/kg**
Benzo(a)pyrene	50-32-8	mg/kg	**0.3 mg/kg**
Benzo(b+j)fluoranthene	n/a	mg/kg	**0.47 mg/kg**
Benzo(g,h,i)perylene	191-24-2	mg/kg	**0.68 mg/kg**
Benzo(k)fluoranthene	207-08-9	mg/kg	**0.48 mg/kg**
Chrysene	218-01-9	mg/kg	**2.8 mg/kg**
Dibenz(a,h)anthracene	53-70-3	mg/kg	**0.1 mg/kg**
Fluoranthene	206-44-0	mg/kg	**0.56 mg/kg**
Fluorene	86-73-7	mg/kg	**0.12 mg/kg**
Indeno(1,2,3-c,d)pyrene	193-39-5	mg/kg	**0.23 mg/kg**
Methylnaphthalene, 1+2-	----	mg/kg	**0.59 mg/kg**
Methylnaphthalene, 1-	90-12-0	mg/kg	**0.59 mg/kg**
Methylnaphthalene, 2-	91-57-6	mg/kg	**0.59 mg/kg**
Naphthalene	91-20-3	mg/kg	**0.09 mg/kg**
Phenanthrene	85-01-8	mg/kg	**0.69 mg/kg**
Pyrene	129-00-0	mg/kg	**1 mg/kg**
Phthalate Esters			
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	mg/kg	**5 mg/kg**
Diethyl phthalate	84-66-2	mg/kg	**0.5 mg/kg**
Dimethyl phthalate	131-11-3	mg/kg	**0.5 mg/kg**
Semi-Volatile Organics			
Biphenyl	92-52-4	mg/kg	**0.05 mg/kg**
bis(2-Chloro-1-methylethyl) ether	108-60-1	mg/kg	**0.5 mg/kg**

Analyte	CAS Number	Unit	ON153/04 T1-RPIICC
Semi-Volatile Organics - Continued			
bis(2-Chloroethyl) ether	111-44-4	mg/kg	**0.5 mg/kg**
Chloroaniline, 4-	106-47-8	mg/kg	**0.5 mg/kg**
Dichlorobenzidine, 3,3'-	91-94-1	mg/kg	**1 mg/kg**
Dinitrotoluene, 2,4 + 2,6-	n/a	mg/kg	**0.5 mg/kg**
Dinitrotoluene, 2,4-	121-14-2	mg/kg	
Dinitrotoluene, 2,6-	606-20-2	mg/kg	
Trichlorobenzene, 1,2,4-	120-82-1	mg/kg	**0.05 mg/kg**
Chlorinated Phenolics			
Chlorophenol, 2-	95-57-8	mg/kg	**0.1 mg/kg**
Dichlorophenol, 2,4-	120-83-2	mg/kg	**0.1 mg/kg**
Pentachlorophenol [PCP]	87-86-5	mg/kg	**0.1 mg/kg**
Trichlorophenol, 2,4,5-	95-95-4	mg/kg	**0.1 mg/kg**
Trichlorophenol, 2,4,6-	88-06-2	mg/kg	**0.1 mg/kg**
Dimethylphenol, 2,4-	105-67-9	mg/kg	**0.2 mg/kg**
Dinitrophenol, 2,4-	51-28-5	mg/kg	**2 mg/kg**
Phenol	108-95-2	mg/kg	**0.5 mg/kg**

Please refer to the General Comments section for an explanation of any qualifiers detected.

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T1-RPIICC	153 T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

ALS Canada Ltd.

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CERTIFICATE OF ANALYSIS

Work Order	: **WT2310622**	Page	: 1 of 12
Client	: **Gemtec Consulting Engineers and Scientists Limited**	Laboratory	: Waterloo - Environmental
Contact	: Connor Shaw	Account Manager	: Costas Farassoglou
Address	: 142 Industrial Drive Petawawa ON Canada K8H 2W8	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: ----	Telephone	: 613 225 8279
Project	: 61899.04	Date Samples Received	: 26-Apr-2023 14:45
PO	: ----	Date Analysis Commenced	: 28-Apr-2023
C-O-C number	: ----	Issue Date	: 08-May-2023 10:02
Sampler	: CLIENT		
Site	: ----		
Quote number	: SOA - 2022		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Andrea Armstrong	Department Manager - Air Quality and Volatiles	VOC, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Niral Patel		Centralized Prep, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Metals, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.
Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
%	percent
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
mS/cm	millisiemens per centimetre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Sample Comments

Sample	Client Id	*Comment*
WT2310622-001	BH23-01 SA1	RRR:Detection limit raised due to potential carryover from previous sample.

Qualifiers

Qualifier	*Description*
DLHC	*Detection Limit Raised: Dilution required due to high concentration of test analyte(s).*
DLIS	*Detection Limit Adjusted due to insufficient sample.*
FR8	*As per applicable reference method(s), soil:water ratio for Fixed Ratio Leach was modified to 1:8 due to high soil organic content.*
RRR	*Refer to report comments for issues regarding this analysis.*

Analytical Results

Sub-Matrix: Soil
(Matrix: Soil/Solid)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BH23-01 SA1	BH23-01 SA101	BH23-02 SA1	BH23-03 SA1	BH23-04 SA1
					Client sampling date / time	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023
						WT2310622-001	WT2310622-002	WT2310622-003	WT2310622-004	WT2310622-005
						Result	Result	Result	Result	Result
Physical Tests										
Conductivity (1:2 leachate)	----	E100-L	0.00500	mS/cm		0.305	0.264	3.82 DLHC	0.652	0.722
Moisture	----	E144	0.25	%		20.9	27.4	19.3	19.1	20.8
pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units		7.18	7.16	7.83	6.97	6.69
Cyanides										
Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Fixed-Ratio Extractables										
Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L		13.2	8.86	37.0 DLHC	21.5	18.5
Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L		6.33	4.28	<10.0 DLHC	5.30	3.63
Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L		27.5	27.4	7340 DLHC	77.3	105
Sodium adsorption ratio [SAR]	----	E484	0.10	-		1.56	1.89	332 DLHC	3.87	5.84
Metals										
Antimony	7440-36-0	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic	7440-38-2	E440	0.10	mg/kg		5.60	5.20	4.12	4.72	3.38
Barium	7440-39-3	E440	0.50	mg/kg		278	270	200	261	168
Beryllium	7440-41-7	E440	0.10	mg/kg		1.05	1.00	0.89	0.98	0.76
Boron	7440-42-8	E440	5.0	mg/kg		15.0	14.8	12.6	10.8	9.8
Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg		<0.40 DLIS, FR8	0.24	0.96	0.46	1.10
Cadmium	7440-43-9	E440	0.020	mg/kg		0.131	0.096	0.086	0.278	0.205
Chromium	7440-47-3	E440	0.50	mg/kg		67.2	66.6	50.0	53.0	40.8
Cobalt	7440-48-4	E440	0.10	mg/kg		21.9	19.3	14.8	17.0	11.2
Copper	7440-50-8	E440	0.50	mg/kg		39.2	38.7	21.5	23.5	20.6
Lead	7439-92-1	E440	0.50	mg/kg		9.02	8.56	8.02	9.88	9.92
Mercury	7439-97-6	E510	0.0050	mg/kg		0.0110	0.0114	0.0274	0.0279	0.0425
Molybdenum	7439-98-7	E440	0.10	mg/kg		0.49	0.37	0.39	0.85	0.64
Nickel	7440-02-0	E440	0.50	mg/kg		47.2	42.9	28.0	34.7	21.4
Selenium	7782-49-2	E440	0.20	mg/kg		<0.20	<0.20	<0.20	0.23	0.24
Silver	7440-22-4	E440	0.10	mg/kg		<0.10	<0.10	<0.10	0.11	0.14
Thallium	7440-28-0	E440	0.050	mg/kg		0.327	0.304	0.245	0.249	0.188
Uranium	7440-61-1	E440	0.050	mg/kg		0.604	0.614	0.677	0.886	0.933
Vanadium	7440-62-2	E440	0.20	mg/kg		94.4	91.9	69.8	79.3	61.9

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BH23-01 SA1	BH23-01 SA101	BH23-02 SA1	BH23-03 SA1	BH23-04 SA1
					Client sampling date / time	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023
						WT2310622-001	WT2310622-002	WT2310622-003	WT2310622-004	WT2310622-005
						Result	Result	Result	Result	Result
Metals										
Zinc	7440-66-6	E440	2.0	mg/kg		96.2	95.4	66.7	91.7	87.9
Speciated Metals										
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg		0.33	0.25	0.12	<0.10	<0.10
Volatile Organic Compounds										
Acetone	67-64-1	E611D	0.50	mg/kg		<0.50	<0.50	----	----	----
Benzene	71-43-2	E611A	0.0050	mg/kg		----	----	<0.0050	<0.0050	<0.0050
Benzene	71-43-2	E611D	0.0050	mg/kg		<0.0050	<0.0050	----	----	----
Bromodichloromethane	75-27-4	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Bromoform	75-25-2	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Bromomethane	74-83-9	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Carbon tetrachloride	56-23-5	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Chlorobenzene	108-90-7	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Chloroform	67-66-3	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Dibromochloromethane	124-48-1	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Dibromoethane, 1,2-	106-93-4	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Dichlorodifluoromethane	75-71-8	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Dichloroethane, 1,1-	75-34-3	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Dichloroethane, 1,2-	107-06-2	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg		<0.045	<0.045	----	----	----
Dichloropropane, 1,2-	78-87-5	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Dichloropropylene, cis+trans-1,3-	542-75-6	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.030	mg/kg		<0.030	<0.030	----	----	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.030	mg/kg		<0.030	<0.030	----	----	----
Ethylbenzene	100-41-4	E611A	0.015	mg/kg		----	----	<0.015	<0.015	<0.015

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BH23-01 SA1	BH23-01 SA101	BH23-02 SA1	BH23-03 SA1	BH23-04 SA1
					Client sampling date / time	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023
						WT2310622-001	WT2310622-002	WT2310622-003	WT2310622-004	WT2310622-005
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
Ethylbenzene	100-41-4	E611D	0.015	mg/kg		<0.015	<0.015	----	----	----
Hexane, n-	110-54-3	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.50	mg/kg		<0.50	<0.50	----	----	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.50	mg/kg		<0.50	<0.50	----	----	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.040	mg/kg		<0.040	<0.040	----	----	----
Styrene	100-42-5	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Tetrachloroethylene	127-18-4	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Toluene	108-88-3	E611A	0.050	mg/kg		----	----	<0.050	<0.050	<0.050
Toluene	108-88-3	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Trichloroethylene	79-01-6	E611D	0.010	mg/kg		<0.010	<0.010	----	----	----
Trichlorofluoromethane	75-69-4	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
Vinyl chloride	75-01-4	E611D	0.020	mg/kg		<0.020	<0.020	----	----	----
Xylene, m+p-	179601-23-1	E611A	0.030	mg/kg		----	----	<0.030	<0.030	<0.030
Xylene, m+p-	179601-23-1	E611D	0.030	mg/kg		<0.030	<0.030	----	----	----
Xylene, o-	95-47-6	E611A	0.030	mg/kg		----	----	<0.030	<0.030	<0.030
Xylene, o-	95-47-6	E611D	0.030	mg/kg		<0.030	<0.030	----	----	----
Xylenes, total	1330-20-7	E611A	0.050	mg/kg		----	----	<0.050	<0.050	<0.050
Xylenes, total	1330-20-7	E611D	0.050	mg/kg		<0.050	<0.050	----	----	----
BTEX, total	----	E611A	0.10	mg/kg		----	----	<0.10	<0.10	<0.10
BTEX, total	----	E611D	0.10	mg/kg		<0.10	<0.10	----	----	----
Hydrocarbons										
F1 (C6-C10)	----	E581.F1	5.0	mg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	----	E601.SG-L	10	mg/kg		<10	<10	<10	<10	<10
F2-Naphthalene	----	EC600	25	mg/kg		<25	<25	<25	<25	<25
F3 (C16-C34)	----	E601.SG-L	50	mg/kg		<50	<50	<50	<50	74
F3-PAH	n/a	EC600	50	mg/kg		<50	<50	<50	<50	74

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BH23-01 SA1	BH23-01 SA101	BH23-02 SA1	BH23-03 SA1	BH23-04 SA1
					Client sampling date / time	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023
						WT2310622-001	WT2310622-002	WT2310622-003	WT2310622-004	WT2310622-005
						Result	Result	Result	Result	Result
Hydrocarbons										
F4 (C34-C50)	----	E601.SG-L	50	mg/kg		<50	<50	<50	<50	190
F4G-sg	----	E601.F4G-L	250	mg/kg		----	----	----	----	620
F1-BTEX	----	EC580	5.0	mg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
Hydrocarbons, total (C6-C50)	----	EC581	80	mg/kg		<80	<80	<80	<80	264
Chromatogram to baseline at nC50	n/a	E601.SG-L	-	-		YES	YES	YES	YES	NO
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601.SG-L	1.0	%		91.0	90.9	87.1	95.3	91.0
Dichlorotoluene, 3,4-	95-75-0	E581.F1	1.0	%		66.7	97.1	82.3	92.7	104
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A	0.10	%		----	----	82.2	90.3	103
Bromofluorobenzene, 4-	460-00-4	E611D	0.10	%		94.0	97.4	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611A	0.10	%		----	----	105	116	133
Difluorobenzene, 1,4-	540-36-3	E611D	0.10	%		102	105	----	----	----
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	83-32-9	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Acenaphthylene	208-96-8	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Anthracene	120-12-7	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Benz(a)anthracene	56-55-3	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(a)pyrene	50-32-8	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(b+j)fluoranthene	n/a	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(g,h,i)perylene	191-24-2	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(k)fluoranthene	207-08-9	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Chrysene	218-01-9	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Dibenz(a,h)anthracene	53-70-3	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	206-44-0	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Fluorene	86-73-7	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Indeno(1,2,3-c,d)pyrene	193-39-5	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Methylnaphthalene, 1-	90-12-0	E655A	0.030	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030
Methylnaphthalene, 1+2-	----	E655A	0.030	mg/kg		<0.042	<0.042	<0.042	<0.042	<0.042
Methylnaphthalene, 2-	91-57-6	E655A	0.030	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BH23-01 SA1	BH23-01 SA101	BH23-02 SA1	BH23-03 SA1	BH23-04 SA1
					Client sampling date / time	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023
						WT2310622-001	WT2310622-002	WT2310622-003	WT2310622-004	WT2310622-005
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
Naphthalene	91-20-3	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Phenanthrene	85-01-8	E655A	0.050	mg/kg		<0.100 RRR	<0.050	<0.050	<0.050	<0.050
Pyrene	129-00-0	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Phthalate Esters										
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655A	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Diethyl phthalate	84-66-2	E655A	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Dimethyl phthalate	131-11-3	E655A	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Semi-Volatile Organics										
Biphenyl	92-52-4	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
bis(2-Chloro-1-methylethyl) ether	108-60-1	E655A	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
bis(2-Chloroethyl) ether	111-44-4	E655A	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Chloroaniline, 4-	106-47-8	E655A	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Dichlorobenzidine, 3,3'-	91-94-1	E655A	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Dinitrotoluene, 2,4-	121-14-2	E655A	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Dinitrotoluene, 2,4 + 2,6-	n/a	E655A	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20
Dinitrotoluene, 2,6-	606-20-2	E655A	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Trichlorobenzene, 1,2,4-	120-82-1	E655A	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Semi-Volatile Organics Surrogates										
Fluorobiphenyl, 2-	321-60-8	E655A	0.1	%		76.5	76.3	73.9	81.5	72.3
Nitrobenzene-d5	4165-60-0	E655A	0.1	%		83.3	81.6	78.5	86.6	80.6
Terphenyl-d14, p-	1718-51-0	E655A	0.1	%		84.0	83.3	80.4	89.9	83.7
Chlorinated Phenolics										
Chlorophenol, 2-	95-57-8	E655A	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Dichlorophenol, 2,4-	120-83-2	E655A	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Pentachlorophenol [PCP]	87-86-5	E655A	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Trichlorophenol, 2,4,5-	95-95-4	E655A	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Trichlorophenol, 2,4,6-	88-06-2	E655A	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Non-Chlorinated Phenolics										
Dimethylphenol, 2,4-	105-67-9	E655A	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Dinitrophenol, 2,4-	51-28-5	E655A	1.0	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0

Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BH23-01 SA1	BH23-01 SA101	BH23-02 SA1	BH23-03 SA1	BH23-04 SA1
					Client sampling date / time	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023
Analyte	CAS Number	Method	LOR	Unit		WT2310622-001	WT2310622-002	WT2310622-003	WT2310622-004	WT2310622-005
						Result	Result	Result	Result	Result
Non-Chlorinated Phenolics										
Phenol	108-95-2	E655A	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Phenolics Surrogates										
Tribromophenol, 2,4,6-	118-79-6	E655A	1.0	%		71.8	72.1	71.4	86.1	76.6

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BH23-05 SA2	----	----	----	----
					Client sampling date / time	25-Apr-2023	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		WT2310622-006	--------	--------	--------	--------
						Result	----	----	----	----
Physical Tests										
Conductivity (1:2 leachate)	----	E100-L	0.00500	mS/cm		1.60	----	----	----	----
Moisture	----	E144	0.25	%		22.8	----	----	----	----
pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units		8.17	----	----	----	----
Cyanides										
Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg		<0.050	----	----	----	----
Fixed-Ratio Extractables										
Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L		18.5	----	----	----	----
Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L		15.9	----	----	----	----
Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L		349	----	----	----	----
Sodium adsorption ratio [SAR]	----	E484	0.10	-		14.4	----	----	----	----
Metals										
Antimony	7440-36-0	E440	0.10	mg/kg		<0.10	----	----	----	----
Arsenic	7440-38-2	E440	0.10	mg/kg		5.31	----	----	----	----
Barium	7440-39-3	E440	0.50	mg/kg		216	----	----	----	----
Beryllium	7440-41-7	E440	0.10	mg/kg		0.99	----	----	----	----
Boron	7440-42-8	E440	5.0	mg/kg		13.4	----	----	----	----
Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg		0.52	----	----	----	----
Cadmium	7440-43-9	E440	0.020	mg/kg		0.089	----	----	----	----
Chromium	7440-47-3	E440	0.50	mg/kg		56.8	----	----	----	----
Cobalt	7440-48-4	E440	0.10	mg/kg		18.5	----	----	----	----
Copper	7440-50-8	E440	0.50	mg/kg		26.0	----	----	----	----
Lead	7439-92-1	E440	0.50	mg/kg		9.38	----	----	----	----
Mercury	7439-97-6	E510	0.0050	mg/kg		0.0193	----	----	----	----
Molybdenum	7439-98-7	E440	0.10	mg/kg		0.52	----	----	----	----
Nickel	7440-02-0	E440	0.50	mg/kg		31.6	----	----	----	----
Selenium	7782-49-2	E440	0.20	mg/kg		<0.20	----	----	----	----
Silver	7440-22-4	E440	0.10	mg/kg		<0.10	----	----	----	----
Thallium	7440-28-0	E440	0.050	mg/kg		0.280	----	----	----	----
Uranium	7440-61-1	E440	0.050	mg/kg		0.652	----	----	----	----
Vanadium	7440-62-2	E440	0.20	mg/kg		79.7	----	----	----	----

Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BH23-05 SA2	----	----	----	----
					Client sampling date / time	25-Apr-2023	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		WT2310622-006	--------	--------	--------	--------
						Result	----	----	----	----
Metals										
Zinc	7440-66-6	E440	2.0	mg/kg		81.4	----	----	----	----
Speciated Metals										
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg		0.40	----	----	----	----
Volatile Organic Compounds										
Benzene	71-43-2	E611A	0.0050	mg/kg		<0.0050	----	----	----	----
Ethylbenzene	100-41-4	E611A	0.015	mg/kg		<0.015	----	----	----	----
Toluene	108-88-3	E611A	0.050	mg/kg		<0.050	----	----	----	----
Xylene, m+p-	179601-23-1	E611A	0.030	mg/kg		<0.030	----	----	----	----
Xylene, o-	95-47-6	E611A	0.030	mg/kg		<0.030	----	----	----	----
Xylenes, total	1330-20-7	E611A	0.050	mg/kg		<0.050	----	----	----	----
BTEX, total	----	E611A	0.10	mg/kg		<0.10	----	----	----	----
Hydrocarbons										
F1 (C6-C10)	----	E581.F1	5.0	mg/kg		<5.0	----	----	----	----
F2 (C10-C16)	----	E601.SG-L	10	mg/kg		<10	----	----	----	----
F2-Naphthalene	----	EC600	25	mg/kg		<25	----	----	----	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg		<50	----	----	----	----
F3-PAH	n/a	EC600	50	mg/kg		<50	----	----	----	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg		<50	----	----	----	----
F1-BTEX	----	EC580	5.0	mg/kg		<5.0	----	----	----	----
Hydrocarbons, total (C6-C50)	----	EC581	80	mg/kg		<80	----	----	----	----
Chromatogram to baseline at nC50	n/a	E601.SG-L	-	-		YES	----	----	----	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601.SG-L	1.0	%		93.0	----	----	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.F1	1.0	%		76.6	----	----	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A	0.10	%		77.7	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611A	0.10	%		100	----	----	----	----
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	83-32-9	E655A	0.050	mg/kg		<0.050	----	----	----	----
Acenaphthylene	208-96-8	E655A	0.050	mg/kg		<0.050	----	----	----	----

Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BH23-05 SA2	----	----	----	----
					Client sampling date / time	25-Apr-2023	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		WT2310622-006	--------	--------	--------	--------
						Result	----	----	----	----
Polycyclic Aromatic Hydrocarbons										
Anthracene	120-12-7	E655A	0.050	mg/kg		<0.050	----	----	----	----
Benz(a)anthracene	56-55-3	E655A	0.050	mg/kg		<0.050	----	----	----	----
Benzo(a)pyrene	50-32-8	E655A	0.050	mg/kg		<0.050	----	----	----	----
Benzo(b+j)fluoranthene	n/a	E655A	0.050	mg/kg		<0.050	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	E655A	0.050	mg/kg		<0.050	----	----	----	----
Benzo(k)fluoranthene	207-08-9	E655A	0.050	mg/kg		<0.050	----	----	----	----
Chrysene	218-01-9	E655A	0.050	mg/kg		<0.050	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	E655A	0.050	mg/kg		<0.050	----	----	----	----
Fluoranthene	206-44-0	E655A	0.050	mg/kg		<0.050	----	----	----	----
Fluorene	86-73-7	E655A	0.050	mg/kg		<0.050	----	----	----	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E655A	0.050	mg/kg		<0.050	----	----	----	----
Methylnaphthalene, 1-	90-12-0	E655A	0.030	mg/kg		<0.030	----	----	----	----
Methylnaphthalene, 1+2-	----	E655A	0.030	mg/kg		<0.042	----	----	----	----
Methylnaphthalene, 2-	91-57-6	E655A	0.030	mg/kg		<0.030	----	----	----	----
Naphthalene	91-20-3	E655A	0.050	mg/kg		<0.050	----	----	----	----
Phenanthrene	85-01-8	E655A	0.050	mg/kg		<0.050	----	----	----	----
Pyrene	129-00-0	E655A	0.050	mg/kg		<0.050	----	----	----	----
Phthalate Esters										
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655A	0.10	mg/kg		<0.10	----	----	----	----
Diethyl phthalate	84-66-2	E655A	0.10	mg/kg		<0.10	----	----	----	----
Dimethyl phthalate	131-11-3	E655A	0.10	mg/kg		<0.10	----	----	----	----
Semi-Volatile Organics										
Biphenyl	92-52-4	E655A	0.050	mg/kg		<0.050	----	----	----	----
bis(2-Chloro-1-methylethyl) ether	108-60-1	E655A	0.10	mg/kg		<0.10	----	----	----	----
bis(2-Chloroethyl) ether	111-44-4	E655A	0.10	mg/kg		<0.10	----	----	----	----
Chloroaniline, 4-	106-47-8	E655A	0.10	mg/kg		<0.10	----	----	----	----
Dichlorobenzidine, 3,3'-	91-94-1	E655A	0.10	mg/kg		<0.10	----	----	----	----
Dinitrotoluene, 2,4-	121-14-2	E655A	0.10	mg/kg		<0.10	----	----	----	----
Dinitrotoluene, 2,4 + 2,6-	n/a	E655A	0.20	mg/kg		<0.20	----	----	----	----
Dinitrotoluene, 2,6-	606-20-2	E655A	0.10	mg/kg		<0.10	----	----	----	----

Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BH23-05 SA2	----	----	----	----
					Client sampling date / time	25-Apr-2023	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		WT2310622-006	--------	--------	--------	--------
						Result	----	----	----	----
Semi-Volatile Organics										
Trichlorobenzene, 1,2,4-	120-82-1	E655A	0.050	mg/kg		<0.050	----	----	----	----
Semi-Volatile Organics Surrogates										
Fluorobiphenyl, 2-	321-60-8	E655A	0.1	%		75.1	----	----	----	----
Nitrobenzene-d5	4165-60-0	E655A	0.1	%		80.6	----	----	----	----
Terphenyl-d14, p-	1718-51-0	E655A	0.1	%		80.8	----	----	----	----
Chlorinated Phenolics										
Chlorophenol, 2-	95-57-8	E655A	0.10	mg/kg		<0.10	----	----	----	----
Dichlorophenol, 2,4-	120-83-2	E655A	0.10	mg/kg		<0.10	----	----	----	----
Pentachlorophenol [PCP]	87-86-5	E655A	0.10	mg/kg		<0.10	----	----	----	----
Trichlorophenol, 2,4,5-	95-95-4	E655A	0.10	mg/kg		<0.10	----	----	----	----
Trichlorophenol, 2,4,6-	88-06-2	E655A	0.10	mg/kg		<0.10	----	----	----	----
Non-Chlorinated Phenolics										
Dimethylphenol, 2,4-	105-67-9	E655A	0.10	mg/kg		<0.10	----	----	----	----
Dinitrophenol, 2,4-	51-28-5	E655A	1.0	mg/kg		<1.0	----	----	----	----
Phenol	108-95-2	E655A	0.10	mg/kg		<0.10	----	----	----	----
Phenolics Surrogates										
Tribromophenol, 2,4,6-	118-79-6	E655A	1.0	%		77.0	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2310622**	Page	: 1 of 19
Client	: **Gemtec Consulting Engineers and Scientists Limited**	Laboratory	: Waterloo - Environmental
Contact	: Connor Shaw	Account Manager	: Costas Farassoglou
Address	: 142 Industrial Drive Petawawa ON Canada K8H 2W8	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: 613 225 8279
Project	: 61899.04	Date Samples Received	: 26-Apr-2023 14:45
PO	: ----	Issue Date	: 08-May-2023 10:03
C-O-C number	: ----		
Sampler	: CLIENT		
Site	: ----		
Quote number	: SOA - 2022		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Chlorinated Phenolics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Chlorinated Phenolics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA101	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Chlorinated Phenolics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-02 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Chlorinated Phenolics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-03 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Chlorinated Phenolics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-04 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Chlorinated Phenolics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-05 SA2	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA1	E336A	25-Apr-2023	03-May-2023	14 days	9 days	✓	04-May-2023	14 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA101	E336A	25-Apr-2023	03-May-2023	14 days	9 days	✓	04-May-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-02 SA1	E336A	25-Apr-2023	03-May-2023	14 days	9 days	✓	04-May-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-03 SA1	E336A	25-Apr-2023	03-May-2023	14 days	9 days	✓	04-May-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-04 SA1	E336A	25-Apr-2023	03-May-2023	14 days	9 days	✓	04-May-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-05 SA2	E336A	25-Apr-2023	03-May-2023	14 days	9 days	✓	04-May-2023	14 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA1	E484	25-Apr-2023	04-May-2023	180 days	10 days	✓	05-May-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA101	E484	25-Apr-2023	04-May-2023	180 days	10 days	✓	05-May-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-02 SA1	E484	25-Apr-2023	04-May-2023	180 days	10 days	✓	05-May-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-03 SA1	E484	25-Apr-2023	04-May-2023	180 days	10 days	✓	05-May-2023	180 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-04 SA1	E484	25-Apr-2023	04-May-2023	180 days	10 days	✓	05-May-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-05 SA2	E484	25-Apr-2023	04-May-2023	180 days	10 days	✓	05-May-2023	180 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH23-02 SA1	E581.F1	25-Apr-2023	28-Apr-2023	14 days	4 days	✓	30-Apr-2023	40 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH23-03 SA1	E581.F1	25-Apr-2023	28-Apr-2023	14 days	4 days	✓	30-Apr-2023	40 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH23-04 SA1	E581.F1	25-Apr-2023	28-Apr-2023	14 days	4 days	✓	30-Apr-2023	40 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH23-05 SA2	E581.F1	25-Apr-2023	28-Apr-2023	14 days	4 days	✓	30-Apr-2023	40 days	2 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH23-01 SA1	E581.F1	25-Apr-2023	01-May-2023	14 days	6 days	✓	01-May-2023	40 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH23-01 SA101	E581.F1	25-Apr-2023	01-May-2023	14 days	6 days	✓	01-May-2023	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F4G by Gravimetry (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-04 SA1	E601.F4G-L	25-Apr-2023	04-May-2023	14 days	10 days	✓	05-May-2023	40 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA1	E601.SG-L	25-Apr-2023	04-May-2023	14 days	9 days	✓	04-May-2023	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA101	E601.SG-L	25-Apr-2023	04-May-2023	14 days	9 days	✓	04-May-2023	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-02 SA1	E601.SG-L	25-Apr-2023	04-May-2023	14 days	9 days	✓	04-May-2023	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-03 SA1	E601.SG-L	25-Apr-2023	04-May-2023	14 days	9 days	✓	04-May-2023	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-04 SA1	E601.SG-L	25-Apr-2023	04-May-2023	14 days	9 days	✓	04-May-2023	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-05 SA2	E601.SG-L	25-Apr-2023	04-May-2023	14 days	9 days	✓	04-May-2023	40 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA1	E487	25-Apr-2023	04-May-2023	180 days	10 days	✓	05-May-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA101	E487	25-Apr-2023	04-May-2023	180 days	10 days	✓	05-May-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] BH23-02 SA1	E487	25-Apr-2023	04-May-2023	180 days	10 days	✓	05-May-2023	180 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-03 SA1	E487	25-Apr-2023	04-May-2023	180 days	10 days	✓	05-May-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-04 SA1	E487	25-Apr-2023	04-May-2023	180 days	10 days	✓	05-May-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-05 SA2	E487	25-Apr-2023	04-May-2023	180 days	10 days	✓	05-May-2023	180 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-01 SA1	E510	25-Apr-2023	04-May-2023	----	----		05-May-2023	28 days	10 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-01 SA101	E510	25-Apr-2023	04-May-2023	----	----		05-May-2023	28 days	10 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-02 SA1	E510	25-Apr-2023	04-May-2023	----	----		05-May-2023	28 days	10 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-03 SA1	E510	25-Apr-2023	04-May-2023	----	----		05-May-2023	28 days	10 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-04 SA1	E510	25-Apr-2023	04-May-2023	----	----		05-May-2023	28 days	10 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-05 SA2	E510	25-Apr-2023	04-May-2023	----	----		05-May-2023	28 days	10 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA1	E440	25-Apr-2023	04-May-2023	----	----		05-May-2023	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA101	E440	25-Apr-2023	04-May-2023	----	----		05-May-2023	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-02 SA1	E440	25-Apr-2023	04-May-2023	----	----		05-May-2023	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-03 SA1	E440	25-Apr-2023	04-May-2023	----	----		05-May-2023	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-04 SA1	E440	25-Apr-2023	04-May-2023	----	----		05-May-2023	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-05 SA2	E440	25-Apr-2023	04-May-2023	----	----		05-May-2023	180 days	10 days	✓
Non-Chlorinated Phenolics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Non-Chlorinated Phenolics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA101	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Non-Chlorinated Phenolics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-02 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Non-Chlorinated Phenolics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-03 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Non-Chlorinated Phenolics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-04 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Non-Chlorinated Phenolics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-05 SA2	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Phthalate Esters : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Phthalate Esters : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA101	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Phthalate Esters : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-02 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Phthalate Esters : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-03 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Phthalate Esters : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-04 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Phthalate Esters : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-05 SA2	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA1	E100-L	25-Apr-2023	04-May-2023	----	----		05-May-2023	30 days	10 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA101	E100-L	25-Apr-2023	04-May-2023	----	----		05-May-2023	30 days	10 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-02 SA1	E100-L	25-Apr-2023	04-May-2023	----	----		05-May-2023	30 days	10 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-03 SA1	E100-L	25-Apr-2023	04-May-2023	----	----		05-May-2023	30 days	10 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-04 SA1	E100-L	25-Apr-2023	04-May-2023	----	----		05-May-2023	30 days	10 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-05 SA2	E100-L	25-Apr-2023	04-May-2023	----	----		05-May-2023	30 days	10 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA1	E144	25-Apr-2023	----	----	----		03-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA101	E144	25-Apr-2023	----	----	----		03-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP] BH23-02 SA1	E144	25-Apr-2023	----	----	----		03-May-2023	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-03 SA1	E144	25-Apr-2023	----	----	----		03-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-04 SA1	E144	25-Apr-2023	----	----	----		03-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-05 SA2	E144	25-Apr-2023	----	----	----		03-May-2023	----	----	
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-01 SA1	E108A	25-Apr-2023	03-May-2023	----	----		04-May-2023	30 days	10 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-01 SA101	E108A	25-Apr-2023	03-May-2023	----	----		04-May-2023	30 days	10 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-02 SA1	E108A	25-Apr-2023	03-May-2023	----	----		04-May-2023	30 days	10 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-03 SA1	E108A	25-Apr-2023	03-May-2023	----	----		04-May-2023	30 days	10 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-04 SA1	E108A	25-Apr-2023	03-May-2023	----	----		04-May-2023	30 days	10 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-05 SA2	E108A	25-Apr-2023	03-May-2023	----	----		04-May-2023	30 days	10 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polycyclic Aromatic Hydrocarbons : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA101	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-02 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-03 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-04 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-05 SA2	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Semi-Volatile Organics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Semi-Volatile Organics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA101	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Semi-Volatile Organics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH23-02 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Semi-Volatile Organics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-03 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Semi-Volatile Organics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-04 SA1	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Semi-Volatile Organics : BNA (ON 625-511 list) by GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-05 SA2	E655A	25-Apr-2023	03-May-2023	60 days	9 days	✓	04-May-2023	40 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-01 SA1	E532	25-Apr-2023	03-May-2023	30 days	9 days	✓	04-May-2023	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-01 SA101	E532	25-Apr-2023	03-May-2023	30 days	9 days	✓	04-May-2023	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-02 SA1	E532	25-Apr-2023	03-May-2023	30 days	9 days	✓	04-May-2023	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-03 SA1	E532	25-Apr-2023	03-May-2023	30 days	9 days	✓	04-May-2023	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-04 SA1	E532	25-Apr-2023	03-May-2023	30 days	9 days	✓	04-May-2023	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-05 SA2	E532	25-Apr-2023	03-May-2023	30 days	9 days	✓	04-May-2023	7 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH23-02 SA1	E611A	25-Apr-2023	28-Apr-2023	14 days	4 days	✓	30-Apr-2023	40 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH23-03 SA1	E611A	25-Apr-2023	28-Apr-2023	14 days	4 days	✓	30-Apr-2023	40 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH23-04 SA1	E611A	25-Apr-2023	28-Apr-2023	14 days	4 days	✓	30-Apr-2023	40 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH23-05 SA2	E611A	25-Apr-2023	28-Apr-2023	14 days	4 days	✓	30-Apr-2023	40 days	2 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH23-01 SA1	E611D	25-Apr-2023	01-May-2023	14 days	6 days	✓	01-May-2023	40 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH23-01 SA101	E611D	25-Apr-2023	01-May-2023	14 days	6 days	✓	01-May-2023	40 days	0 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
BNA (ON 625-511 list) by GC-MS	E655A	920240	1	19	5.2	5.0	✓
Boron-Hot Water Extractable by ICPOES	E487	918456	1	11	9.0	5.0	✓
BTEX by Headspace GC-MS	E611A	915134	1	19	5.2	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	915135	2	36	5.5	5.0	✓
CCME PHCs - F4G by Gravimetry (Low Level)	E601.F4G-L	923109	0	1	0.0	5.0	×
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	920710	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	918454	1	15	6.6	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	921177	1	20	5.0	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	918453	1	11	9.0	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	918452	1	20	5.0	5.0	✓
Moisture Content by Gravimetry	E144	919994	1	20	5.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	920404	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	918455	1	15	6.6	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	916996	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	920403	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
BNA (ON 625-511 list) by GC-MS	E655A	920240	1	19	5.2	5.0	✓
Boron-Hot Water Extractable by ICPOES	E487	918456	2	11	18.1	10.0	✓
BTEX by Headspace GC-MS	E611A	915134	1	19	5.2	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	915135	2	36	5.5	5.0	✓
CCME PHCs - F4G by Gravimetry (Low Level)	E601.F4G-L	923109	1	1	100.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	920710	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	918454	2	15	13.3	10.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	921177	2	20	10.0	10.0	✓
Mercury in Soil/Solid by CVAAS	E510	918453	2	11	18.1	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	918452	2	20	10.0	10.0	✓
Moisture Content by Gravimetry	E144	919994	1	20	5.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	920404	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	918455	2	15	13.3	10.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	916996	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	920403	1	20	5.0	5.0	✓
Method Blanks (MB)							
BNA (ON 625-511 list) by GC-MS	E655A	920240	1	19	5.2	5.0	✓
Boron-Hot Water Extractable by ICPOES	E487	918456	1	11	9.0	5.0	✓
BTEX by Headspace GC-MS	E611A	915134	1	19	5.2	5.0	✓

Matrix: **Soil/Solid**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
CCME PHC - F1 by Headspace GC-FID	E581.F1	915135	2	36	5.5	5.0	✓
CCME PHCs - F4G by Gravimetry (Low Level)	E601.F4G-L	923109	1	1	100.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	920710	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	918454	1	15	6.6	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	921177	1	20	5.0	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	918453	1	11	9.0	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	918452	1	20	5.0	5.0	✓
Moisture Content by Gravimetry	E144	919994	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	918455	1	15	6.6	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	916996	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	920403	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
BNA (ON 625-511 list) by GC-MS	E655A	920240	1	19	5.2	5.0	✓
BTEX by Headspace GC-MS	E611A	915134	1	19	5.2	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	915135	2	36	5.5	5.0	✓
CCME PHCs - F4G by Gravimetry (Low Level)	E601.F4G-L	923109	0	1	0.0	5.0	×
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	920710	1	20	5.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	916996	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	920403	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L Waterloo - Environmental	Soil/Solid	CSSS Ch. 15 (mod)/APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a soil sample that has been added in a defined ratio of soil to deionized water, then shaken well and allowed to settle. Conductance is measured in the fluid that is observed in the upper layer.
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A Waterloo - Environmental	Soil/Solid	MOEE E3137A	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) and is carried out in accordance with procedures described in the Analytical Protocol (prescriptive method). A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling, or decanting and then analyzed using a pH meter and electrode.
Moisture Content by Gravimetry	E144 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
WAD Cyanide (0.01M NaOH Extraction)	E336A Waterloo - Environmental	Soil/Solid	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined after extraction by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Metals in Soil/Solid by CRC ICPMS	E440 Waterloo - Environmental	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484 Waterloo - Environmental	Soil/Solid	SW846 6010C	A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.
Boron-Hot Water Extractable by ICPOES	E487 Waterloo - Environmental	Soil/Solid	HW EXTR, EPA 6010B	A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Mercury in Soil/Solid by CVAAS	E510 Waterloo - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl, followed by CVAAS analysis.
Hexavalent Chromium (Cr VI) by IC	E532 Waterloo - Environmental	Soil/Solid	APHA 3500-CR C	Instrumental analysis is performed by ion chromatography with UV detection.
CCME PHC - F1 by Headspace GC-FID	E581.F1 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	CCME Fraction 1 (F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
CCME PHCs - F4G by Gravimetry (Low Level)	E601.F4G-L Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	A portion of the silica gel treated sample extract is filtered and dried at 105°C and the mass of the residual gravimetric heavy hydrocarbons (F4G) is determined gravimetrically.
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Sample extracts are subjected to in-situ silica gel treatment prior to analysis by GC-FID for CCME hydrocarbon fractions (F2-F4).
BTEX by Headspace GC-MS	E611A Waterloo - Environmental	Soil/Solid	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
VOCs (Eastern Canada List) by Headspace GC-MS	E611D Waterloo - Environmental	Soil/Solid	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
BNA (ON 625-511 list) by GC-MS	E655A Waterloo - Environmental	Soil/Solid	EPA 8270E (mod)	BNA are analyzed by GC-MS.
F1-BTEX	EC580 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
Sum F1 to F4 (C6-C50)	EC581 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CCME Fractions F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50). F4G-sg is not used within this calculation due to overlap with other fractions.
F2 to F3 minus PAH	EC600 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	F2-PAH = CCME Fraction 2 (C10-C16) minus Naphthalene F3-PAH = CCME Fraction 3 (C16-C34) minus select Polycyclic Aromatic Hydrocarbons (PAH) as per CCME Soil Tier 1

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 Waterloo - Environmental	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Leach 1:2 Soil : 0.01CaCl2 - As Received for pH	EP108A Waterloo - Environmental	Soil/Solid	MOEE E3137A	A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling or decanting and then analyzed using a pH meter and electrode.
Cyanide Extraction for CFA (0.01M NaOH)	EP333A Waterloo - Environmental	Soil/Solid	ON MECP E3015 (mod)	Extraction for various cyanide analysis is by rotary extraction of the soil with 0.01M Sodium Hydroxide.
Digestion for Metals and Mercury	EP440 Waterloo - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available.
Boron-Hot Water Extractable	EP487 Waterloo - Environmental	Soil/Solid	HW EXTR, EPA 6010B	A dried solid sample is extracted with weak calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011)
Preparation of Hexavalent Chromium (Cr VI) for IC	EP532 Waterloo - Environmental	Soil/Solid	EPA 3060A	Field moist samples are digested with a sodium hydroxide/sodium carbonate solution as described in EPA 3060A.
VOCs Methanol Extraction for Headspace Analysis	EP581 Waterloo - Environmental	Soil/Solid	EPA 5035A (mod)	VOCs in samples are extracted with methanol. Extracts are then prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PHCs and PAHs Hexane-Acetone Tumbler Extraction	EP601 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1 (mod)	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.
BNA DCM-Acetone Shaker Extraction	EP655 Waterloo - Environmental	Soil/Solid	EPA 3570 (mod)	Samples are subsampled and BNA are extracted with 1:1 DCM:acetone using a mechanical shakerr.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **WT2310622**	Page	: 1 of 21
Client	: Gemtec Consulting Engineers and Scientists Limited	Laboratory	: Waterloo - Environmental
Contact	: Connor Shaw	Account Manager	: Costas Farassoglou
Address	: 142 Industrial Drive Petawawa ON Canada K8H 2W8	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: 613 225 8279
Project	: 61899.04	Date Samples Received	: 26-Apr-2023 14:45
PO	: ----	Date Analysis Commenced	: 28-Apr-2023
C-O-C number	: ----	Issue Date	: 08-May-2023 10:02
Sampler	: CLIENT ----		
Site	: ----		
Quote number	: SOA - 2022		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Andrea Armstrong	Department Manager - Air Quality and Volatiles	Waterloo VOC, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario
Niral Patel		Waterloo Centralized Prep, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 918454)											
WT2310435-002	Anonymous	Conductivity (1:2 leachate)	----	E100-L	5.00	µS/cm	0.177 mS/cm	172	2.93%	20%	----
Physical Tests (QC Lot: 919994)											
WT2310622-001	BH23-01 SA1	Moisture	----	E144	0.25	%	20.9	20.4	2.54%	20%	----
Physical Tests (QC Lot: 920404)											
WT2310622-001	BH23-01 SA1	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	7.18	7.10	1.12%	5%	----
Cyanides (QC Lot: 920403)											
WT2310622-001	BH23-01 SA1	Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Metals (QC Lot: 918452)											
WT2310510-001	Anonymous	Antimony	7440-36-0	E440	0.10	mg/kg	0.13	0.11	0.02	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	2.97	2.90	2.45%	30%	----
		Barium	7440-39-3	E440	0.50	mg/kg	57.9	56.6	2.26%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.42	0.38	0.04	Diff <2x LOR	----
		Boron	7440-42-8	E440	5.0	mg/kg	7.1	6.7	0.4	Diff <2x LOR	----
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.101	0.102	0.002	Diff <2x LOR	----
		Chromium	7440-47-3	E440	0.50	mg/kg	22.3	20.3	9.31%	30%	----
		Cobalt	7440-48-4	E440	0.10	mg/kg	6.48	6.38	1.60%	30%	----
		Copper	7440-50-8	E440	0.50	mg/kg	16.5	16.2	1.85%	30%	----
		Lead	7439-92-1	E440	0.50	mg/kg	12.0	13.0	8.05%	40%	----
		Molybdenum	7439-98-7	E440	0.10	mg/kg	0.34	0.33	0.01	Diff <2x LOR	----
		Nickel	7440-02-0	E440	0.50	mg/kg	15.3	14.5	4.88%	30%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440	0.050	mg/kg	0.098	0.101	0.003	Diff <2x LOR	----
		Uranium	7440-61-1	E440	0.050	mg/kg	0.421	0.400	5.10%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	28.5	27.0	5.61%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	40.9	42.9	4.84%	30%	----
Metals (QC Lot: 918453)											
WT2310510-001	Anonymous	Mercury	7439-97-6	E510	0.0050	mg/kg	0.0197	0.0202	0.0005	Diff <2x LOR	----
Metals (QC Lot: 918455)											
WT2310435-002	Anonymous	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	5.46	5.30	2.97%	30%	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 918455) - continued											
WT2310435-002	Anonymous	Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L	2.57	2.50	0.07	Diff <2x LOR	----
		Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L	29.6	28.4	4.14%	30%	----
Metals (QC Lot: 918456)											
WT2310510-001	Anonymous	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	0.23	0.24	0.007	Diff <2x LOR	----
Speciated Metals (QC Lot: 921177)											
WT2310622-001	BH23-01 SA1	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	0.33	0.33	0.004	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 915134)											
WT2311058-002	Anonymous	Benzene	71-43-2	E611A	0.0060	mg/kg	<0.0060	<0.0060	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611A	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		Toluene	108-88-3	E611A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 916996)											
WT2310622-001	BH23-01 SA1	Acetone	67-64-1	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	<0.045	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 916996) - continued											
WT2310622-001	BH23-01 SA1	Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		Hexane, n-	110-54-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.040	mg/kg	<0.040	<0.040	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611D	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 915135)											
WT2311058-002	Anonymous	F1 (C6-C10)	----	E581.F1	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 916997)											
WT2310622-001	BH23-01 SA1	F1 (C6-C10)	----	E581.F1	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 920710)											
WT2310694-001	Anonymous	F2 (C10-C16)	----	E601.SG-L	10	mg/kg	<10	<10	0	Diff <2x LOR	----
		F3 (C16-C34)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
		F4 (C34-C50)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 920240)											
WT2310376-001	Anonymous	Acenaphthene	83-32-9	E655A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Acenaphthylene	208-96-8	E655A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Anthracene	120-12-7	E655A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benz(a)anthracene	56-55-3	E655A	0.050	mg/kg	0.075	0.081	0.006	Diff <2x LOR	----
		Benzo(a)pyrene	50-32-8	E655A	0.050	mg/kg	0.052	0.057	0.006	Diff <2x LOR	----
		Benzo(b+j)fluoranthene	n/a	E655A	0.050	mg/kg	0.051	0.061	0.010	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Polycyclic Aromatic Hydrocarbons (QC Lot: 920240) - continued											
WT2310376-001	Anonymous	Benzo(g,h,i)perylene	191-24-2	E655A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(k)fluoranthene	207-08-9	E655A	0.050	mg/kg	0.050	<0.050	0.0002	Diff <2x LOR	----
		Chrysene	218-01-9	E655A	0.050	mg/kg	0.091	0.083	0.009	Diff <2x LOR	----
		Dibenz(a,h)anthracene	53-70-3	E655A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Fluoranthene	206-44-0	E655A	0.050	mg/kg	0.160	0.158	0.001	Diff <2x LOR	----
		Fluorene	86-73-7	E655A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E655A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Methylnaphthalene, 1-	90-12-0	E655A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Methylnaphthalene, 2-	91-57-6	E655A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Naphthalene	91-20-3	E655A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Phenanthrene	85-01-8	E655A	0.050	mg/kg	0.086	0.078	0.009	Diff <2x LOR	----
		Pyrene	129-00-0	E655A	0.050	mg/kg	0.158	0.153	0.005	Diff <2x LOR	----
Phthalate Esters (QC Lot: 920240)											
WT2310376-001	Anonymous	bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655A	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Diethyl phthalate	84-66-2	E655A	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Dimethyl phthalate	131-11-3	E655A	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
Semi-Volatile Organics (QC Lot: 920240)											
WT2310376-001	Anonymous	Biphenyl	92-52-4	E655A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		bis(2-Chloro-1-methylethyl) ether	108-60-1	E655A	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		bis(2-Chloroethyl) ether	111-44-4	E655A	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Chloroaniline, 4-	106-47-8	E655A	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Dichlorobenzidine, 3,3'-	91-94-1	E655A	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Dinitrotoluene, 2,4-	121-14-2	E655A	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Dinitrotoluene, 2,6-	606-20-2	E655A	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Trichlorobenzene, 1,2,4-	120-82-1	E655A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Chlorinated Phenolics (QC Lot: 920240)											
WT2310376-001	Anonymous	Chlorophenol, 2-	95-57-8	E655A	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Dichlorophenol, 2,4-	120-83-2	E655A	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Pentachlorophenol [PCP]	87-86-5	E655A	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Trichlorophenol, 2,4,5-	95-95-4	E655A	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Trichlorophenol, 2,4,6-	88-06-2	E655A	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
Non-Chlorinated Phenolics (QC Lot: 920240)											
WT2310376-001	Anonymous	Dimethylphenol, 2,4-	105-67-9	E655A	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Dinitrophenol, 2,4-	51-28-5	E655A	1.0	mg/kg	<1.0	<1.0	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Non-Chlorinated Phenolics (QC Lot: 920240) - continued											
WT2310376-001	Anonymous	Phenol	108-95-2	E655A	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 918454)						
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	<5.00	----
Physical Tests (QCLot: 919994)						
Moisture	----	E144	0.25	%	<0.25	----
Cyanides (QCLot: 920403)						
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Metals (QCLot: 918452)						
Antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
Arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
Barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
Beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
Boron	7440-42-8	E440	5	mg/kg	<5.0	----
Cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
Chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
Cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
Lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
Nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
Selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
Silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
Thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
Uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----
Vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----
Zinc	7440-66-6	E440	2	mg/kg	<2.0	----
Metals (QCLot: 918453)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 918455)						
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	<0.50	----
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	<0.50	----
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	<0.50	----
Metals (QCLot: 918456)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Speciated Metals (QCLot: 921177)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Volatile Organic Compounds (QCLot: 915134)						
Benzene	71-43-2	E611A	0.005	mg/kg	<0.0050	----
Ethylbenzene	100-41-4	E611A	0.015	mg/kg	<0.015	----
Toluene	108-88-3	E611A	0.05	mg/kg	<0.050	----
Xylene, m+p-	179601-23-1	E611A	0.03	mg/kg	<0.030	----
Xylene, o-	95-47-6	E611A	0.03	mg/kg	<0.030	----
Volatile Organic Compounds (QCLot: 916996)						
Acetone	67-64-1	E611D	0.5	mg/kg	<0.50	----
Benzene	71-43-2	E611D	0.005	mg/kg	<0.0050	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	<0.050	----
Bromoform	75-25-2	E611D	0.05	mg/kg	<0.050	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	<0.050	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	<0.050	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	<0.050	----
Chloroform	67-66-3	E611D	0.05	mg/kg	<0.050	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	<0.050	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	<0.050	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	<0.050	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	<0.050	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	<0.050	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	<0.050	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	<0.030	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	<0.030	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	<0.015	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	<0.050	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	<0.50	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	<0.50	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 916996) - continued						
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	<0.040	----
Styrene	100-42-5	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	<0.050	----
Toluene	108-88-3	E611D	0.05	mg/kg	<0.050	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	<0.050	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	<0.050	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	<0.010	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	<0.050	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	<0.020	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	<0.030	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	<0.030	----
Hydrocarbons (QCLot: 915135)						
F1 (C6-C10)	----	E581.F1	5	mg/kg	<5.0	----
Hydrocarbons (QCLot: 916997)						
F1 (C6-C10)	----	E581.F1	5	mg/kg	<5.0	----
Hydrocarbons (QCLot: 920710)						
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	<10	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	<50	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	<50	----
Hydrocarbons (QCLot: 923109)						
F4G-sg	----	E601.F4G-L	250	mg/kg	<250	----
Polycyclic Aromatic Hydrocarbons (QCLot: 920240)						
Acenaphthene	83-32-9	E655A	0.05	mg/kg	<0.050	----
Acenaphthylene	208-96-8	E655A	0.05	mg/kg	<0.050	----
Anthracene	120-12-7	E655A	0.05	mg/kg	<0.050	----
Benz(a)anthracene	56-55-3	E655A	0.05	mg/kg	<0.050	----
Benzo(a)pyrene	50-32-8	E655A	0.05	mg/kg	<0.050	----
Benzo(b+j)fluoranthene	n/a	E655A	0.05	mg/kg	<0.050	----
Benzo(g,h,i)perylene	191-24-2	E655A	0.05	mg/kg	<0.050	----
Benzo(k)fluoranthene	207-08-9	E655A	0.05	mg/kg	<0.050	----
Chrysene	218-01-9	E655A	0.05	mg/kg	<0.050	----
Dibenz(a,h)anthracene	53-70-3	E655A	0.05	mg/kg	<0.050	----
Fluoranthene	206-44-0	E655A	0.05	mg/kg	<0.050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 920240) - continued						
Fluorene	86-73-7	E655A	0.05	mg/kg	<0.050	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E655A	0.05	mg/kg	<0.050	----
Methylnaphthalene, 1-	90-12-0	E655A	0.03	mg/kg	<0.030	----
Methylnaphthalene, 2-	91-57-6	E655A	0.03	mg/kg	<0.030	----
Naphthalene	91-20-3	E655A	0.05	mg/kg	<0.050	----
Phenanthrene	85-01-8	E655A	0.05	mg/kg	<0.050	----
Pyrene	129-00-0	E655A	0.05	mg/kg	<0.050	----
Phthalate Esters (QCLot: 920240)						
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655A	0.1	mg/kg	<0.10	----
Diethyl phthalate	84-66-2	E655A	0.1	mg/kg	<0.10	----
Dimethyl phthalate	131-11-3	E655A	0.1	mg/kg	<0.10	----
Semi-Volatile Organics (QCLot: 920240)						
Biphenyl	92-52-4	E655A	0.05	mg/kg	<0.050	----
bis(2-Chloro-1-methylethyl) ether	108-60-1	E655A	0.1	mg/kg	<0.10	----
bis(2-Chloroethyl) ether	111-44-4	E655A	0.1	mg/kg	<0.10	----
Chloroaniline, 4-	106-47-8	E655A	0.1	mg/kg	<0.10	----
Dichlorobenzidine, 3,3'-	91-94-1	E655A	0.1	mg/kg	<0.10	----
Dinitrotoluene, 2,4-	121-14-2	E655A	0.1	mg/kg	<0.10	----
Dinitrotoluene, 2,6-	606-20-2	E655A	0.1	mg/kg	<0.10	----
Trichlorobenzene, 1,2,4-	120-82-1	E655A	0.05	mg/kg	<0.050	----
Chlorinated Phenolics (QCLot: 920240)						
Chlorophenol, 2-	95-57-8	E655A	0.1	mg/kg	<0.10	----
Dichlorophenol, 2,4-	120-83-2	E655A	0.1	mg/kg	<0.10	----
Pentachlorophenol [PCP]	87-86-5	E655A	0.1	mg/kg	<0.10	----
Trichlorophenol, 2,4,5-	95-95-4	E655A	0.1	mg/kg	<0.10	----
Trichlorophenol, 2,4,6-	88-06-2	E655A	0.1	mg/kg	<0.10	----
Non-Chlorinated Phenolics (QCLot: 920240)						
Dimethylphenol, 2,4-	105-67-9	E655A	0.1	mg/kg	<0.10	----
Dinitrophenol, 2,4-	51-28-5	E655A	1	mg/kg	<1.0	----
Phenol	108-95-2	E655A	0.1	mg/kg	<0.10	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 918454)									
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	1409 µS/cm	98.6	90.0	110	----
Physical Tests (QCLot: 919994)									
Moisture	----	E144	0.25	%	50 %	100	90.0	110	----
Physical Tests (QCLot: 920404)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	101	98.0	102	----
Cyanides (QCLot: 920403)									
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	2.5 mg/kg	92.5	80.0	120	----
Metals (QCLot: 918452)									
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	103	80.0	120	----
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	105	80.0	120	----
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	102	80.0	120	----
Beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	97.5	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	98.0	80.0	120	----
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	102	80.0	120	----
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	102	80.0	120	----
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	101	80.0	120	----
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	99.5	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	102	80.0	120	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	97.6	80.0	120	----
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	100	80.0	120	----
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	102	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	91.7	80.0	120	----
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	101	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	97.9	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	104	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	97.1	80.0	120	----
Metals (QCLot: 918453)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	104	80.0	120	----
Metals (QCLot: 918455)									
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	105	80.0	120	----
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	50 mg/L	100	80.0	120	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 918455) - continued									
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	50 mg/L	100	80.0	120	----
Metals (QCLot: 918456)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	98.0	70.0	130	----
Speciated Metals (QCLot: 921177)									
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	89.9	80.0	120	----
Volatile Organic Compounds (QCLot: 915134)									
Benzene	71-43-2	E611A	0.005	mg/kg	3.475 mg/kg	102	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.015	mg/kg	3.475 mg/kg	81.1	70.0	130	----
Toluene	108-88-3	E611A	0.05	mg/kg	3.475 mg/kg	86.1	70.0	130	----
Xylene, m+p-	179601-23-1	E611A	0.03	mg/kg	6.95 mg/kg	90.5	70.0	130	----
Xylene, o-	95-47-6	E611A	0.03	mg/kg	3.475 mg/kg	89.0	70.0	130	----
Volatile Organic Compounds (QCLot: 916996)									
Acetone	67-64-1	E611D	0.5	mg/kg	3.475 mg/kg	135	60.0	140	----
Benzene	71-43-2	E611D	0.005	mg/kg	3.475 mg/kg	107	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	3.475 mg/kg	110	50.0	140	----
Bromoform	75-25-2	E611D	0.05	mg/kg	3.475 mg/kg	110	70.0	130	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	3.475 mg/kg	106	50.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	3.475 mg/kg	106	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	3.475 mg/kg	107	70.0	130	----
Chloroform	67-66-3	E611D	0.05	mg/kg	3.475 mg/kg	109	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	3.475 mg/kg	107	60.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	3.475 mg/kg	113	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	3.475 mg/kg	104	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	3.475 mg/kg	102	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	3.475 mg/kg	103	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	3.475 mg/kg	54.1	50.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	3.475 mg/kg	108	60.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	3.475 mg/kg	115	60.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	3.475 mg/kg	95.1	60.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	3.475 mg/kg	109	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	3.475 mg/kg	105	60.0	130	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	3.475 mg/kg	110	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	3.475 mg/kg	110	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	3.475 mg/kg	114	70.0	130	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Volatile Organic Compounds (QCLot: 916996) - continued									
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	3.475 mg/kg	110	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	3.475 mg/kg	101	70.0	130	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	3.475 mg/kg	92.6	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	3.475 mg/kg	134	60.0	140	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	3.475 mg/kg	120	60.0	140	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	3.475 mg/kg	109	70.0	130	----
Styrene	100-42-5	E611D	0.05	mg/kg	3.475 mg/kg	106	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	3.475 mg/kg	108	60.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	3.475 mg/kg	110	60.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	3.475 mg/kg	102	60.0	130	----
Toluene	108-88-3	E611D	0.05	mg/kg	3.475 mg/kg	101	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	3.475 mg/kg	108	60.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	3.475 mg/kg	111	60.0	130	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	3.475 mg/kg	108	60.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	3.475 mg/kg	96.3	50.0	140	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	3.475 mg/kg	87.7	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	6.95 mg/kg	102	70.0	130	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	3.475 mg/kg	102	70.0	130	----
Hydrocarbons (QCLot: 915135)									
F1 (C6-C10)	----	E581.F1	5	mg/kg	69.1875 mg/kg	115	80.0	120	----
Hydrocarbons (QCLot: 916997)									
F1 (C6-C10)	----	E581.F1	5	mg/kg	69.1875 mg/kg	116	80.0	120	----
Hydrocarbons (QCLot: 920710)									
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	821.775 mg/kg	106	70.0	130	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	1151.486 mg/kg	105	70.0	130	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	719.6893 mg/kg	103	70.0	130	----
Hydrocarbons (QCLot: 923109)									
F4G-sg	----	E601.F4G-L	250	mg/kg	1298.6 mg/kg	89.8	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 920240)									
Acenaphthene	83-32-9	E655A	0.05	mg/kg	0.8 mg/kg	92.8	50.0	140	----
Acenaphthylene	208-96-8	E655A	0.05	mg/kg	0.8 mg/kg	86.1	50.0	140	----
Anthracene	120-12-7	E655A	0.05	mg/kg	0.8 mg/kg	91.7	50.0	140	----
Benz(a)anthracene	56-55-3	E655A	0.05	mg/kg	0.8 mg/kg	90.2	50.0	140	----
Benzo(a)pyrene	50-32-8	E655A	0.05	mg/kg	0.8 mg/kg	94.1	50.0	140	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 920240) - continued									
Benzo(b+j)fluoranthene	n/a	E655A	0.05	mg/kg	0.8 mg/kg	97.4	50.0	140	----
Benzo(g,h,i)perylene	191-24-2	E655A	0.05	mg/kg	0.8 mg/kg	77.2	50.0	140	----
Benzo(k)fluoranthene	207-08-9	E655A	0.05	mg/kg	0.8 mg/kg	103	50.0	140	----
Chrysene	218-01-9	E655A	0.05	mg/kg	0.8 mg/kg	98.6	50.0	140	----
Dibenz(a,h)anthracene	53-70-3	E655A	0.05	mg/kg	0.8 mg/kg	76.2	50.0	140	----
Fluoranthene	206-44-0	E655A	0.05	mg/kg	0.8 mg/kg	78.3	50.0	140	----
Fluorene	86-73-7	E655A	0.05	mg/kg	0.8 mg/kg	92.4	50.0	140	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E655A	0.05	mg/kg	0.8 mg/kg	70.2	50.0	140	----
Methylnaphthalene, 1-	90-12-0	E655A	0.03	mg/kg	0.8 mg/kg	90.9	50.0	140	----
Methylnaphthalene, 2-	91-57-6	E655A	0.03	mg/kg	0.8 mg/kg	91.2	50.0	140	----
Naphthalene	91-20-3	E655A	0.05	mg/kg	0.8 mg/kg	92.5	50.0	140	----
Phenanthrene	85-01-8	E655A	0.05	mg/kg	0.8 mg/kg	88.9	50.0	140	----
Pyrene	129-00-0	E655A	0.05	mg/kg	0.8 mg/kg	78.6	50.0	140	----
Phthalate Esters (QCLot: 920240)									
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655A	0.1	mg/kg	3.2 mg/kg	74.4	50.0	140	----
Diethyl phthalate	84-66-2	E655A	0.1	mg/kg	3.2 mg/kg	90.7	50.0	140	----
Dimethyl phthalate	131-11-3	E655A	0.1	mg/kg	3.2 mg/kg	87.5	50.0	140	----
Semi-Volatile Organics (QCLot: 920240)									
Biphenyl	92-52-4	E655A	0.05	mg/kg	0.8 mg/kg	91.7	50.0	140	----
bis(2-Chloro-1-methylethyl) ether	108-60-1	E655A	0.1	mg/kg	0.8 mg/kg	87.0	50.0	140	----
bis(2-Chloroethyl) ether	111-44-4	E655A	0.1	mg/kg	0.8 mg/kg	92.1	50.0	140	----
Chloroaniline, 4-	106-47-8	E655A	0.1	mg/kg	0.8 mg/kg	87.8	50.0	140	----
Dichlorobenzidine, 3,3'-	91-94-1	E655A	0.1	mg/kg	0.8 mg/kg	97.0	50.0	140	----
Dinitrotoluene, 2,4-	121-14-2	E655A	0.1	mg/kg	0.8 mg/kg	93.3	50.0	140	----
Dinitrotoluene, 2,6-	606-20-2	E655A	0.1	mg/kg	0.8 mg/kg	85.4	50.0	140	----
Trichlorobenzene, 1,2,4-	120-82-1	E655A	0.05	mg/kg	0.8 mg/kg	94.9	50.0	140	----
Chlorinated Phenolics (QCLot: 920240)									
Chlorophenol, 2-	95-57-8	E655A	0.1	mg/kg	2.4 mg/kg	96.5	50.0	140	----
Dichlorophenol, 2,4-	120-83-2	E655A	0.1	mg/kg	2.4 mg/kg	92.6	50.0	140	----
Pentachlorophenol [PCP]	87-86-5	E655A	0.1	mg/kg	2.4 mg/kg	88.0	50.0	140	----
Trichlorophenol, 2,4,5-	95-95-4	E655A	0.1	mg/kg	2.4 mg/kg	97.1	50.0	140	----
Trichlorophenol, 2,4,6-	88-06-2	E655A	0.1	mg/kg	2.4 mg/kg	87.0	50.0	140	----
Non-Chlorinated Phenolics (QCLot: 920240)									

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Non-Chlorinated Phenolics (QCLot: 920240) - continued									
Dimethylphenol, 2,4-	105-67-9	E655A	0.1	mg/kg	2.4 mg/kg	94.9	50.0	140	----
Dinitrophenol, 2,4-	51-28-5	E655A	1	mg/kg	2.4 mg/kg	70.0	50.0	140	----
Phenol	108-95-2	E655A	0.1	mg/kg	2.4 mg/kg	109	50.0	140	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Cyanides (QCLot: 920403)										
WT2310622-001	BH23-01 SA1	Cyanide, weak acid dissociable	----	E336A	1.09 mg/kg	2.5 mg/kg	88.1	70.0	130	----
Volatile Organic Compounds (QCLot: 915134)										
WT2311058-002	Anonymous	Benzene	71-43-2	E611A	3.95 mg/kg	3.125 mg/kg	106	60.0	140	----
		Ethylbenzene	100-41-4	E611A	3.09 mg/kg	3.125 mg/kg	82.9	60.0	140	----
		Toluene	108-88-3	E611A	3.24 mg/kg	3.125 mg/kg	87.0	60.0	140	----
		Xylene, m+p-	179601-23-1	E611A	6.91 mg/kg	6.25 mg/kg	92.6	60.0	140	----
		Xylene, o-	95-47-6	E611A	3.40 mg/kg	3.125 mg/kg	91.2	60.0	140	----
Volatile Organic Compounds (QCLot: 916996)										
WT2310622-001	BH23-01 SA1	Acetone	67-64-1	E611D	3.52 mg/kg	3.125 mg/kg	126	50.0	140	----
		Benzene	71-43-2	E611D	2.79 mg/kg	3.125 mg/kg	100	50.0	140	----
		Bromodichloromethane	75-27-4	E611D	2.88 mg/kg	3.125 mg/kg	103	50.0	140	----
		Bromoform	75-25-2	E611D	2.93 mg/kg	3.125 mg/kg	105	50.0	140	----
		Bromomethane	74-83-9	E611D	3.15 mg/kg	3.125 mg/kg	113	50.0	140	----
		Carbon tetrachloride	56-23-5	E611D	2.76 mg/kg	3.125 mg/kg	99.4	50.0	140	----
		Chlorobenzene	108-90-7	E611D	2.77 mg/kg	3.125 mg/kg	99.5	50.0	140	----
		Chloroform	67-66-3	E611D	2.85 mg/kg	3.125 mg/kg	102	50.0	140	----
		Dibromochloromethane	124-48-1	E611D	2.84 mg/kg	3.125 mg/kg	102	50.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	3.00 mg/kg	3.125 mg/kg	108	50.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	2.72 mg/kg	3.125 mg/kg	97.8	50.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	2.67 mg/kg	3.125 mg/kg	95.9	50.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	2.67 mg/kg	3.125 mg/kg	96.1	50.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	2.92 mg/kg	3.125 mg/kg	105	50.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	2.94 mg/kg	3.125 mg/kg	106	50.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	3.07 mg/kg	3.125 mg/kg	110	50.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	2.59 mg/kg	3.125 mg/kg	93.1	50.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	2.84 mg/kg	3.125 mg/kg	102	50.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	2.74 mg/kg	3.125 mg/kg	98.6	50.0	140	----
		Dichloromethane	75-09-2	E611D	2.94 mg/kg	3.125 mg/kg	106	50.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	2.88 mg/kg	3.125 mg/kg	104	50.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	3.01 mg/kg	3.125 mg/kg	108	50.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	2.94 mg/kg	3.125 mg/kg	106	50.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 916996) - continued										
WT2310622-001	BH23-01 SA1	Ethylbenzene	100-41-4	E611D	2.59 mg/kg	3.125 mg/kg	93.2	50.0	140	----
		Hexane, n-	110-54-3	E611D	2.72 mg/kg	3.125 mg/kg	97.7	50.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	3.51 mg/kg	3.125 mg/kg	126	50.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	3.15 mg/kg	3.125 mg/kg	113	50.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	2.90 mg/kg	3.125 mg/kg	104	50.0	140	----
		Styrene	100-42-5	E611D	2.75 mg/kg	3.125 mg/kg	99.0	50.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	2.79 mg/kg	3.125 mg/kg	100	50.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	2.87 mg/kg	3.125 mg/kg	103	50.0	140	----
		Tetrachloroethylene	127-18-4	E611D	2.65 mg/kg	3.125 mg/kg	95.3	50.0	140	----
		Toluene	108-88-3	E611D	2.62 mg/kg	3.125 mg/kg	94.2	50.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	2.82 mg/kg	3.125 mg/kg	101	50.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	2.95 mg/kg	3.125 mg/kg	106	50.0	140	----
		Trichloroethylene	79-01-6	E611D	2.79 mg/kg	3.125 mg/kg	100	50.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	2.77 mg/kg	3.125 mg/kg	99.6	50.0	140	----
		Vinyl chloride	75-01-4	E611D	2.80 mg/kg	3.125 mg/kg	100	50.0	140	----
		Xylene, m+p-	179601-23-1	E611D	5.26 mg/kg	6.25 mg/kg	94.4	50.0	140	----
		Xylene, o-	95-47-6	E611D	2.64 mg/kg	3.125 mg/kg	95.1	50.0	140	----
Hydrocarbons (QCLot: 915135)										
WT2311058-002	Anonymous	F1 (C6-C10)	----	E581.F1	71.1 mg/kg	62.5 mg/kg	95.4	60.0	140	----
Hydrocarbons (QCLot: 916997)										
WT2310622-001	BH23-01 SA1	F1 (C6-C10)	----	E581.F1	45.6 mg/kg	62.5 mg/kg	82.0	60.0	140	----
Hydrocarbons (QCLot: 920710)										
WT2310694-001	Anonymous	F2 (C10-C16)	----	E601.SG-L	757 mg/kg	821.775 mg/kg	114	60.0	140	----
		F3 (C16-C34)	----	E601.SG-L	969 mg/kg	1151.486 mg/kg	104	60.0	140	----
		F4 (C34-C50)	----	E601.SG-L	623 mg/kg	719.6893 mg/kg	107	60.0	140	----
Polycyclic Aromatic Hydrocarbons (QCLot: 920240)										
WT2310376-001	Anonymous	Acenaphthene	83-32-9	E655A	0.672 mg/kg	0.8 mg/kg	85.0	50.0	140	----
		Acenaphthylene	208-96-8	E655A	0.636 mg/kg	0.8 mg/kg	80.5	50.0	140	----
		Anthracene	120-12-7	E655A	0.681 mg/kg	0.8 mg/kg	86.1	50.0	140	----
		Benz(a)anthracene	56-55-3	E655A	0.734 mg/kg	0.8 mg/kg	92.8	50.0	140	----
		Benzo(a)pyrene	50-32-8	E655A	0.720 mg/kg	0.8 mg/kg	91.1	50.0	140	----
		Benzo(b+j)fluoranthene	n/a	E655A	0.730 mg/kg	0.8 mg/kg	92.3	50.0	140	----
		Benzo(g,h,i)perylene	191-24-2	E655A	0.542 mg/kg	0.8 mg/kg	68.6	50.0	140	----
		Benzo(k)fluoranthene	207-08-9	E655A	0.701 mg/kg	0.8 mg/kg	88.6	50.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 920240) - continued										
WT2310376-001	Anonymous	Chrysene	218-01-9	E655A	0.675 mg/kg	0.8 mg/kg	85.3	50.0	140	----
		Dibenz(a,h)anthracene	53-70-3	E655A	0.565 mg/kg	0.8 mg/kg	71.4	50.0	140	----
		Fluoranthene	206-44-0	E655A	0.588 mg/kg	0.8 mg/kg	74.3	50.0	140	----
		Fluorene	86-73-7	E655A	0.663 mg/kg	0.8 mg/kg	83.8	50.0	140	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E655A	0.564 mg/kg	0.8 mg/kg	71.3	50.0	140	----
		Methylnaphthalene, 1-	90-12-0	E655A	0.644 mg/kg	0.8 mg/kg	81.4	50.0	140	----
		Methylnaphthalene, 2-	91-57-6	E655A	0.665 mg/kg	0.8 mg/kg	84.1	50.0	140	----
		Naphthalene	91-20-3	E655A	0.680 mg/kg	0.8 mg/kg	86.0	50.0	140	----
		Phenanthrene	85-01-8	E655A	0.633 mg/kg	0.8 mg/kg	80.0	50.0	140	----
		Pyrene	129-00-0	E655A	0.582 mg/kg	0.8 mg/kg	73.6	50.0	140	----
Phthalate Esters (QCLot: 920240)										
WT2310376-001	Anonymous	bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655A	2.41 mg/kg	3.2 mg/kg	76.2	50.0	140	----
		Diethyl phthalate	84-66-2	E655A	2.65 mg/kg	3.2 mg/kg	83.8	50.0	140	----
		Dimethyl phthalate	131-11-3	E655A	2.56 mg/kg	3.2 mg/kg	81.0	50.0	140	----
Semi-Volatile Organics (QCLot: 920240)										
WT2310376-001	Anonymous	Biphenyl	92-52-4	E655A	0.672 mg/kg	0.8 mg/kg	85.0	50.0	140	----
		bis(2-Chloro-1-methylethyl) ether	108-60-1	E655A	0.64 mg/kg	0.8 mg/kg	80.7	50.0	140	----
		bis(2-Chloroethyl) ether	111-44-4	E655A	0.70 mg/kg	0.8 mg/kg	88.1	50.0	140	----
		Chloroaniline, 4-	106-47-8	E655A	0.57 mg/kg	0.8 mg/kg	72.1	50.0	140	----
		Dichlorobenzidine, 3,3'-	91-94-1	E655A	0.76 mg/kg	0.8 mg/kg	96.7	50.0	140	----
		Dinitrotoluene, 2,4-	121-14-2	E655A	0.66 mg/kg	0.8 mg/kg	83.3	50.0	140	----
		Dinitrotoluene, 2,6-	606-20-2	E655A	0.65 mg/kg	0.8 mg/kg	82.2	50.0	140	----
		Trichlorobenzene, 1,2,4-	120-82-1	E655A	0.698 mg/kg	0.8 mg/kg	88.3	50.0	140	----
Chlorinated Phenolics (QCLot: 920240)										
WT2310376-001	Anonymous	Chlorophenol, 2-	95-57-8	E655A	2.14 mg/kg	2.4 mg/kg	90.0	50.0	140	----
		Dichlorophenol, 2,4-	120-83-2	E655A	1.98 mg/kg	2.4 mg/kg	83.7	50.0	140	----
		Pentachlorophenol [PCP]	87-86-5	E655A	2.00 mg/kg	2.4 mg/kg	84.5	50.0	140	----
		Trichlorophenol, 2,4,5-	95-95-4	E655A	2.19 mg/kg	2.4 mg/kg	92.4	50.0	140	----
		Trichlorophenol, 2,4,6-	88-06-2	E655A	1.94 mg/kg	2.4 mg/kg	81.8	50.0	140	----
Non-Chlorinated Phenolics (QCLot: 920240)										
WT2310376-001	Anonymous	Dimethylphenol, 2,4-	105-67-9	E655A	2.08 mg/kg	2.4 mg/kg	87.5	50.0	140	----
		Dinitrophenol, 2,4-	51-28-5	E655A	1.3 mg/kg	2.4 mg/kg	53.3	50.0	140	----
		Phenol	108-95-2	E655A	2.50 mg/kg	2.4 mg/kg	105	50.0	140	----

Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:

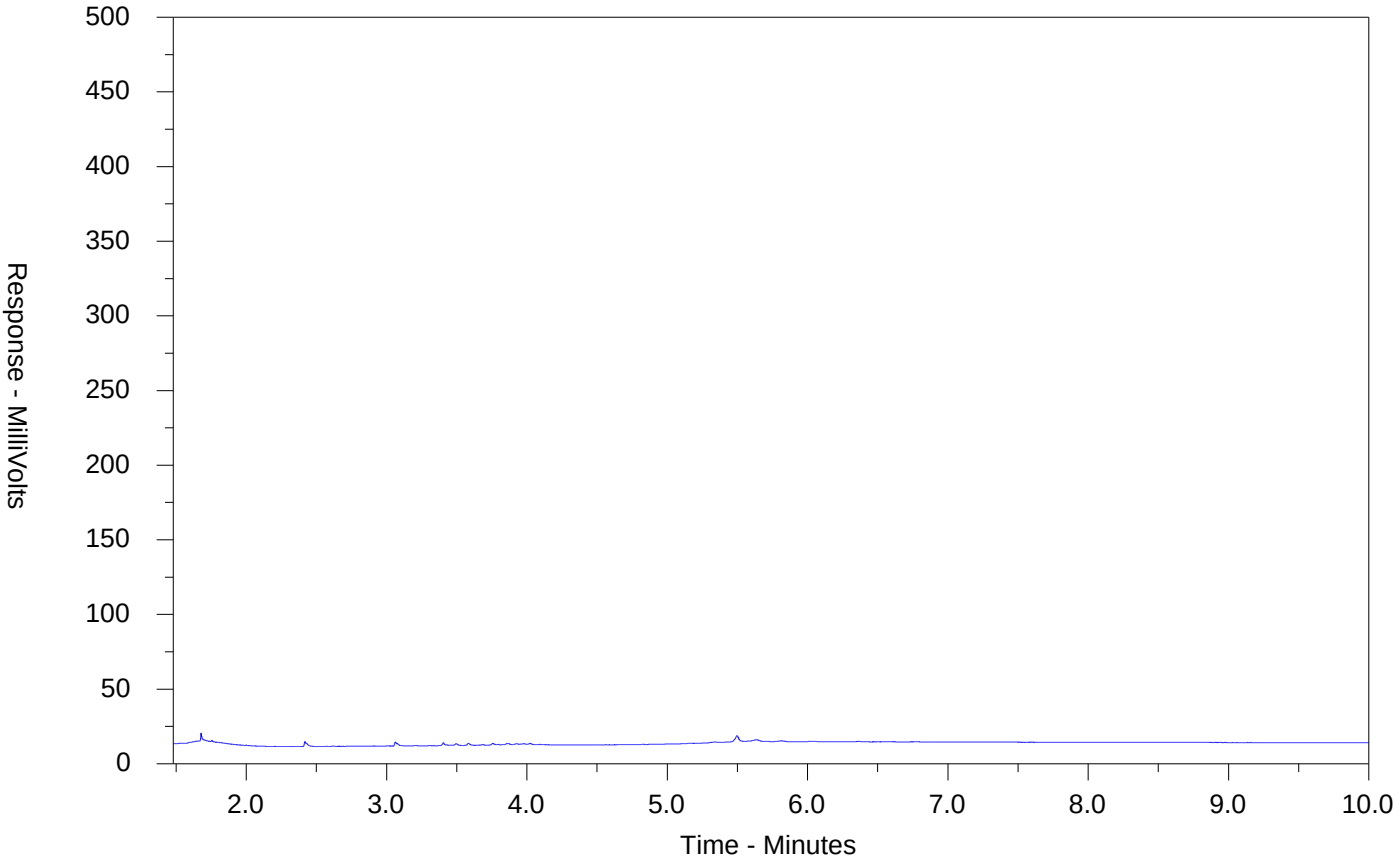
					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Physical Tests (QCLot: 918454)									
	RM	Conductivity (1:2 leachate)	----	E100-L	1875.8 µS/cm	100	70.0	130	----
Metals (QCLot: 918452)									
	RM	Antimony	7440-36-0	E440	3.99 mg/kg	114	70.0	130	----
	RM	Arsenic	7440-38-2	E440	3.73 mg/kg	108	70.0	130	----
	RM	Barium	7440-39-3	E440	105 mg/kg	120	70.0	130	----
	RM	Beryllium	7440-41-7	E440	0.349 mg/kg	123	70.0	130	----
	RM	Boron	7440-42-8	E440	8.5 mg/kg	132	40.0	160	----
	RM	Cadmium	7440-43-9	E440	0.91 mg/kg	103	70.0	130	----
	RM	Chromium	7440-47-3	E440	101 mg/kg	122	70.0	130	----
	RM	Cobalt	7440-48-4	E440	6.9 mg/kg	114	70.0	130	----
	RM	Copper	7440-50-8	E440	123 mg/kg	112	70.0	130	----
	RM	Lead	7439-92-1	E440	267 mg/kg	109	70.0	130	----
	RM	Molybdenum	7439-98-7	E440	1.03 mg/kg	115	70.0	130	----
	RM	Nickel	7440-02-0	E440	26.7 mg/kg	113	70.0	130	----
	RM	Silver	7440-22-4	E440	4.06 mg/kg	108	70.0	130	----
	RM	Thallium	7440-28-0	E440	0.0786 mg/kg	110	40.0	160	----
	RM	Uranium	7440-61-1	E440	0.52 mg/kg	110	70.0	130	----
	RM	Vanadium	7440-62-2	E440	32.7 mg/kg	118	70.0	130	----
	RM	Zinc	7440-66-6	E440	297 mg/kg	108	70.0	130	----
Metals (QCLot: 918453)									
	RM	Mercury	7439-97-6	E510	0.0585 mg/kg	122	70.0	130	----
Metals (QCLot: 918455)									
	RM	Calcium, soluble ion content	7440-70-2	E484	59.13 mg/L	104	70.0	130	----
	RM	Magnesium, soluble ion content	7439-95-4	E484	19.66 mg/L	105	70.0	130	----
	RM	Sodium, soluble ion content	17341-25-2	E484	87.34 mg/L	103	70.0	130	----
Metals (QCLot: 918456)									
	RM	Boron, hot water soluble	7440-42-8	E487	1.84 mg/kg	115	60.0	140	----
Speciated Metals (QCLot: 921177)									

Sub-Matrix:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Speciated Metals (QCLot: 921177) - continued									
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	98.8	70.0	130	----

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2310622-001-E601.SG-L
Client Sample ID: BH23-01 SA1



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →	← Motor Oils/Lube Oils/Grease →		
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

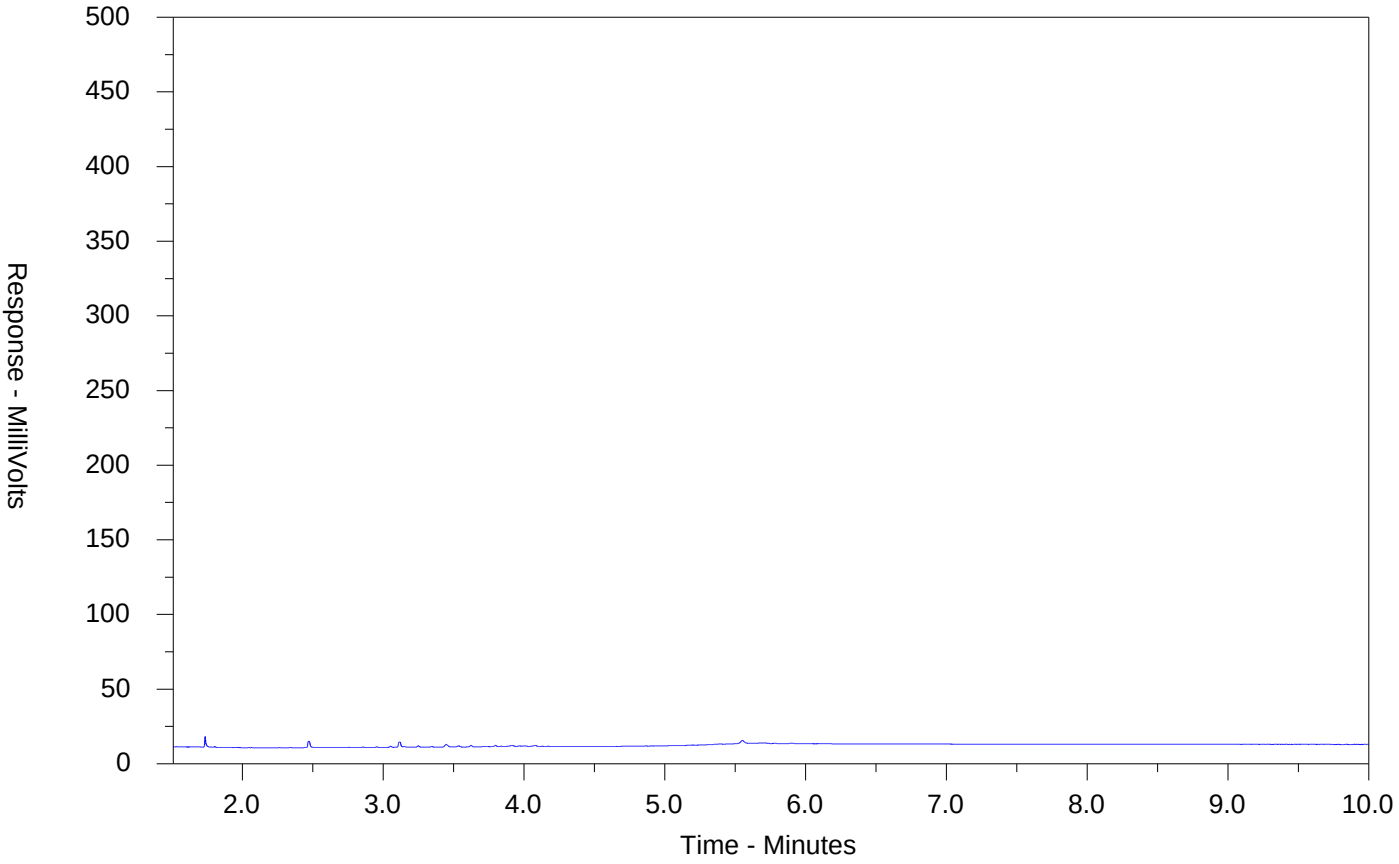
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2310622-002-E601.SG-L
Client Sample ID: BH23-01 SA101



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →	← Motor Oils/Lube Oils/Grease →		
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

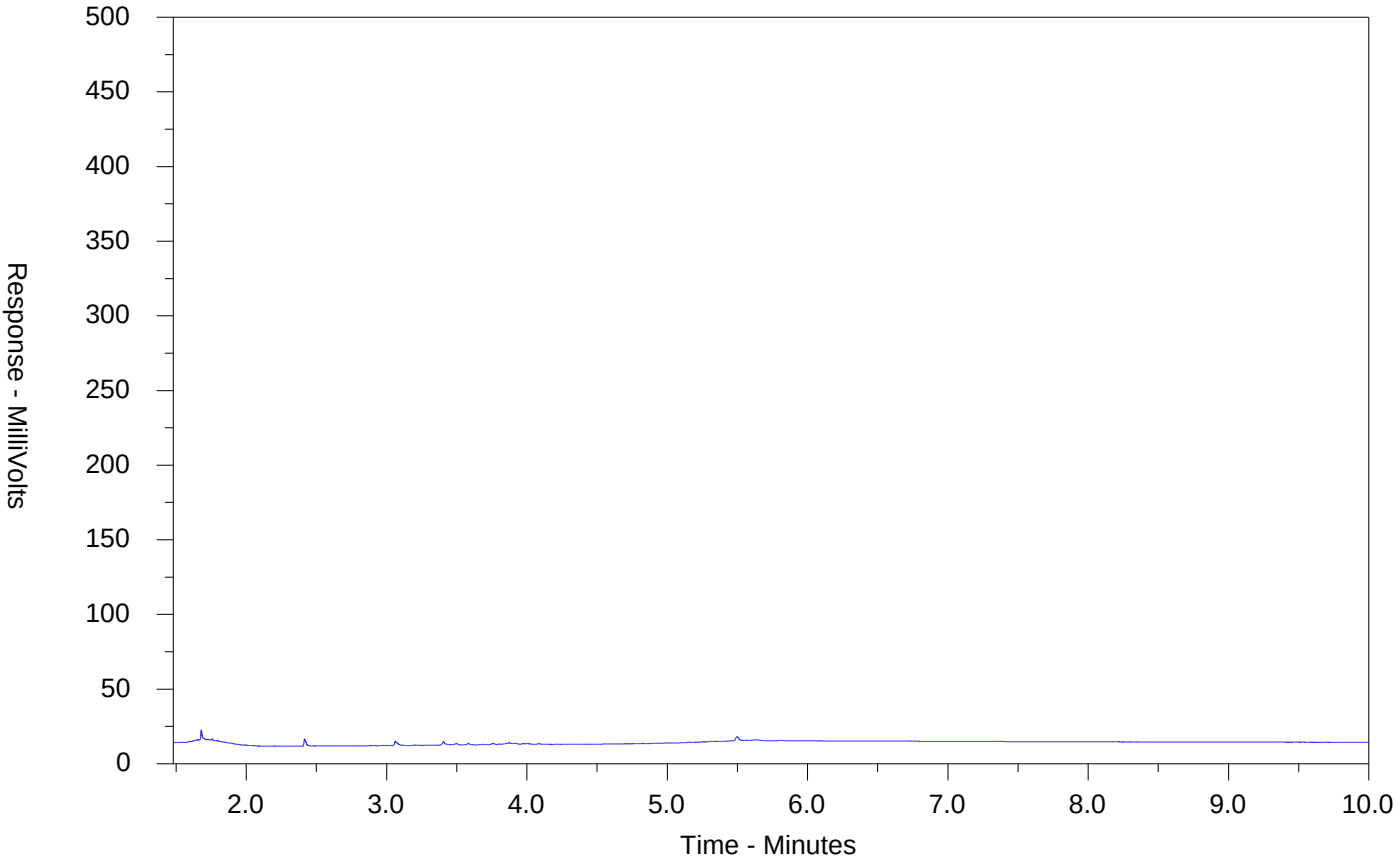
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2310622-003-E601.SG-L
Client Sample ID: BH23-02 SA1



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →	← Motor Oils/Lube Oils/Grease →		
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

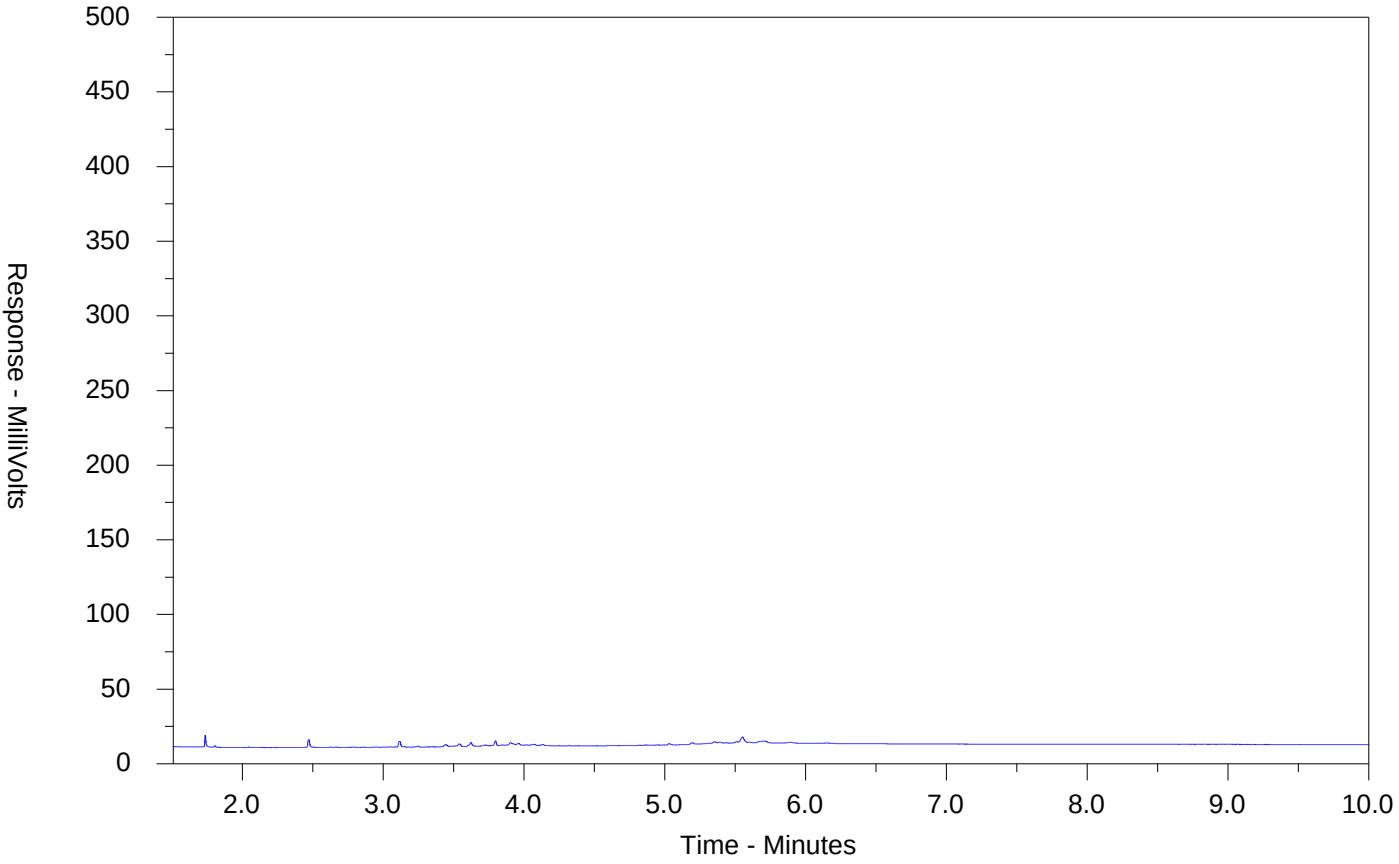
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2310622-004-E601.SG-L
Client Sample ID: BH23-03 SA1



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →	← Motor Oils/Lube Oils/Grease →		
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

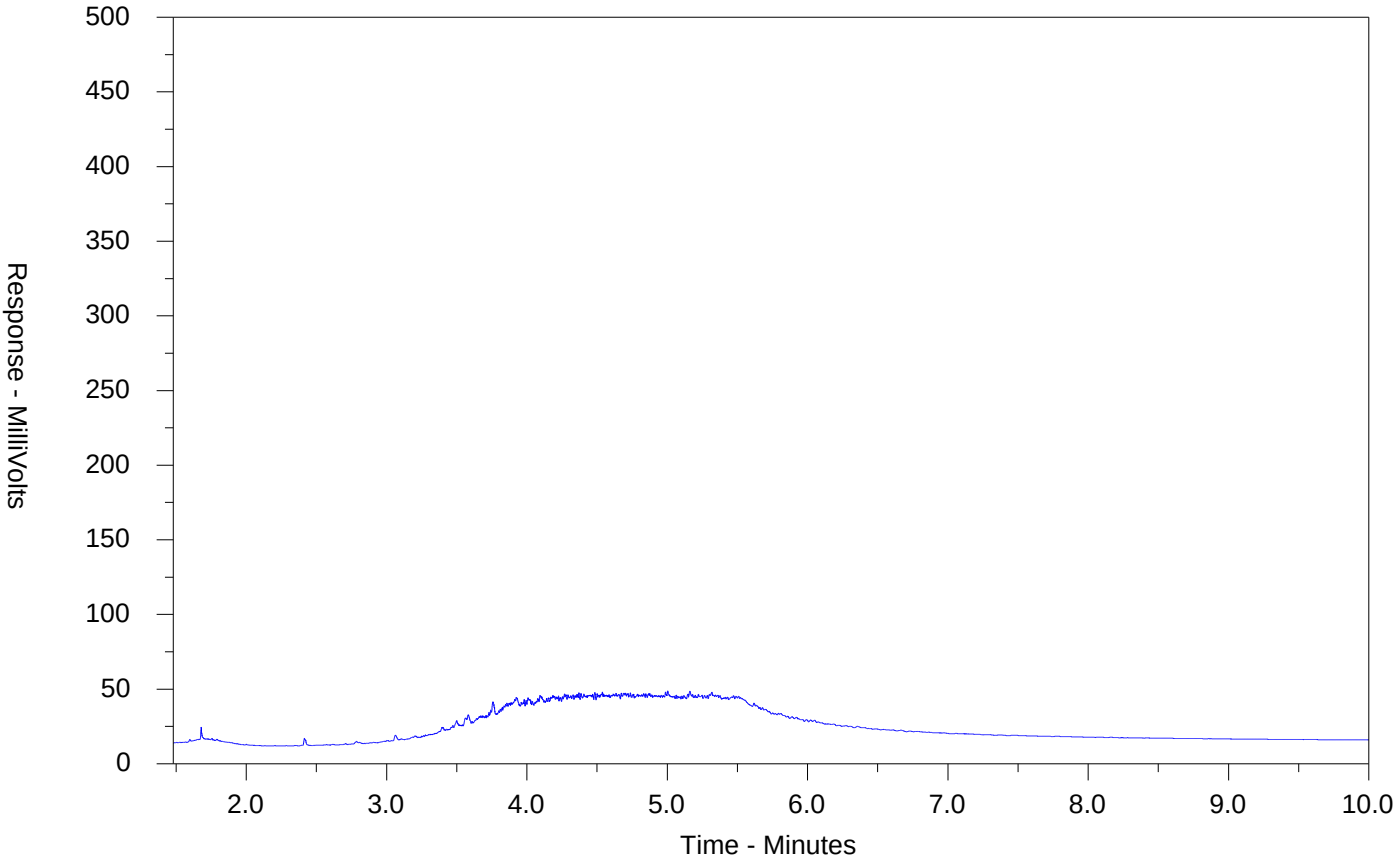
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2310622-005-E601.SG-L
Client Sample ID: BH23-04 SA1



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →	← Motor Oils/Lube Oils/Grease →		
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

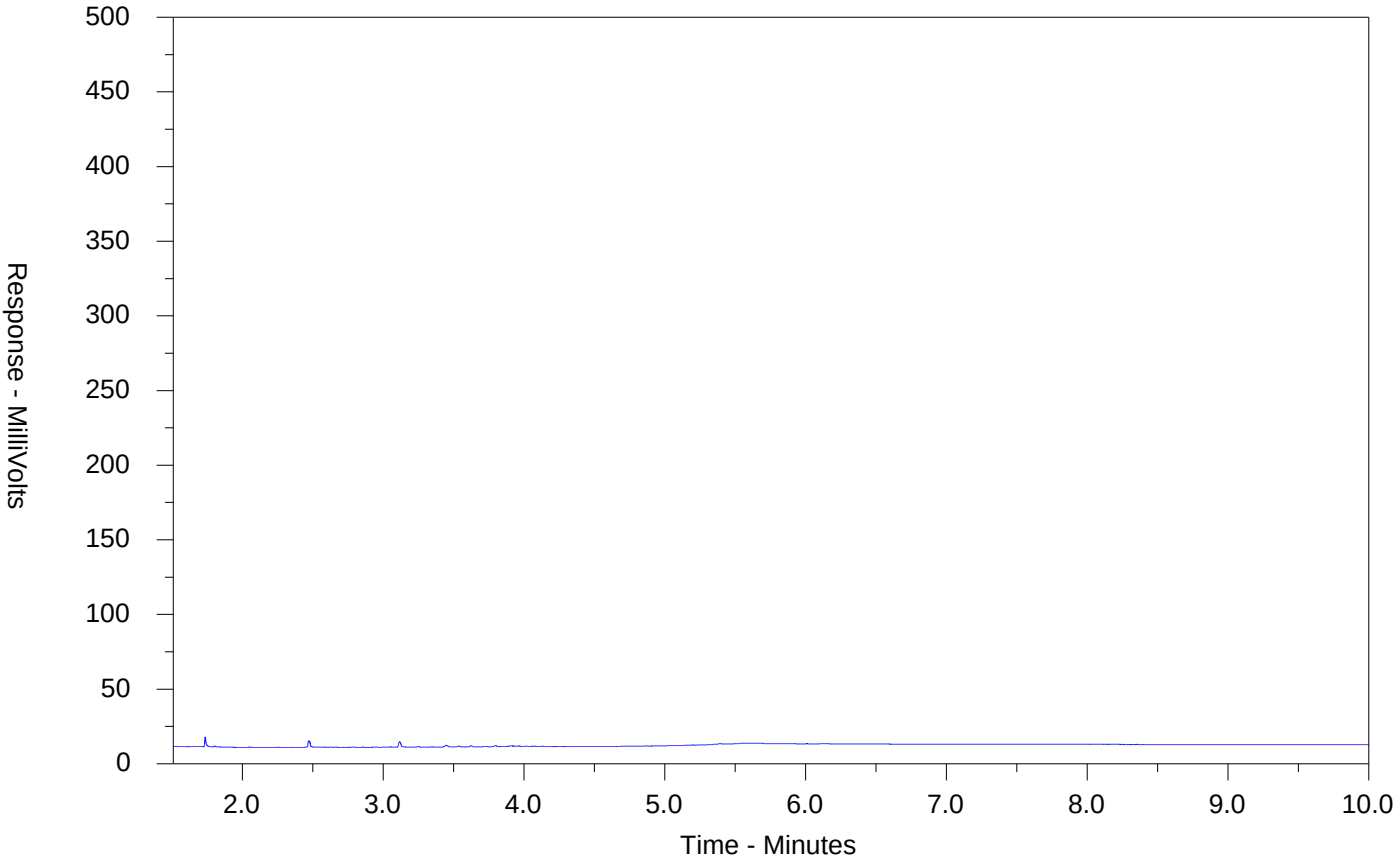
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2310622-006-E601.SG-L
Client Sample ID: BH23-05 SA2



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →	← Motor Oils/Lube Oils/Grease →		
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page of

Environmental Division Waterloo

Work Order Reference WT2310622

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	Gemtec Consulting Engineers - GESL100
Contact:	Connor Shaw
Phone:	613-585-3626
	Company address below will appear on the final report
Street:	142 Industrial Ave.
City/Province:	Petawawa,ON
Postal Code:	613-585-3626
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL MAIL ☐ FAX

Email 1 or Fax connor.shaw@gemtec.ca

Email 2

Email 3

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL MAIL ☐ FAX

Email 1 or Fax connor.shaw@gemtec.ca

Email 2 accountspayable@gemtec.ca

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minim

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minir

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minir

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minir

☐ Same day [E2] if received by 10am M-S - 200% rush surcharg

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

Project Information

ALS Account # / Quote #:	GESL100/WT2022GESL1000001
Job #:	61899.04
PO / AFE:	
LSD:	
ALS Lab Work Order # (ALS use only):	WT2310622

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact: Costas Farassoglou	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Metals & Inorganics	PAH	PHC F1-F4	BTEX	OC Pesticides	VOCs	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	BH 23-01 SA1	25-Apr-23		SOIL	4	✓	✓	✓			✓			
	BH 23-01 SA101	"		SOIL	4	✓	✓	✓			✓			
	BH 23-02 SA1	"		SOIL	4	✓	✓	✓	✓					
	BH 23-03 SA1	"		SOIL	4	✓	✓	✓	✓					
	BH 23-04 SA1	"		SOIL	4	✓	✓	✓	✓					
	BH 23-05 SA2	"		SOIL	4	✓	✓	✓	✓					
				SOIL	4									
				SOIL	4									
				SOIL	4									
				SOIL	4									
				SOIL	4									
				SOIL	4									

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Tabel 1

O.Reg. 153/04 ~~Table 2 RPI~~

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☑ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: YES NO

Cooler Custody Seals Intact: YES N/A Sample Custody Seals Intact: YES N/A

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
12.4				5.2	

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
	25-Apr-23	

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
	4/25/23	2:45

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
	04/26/23	9:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

VS17, SOL891

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **WT2308433**	Page	: 1 of 8
Client	: **Gemtec Consulting Engineers and Scientists Limited**	Laboratory	: Waterloo - Environmental
Contact	: Connor Shaw	Account Manager	: Costas Farassoglou
Address	: 142 Industrial Drive Petawawa ON Canada K8H 2W8	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: ----	Telephone	: 613 225 8279
Project	: 61899.04	Date Samples Received	: 04-Apr-2023 13:25
PO	: ----	Date Analysis Commenced	: 11-Apr-2023
C-O-C number	: ----	Issue Date	: 13-Apr-2023 21:16
Sampler	: ----		
Site	: ----		
Quote number	: SOA - 2022		
No. of samples received	: 12		
No. of samples analysed	: 12		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Amanda Ganouri-Lumsden	Department Manager - Microbiology and Prep	Centralized Prep, Waterloo, Ontario
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Jon Fisher	Production Manager, Environmental	Metals, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: Soil/Solid
(Matrix: Soil/Solid)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	GS 23-01	GS 23-101	GS 23-02	GS 23-03	GS 23-04
					Client sampling date / time	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023
						WT2308433-001	WT2308433-002	WT2308433-003	WT2308433-004	WT2308433-005
						Result	Result	Result	Result	Result
Physical Tests										
Moisture	----	E144	0.25	%		21.1	22.2	23.3	24.8	22.8
Metals										
Antimony	7440-36-0	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic	7440-38-2	E440	0.10	mg/kg		4.00	3.99	4.16	3.36	3.04
Barium	7440-39-3	E440	0.50	mg/kg		155	148	162	113	130
Beryllium	7440-41-7	E440	0.10	mg/kg		0.78	0.77	0.82	0.71	0.68
Boron	7440-42-8	E440	5.0	mg/kg		9.3	9.0	7.7	6.9	6.6
Cadmium	7440-43-9	E440	0.020	mg/kg		0.132	0.141	0.147	0.142	0.139
Chromium	7440-47-3	E440	0.50	mg/kg		38.8	38.3	40.6	34.1	33.4
Cobalt	7440-48-4	E440	0.10	mg/kg		11.8	11.7	12.3	10.0	8.19
Copper	7440-50-8	E440	0.50	mg/kg		18.2	18.1	17.5	14.8	13.3
Lead	7439-92-1	E440	0.50	mg/kg		9.69	9.67	10.5	11.4	9.86
Molybdenum	7439-98-7	E440	0.10	mg/kg		0.58	0.65	0.57	0.55	0.43
Nickel	7440-02-0	E440	0.50	mg/kg		22.3	22.5	21.9	17.4	16.8
Selenium	7782-49-2	E440	0.20	mg/kg		<0.20	0.21	0.21	0.22	<0.20
Silver	7440-22-4	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
Thallium	7440-28-0	E440	0.050	mg/kg		0.201	0.192	0.200	0.165	0.162
Uranium	7440-61-1	E440	0.050	mg/kg		0.746	0.710	0.838	0.939	0.956
Vanadium	7440-62-2	E440	0.20	mg/kg		59.1	58.2	60.1	52.6	48.7
Zinc	7440-66-6	E440	2.0	mg/kg		69.8	70.9	74.7	66.0	66.7
Organochlorine Pesticides										
Aldrin	309-00-2	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane, cis- (alpha)	5103-71-9	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane, total	57-74-9	E660F	0.030	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030
Chlordane, trans- (gamma)	5103-74-2	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
DDD, 2,4'-	53-19-0	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
DDD, 4,4'-	72-54-8	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
DDD, total	----	E660F	0.030	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030
DDE, 2,4'-	3424-82-6	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
DDE, 4,4'-	72-55-9	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020

Analytical Results

Sub-Matrix: **Soil/Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	GS 23-01	GS 23-101	GS 23-02	GS 23-03	GS 23-04
					Client sampling date / time	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023
						WT2308433-001	WT2308433-002	WT2308433-003	WT2308433-004	WT2308433-005
						Result	Result	Result	Result	Result
Organochlorine Pesticides										
DDE, total	----	E660F	0.030	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030
DDT, 2,4'-	789-02-6	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
DDT, 4,4'-	50-29-3	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
DDT, total	----	E660F	0.030	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030
Dieldrin	60-57-1	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan, alpha-	959-98-8	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan, beta-	33213-65-9	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan, total	----	E660F	0.030	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030
Endrin	72-20-8	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor	76-44-8	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor epoxide	1024-57-3	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene	118-74-1	E660F	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	87-68-3	E660F	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	67-72-1	E660F	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	72-43-5	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Organochlorine Pesticides Surrogates										
Decachlorobiphenyl	2051-24-3	E660F	0.1	%		127	120	116	93.5	104
Tetrachloro-m-xylene	877-09-8	E660F	0.1	%		95.2	80.1	84.8	84.8	82.9

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: Soil/Solid
(Matrix: Soil/Solid)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	GS 23-05	GS 23-06	GS 23-07	GS 23-08	GS 23-09
					Client sampling date / time	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023
						WT2308433-006	WT2308433-007	WT2308433-008	WT2308433-009	WT2308433-010
						Result	Result	Result	Result	Result
Physical Tests										
Moisture	----	E144	0.25	%		24.1	28.3	30.0	30.6	35.6
Metals										
Antimony	7440-36-0	E440	0.10	mg/kg		0.11	<0.10	<0.10	<0.10	<0.10
Arsenic	7440-38-2	E440	0.10	mg/kg		4.59	4.52	3.11	3.43	3.53
Barium	7440-39-3	E440	0.50	mg/kg		191	174	105	129	120
Beryllium	7440-41-7	E440	0.10	mg/kg		1.04	0.97	0.59	0.66	0.65
Boron	7440-42-8	E440	5.0	mg/kg		10.8	10.3	8.1	7.2	9.4
Cadmium	7440-43-9	E440	0.020	mg/kg		0.212	0.249	0.209	0.203	0.240
Chromium	7440-47-3	E440	0.50	mg/kg		48.5	45.0	30.0	34.8	34.6
Cobalt	7440-48-4	E440	0.10	mg/kg		14.3	14.1	7.50	10.5	9.00
Copper	7440-50-8	E440	0.50	mg/kg		21.7	21.5	15.6	17.6	18.3
Lead	7439-92-1	E440	0.50	mg/kg		12.3	11.8	8.60	9.43	9.65
Molybdenum	7439-98-7	E440	0.10	mg/kg		0.68	0.60	0.40	0.46	0.45
Nickel	7440-02-0	E440	0.50	mg/kg		26.6	25.8	15.7	19.5	17.9
Selenium	7782-49-2	E440	0.20	mg/kg		0.26	0.23	0.25	0.22	0.33
Silver	7440-22-4	E440	0.10	mg/kg		0.11	0.11	0.11	<0.10	0.12
Thallium	7440-28-0	E440	0.050	mg/kg		0.259	0.243	0.143	0.177	0.163
Uranium	7440-61-1	E440	0.050	mg/kg		1.08	1.04	1.11	1.02	1.34
Vanadium	7440-62-2	E440	0.20	mg/kg		69.7	66.0	47.1	51.1	53.2
Zinc	7440-66-6	E440	2.0	mg/kg		91.2	89.2	67.2	73.9	75.4
Organochlorine Pesticides										
Aldrin	309-00-2	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane, cis- (alpha)	5103-71-9	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane, total	57-74-9	E660F	0.030	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030
Chlordane, trans- (gamma)	5103-74-2	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
DDD, 2,4'-	53-19-0	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
DDD, 4,4'-	72-54-8	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
DDD, total	----	E660F	0.030	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030
DDE, 2,4'-	3424-82-6	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
DDE, 4,4'-	72-55-9	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020

Analytical Results

Sub-Matrix: **Soil/Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	GS 23-05	GS 23-06	GS 23-07	GS 23-08	GS 23-09
					Client sampling date / time	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023
						WT2308433-006	WT2308433-007	WT2308433-008	WT2308433-009	WT2308433-010
						Result	Result	Result	Result	Result
Organochlorine Pesticides										
DDE, total	----	E660F	0.030	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030
DDT, 2,4'-	789-02-6	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
DDT, 4,4'-	50-29-3	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
DDT, total	----	E660F	0.030	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030
Dieldrin	60-57-1	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan, alpha-	959-98-8	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan, beta-	33213-65-9	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan, total	----	E660F	0.030	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030
Endrin	72-20-8	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor	76-44-8	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor epoxide	1024-57-3	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene	118-74-1	E660F	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	87-68-3	E660F	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	67-72-1	E660F	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	72-43-5	E660F	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
Organochlorine Pesticides Surrogates										
Decachlorobiphenyl	2051-24-3	E660F	0.1	%		87.1	112	109	111	104
Tetrachloro-m-xylene	877-09-8	E660F	0.1	%		102	89.2	82.4	85.3	96.8

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: Soil/Solid
(Matrix: Soil/Solid)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	GS 23-10	GS 23-11	----	----	----
					Client sampling date / time	04-Apr-2023	04-Apr-2023	----	----	----
						WT2308433-011	WT2308433-012	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
Moisture	----	E144	0.25	%		25.8	29.4	----	----	----
Metals										
Antimony	7440-36-0	E440	0.10	mg/kg		<0.10	<0.10	----	----	----
Arsenic	7440-38-2	E440	0.10	mg/kg		3.92	3.36	----	----	----
Barium	7440-39-3	E440	0.50	mg/kg		146	119	----	----	----
Beryllium	7440-41-7	E440	0.10	mg/kg		0.77	0.61	----	----	----
Boron	7440-42-8	E440	5.0	mg/kg		9.1	8.5	----	----	----
Cadmium	7440-43-9	E440	0.020	mg/kg		0.233	0.215	----	----	----
Chromium	7440-47-3	E440	0.50	mg/kg		38.2	31.6	----	----	----
Cobalt	7440-48-4	E440	0.10	mg/kg		10.9	8.06	----	----	----
Copper	7440-50-8	E440	0.50	mg/kg		18.4	17.4	----	----	----
Lead	7439-92-1	E440	0.50	mg/kg		10.7	9.17	----	----	----
Molybdenum	7439-98-7	E440	0.10	mg/kg		0.52	0.39	----	----	----
Nickel	7440-02-0	E440	0.50	mg/kg		20.1	16.6	----	----	----
Selenium	7782-49-2	E440	0.20	mg/kg		0.30	0.28	----	----	----
Silver	7440-22-4	E440	0.10	mg/kg		0.11	0.11	----	----	----
Thallium	7440-28-0	E440	0.050	mg/kg		0.180	0.155	----	----	----
Uranium	7440-61-1	E440	0.050	mg/kg		1.22	1.21	----	----	----
Vanadium	7440-62-2	E440	0.20	mg/kg		57.6	48.8	----	----	----
Zinc	7440-66-6	E440	2.0	mg/kg		78.0	74.0	----	----	----
Organochlorine Pesticides										
Aldrin	309-00-2	E660F	0.020	mg/kg		<0.020	<0.020	----	----	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.020	mg/kg		<0.020	<0.020	----	----	----
Chlordane, total	57-74-9	E660F	0.030	mg/kg		<0.030	<0.030	----	----	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.020	mg/kg		<0.020	<0.020	----	----	----
DDD, 2,4'-	53-19-0	E660F	0.020	mg/kg		<0.020	<0.020	----	----	----
DDD, 4,4'-	72-54-8	E660F	0.020	mg/kg		<0.020	<0.020	----	----	----
DDD, total	----	E660F	0.030	mg/kg		<0.030	<0.030	----	----	----
DDE, 2,4'-	3424-82-6	E660F	0.020	mg/kg		<0.020	<0.020	----	----	----
DDE, 4,4'-	72-55-9	E660F	0.020	mg/kg		<0.020	<0.020	----	----	----

Analytical Results

Sub-Matrix: Soil/Solid (Matrix: Soil/Solid)					Client sample ID	GS 23-10	GS 23-11	----	----	----
					Client sampling date / time	04-Apr-2023	04-Apr-2023	----	----	----
Analyte	CAS Number	Method	LOR	Unit		WT2308433-011	WT2308433-012	--------	--------	--------
						Result	Result	----	----	----
Organochlorine Pesticides										
DDE, total	----	E660F	0.030	mg/kg		<0.030	<0.030	----	----	----
DDT, 2,4'-	789-02-6	E660F	0.020	mg/kg		<0.020	<0.020	----	----	----
DDT, 4,4'-	50-29-3	E660F	0.020	mg/kg		<0.020	<0.020	----	----	----
DDT, total	----	E660F	0.030	mg/kg		<0.030	<0.030	----	----	----
Dieldrin	60-57-1	E660F	0.020	mg/kg		<0.020	<0.020	----	----	----
Endosulfan, alpha-	959-98-8	E660F	0.020	mg/kg		<0.020	<0.020	----	----	----
Endosulfan, beta-	33213-65-9	E660F	0.020	mg/kg		<0.020	<0.020	----	----	----
Endosulfan, total	----	E660F	0.030	mg/kg		<0.030	<0.030	----	----	----
Endrin	72-20-8	E660F	0.020	mg/kg		<0.020	<0.020	----	----	----
Heptachlor	76-44-8	E660F	0.020	mg/kg		<0.020	<0.020	----	----	----
Heptachlor epoxide	1024-57-3	E660F	0.020	mg/kg		<0.020	<0.020	----	----	----
Hexachlorobenzene	118-74-1	E660F	0.010	mg/kg		<0.010	<0.010	----	----	----
Hexachlorobutadiene	87-68-3	E660F	0.010	mg/kg		<0.010	<0.010	----	----	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.010	mg/kg		<0.010	<0.010	----	----	----
Hexachloroethane	67-72-1	E660F	0.010	mg/kg		<0.010	<0.010	----	----	----
Methoxychlor	72-43-5	E660F	0.020	mg/kg		<0.020	<0.020	----	----	----
Organochlorine Pesticides Surrogates										
Decachlorobiphenyl	2051-24-3	E660F	0.1	%		94.7	104	----	----	----
Tetrachloro-m-xylene	877-09-8	E660F	0.1	%		93.8	84.0	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2308433**	Page	: 1 of 9
Client	: **Gemtec Consulting Engineers and Scientists Limited**	Laboratory	: Waterloo - Environmental
Contact	: Connor Shaw	Account Manager	: Costas Farassoglou
Address	: 142 Industrial Drive Petawawa ON Canada K8H 2W8	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: 613 225 8279
Project	: 61899.04	Date Samples Received	: 04-Apr-2023 13:25
PO	: ----	Issue Date	: 13-Apr-2023 21:17
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: SOA - 2022		
No. of samples received	: 12		
No. of samples analysed	: 12		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] GS 23-01	E440	04-Apr-2023	12-Apr-2023	----	----		13-Apr-2023	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] GS 23-02	E440	04-Apr-2023	12-Apr-2023	----	----		13-Apr-2023	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] GS 23-03	E440	04-Apr-2023	12-Apr-2023	----	----		13-Apr-2023	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] GS 23-04	E440	04-Apr-2023	12-Apr-2023	----	----		13-Apr-2023	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] GS 23-05	E440	04-Apr-2023	12-Apr-2023	----	----		13-Apr-2023	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] GS 23-06	E440	04-Apr-2023	12-Apr-2023	----	----		13-Apr-2023	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] GS 23-07	E440	04-Apr-2023	12-Apr-2023	----	----		13-Apr-2023	180 days	10 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] GS 23-08	E440	04-Apr-2023	12-Apr-2023	----	----		13-Apr-2023	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] GS 23-09	E440	04-Apr-2023	12-Apr-2023	----	----		13-Apr-2023	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] GS 23-10	E440	04-Apr-2023	12-Apr-2023	----	----		13-Apr-2023	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] GS 23-101	E440	04-Apr-2023	12-Apr-2023	----	----		13-Apr-2023	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] GS 23-11	E440	04-Apr-2023	12-Apr-2023	----	----		13-Apr-2023	180 days	10 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] GS 23-01	E660F	04-Apr-2023	11-Apr-2023	60 days	8 days	✓	12-Apr-2023	40 days	1 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] GS 23-02	E660F	04-Apr-2023	11-Apr-2023	60 days	8 days	✓	12-Apr-2023	40 days	1 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] GS 23-03	E660F	04-Apr-2023	11-Apr-2023	60 days	8 days	✓	12-Apr-2023	40 days	1 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] GS 23-04	E660F	04-Apr-2023	11-Apr-2023	60 days	8 days	✓	12-Apr-2023	40 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-05	E660F	04-Apr-2023	11-Apr-2023	60 days	8 days	✓	12-Apr-2023	40 days	1 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-06	E660F	04-Apr-2023	11-Apr-2023	60 days	8 days	✓	12-Apr-2023	40 days	1 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-07	E660F	04-Apr-2023	11-Apr-2023	60 days	8 days	✓	12-Apr-2023	40 days	1 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-08	E660F	04-Apr-2023	11-Apr-2023	60 days	8 days	✓	12-Apr-2023	40 days	1 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-09	E660F	04-Apr-2023	11-Apr-2023	60 days	8 days	✓	12-Apr-2023	40 days	1 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-10	E660F	04-Apr-2023	11-Apr-2023	60 days	8 days	✓	12-Apr-2023	40 days	1 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-101	E660F	04-Apr-2023	11-Apr-2023	60 days	8 days	✓	12-Apr-2023	40 days	1 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-11	E660F	04-Apr-2023	11-Apr-2023	60 days	8 days	✓	12-Apr-2023	40 days	1 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-01	E144	04-Apr-2023	----	----	----		11-Apr-2023	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-02	E144	04-Apr-2023	----	----	----		11-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-03	E144	04-Apr-2023	----	----	----		11-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-04	E144	04-Apr-2023	----	----	----		11-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-05	E144	04-Apr-2023	----	----	----		11-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-06	E144	04-Apr-2023	----	----	----		11-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-07	E144	04-Apr-2023	----	----	----		11-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-08	E144	04-Apr-2023	----	----	----		11-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-09	E144	04-Apr-2023	----	----	----		11-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-10	E144	04-Apr-2023	----	----	----		11-Apr-2023	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-101	E144	04-Apr-2023	----	----	----		11-Apr-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
GS 23-11	E144	04-Apr-2023	----	----	----		11-Apr-2023	----	----	

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Metals in Soil/Solid by CRC ICPMS	E440	893413	1	16	6.2	5.0	✓
Moisture Content by Gravimetry	E144	893025	1	20	5.0	5.0	✓
OCPs by GC-MS-MS or GC-MS	E660F	893257	1	17	5.8	5.0	✓
Laboratory Control Samples (LCS)							
Metals in Soil/Solid by CRC ICPMS	E440	893413	2	16	12.5	10.0	✓
Moisture Content by Gravimetry	E144	893025	1	20	5.0	5.0	✓
OCPs by GC-MS-MS or GC-MS	E660F	893257	1	17	5.8	5.0	✓
Method Blanks (MB)							
Metals in Soil/Solid by CRC ICPMS	E440	893413	1	16	6.2	5.0	✓
Moisture Content by Gravimetry	E144	893025	1	20	5.0	5.0	✓
OCPs by GC-MS-MS or GC-MS	E660F	893257	1	17	5.8	5.0	✓
Matrix Spikes (MS)							
OCPs by GC-MS-MS or GC-MS	E660F	893257	1	17	5.8	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Moisture Content by Gravimetry	E144 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Metals in Soil/Solid by CRC ICPMS	E440 Waterloo - Environmental	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
OCPs by GC-MS-MS or GC-MS	E660F Waterloo - Environmental	Soil/Solid	EPA 8270E (mod)	OCPs are analyzed by GC-MS-MS or GC-MS

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Metals and Mercury	EP440 Waterloo - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available.
Pesticides, PCB, PAH, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 Waterloo - Environmental	Soil/Solid	EPA 3570 (mod)	A homogenized subsample is extracted with organic solvents using a mechanical shaker.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **WT2308433**	Page	: 1 of 10
Client	: Gemtec Consulting Engineers and Scientists Limited	Laboratory	: Waterloo - Environmental
Contact	: Connor Shaw	Account Manager	: Costas Farassoglou
Address	: 142 Industrial Drive Petawawa ON Canada K8H 2W8	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: 613 225 8279
Project	: 61899.04	Date Samples Received	: 04-Apr-2023 13:25
PO	: ----	Date Analysis Commenced	: 11-Apr-2023
C-O-C number	: ----	Issue Date	: 13-Apr-2023 21:16
Sampler	: ---- ----		
Site	: ----		
Quote number	: SOA - 2022		
No. of samples received	: 12		
No. of samples analysed	: 12		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Amanda Ganouri-Lumsden	Department Manager - Microbiology and Prep	Waterloo Centralized Prep, Waterloo, Ontario
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Jon Fisher	Production Manager, Environmental	Waterloo Metals, Waterloo, Ontario

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 893025)											
WT2308376-001	Anonymous	Moisture	----	E144	0.25	%	14.0	14.9	6.11%	20%	----
Metals (QC Lot: 893413)											
WT2308432-002	Anonymous	Antimony	7440-36-0	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	3.35	3.40	1.72%	30%	----
		Barium	7440-39-3	E440	0.50	mg/kg	300	300	0.0631%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.89	0.97	8.67%	30%	----
		Boron	7440-42-8	E440	5.0	mg/kg	11.2	14.5	3.3	Diff <2x LOR	----
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.110	0.103	0.007	Diff <2x LOR	----
		Chromium	7440-47-3	E440	0.50	mg/kg	78.8	78.4	0.500%	30%	----
		Cobalt	7440-48-4	E440	0.10	mg/kg	19.9	20.3	2.04%	30%	----
		Copper	7440-50-8	E440	0.50	mg/kg	36.1	36.5	1.28%	30%	----
		Lead	7439-92-1	E440	0.50	mg/kg	7.68	7.90	2.82%	40%	----
		Molybdenum	7439-98-7	E440	0.10	mg/kg	0.80	1.16	37.1%	40%	----
		Nickel	7440-02-0	E440	0.50	mg/kg	45.1	45.6	1.12%	30%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440	0.050	mg/kg	0.372	0.386	3.94%	30%	----
		Uranium	7440-61-1	E440	0.050	mg/kg	0.842	0.846	0.427%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	96.3	95.7	0.559%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	113	114	0.260%	30%	----
Organochlorine Pesticides (QC Lot: 893257)											
WT2308524-002	Anonymous	Aldrin	309-00-2	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Chlordane, cis- (alpha)	5103-71-9	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Chlordane, trans- (gamma)	5103-74-2	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDD, 2,4'-	53-19-0	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDD, 4,4'-	72-54-8	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDE, 2,4'-	3424-82-6	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDE, 4,4'-	72-55-9	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDT, 2,4'-	789-02-6	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDT, 4,4'-	50-29-3	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Organochlorine Pesticides (QC Lot: 893257) - continued											
WT2308524-002	Anonymous	Dieldrin	60-57-1	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Endosulfan, alpha-	959-98-8	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Endosulfan, beta-	33213-65-9	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Endrin	72-20-8	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Heptachlor	76-44-8	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Heptachlor epoxide	1024-57-3	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Hexachlorobenzene	118-74-1	E660F	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Hexachlorobutadiene	87-68-3	E660F	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Hexachloroethane	67-72-1	E660F	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Methoxychlor	72-43-5	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 893025)						
Moisture	----	E144	0.25	%	<0.25	----
Metals (QCLot: 893413)						
Antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
Arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
Barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
Beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
Boron	7440-42-8	E440	5	mg/kg	<5.0	----
Cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
Chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
Cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
Lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
Nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
Selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
Silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
Thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
Uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----
Vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----
Zinc	7440-66-6	E440	2	mg/kg	<2.0	----
Organochlorine Pesticides (QCLot: 893257)						
Aldrin	309-00-2	E660F	0.02	mg/kg	<0.020	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.02	mg/kg	<0.020	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.02	mg/kg	<0.020	----
DDD, 2,4'-	53-19-0	E660F	0.02	mg/kg	<0.020	----
DDD, 4,4'-	72-54-8	E660F	0.02	mg/kg	<0.020	----
DDE, 2,4'-	3424-82-6	E660F	0.02	mg/kg	<0.020	----
DDE, 4,4'-	72-55-9	E660F	0.02	mg/kg	<0.020	----
DDT, 2,4'-	789-02-6	E660F	0.02	mg/kg	<0.020	----
DDT, 4,4'-	50-29-3	E660F	0.02	mg/kg	<0.020	----
Dieldrin	60-57-1	E660F	0.02	mg/kg	<0.020	----
Endosulfan, alpha-	959-98-8	E660F	0.02	mg/kg	<0.020	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organochlorine Pesticides (QCLot: 893257) - continued						
Endosulfan, beta-	33213-65-9	E660F	0.02	mg/kg	<0.020	----
Endrin	72-20-8	E660F	0.02	mg/kg	<0.020	----
Heptachlor	76-44-8	E660F	0.02	mg/kg	<0.020	----
Heptachlor epoxide	1024-57-3	E660F	0.02	mg/kg	<0.020	----
Hexachlorobenzene	118-74-1	E660F	0.01	mg/kg	<0.010	----
Hexachlorobutadiene	87-68-3	E660F	0.01	mg/kg	<0.010	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.01	mg/kg	<0.010	----
Hexachloroethane	67-72-1	E660F	0.01	mg/kg	<0.010	----
Methoxychlor	72-43-5	E660F	0.02	mg/kg	<0.020	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 893025)									
Moisture	----	E144	0.25	%	50 %	99.5	90.0	110	----
Metals (QCLot: 893413)									
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	109	80.0	120	----
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	108	80.0	120	----
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	109	80.0	120	----
Beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	108	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	105	80.0	120	----
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	105	80.0	120	----
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	103	80.0	120	----
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	106	80.0	120	----
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	103	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	108	80.0	120	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	108	80.0	120	----
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	106	80.0	120	----
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	100	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	102	80.0	120	----
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	104	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	109	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	109	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	97.4	80.0	120	----
Organochlorine Pesticides (QCLot: 893257)									
Aldrin	309-00-2	E660F	0.02	mg/kg	0.005 mg/kg	84.2	50.0	150	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.02	mg/kg	0.005 mg/kg	100.0	50.0	150	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.02	mg/kg	0.005 mg/kg	127	50.0	150	----
DDD, 2,4'-	53-19-0	E660F	0.02	mg/kg	0.005 mg/kg	118	50.0	150	----
DDD, 4,4'-	72-54-8	E660F	0.02	mg/kg	0.005 mg/kg	94.2	50.0	150	LCS-H
DDE, 2,4'-	3424-82-6	E660F	0.02	mg/kg	0.005 mg/kg	101	50.0	150	----
DDE, 4,4'-	72-55-9	E660F	0.02	mg/kg	0.005 mg/kg	106	50.0	150	----
DDT, 2,4'-	789-02-6	E660F	0.02	mg/kg	0.005 mg/kg	116	50.0	150	----
DDT, 4,4'-	50-29-3	E660F	0.02	mg/kg	0.005 mg/kg	97.1	50.0	150	----
Dieldrin	60-57-1	E660F	0.02	mg/kg	0.005 mg/kg	105	50.0	150	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Organochlorine Pesticides (QCLot: 893257) - continued									
Endosulfan, alpha-	959-98-8	E660F	0.02	mg/kg	0.005 mg/kg	126	50.0	150	----
Endosulfan, beta-	33213-65-9	E660F	0.02	mg/kg	0.005 mg/kg	141	50.0	150	----
Endrin	72-20-8	E660F	0.02	mg/kg	0.005 mg/kg	129	50.0	150	----
Heptachlor	76-44-8	E660F	0.02	mg/kg	0.005 mg/kg	80.0	50.0	150	----
Heptachlor epoxide	1024-57-3	E660F	0.02	mg/kg	0.005 mg/kg	100	50.0	150	----
Hexachlorobenzene	118-74-1	E660F	0.01	mg/kg	0.005 mg/kg	121	50.0	150	----
Hexachlorobutadiene	87-68-3	E660F	0.01	mg/kg	0.005 mg/kg	112	50.0	150	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.01	mg/kg	0.005 mg/kg	115	50.0	150	----
Hexachloroethane	67-72-1	E660F	0.01	mg/kg	0.005 mg/kg	104	50.0	150	----
Methoxychlor	72-43-5	E660F	0.02	mg/kg	0.005 mg/kg	69.0	50.0	150	----

Qualifiers

Qualifier	Description
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Organochlorine Pesticides (QCLot: 893257)										
WT2308524-002	Anonymous	Aldrin	309-00-2	E660F	0.008 mg/kg	0.005 mg/kg	80.7	50.0	150	----
		Chlordane, cis- (alpha)	5103-71-9	E660F	0.007 mg/kg	0.005 mg/kg	67.2	50.0	150	----
		Chlordane, trans- (gamma)	5103-74-2	E660F	0.008 mg/kg	0.005 mg/kg	79.2	50.0	150	----
		DDD, 2,4'-	53-19-0	E660F	0.011 mg/kg	0.005 mg/kg	115	50.0	150	----
		DDD, 4,4'-	72-54-8	E660F	0.014 mg/kg	0.005 mg/kg	143	50.0	150	----
		DDE, 2,4'-	3424-82-6	E660F	0.009 mg/kg	0.005 mg/kg	93.3	50.0	150	----
		DDE, 4,4'-	72-55-9	E660F	0.009 mg/kg	0.005 mg/kg	95.9	50.0	150	----
		DDT, 2,4'-	789-02-6	E660F	0.008 mg/kg	0.005 mg/kg	83.7	50.0	150	----
		DDT, 4,4'-	50-29-3	E660F	0.007 mg/kg	0.005 mg/kg	72.4	50.0	150	----
		Dieldrin	60-57-1	E660F	0.009 mg/kg	0.005 mg/kg	88.4	50.0	150	----
		Endosulfan, alpha-	959-98-8	E660F	0.010 mg/kg	0.005 mg/kg	103	50.0	150	----
		Endosulfan, beta-	33213-65-9	E660F	0.009 mg/kg	0.005 mg/kg	95.8	50.0	150	----
		Endrin	72-20-8	E660F	0.011 mg/kg	0.005 mg/kg	114	50.0	150	----
		Heptachlor	76-44-8	E660F	0.008 mg/kg	0.005 mg/kg	84.3	50.0	150	----
		Heptachlor epoxide	1024-57-3	E660F	0.007 mg/kg	0.005 mg/kg	70.0	50.0	150	----
		Hexachlorobenzene	118-74-1	E660F	0.009 mg/kg	0.005 mg/kg	94.0	50.0	150	----
		Hexachlorobutadiene	87-68-3	E660F	0.010 mg/kg	0.005 mg/kg	99.7	50.0	150	----
		Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.010 mg/kg	0.005 mg/kg	106	50.0	150	----
		Hexachloroethane	67-72-1	E660F	0.010 mg/kg	0.005 mg/kg	101	50.0	150	----
		Methoxychlor	72-43-5	E660F	0.008 mg/kg	0.005 mg/kg	76.7	50.0	150	----

Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 893413)									
	RM	Antimony	7440-36-0	E440	3.99 mg/kg	101	70.0	130	----
	RM	Arsenic	7440-38-2	E440	3.73 mg/kg	99.0	70.0	130	----
	RM	Barium	7440-39-3	E440	105 mg/kg	107	70.0	130	----
	RM	Beryllium	7440-41-7	E440	0.349 mg/kg	108	70.0	130	----
	RM	Boron	7440-42-8	E440	8.5 mg/kg	124	40.0	160	----
	RM	Cadmium	7440-43-9	E440	0.91 mg/kg	91.1	70.0	130	----
	RM	Chromium	7440-47-3	E440	101 mg/kg	101	70.0	130	----
	RM	Cobalt	7440-48-4	E440	6.9 mg/kg	98.1	70.0	130	----
	RM	Copper	7440-50-8	E440	123 mg/kg	95.8	70.0	130	----
	RM	Lead	7439-92-1	E440	267 mg/kg	100.0	70.0	130	----
	RM	Molybdenum	7439-98-7	E440	1.03 mg/kg	102	70.0	130	----
	RM	Nickel	7440-02-0	E440	26.7 mg/kg	97.7	70.0	130	----
	RM	Thallium	7440-28-0	E440	0.0786 mg/kg	104	40.0	160	----
	RM	Uranium	7440-61-1	E440	0.52 mg/kg	102	70.0	130	----
	RM	Vanadium	7440-62-2	E440	32.7 mg/kg	100	70.0	130	----
	RM	Zinc	7440-66-6	E440	297 mg/kg	92.8	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

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Canada Toll Free: 1 800 668 9878

Environmental Division
Waterloo
Work Order Reference
WT2308433

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Requested
Company:	Gemtec Consulting Engineers - GESL100	Select Report Format: ☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☐ Routine [R] if received by 3pm M-F - no surcharges apply
Contact:	Connor Shaw	Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimu
Phone:	613-585-3626	☐ Compare Results to Criteria on Report - provide details below if box checked	☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minim
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimu
Street:	142 Industrial Ave.	Email 1 or Fax connor.shaw@gemtec.ca	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimu
City/Province:	Petawawa,ON	Email 2	☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.
Postal Code:	613-585-3626	Email 3	Additional fees may apply to rush requests on weekends,
Invoice To	Same as Report To ☐ YES ☑ NO	**Invoice Recipients**	Date and Time Required for all E&P TATs:
	Copy of Invoice with Report ☑ YES ☐ NO	Select Invoice Distribution: ☑ EMAIL MAIL ☐ FAX	For all tests with rush TATs requested, please contact your AM to confirm availability.
Company:		Email 1 or Fax connor.shaw@gemtec.ca	
Contact:		Email 2 accountspayable@gemtec.ca	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	GESL100/WT2022GESL1000001	AFE/Cost Center:	PO#
Job #:	61899.04	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (ALS use only):		ALS Contact: Costas Farassoglou	Sampler:

Analysis Request

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below: Metals & Inorganics	PAH	PHC F1-F4	BTEX	OC Pesticides	Metals	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	GS 23-01	04-APR-23		SOIL	4					✓	✓			
	GS 23-101	"		SOIL	4					✓	✓			
	GS 23-02	"		SOIL	4					✓	✓			
	GS 23-03	"		SOIL	4					✓	✓			
	GS 23-04	"		SOIL	4					✓	✓			
	GS 23-05	"		SOIL	4					✓	✓			
	GS 23-06	"		SOIL	4					✓	✓			
	GS 23-07	"		SOIL	4					✓	✓			
	GS 23-08	"		SOIL	4					✓	✓			
	GS 23-09	"		SOIL	4					✓	✓			
	GS 23-10	"		SOIL	4					✓	✓			
	GS 23-11	"		SOIL	4					✓	✓			

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	Table 1 RPI / ICC
Are samples for human consumption/ use? ☐ YES ☐ NO	O.Reg. 153/04 Table 2 RPI

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: YES NO

Cooler Custody Seals Intact: YES N/A Sample Custody Seals Intact: YES N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
8.6				5.4			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Connor Shaw	4-Apr-2023	1:15	Eric Dobbins	04/04/23	1:25		4/5/23	1030

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

Sol 500/501

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geotechnical	géotechnique
environmental	environnement
structural	structures
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materials testing	service de laboratoire des matériaux

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