Phase II Environmental Site Assessment

Vacant Former Agricultural Property
50 Leikin Drive, Ottawa, Ontario
Project No. OESAO2132

Prepared for:
Canada Post Corporation

2701 Riverside Drive, Ottawa, Ontario, K1A 0B1

Prepared by:
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September 2022

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16 September 2022

Reference No. OESAO2132

VIA EMAIL

Canada Post Corporation
2701 Riverside Drive
Ottawa, Ontario
K1A 0B1

Attention: Emily Payton
Specialist, Real Estate, Environment & Sustainability

Dear Ms. Payton;

RE: Phase II Environmental Site Assessment
Vacant Former Agricultural Property
50 Leikin Drive, Ottawa, Ontario

Please find enclosed one (1) electronic copy, in PDF format, of our final report entitled *Phase II Environmental Site Assessment, Vacant Former Agricultural Property, 50 Leikin Drive, Ottawa, Ontario*.

We thank you for entrusting us with this assignment and look forward to future opportunities with Canada Post. In the meantime, should you have any questions or require any additional information, please do not hesitate to contact the undersigned.

Sincerely,
Wood Environment & Infrastructure Solutions Canada Limited

Kevin Hicks, M.Sc., P.Geo., QP_{ESA}
Principal Hydrogeologist

Enclosure (1)

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Executive Summary

Wood Environment & Infrastructure Solutions Canada Limited ("Wood"), was retained by Canada Post Corporation ("CPC") to conduct a Phase II Environmental Site Assessment (ESA) of a vacant former agricultural property located at 50 Leikin Drive, Ottawa, Ontario (the "Site"). The Site is currently owned by 2717605 Ontario Limited and was occupied by abandoned agricultural fields. The Phase II ESA was carried out in support of CPC's potential acquisition of the Site in accordance with Wood's proposal (Ref. No. POESAO21841) dated December 14, 2021.

The Phase II ESA was undertaken to assess soil and groundwater quality at or beneath the Site with respect to Areas of Potential Environmental Concern (APEC) identified in a Phase I ESA previously carried out at the Site by Wood, as documented in the report entitled *Draft Phase I Environmental Site Assessment, Vacant Agricultural Property, 50 Leikin Drive, Ottawa, Ontario* dated January 7, 2022. Based on the findings of the Phase I ESA, the following APECs were identified that may be impacting the quality of soil and/or groundwater at or beneath the Site:

APEC	Location (Distance and Direction from Site)	Potentially Impacted Media	Contaminants of Potential Concern
APEC 1 – Importation and stockpiling/staging of fill of unknown quality and origin	On-site	Soil	Metals, As, Sb, Se, B-HWS, Cr(VI), Hg, PAH, PHC F1 – F4
APEC 2 – Potential historical use of pesticides and/or herbicides to control insect populations and/or weed growth	On-site	Soil, groundwater	OCP, HPA, metals
APEC 3 – Elevated levels of Ba, B, Cr, Co and V in fine textured Champlain Sea sediments	On-site	Soil	Ba, B, Cr, Co and V
APEC 4 – Potential chlorinated solvent use at adjacent property to the west	Off-site, adjacent west	Groundwater	VOC

The scope of work for the Phase II ESA included excavating and sampling nineteen (19) exploratory test pits and drilling and sampling fourteen (14) boreholes to assess APECs identified at the Site. Six (6) of the boreholes were completed as monitoring wells to characterize shallow groundwater flow and quality. Selected soil and groundwater samples were submitted for analysis of suspect contaminants of potential concern (COPC) including: selected metals; polynuclear aromatic hydrocarbons (PAH); benzene, toluene, ethylbenzene, xylenes (BTEX); volatile organic compounds (VOC); petroleum hydrocarbon (PHC) fractions F1-F4; organochlorine pesticides, phenoxy acid herbicides and selected inorganic parameters including pH, cyanide (CN), electrical conductivity (EC) and sodium adsorption ratio (SAR). The Phase II ESA was completed concurrently with a geotechnical investigation and a hydrogeological investigation which are documented under separate covers.

Soil and groundwater laboratory analytical data was evaluated through comparison to relevant Federal Guidelines including Canadian Soil Quality Guidelines (CSoQG) for the protection of human and environmental health, Canada-Wide Standards for Petroleum Hydrocarbon in Soil (CWS-PHC) and Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites (FIGQG). Analytical results

reported for the soil and groundwater samples were also compared to the applicable provincial generic Site Condition Standards (SCS) established by the Ministry of the Environment, Conservation and Parks (MECP). Both the Federal Guidelines and Provincial standards as applied were based on future commercial land use, fine textured soil and non-potable groundwater conditions.

The subsurface conditions at the Site consisted of an organic rich topsoil successively underlain by fine grained Champlain Sea deposits consisting of clayey silt to silt clay. Interbedded grey to dark grey limestone and buff coloured sandstone bedrock were intersected at depths ranging from 19.00 metres below ground surface (mbgs_ at BH21-3 to 21.95 mbgs at BH21-5. Sandy cobble/boulder till was intersected beneath the clayey silt/silty clay and overlying the bedrock at boreholes BH21-3 and BH21-5 at depths of 14.88 mbgs and 19.74 mbgs, respectively.

With the exception of TP-1 excavated near the north end of the access road into the Site from Bill Leathem Drive, no evidence of fill or other deleterious materials was identified in any of the sampling locations at the Site. At TP-1, silty sand and gravel fill containing some cobbles and boulders was intersected to a depth of 1.1 m. Crushed/ground asphalt was also noted to be present in the granular material.

Groundwater was present at depths ranging from 0.90 mbgs at MW21-14 to 2.057 mbgs (MW21-11) and elevations between 87.92 masl at MW21-11 and 89.12 masl at MW21-13. Shallow groundwater within the silty clay/clayey silt is interpreted to flow in an outward radial pattern from the northwest corner of the Site. Beneath the west and central portion of the Site, groundwater flow is directed to the south whereas in the north portion of the Site groundwater flow is directed to the east. This pattern appears to be the result of a second area of outward radial flow interpreted on the east side of the Site at MW21-13 where the highest groundwater elevation was observed.

No odours or staining suggestive of petroleum hydrocarbon impacts were detected in any of the soil samples collected at the Site. With the exception of test pit TP-1 where a combustible organic vapour (COV) reading of 125 ppm was reported in sample SS-1, all COV and total organic vapour (TOV) headspace concentration measurements recorded in the soil samples collected at the Site were reported as 0 ppm.

No visible non-aqueous phase liquid (NAPL) was observed in either the soil or groundwater samples obtained from the Site. No measurable accumulations of floating (i.e., light [L]) or sinking (i.e., dense [D]) NAPL were detected in any of the monitoring wells installed at the Site. No evidence of hydrocarbon sheen or iridescence was noted during the monitoring well development and/or groundwater purging and sampling activities.

Soil impacts by PHC F3, F4 and F4G exceeding CWS-PHC, which are identical to their respective MECP Table 3 SCS, were reported in a single soil sample collected at test pit TP-1 excavated at the north end of the gravel access road that extends from Bill Leathem Drive into the Site. The PHC F3, F4 and F4G impacts are consistent with crushed asphalt observed in the fill material used to construct the access road. The

volume of road bed material impacted by PHC is unknown but could be in excess of 300 m^3 based on observations made at the Site and assuming similar PHC impacts over the length of the road.

Several metals were found to exceed CCME CSoQG and/or MECP Table 3 SCS. Chromium, hexavalent chromium and vanadium exceeded CCME CSoQG at 16, three and one sampling locations, respectively. Vanadium also exceeded the MECP Table 3 SCS at 16 locations. All sample reporting exceedances of CSoQG for chromium and hexavalent chromium met MECP Table 3 SCS.

Barium, cobalt and molybdenum were also noted to exceed MECP Table 1 SCS at 23, 10 and one sampling locations, respectively. These metals, along with chromium and vanadium, have been shown to occur at naturally elevated concentrations typically exceeding MECP Table 1 Background SCS in fine textured Champlain Sea deposits in the Ottawa region (Sterling et. al, 2018). Any excess soil generated at the Site containing vanadium at concentrations in excess of the MECP Table 3 SCS would be deemed contaminated and would thus require disposal at a licensed landfill unless it can be re-used at a property where it can be placed more than 1.5 m below grade. Site development initiatives should thus endeavour to minimize the amount of excess soil that may be generated at the Site.

All groundwater samples collected at the Site met FIGQG and/or MECP Table 3 SCS.

NOTE: The Executive Summary highlights the key points of the Phase II ESA only. For complete information and findings, as well as the limitations, the reader should examine the complete report.

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List of Acronyms and Abbreviations

APEC	Area of Potential Environmental Concern
BH	Borehole
BTEX	Benzene, toluene, ethylbenzene and xylenes
CALA	Canadian Association for Laboratory Accreditation Inc.
CN	Cyanide
COPC	Contaminant of Potential Concern
COV	Combustible Organic Vapours
CPC	Canada Post Corporation
CSRS	Canadian Spatial Reference System
EC	Electrical Conductivity
EPA	Environmental Protection Act
ESA	Environmental Site Assessment
LDPE	Low-Density Polyethylene
LFG	Landfill Gas
LPH	Liquid Petroleum Hydrocarbon
masl	metres above sea level
mbgs	metres below ground surface
mbtoc	metres below top of casing
MECP	Ministry of the Environment. Conservation and Parks
MW	Monitoring Well
NAD	North American Datum
OCP	Organochlorine Pesticide
PAH	Polynuclear Aromatic Hydrocarbons
PHC	Petroleum Hydrocarbons
QA/QC	Quality Assurance/Quality Control
RAP	Remedial Action Plan
RL	Reporting Limit
RDL	Reporting Detection Limit
RPD	Relative Percent Difference
SAR	Sodium Adsorption Ratio
SCS	Site Condition Standard
TOV	Total Organic Vapour
TP	Test Pit
U.S. EPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compound

1.0 Introduction

Wood Environment & Infrastructure Solutions Canada Limited ("Wood"), was retained by Canada Post Corporation ("CPC ") to conduct a Phase II Environmental Site Assessment (ESA) of a vacant former agricultural property located at 50 Leikin Drive, Ottawa, Ontario (the "Site"). A key plan showing the location of the Site is provided on Figure 1. The Site is currently owned by 2717605 Ontario Limited and was unused at the time of the Phase II ESA. The Phase II ESA was carried out in support of CPC's potential acquisition of the Site.

The Phase II ESA was undertaken to assess soil and groundwater quality at or beneath the Site with respect to Areas of Potential Environmental Concern (APEC) identified in a Phase I ESA previously carried out at the Site by Wood, as documented in the report entitled "Draft Phase I Environmental Site Assessment, Vacant Agricultural Property, 50 Leikin Drive, Ottawa, Ontario" dated January 7, 2022. Based on the findings of the Phase I ESA, the following APECs were identified that may be impacting the quality of soil and/or groundwater at or beneath the Site.

This Phase II ESA was conducted in accordance with the Phase II ESA standard as defined by the Canadian Standards Association (CSA) document entitled *Phase II Environmental Site Assessment, Z769-00* (March 2000, reaffirmed 2013), *Ontario Regulation 153/04 - Records of Site Condition, Part XV.1 of the Environmental Protect*ion Act, as amended ("O.Reg. 153/04") and the Terms of Reference provided in Wood's proposal / work agreement POESAO21841 dated December 14, 2021. While the scope of work was carried out in accordance with the general requirements of O.Reg. 153/04, this report is not intended to support the filing of a Record of Site Condition (RSC) and thus does not contain all of the elements or conform to the format dictated by O.Reg. 153/04.

1.1 Site Description

The Site is located on the west side of Leikin Drive at the intersection of Bill Leatham Drive in the Rideau Crest – Davidson Heights neighbourhood. The Site is a near rectangular-shaped property measuring approximately 9.07 hectares (22.4 acres) with approximate dimensions of 345 m in length (north-south) by 280 m in width (east-west). The topography across the site is relatively flat lying at an elevation of approximately 90 metres above sea level (masl).

The Site is located in an area of developing commercial land uses with the nearest major arterial route being Prince of Wales Drive to the east. The site is currently vacant and was previously used for agricultural purposes (growing fields) up until sometime between after 1991 but before 1999. The site appears to have been used as staging grounds during development of surrounding properties including construction of the City of Ottawa's Davidson Heights stormwater management facility to the south. Ground disturbance activities and fill/stockpile storage on the Site is evident on many of the aerial photographs for the period 1991 to 2015. Based on aerial photography, the Site appears to have been used for the harvesting of feed grass in 2019. No development is reported to have ever taken place at the Site.

The Site is bound to the north by vacant land. Leikin Drive lies immediately east of the Site beyond which lies the Royal Canadian Mounted Police National Headquarters. Bill Leathem Drive lies to the south followed by the Davidson Heights stormwater management facility. Lumentum Holdings, a telecommunications equipment company, occupies the property to the west.

Figure 2 illustrates the configuration of the Site. Relevant information regarding the Site is provided in the table below.

Table 1.1. Property Information

Municipal Address:	88 Leikin Drive, Ottawa (Nepean), Ontario					
Legal Description:	Part 1, Block 2, Plan 4M-1354; City of Ottawa					
Property Identification Number (PIN):	04733-6646					
Property Owner:	2717605 Ontario Limited					
Property Use:	N/A					
Number of Buildings on Site:	None					
Municipal Zoning:	Light Industrial					
Total Site Area:	Approximately 9.07 hectares (22.4 acres)					
Percentage of Site Consisting of Soft Landscape or Bare Areas:	100 %					
Dimensions:	Frontage:	280 m	Lot Depth:	345 m		
UTM (NAD 83):	Zone:	18	Easting:	444475	Northing:	5016040

Future development and use of the Site by CPC are not known at this time but may include a one or two storey postal facility such as a plant or depot.

2.0 Project Objective and Scope of Work

A Phase I ESA was previously carried out at the Site by Wood, as documented in the report entitled "Draft Phase I Environmental Site Assessment, Vacant Agricultural Property, 50 Leikin Drive, Ottawa, Ontario" dated January 7, 2022. Results of the Phase I ESA indicated a potential for contamination at the Site associated with the following APECs.

Table 2.1. Areas of Potential Environmental Concern

APEC	Distance and Direction from Site	Probability of Impact to Site	Potentially Impacted Media	Contaminants of Potential Concern
APEC 1 – Importation and stockpiling/staging of fill of unknown quality and origin	On-site	Low - moderate	Soil	Metals, As, Sb, Se, B-HWS, Cr(VI), Hg, PAH, PHC F1 – F4
APEC 2 – Potential historical use of pesticides and/or herbicides to control insect populations and/or weed growth	On-site	Low - moderate	Soil, groundwater	OCP, HPA, metals
APEC 3 – Elevated levels of Ba, B, Cr, Co and V in fine textured Champlain Sea sediments	On-site	Low - moderate	Soil	Ba, B, Cr, Co and V
APEC 4 – Potential chlorinated solvent use at adjacent property to the west	Off-site, adjacent west	Low	Groundwater	VOC

Notes:
OCP = Organochlorine Pesticides.
PAH = Polynuclear Aromatic Hydrocarbons.
PHA = Phenoxy Acid Herbicides.
PHC = Petroleum Hydrocarbons.
VOC = Volatile Organic Compounds.

The locations of the above-noted APECs are shown on Figure 3.

2.1 Scope of Work

Based on the findings of the Phase I ESA report, this Phase II ESA was completed at the Site to quantitatively assess potential impacts to soil and groundwater quality at or beneath the Site associated with the above-noted APECs. The general scope of work for the Phase II ESA included of the following tasks:

- Developing a Health & Safety Plan (HASP) and Sampling and Analysis Plan (SAP) for the field work and sampling and laboratory analytical programs to be undertaken at the Site;
- Conducting a Site reconnaissance visit to evaluate Site access, identify existing conditions and to mark borehole and other ground disturbance areas to facilitate utility locates and clearance;
- Arranging for the locations of public and private underground and overhead utilities including natural gas pipelines, storm and sanitary sewers, and telephone and electrical conduits to be marked by the

respective utility companies and/or their representative agents and for a private locating contractor to clear the planned test pit and borehole locations in advance of the sampling programs;

- A subsurface soil sampling program including the excavation of nineteen (19) test pits and the drilling of fourteen (14) boreholes to facilitate the collection of fill and/or soil samples; logging and field screening for evidence of negative impact using visual, olfactory and sample headspace screening methods;
- Installing groundwater monitoring wells in six (6) of the boreholes to assess the quality of groundwater beneath Site and the direction of shallow, horizontal groundwater flow;
- Submitting selected soil and groundwater samples for laboratory analyses suspect contaminants of potential concern (COPC) including: selected metals; polynuclear aromatic hydrocarbons (PAH); benzene, toluene, ethylbenzene, xylenes (BTEX); volatile organic compounds (VOC); petroleum hydrocarbon (PHC) fractions F1-F4; organochlorine pesticides, phenoxy acid herbicides and selected inorganic parameters including pH, cyanide (CN), electrical conductivity (EC) and sodium adsorption ratio (SAR);
- Evaluating the laboratory analytical results through comparison to relevant Federal Guideline and Provincial Standards established by the Canadian Council of Ministers of the Environment (CCME), Federal Contaminated Sites Action Plan (FCSAP) and the Ontario Ministry of the Environment, Conservation and Parks (MECP); and,
- Preparing a report, inclusive of figures, tables, stratigraphic and instrumentation logs and certificates of analysis, documenting the methodology and findings of the investigations and conclusions and recommendations regarding soil and groundwater quality and the need for additional investigation and/or remedial activities drawn there from.

3.0 Work Program and Methodology

The Site conditions and representative samples of soil and groundwater were obtained through the completion of a multi-faceted investigation and sampling program that included the excavation and sampling of exploratory test pits, drilling and sampling of overburden boreholes and the installation and sampling of groundwater monitoring wells. The subsurface geological conditions were established from visual observations and soil samples collected during the surface and subsurface sampling programs. Soil and groundwater quality data were obtained from visual and olfactory observations, field screening methods and laboratory analysis of selected samples deemed to be representative of the Site environmental conditions. A Sampling and Analysis Plan (SAP) was prepared to provide direction with respect to the media to be sampled, sampling methods, number of samples, sampling frequency, sampling points, sampling depth intervals, screened intervals of the monitoring wells, samples to be submitted for laboratory analysis as well as other information including water levels, field measurements and elevation surveying. A copy of the SAP is provided in Appendix A.

Details of the Phase II ESA investigation activities are provided in the following sections.

3.1 Field Preparation

3.1.1 Health and Safety Plan

Prior to initiating any Wood developed and implemented site-specific Health and Safety Plan (HASP) to establish the necessary protocols and procedures to protect the health and safety of its employees and subcontractors. The HASP outlined potential hazards associated with the project, the relevant codes/regulations to be met, rules of behaviour, PPE, security features to be established, responsible individuals, and procedures to be followed in the event of an emergency.

3.1.2 Utility Locates and Clearances

The locations of all buried and overhead services were obtained prior to the initiation of any of the subsurface investigations. Wood contacted Ontario One Call to coordinate public utility locates by the respective utility companies and agencies. MARK IT Locates Inc., a specialist utility locating firm, was retained to mark the locations of any private on-Site underground utilities that were not marked by the public utility locating services, and to clear the individual borehole and monitoring well locations prior to their advancement.

3.1.3 Test Pit Excavations and Soil Sampling

A test pit investigation program was performed at the Site on December 14 and 15 to assess the shallow subsurface conditions beneath the Site. The test pit locations were chosen to establish the general nature and quality of any near surface fill and/or native soil materials present at the Site and to provide an assessment of the shallow subsurface soil conditions with respect to specific areas of concern including

APEC 1 (importation and stockpiling/staging of fill of unknown quality and origin), APEC 2 (potential historical use of pesticides and/or herbicides to control insect populations and/or weed growth) and APEC 3 (elevated levels of Ba, B, Cr, Co and V in fine textured Champlain Sea sediments).

A total of 19 test pits (TP-1 – TP-8, TP-10 – TP-20) were excavated to depths ranging from 1.5 m to 2.0 m below ground surface (mbgs) using a rubber tired backhoe supplied and operated by Lacroix Equipment Rentals. The locations of the test pit excavations are shown on Figure 4. One test pit, TP-9, could not be excavated due to the proposed location and surrounding are being inundated with accumulated surface water. All test pit excavations were completed under the full-time supervision of Wood personnel. The test pits were backfilled using excavated materials upon completion and nominally compacted using the bucket of the backhoe.

Representative soil samples were collected throughout the depth of each test pit. Samples were collected at a minimum of 0.5 metre intervals, at changes in the subsurface geological units and at any indication of the presence of deleterious fill material or gross evidence (i.e., staining or odours) of negative impact. Samples were collected from the walls of the test pit above a depth of one metre. Samples of fill material were generally collected as composite samples with material collected from distinct layers from all fours wall of the test pit to avoid potential false positive analyses due to "nugget effect". At depths greater than one metre samples of the fill and native material were collected from the backhoe bucket.

Details of the test pit excavations and soil sampling are summarized in Table 1 and provided on the test pit records in Appendix B.

3.1.4 Borehole Drilling and Soil Sampling

A total of 14 boreholes (BH21-3 – BH21-10, MW21-11 – MW21-16) were advanced at strategic locations across the Site. The boreholes were completed as part of a combined environmental and geotechnical investigation program carried out concurrently. Borehole locations were thus selected to intersect potential subsurface soil and groundwater plumes and to establish the site-specific geological and hydrogeological characteristics beneath the Site as well as to acquire subsurface information to provide recommendations with regard to the geotechnical aspects of design and construction of future development of the Site.

Boreholes BH21-3, BH21-4 and BH21-5 comprised deep boreholes advanced for geotechnical investigation purposes within the possible footprint of a building that may be constructed as part of CPC future development of the Site. Boreholes BH21-6 through BH21-10 consisted of 6 m deep boreholes advanced within future potential asphalt paved parking areas and/or access laneway. These boreholes were advanced for both geotechnical and environmental purposes, the latter notably being assessment of soil quality with respect to APEC3. Boreholes MW21-11 through MW21-16 consisted of 6 m deep boreholes also advanced within future potential asphalt paved parking areas and/or access laneways. These boreholes were also utilized to investigate APEC 3 and were completed as groundwater monitoring wells to assess groundwater quality with respect to APEC3 and 4.

Details of the borehole drilling and soil sampling are summarized in Table 1 and provided on the test pit records in Appendix C.

The borehole investigations were completed between December 20 and 23, 2021 and January 4 and 10, 2022 by George Downing Estate Drilling Limited of Hawkesbury, Ontario under the supervision of Wood staff. The boreholes were advanced to depths ranging from 6 to 25.07 mbgs using a track-mounted CME 550 drilling rig. All boreholes were advanced using standard 200 mm diameter hollow stem augers. Sixty cm soil samples were collected using standard split spoon sampling techniques at 0.76 m intervals from 0 to 3.05 mbgs and 1.52 m intervals thereafter. Boreholes BH21-3 through BH21-5 were advanced 2.97 to 3.12 m into the underlying bedrock using HQ rock coring tools to confirm depth to bedrock and bedrock quality. Boreholes not instrumented with groundwater monitoring wells were backfilled with 10 mm bentonite chips (Holeplug™) in accordance with Ontario Regulation 903 – Wells, as amended ("O.Reg. 903").

The borehole/monitoring well locations are shown in Figure 4. Details of the borehole drilling and soil sampling are provided in the stratigraphic and instrumentation logs in Appendix C.

3.1.5 Sample Logging and Handling

The soil samples retrieved during the test pit excavation and borehole investigations were examined, classified, and logged according to soil type, moisture content, colour, consistency, and presence of visual and/or olfactory indicators of negative impact. The soil samples recovered at the Site were subsampled based on visual observations including fill/soil type and visual/olfactory evidence of suspected impact.

Soil samples were split into duplicate fractions upon recovery at the surface. The primary sample fractions were placed in laboratory supplied glass sample jars. The duplicate sample fractions were placed in "Ziploc" sample bags and stored at ambient temperature for subsequent field vapour screening purposes. Where analysis for volatile organic constituents (e.g., BTEX, PHC F1) was a consideration, the sample was sub-sampled by micro-coring and the sub-sample subject to field preservation using methanol charged vials supplied by the analytical laboratory in order to minimize potential losses due to volatilization.

All soil samples were collected in accordance with strict environmental sampling protocols to minimize loss of volatile organics and to ensure reliable and representative results. Disposable nitrile gloves were used and replaced between the handling of successive samples. All soil sampling equipment (stainless steel trowels, spatulas, etc.) was thoroughly decontaminated between soil sample locations to prevent potential cross-contamination. Decontamination activities included:

- Physical removal of any adhered debris;
- Wash/scrub in "Alconox" soap solution;
- Distilled water rinse;
- Methanol rinse; and,
- Air dry.

3.1.6 Sample Screening

All soil samples were screened in the field for gross evidence of negative environmental impact including staining and odours. Soil sample headspace screening was also performed to facilitate sample selections for laboratory analysis and to provide an assessment of the vertical contaminant distributions at each borehole location. The duplicate soil sample fractions were screened for combustible organic vapour (COV) and total organic vapour (TOV) concentrations using the sample headspace method. COV and TOV concentrations were measured using a RKI Eagle 2 combined combustible vapour analyzer and photoionization detector calibrated to known hexane and isobutylene standards and operated in methane elimination mode.

3.1.7 Soil Sample Analyses

Soil samples for laboratory analysis were selected on the basis of visual/olfactory evidence of contamination, field screening results (details follow), from the vicinity of the apparent water table or features such as inferred confining layers or, in the absence of any "targeting rationale", on the basis of at least one sample per sampling location. All samples were stored in coolers, on ice, immediately after collection and during storage and transport to the laboratory. Continuous Chain of Custody documentation was maintained.

A total of 32 discrete (i.e., exclusive of field duplicates) soil samples were submitted to the laboratory for analysis of one or more contaminants of potential concern (COPC) including metals (including antimony, arsenic, barium, beryllium, available boron, total boron, cadmium, total chromium, hexavalent chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, uranium, vanadium and zinc), petroleum hydrocarbon (PHC) fractions F1 – F4, organochlorine pesticides (OCP), phenoxy acid herbicides (HPA) and selected inorganic parameters including pH, cyanide (CN), electrical conductivity (EC) and sodium adsorption ration (SAR).

Details of the soil sampling program, selected analytes and sampling rationale are provided in Table 2. As noted in the Table 2, four (4) blind duplicate soil samples were collected for analysis of one or more COPC for QA/QC purposes.

3.1.8 Grain Size Determination

In addition to the above noted chemical analyses, 11 soil samples collected from boreholes advanced at the Site were submitted for grain size determination to facilitate accurate soil textural classification and application of appropriate regulatory standards and/or guidelines, where necessary. Results of the grain size determination are provided in Appendix D.

3.2 Monitoring Well Installations

Six (6) boreholes (MW21-11 – MW21-16) were instrumented with groundwater monitoring wells upon completion to permit the collection of groundwater samples and the determination of the direction of shallow, horizontal groundwater flow. The monitoring wells were constructed using 52 mm inside diameter, schedule 40, flush-joint threaded PVC monitoring well supplies. The monitoring wells were completed with a 3.05 m long 10 mil slotted intake screen. The tops of the intake screens were then extended above ground surface using solid riser pipe. A silica sand filter pack was placed between the intake screen and the wall of the borehole. The filter pack was extended approximately 0.3 m above the top of the well screen to allow for settlement of the sand packs and to accommodate expansion of the overlying well seals. A bentonite seal was placed above the sand pack and extended to approximately 0.3 metres below grade. The monitoring wells were finished at the surface with locking steel monument casings set in a concrete surface seal. The locations of the monitoring wells are shown in Figure 4. Details of the monitoring well constructions are provided in Table 1 and the stratigraphic and instrumentation logs in Appendix C.

All groundwater monitoring wells installed at the Site were instrumented with dedicated Waterra inertial lift pumps and sufficient lengths of low-density polyethylene (LDPE) tubing to facilitate well development. Following installation, each monitoring well was developed by extracting approximately five to ten casing volumes to remove any residual sediment and/or drill cuttings introduced during the borehole drilling and well installation process, stabilize and grade the filter pack, retrieve lost drilling fluids, improve connectivity between the well and the formation, and restore groundwater that may have been disturbed or altered during the drilling process.

Well development was performed by Wood field staff on January 12, 2022. Details of the monitoring well development are provided in Table 3. Monitoring wells MW21-13 and MW21-16 were of insufficient yield to achieve ten casing volumes. Monitoring well MW21-13 was frozen due to freezing conditions and the water table being present roughly at surface grade.

Once developed the wells were instrumented with smaller diameter LDPE tubing to facilitate low-flow sampling using a peristaltic pump.

3.3 Surveying and Levelling

The locations of all test pits, boreholes and monitoring wells were located in the field using a Garmin GPS III global positioning system and referenced relative to the Universal Transverse Mercator (UTM) grid reference system, Zone 17, North American Datum 1983 (NAD83), Canadian Spatial Reference System (CSRS). The ground surface elevations at all borehole locations and tops of all monitoring well casings were surveyed and referenced to the CGVD28 geodetic datum using a project benchmark established on the top bolt of the fire hydrant on the north side of Bill Leathem Drive approximately 30 m west of Leikin Drive by Annis, O'Sullivan, Vollebekk Ltd., Ontario Land Surveyors, and having an elevation of 90.50 metres above sea level (masl).

3.4 Groundwater Monitoring and Sampling

Groundwater monitoring, including measuring the depth to the static water level and assessing the presence/absence of measurable accumulations of phase separated light and/or dense non-aqueous phase liquid (LNAPL/DNAPL) was conducted on January 12 and 19, 2022 and included all on-Site monitoring wells. Measurements of groundwater depth were made using a Heron Instruments electronic interface probe and reduced to static elevations based on the monitoring well survey data. Groundwater monitoring and elevation data is presented in Table 4.

Groundwater sampling was also performed on January 19, 2022. Low-flow sampling techniques were utilized in order to minimize potential sample biasing due to sediment entrainment and loss of volatiles commonly associated with conventional sampling practices using inertial lift sampling devices or bailers. Using this sampling method, wells were purged and sampled at a maximum flow rate of 100 ml per minute while measuring the water level in order to ensure a maximum drawdown of not more than 0.3 metres. Field parameters including temperature, pH, conductivity and oxidation-reduction potential (ORP) were measured throughout the purging and sampling process using a YSI 556 multi-parameter water quality probe with the samples being collected upon stabilization of these parameters. Monitoring wells incapable of yielding sufficient water to sustain the 0.3 m maximum drawdown were purged dry and sampled on recovery. The stabilized groundwater field parameter data and general observations are provided in Table 5.

Groundwater samples were collected directly into laboratory supplied sample containers pre-inoculated with any necessary preservatives. Dedicated (one pair per sample), disposable nitrile gloves were used throughout the proceedings. Vials that contained samples to be analyzed for volatile compounds were inverted after filling and inspected to ensure that no head space was present in any vial. Samples were placed in a cooler and stored on ice until delivered to the analytical laboratory.

Details of the groundwater sampling program, selected analytes and sampling rationale are provided in Table 5. As noted in the Table 4, one blind duplicate soil sample also collected for analysis of COPC for QA/QC purposes. One travel blank was also employed to assess potential cross contamination during sample storage and transport.

3.5 Hydraulic Testing

Hydraulic conductivity field testing was carried out on January 25, 2022 at four (4) of the groundwater monitor wells installed at the Site including MW21-11, MW21-12, MW21-15 and MW21-16. The tests were performed using rising head test methods. In this method, a volume of water was instantaneously removed from the well and the subsequent rise in water level in the well is recorded against time using a down-well water level datalogger (Solinst Levelogger 5). The field data were analyzed according to the method of Bouwer and Rice (1976) to obtain estimates of the hydraulic conductivity at each test location. The results of the hydraulic conductivity field testing and slug test solutions are provided in Appendix E.

3.6 Laboratory Analyses

Representative soil and groundwater samples collected during the investigation were submitted for laboratory analysis of suspect COPC. All laboratory chemical analyses were conducted by ALS Environmental ("ALS") of Waterloo, Ontario. ALS is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) Standards Council of Canada (SCC) in accordance with ISO/IEC 17025:2017 – *General Requirements for the Competence of Testing and Calibration Laboratories* for the tested parameters set out in the Soil, Ground Water and Sediment Standards.

Soil samples collected at the Site were subject to analysis of one or more COPC in accordance with the APECs identified at the Site. Although identified as a COPC in soil, no samples were subject to analysis of PAH given the absence of any evidence of fill material having been placed at the Site, save and except the granular material used to construct the access road leading into the Site from Bill Leathem Drive.

Groundwater samples collected at the Site were subject to analysis of VOC, OCP and HPA in accordance with the COPC identified for APECs 3 and 4.

3.7 Management of Investigation Derived Waste

Auger cuttings generated during the borehole drilling program were left on-site adjacent to each of the borehole locations. Waste fluids including decontamination fluids, and well development and purge water were placed in 205-L steel drums and stored on-Site pending waste classification and subsequent disposal and/or treatment at off-site facilities. A temporary drum storage area was established on the access road into the Site from Bill Leathem Drive. Two drums of excess water was generated during the completion of this investigation.

Representative samples of the excess soil cuttings were submitted for waste classification testing in accordance with *Ontario Regulation 347/90 – General, Waste Management*, as amended ("O.Reg. 347") including flashpoint determination and analysis of selected parameters in accordance with the toxicity characteristic leaching procedure (TCLP). Results of the TCLP analysis and flashpoint determination are provided in Table 11.

4.0 Results of the Field Investigations

4.1 Site Geology

The subsurface conditions encountered at the Site are described in the test pit records and stratigraphic and instrumentation logs provided in Appendices B and C. In general, the subsurface conditions at the Site consisted of an organic rich topsoil successively underlain by Champlain Sea Quaternary deposits consisting of silt clay, sandy silt, silty sand, sill, gravelly sand, cobbles and boulders overlying Paleozoic sedimentary bedrock. Bedrock was intersected at depths ranging from 19.00 mbgs at BH21-3 to 21.95 mbgs at BH21-5. Bedrock consists of interbedded grey to dark grey limestone and buff coloured sandstone. Sandy cobble/boulder till was intersected beneath the clayey silt/silty clay and overlying the bedrock at boreholes BH21-3 and BH21-5 at depth of 14.88 mbgs and 19.74 mbgs, respectively.

4.1.1 Topsoil

Surficial topsoil ranging from 0.1 m to 0.5 m in thickness was encountered at the surface at all boreholes and monitoring well locations except Boreholes BH21-5, BH21-7 and BH21-14. Borehole BH21-14 was covered by the 200 mm thick ice during investigation period.

4.1.2 Fill

With the exception of TP-1 and BH21-5 near the north end of the access road into the Site from Bill Leathem Drive, no evidence of fill was identified in any of the sampling locations at the Site. At TP-1 and BH21-5, grey to black silty sand and gravel fill containing some cobbles and boulders was intersected to depths of 1.1 m and 2.2 mbgs, respectively. Traces of crushed/ground asphalt and clay were also noted to be present in the granular material.

Brown to grey silty clay, which is possibly disturbed native silty clay, was encountered in boreholes BH21-6, BH21-9, and MW21-12 below the topsoil and extended to depths ranging between 0.7 m and 1.4 mbgs

4.1.3 Silty Clay

Native silty clay deposit was encountered at all of borehole locations below topsoil and/or at ground surface and extended to depths ranging from 11.3 mbgs to 14.2 mbgs (78.5 masl to 76.2 masl). The silty clay deposit was generally brown to grey in colour and contained trace to some sand, trace gravel, and / or trace organics at some locations.

4.1.4 Sandy Clayey Silt / Clayey Silt

Native sandy clayey silt / clayey silt deposits were encountered underlying the silty clay deposit at boreholes BH21-3 to BH21-5 locations and extended to depths ranging from 14.3 m to 14.4 mbgs (75.5 masl to 69.0 masl). The sandy clayey silt / clayey silt deposits were generally light grey to grey in colour and contained trace gravel.

4.1.5 Gravelly Sand / Silty Sand

Native gravelly sand / silty sand deposits were encountered underlying the sandy clayey silt / clayey silt at Boreholes BH21-3 and BH21-4 locations and extended to depths ranging from 18.9 mbgs to 19.7 mbgs (70.9 masl to 71.4 masl). The gravelly sand / silty sand deposits were generally grey in colour and contained trace clay and cobbles / boulders.

4.1.6 Cobbles / Boulders

Cobbles / Boulders were observed in the core samples collected below the sandy clayey silt / clayey silt and/or gravelly sand / silty sand deposits in boreholes BH21-3 to BH21-5 and extended to depths of 19.0 mbgs and 21.9 mbgs (71.0 masl and 69.2 masl) below existing grade, respectively. Rock coring was initiated below the sandy clayey silt / clayey silt and/or gravelly sand / silty sand deposits due to split spoon and/or auger refusal. The core sample recovery in this stratum was very low (16 % to 69 %) due to probable washing out of soils during coring.

4.1.7 Bedrock

Bedrock consisting of interbedded limestone and sandstone of March Formation was encountered below the cobbles / boulders or gravelly sand in boreholes BH21-3 to BH21-5. The limestone was generally grey to dark grey in colour and the sandstone was generally grey to white in colour. The bedrock was cored to the borehole termination depths ranging from 21.9 mbgs to 25.1 mbgs (68.0 masl to 65.9 masl).

4.1.8 Grain Size

Ten (10) soil samples collected from the boreholes were subject to grain size determination to facilitate accurate soil textural classification and application of appropriate regulatory standards and/or guidelines, where necessary. Results of the grain size determination are summarized in Table 4.1 below.

Table 4.1. Grain Size Determination Results

Sample ID	Sample Depth (mbgs)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Soil Description
BH21-3	3.05 – 3.66	0	4	65	31	Silty clay, trace sand
BH21-3	10.36 - 10.97	0	5	67	28	Silty clay, trace sand
BH21-3	13.84 – 14.02	5	34	48	13	Sandy silt, some clay, trace gravel
BH21-4	11.89 – 12.50	0	1	86	13	Silt, some clay, trace sand
BH21-4	14.93 – 15.54	11	47	34	8	Silty sand, some gravel, trace clay
BH21-4	19.35 – 19.96	26	63	10	1	Gravelly sand, trace silt and clay
BH21-5	16.46 – 17.07	0	1	91	8	Silt, trace sand and clay
BH21-5	17.98 – 18.59	13	45	34	8	Silty sand, some gravel, trace clay
BH21-10	2.29 – 2.90	0	6	65	29	Silty clay, trace sand
MW21-12	3.05 – 3.66	0	5	57	38	Silty clay, trace sand

Copies of the grain size distribution curves are provided in Appendix D.

4.2 Site Hydrogeology

Groundwater levels were measured in the monitoring well constructed at the Site on January 12, 2022 during well development and on January 19, 2022 during groundwater sampling. On January 19, 2022 groundwater was present at depths ranging from 0.90 mbgs at MW21-14 to 2.057 mbgs (MW21-11) and elevations between 87.92 masl (MW21-11) and 89.12 masl (MW21-13). The results of the groundwater monitoring indicate that the primary near surface water table resides within the native clayey silt/silty clay deposits underlying the Site.

A groundwater elevation contour plan depicting the interpreted groundwater flow pattern across the site is provided on Figure 5. Shallow groundwater is interpreted to flow in an outward radial pattern from the northwest corner of the Site. Along the west and central portion of the Site, groundwater flow is directed to the south whereas in the north portion of the Site groundwater flow is directed to the east. A second area of outward radial flow is interpreted on the east side of the Site at MW21-13 flow where the highest groundwater elevation was observed. This outward radial pattern disrupts the west to east flow that would be expected relative to the locations of the Rideau River approximately 500 metres east of the Site. The cause of this groundwater high is unknown and may ultimately prove to be an artifact or seasonal anomaly as additional temporal/seasonal monitoring data is acquired.

The results of the hydraulic conductivity testing are presented in Table 4.2 below. The hydraulic conductivity test results were reviewed against the borehole logs and were found to be reasonable based on the geologic materials in which the well screens were placed. The hydraulic conductivity test results for the overburden ranged from 1.42×10^{-5} m/s to 1.73×10^{-6} m/s with a geometric mean of 4.84×10^{-6}. The hydraulic conductivity values fall at the middle to upper end of the range for silt and within the low to middle end of the range for silty sand and well above the range for clay.

Table 4.2. Hydraulic Conductivity Test Results

Monitoring Well ID	Test Method	Solution Method	Hydraulic Conductivity (m/sec)
MW21-11	Rising Head	Bouwer and Rice, Partially Penetrating	1.73×10^{-6}
MW21-12	Rising Head	Bouwer and Rice, Partially Penetrating	1.42×10^{-5}
MW21-15	Rising Head	Bouwer and Rice, Partially Penetrating	9.52×10^{-6}
MW21-16	Rising Head	Bouwer and Rice, Partially Penetrating	2.34×10^{-6}
		Geometric mean	4.84×10^{-6}

Additionally, it should be noted that geologic materials can vary in characteristics even over short distances, and some higher and lower permeability materials may be present within the investigated site and between the borehole locations that were not encountered during the field investigation.

Horizontal hydraulic gradients measured across the Site on January 19, 2022 ranged from 0.22% to 0.97%

with higher gradients occurring in the southeastern portion of the Site. Based on the hydraulic conductivity data, horizontal hydraulic gradients and assuming an effective porosity of 40%, the average horizontal linear groundwater velocity is estimated to range between 0.3 m/year and 10.9 m/year with an average velocity of 1.6 m/year.

4.3 Field Measurements and Observations

4.3.1 Staining and Odours

No odours or staining suggestive of petroleum hydrocarbon impacts were detected in any of the soil samples collected at the Site.

As noted in Section 4.1 above, crushed/ground asphalt was observed in the granular fill material at test pit TP-1. Apart from this, no fill materials or otherwise deleterious materials were observed at any of the test pit or borehole location.

4.3.2 Sample Headspace COV and TOV Concentrations

With the exception of sample TP-1 SS-1, all COV and TOV concentration headspace measurements recorded in the soil samples collected at the Site were reported as 0 ppm. These concentrations are not indicative of impact by petroleum hydrocarbons. Sample TP-1 SS-1 reported a COV concentration of 125 ppm. This can likely be attributed to the asphalt observed in the samples. The COV/TOV results are semi-quantitative at best and are generally only used for relative sample comparison purposes when selecting samples for laboratory analysis. The COV/TOV concentrations headspace measurements are summarized in the test pit records and stratigraphic and instrumentation logs in Appendices B and C.

4.3.3 Non-Aqueous Phase Liquids

Attention was given to the presence of any non-aqueous phase liquids (NAPL) such as liquid petroleum hydrocarbon (LPH) during the collection of soil and groundwater samples at the Site. No visible NAPL was observed in either the soil or groundwater samples obtained from the Site. No measurable accumulations of floating (i.e., light [L]) or sinking (i.e., dense [D]) NAPL were detected in any of the monitoring wells installed at the Site. No evidence of hydrocarbon sheen or iridescence was noted during the monitoring well development and/or groundwater purging and sampling activities.

5.0 Regulatory Framework

5.1 Federal Guidelines

Federal contaminated sites are generally evaluated using generic guidelines developed by, or on behalf of the Federal government including the Canadian Council of Ministers of the Environment (CCME), Environment Canada (EC), Health Canada (HC), and the Federal Contaminated Sites Action Plan (FCSAP). Federal Guidelines considered relevant to this study include the following:

- *Canadian Environmental Quality Guidelines* (CCME, 1999; updated and available online at http://st-ts.ccme.ca/en/index);
- *Canada-Wide Standards for Petroleum Hydrocarbons in Soil* (CCME, revised January 2008); and,
- *Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites* (FCSAP, revised June 2016).

5.1.1 Canadian Environmental Quality Guidelines

Canadian Environmental Quality Guidelines (CEQG) are primarily risk-based numerical guidelines set at levels at which it is believed that unacceptable adverse effects to human or environmental health will not occur. CEQGs have been developed for various media including air, soil, water, sediment, and biological tissue. For some media, such as surface water and soil, a multi-tiered framework allows for the application of: 1) generic numerical guidelines (Tier 1); 2) the modification of guidelines based on site-specific conditions (Tier 2); or 3) the use of site-specific risk assessment to develop site-specific remediation objectives or trigger values (Tier 3). The CEQG are available online (https://ccme.ca/en/summary-table) and are updated from time to time including revisions to existing guideline values and/or the addition of guidelines for new parameters.

Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health

Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (CSoQG) are considerate of both human health and ecological receptors. The final guideline is set to protect the more sensitive of the two. These guidelines are intended as general guidance for the protection, maintenance, and improvement of specific uses of land and water. Recommended CCME Soil Quality Guidelines have been developed for four different land-uses including: 1) agricultural; 2) residential/parkland; 3) commercial; and 4) industrial. Soil Quality Guidelines can be used as benchmarks to evaluate the need for further investigation or remediation with respect to a specified land use. Guidelines are applied to identify and classify sites, to assess the general degree of contamination at a site and to determine the need for further action and as a basis for remediation objectives.

Canada-Wide Standards for Petroleum Hydrocarbons in Soil

The *Canada-Wide Standards for Petroleum Hydrocarbons* (CWS-PHC) *in Soil* (CCME, 2008) are typically used as a preliminary means of evaluating petroleum hydrocarbons in soil at federal sites. CWS-PWC have also been adopted by some provincial and territorial regulatory agencies. CWS-PHC are dependent on the nature of the hydrocarbon type. That is, the CWS-PHC group petroleum hydrocarbons into four

practical fractions (F1, F2, F3 and F4) with different standards for each. CWS-PHC have been developed based on land use, soil type and soil depth. Different generic levels exist for agricultural, residential, commercial and industrial sites and are based on coarse textured soil versus fine textured soil. The standards also change with depth of soil as related to exposure. Allowable concentrations for surface soil (less than 1.5 mbgs) are different from those for subsurface soil (that which is deeper than 1.5 mbgs).

Additional generic standards have also been developed according to exposure pathways. If potential exposure pathways can be identified at a site, different generic standards exist for exposure pathways including soil ingestion, dermal contact, vapour inhalation, protection of groundwater for aquatic life, protection of groundwater for livestock watering, nutrient cycling, eco-soil contact, eco-soil ingestion, produce and off-site migration.

5.1.2 Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites

In the absence of CEQG for non-potable groundwater use and in recognizing the need for a nationally-consistent approach for assessing and managing groundwater at federal contaminated sites, Environment and Climate Change Canada (ECCC) commissioned a study to develop a federal approach that would be based on a critical review and evaluation of existing approaches used by other jurisdictions in Canada and in other countries. The study, completed by Meridian Environmental Inc. on behalf of ECCC, culminated in the *Federal Interim Groundwater Quality Guidelines* (FIGQG) for Federal Contaminated Sites (revised June 2016). The FIGQG are intended to be used as an interim measure until CEQGs for groundwater become available and have been designed to be used in connection with groundwater investigation and remediation activities at federal contaminated sites.

The FIGQG follow a tiered framework consisting of:

- Tier 1: direct application of the generic numerical guidelines; specifically, application of the lowest guideline for any pathway;
- Tier 2: allows for the development of site-specific remediation objectives through the consideration of site-specific conditions, by modifying (within limits) the numerical guidelines based on site-specific conditions and focusing on exposure pathways and receptors that are applicable to the site; and,
- Tier 3: use of site-specific risk assessment to develop Site-Specific Remediation Objectives.

5.2 Provincial Standards

5.2.1 Soil, Ground Water and Sediment Standards

The legislative and regulatory requirements for contaminated sites in Ontario are established by *Ontario Regulation 153/04 - Records of Site Condition, Part XV.1 of the Environmental Protection Act*, as amended, ("O.Reg. 153/04"). O.Reg. 153/04 provides two approaches for remediating contaminated sites including: 1) restoration to generic Site Condition Standards (SCS) comprised of background standards and effects-based standards; and 2) preparation of a risk assessment. The generic and background SCS are set out in

the document entitled *"Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act"* dated April 15, 2011 (the "MECP Standards"). The generic effects-based SCS have been developed using a risk-based approach and are provided in Tables 2 through 9 of the MECP Standards. The application of the appropriate generic effects-based SCS is dependent upon several site-specific conditions including: 1) the existing/proposed property use; 2) the existing/potential groundwater use; 3) depth of clean-up; 4) soil texture; 5) depth to bedrock; 6) soil pH; and 7) proximity to a water body.

The SCS applicable to the Site have been evaluated on the basis of the following rationale:

- There are no known areas of natural significance[1] or conditions in the vicinity of the Site, which would cause the Site to be classified as potentially sensitive according to the Ministry of Natural Resources' Natural Heritage Information Centre web site;
- Based on the results of the borehole drilling, the depth of the soil on the Site is greater than 2.0 mbgs;
- Groundwater is not used as a source of potable water within 250 metres of Site and municipal services are in place;
- No permanent water bodies were located on or within 30 metres of the Site;
- The existing and intended future use of the Site is commercial;
- Soil pH values measured at the Site ranged from 7.50 to 10.23, reporting within the required range of 5 – 9 with the exception of one soil sample (BH19-E8-SS1C); and,
- Based on soil textural observations made during the test pitting and drilling programs and grain size distribution curves for samples obtained therefrom, the subsurface soil conditions across the Site are considered fine-medium textured for the purposes of this assessment.

5.2.2 Ontario Regulation 347 Waste Classification

The legislative and regulatory requirements for contaminated soil disposal in Ontario are established by *Ontario Regulation 347/90 – General, Waste Management,* as amended ("O.Reg. 347/90"). The Schedule 4 Leachate Quality Criteria, as provided in O.Reg. 347/90, were developed as a guideline for waste classification and consequently determine the appropriate method of waste disposal. Analysis of soil samples in accordance with the toxicity characteristic leaching procedure (TCLP) is required in order to evaluate soil characteristics with respect to the Schedule 4 Leachate Quality Criteria.

[1] An "Area of Natural Significance" means any of the following: 1) An area reserved or set apart as a provincial park or conservation reserve under the Provincial Parks and Conservation Reserves Act, 2006; 2) An area of natural and scientific interest (life science or earth science) identified by the Ministry of Natural Resources as having provincial significance; 3) A wetland identified by the Ministry of Natural Resources as having provincial significance; 4) An area designated by a municipality in its official plan as environmentally significant, however expressed, including designations of areas as environmentally sensitive, as being of environmental concern and as being ecologically significant; 5) An area designated as an escarpment natural area or an escarpment protection area by the Niagara Escarpment Plan under the Niagara Escarpment Planning and Development Act; 6) An area identified by the Ministry of Natural Resources as significant habitat of a threatened or endangered species; 7) An area which is habitat of a species that is classified under section 7 of the Endangered Species Act, 2007 as a threatened or endangered species; 8) Property within an area designated as a natural core area or natural linkage area within the area to which the Oak Ridges Moraine Conservation Plan under the Oak Ridges Moraine Conservation Act, 2001 applies; and 9) An area set apart as a wilderness area under the Wilderness Areas Act.

5.2.3 Excess Soil Standards

The legislative and regulatory requirements for excess soil generated at a project site are established by *Ontario Regulation 406/19 – On-site and Excess Soil Management*, as amended ("O.Reg. 406/19"). O.Reg. 406/19 applies to excess soils generated at a project site which may include the construction, reconstruction, erection or placement of a building or structure or the establishment, replacement, alteration or extension of infrastructure. The regulation establishes a framework for better management and reuse of excess soils excavated from a project site.

As defined in O.Reg. 406/19, "excess soil" means soil, or soil mixed with rock, that has been excavated as part of a project and removed from the project area. However, O.Reg. 406/19 does not apply to the excavation of soil that is hazardous waste or asbestos waste (both within the meaning of O.Reg. 347/90, the operation of a pit or quarry from which consolidated or unconsolidated aggregate (within the meaning of the Aggregate Resources Act) is excavated (including the use and production of recycled aggregate in the pit or quarry), the excavation of topsoil in accordance with a permit issued under the Aggregate Resources Act, the production of peat from a peat extraction operation, or the final placement of excess soil on the bed of a surface water body.

The "Rules for Soil Management and Excess Soil Quality Standards" adopted under O.Reg. 406/19 sets out the soil management requirements and Excess Soil Quality Standards (ESQS), including specific requirements that must be complied with before excess soil may be removed from a project site. These requirements include but are not limited to, an Assessment of Past Uses, development and implementation of a Sampling and Analysis Plan and an excess soil tracking system, and the preparation of soil characterization reports and excess soil destination assessment reports.

5.3 Application of Federal Guidelines and Provincial Standards

As the Site would be considered Federal property under CPC ownership, soil and groundwater analytical data was evaluated through comparison to Federal Guidelines, where available. The current and future use of the Site is considered to be commercial, therefore the laboratory analytical results were compared to the applicable guidelines developed for commercial or commercial/industrial land use, as available. Soil analytical data for samples collected at the Site were evaluated through comparison to Federal Guidelines taken from the CSoQG (accessed online January 5, 2022). Guidelines applied were those established for fine textured, where established, based on samples collected at the Site and soil depth observations made during drilling and sampling.

Owing to the current existing non-potable groundwater use conditions, groundwater analytical results were evaluated through comparison with the FIGQG for industrial/commercial (Table 3) land uses only. Groundwater analytical data was evaluated though comparison to Tier 1 guideline values.
Soil and groundwater samples collected at the Site were also evaluated through comparison Provincial SCS. Based on the above Site characteristics, the Site was evaluated through comparison to the Table 3 SCS for commercial/industrial/community property use and fine-medium textured soils in a non-potable groundwater use setting ("MECP 2011 Table 3 SCS"). Owing to the shallow water table depth,

groundwater data was also evaluated though comparison to the MECP 2011 Table 7 SCS for shallow soil sites.

Where groundwater is considered shallow (i.e., <3 mbgs) the generic model used in the development of the component values protective of the migration of volatiles from groundwater to indoor air in the Table 3 SCS has the potential to become under-conservative. Where groundwater is considered shallow, the MECP 2011 Table 7 SCS were applied to address this exposure pathway.

Soil and groundwater exceedances of the Federal Tier I guidelines or generic Provincial SCS were subject to Tier 2 evaluation to further assess potentially unacceptable risks to human and ecological health associated with the COPCs and the site-specific exposure pathways considered applicable at the Site. For Federal Guidelines, this was done by comparing exceedances of the Tier I guideline to relevant Tier II Soil Quality Guidelines for soil exceedances and water use / pathway specific values for groundwater. For the Provincial Standards, exceedances were compared to soil or groundwater component values for exposure pathway/receptor combinations considered relevant to the Site. For VOCs, the Tier II evaluation included comparison of the exceedance to the Table 7 GW2 component values.

6.0 Laboratory Analyses

The results of the soil and groundwater sample analyses carried out as part of this investigation are summarized in Tables 6 through 11. A discussion of the results of the laboratory analyses in the context of the applicable generic MECP SCS and/or PWQO is provided in the following sections. Where field duplicate samples for QA/QC purposes were analyzed the calculated average value was applied.

Copies of the laboratory Certificates of Analysis are provided in Appendix F.

6.1 Soil Sample Analyses

The results of the soil sample analyses, and their respective Federal Guidelines and Provincial Standards relevant to the Site are summarized in Tables 6 through 8.

6.1.1 Petroleum Hydrocarbons

One (1) soil collected from test pit TP-1 (SS-1) was submitted for analysis of PHC F1 – F4. The results of the BTEX and PHC F1 - F4 soil sample analyses and their respective CWS-PHC and MECP Table 3 SCS are provided in Table 6 and summarized as follows.

- PHC F1 (C6 – C10) and PHC F2 (>C10 to C16) were not detected in samples TP-1 SS1. Based on the reporting detection limits (RDL) reported by the laboratory, the sample meets CWS-PHC and MECP Table 3 SCS;
- PHC F3 (>C16 to C34) was detected at a concentration of 2,900 µg/g thereby exceeding both the CWS-PHC and MECP Table 3 SCS (2,500 µg/g);
- PHC F4 (>C34) was detected at a concentration of 7,400 µg/g thereby exceeding both the CWS-PHC and MECP Table 3 SCS (6,600 µg/g); and,
- PHC F4G (>C34) was detected at a concentration of 14,000 µg/g thereby exceeding both the CWS-PHC and MECP Table 3 SCS (6,600 µg/g).

6.1.2 Metals

A total of 30 soil samples, in addition to four (4) QA/QC duplicate samples, collected during the test pit and borehole sampling programs were submitted for analysis of metals. The results of the metals soil sample analyses and their respective CCME CSoQG and MECP Table 3 SCS are summarized in Table 7.

All soils naturally contain trace levels of metals. The presence of metals in soils is, therefore, not necessarily indicative of contamination. The concentration of metals in uncontaminated soil is primarily related to the geology of the parent material from which the soil was formed. However, elevated concentrations of specific metals may accumulate in soil and fill materials due to anthropogenic activities and or as a result of the nature and origin of fill materials.

Of the 30 samples analysed, the concentrations of one or more metals including chromium, hexavalent chromium and vanadium were found to be in excess of CCME CSoQG and/or MECP Table 3 SCS in 17 of the samples. The results of the metals sample analyses are summarized as follows:

- Chromium was detected at concentrations in excess of the CSoQG (87 µg/g) in 16 samples with a maximum reported concentration of 137 µg/g;
- Hexavalent chromium was detected at concentrations in excess of the CSoQG (1.4 µg/g) in 3 samples with a maximum reported concentration of 2.16 µg/g; and,
- Vanadium was detected in sample MW21-15 SS3 at a concentration of 147 µg/g thereby exceeding the CSoQG (130 µg/g)
- Vanadium exceeded the MECP Table 3 SCS (86 µg/g) in 16 samples with a maximum reported concentration of 147 µg/g;

The locations of the soil samples exceedances are shown on Figure 6.

It is noted the CSoQG for chromium, hexavalent chromium and vanadium are based on the soil quality guidelines for soil contact for ecological health with no provisions for modification using a Tier 2 approach.

For duplicate samples pairs TP-2 SS-1/DUP-1 and TP-12 SS-1/DUP-2 vanadium exceeded the MECP Table 3 SCS in both duplicate samples but not the primary samples. The average concentrations were below the MECP Table 3 SCS in both instances.

In addition to the above noted exceedances, the following parameters were found to exceed MECP Table 1 SCS:

- Barium exceeded the MECP Table 1 SCS (220 µg/g) in 23 samples;
- Chromium exceeded the MECP Table 1 SCS (70 µg/g) in 20 samples;
- Hexavalent chromium exceeded the MECP Table 1 SCS (0.66 µg/g) in 16 samples;
- Cobalt exceeded the MECP Table 1 SCS (21 µg/g) in 10 samples;
- Molybdenum exceeded the MECP Table 1 SCS (2 µg/g) in one sample (TP-1 SS1); and,
- Electrical conductivity exceeded the MECP Table 1 SCS (0.57 mS/cm) in one sample (TP-1 SS1).

All other samples collected from the Site reported either non-detect parameter concentrations or contained detectable metals concentrations below CCME CSoQG and/or MECP Table 3 SCS.

6.1.3 Pesticides

Eleven (11) soil samples, in addition to one (1) QA/QC blind duplicate sample, collected during the test pit sampling program were submitted for analysis of OCP and PHA. The results of the OCP and PHA soil sample analyses and their respective CSoQG and MECP Table 3 SCS are summarized in Table 8. It is noted

that no CSoQG or MECP Table 3 SCS exist for PHA. All soil samples reported concentrations of OCP and PHA below laboratory RDLs. Based on the RDLs reported by the laboratory, all OCP parameters met CSoQG and/or MECP Table 3 SCS applicable to the Site, where established.

6.2 Groundwater Sample Analyses

Seven (7) groundwater samples, including one sample from each monitoring well installed during this study and one QA/QC duplicate sample, were submitted for laboratory analysis of VOCs and OCP. The results of the groundwater sample analyses, and their respective and Federal Interim Groundwater Quality Guidelines (FIGQG) and MECP Table 3 SCS are summarized in Tables 9 and 10.

6.2.1 Volatile Organic Compounds

The results of the VOC analyses and their respective FIGQG Tier 1 guidelines and MECP Table 3 SCS are summarized in Table 9. All groundwater samples reported VOC concentrations below laboratory RDLs with the exception of sample MW21-14 and its blind duplicate (DUP-1) which reported toluene at concentrations of 1.5 µg/L and 1.56 µg/L, respectively. Based on the detectable concentrations and RDLs reported by the laboratory all VOC met FIGQG-Tier 1 and MECP Table 3 SCS applicable to the Site.

6.2.2 Pesticides

The results of the OCP analyses and their respective FIGQG-Tier 1 guidelines and MECP Table 3 SCS are summarized in Table 10. All groundwater samples reported concentrations of OCP below laboratory RDLs. Based on the RDLs reported by the laboratory all OCP and PHA parameters met FIGQG-Tier 1 and MECP 2011 Table 3 SCS applicable to the Site.

6.3 Waste Classification Testing

One (1) composite sample collected during the test pit sampling program Site investigation was submitted for waste classification testing in accordance with *O.Reg. 347/90 – General, Waste Management* ("O.Reg. 347/90"). The sample was prepared as a composite sample by selecting soil aliquots from the several of the test pit locations. The sample was subject to flashpoint determination and analysis of general inorganics, metals, and benzo[a]pyrene in accordance with the toxicity characteristic leaching procedure (TCLP). The results of the waste classification testing along with the Schedule 4 leachate quality criteria are summarized in Table 11. The results of the waste classification indicate that the soil would be classified as non-hazardous solid waste if removed from the Site.

7.0 Quality Assurance / Quality Control

A strict Quality Assurance/Quality Control (QA/QC) program was implemented and maintained throughout the project to ensure the integrity of the soil and groundwater sampling and analytical testing and that the results of the Site data are representative of the actual Site conditions. The QA/QC program provides a method of documented checks to assess the precision and accuracy of collected data. The QA/QC program includes a set of standard procedures or protocols to be followed throughout the investigations. To this end, Wood field and QA/QC protocols have been developed in recognition of recognized scientific and engineering practices to meet or exceed those defined in the documents entitled *Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04* (MOE, June 2011) and *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario* (MOEE, 1996) and Canadian Council of Ministers of the Environment (CCME) *Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites* (CCME, 1993) and *Guidance Manual For Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment -– Volumes 1 through 3* (CCME, 2016). The field QA/QC program included the following components:

- The use of personal protective equipment (PPE) including hard hats, safety glasses, safety work boots and high visibility vests;
- The use of standard operating procedures (SOP) developed to meet or exceed industry standard practices;
- Thorough documentation of all field activities and sample handling practices including field notes, chain of custody forms, memos to file, etc.;
- Daily inspection and calibration of all field instruments prior to use;
- Use of new disposable latex or nitrile gloves worn when handling samples of environmental media and/or monitoring or measuring equipment;
- The use of dedicated or disposable sampling equipment where practical or the implementation of thorough equipment decontamination procedures to prevent cross contamination between sample locations;
- Use of pre-cleaned, pre-labelled sample containers supplied by the analytical laboratory which performed the samples analyses;
- Storage and transportation of all samples collected in the field in clean coolers on ice until delivered to the laboratory;
- Samples were delivered to the laboratory by Wood staff and submitted under chain of custody protocol; and,
- The use of laboratory analytical protocols and method detection limits that have been established in accordance with regulatory requirements for the province of Ontario.

7.1 Field Quality Assurance Program

The field QA/QC program was implemented to minimize and quantify sample biasing introduced during sample collection, handling, shipping and analysis and ensure the integrity of the soil and groundwater sampling and analytical testing results. Sampling protocols included use of standardized field procedures (e.g., minimizing sample handling, use of field QA/QC samples, using dedicated non-contaminating sampling equipment, using unique sample-specific identification procedures, using chain-of-custody records) and recognized laboratory analytical methods and procedures.

In addition to the protocols and measures cited above, the field quality assurance program included the use of field duplicates and trip blanks. Blind field duplicate samples were collected at the rate of one (1) duplicate samples for every ten (10) samples (i.e., 10%). In some cases, less than 10% soil duplicate samples were collected due to poor soil recovery during drilling. Trips blanks were employed at a rate of one trip blank for each sample cooler shipped containing volatile analytes (e.g., BTEX, VOC, PHC F1).

7.1.1 Field Duplicates

Field duplicates consist of samples collected at the same time and location placed into separate containers and are submitted for laboratory analysis to evaluate laboratory precision and field sampling and handling procedures, as well as to assess potential sample heterogeneity. As such, the field duplicates are typically collected "blindly" so that they cannot be cross-reference to the parent or primary sample by the analytical laboratory. For water samples, duplicates are prepared by alternately filling the sample bottles. The relative percent difference (RPD) is defined as the absolute value of the variation between a sample and its duplicate, when compared to the average concentration of the original and the duplicate. It is used to assess the validity of the field and laboratory analytical procedures. Meaningful RPDs can only be calculated if concentrations of a parameter are greater than the analytical reporting detection limits (RDL) in both the primary and duplicate samples. Lower precision in the RPD calculation is expected when concentrations are less than five (5) times the RDL.

The results of the field duplicate sample analyses indicate that the sampling results are generally reproducible with RPDs reporting at values less than recommended alert limits. In many cases, notably organic parameters, RPDs for the primary and duplicate samples could not be calculated as results were either below RDL or were less than five (5) times the reported RDL and thus not considered statistically significant. Where RPDs were calculated all values were within the acceptable limits.

7.1.2 Trip Blanks

Trip blanks, also known as travel blanks, are employed to assess potential cross contamination of volatile organic compounds from other samples, ambient conditions, or other sources during sample storage and shipment prior to receipt at the laboratory. Trip blanks consist of analyte free media (soil or water) prepared and placed in the sample storage and shipping cooler by the laboratory, taken to the site, and returned unopened to the laboratory with the sample submission.

The trip blank employed during the groundwater sampling program reported non-detect concentrations for all VOC. This is consistent with the laboratory analytical results as none of these parameters were detected in any of the samples collected at the Site during either sampling event.

7.2 Laboratory Quality Assurance Program

ALS has an extensive QA/QC program in place to ensure that reliable results are consistently obtained. The laboratory QA/QC program included adherence to recognized or proven laboratory sampling and analysis protocols (e.g., sample hold times, sample containers, sample preservatives, detection limits and approved methodology) and the analysis of laboratory QC samples (e.g., method blanks, laboratory sample duplicates, surrogate recovery and chemical spikes). Specific laboratory QA/QC measures include:

- Chain of Custody and sample integrity inspection;
- Strict documentation control and files;
- Trained personnel prepare and analyze samples according to Standard Operating Procedures (SOPs);
- All analytical methods are based on accepted (e.g., MOE, US EPA, ASTM) procedures and are fully validated prior to use;
- Precision is monitored by performing replicate analysis of samples within each batch;
- Accuracy is verified by analyzing spiked samples and reference materials within each batch;
- Instrument calibration integrity is ensured by analyzing calibration check standards within each run sequence;
- Matrix effects in organic analyses are assessed with surrogate fortification of each sample;
- Extensive use is made of reference material for routine procedure evaluation;
- Highest available purity analytical standards;
- Predefined analytical sequences ensure all results are traceable to calibration and QA/QC data;
- Hard copy or digital reports displaying all of the required data are generated for each instrument;
- Analytical results are determined only from instrument responses that fall within the calibration range;
- Acceptable QA/QC performance must be demonstrated prior to data authorization (data are subject to three levels of QC review: chemist, supervisor and manager);
- On-going method and instrument performance records are maintained for all analyses;
- Records containing all pertinent data are securely archived for five years;
- A full-time QA/QC Scientist evaluates the QA/QC program on an on-going basis; and,
- Laboratory blank, QC standards, and replicate samples were analyzed with the samples to assess the reliability of the analyses.

7.2.1 Laboratory Accreditation

The analytical laboratory employed to perform the laboratory analyses (ALS) is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) in accordance with ISO/IEC 17025:2017 – *General Requirements for the Competence of Testing and Calibration Laboratories* for the tested parameters set out in the *Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act (MOE,* April 2011 and/or *Guidance Manual For Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment -– Volume 4 Analytical Methods* (CCME, 2016).

7.2.2 Performance Criteria

The *Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment -– Volume 4 Analytical Methods* and/or *Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act"* dated 15 April 2011 (the "Analytical Protocol") establish performance criteria for use when assessing the reliability of data reported by analytical laboratories. These include maximum hold times for the storage of samples/sample extracts between collection and analysis, specified/approved analytical methods, required field and/or laboratory quality assurance samples such as blanks and field and laboratory duplicates, specified recovery ranges for spiked samples and surrogates (compounds added to samples in known concentrations for calibration purposes), Reporting Limits (RL) and specified precision required when analyzing laboratory duplicate and spike/controlled reference material samples.

7.2.3 Laboratory Data Validation

Sample Hold Times

Sample analysis dates provided on the Reports of Analysis issued by ALS indicate that all sample analyses were performed within the required sample/extract hold times.

Detection Limits

The reported RDLs met the RLs established in the MECP Analytical Protocol and/or CCME Analytical Methods with the following exceptions:

- The RDL was raised for the analysis of mercury and PHC F2 as reported on Certificate of Analysis L2673599. The RDL was adjusted due to sample matrix effects (e.g., chemical interference, colour, turbidity). In both instance the raised RDL were less than the applicable criteria such that the elevated RDL had no material effect on decision making; and,
- The RDLs for reported chlordane, endosulfan and heptachlor exceeded their respective CCME LRL but met MECP RL. Regardless, the RDLs for these parameters were well below the applicable FIGQG and/or MECP Table 3 SCS. As such, the elevated RDLs had no material effect on decision making.

Laboratory Blank Samples

Laboratory blank samples (also know as method blanks) consist of an uncontaminated media sample which is free of the target analytes or any other parameters that may interfere with the analysis and are subject to the entire analytical procedure including extraction, digestion, or any other preparation procedure. Method blanks are used to monitor laboratory background level of the target analytes and laboratory artefacts or anomalies. Methods blanks are also used to monitor cross contamination of carry-over between samples, notable when high concentrations of the target analytes are present.

Based on the laboratory Reports of Analysis, laboratory sample blank analyses met MECP and/or CCME requirements.

Laboratory Control Samples

Laboratory control samples (also known as blank spikes) consist of an uncontaminated media sample free of the target analytes or interferences which is fortified with a known concentration of target analytes. The blank spike is processed through the entire analytical method including any extraction, digestion or any other preparation procedure. Blank spikes are used to monitor analyte recovery and potential loss during the preparation procedures as well as to validate the calibration of the instrumentation or technique.

Based on the laboratory Reports of Analysis, recoveries reported for laboratory control samples were within acceptable limits.

Matrix Spike Samples

Matrix spike samples consist of an aliquot from a randomly chosen sample that is fortified with a known concentration of target analytes. Matrix spike samples are processed through the entire analytical method including any extraction, digestion or any other preparation procedure. The matrix spike sample is used to evaluate laboratory precision and to evaluate any “matrix effects” that may exist in a sample due to its composition that may affect the recovery of the target analytes. An example is the presence of peat in soils which tends to adsorb organic analytes resulting in a poor matrix spike recovery.

Based on the laboratory Reports of Analysis, recoveries reported for spiked samples/blanks were acceptable.

Laboratory Replicates

Laboratory replicates (or duplicates) consist of an aliquot from a randomly chosen sample within an analytical batch that is processed through the entire analytical method to evaluate analytical precision and sample homogeneity. The differences between the two sample results are expressed as RPDs.

Based on the laboratory Reports of Analysis, RPDs for laboratory replicate sample analyses met MECP and/or CCME requirements with the exception of hexavalent chromium reported on certificate of analysis L2678188. The disparity was reported by the lab to be due to sample heterogeneity.

Surrogate Recoveries

Surrogates are deuterated analogues or compounds not normally found in nature but behave chemically and physically similar to the target analytes in the analysis. Known surrogate concentrations are added to samples prior to analysis and recoveries calculated and expressed as a percentage. Surrogates are employed to monitor the efficiency of organic extractions, instrument performance and provide within run quality control. The results are reported as percentage recoveries based on the known concentrations added to the sample. If surrogate recoveries are above criteria, a high bias is assumed for that group of analytes; below criteria, a low bias is assumed. High bias would not be of concern for analytes that are under a regulatory limit. Low bias would be of concern for analytes that are under a regulatory limit depending on proximity to the limit. Extrapolation based on percent recovery would be advisable, however extremely low recoveries would affect data usability.

Laboratory surrogate recoveries reported as part of the laboratory Reports of Analysis were found to be within acceptable ranges.

7.3 QA/QC Summary

In summary, the laboratory and field QA/QC data indicate that the soil and groundwater data have met the performance criteria of the MECP Analytical Protocol and/or CCME Analytical Methods and have not been biased or compromised in any way. The analytical results are thus considered to be representative of the Site conditions and can be relied upon in the context of this report and its intended objectives.

8.0 Data Interpretation and Assessment

8.1 Soil Quality

The soil quality beneath the Site has been evaluated with respect to Federal and Provincial criteria applicable to the Site including CCME CSoQG and CWS-PHC and MECP Table 3 SCS.

Soil impacts by PHC F3, F4 and F4G exceeding CWS-PHC, which are identical to their respective MECP Table 3 SCS, were reported in a single soil sample collected at test pit TP-1. The test pit was excavated on the gravel access road that extends from Bill Leathem Drive into the Site. The PHC F3, F4 and F4G impacts are consistent with crushed asphalt observed in the fill material used to construct the access road. While the re-use of crushed or ground asphalt as granular material is common, mixing such material with soils resulting in concentrations exceeding applicable SCS renders those materials as contaminated soil, both under O.Reg. 153/04 and O.Reg. 406/19.

The volume of road bed material impacted by PHC is unknown but could be in excess of 300 m^3 based on observations made at the Site and assuming similar PHC impacts over the length of the road. These materials could be removed from the Site and disposed as waste at a licensed landfill, or they could be re-used on-site as subgrade materials beneath asphalt or concrete surfaced areas, subject to their suitability from a geomaterials perspective.

Several metals were found to exceed CCME CSoQG and/or MECP Table 3 SCS. Chromium, hexavalent chromium and vanadium exceeded CCME CSoQG at 16, 3 and sampling locations, respectively. Vanadium was reported to exceed the MECP Table 3 SCS at 16 locations. All sample reporting exceedances of CSoQG for chromium and hexavalent chromium met MECP Table 3 SCS.

Barium, cobalt and molybdenum were also noted to exceed MECP Table 1 SCS at 23, 10 and 1 sampling locations, respectively. These metals, along with chromium and vanadium, have been shown to occur at naturally elevated concentrations typically exceeding MECP Table 1 Background SCS in fine textured Champlain Sea deposits in the Ottawa region (Sterling et. al, 2018). This is problematic in the case of vanadium as the soil component value derived to be protective of birds and mammals is less than Table 1 Background SCS. As such, the MECP Table 3 SCS has been set to equal the MECP Table 1 Background SCS. Any excess soil generated at the Site containing naturally elevated concentrations of vanadium in excess of the MECP Table 3 SCS would be deemed contaminated and would thus require disposal at a licensed landfill unless it can be re-used at a property where it can be placed more than 1.5 m below grade. No other metals exceeded MECP Table 3 SCS.

The MECP Table 3 SCS exceedances by vanadium are prevalent in shallow soil (0.0 – 1.5 m) with exceedances being reported at 14 of 19 test pits excavated at the Site. This is likely to include any organic-rich layers typically removed as part of site development activities. Vanadium exceedances are less common in deeper samples with exceedances having been reported at only two of 11 borehole locations. Regardless, Site development initiatives should endeavour to minimize the amount of excess soil that may be generated at the Site given the potential need to dispose of such material at a landfill and/or the challenges associated with finding a potential re-use site.

A preliminary excess soil data evaluation is provided in Appendix G. The results indicate that much of the near surface soil exceeds MECP Table 3.1 ESQS for surface soil (< 1.5 m) for vanadium but meets the Table 5.1 ESQS for subsurface soil (>1.5 m). The soil could potentially be used at other receiving sites provided it can be placed more than 1.5 m below final grade. Further testing under O.Reg. 406 will be required including but not limited to leachate testing for metals and OCP depending on the actual quantity of excess soil that may be removed form the Site.

8.2 Groundwater Quality

The groundwater quality beneath the Site has been evaluated with respect to Federal and Provincial criteria applicable to the Site including FIGQG and MECP Table 3 SCS.

All groundwater samples collected at the Site reported concentrations below Federal and Provincial assessment criteria.

9.0 Conclusions and Recommendations

Based on the results of the soil and groundwater sampling and laboratory analytical programs, Wood offers the following conclusions and recommendations regarding the environmental Site conditions:

9.1 Conclusions

The subsurface conditions at the Site consisted of an organic rich topsoil successively underlain by fine grained Champlain Sea deposits consisting of clayey silt to silt clay. Interbedded grey to dark grey limestone and buff coloured sandstone bedrock were intersected at depths ranging from 19.00 mbgs at BH21-3 to 21.95 mbgs at BH21-5. Sandy cobble/boulder till was intersected beneath the clayey silt/silty clay and overlying the bedrock at boreholes BH21-3 and BH21-5 at depths of 14.88 mbgs and 19.74 mbgs, respectively.

With the exception of TP-1 excavated near the north end of the access road into the Site from Bill Leathem Drive, no evidence of fill or other deleterious materials was identified in any of the sampling locations at the Site. At TP-1, silty sand and gravel fill containing some cobbles and boulders was intersected to a depth of 1.1 m. Crushed/ground asphalt was also noted to be present in the granular material.

Groundwater was present at depths ranging from 0.90 mbgs at MW21-14 to 2.057 mbgs (MW21-11) and elevations between 87.92 masl at MW21-11 and 89.12 masl at MW21-13. Shallow groundwater within the silty clay/clayey silt is interpreted to flow in an outward radial pattern from the northwest corner of the Site. Beneath the west and central portion of the Site, groundwater flow is directed to the south whereas in the north portion of the Site groundwater flow is directed to the east. This pattern appears to be the result of a second area of outward radial flow interpreted on the east side of the Site at MW21-13 where the highest groundwater elevation was observed.

No odours or staining suggestive of petroleum hydrocarbon impacts were detected in any of the soil samples collected at the Site. With the exception of test pit TP-1 where a combustible organic vapour (COV) reading of 125 ppm was reported in sample SS-1, all COV and total organic vapour (TOV) headspace concentration measurements recorded in the soil samples collected at the Site were reported as 0 ppm.

No visible non-aqueous phase liquid (NAPL) was observed in either the soil or groundwater samples obtained from the Site. No measurable accumulations of floating (i.e., light [L]) or sinking (i.e., dense [D]) NAPL were detected in any of the monitoring wells installed at the Site. No evidence of hydrocarbon sheen or iridescence was noted during the monitoring well development and/or groundwater purging and sampling activities

Soil impacts by PHC F3, F4 and F4G exceeding CWS-PHC, which are identical to their respective MECP Table 3 SCS, were reported in a single soil sample collected at test pit TP-1 excavated at the north end of the gravel access road that extends from Bill Leathem Drive into the Site. The PHC F3, F4 and F4G impacts

are consistent with crushed asphalt observed in the fill material used to construct the access road. The volume of road bed material impacted by PHC is unknown but could be in excess of 300 m^3 based on observations made at the Site and assuming similar PHC impacts over the length of the road.

Several metals were found to exceed CCME CSoQG and/or MECP Table 3 SCS. Chromium, hexavalent chromium and vanadium exceeded CCME CSoQG at 16, three and one sampling locations, respectively. Vanadium also exceeded the MECP Table 3 SCS at 16 locations. All sample reporting exceedances of CSoQG for chromium and hexavalent chromium met MECP Table 3 SCS.

All groundwater samples collected at the Site met FIGQG and/or MECP Table 3 SCS.

9.2 Recommendations

Barium, cobalt and molybdenum were also noted to exceed MECP Table 1 SCS at 23, 10 and one sampling locations, respectively. These metals, along with chromium and vanadium, have been shown to occur at naturally elevated concentrations typically exceeding MECP Table 1 Background SCS in fine textured Champlain Sea deposits in the Ottawa region (Sterling et. al, 2018). Any excess soil generated at the Site containing vanadium at concentrations in excess of the MECP Table 3 SCS would be deemed contaminated and would thus require disposal at a licensed landfill unless it can be re-used at a property where it can be placed more than 1.5 m below grade. Site development initiatives should thus endeavour to minimize the amount of excess soil that may be generated at the Site.

10.0 Closure

This report was prepared for the exclusive use of Canada Post Corporation, and is intended to provide a Phase II Environmental Site Assessment on the property located at 50 Leikin Drive, Ottawa, Ontario at the time of the Site field work performed on the dates set out in this report. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of the third party. Should additional parties require reliance on this report, written authorization from Wood will be required. With respect to third parties, Wood has no liability or responsibility for losses of any kind whatsoever, including direct or consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

The investigation activities undertaken by Wood with respect to this report and any conclusions and/or recommendations made in this report reflect Wood's judgment based on the Site conditions observed at the time of the Site investigations and on information available at the time of preparation of this report. This report has been prepared for specific application to this Site and it is based, in part, upon visual observation of the Site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future Site conditions, portions of the Site, which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Wood has used its professional judgment in analyzing this information and formulating these conclusions.

In evaluating the property, Wood has relied in good faith on information provided by other individuals noted in this report. Wood has assumed that the information provided is factual and accurate. In addition, the findings in this report are based, to a large degree, upon information provided by the current owner/occupant. Wood accepts no responsibility for any deficiency, misstatement or inaccuracy contained in this report as a result of omissions, misinterpretations or fraudulent acts of persons interviewed or contacted.

Wood makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and change. Such interpretations and regulatory changes should be reviewed with legal counsel.

This Report is also subject to the further Standard Limitations contained in Appendix H.

We trust that the information presented in this report meets your current requirements. Should you have any questions, or concerns, please do not hesitate to contact the undersigned.

Respectfully Submitted,

Wood Environment & Infrastructure Solutions Canada Limited

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Associate/Team Lead – Ottawa ESA Services

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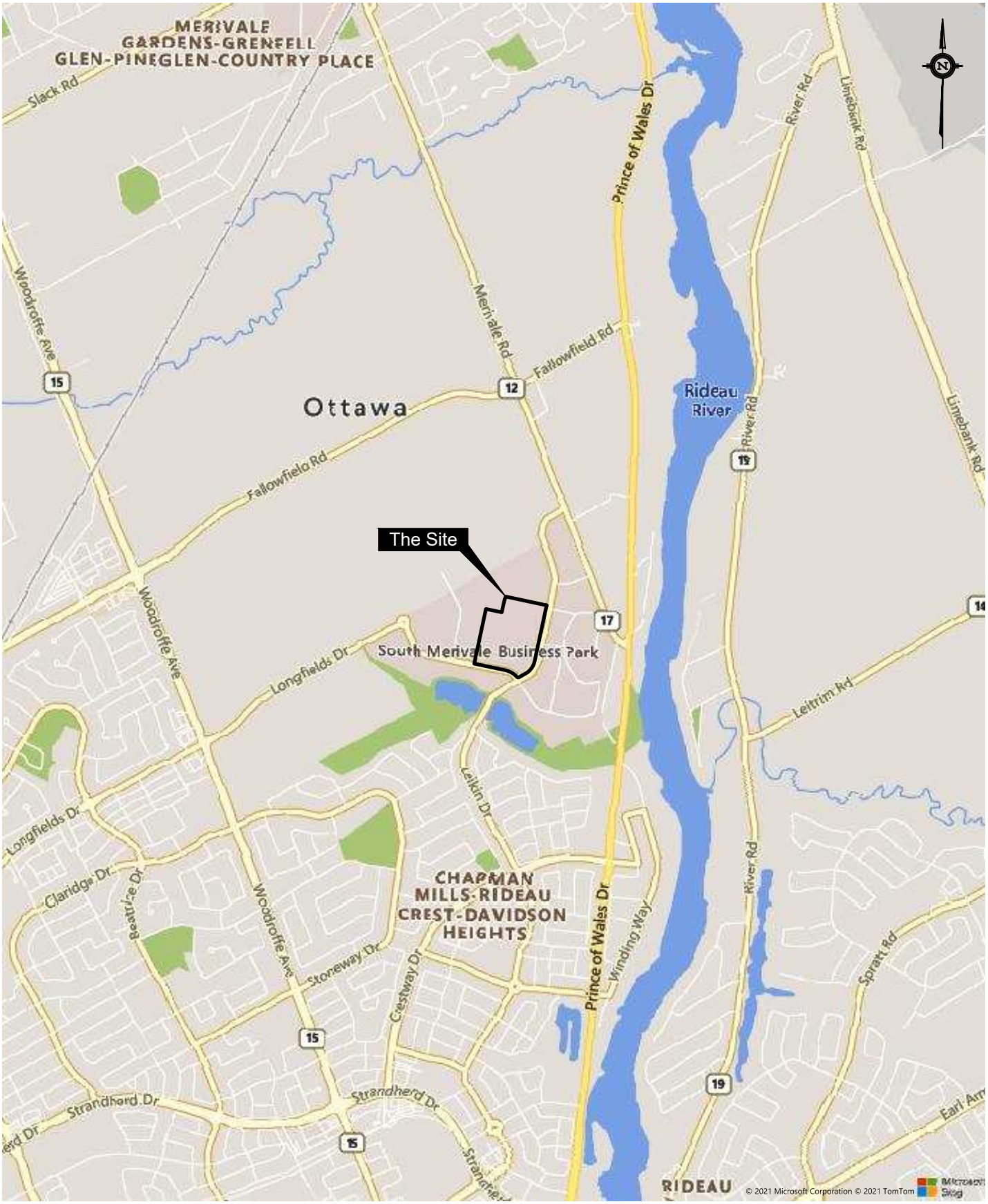
Figures



LEGEND

250 0 250 500 750
METRES

TITLE:
KEY PLAN
50 LEIKIN DRIVE, OTTAWA, ONTARIO

CLIENT:
CANADA POSTES POST CANADA

wood.

DATE: SEPTEMBER 2022

PROJECT NO: OESAO2132

FIGURE NO: 1

DRWN: JFT

CHK'D: KDH

SCALE: 1 : 25,000

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LEGEND

PROPERTY BOUNDARY

PROPOSED BUILDING

TITLE: SITE PLAN

PROJECT: PHASE II ENVIRONMENTAL SITE ASSESSMENT

50 LEIKIN DRIVE
OTTAWA ONTARIO

wood.

CLIENT: CANADA POST / POSTES CANADA

DRAWN BY:	CHECKED BY:	DATE:	SCALE:
JFT	KDH	SEPTEMBER 2022	1 : 1,250

REVISION:	PROJECT NO:	FIGURE NO:
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DATUM: NAD 83 CSRS 2010

PROJECTION: UTM ZONE 18 N

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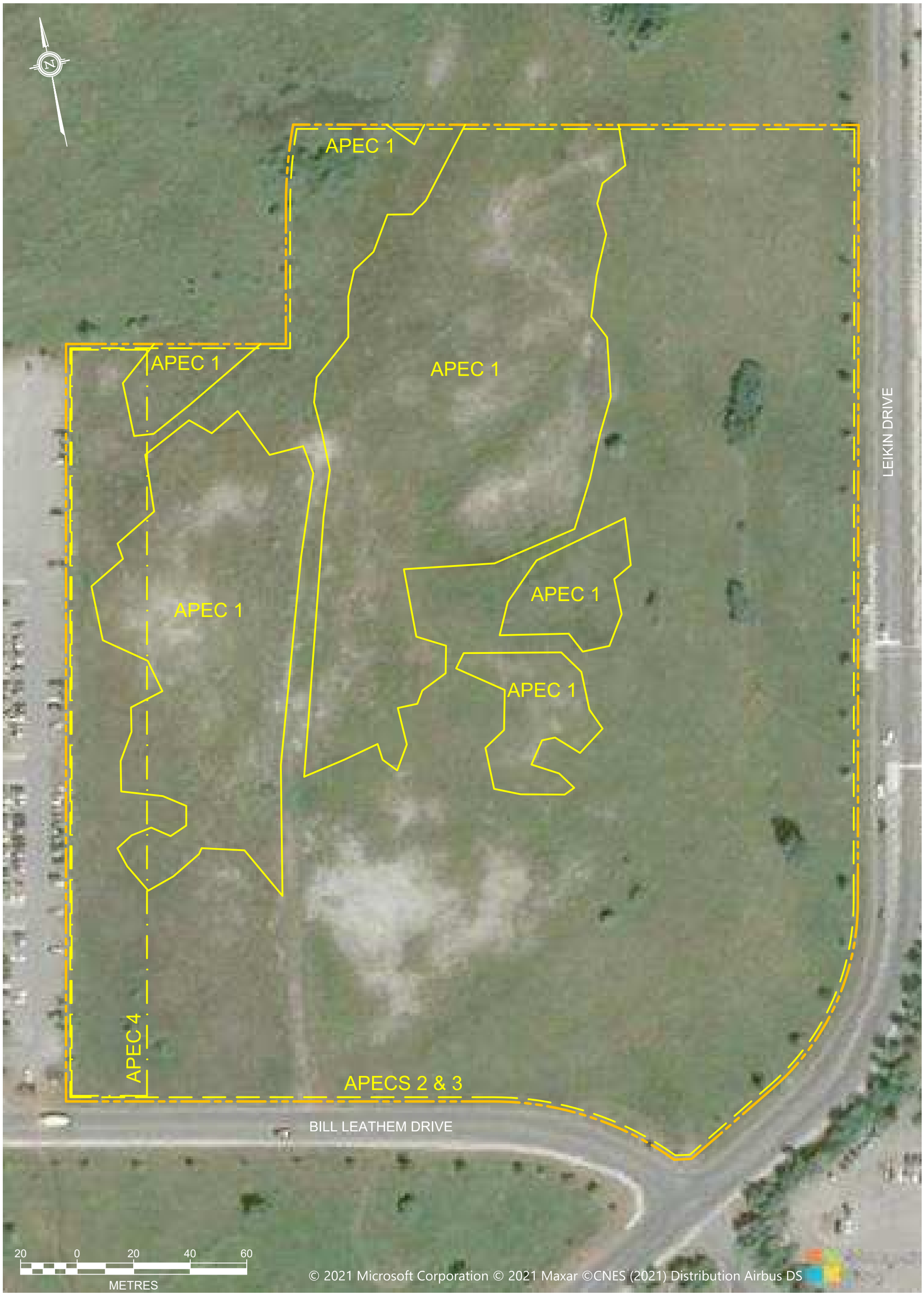

LEGEND

- PROPERTY BOUNDARY
- APEC 1: Importation and stockpiling / staging of fill of unknown quality and origin.
- APEC 2: Historic use of pesticides / herbicides to control insect populations or weed growth.
- APEC 3: Elevated levels of Ba, B, Cr, Co and V in fine textured Champlain Sea sediments.
- APEC 4: Chlorinated solvent use at adjacent property to the west.

TITLE: AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

PROJECT: PHASE II ENVIRONMENTAL SITE ASSESSMENT

50 LEIKIN DRIVE
OTTAWA ONTARIO

CLIENT: CANADA POST / POSTES CANADA

DRAWN BY:	CHECKED BY:	DATE:	SCALE:
JFT	KDH	SEPTEMBER 2022	1 : 1,250

REVISION:	PROJECT NO:	FIGURE NO:
0	OESAO2132	3

DATUM: NAD 83 CSRS 2010
PROJECTION: UTM ZONE 18 N

wood.

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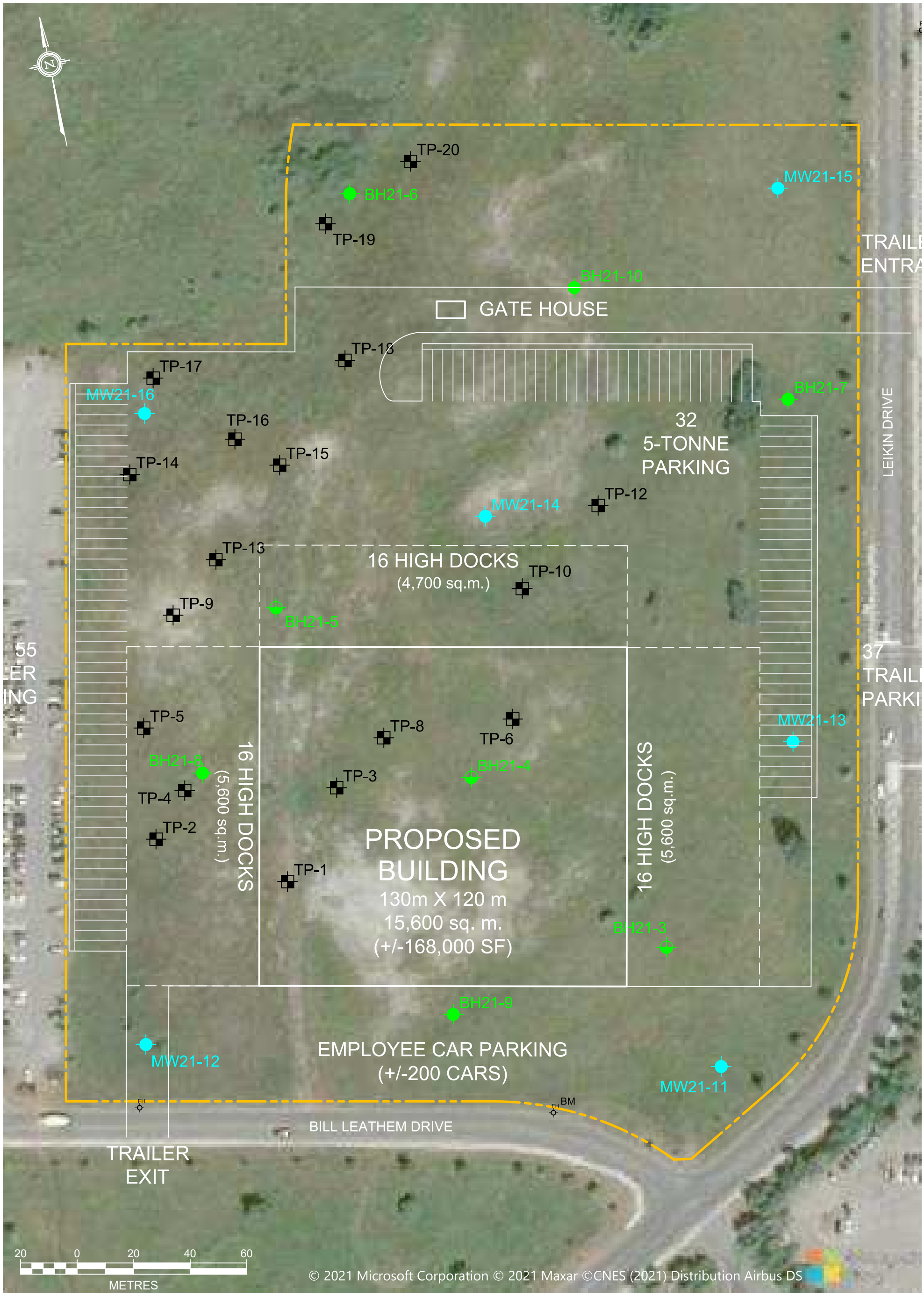

LEGEND

- PROPERTY BOUNDARY
- TEST PIT
- SHALLOW BOREHOLE (6 m)
- DEEP BOREHOLE (UP TO 15 - 20 m)
- SHALLOW BOREHOLE WITH MONITORING WELL
- BM BENCHMARK (90.500 masl)

TITLE: TEST PIT, BOREHOLE AND MONITORING WELL LOCATION PLAN

PROJECT: PHASE II ENVIRONMENTAL SITE ASSESSMENT

50 LEIKIN DRIVE
OTTAWA ONTARIO

CLIENT: CANADA POST / POSTES CANADA

DRAWN BY: JFT	CHECKED BY: KDH	DATE: SEPTEMBER 2022	SCALE: 1 : 1,250
REVISION: 0	PROJECT NO: OESAO2132	FIGURE NO: 4	
DATUM: NAD 83 CSRS 2010	PROJECTION: UTM ZONE 18 N		

wood.

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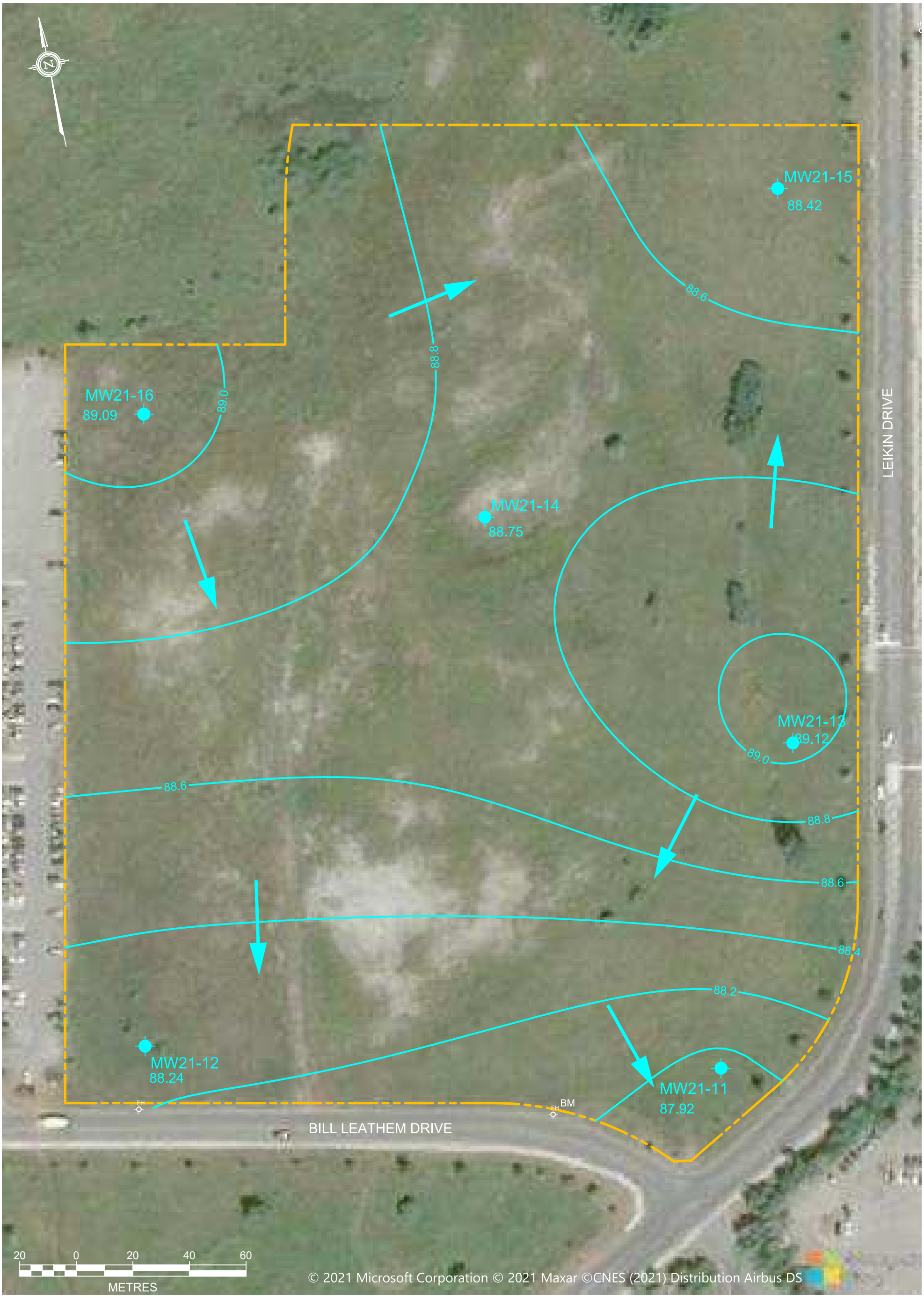

LEGEND

- PROPERTY BOUNDARY
- SHALLOW BOREHOLE WITH MONITORING WELL
- INFERRED DIRECTION OF SHALLOW GROUNDWATER FLOW
- BM BENCHMARK (90.500 masl)

TITLE: GROUNDWATER ELEVATION CONTOUR PLAN January 19, 2022

PROJECT: PHASE II ENVIRONMENTAL SITE ASSESSMENT

50 LEIKIN DRIVE
OTTAWA ONTARIO

CLIENT: CANADA POST / POSTES CANADA

DRAWN BY:	CHECKED BY:	DATE:	SCALE:
JFT	KDH	SEPTEMBER 2022	1 : 1,250
REVISION: 0	PROJECT NO: OESAO2132	FIGURE NO: 5	
DATUM: NAD 83 CSRS 2010	PROJECTION: UTM ZONE 18 N		

P:\2021\PROJECTS\OESAO2132_CPC LEIKEN ESA-GEO-HYD\12_CAD\OESAO2132 DRAWINGS.DWG

TP-19 SS-1 0.0 - 0.5	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	**112**
Vanadium	130	86	115

TP-20 SS-1 0.0 - 0.5	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	**97.8**
Vanadium	130	86	89.3

BH21-15 SS3 1.32-2.13	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	**137**
Vanadium	130	86	**147**

TP-18 SS-1 0.0 - 0.5	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	**105**
Vanadium	130	86	114

TP-17 SS-1 0.0 - 0.5	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	**98.9**
Vanadium	130	86	99.7

BH21-7 SS3 1.32-2.13	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	**87.9**
Vanadium	130	86	100

TP-16 SS-1 0.0 - 0.5	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	**110**
Vanadium	130	86	97.3

TP-15 SS-1 0.0 - 0.5	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	**105**
Vanadium	130	86	104

TP-14 SS-1 0.0 - 0.5	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	**110**
Vanadium	130	86	97

TP-13 SS-1 0.0 - 0.5	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	**95.5**
Vanadium	130	86	96.5

TP-10 SS-2 0.5 - 1.0	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	**102**
Vanadium	130	86	108

TP-8 SS-1 0.0 - 0.5	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	**101**
Vanadium	130	86	98.1

TP-7 SS-1 0.0 - 0.5	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	**106**
Chromium (VI)	1.4	10	**2.16**
Vanadium	130	86	85.5

TP-6 SS-1 0.0 - 0.5	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	**95.7**
Chromium (VI)	1.4	10	**1.49**
Vanadium	130	86	96.7

TP-3 SS-1 0.0 - 0.5	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	84.6
Vanadium	130	86	95.5

TP-4 SS-1 0.0 - 0.5	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	**121**
Chromium (VI)	1.4	10	**1.45**
Vanadium	130	86	118

TP-5 SS-1 0.0 - 0.5	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
Chromium (Total)	87	160	**106**
Vanadium	130	86	108

TP-1 SS-1 0.0 - 0.5	CSoQG (µg/g)	MECP SCS (µg/g)	Conc. (µg/g)
PHC F3 (>C16 - C34)	2500	2500	**2900**
PHC F4 (>C34)	6600	6600	**7400**
PHC F4 Gravimetric	6600	6600	**14000**

TP-19 TP-20 MW21-15 BH21-6 TP-18 BH21-10 TP-17 MW21-16 TP-16 TP-15 TP-14 TP-12 MW21-14 TP-13 TP-10 SCPT21-1 TP-9 BH21-5 TP-5 TP-8 TP-6 MW21-13 BH21-8 TP-4 TP-3 BH21-4 TP-2 TP-1 SCPT21-2 BH21-3 BH21-9 MW21-12 MW21-11

LEIKIN DRIVE

BILL LEATHEM DRIVE

20 0 20 40 60
METRES

LEGEND

- PROPERTY BOUNDARY
- TEST PIT
- SHALLOW BOREHOLE (6 m)
- DEEP BOREHOLE (UP TO 15 - 20 m)
- SHALLOW BOREHOLE WITH MONITORING WELL

BOLDED TEXT DENOTES PARAMETER CONCENTRATION EXCEEDS CCME CSoQG
UNDERLINED TEXT DENOTES PARAMETER CONCENTRATION EXCEED MECP TABLE 3 SCS

TITLE: SOIL EXCEEDANCES

PROJECT: PHASE II ENVIRONMENTAL SITE ASSESSMENT

50 LEIKIN DRIVE
OTTAWA ONTARIO

CLIENT: CANADA POST / POSTES CANADA

DRAWN BY:	CHECKED BY:	DATE:	SCALE:
JFT	KDH	SEPTEMBER 2022	1 : 1,250

REVISION:	PROJECT NO:	FIGURE NO:
0	OESAO2132	6

DATUM: NAD 83 CSRS 2010
PROJECTION: UTM ZONE 18 N

wood.

Tables

Table 1. Test Pit, Borehole and Groundwater Monitoring Well Construction Details

Monitor Well ID	MTM Coordinates		Date of Construction	Well Constructed By	Borehole and Groundwater Monitoring Interval Construction Data										Geological Contact Data	
	Easting	Northing			Ground Surface Elevation (masl)	Top of Casing Elevation (masl)	Test Pit / Borehole Depth (mbgs)	Borehole Bottom Elevation (masl)	Casing Stick-up (m)	Depth to Bottom of Well Screen (mbgs)	Well Diameter (mm)	Well Screen Length (m)	Well Screen Interval (masl)	Geologic Media Intersected by Well Screen	Depth to Bedrock (mbgs)	Bedrock Elevation (masl)
TP-1	444377.10	5016019.31	12-Dec-21	Wood	-	-	2.00	-	-	-	-	-	-	-	-	-
TP-2	444334.72	5016043.64	14-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-3	444401.01	5016048.19	15-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-4	444348.22	5016058.35	14-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-5	444338.62	5016083.03	14-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-6	444467.00	5016059.00	15-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-7	444445.00	5016101.00	15-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-8	444421.00	5016062.00	15-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-9	444357.09	5016119.88	14-Dec-21	Wood	-	-	0.50	-	-	-	-	-	-	-	-	-
TP-10	444479.88	5016103.45	15-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-11	444500.91	5016088.33	15-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-12	444512.25	5016126.58	15-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-13	444376.00	5016136.00	14-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-14	444352.46	5016171.77	14-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-15	444405.00	5016164.00	14-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-16	444391.44	5016176.28	14-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-17	444367.61	5016203.46	14-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-18	444435.34	5016195.47	14-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-19	444438.65	5016244.20	14-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
TP-20	444472.61	5016259.50	14-Dec-21	Wood	-	-	1.50	-	-	-	-	-	-	-	-	-
SCPT21-1	444528.48	5016085.77	17-Dec-21	Conetec	89.970	-	17.00	-	-	-	-	-	-	-	-	-
SCPT21-2	444368.07	5015997.95	17-Dec-21	Conetec	89.500	-	16.38	-	-	-	-	-	-	-	-	-
BH21-3	444503.39	5015968.71	20-21-Dec-21	Wood	89.974	-	21.97	68.00	-	-	-	-	-	-	19.00	70.97
BH21-4	444448.37	5016041.85	22-23-Dec-21	Wood	89.803	-	23.90	65.90	-	-	-	-	-	-	20.83	68.97
BH21-5	444393.23	5016114.92	4-5-Jan-22	Wood	91.174	-	25.07	66.10	-	-	-	-	-	-	21.95	69.22
BH21-6	444449.23	5016252.81	7-Jan-22	Wood	90.278	-	6.10	84.18	-	-	-	-	-	-	-	-
BH21-7	444585.78	5016149.43	7-Jan-22	Wood	90.185	-	6.10	84.09	-	-	-	-	-	-	-	-
BH21-8	444355.67	5016063.09	6-Jan-22	Wood	89.744	-	6.10	83.64	-	-	-	-	-	-	-	-
BH21-9	444424.68	5015961.18	10-Jan-22	Wood	89.724	-	6.10	83.62	-	-	-	-	-	-	-	-
BH21-10	444520.01	5016203.74	7-Jan-22	Wood	89.797	-	6.10	83.70	-	-	-	-	-	-	-	-
MW21-11	444513.54	5015922.38	10-Jan-22	Wood	89.979	90.840	6.10	83.88	-0.86	6.10	52	3.05	83.88 - 86.93	silty clay	-	-
MW21-12	444314.40	5015973.49	6-Jan-22	Wood	89.479	90.293	6.10	83.38	-0.81	6.10	52	3.05	83.38 - 86.43	silty clay	-	-
MW21-13	444559.47	5016036.63	10-Jan-22	Wood	90.100	90.894	6.10	84.00	-0.79	4.57	52	3.05	85.53 - 88.58	silty clay	-	-
MW21-14	444470.55	5016132.93	7-Jan-22	Wood	89.653	90.535	6.10	83.55	-0.88	4.57	52	3.05	85.08 - 88.13	silty clay	-	-
MW21-15	444597.78	5016222.40	10-Jan-22	Wood	89.947	90.808	6.10	83.85	-0.86	6.10	52	3.05	83.85 - 86.90	silty clay	-	-
MW21-16	444361.28	5016191.29	6-Jan-22	Wood	90.014	90.860	6.10	83.91	-0.85	4.57	52	3.05	85.44 - 88.49	silty clay	-	-

Notes:

masl = Metres Above Sea Level.

mbgs = Metres Below Ground Surface.

Elevations referenced to the top nut of the fire hydrant located on the north side Bill Leathem Drive 30 m approximately west of Leikin Drive having an elevation of 90.500 masl.

Table 2. Soil Sample Summary

Sample Location ID	Area of Potential Environmental Concern / Sampling Rationale	Sampling Date	Sample ID	Sample Type	Sample Depth (mbgs)	COV (ppm)	TOV (ppm)	Laboratory Job ID	Laboratory Sample ID	Laboratory Analyses							
										PHC F1 - F4	Reg 153 Metals	OCP	HPA	CN	EC	SAR	pH
TP-1	APECs 1, 2, 3	12-Dec-21	SS-1	GS	0.0 - 0.5	125	0	L2673599	L2673599-1	✓	✓			✓	✓	✓	✓
TP-2	APECs 1, 2, 3	14-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-2		✓	✓	✓	✓	✓	✓	✓
TP-2	APECs 1, 2, 3	14-Dec-21	Dup-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-22		✓	✓	✓	✓	✓	✓	✓
TP-3	APECs 1, 2, 3	15-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-3		✓			✓	✓	✓	✓
TP-3	APECs 1, 2, 3	15-Dec-21	SS-3	GS	1.0 - 1.5	0	0	L2673599	L2673599-4			✓	✓				✓
TP-4	APECs 1, 2, 3	14-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-5		✓			✓	✓	✓	✓
TP-5	APECs 1, 2, 3	14-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-6		✓			✓	✓	✓	✓
TP-5	APECs 1, 2, 3	14-Dec-21	SS-3	GS	1.0 - 1.5	0	0	L2673599	L2673599-7			✓	✓				✓
TP-6	APECs 1, 2, 3	15-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-8		✓	✓	✓	✓	✓	✓	✓
TP-7	APECs 1, 2, 3	15-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-9		✓	✓	✓	✓	✓	✓	✓
TP-8	APECs 1, 2, 3	15-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-10		✓			✓	✓	✓	✓
TP-10	APECs 1, 2, 3	15-Dec-21	SS-2	GS	0.5 - 1.0	0	0	L2673599	L2673599-11		✓			✓	✓	✓	✓
TP-11	APECs 1, 2, 3	15-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-12		✓			✓	✓	✓	✓
TP-12	APECs 1, 2, 3	15-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-13		✓	✓	✓	✓	✓	✓	✓
TP-12	APECs 1, 2, 3	15-Dec-21	Dup-2	GS	0.0 - 0.5	0	0	L2673599	L2673599-23		✓	✓	✓	✓	✓	✓	✓
TP-13	APECs 1, 2, 3	14-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-14		✓	✓	✓	✓	✓	✓	✓
TP-14	APECs 1, 2, 3	14-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-15		✓			✓	✓	✓	✓
TP-15	APECs 1, 2, 3	14-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-16		✓			✓	✓	✓	✓
TP-16	APECs 1, 2, 3	14-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-17		✓			✓	✓	✓	✓
TP-17	APECs 1, 2, 3	14-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-18		✓	✓	✓	✓	✓	✓	✓
TP-18	APECs 1, 2, 3	14-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-19		✓	✓	✓	✓	✓	✓	✓
TP-19	APECs 1, 2, 3	14-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-20		✓			✓	✓	✓	✓
TP-20	APECs 1, 2, 3	14-Dec-21	SS-1	GS	0.0 - 0.5	0	0	L2673599	L2673599-21		✓	✓	✓	✓	✓	✓	✓
BH21-6	APEC 3	7-Jan-22	SS-3	SS	1.52 - 2.13	0	0	L2678188	L2678188-1		✓			✓	✓	✓	
BH21-7	APEC 3	7-Jan-22	SS-3	SS	1.52 - 2.13	0	0	L2678188	L2678188-2		✓			✓	✓	✓	

Table 2. Soil Sample Summary

Sample Location ID	Area of Potential Environmental Concern / Sampling Rationale	Sampling Date	Sample ID	Sample Type	Sample Depth (mbgs)	COV (ppm)	TOV (ppm)	Laboratory Job ID	Laboratory Sample ID	Laboratory Analyses							
										PHC F1 - F4	Reg 153 Metals	OCP	HPA	CN	EC	SAR	pH
BH21-8	APEC 3	6-Jan-22	SS-3	SS	1.52 - 2.13	0	0	L2678188	L2678188-3		✓			✓	✓	✓	
BH21-9	APEC 3	10-Jan-22	SS-3	SS	1.52 - 2.13	0	0	L2678188	L2678188-4		✓			✓	✓	✓	
BH21-10	APEC 3	7-Jan-22	SS-3	SS	1.52 - 2.13	0	0	L2678188	L2678188-5		✓			✓	✓	✓	
BH21-10	APEC 3	7-Jan-22	Dup-2	SS	1.52 - 2.13	0	0	L2678188	L2678188-13		✓			✓	✓	✓	
MW21-11	APECs 3, 4	10-Jan-22	SS-3	SS	1.52 - 2.13	0	0	L2678188	L2678188-6		✓			✓	✓	✓	
MW21-12	APECs 3, 4	6-Jan-22	SS-3	SS	1.52 - 2.13	0	0	L2678188	L2678188-7		✓			✓	✓	✓	
MW21-13	APECs 3, 4	10-Jan-22	SS-3	SS	1.52 - 2.13	0	0	L2678188	L2678188-8		✓			✓	✓	✓	
MW21-14	APECs 3, 4	7-Jan-22	SS-3	SS	1.52 - 2.13	0	0	L2678188	L2678188-9		✓			✓	✓	✓	
MW21-14	APECs 3, 4	7-Jan-22	Dup-1	SS	1.52 - 2.13	0	0	L2678188	L2678188-12		✓			✓	✓	✓	
MW21-15	APECs 3, 4	10-Jan-22	SS-3	SS	1.52 - 2.13	0	0	L2678188	L2678188-10		✓			✓	✓	✓	
MW21-16	APECs 3, 4	6-Jan-22	SS-3	SS	1.52 - 2.13	0	0	L2678188	L2678188-11		✓			✓	✓	✓	

Notes:

mbgs = Metres Below Ground Surface.

DTSS = Direct Push Dual-Tube Soil Sample with Acetate-Lined Open Tube Sampler.

SS = Split Spoon Sample.

Reg 153 Metals includes Ag, As, Ba, Be, B, B-HWS, Cd, Cr, Cr(VI), Co, Cu, Hg, Pb, Mo, Ni, Sb, Se, Th, U, V, Zn.

CN = Cyanide.

EC - Electrical Conductivity.

HPA - Herbicides - Phenoxy Acid.

OCP = Organochlorine Pesticides.

PHC = Petroleum Hydrocarbons.

PAH = Polynuclear Aromatic Hydrocarbons.

SAR = Sodium Adsorption Ratio.

Table 3. Monitoring Well Development Data

Monitor Well ID	MTM Coordinates		Depth to Water (mbtoc)	Depth to Water (mbgs)	Depth to Bottom of Well Screen (mbgs)	Depth to Bottom of Bentonite Seal above Screen (mbgs)	Borehole Diameter (mm)	Well Diameter (mm)	Well Casing Volume (L)	Sand Pack Volume (L)	Desired Number of Volumes	Theoretical Well Development Volume (L)	Actual Well Development Volume (L)	General Observations
	Easting	Northing												
MW21-11	444513.54	5015922.38	2.528	1.667	6.10	2.74	200.0	50.0	8.7	34.0	3	128.2	60.0	Grey, clear @ 50L. No sheen, no odour
MW21-12	444314.40	5015973.49	1.824	1.010	6.10	2.74	200.0	50.0	10.0	34.0	3	132.1	100.0	Grey cloudy. No sheen, no odour
MW21-13	444559.47	5016036.63	1.649	0.855	4.57	1.22	200.0	50.0	7.3	33.9	3	123.6	40.0	Brown, clear @ 10L. No sheen, no odour
MW21-14	444470.55	5016132.93	-	-	4.57	1.22	200.0	50.0	-	-	3	-		Well is frozen.
MW21-15	444597.78	5016222.40	2.223	1.362	6.10	2.74	200.0	50.0	9.3	34.0	3	130.0	100.0	Grey cloudy. No sheen, no odour
MW21-16	444361.28	5016191.29	1.586	0.740	4.57	1.22	200.0	50.0	7.5	33.9	3	124.3	40.0	Grey, clear @ 5L. No sheen, no odour

Notes:

mbgs = Metres Below Ground Surface.

Well casing volume calculated based on well casing inside diameter and height of water column in the well.

Sand pack volume calculated based on borehole diameter, well casing outside diameter and height of water in well casing for unsubmerged well screens.

Sand pack volume calculated based on borehole diameter, well casing outside diameter and height of sand pack below bentonite seal for submerged well screens.

Sand pack porosity assumed to be 35%.

Theoretical development volume equals three time the summation of well casing volume and sand pack volume.

Table 4. Groundwater Monitoring Data

Monitoring Well ID	Ground Surface Elevation (masl)	Top of Casing Elevation (masl)	January 12, 2022					January 19, 2022				
			Depth to Water (mbtoc)	Depth to LNAPL (mbtoc)	Depth to Water (mbgs)	LNAPL Thickness (cm)	Static Elevation (masl)	Depth to Water (mbtoc)	Depth to LNAPL (mbtoc)	Depth to Water (mbgs)	LNAPL Thickness (cm)	Static Elevation (masl)
MW21-11	89.979	90.840	2.528	ND	1.667	-	88.312	2.918	ND	2.057	-	87.922
MW21-12	89.479	90.293	1.824	ND	1.010	-	88.469	2.049	ND	1.235	-	88.244
MW21-13	90.100	90.894	1.649	ND	0.855	-	89.245	1.770	ND	0.976	-	89.124
MW21-14	89.653	90.535		-	-	-	-	1.784	ND	0.902	-	88.751
MW21-15	89.947	90.808	2.223	ND	1.362	-	88.585	2.385	ND	1.524	-	88.423
MW21-16	90.014	90.860	1.586	ND	0.740	-	89.274	1.768	ND	0.922	-	89.092

Notes:

masl = Metres Above Sea Level.

mbtoc = Metres Below Top of Casing.

mbgs = Metres Below Ground Surface.

LNAPL = Light Non-Aqueous Phase Liquid.

ND - Not Detected.

Elevations referenced to the top nut of the fire hydrant located on the north side Bill Leathem Drive 30 m approximately west of Leikin Drive having an elevation of 90.500 masl.

Table 5. Groundwater Sampling Data and Field Observations

Monitoring Well ID	Area of Potential Environmental Concern / Sampling Rationale	Sample ID	Sampling Date	Water Level Data			Field Parameters					Laboratory Analyses			General Observations
				Initial Depth to Water (mbtoc)	Final Depth to Water (mbtoc)	Total Drawdown (m)	pH (pH units)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Temperature (°C)	Oxidation Reduction Potential (mV)	BTEX	VOC	OCP	
MW21-11	APECs 3, 4	MW21-11	19-Jan-22	2.918	-	>0.3	Insufficient yield to stabilize					✓	✓	✓	Clear, little sediment, no sheen/odour
MW21-12	APECs 3, 4	MW21-12	19-Jan-22	2.049	4.265	2.216	6.87	770	6.51	5.8	199.8	✓	✓	✓	Clear, no sediment, no sheen/odour
MW21-13	APECs 3, 4	MW21-13	19-Jan-22	1.77	3.788	2.018	7.1	513	8.99	5.5	184.7	✓	✓	✓	Clear, no sediment, no sheen/odour
MW21-14	APECs 3, 4	MW21-14	19-Jan-22	1.784	3.812	2.028	7.16	607	0.29	7.3	148.6	✓	✓	✓	Clear, little sediment, no sheen/odour
MW21-14	APECs 3, 4	Dup-1	19-Jan-22	1.784	3.812	2.028	7.16	607	0.29	7.3	148.6	✓	✓	✓	QA/QC blind duplicate sample.
MW21-15	APECs 3, 4	MW21-15	19-Jan-22	2.385	2.479	0.094	6.8	830	2.9	4.99	209.9	✓	✓	✓	Clear, little sediment, no sheen/odour
MW21-16	APECs 3, 4	MW21-16	19-Jan-22	1.768	-	>0.3	7.27	879	8.97	6	169.2	✓	✓	✓	Clear, no sediment, no sheen/odour

Notes:

mbtoc = Metres Below Top of Casing.

Water Level Data as Recorded During Low-Flow Sampling.

Field Parameters Measured using a YSI 556 Multi-Parameter Water Quality Monitoring Instrument.

Groundwater Sampling Performed Using a Geotech Submersible Bladder Pump.

Groundwater Sampling Performed Using a Waterra Pegasus Alexis Peristaltic Pump.

mS/cm = MilliSiemens per Centimeter.

mV = Millivolts.

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes.

OCP = Organochlorine Pesticides.

VOC = Volatile Organic Compound.

Notes on Soil Analytical Summary Tables

All Units in Micrograms per Gram (µg/g) Except Where Indicated Otherwise.

RDL = Laboratory Analytical Reporting Detection Limit.

RL = MOE 2011 Analytical Protocol Reporting Limit.

LRL = CCME 2016 Analytical Methods Laboratory Reporting Limit.

- = Not Analyzed or No Published Value.

DUP = Quality Assurance/Quality Control Duplicate Sample.

RPD = Relative Percent Difference (Between Primary and Duplicate Samples).

* Denotes RPD Exceeds Recommended Alert Criterion Exceeded, However, Parameter Concentration Less than 5 Times Laboratory RDL.

< = Less Than Laboratory Analytical Reporting Detection Limit.

NGR = No Guideline Required; Calculated Guideline Exceeds Solubility Limit.

(a) F1 Fraction Does Not Include BTEX; However, the Proponent has the Choice as to Whether or not to Subtract BTEX from the Analytical Result.

(g) MECP Standard for Boron Based on Hot Water Extract.

(h) Analysis for Methyl Mercury is Required When the MECP Standard for Mercury (total) is Exceeded.

55	Parameter Concentration May Exceed Applicable Standard or Guideline Due to Elevated Reporting Detection Limit.
87	Parameter Concentration Exceeds MECP Table 1 Full Depth Background SCS for Industrial/Commercial/Community/Residential/Parkland/Institutional (I/C/C/R/P/I) Property Use.
183	Parameter Concentration Exceeds MECP Table 3 Full Depth SCS for Industrial/Commercial/Community (I/C/C) Property Use, Fine-Medium Textured Soil.
797	Parameter Concentration Exceeds CCME CSoQG or CWS-PHC for Commercial Land Use, Fine-Medium Textured Soil.

MECP Standards = Soil Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act, Ministry of the Environment, Conservation and Parks, April 15, 2011.

CCME Guidelines = Canadian Environmental Quality Guidelines, Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health, CCME Online (Accessed ????).

CCME CWS PHC = Canadian Environmental Quality Guidelines, Canada Wide Standards for Petroleum Hydrocarbons in Soil, CCME, 2008.

Table 6.

Summary of Petroleum Hydrocarbon Soil Analyses

					Sample Location	MECP Standards		CCME Guidelines	TP-1
					Sample No.	Full Depth	Full Depth	CEQG	SS-1
					Sample Depth (m)	Background	Generic Non	CSoQG / CWS	0.0 - 0.5
					Laboratory Name	SCS	Potable SCS	Tiel 1	ALS
					Laboratory Work Order No.	Table 1	Table 3	Commercial	L2673599
					Laboratory Sample ID	I/C/C/R/P/I	I/C/C Use	Land Use	L2673599-1
					Sample Date	Property Uses	Fine Textured	Fine Textured	14-Dec-21
Parameters	**Units**	**RDL**	**LRL**	**RL**					
PHC F1 (C6 - C10) [a]	µg/g	5	10	10	25	65	320	<5.0	
PHC F2 (>C10 - C16)	µg/g	200	30	10	10	250	260	<200	
PHC F3 (>C16 - C34)	µg/g	1000	50	50	240	2500	2500	**2900**	
PHC F4 (>C34)	µg/g	1000	50	50	120	6600	6600	**7400**	
PHC F4 Gravimetric	µg/g	250	500	50	120	6600	6600	**14000**	

Table 7.

Summary of Metals, Hydride Metals and Other Reportable Parameters Soil Analyses

					Sample Location	MECP Standards		CCME Guidelines	TP-1	TP-2	TP-2	TP-2	TP-2	TP-3
					Sample No.	Full Depth	Full Depth	CEQG	SS-1	SS-1	DUP-1	SS-1	DUP-1	SS-1
					Sample Depth (m)	Background	Generic Non	CSoQG / CWS	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	DUP-1	RPD	0.0 - 0.5
					Laboratory Name	SCS	Potable SCS	Tiel 1	ALS	ALS	ALS	Average	(%)	ALS
					Laboratory Work Order No.	Table 1	Table 3	Commercial	L2673599	L2673599	L2673599			L2673599
					Laboratory Sample ID	I/C/C/R/P/I	I/C/C Use	Land Use	L2673599-1	L2673599-2	L2673599-22			L2673599-3
					Sample Date	Property Uses	Fine Textured	Fine Textured	14-Dec-21	14-Dec-21	14-Dec-21			15-Dec-21
Parameters	**Units**	**RDL**	**LRL**	**RL**										
pH (range)	pH Units	0.1	-	-	-	-	6 - 8	7.49	7.58	7.58	7.58	0.0%	7.33
Cyanide (CN-)	µg/g	0.05	0.05	0.05	0.051	0.051	8	<0.050	<0.050	<0.050	<0.050	-	<0.050
Electrical Conductivity (EC)	mS/cm	0.004	-	0.005	0.57	1.4	4	1.14	0.215	0.278	0.247	25.6%	0.201
Sodium Absorption Ratio (SAR)	N/A	0.1	1	-	2.4	12	12	2.24	0.53	0.49	0.51	7.84%	1.13
Antimony	µg/g	1	2	1	1.3	50	40	<1.0	<1.0	<1.0	<1.0	-	<1.0
Arsenic	µg/g	1	1	1	18	18	12	3.7	4	3.3	3.7	19.2%	3.8
Barium	µg/g	1	10	5	220	670	2000	126	263	276	270	4.82%	360
Beryllium	µg/g	0.5	0.8	2	2.5	10	8	<0.50	1.01	0.99	1	2.00%	0.89
Boron (Available) [g]	µg/g	0.1	5	0.5	NA	2	-	0.89	0.67	0.54	0.61	21.5%	<0.10
Boron (total)	µg/g	5	0.4	5	36	120	-	10.4	9.9	9.1	9.5	8.42%	6.7
Cadmium	µg/g	0.5	0.1	1	1.2	1.9	22	<0.50	<0.50	<0.50	<0.50	-	<0.50
Chromium (Total)	µg/g	1	1	5	70	160	87	21.7	81.9	**90.3**	86.1	9.76%	84.6
Chromium (vi)	µg/g	0.2	0.4	0.2	0.66	10	1.4	<0.20	1.31	0.96	1.14	30.8%	1.13
Cobalt	µg/g	1	2	2	21	100	300	7.5	17.1	18.3	17.7	6.78%	19.2
Copper	µg/g	1	5	5	92	300	91	17.5	33.5	35.8	34.7	6.64%	41.5
Lead	µg/g	1	1	10	120	120	260	15.3	12.5	9.2	10.9	30.4%	7
Mercury [h]	µg/g	0.005	0.05	0.1	0.27	20	24	0.013	0.0123	0.0155	0.0139	23.0%	0.0082
Methyl Mercury [h]	µg/g	-	0.006	-	NV	0.0094	-	-	-	-	-	-	-
Molybdenum	µg/g	1	1	2	2	40	40	3.2	<1.0	<1.0	<1.0	-	<1.0
Nickel	µg/g	1	2	5	82	340	89	18.3	43.8	49.4	46.6	12.0%	46.4
Selenium	µg/g	1	1	1	1.5	5.5	2.9	<1.0	<1.0	<1.0	<1.0	-	<1.0
Silver	µg/g	0.2	1	0.5	0.5	50	40	<0.20	<0.20	<0.20	<0.20	-	<0.20
Thallium	µg/g	0.5	0.4	1	1	3.3	1	<0.50	<0.50	<0.50	<0.50	-	<0.50
Uranium	µg/g	1	1	1	2.5	33	33	<1.0	1.1	1	1.1	9.52%	<1.0
Vanadium	µg/g	1	5	10	86	86	130	35.1	83.6	86.3	85.0	3.18%	95.5
Zinc	µg/g	5	10	30	290	340	410	65.6	105	96.9	101	8.02%	111

Table 7.

Summary of Metals, Hydride Metals and Other Reportable Parameters Soil Analyses

					Sample Location	MECP Standards		CCME Guidelines	TP-4	TP-5	TP-5	TP-6	TP-7	TP-8
					Sample No.	Full Depth	Full Depth	CEQG	SS-1	SS-1	SS-3	SS-1	SS-1	SS-1
					Sample Depth (m)	Background	Generic Non	CSoQG / CWS	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
					Laboratory Name	SCS	Potable SCS	Tiel 1	ALS	ALS	ALS	ALS	ALS	ALS
					Laboratory Work Order No.	Table 1	Table 3	Commercial	L2673599	L2673599	L2673599	L2673599	L2673599	L2673599
					Laboratory Sample ID	I/C/C/R/P/I	I/C/C Use	Land Use	L2673599-5	L2673599-6	L2673599-7	L2673599-8	L2673599-9	L2673599-10
					Sample Date	Property Uses	Fine Textured	Fine Textured	14-Dec-21	14-Dec-21	14-Dec-21	15-Dec-21	15-Dec-21	15-Dec-21
Parameters	**Units**	**RDL**	**LRL**	**RL**										
pH (range)	pH Units	0.1	-	-	-	-	6 - 8	7.58	7.58	7.39	7	6.91	7.13
Cyanide (CN-)	µg/g	0.05	0.05	0.05	0.051	0.051	8	<0.050	<0.050	-	<0.050	<0.050	<0.050
Electrical Conductivity (EC)	mS/cm	0.004	-	0.005	0.57	1.4	4	0.167	0.146	-	0.189	0.159	0.172
Sodium Absorption Ratio (SAR)	N/A	0.1	1	-	2.4	12	12	1.33	1.57	-	0.86	1.37	1.09
Antimony	µg/g	1	2	1	1.3	50	40	<1.0	<1.0	-	<1.0	<1.0	<1.0
Arsenic	µg/g	1	1	1	18	18	12	4.1	4	-	3.9	2.9	3.2
Barium	µg/g	1	10	5	220	670	2000	485	424	-	345	291	377
Beryllium	µg/g	0.5	0.8	2	2.5	10	8	1.01	0.97	-	0.94	1.03	0.94
Boron (Available) [g]	µg/g	0.1	5	0.5	NA	2	-	<0.10	<0.10	-	<0.10	<0.10	<0.10
Boron (total)	µg/g	5	0.4	5	36	120	-	6	6.1	-	6.5	9	6.6
Cadmium	µg/g	0.5	0.1	1	1.2	1.9	22	<0.50	<0.50	-	<0.50	<0.50	<0.50
Chromium (Total)	µg/g	1	1	5	70	160	87	**121**	**106**	-	**95.7**	**106**	**101**
Chromium (vi)	µg/g	0.2	0.4	0.2	0.66	10	1.4	**1.45**	0.98	-	**1.49**	**2.16**	1.08
Cobalt	µg/g	1	2	2	21	100	300	24.7	22.8	-	18.5	18.9	20
Copper	µg/g	1	5	5	92	300	91	51.5	52.3	-	42.4	39.5	44.4
Lead	µg/g	1	1	10	120	120	260	7.2	7.1	-	7.2	8.3	6.9
Mercury [h]	µg/g	0.005	0.05	0.1	0.27	20	24	0.0115	0.0129	-	0.0121	0.0128	0.0175
Methyl Mercury [h]	µg/g	-	0.006	-	NV	0.0094	-	-	-	-	-	-	-
Molybdenum	µg/g	1	1	2	2	40	40	<1.0	<1.0	-	<1.0	<1.0	<1.0
Nickel	µg/g	1	2	5	82	340	89	64.3	57.1	-	51.3	56.3	55.8
Selenium	µg/g	1	1	1	1.5	5.5	2.9	<1.0	<1.0	-	<1.0	<1.0	<1.0
Silver	µg/g	0.2	1	0.5	0.5	50	40	<0.20	<0.20	-	<0.20	<0.20	<0.20
Thallium	µg/g	0.5	0.4	1	1	3.3	1	<0.50	<0.50	-	<0.50	<0.50	<0.50
Uranium	µg/g	1	1	1	2.5	33	33	1.1	1	-	<1.0	<1.0	<1.0
Vanadium	µg/g	1	5	10	86	86	130	118	108	-	96.7	85.5	98.1
Zinc	µg/g	5	10	30	290	340	410	146	127	-	114	95.9	111

Table 7.

Summary of Metals, Hydride Metals and Other Reportable Parameters Soil Analyses

					Sample Location	MECP Standards		CCME Guidelines	TP-10	TP-11	TP-12	TP-12	TP-12	TP-12
					Sample No.	Full Depth	Full Depth	CEQG	SS-2	SS-1	SS-1	DUP-2	SS-1	SS-1
					Sample Depth (m)	Background	Generic Non	CSoQG / CWS	0.5 - 1.0	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	DUP-2	DUP-2
					Laboratory Name	SCS	Potable SCS	Tiel 1	ALS	ALS	ALS	ALS	Average	RPD
					Laboratory Work Order No.	Table 1	Table 3	Commercial	L2673599	L2673599	L2673599	L2673599		(%)
					Laboratory Sample ID	I/C/C/R/P/I	I/C/C Use	Land Use	L2673599-11	L2673599-12	L2673599-13	L2673599-23		
					Sample Date	Property Uses	Fine Textured	Fine Textured	15-Dec-21	15-Dec-21	15-Dec-21	14-Dec-21		
Parameters	**Units**	**RDL**	**LRL**	**RL**										
pH (range)	pH Units	0.1	-	-	-	-	6 - 8	6.91	7.47	7.46	7.44	7.45	0.27%	
Cyanide (CN-)	µg/g	0.05	0.05	0.05	0.051	0.051	8	<0.050	<0.050	<0.050	<0.050	<0.050	-	
Electrical Conductivity (EC)	mS/cm	0.004	-	0.005	0.57	1.4	4	0.216	0.256	0.23	0.308	0.269	29.0%	
Sodium Absorption Ratio (SAR)	N/A	0.1	1	-	2.4	12	12	0.69	0.31	0.37	0.4	0.39	7.79%	
Antimony	µg/g	1	2	1	1.3	50	40	<1.0	<1.0	<1.0	<1.0	<1.0	-	
Arsenic	µg/g	1	1	1	18	18	12	3.4	3.3	3.7	3.8	3.8	2.67%	
Barium	µg/g	1	10	5	220	670	2000	431	295	256	275	266	7.16%	
Beryllium	µg/g	0.5	0.8	2	2.5	10	8	0.98	0.94	0.85	0.9	0.88	5.71%	
Boron (Available) [g]	µg/g	0.1	5	0.5	NA	2	-	<0.10	<0.10	<0.10	0.1	0.10	-	
Boron (total)	µg/g	5	0.4	5	36	120	-	5.9	7.7	8.7	9	8.9	3.39%	
Cadmium	µg/g	0.5	0.1	1	1.2	1.9	22	<0.50	<0.50	<0.50	<0.50	<0.50	-	
Chromium (Total)	µg/g	1	1	5	70	160	87	**102**	81.7	69.5	80.3	74.9	14.4%	
Chromium (vi)	µg/g	0.2	0.4	0.2	0.66	10	1.4	1.23	0.73	0.53	0.4	0.47	28.0%	
Cobalt	µg/g	1	2	2	21	100	300	26.1	18.5	17.6	19.1	18.4	8.17%	
Copper	µg/g	1	5	5	92	300	91	48	34.5	33.6	35.9	34.8	6.62%	
Lead	µg/g	1	1	10	120	120	260	7.3	7.9	7.6	8.6	8.100	12.3%	
Mercury [h]	µg/g	0.005	0.05	0.1	0.27	20	24	0.0153	0.0148	0.0107	0.0137	0.0122	24.6%	
Methyl Mercury [h]	µg/g	-	0.006	-	NV	0.0094	-	-	-	-	-	-	-	
Molybdenum	µg/g	1	1	2	2	40	40	<1.0	<1.0	<1.0	<1.0	<1.0	-	
Nickel	µg/g	1	2	5	82	340	89	58.3	45.5	39.9	44.8	42.4	11.6%	
Selenium	µg/g	1	1	1	1.5	5.5	2.9	<1.0	<1.0	<1.0	<1.0	<1.0	-	
Silver	µg/g	0.2	1	0.5	0.5	50	40	<0.20	<0.20	<0.20	<0.20	<0.20	-	
Thallium	µg/g	0.5	0.4	1	1	3.3	1	<0.50	<0.50	<0.50	<0.50	<0.50	-	
Uranium	µg/g	1	1	1	2.5	33	33	1	1	1	1.1	1.1	9.52%	
Vanadium	µg/g	1	5	10	86	86	130	108	85.9	83.3	86.1	84.7	3.31%	
Zinc	µg/g	5	10	30	290	340	410	119	96.9	90	93.9	92.0	4.24%	

Table 7.

Summary of Metals, Hydride Metals and Other Reportable Parameters Soil Analyses

					Sample Location	MECP Standards		CCME Guidelines	TP-13	TP-14	TP-15	TP-16	TP-17	TP-18
					Sample No.	Full Depth	Full Depth	CEQG	SS-1	SS-1	SS-1	SS-1	SS-1	SS-1
					Sample Depth (m)	Background	Generic Non	CSoQG / CWS	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
					Laboratory Name	SCS	Potable SCS	Tiel 1	ALS	ALS	ALS	ALS	ALS	ALS
					Laboratory Work Order No.	Table 1	Table 3	Commercial	L2673599	L2673599	L2673599	L2673599	L2673599	L2673599
					Laboratory Sample ID	I/C/C/R/P/I	I/C/C Use	Land Use	L2673599-14	L2673599-15	L2673599-16	L2673599-17	L2673599-18	L2673599-19
					Sample Date	Property Uses	Fine Textured	Fine Textured	14-Dec-21	14-Dec-21	14-Dec-21	14-Dec-21	14-Dec-21	14-Dec-21
Parameters	**Units**	**RDL**	**LRL**	**RL**										
pH (range)	pH Units	0.1	-	-	-	-	6 - 8	7.06	7.06	7.47	7.35	7.31	7.34
Cyanide (CN-)	µg/g	0.05	0.05	0.05	0.051	0.051	8	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Electrical Conductivity (EC)	mS/cm	0.004	-	0.005	0.57	1.4	4	0.249	0.189	0.235	0.2	0.245	0.305
Sodium Absorption Ratio (SAR)	N/A	0.1	1	-	2.4	12	12	1	2.12	0.81	2.19	0.83	0.79
Antimony	µg/g	1	2	1	1.3	50	40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	µg/g	1	1	1	18	18	12	3.2	3.4	3.4	3.8	3.2	3.5
Barium	µg/g	1	10	5	220	670	2000	382	345	385	334	354	409
Beryllium	µg/g	0.5	0.8	2	2.5	10	8	0.87	1.01	0.97	1.06	0.87	0.92
Boron (Available) [g]	µg/g	0.1	5	0.5	NA	2	-	<0.10	<0.10	<0.10	<0.10	0.1	<0.10
Boron (total)	µg/g	5	0.4	5	36	120	-	5.8	8	6.4	10.4	7	6.2
Cadmium	µg/g	0.5	0.1	1	1.2	1.9	22	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Total)	µg/g	1	1	5	70	160	87	**95.5**	**110**	**105**	**110**	**98.9**	**105**
Chromium (vi)	µg/g	0.2	0.4	0.2	0.66	10	1.4	1	1.18	0.94	0.83	0.4	0.45
Cobalt	µg/g	1	2	2	21	100	300	20.8	20.5	22.6	24	21.6	25.2
Copper	µg/g	1	5	5	92	300	91	48.8	44.4	48.9	49.3	44.9	54.4
Lead	µg/g	1	1	10	120	120	260	6.5	8.2	7.4	9.1	7	7.1
Mercury [h]	µg/g	0.005	0.05	0.1	0.27	20	24	0.0128	0.0169	0.0146	0.0162	0.0129	0.0104
Methyl Mercury [h]	µg/g	-	0.006	-	NV	0.0094	-	-	-	-	-	-	-
Molybdenum	µg/g	1	1	2	2	40	40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel	µg/g	1	2	5	82	340	89	53.9	58.9	58.1	65.3	55.9	61.3
Selenium	µg/g	1	1	1	1.5	5.5	2.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver	µg/g	0.2	1	0.5	0.5	50	40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	µg/g	0.5	0.4	1	1	3.3	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium	µg/g	1	1	1	2.5	33	33	<1.0	1	<1.0	<1.0	<1.0	<1.0
Vanadium	µg/g	1	5	10	86	86	130	96.5	97	104	97.3	99.7	114
Zinc	µg/g	5	10	30	290	340	410	108	111	113	100	106	119

Table 7.

Summary of Metals, Hydride Metals and Other Reportable Parameters Soil Analyses

					Sample Location	MECP Standards		CCME Guidelines	TP-19	TP-20	BH21-6	BH21-7	BH21-8	BH21-9
					Sample No.	Full Depth	Full Depth	CEQG	SS-1	SS-1	SS3	SS3	SS3	SS3
					Sample Depth (m)	Background	Generic Non	CSoQG / CWS	0.0 - 0.5	0.0 - 0.5	1.52 - 2.13	1.52 - 2.13	1.52 - 2.13	1.52 - 2.13
					Laboratory Name	SCS	Potable SCS	Tiel 1	ALS	ALS	ALS	ALS	ALS	ALS
					Laboratory Work Order No.	Table 1	Table 3	Commercial	L2673599	L2673599	L2678188	L2678188	L2678188	L2678188
					Laboratory Sample ID	I/C/C/R/P/I	I/C/C Use	Land Use	L2673599-20	L2673599-21	L2678188-1	L2678188-2	L2678188-3	L2678188-4
					Sample Date	Property Uses	Fine Textured	Fine Textured	14-Dec-21	14-Dec-21				
Parameters	**Units**	**RDL**	**LRL**	**RL**										
pH (range)	pH Units	0.1	-	-	-	-	6 - 8	7.61	7.35	7.6	7.58	7.33	7.49
Cyanide (CN-)	µg/g	0.05	0.05	0.05	0.051	0.051	8	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Electrical Conductivity (EC)	mS/cm	0.004	-	0.005	0.57	1.4	4	0.214	0.117	0.218	0.103	0.16	0.141
Sodium Absorption Ratio (SAR)	N/A	0.1	1	-	2.4	12	12	1.74	1.24	0.79	1.2	0.44	0.47
Antimony	µg/g	1	2	1	1.3	50	40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	µg/g	1	1	1	18	18	12	3.5	3.3	3.9	3.7	3.7	3.7
Barium	µg/g	1	10	5	220	670	2000	418	273	231	362	199	198
Beryllium	µg/g	0.5	0.8	2	2.5	10	8	0.94	1.01	0.63	0.86	0.65	0.62
Boron (Available) [g]	µg/g	0.1	5	0.5	NA	2	-	<0.10	0.1	0.17	<0.10	<0.10	<0.10
Boron (total)	µg/g	5	0.4	5	36	120	-	6.6	8.9	7.7	6.1	6.9	6.2
Cadmium	µg/g	0.5	0.1	1	1.2	1.9	22	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Total)	µg/g	1	1	5	70	160	87	**112**	**97.8**	47.7	**87.9**	45.2	40.3
Chromium (vi)	µg/g	0.2	0.4	0.2	0.66	10	1.4	0.68	0.62	0.26	0.45	0.35	0.42
Cobalt	µg/g	1	2	2	21	100	300	24.6	19.6	12.2	21.5	12.7	12.2
Copper	µg/g	1	5	5	92	300	91	53.6	41.4	27.8	48.2	30.2	26.3
Lead	µg/g	1	1	10	120	120	260	7.4	8.3	6.3	7.4	6.5	6.3
Mercury [h]	µg/g	0.005	0.05	0.1	0.27	20	24	0.0112	0.0109	0.0057	0.0077	0.0082	<0.0050
Methyl Mercury [h]	µg/g	-	0.006	-	NV	0.0094	-	-	-	-	-	-	-
Molybdenum	µg/g	1	1	2	2	40	40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel	µg/g	1	2	5	82	340	89	63	56	27.1	49	26.2	25.7
Selenium	µg/g	1	1	1	1.5	5.5	2.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver	µg/g	0.2	1	0.5	0.5	50	40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	µg/g	0.5	0.4	1	1	3.3	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium	µg/g	1	1	1	2.5	33	33	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium	µg/g	1	5	10	86	86	130	115	89.3	68.5	100	64.6	62.9
Zinc	µg/g	5	10	30	290	340	410	116	89.5	74.1	113	69.4	66.4

Table 7.

Summary of Metals, Hydride Metals and Other Reportable Parameters Soil Analyses

Sample Location					MECP Standards		CCME Guidelines	BH21-10	BH21-10	BH21-10	BH21-10	MW21-11	MW21-12
Sample No.					Full Depth	Full Depth	CEQG	SS3	DUP-2	SS3	SS3	SS3	SS3
Sample Depth (m)					Background	Generic Non	CSoQG / CWS	1.52 - 2.13	1.52 - 2.13	DUP-2	DUP-2	1.52 - 2.13	1.52 - 2.13
Laboratory Name					SCS	Potable SCS	Tiel 1	ALS	ALS	Average	RPD	ALS	ALS
Laboratory Work Order No.					Table 1	Table 3	Commercial	L2678188	L2678188		(%)	L2678188	L2678188
Laboratory Sample ID					I/C/C/R/P/I	I/C/C Use	Land Use	L2678188-5	L2678188-13			L2678188-6	L2678188-7
Sample Date					Property Uses	Fine Textured	Fine Textured						
Parameters	**Units**	**RDL**	**LRL**	**RL**									
pH (range)	pH Units	0.1	-	-	-	-	6 - 8	7.56	7.56	7.56	0.0%	7.36	7.43
Cyanide (CN-)	µg/g	0.05	0.05	0.05	0.051	0.051	8	<0.050	<0.050	<0.050	-	<0.050	<0.050
Electrical Conductivity (EC)	mS/cm	0.004	-	0.005	0.57	1.4	4	0.19	0.146	0.168	26.2%	0.163	0.229
Sodium Absorption Ratio (SAR)	N/A	0.1	1	-	2.4	12	12	0.67	0.85	0.76	23.7%	0.6	0.54
Antimony	µg/g	1	2	1	1.3	50	40	<1.0	<1.0	<1.0	-	<1.0	<1.0
Arsenic	µg/g	1	1	1	18	18	12	3.6	3.1	3.4	14.9%	4	4.4
Barium	µg/g	1	10	5	220	670	2000	230	203	217	12.5%	203	221
Beryllium	µg/g	0.5	0.8	2	2.5	10	8	0.68	0.64	0.66	6.06%	0.62	0.67
Boron (Available) [g]	µg/g	0.1	5	0.5	NA	2	-	<0.10	<0.10	<0.10	-	<0.10	<0.10
Boron (total)	µg/g	5	0.4	5	36	120	-	5.8	6.1	6.0	5.04%	6.3	7.1
Cadmium	µg/g	0.5	0.1	1	1.2	1.9	22	<0.50	<0.50	<0.50	-	<0.50	<0.50
Chromium (Total)	µg/g	1	1	5	70	160	87	49.2	42.1	45.7	15.6%	41.4	53.8
Chromium (vi)	µg/g	0.2	0.4	0.2	0.66	10	1.4	<0.20	0.27	0.27	-	<0.20	0.61
Cobalt	µg/g	1	2	2	21	100	300	11.9	11.1	11.5	6.96%	12.9	12.1
Copper	µg/g	1	5	5	92	300	91	30.6	26	28.3	16.3%	26.5	29.7
Lead	µg/g	1	1	10	120	120	260	6.8	6	6.4	12.5%	6.2	6.7
Mercury [h]	µg/g	0.005	0.05	0.1	0.27	20	24	0.0072	0.0053	0.006250	30.4%	<0.0050	0.0067
Methyl Mercury [h]	µg/g	-	0.006	-	NV	0.0094	-	-	-	-	-	-	-
Molybdenum	µg/g	1	1	2	2	40	40	<1.0	<1.0	<1.0	-	<1.0	<1.0
Nickel	µg/g	1	2	5	82	340	89	26.8	24.9	25.9	7.4%	25.2	27.3
Selenium	µg/g	1	1	1	1.5	5.5	2.9	<1.0	<1.0	<1.0	-	<1.0	<1.0
Silver	µg/g	0.2	1	0.5	0.5	50	40	<0.20	<0.20	<0.20	-	<0.20	<0.20
Thallium	µg/g	0.5	0.4	1	1	3.3	1	<0.50	<0.50	<0.50	-	<0.50	<0.50
Uranium	µg/g	1	1	1	2.5	33	33	<1.0	<1.0	<1.0	-	<1.0	<1.0
Vanadium	µg/g	1	5	10	86	86	130	69.3	58.6	64.0	16.7%	63.9	67.4
Zinc	µg/g	5	10	30	290	340	410	79.6	69	74.3	14.3%	67	75.2

Table 7.

Summary of Metals, Hydride Metals and Other Reportable Parameters Soil Analyses

					Sample Location	MECP Standards		CCME Guidelines	MW21-13	MW21-14	MW21-14	MW21-14	MW21-14	MW21-15
					Sample No.	Full Depth	Full Depth	CEQG	SS3	SS3	DUP-1	SS3	SS3	SS3
					Sample Depth (m)	Background	Generic Non	CSoQG / CWS	1.52 - 2.13	1.52 - 2.13	1.52 - 2.13	DUP-1	DUP-1	1.52 - 2.13
					Laboratory Name	SCS	Potable SCS	Tiel 1	ALS	ALS	ALS	Average	RPD	ALS
					Laboratory Work Order No.	Table 1	Table 3	Commercial	L2678188	L2678188	L2678188		(%)	L2678188
					Laboratory Sample ID	I/C/C/R/P/I	I/C/C Use	Land Use	L2678188-8	L2678188-9	L2678188-12			L2678188-10
					Sample Date	Property Uses	Fine Textured	Fine Textured						
Parameters	**Units**	**RDL**	**LRL**	**RL**										
pH (range)	pH Units	0.1	-	-	-	-	6 - 8	7.17	7.2	7.21	7.21	0.14%	7.24
Cyanide (CN-)	µg/g	0.05	0.05	0.05	0.051	0.051	8	<0.050	<0.050	<0.050	<0.050	-	<0.050
Electrical Conductivity (EC)	mS/cm	0.004	-	0.005	0.57	1.4	4	0.104	0.153	0.133	0.143	14.0%	0.161
Sodium Absorption Ratio (SAR)	N/A	0.1	1	-	2.4	12	12	0.54	0.52	0.7	0.61	29.5%	3.82
Antimony	µg/g	1	2	1	1.3	50	40	<1.0	<1.0	<1.0	<1.0	-	<1.0
Arsenic	µg/g	1	1	1	18	18	12	3.5	4.1	4.1	4.1	0.0%	4.5
Barium	µg/g	1	10	5	220	670	2000	235	239	198	219	18.8%	529
Beryllium	µg/g	0.5	0.8	2	2.5	10	8	0.79	0.71	0.61	0.66	15.2%	1
Boron (Available) [g]	µg/g	0.1	5	0.5	NA	2	-	<0.10	<0.10	<0.10	<0.10	-	<0.10
Boron (total)	µg/g	5	0.4	5	36	120	-	6.5	6.9	5.8	6.4	17.3%	5.5
Cadmium	µg/g	0.5	0.1	1	1.2	1.9	22	<0.50	<0.50	<0.50	<0.50	-	<0.50
Chromium (Total)	µg/g	1	1	5	70	160	87	54.4	49	40.4	44.7	19.2%	**137**
Chromium (vi)	µg/g	0.2	0.4	0.2	0.66	10	1.4	1.2	0.85	0.41	0.63	69.8%	1.27
Cobalt	µg/g	1	2	2	21	100	300	13.6	14.5	14.2	14.4	2.09%	31.6
Copper	µg/g	1	5	5	92	300	91	31.1	31.6	27.2	29.4	15.0%	67.7
Lead	µg/g	1	1	10	120	120	260	7.3	7.3	6.5	6.9	11.6%	8.2
Mercury [h]	µg/g	0.005	0.05	0.1	0.27	20	24	0.0081	0.0076	<0.0050	0.0076	-	0.0068
Methyl Mercury [h]	µg/g	-	0.006	-	NV	0.0094	-	-	-	-	-	-	-
Molybdenum	µg/g	1	1	2	2	40	40	<1.0	<1.0	<1.0	<1.0	-	<1.0
Nickel	µg/g	1	2	5	82	340	89	31.2	30.2	26.5	28.4	13.1%	72.3
Selenium	µg/g	1	1	1	1.5	5.5	2.9	<1.0	<1.0	<1.0	<1.0	-	<1.0
Silver	µg/g	0.2	1	0.5	0.5	50	40	<0.20	<0.20	<0.20	<0.20	-	<0.20
Thallium	µg/g	0.5	0.4	1	1	3.3	1	<0.50	<0.50	<0.50	<0.50	-	0.51
Uranium	µg/g	1	1	1	2.5	33	33	<1.0	<1.0	<1.0	<1.0	-	<1.0
Vanadium	µg/g	1	5	10	86	86	130	73.2	75.1	67.2	71.2	11.1%	**147**
Zinc	µg/g	5	10	30	290	340	410	85.2	80.6	66.3	73.5	19.5%	152

Table 7.

Summary of Metals, Hydride Metals and Other Reportable Parameters Soil Analyses

					Sample Location	MECP Standards		CCME Guidelines	MW21-16
					Sample No.	Full Depth	Full Depth	CEQG	SS3
					Sample Depth (m)	Background	Generic Non	CSoQG / CWS	1.52 - 2.13
					Laboratory Name	SCS	Potable SCS	Tiel 1	ALS
					Laboratory Work Order No.	Table 1	Table 3	Commercial	L2678188
					Laboratory Sample ID	I/C/C/R/P/I	I/C/C Use	Land Use	L2678188-11
					Sample Date	Property Uses	Fine Textured	Fine Textured	
Parameters	**Units**	**RDL**	**LRL**	**RL**					
pH (range)	pH Units	0.1	-	-	-	-	6 - 8	7.61
Cyanide (CN-)	µg/g	0.05	0.05	0.05	0.051	0.051	8	<0.050
Electrical Conductivity (EC)	mS/cm	0.004	-	0.005	0.57	1.4	4	0.195
Sodium Absorption Ratio (SAR)	N/A	0.1	1	-	2.4	12	12	0.53
Antimony	µg/g	1	2	1	1.3	50	40	<1.0
Arsenic	µg/g	1	1	1	18	18	12	4.4
Barium	µg/g	1	10	5	220	670	2000	203
Beryllium	µg/g	0.5	0.8	2	2.5	10	8	0.62
Boron (Available) [g]	µg/g	0.1	5	0.5	NA	2	-	0.12
Boron (total)	µg/g	5	0.4	5	36	120	-	7
Cadmium	µg/g	0.5	0.1	1	1.2	1.9	22	<0.50
Chromium (Total)	µg/g	1	1	5	70	160	87	42.6
Chromium (vi)	µg/g	0.2	0.4	0.2	0.66	10	1.4	0.42
Cobalt	µg/g	1	2	2	21	100	300	12.4
Copper	µg/g	1	5	5	92	300	91	27.3
Lead	µg/g	1	1	10	120	120	260	6.3
Mercury [h]	µg/g	0.005	0.05	0.1	0.27	20	24	<0.0050
Methyl Mercury [h]	µg/g	-	0.006	-	NV	0.0094	-	-
Molybdenum	µg/g	1	1	2	2	40	40	<1.0
Nickel	µg/g	1	2	5	82	340	89	25.1
Selenium	µg/g	1	1	1	1.5	5.5	2.9	<1.0
Silver	µg/g	0.2	1	0.5	0.5	50	40	<0.20
Thallium	µg/g	0.5	0.4	1	1	3.3	1	<0.50
Uranium	µg/g	1	1	1	2.5	33	33	<1.0
Vanadium	µg/g	1	5	10	86	86	130	66.4
Zinc	µg/g	5	10	30	290	340	410	68.7

Table 8.

Summary of Pesticide/Herbicide Soil Analyses

Sample Location					MECP Standards		CCME Guidelines	TP-2	TP-2	TP-3	TP-5	TP-6	TP-7
Sample No.					Full Depth	Full Depth	CEQG	SS-1	DUP-1	SS-3	SS-3	SS-1	SS-1
Sample Depth (m)					Background	Generic Non	CSoQG / CWS	0.0 - 0.5	0.0 - 0.5	1.0 - 1.5	1.0 - 1.5	0.0 - 0.5	0.0 - 0.5
Laboratory Name					SCS	Potable SCS	Tiel 1	ALS	ALS	ALS	ALS	ALS	ALS
Laboratory Work Order No.					Table 1	Table 3	Commercial	L2673599	L2673599	L2673599	L2673599	L2673599	L2673599
Laboratory Sample ID					I/C/C/R/P/I	I/C/C Use	Land Use	L2673599-2	L2673599-22	L2673599-4	L2673599-7	L2673599-8	L2673599-9
Sample Date					Property Uses	Fine Textured	Fine Textured	14-Dec-21	14-Dec-21	15-Dec-21	14-Dec-21	15-Dec-21	15-Dec-21
Parameters	**Units**	**RDL**	**LRL**	**RL**									
Aldrin	µg/g	0.02	0.01	0.05	0.05	0.11	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane	µg/g	0.2	0.001	0.05	0.05	0.05	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
DDD	µg/g	0.04	0.001	0.05	0.05	4.6	-	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
DDE	µg/g	0.04	0.001	0.05	0.05	0.65	-	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
DDT	µg/g	0.04	0.001	0.05	1.4	1.4	12	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Dieldrin	µg/g	0.02	0.001	0.05	0.05	0.11	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan	µg/g	0.04	0.01	0.04	0.04	0.38	-	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Endrin	µg/g	0.02	0.001	0.04	0.04	0.04	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor	µg/g	0.02	0.05	0.05	0.05	0.19	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor Epoxide	µg/g	0.02	0.05	0.05	0.05	0.05	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene (HCB)	µg/g	0.01	0.05	0.01	0.01	0.66	10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	µg/g	0.01	0.01	0.01	0.01	0.095	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorocyclohexane, gamma	µg/g	0.01	0.0001	0.01	0.01	0.063	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	µg/g	0.01	0.01	0.01	0.01	0.43	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	µg/g	0.02	0.05	0.05	0.05	1.6	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Phenoxy Acid Herbicides													
Bromoxynil	ug/g	0.08	-	-	-	-	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
2,4-D	ug/g	0.08	-	-	-	-	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
Dicamba	ug/g	0.08	-	-	-	-	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
Dinoseb	ug/g	0.08	-	-	-	-	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
MCPA	ug/g	0.3	-	-	-	-	-	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Mecoprop (MCCP)	ug/g	0.3	-	-	-	-	-	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Picloram	ug/g	0.08	-	-	-	-	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
2,4,5-T	ug/g	0.08	-	-	-	-	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
2,4,5-TP (Silvex)	ug/g	0.08	-	-	-	-	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080

Table 8.

Summary of Pesticide/Herbicide Soil Analyses

Sample Location					MECP Standards		CCME Guidelines	TP-12	TP-12	TP-13	TP-17	TP-18	TP-20
Sample No.					Full Depth	Full Depth	CEQG	SS-1	DUP-2	SS-1	SS-1	SS-1	SS-1
Sample Depth (m)					Background	Generic Non	CSoQG / CWS	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
Laboratory Name					SCS	Potable SCS	Tiel 1	ALS	ALS	ALS	ALS	ALS	ALS
Laboratory Work Order No.					Table 1	Table 3	Commercial	L2673599	L2673599	L2673599	L2673599	L2673599	L2673599
Laboratory Sample ID					I/C/C/R/P/I	I/C/C Use	Land Use	L2673599-13	L2673599-23	L2673599-14	L2673599-18	L2673599-19	L2673599-21
Sample Date					Property Uses	Fine Textured	Fine Textured	15-Dec-21	14-Dec-21	14-Dec-21	14-Dec-21	14-Dec-21	14-Dec-21
Parameters	**Units**	**RDL**	**LRL**	**RL**									
Aldrin	µg/g	0.02	0.01	0.05	0.05	0.11	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane	µg/g	0.2	0.001	0.05	0.05	0.05	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
DDD	µg/g	0.04	0.001	0.05	0.05	4.6	-	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
DDE	µg/g	0.04	0.001	0.05	0.05	0.65	-	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
DDT	µg/g	0.04	0.001	0.05	1.4	1.4	12	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Dieldrin	µg/g	0.02	0.001	0.05	0.05	0.11	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan	µg/g	0.04	0.01	0.04	0.04	0.38	-	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Endrin	µg/g	0.02	0.001	0.04	0.04	0.04	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor	µg/g	0.02	0.05	0.05	0.05	0.19	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor Epoxide	µg/g	0.02	0.05	0.05	0.05	0.05	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene (HCB)	µg/g	0.01	0.05	0.01	0.01	0.66	10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	µg/g	0.01	0.01	0.01	0.01	0.095	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorocyclohexane, gamma	µg/g	0.01	0.0001	0.01	0.01	0.063	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	µg/g	0.01	0.01	0.01	0.01	0.43	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	µg/g	0.02	0.05	0.05	0.05	1.6	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Phenoxy Acid Herbicides													
Bromoxynil	ug/g	0.08	-	-	-	-	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
2,4-D	ug/g	0.08	-	-	-	-	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
Dicamba	ug/g	0.08	-	-	-	-	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
Dinoseb	ug/g	0.08	-	-	-	-	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
MCPA	ug/g	0.3	-	-	-	-	-	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Mecoprop (MCCP)	ug/g	0.3	-	-	-	-	-	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Picloram	ug/g	0.08	-	-	-	-	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
2,4,5-T	ug/g	0.08	-	-	-	-	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
2,4,5-TP (Silvex)	ug/g	0.08	-	-	-	-	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080

Notes on Groundwater Analytical Summary Tables

All Units in Micrograms per Litre (µg/L) Except Where Indicated Otherwise.

RDL = Laboratory Analytical Reporting Detection Limit.

RL = MOE 2011 Analytical Protocol Reporting Limit.

LRL = CCME 2016 Analytical Methods Laboratory Reporting Limit.

- = Not Analyzed or No Published Value.

DUP = Quality Assurance/Quality Control Duplicate Sample.

RPD = Relative Percent Difference (Between Primary and Duplicate Samples).

* Denotes RPD Exceeds Recommended Alert Criterion Exceeded, However, Parameter Concentration Less than 5 Times Laboratory RDL.

< = Less Than Laboratory Analytical Reporting Detection Limit.

55	Parameter Concentration May Exceed Applicable Standard or Guideline Due to Elevated Reporting Detection Limit.
183	Parameter Concentration Exceeds MECP Table 3 Full Depth Site Condition Standards for Non-Potable Ground Water Situation and Fine-Medium Textured Soil.
797	Parameter Concentration Exceeds Federal Interim Groundwater Quality Guidelines, Commercial / Industrial Land Use, Tier 1 Guidelines, Fine-Medium Textured Soil.

MECP Standards = Soil Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act, Ministry of the Environment, Conservation and Parks, April 15, 2011.

FIGQG = Guidance Document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites, Federal Contaminated Sites Action Plan, June 2016.

Table 9.

Summary of Volatile Organic Compound Groundwater Analyses

Sample Location Sample ID Laboratory Name Laboratory Work Order No. Laboratory Sample ID Sample Date Analysis Date					MECP Standards Full Depth Generic Non-Potable Table 3 Fine	FIGQG Tier 1 Comm / Ind Land Use Fine	MW21-11 MW21-11 ALS L2680371 L2680371-1 19-Jan-22	MW21-12 MW21-12 ALS L2680371 L2680371-2 19-Jan-22	MW21-13 MW21-13 ALS L2680371 L2680371-3 19-Jan-22	MW21-14 MW21-14 ALS L2680371 L2680371-4 19-Jan-22	MW21-14 DUP-1 ALS L2680371 L2680371-8 19-Jan-22	MW21-14 DUP-1 Average	MW21-14 DUP-1 RPD (%)
Parameters	**Units**	**RDL**	**LRL**	**RL**									
Acetone	µg/L	30	6	30	130000	13000	<30	<30	<30	<30	<30	<30	-
Benzene	µg/L	0.5	5	0.5	430	19000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Bromodichloromethane	µg/L	2	1	2	85000	8500	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-
Bromoform	µg/L	5	2	5	770	3700	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-
Bromomethane	µg/L	0.5	-	0.5	56	230	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Carbon Tetrachloride	µg/L	0.2	0.5	0.2	8.4	13	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-
Chlorobenzene (Monochlorobenzene)	µg/L	0.5	0.5	0.5	630	1.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Chloroform	µg/L	1	0.5	1	22	1.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-
Dibromochloromethane	µg/L	2	2	2	82000	250000	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-
Dichlorobenzene, 1,2- (o-DCB)	µg/L	0.5	0.5	0.5	9600	0.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Dichlorobenzene, 1,3- (m-DCB)	µg/L	0.5	0.5	0.5	9600	42	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Dichlorobenzene, 1,4- (p-DCB)	µg/L	0.5	0.5	0.5	67	26	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Dichlorodifluoromethane	µg/L	2	2	2	4400	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-
Dichloroethane, 1,1- (1,1-DCA)	µg/L	0.5	0.5	0.5	3100	44000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Dichloroethane, 1,2- (1,2-DCA)	µg/L	0.5	0.5	0.5	12	100	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Dichloroethylene, 1,1- (1,1-DCE)	µg/L	0.5	0.5	0.5	17	4500	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Dichloroethylene, cis-1,2- (c-1,2-DCE)	µg/L	0.5	0.5	0.5	17	230	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Dichloroethylene, trans-1,2- (t-1,2-DCE)	µg/L	0.5	0.5	0.5	17	230	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Dichloropropane, 1,2-	µg/L	0.5	0.5	0.5	140	2000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Dichloropropene, 1,3-	µg/L	0.5	0.5	0.5	45	310	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Ethylbenzene	µg/L	0.5	2	0.5	2300	150000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Ethylene Dibromide (Dibromoethane, 1,2-)	µg/L	0.2	0.2	0.2	0.83	12	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-
Hexane	µg/L	0.5	5	5	520	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Methyl Ethyl Ketone (MEK)	µg/L	20	20	20	1500000	150000	<20	<20	<20	<20	<20	<20	-
Methyl Isobutyl Ketone (MIBK)	µg/L	20	20	20	580000	58000	<20	<20	<20	<20	<20	<20	-
Methyl Tert Butyl Ether (MTBE)	µg/L	2	10	2	1400	5000	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-
Methylene Chloride (Dichloromethane)	µg/L	5	10	5	5500	98	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-
Styrene	µg/L	0.5	1	0.5	9100	72	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Tetrachloroethane, 1,1,1,2-	µg/L	0.5	0.5	0.5	28	380	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Tetrachloroethane, 1,1,2,2-	µg/L	0.5	0.5	0.5	15	210	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Tetrachloroethylene (PCE)	µg/L	0.5	0.5	0.5	17	110	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Toluene	µg/L	0.5	0.5	0.5	18000	240000	<0.50	<0.50	<0.50	1.5	1.56	1.56	-
Trichloroethane, 1,1,1- (1,1,1-TCA)	µg/L	0.5	0.5	0.5	6700	1100	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Trichloroethane, 1,1,2- (1,1,2-TCA)	µg/L	0.5	0.5	0.5	30	410	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Trichloroethylene (TCE)	µg/L	0.5	1	0.5	17	270	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Trichlorofluoromethane	µg/L	5	1	5	2500	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-
Vinyl Chloride	µg/L	0.5	1	0.5	1.7	120	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Xylenes (total)	µg/L	0.5	5	0.5	4200	74000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-

Table 9.

Summary of Volatile Organic Compound Groundwater Analyses

Sample Location Sample ID Laboratory Name Laboratory Work Order No. Laboratory Sample ID Sample Date Analysis Date					MECP Standards Full Depth Generic Non-Potable Table 3 Fine	FIGQG Tier 1 Comm / Ind Land Use Fine	MW21-15 MW21-15 ALS L2680371 L2680371-5 19-Jan-22	MW21-16 MW21-16 ALS L2680371 L2680371-6 19-Jan-22	Trip Blank ALS L2680371 L2680371-7 19-Jan-22
Parameters	**Units**	**RDL**	**LRL**	**RL**					
Acetone	µg/L	30	6	30	130000	13000	<30	<30	<30
Benzene	µg/L	0.5	5	0.5	430	19000	<0.50	<0.50	<0.50
Bromodichloromethane	µg/L	2	1	2	85000	8500	<2.0	<2.0	<2.0
Bromoform	µg/L	5	2	5	770	3700	<5.0	<5.0	<5.0
Bromomethane	µg/L	0.5	-	0.5	56	230	<0.50	<0.50	<0.50
Carbon Tetrachloride	µg/L	0.2	0.5	0.2	8.4	13	<0.20	<0.20	<0.20
Chlorobenzene (Monochlorobenzene)	µg/L	0.5	0.5	0.5	630	1.3	<0.50	<0.50	<0.50
Chloroform	µg/L	1	0.5	1	22	1.8	<1.0	<1.0	<1.0
Dibromochloromethane	µg/L	2	2	2	82000	250000	<2.0	<2.0	<2.0
Dichlorobenzene, 1,2- (o-DCB)	µg/L	0.5	0.5	0.5	9600	0.7	<0.50	<0.50	<0.50
Dichlorobenzene, 1,3- (m-DCB)	µg/L	0.5	0.5	0.5	9600	42	<0.50	<0.50	<0.50
Dichlorobenzene, 1,4- (p-DCB)	µg/L	0.5	0.5	0.5	67	26	<0.50	<0.50	<0.50
Dichlorodifluoromethane	µg/L	2	2	2	4400	-	<2.0	<2.0	<2.0
Dichloroethane, 1,1- (1,1-DCA)	µg/L	0.5	0.5	0.5	3100	44000	<0.50	<0.50	<0.50
Dichloroethane, 1,2- (1,2-DCA)	µg/L	0.5	0.5	0.5	12	100	<0.50	<0.50	<0.50
Dichloroethylene, 1,1- (1,1-DCE)	µg/L	0.5	0.5	0.5	17	4500	<0.50	<0.50	<0.50
Dichloroethylene, cis-1,2- (c-1,2-DCE)	µg/L	0.5	0.5	0.5	17	230	<0.50	<0.50	<0.50
Dichloroethylene, trans-1,2- (t-1,2-DCE)	µg/L	0.5	0.5	0.5	17	230	<0.50	<0.50	<0.50
Dichloropropane, 1,2-	µg/L	0.5	0.5	0.5	140	2000	<0.50	<0.50	<0.50
Dichloropropene, 1,3-	µg/L	0.5	0.5	0.5	45	310	<0.50	<0.50	<0.50
Ethylbenzene	µg/L	0.5	2	0.5	2300	150000	<0.50	<0.50	<0.50
Ethylene Dibromide (Dibromoethane, 1,2-)	µg/L	0.2	0.2	0.2	0.83	12	<0.20	<0.20	<0.20
Hexane	µg/L	0.5	5	5	520	-	<0.50	<0.50	<0.50
Methyl Ethyl Ketone (MEK)	µg/L	20	20	20	1500000	150000	<20	<20	<20
Methyl Isobutyl Ketone (MIBK)	µg/L	20	20	20	580000	58000	<20	<20	<20
Methyl Tert Butyl Ether (MTBE)	µg/L	2	10	2	1400	5000	<2.0	<2.0	<2.0
Methylene Chloride (Dichloromethane)	µg/L	5	10	5	5500	98	<5.0	<5.0	<5.0
Styrene	µg/L	0.5	1	0.5	9100	72	<0.50	<0.50	<0.50
Tetrachloroethane, 1,1,1,2-	µg/L	0.5	0.5	0.5	28	380	<0.50	<0.50	<0.50
Tetrachloroethane, 1,1,2,2-	µg/L	0.5	0.5	0.5	15	210	<0.50	<0.50	<0.50
Tetrachloroethylene (PCE)	µg/L	0.5	0.5	0.5	17	110	<0.50	<0.50	<0.50
Toluene	µg/L	0.5	0.5	0.5	18000	240000	<0.50	<0.50	<0.50
Trichloroethane, 1,1,1- (1,1,1-TCA)	µg/L	0.5	0.5	0.5	6700	1100	<0.50	<0.50	<0.50
Trichloroethane, 1,1,2- (1,1,2-TCA)	µg/L	0.5	0.5	0.5	30	410	<0.50	<0.50	<0.50
Trichloroethylene (TCE)	µg/L	0.5	1	0.5	17	270	<0.50	<0.50	<0.50
Trichlorofluoromethane	µg/L	5	1	5	2500	-	<5.0	<5.0	<5.0
Vinyl Chloride	µg/L	0.5	1	0.5	1.7	120	<0.50	<0.50	<0.50
Xylenes (total)	µg/L	0.5	5	0.5	4200	74000	<0.50	<0.50	<0.50

Table 10.

Summary of Pesticide/Herbicide Groundwater Analyses

Sample Location					MECP Standards	FIGQG	MW21-11	MW21-12	MW21-13	MW21-14	MW21-14
Sample ID					Full Depth		MW21-11	MW21-12	MW21-13	MW21-14	DUP-1
Laboratory Name					Generic	Tier 1	ALS	ALS	ALS	ALS	ALS
Laboratory Work Order No.					Non-Potable	Comm / Ind	L2680371	L2680371	L2680371	L2680371	L2680371
Laboratory Sample ID					Table 3	Land Use	L2680371-1	L2680371-2	L2680371-3	L2680371-4	L2680371-8
Sample Date					Fine	Fine	19-Jan-22	19-Jan-22	19-Jan-22	19-Jan-22	19-Jan-22
Analysis Date											
Parameters	**Units**	**RDL**	**LRL**	**RL**							
Aldrin	µg/L	0.008	0.01	0.01	8.5	3	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
Chlordane	µg/L	0.011	0.0002	0.06	28	15	<0.011	<0.011	<0.011	<0.011	<0.011
DDD	µg/L	0.0057	0.1	0.05	45	0.001	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057
DDE	µg/L	0.0057	0.1	0.01	20	0.001	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057
DDT	µg/L	0.0057	0.02	0.05	2.8	0.001	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057
Dieldrin	µg/L	0.008	0.02	0.05	0.75	0.056	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
Endosulfan	µg/L	0.0099	0.002	0.05	1.5	0.02	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099
Endrin	µg/L	0.01	0.02	0.05	0.48	0.036	<0.010	<0.010	<0.010	<0.010	<0.010
Heptachlor	µg/L	0.008	0.002	0.01	2.5	-	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
Heptachlor Epoxide	µg/L	0.008	0.01	0.01	0.048	0.0038	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
Hexachlorobenzene	µg/L	0.008	0.01	0.01	3.1	210	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
Hexachlorobutadiene	µg/L	0.008	0.2	0.01	4.5	1.3	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
Hexachlorocyclohexane, gamma (Lindane)	µg/L	0.008	0.01	0.01	1.2	0.01	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
Hexachloroethane	µg/L	0.008	0.01	0.01	200	-	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
Methoxychlor	µg/L	0.008	0.05	0.05	6.5	0.03	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080

Table 10.

Summary of Pesticide/Herbicide Groundwater Analyses

Sample Location Sample ID Laboratory Name Laboratory Work Order No. Laboratory Sample ID Sample Date Analysis Date					MECP Standards Full Depth Generic Non-Potable Table 3 Fine	FIGQG Tier 1 Comm / Ind Land Use Fine	MW21-14 DUP-1 Average	MW21-14 DUP-1 RPD (%)	MW21-15 MW21-15 ALS L2680371 L2680371-5 19-Jan-22	MW21-16 MW21-16 ALS L2680371 L2680371-6 19-Jan-22
Parameters	**Units**	**RDL**	**LRL**	**RL**						
Aldrin	µg/L	0.008	0.01	0.01	8.5	3	<0.0080	-	<0.0080	<0.0080
Chlordane	µg/L	0.011	0.0002	0.06	28	15	<0.011	-	<0.011	<0.011
DDD	µg/L	0.0057	0.1	0.05	45	0.001	<0.0057	-	<0.0057	<0.0057
DDE	µg/L	0.0057	0.1	0.01	20	0.001	<0.0057	-	<0.0057	<0.0057
DDT	µg/L	0.0057	0.02	0.05	2.8	0.001	<0.0057	-	<0.0057	<0.0057
Dieldrin	µg/L	0.008	0.02	0.05	0.75	0.056	<0.0080	-	<0.0080	<0.0080
Endosulfan	µg/L	0.0099	0.002	0.05	1.5	0.02	<0.0099	-	<0.0099	<0.0099
Endrin	µg/L	0.01	0.02	0.05	0.48	0.036	<0.010	-	<0.010	<0.010
Heptachlor	µg/L	0.008	0.002	0.01	2.5	-	<0.0080	-	<0.0080	<0.0080
Heptachlor Epoxide	µg/L	0.008	0.01	0.01	0.048	0.0038	<0.0080	-	<0.0080	<0.0080
Hexachlorobenzene	µg/L	0.008	0.01	0.01	3.1	210	<0.0080	-	<0.0080	<0.0080
Hexachlorobutadiene	µg/L	0.008	0.2	0.01	4.5	1.3	<0.0080	-	<0.0080	<0.0080
Hexachlorocyclohexane, gamma (Lindane)	µg/L	0.008	0.01	0.01	1.2	0.01	<0.0080	-	<0.0080	<0.0080
Hexachloroethane	µg/L	0.008	0.01	0.01	200	-	<0.0080	-	<0.0080	<0.0080
Methoxychlor	µg/L	0.008	0.05	0.05	6.5	0.03	<0.0080	-	<0.0080	<0.0080

Table 11. Summary of Regulation 347 Waste Classification Testing

Parameters	RDL	Analytical Results - mg/L	Ontario Regulation 347 Schedule 4 Leachate Quality Criteria
Sample Location		**Composite Grab**	
Sample No.		**TCLP**	
Sample Depth (m)		**N/A**	
Laboratory ID		**L2673619-1**	
Sample Date (mm/dd/yy)		**2021-12-15**	
Metals			
Arsenic	0.05	<0.050	2.5
Barium	0.5	<0.50	100
Boron	2.5	<2.5	500
Cadmium	0.005	<0.0050	0.5
Chromium	0.05	<0.050	5
Lead	0.025	<0.025	5
Mercury	0.0001	<0.00010	0.1
Selenium	0.025	<0.025	1
Silver	0.005	<0.0050	5
Uranium	0.25	<0.25	10
Semi-Volatile Organic Compounds (SVOC)			
Benzo(a)pyrene	0.001	<0.0010	0.001
Other			
Cyanide	0.1	<0.10	20
Fluoride	10	<10	150
Nitrate + Nitrite (as Nitrogen)	4	<4.0	1000
Flashpoint			
Ignitability		Non-flammable	-

Notes:

All Units in Milligrams per Litre (mg/L) Except Where Otherwise Indicated.

< = Less Than Laboratory Analytical Method Detection Limit.

2630 Parameter Concentration Exceeds Ontario Regulation 347 Schedule 4 Leachate Quality Criteria.

NI = Not Ignitable According to Transport Canada Methodology (TDG).

Appendix A
Sampling and Analysis Plan

Wood Environment & Infrastructure Solutions,
a Division of Wood Canada Limited
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Ottawa, Ontario K2E 7L5
Canada
T: 613-727-0658
www.woodplc.com

Technical Memorandum

To: Field Staff

From: Kevin Hicks, M.Sc., P.Geo., QP_{ESA} **Reviewer:**

CC: Project File

Date: **2 December 2021**

Ref: OESAO2132

Re: **Sampling and Analysis Plan**
50 Leikin Drive, Ottawa (Nepean), Ontario

This Technical Memorandum presents the Sampling and Analysis Plan (SAP) that has been developed in support of the Phase II Environmental Site Assessment (ESA) for the property identified by the municipal addresses of 50 Leikin Drive in Ottawa, Ontario (the "Site"). The Site comprises a 9.07 hectare property located on the west side of Leikin Drive at the intersection with Bill Leathem Drive in the Rideau Crest - Davidson Heights Neighbourhood.

The Site is a near rectangular-shaped property measuring approximately 9.07 hectares (22.4 acres) with approximate dimensions of 345 m in length (north-south) by 280 m in width (east-west). The topography across the Site is relatively flat lying at an elevation of approximately 90 metres above sea level (masl). The Site is located in an area of developing commercial land uses with the nearest major arterial route being Prince of Wales Drive to the east. The Site is currently vacant and was used for agricultural purposes (growing fields) up until sometime between after 1991 but before 1999.

1.0 Purpose and Objective

A Phase Two ESA is to be conducted to provide characterization of the geological and hydrogeological conditions, assess the soil and groundwater quality with respect to the Areas of Potential Environmental Concern (APEC) and their associated Contaminants of Potential Concern (COPC) identified in a Phase I ESA of the Site (Wood, in progress), and delineate extent of any soil and/or groundwater impacts that may be identified. This SAP presents the general approach and framework of the field investigations and sampling program to characterize the Site conditions, the recommended procedures and protocols for sampling and associated field activities, the quality assurance/ quality control (QA/QC) measures for the collection of accurate and reproducible data that is representative of the Site conditions, and the data quality objectives (DQO). These components are described in further detail below.

It is noted that the Phase II ESA field investigations are being completed concurrently with a geotechnical investigations of the Site. Boreholes required for geotechnical purposes only will be subject to field screening as an added measure of robustness to the Phase II ESA.

2.0 Sampling Rationale and Procedures

To meet the desired objectives, the Phase II ESA field program will include the excavation of test pits, drilling of boreholes, installation of ground water monitoring wells, collection of representative soil and ground water samples, and laboratory analysis of soil and ground water samples for suspect COPC. The sampling programs will employ a judgemental sampling approach with the sampling locations being targeted to assess the known APECs and COPCs identified at the Site. Details of the sampling and analysis plan are provided in Table 1 while sampling locations are shown on Figure 1.

Sampling locations shall be marked in the field prior to initiating any ground disturbance activities to ensure accurate positioning of the sampling locations with respect to the APECs and to accommodate utility locates and clearances by their respective owners and/or agents. Sampling locations may require subsequent adjustment depending on utility locations. Any such alterations/deviations shall be recorded in the field notes.

All samples are assigned a unique identification number, which is recorded along with the date, time, project number, company name, location and requested analysis in a bound field notebook. All samples are handled and transported following Chain of Custody protocols.

2.1 Test Pitting and Soil Sampling

Surface and shallow subsurface (approx. 2 m max depth) soil samples will be collected through the excavation of exploratory test pits. The test pits will be excavated using a rubber tired backhoe. Samples will be collected at a minimum of 0.5 metre intervals, at changes in geological units, and at any indication of the presence of deleterious fill material or gross evidence (i.e., staining or odours) of negative impact. Samples will be collected from the walls of the test pit above a depth of one metre. Samples of fill material for analysis of non-volatile COPCs (e.g., metals, general inorganics, PAH) will be collected as composite samples with material collected from distinct layers from all fours wall of the test pit to avoid potential false positive analyses due to "nugget effect". At depths greater than one metre samples of the fill and native material were collected from the backhoe bucket.

2.2 Borehole Drilling and Soil Sampling

Boreholes will be advanced using a CME 75 track-mounted drilling rig equipped with 110 mm inside diameter hollow stem augers to facilitate the collection of surface and subsurface soil samples and the installation of groundwater monitoring. Soil/fill samples shall be collected at regular interval ahead of the augers using standard split spoon sampling methods. Soil samples will be obtained at 0.75 m intervals from 0 to 3.0 metres below ground surface (mgbs) and at 1.5 m intervals thereafter.

2.3 Sample Screening

Soil samples collected during test pitting and borehole sampling programs will be screened in the field for evidence of negative impact to facilitate sample selections for laboratory analysis of COPC. Samples will be

subject to screening using visual/olfactory observations (i.e., presence of deleterious or foreign materials, unusual odours, etc.) as well as soil sample headspace screening measurements for combustible and total organic vapours using a potable hydrocarbon surveyor (e.g., RKI Eagle) and a photoionization detector (e.g., MiniRAE 3000). Such instruments shall be calibrated at the start of each using known calibrations standards.

2.4 Monitoring Wells

Monitoring wells shall be constructed at selected borehole locations using commercially available 50 mm diameter flush joint threaded schedule 40 PVC monitoring well supplies. Shallow (water table) monitoring wells (4.5 to 6.0 m total depth) shall be constructed with 3.05 m long screens positioned to intersect the water table.

Monitoring wells will be developed a minimum of 24 hours after installation using dedicated Waterra inertial lift pumps and sufficient lengths of low-density polyethylene (LDPE) tubing. Approximately three to five well volumes (casing volume plus filter pack) will be extracted from each well to remove any residual sediment and/or drill cuttings introduced during the borehole drilling and well installation process, stabilize and grade the filter pack, retrieve lost drilling fluids, improve connectivity between the well and the formation, and restore groundwater that may have been disturbed or altered during the drilling process. Lesser well development volume may be realized depending on water clarity and formation yield.

2.5 Decontamination Protocols

Rigorous decontamination protocols are to be followed during field sampling where non-dedicated or non-disposal sampling equipment is used to avoid potential sample cross contamination. For the borehole drilling and soil sampling, soil sampling devices are cleaned and decontaminated between sampling intervals and auger flights between borehole locations in accordance with Wood SOP No. 2 – Equipment Decontamination.

For the monitoring well installation, well components are not to come into contact with the ground surface prior to insertion into boreholes. Electronic water level meters are decontaminated between monitoring well locations during well development and purging activities. All decontamination fluids are collected and stored in sealed, labelled containers.

2.6 Equipment Calibration

All equipment requiring calibration are to be calibrated in accordance with the manufacturer's requirements and Wood SOP No. 1 – Equipment Calibration and Maintenance using analytical grade reagents and/or calibration standards, or by the supplier prior to conducting field activities, and subsequently routinely checked in the field. The calibration of all pre-calibrated instruments are checked in the field using analytical grade reagents and/or calibration standards and re-calibrated as required. For multi-day sampling events, equipment calibration is checked prior to the beginning of sampling activities on each day the equipment is in use. All calibration data are documented as part of the field note taking process.

2.7 Surveying

Boreholes and ground water monitoring wells shall be surveyed for location (eastings and northings) relative to the Universal Transverse Mercator (UTM) reference grid, North American Datum of 1983 (NAD83),

Canadian Spatial Reference System (CSRS) using a Trimble GeoXH Global Positioning System (GPS). Top of monitor elevations and the ground surface elevations for all borehole/monitoring well locations shall be referenced to geodetic subject to benchmark availability. In the absence of a know benchmark, elevation will be tied to a fixed reference point with an assigned arbitrary elevation of 100 metres.

2.8 Soil Sample Analyses

Soil samples shall be selected for analysis of COPCs on the basis of the presence of fill material, visual or olfactory evidence of contamination, field screening results (hydrocarbons and VOCs), and proximity to the apparent water table (LNAPL). In the absence of any screening indicators of impact, soil samples to be analyzed for all parameters shall be collected from fill materials which contain deleterious materials such as ashes and cinders, coal, clinker, etc. with the exception that samples for BTEX/VOC/PHC F1-F4 may be collected from the vicinity of the water table or depths where so warranted by visual/olfactory evidence of elevated.

A summary of the soil analytical schedule is provided in the table below. Samples shall be analyzed at a minimum of one sample analysis for the target COPC from each test pit / borehole locations. Soil sample selected for analysis shall be based on worse case results of the sample screening. Where no elevated COV or TOV vapours or other obvious indicators (staining/odours) samples selections for analyses shall be based presence of deleterious materials commonly associated with PAH/metals impacts (e.g., ashes, cinders, coal fragments, waste materials). Where no foreign/deleterious materials or evidence of fill are observed analysis for PAH may be omitted.

Sample Media	Metals & Inorganic	PAH	PHC F1-F4	OCP & HPA	pH	Waste Class
Test Pit Soil Samples	20	10	5	10	10	1
Borehole Soil Samples	10	5	-	-	-	-
QA/QC Samples	3	2	1	1	1	-
Totals	33	17	6	11	11	1

Notes:
Soil samples include minimum 10 percent blind duplicate QA/QC samples.
OCP = Organochlorine Pesticides.
PAH = Polynuclear Aromatic Hydrocarbons.
HPA = Herbicides - Phenoxy Acid.
PHC = Petroleum Hydrocarbons.
Waste Class includes inorganic and zero headspace leachate extractions and analysis of metals and inorganics, VOC, benzo(a)pyrene, polychlorinated biphenyls, and flashpoint determination. Will only be analyzed in the event that soil contamination is identified.

Soil samples to be analyzed for BTEX/VOC/PHC F1 shall be preserved in the field using methanol-charged 40-ml sample vials. The QP shall be notified where additional laboratory analyses are warranted based on visual/olfactory observations and/or soil sample headspace measurements.

2.9 Ground Water Sample Analyses

Ground water samples will be collected at each of the new monitoring wells as well as all existing monitoring wells present at the Site. Groundwater samples will be collected using low-flow sampling methods

employing a Waterra Pegasus Alexis peristaltic pump. Samples will be collected using dedicated low density polyethylene (LDPE) down well tubing and disposable silicone pump-head tubing.

Wells will be purged prior to sampling to ensure the samples are representative of true formation water. Field parameters including pH, temperature, conductivity, dissolve oxygen (DO), and oxidation-reduction potential (ORP) shall be measured during purging using a YSI water quality instrument fitted with a flow through cell. Samples shall be collected upon stabilization of the field parameters.

A summary of the proposed ground water analytical schedule is provided below. A detailed breakdown of the ground water sampling and laboratory analyses on a location basis is provided on Table 1 attached.

Sample Media	VOC [1]	OCP
Groundwater Samples	6	6
QA/QC Samples	2	1
Totals	8	7

Notes:
(1) Includes QA/QC travel blank for groundwater samples.
OCP = Organochlorine Pesticides.
PHC = Petroleum Hydrocarbons.
VOC = Volatile Organic Compounds.

2.10 Laboratory Analyses

Laboratory supplied sample containers are used for all sampling conducted on the Site. All samples are preserved using appropriate analytical test group specific reagents, as required and as provided by the laboratory, and upon collection placed in ice-filled insulated coolers for storage and transport to the laboratory.
Samples shall be submitted to ALS Environmental under Chain of Custody (CoC) protocol for analysis of COPCs. The CoC form shall be clearly marked "O.Reg. 153/04" and with Table 3 selected as the applicable criteria. All selections for analysis are to be approved by Kevin D. Hicks, P.Geo. (Project QP). Any deviations from the planned scope of work and the rationale for the deviation(s) are to be approved by Kevin D. Hicks, P.Geo. (Project QP) and are to be recorded in the field notes.

Laboratory analyses shall be carried out in accordance with *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act* dated March 9, 2004, amended as of November 30, 2020. The proposed analytical program will include verification that the selected analytical methods will have minimum detection limits that are less than the applicable environmental quality criteria or standard on which the numerical comparison will be based. In instances where the laboratory detection limits have been raised and/or elevated above the applicable guidelines, discussion/rationale must be provided in the report to support these results.

2.11 Management of Investigation Derived Waste

Excess soil cuttings, decontamination fluids and purge water generated during well development and sampling programs will be stored in 205-L steel drums on Site pending off-Site disposal by a licensed water hauler. The drums will be clearly labelled as to content with contact information for the Wood Project

Management provided on the label. Drums of IDW waste shall be disposed by a licensed contractor following receipt of any pertinent sample analyses required for waste classification purposes.

3.0 Quality Assurance and Quality Control (QA/QC)

Wood embraces the concept that total quality assurance is based on the principal that quality work is the primary responsibility of each individual and the Project Team working in concert. Quality is achieved through the use of skilled personnel, adequate planning, use of suitable tools and industry recognized and standardized procedures, proper definition of job requirements, proper supervision and effective technical direction. Quality is controlled through the establishment of plans and procedures to perform, examine, measure, monitor and evaluate the work in progress. Quality is verified through surveillance, inspection, testing, checking, review, and audit of the work activities and documentation.

3.1 Data Quality Objectives

The data quality objectives (DQO) for the QA/QC program are to obtain soil and groundwater samples and other field measurements that provide data of acceptable quality that meets the objectives of the Phase II ESA. To that end, the DQOs are as follows:

- To obtain soil and groundwater samples and other field measurements that provide data of acceptable quality that meets the objectives of the Phase Two ESA.
- To collect samples of unbiased (i.e., non-contaminated) samples, document sampling procedures, and to collect appropriate QC samples to provide a measure of sample reproducibility and accuracy.
- To collect field quality control samples at a rate that meets or exceeds those specified in Section 2.5, and to ensure that the results of those QC samples are satisfactory. The data quality objectives for all types of field data collected during the Phase Two ESA field investigation that set the level of uncertainty in environmental data were set such that:
  - Decision-making is not affected; and,
  - The general (general) objectives of the investigation are met.

3.2 QA/QC Plan

A strict QA/QC plan will be implemented and maintained throughout the project to ensure the field and laboratory analytical data is unbiased and representative of the actual Site conditions. The QA/QC plan provides a method of documented checks to assess the precision and accuracy of collected data, procedures and protocols for the collection of samples unbiased by sampling activities, sample documentation and the collection of appropriate QC samples to provide a measure of sample reproducibility and accuracy.

To this end, Wood Standards Operating Procedures (SOP) and QA/QC protocols have been developed in recognition of recognized scientific and engineering practices to meet or exceed those defined in the documents entitled *Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04* (MOE, June 2011) and *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario* (MOEE, 1996) and Canadian Council of Ministers of the Environment (CCME) *Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites* (CCME, 1993) and *Guidance Manual For Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment -– Volumes 1 through 3* (CCME, 2016).

3.3 Standard Operating Procedures

During the sampling process, strict adherence to established QA/QC protocol ensures the integrity of the samples collected and the validity of analytical data generated. Field sampling is of extreme importance, both in terms of the accuracy of the results and the defence of the final data set. This will be addressed via SOPs developed for sample tracking, labelling and chain of custody protocols and the provision for an appropriate number of field duplicates, which will be used to validate the data and ensure that the data obtained from the laboratory is reliable and defensible.

The following Wood Standard Operating Procedures (SOPs) are to be followed during the Project and are incorporated herein by reference and are included in Appendix A:

- SOP No. 1: Equipment Calibration and Maintenance
- SOP No. 2: Equipment Decontamination
- SOP No. 3: Sampling Location Inspection and Monitoring
- SOP No. 4: Measurement of Field Parameters
- SOP No. 8: Subsurface Soil Sampling
- SOP No. 10: Soil Vapour Headspace Screening
- SOP No. 13: Borehole Drilling and Soil Sampling
- SOP No. 14: Monitoring Well Design and Construction
- SOP No. 15: Monitoring Well Decommissioning
- SOP No. 16: Ground Water and Liquid Level Monitoring
- SOP No. 17: Ground Water Purging and Sampling
- SOP No. 18: Low Flow Groundwater Sampling
- SOP No. 19: Handling of Volatile Samples
- SOP No. 20: Chain of Custody Completion

3.4 Field Quality Control Samples

Field quality controls samples are collected to evaluate the accuracy and reproducibility of the field sampling procedures. The field quality assurance program includes the use of field (blind) duplicates, trip blanks, field blanks and equipment blanks. Blind duplicate samples will be collected at the rate of one (1) duplicate sample for every ten (10) samples (i.e., 10%) per analytical test group to evaluate laboratory precision and field sampling and handling procedures, as well as to assess potential sample heterogeneity. Trip blanks will be employed at a rate of one trip blank for each sample cooler shipped containing volatile analytes (e.g., BTEX, VOC, PHC F1) to evaluate the potential for sample cross-contamination during sample storage and shipping.

Field duplicate samples are assessed by calculating the relative percent difference (RPD) and comparing to the analytical test group specific acceptance criteria. The recommended alert criterion for QC blank samples

the detection of any test group analyte at a concentration in excess of laboratory reporting detection limits (RDL).

Attachments (2)

Table 1. Sampling Rationale
Figure 1. Sample Location Plan

Table 1. Sampling Rationale

APEC	Sample Media COPCs		Sample Locations	Sampling Depth	Sampling Rationale
	Soil	Ground Water			
APEC 1 – Importation of fill of unknown quality	Metals As, Sb, Se, B-HWS, Cr(VI), Hg PAH PHC F1 – F4	-	TP-1 – TP-20 BH21-6 – BH21-10 MW21-11 – MW21-16	0 – 2.0 mbgs depending on depth of fill	Test pit and borehole samples for laboratory analysis to be collected from suspected fill material. Fill material may contain deleterious or foreign materials such as ashes, cinders, brick, concrete, wood, glass, etc. One sample from each test pit to be analyzed for Reg 153 metals where evidence of potential adverse impact is noted. Samples free of such evidence may be omitted for PAH analysis but should include metals analysis given the potential for naturally elevated levels of Ba, B, Cr, Co and V. Samples from selected test pits to be analyzed for PHC should be based on field (visual/olfactory) and sample headspace screening results.
APEC 2 - Pesticides Manufacturing, Processing, Bulk Storage and Large-Scale Applications	OCP, HPA metals	-	TP-1 – TP-20	Suspected to be up to 2 m depending on depth of overlying fill, if present	Samples of original topsoil and/or immediate underlying soil from up to 10 test pits to be analyzed for OCP and HPA.
		ORC, HPA	MW21-11 – MW21-16	Water table	All monitoring wells to be sampled for OCP and PHA
APEC 3 – Elevated levels of Ba, B, Cr, Co and V in fine grained Champlain Sea sediments	Metals	-	BH21-6 – BH21-10	0 – 5 mbgs	One sample of silty clay / clayey silt from each borehole to be analyzed for Reg. 153 metals.
APEC 4 – Potential chlorinated solvent use at adjacent property to the west		VOC	MW21-11 – MW21-16	Water table	All monitoring wells to be sampled for VOC.

Notes:
See Figure 1 for sampling locations.
OCP = Organochlorine Pesticides.
PAH = Polynuclear Aromatic Hydrocarbons.
HPA = Herbicides - Phenoxy Acid.
PHC = Petroleum Hydrocarbons.
VOC = Volatile Organic Compounds.

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LEGEND

- PROPERTY BOUNDARY
- PROPOSED TEST PIT (1.5 m)
- PROPOSED SHALLOW BOREHOLE (6 m)
- PROPOSED DEEP BOREHOLE (UP TO 15 - 20 m)
- PROPOSED SHALLOW BOREHOLE WITH MONITORING WELL

TITLE: PROPOSED SAMPLING LOCATIONS	PROJECT: 50 LEIKIN DRIVE OTTAWA ONTARIO		wood.
CLIENT: CANADA POST / POSTES CANADA	DRAWN BY: JFT	CHECKED BY: KDH	DATE: DECEMBER 2021 / SCALE: 1 : 800
	REVISION: 0	PROJECT NO: OESAO2132	FIGURE NO: 1
	DATUM: NAD 83 CSRS 2010	PROJECTION: UTM ZONE 18 N	

Appendix B
Test Pit Records

Test Pit Record

General Information

Client Name: Canada Post Corporation
Site Location: 50 Leikin Drive, Ottawa
Supervised By: Brian Clark

Project No.: OESAO2132
Vapour Instrument: RKI Eagle
Date: Dec 14-15, 2021

Test Pit ID: TP-1
Photographic Record: See below
Location: 444373.1E, 5016043.6N

Elevation (m.a.s.l.):
Depth (m): 1.5 m
Date: 12/14/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 1.1	Silty Sand and Gravel Fill, some cobbles, some boulders, crushed asphalt, grey to brown, trace broken clay drainage tile	SS-1	0.0 – 1.1	N/A	125	0
1.1 -2.0	Silty Clay, grey to brown, stiff, moist	SS-2	1.1 – 1.5	N/A	0	0
		SS-3	1.5 – 2.0	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, PHC F1-F4, CN, EC, SAR and pH analysis. Samples SS-3 submitted for corrosivity analysis.

Test Pit Record

Test Pit ID: TP-2 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444334,7E, 5016043.6N **Date:** 12/14/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.3	Silty Clay with organic topsoil, grey, moist	SS-1	0.0 – 0.5	N/A	0	0
0.3 – 0.5	Silty Clay, grey to brown, moist					
0.5 – 1.5	Silty Clay, grey to brown, moist, becomes wet at 1.4 m	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, OCP, HPA, CN, EC, SAR and pH analysis.

Test Pit Record

Test Pit ID: TP-3 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444401.0E, 5016048.2N **Date:** 12/15/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay, grey to brown, moist					
0.5 – 1.5	Silty Clay, grey to brown, moist, becomes wet at 1.5 m	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, CN, EC, SAR and pH analysis.
Sample SS-3 submitted for OCP, HPA and pH analysis.

Test Pit Record

Test Pit ID: TP-4 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444480.2E, 5016058.4N **Date:** 12/14/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay, grey to brown, moist					
0.5 – 1.5	Silty Clay, grey to brown, moist, becomes wet at 1.4 – 1.5 m	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, CN, EC, SAR and pH analysis.

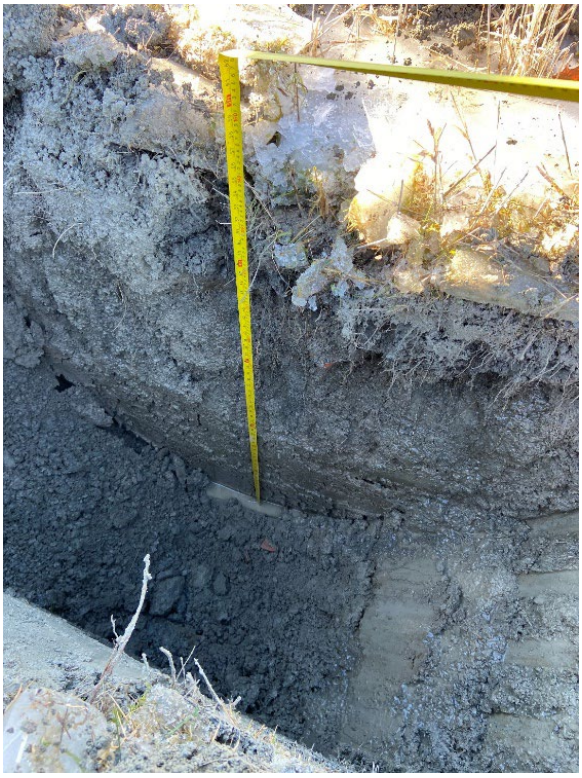
Test Pit Record

Test Pit ID: TP-5 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444338.6E, 5016083.1N **Date:** 12/14/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay, grey to brown, moist					
0.5 – 1.5	Silty Clay, grey to brown, moist, becomes wet at 1.4 – 1.5 m	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0



Sample SS-1 submitted for Reg 153 metals, CN, EC, SAR and pH analysis.
Sample SS-3 submitted for OCP, HPA and pH analysis.

Test Pit Record

Test Pit ID: TP-6 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444467E, 5016059N **Date:** 12/15/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay, grey to brown, moist					
0.5 – 1.5	Silty Clay, grey to brown, moist, becomes wet at 1.3 m	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, OCP, HPA, CN, EC, SAR and pH analysis.

Test Pit Record

Test Pit ID: TP-7 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444445E, 5016101N **Date:** 12/15/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay, grey to brown, moist					
0.5 – 1.5	Silty Clay, grey to brown, moist	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, OCP, HPA, CN, EC, SAR and pH analysis.
Samples SS-3 submitted for corrosivity analysis.

Test Pit Record

Test Pit ID: TP-8 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444421E, 5016062N **Date:** 12/15/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay, grey to brown, moist					
0.5 – 1.5	Silty Clay, grey to brown, moist	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, CN, EC, SAR and pH analysis.

Test Pit Record

Test Pit ID: TP-10 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444479.9E, 5016103.4N **Date:** 12/15/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay, grey to brown, moist					
0.5 – 1.5	Silty Clay, grey to brown, moist.	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, CN, EC, SAR and pH analysis.

Test Pit Record

Test Pit ID: TP-11 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444500.9E, 5016088.3N **Date:** 12/15/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay, grey to brown, moist, becomes reddish brown at 0.5 m					
0.5 – 1.0	Silty Clay, reddish brown, moist	SS-2	0.5 – 1.0	N/A	0	0
1.0 – 1.5	Silty Clay, grey to brown, moist. Becomes wet at 1.5 m	SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, CN, EC, SAR and pH analysis.
Samples SS-3 submitted for corrosivity analysis.

Test Pit Record

Test Pit ID: TP-12 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444512.3E, 5016126.6N **Date:** 12/15/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay, grey to brown, moist					
0.5 – 1.5	Silty Clay, grey to brown, moist.	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, OCP, HPA, CN, EC, SAR and pH analysis.

Test Pit Record

Test Pit ID: TP-13 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444374.5E, 5016144.2N **Date:** 12/14/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay, grey to brown, moist					
0.5 – 1.5	Silty Clay, grey to brown, moist.	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, OCP, HPA, CN, EC, SAR and pH analysis.

Test Pit Record

Test Pit ID: TP-14 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444352.5E, 5016171.8N **Date:** 12/14/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay, brown, moist, possible Fill?					
0.5 – 1.5	Silty Clay, grey to brown, moist.	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, CN, EC, SAR and pH analysis.

Test Pit Record

Test Pit ID: TP-15 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444405E, 5016164N **Date:** 12/14/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay Fill, grey to brown, moist. Red clay drainage tile @ 0.4 m,					
0.5 – 1.5	Silty Clay, grey to brown, moist.	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, CN, EC, SAR and pH analysis.

Test Pit Record

Test Pit ID: TP-16 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444391.4E, 5016176.3N **Date:** 12/14/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay Fill, grey to brown, moist. Red clay drainage tile at 0.6 m.					
0.5 – 1.5	Silty Clay, grey to brown, moist.	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, CN, EC, SAR and pH analysis.

Test Pit Record

Test Pit ID: TP-17 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.7

Location: 444367.6E, 5016203.5N **Date:** 12/14/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay, grey to brown, moist					
0.5 – 1.5	Silty Clay, grey to brown, moist. Becomes wet at 1.5 m	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, OCP, HPA, CN, EC, SAR and pH analysis.

Test Pit Record

Test Pit ID: TP-18 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444435.3E, 5016195.5N **Date:** 12/14/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay, grey to brown, moist					
0.5 – 1.5	Silty Clay, grey to brown, moist.	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, OCP, HPA, CN, EC, SAR and pH analysis.

Test Pit Record

Test Pit ID: TP-19 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444438.7, 5016244.2N **Date:** 12/14/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay, grey to brown, moist					
0.5 – 1.5	Silty Clay, grey to brown, moist.	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, CN, EC, SAR and pH analysis.

Test Pit Record

Test Pit ID: TP-20 **Elevation (m.a.s.l.):**

Photographic Record: See below **Depth (m):** 1.5

Location: 444472.6E, 5016259.5N **Date:** 12/14/21

Depth (m)	Stratigraphy	Sample Information				
		Sample ID	Depth (m)	Odour/ Staining	COV (ppm)	TOV (ppm)
0 – 0.1	Topsoil	SS-1	0.0 – 0.5	N/A	0	0
0.1 – 0.5	Silty Clay, grey to brown, moist					
0.5 – 1.5	Silty Clay, grey to brown, moist.	SS-2	0.5 – 1.0	N/A	0	0
		SS-3	1.0 – 1.5	N/A	0	0

Sample SS-1 submitted for Reg 153 metals, OCP, HPA, CN, EC, SAR and pH analysis.

Appendix C
Stratigraphic and Instrumentation Logs

RECORD OF BOREHOLE No. BH21-3

wood.

Project Number:	OESAO2132	Drilling Location:	BH21-3 E:444503.4 N:5015968.7	Logged by:	BC
Project Client:	Canada Post Corporation	Drilling Method:	200 mm Hollow Stem Augering	Compiled by:	KC
Project Name:	Environmental, Geotechnical and Hydrogeological Investigations	Drilling Machine:	Track Mounted Drill CME75	Reviewed by:	KH
Project Location:	88 Leiken Drive, Ottawa (Nepean), Ontario	Date Started:	Dec. 21, 2021 Date Completed: Dec. 21, 2021	Revision No.:	1, 1/31/22

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING		COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	DEPTH (m)	ELEVATION (m)	Penetration Testing: ○ SPT □ PPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; * Undrained Shear Strength (kPa) 20 40 60 80	Soil Vapour Reading: ▲ COV (LEL) ■ TOV (LEL) 2 4 6 8; △ COV (ppm) □ TOV (ppm) 20 40 60 80; W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION	GR	SA	SI	CL
	Local Ground Surface Elevation: 90.0 m													
	TOPSOIL 89.9 (0.1)													
	Grey to brown SILTY CLAY trace sand, trace organics, very soft to very stiff	SS	1	50	2			○	35					
		SS	2	92	8	1	89	○	29					
		SS	3	100	4	2	88	○	31					
		SS	4	100	0			○	37					
		VT				3	87	▲	△ 105.7					
		SS	5	100					18 42 41		0	4	65	31
						4	86							
	grey below	SS	6	100	0			○	47					
		VT				5	85	▲ △						
		TW	7			6	84							
		VT						▲ △						
		SS	8	100	0	7	83	○	60					
						8	82							

Switched from augers to casings

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▽ No freestanding groundwater measured in open borehole on completion of drilling.

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RECORD OF BOREHOLE No. BH21-3

Project Number: **OESAO2132** Project Name: **Environmental, Geotechnical and Hydrogeological Investigations**

Project Location: **88 Leiken Drive, Ottawa (Nepean), Ontario**

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING		COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	DEPTH (m)	ELEVATION (m)	Penetration Testing: ○ SPT □ PPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; * Undrained Shear Strength (kPa) 20 40 60 80	Soil Vapour Reading: ▲ COV (LEL) ■ TOV (LEL) 2 4 6 8; △ COV (ppm) □ TOV (ppm) 20 40 60 80; W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION	GR	SA	SI	CL
	Grey to brown **SILTY CLAY** trace sand, trace organics, very soft to very stiff	VT												
		SS	9	100	0	9	81	○ 61	△ 103.3					
		VT				10	80	▲	△					
		SS	10	100	4			○	20 ■ 44 ○ 53		0	5	67	28
		VT				11	79		△ 117.4		Shear vane test exceeded the capacity of measuring device.			
		SS	11	13	6	12	78	○	○ 35					
		VT							△ 117.4		Shear vane test exceeded the capacity of measuring device.			
		SS	12	100	3	13	77	○	○ 28					
	76.1 Grey 13.9 **SANDY SILT** some clay, trace gravel, wet								■ 26 ○ 20		5	34	48	13
	Rock coring started due to auger refusal 75.1	SS	13	0	50 / 30mm	14	76							
	14.9 **COBBLES and BOULDERS** (possibly mixed with silty clay and/or sandy silt)					15	75	○ 50 30 mm						
		RC	14	59							RC14 Only cobbles / boulders pieces recovered. Likely soil was washed away during coring.			
						16	74							
		RC	15	17							RC15 Only cobbles / boulders pieces recovered. Likely soil was washed away during coring.			

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying'Explanation of Borehole Log'.

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RECORD OF BOREHOLE No. BH21-3

wood.

Project Number: **OESAO2132** Project Name: **Environmental, Geotechnical and Hydrogeological Investigations**

Project Location: **88 Leiken Drive, Ottawa (Nepean), Ontario**

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING		COMMENTS & GRAIN SIZE DISTRIBUTION (%)
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	DEPTH (m)	ELEVATION (m)	Penetration Testing: ○ SPT □ PPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; * Undrained Shear Strength (kPa) 20 40 60 80	Soil Vapour Reading: ▲ COV (LEL) ■ TOV (LEL) 2 4 6 8; △ COV (ppm) □ TOV (ppm) 20 40 60 80; W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION	GR SA SI CL
	COBBLES and BOULDERS (possibly mixed with silty clay and/or sandy silt)					17	73				
		RC	16	16		18	72				RC16 Only cobbles / boulders pieces recovered. Likely soil was washed away during coring.
	71.0 **BEDROCK** 19.0 LIMESTONE / SANDSTONE (INTERLAYERED) grey to dark grey, fresh to slightly weathered	RC	17	95	73	19 20	71 70				RC17 TCR: 95 % SCR: 79 % RQD: 73 % Rock quality based on RQD: Fair
	SANDSTONE light grey to white, fresh to slightly weathered	RC	18	100	95	21	69				RC18 TCR: 100 % SCR: 98 % RQD: 95 % Rock quality based on RQD: Excellent
	68.0 **END OF BOREHOLE** 21.9										

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying'Explanation of Borehole Log'.

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RECORD OF BOREHOLE No. BH21-4

wood.

Project Number:	OESAO2132	Drilling Location:	BH21-4 E:444448.4 N:5016041.8	Logged by:	BC
Project Client:	Canada Post Corporation	Drilling Method:	200 mm Hollow Stem Augering	Compiled by:	KC
Project Name:	Environmental, Geotechnical and Hydrogeological Investigations	Drilling Machine:	Track Mounted Drill CME75	Reviewed by:	KH
Project Location:	88 Leiken Drive, Ottawa (Nepean), Ontario	Date Started:	Dec. 23, 2021 Date Completed: Dec. 23, 2021	Revision No.:	1, 1/31/22

Local Ground Surface Elevation: 89.8 m

Depth (m)	Elevation (m)	Description	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	Field Testing	Lab Testing	Instrumentation Installation	Comments & Grain Size Distribution (%)
	89.7	**TOPSOIL** 0.1								
		Grey to brown **SILTY CLAY** trace sand, very soft to very stiff	SS	1	67	3		33		
1	89		SS	2	100	5		32		
2	88		SS	3	100	3		33		
			SS	4	100	3		36		
3	87		SS	5	96	2		35		
		grey below	VT							
4	86		TW	6						
			VT							
5	85									
6	84		SS	7	100	0		59		
			VT							
7	83									Switched from augers to casings
			SS	8	100	0		61		
8	82									

Penetration Testing: ○ SPT □ PPT ● DCPT

MTO Vane*: △ Intact ▲ Remould

Nilcon Vane*: ◇ Intact ◆ Remould

* Undrained Shear Strength (kPa) 20 40 60 80

Soil Vapour Reading: ▲ COV (LEL) ■ TOV (LEL) 2 4 6 8; △ COV (ppm) □ TOV (ppm) 20 40 60 80

W_P W W_L Plastic Liquid 20 40 60 80

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▽ No freestanding groundwater measured in open borehole on completion of drilling.

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RECORD OF BOREHOLE No. BH21-4

wood.

Project Number: **OESAO2132** Project Name: **Environmental, Geotechnical and Hydrogeological Investigations**

Project Location: **88 Leiken Drive, Ottawa (Nepean), Ontario**

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING		COMMENTS & GRAIN SIZE DISTRIBUTION (%)				
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	DEPTH (m)	ELEVATION (m)	Penetration Testing: ○ SPT □ PPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; * Undrained Shear Strength (kPa) 20 40 60 80	Soil Vapour Reading: ▲ COV (LEL) ■ TOV (LEL) 2 4 6 8; △ COV (ppm) □ TOV (ppm) 20 40 60 80; W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION		GR	SA	SI	CL
	Grey to brown **SILTY CLAY** trace sand, very soft to very stiff														
		SS	9	100	0	9	81	○ 53	△ 103.3						
		VT						▲							
		TW	10			10	80								
		VT						▲ △							
						11	79								
	78.5														
	Grey 11.3 **SILT** some clay, trace sand, very soft to very stiff														
		SS	11	100	5	12	78	○ 34	■ 25 △ 117.4			0	1	86	13
		VT									Shear vane test exceeded the capacity of measuring device.				
						13	77								
		SS	12	100	2		76	○ 26							
		VT				14			△ 117.4		Shear vane test exceeded the capacity of measuring device.				
	75.5														
	Light grey 14.3 **SILTY SAND** some gravel, trace clay, loose to compact, wet										Unable to perform the remoulded shear vane test as the vane bottom could be on top of a different soil material.				
		SS	13	100	8	15	75	○ 9	■ 13			11	47	34	8
						16	74								
	grey below	SS	14	21	22		73	○ 7							

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying'Explanation of Borehole Log'.

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RECORD OF BOREHOLE No. BH21-4

wood.

Project Number: **OESAO2132** Project Name: **Environmental, Geotechnical and Hydrogeological Investigations**

Project Location: **88 Leiken Drive, Ottawa (Nepean), Ontario**

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING		COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	DEPTH (m)	ELEVATION (m)	Penetration Testing: ○ SPT □ PPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; * Undrained Shear Strength (kPa) 20 40 60 80	Soil Vapour Reading: ▲ COV (LEL) ■ TOV (LEL) 2 4 6 8; △ COV (ppm) □ TOV (ppm) 20 40 60 80; W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION	GR	SA	SI	CL
	Light grey **SILTY SAND** some gravel, trace clay, loose to compact, wet					17								
		SS	15	79	20	18	72	○	⊠ ○ 9					
	70.9 / 18.9						71							
	Grey **GRAVELLY SAND** trace to some silt, trace clay, compact to very dense, wet					19								
		SS	16	33	25			○	⊠ ○ 11		26	63	10	1
						20	70							
	Rock coring started due to auger refusal 69.0	SS	17	100	50 / 80mm			○ 50 80 mm	⊠ ○ 6					
	BEDROCK 20.8 LIMESTONE / SANDSTONE (INTERLAYERED) grey to dark grey, fresh to slightly weathered	RC	18	100	94	21	69				RC18 TCR: 100 % SCR: 100 % RQD: 94 % Rock quality based on RQD: Excellent			
						22	68							
	SANDSTONE Light grey to white, fresh to slightly weathered	RC	19	100	86	23	67				RC19 TCR: 100 % SCR: 100 % RQD: 86 % Rock quality based on RQD: Good			
	65.9	RC	20	100	100		66				RC20 TCR: 100 % SCR: 100 % RQD: 100 % Rock quality based on RQD: Excellent			
	END OF BOREHOLE 23.9													

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying'Explanation of Borehole Log'.

Scale: 1 : 42

RECORD OF BOREHOLE No. BH21-5

wood.

Project Number:	OESAO2132	Drilling Location:	BH21-5 E:444393.2 N:5016114.9	Logged by:	BC
Project Client:	Canada Post Corporation	Drilling Method:	200 mm Hollow Stem Augering	Compiled by:	KC
Project Name:	Environmental, Geotechnical and Hydrogeological Investigations	Drilling Machine:	Track Mounted Drill CME75	Reviewed by:	KH
Project Location:	88 Leiken Drive, Ottawa (Nepean), Ontario	Date Started:	Jan. 5, 2022 Date Completed: Jan. 5, 2022	Revision No.:	1, 1/31/22

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING		COMMENTS & GRAIN SIZE DISTRIBUTION (%)
Lithology Plot	DESCRIPTION Local Ground Surface Elevation: 91.2 m	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	DEPTH (m)	ELEVATION (m)	Penetration Testing: ○ SPT □ PPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; * Undrained Shear Strength (kPa) 20 40 60 80	Soil Vapour Reading: ▲ COV (LEL) ■ TOV (LEL) 2 4 6 8; △ COV (ppm) □ TOV (ppm) 20 40 60 80; W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION	GR SA SI CL
	Grey to black **FILL - SILTY SAND and GRAVEL** trace clay, trace asphalt, moist	SS	1	79	62		91	○	5		
		SS	2	25	10	1	90	○	8		
		SS	3	17	5	2		○	25		
	89.0 Grey to brown 2.2 **SILTY CLAY** trace sand, very soft to stiff						89				
		SS	4	92	8	3		○	33		
		SS	5	100	7		88	○	33		
	grey below	SS	6	100	3	4	87	○	46		
		VT				5	86	▲ △			
		TW	7			6					
		VT					85	▲ △			Switched from augers to casings
		SS	8	100	0	7	84	○	59		
						8					

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▽ No freestanding groundwater measured in open borehole on completion of drilling.

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying'Explanation of Borehole Log'.

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RECORD OF BOREHOLE No. BH21-5

wood.

Project Number: **OESAO2132** Project Name: **Environmental, Geotechnical and Hydrogeological Investigations**

Project Location: **88 Leiken Drive, Ottawa (Nepean), Ontario**

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING			COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	DEPTH (m)	ELEVATION (m)	Penetration Testing: SPT, PPT, DCPT; MTO Vane* Intact/Remould; Nilcon Vane* Intact/Remould; * Undrained Shear Strength (kPa) 20 40 60 80	Soil Vapour Reading: COV (LEL), TOV (LEL) 2 4 6 8; COV (ppm), TOV (ppm) 20 40 60 80; W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION		GR	SA	SI	CL
	Grey to brown **SILTY CLAY** trace sand, very soft to stiff	VT				9	83								
		SS	9	100	0		82				64				
		VT				10									
		TW	10				81								
		VT				11									
		SS	11	100	0	12	80				52				
		VT					79								
		SS	12	100	0	13	78				56				
		VT				14									
		TW	13	0			77								
	76.2					15									
	Grey 14.9 **SILT** trace sand, trace clay, very soft to very stiff, wet	TW	14	0			76								
		VT				16			117.4			Shear vane test exceeded the capacity of measuring device.			
		SS	15	83	2		75				124 31		0	1	91	8

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying'Explanation of Borehole Log'.

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Continued on Next Page

RECORD OF BOREHOLE No. BH21-5

wood.

Project Number: **OESAO2132** Project Name: **Environmental, Geotechnical and Hydrogeological Investigations**

Project Location: **88 Leiken Drive, Ottawa (Nepean), Ontario**

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING		COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	DEPTH (m)	ELEVATION (m)	Penetration Testing: ○ SPT □ PPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; * Undrained Shear Strength (kPa) 20 40 60 80	Soil Vapour Reading: ▲ COV (LEL) ■ TOV (LEL) 2 4 6 8; △ COV (ppm) □ TOV (ppm) 20 40 60 80; W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION	GR	SA	SI	CL
	Grey **SILT** trace sand, trace clay, very soft to very stiff, wet					17	74							
	73.6 Grey **SILTY SAND** some gravel, trace clay, loose to very dense, wet 17.5	SS	16	54	6	18	73	○	11 17 16		13	45	34	8
	Rock coring started due to auger refusal 71.4	SS	17	89	50 / 80mm	19	72	50 ○ 80 mm	○ 9					
	COBBLES and BOULDERS (possibly mixed with silty sand) 19.7	RC	18	67		20	71				RC18 Only cobbles / boulders pieces recovered. Likely soil was washed away during coring.			
	69.2	RC	19	27		21	70				RC19 Only cobbles / boulders pieces recovered. Likely soil was washed away during coring.			
	BEDROCK 21.9 SANDSTONE light grey to white, fresh to slightly weathered SANDSTONE to LIMESTONE light grey to light green, fresh to slightly weathered LIMESTONE grey to dark grey, fresh to slightly weathered	RC	20	100	77	22	69				RC20 TCR: 100 % SCR: 81 % RQD: 77 % Rock quality based on RQD: Fair			
		RC	21	100	99	23	68				RC21 TCR: 100 % SCR: 99 % RQD: 99 % Rock quality based on RQD: Excellent			
		RC	22	100	100	24	67				RC22 TCR: 100 % SCR: 100 % RQD: 100 % Rock quality based on RQD: Excellent			
	66.1 **END OF BOREHOLE** 25.1					25								

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying'Explanation of Borehole Log'.

Scale: 1 : 42

RECORD OF BOREHOLE No. BH21-6

wood.

Project Number:	OESAO2132	Drilling Location:	BH21-6 E:444449.2 N:5016252.8	Logged by:	BC
Project Client:	Canada Post Corporation	Drilling Method:	200 mm Hollow Stem Augering	Compiled by:	KC
Project Name:	Environmental, Geotechnical and Hydrogeological Investigations	Drilling Machine:	Track Mounted Drill CME75	Reviewed by:	KH
Project Location:	88 Leiken Drive, Ottawa (Nepean), Ontario	Date Started:	Jan. 7, 2022 Date Completed: Jan. 7, 2022	Revision No.:	1, 1/31/22

LITHOLOGY PROFILE			SOIL SAMPLING						FIELD TESTING	LAB TESTING		COMMENTS & GRAIN SIZE DISTRIBUTION (%)
Lithology Plot	DESCRIPTION		Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	DEPTH (m)	ELEVATION (m)	Penetration Testing: ○ SPT □ PPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; * Undrained Shear Strength (kPa) 20 40 60 80	Soil Vapour Reading: ▲ COV (LEL) ■ TOV (LEL) 2 4 6 8; △ COV (ppm) □ TOV (ppm) 20 40 60 80; W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION	GR SA SI CL
	Local Ground Surface Elevation: 90.3 m											
	TOPSOIL	90.2										Approximately top 0.6 m is frozen
	Brown	0.1										
	FILL - SILTY CLAY		SS	1	50	6		90	○	○ 33		
		89.6										
	Grey to brown	0.7										
	SILTY CLAY		SS	2	92	7	1	89	○	○ 36		
	trace sand, very soft to stiff		SS	3	100	4	2	88	○	○ 34		BH21-6, SS3: Submitted for Reg 153 Metals, CN, EC, and SAR
			SS	4	100	3	3	87	○	○ 31		
			SS	5	100	0	4	86	○	○ 34		
			VT						▲ △			
			SS	6	100	0	5	85	○	○ 45		
			VT						▲ △			
			SS	7	100	0	6		○	○ 56		
		84.2										
	END OF BOREHOLE	6.1										

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▽ No freestanding groundwater measured in open borehole on completion of drilling.

RECORD OF BOREHOLE No. BH21-7

wood.

Project Number:	OESAO2132	Drilling Location:	BH21-7 E:444585.8 N:5016149.4	Logged by:	BC
Project Client:	Canada Post Corporation	Drilling Method:	200 mm Hollow Stem Augering	Compiled by:	KC
Project Name:	Environmental, Geotechnical and Hydrogeological Investigations	Drilling Machine:	Track Mounted Drill CME75	Reviewed by:	KH
Project Location:	88 Leiken Drive, Ottawa (Nepean), Ontario	Date Started:	Jan. 7, 2022 Date Completed: Jan. 7, 2022	Revision No.:	1, 1/31/22

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING		COMMENTS & GRAIN SIZE DISTRIBUTION (%)
Lithology Plot	DESCRIPTION Local Ground Surface Elevation: 90.2 m	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	DEPTH (m)	ELEVATION (m)	Penetration Testing: ○ SPT □ PPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; * Undrained Shear Strength (kPa) 20 40 60 80	Soil Vapour Reading: ▲ COV (LEL) ■ TOV (LEL) 2 4 6 8; △ COV (ppm) □ TOV (ppm) 20 40 60 80; W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION	GR SA SI CL
	Brown **SILTY CLAY** trace sand, very soft to very stiff	SS	1	71	8		90	○	24		Approximately top 0.6 m is frozen
	grey to brown below	SS	2	92	13	1	89	○	32		
		SS	3	92	9	2	88	○	34		BH21-7, SS3: Submitted for Reg 153 Metals, CN, EC, and SAR
		SS	4	100	4			○	35		
		SS	5	100	3	3	87	○	34		
		VT							△ 117.4		Shear vane test exceeded the capacity of measuring device.
	grey below	SS	6	71	0	4 5	86 85	○	33		
		VT						▲ △			
	84.1 **END OF BOREHOLE** 6.1	SS	7	100	0	6		○	49		

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▽ No freestanding groundwater measured in open borehole on completion of drilling.

RECORD OF BOREHOLE No. BH21-8

wood.

Project Number:	OESAO2132	Drilling Location:	BH21-8 E:444355.7 N:5016063.1	Logged by:	BC
Project Client:	Canada Post Corporation	Drilling Method:	200 mm Hollow Stem Augering	Compiled by:	KC
Project Name:	Environmental, Geotechnical and Hydrogeological Investigations	Drilling Machine:	Track Mounted Drill CME75	Reviewed by:	KH
Project Location:	88 Leiken Drive, Ottawa (Nepean), Ontario	Date Started:	Jan. 6, 2022 Date Completed: Jan. 6, 2022	Revision No.:	1, 1/31/22

LITHOLOGY PROFILE			SOIL SAMPLING						FIELD TESTING	LAB TESTING		COMMENTS & GRAIN SIZE DISTRIBUTION (%)
Lithology Plot	DESCRIPTION		Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	DEPTH (m)	ELEVATION (m)	Penetration Testing: ○ SPT □ PPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; * Undrained Shear Strength (kPa) 20 40 60 80	Soil Vapour Reading: ▲ COV (LEL) ■ TOV (LEL) 2 4 6 8; △ COV (ppm) □ TOV (ppm) 20 40 60 80; W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION	GR SA SI CL
	Local Ground Surface Elevation: 89.7 m											
	TOPSOIL	89.6										Approximately top 0.1 m is frozen
	Grey to brown **SILTY CLAY** trace sand, very soft to stiff	0.1	SS	1	25	2				51		
								89				
			SS	2	67	5	1			35		
								88				
			SS	3	100	2	2			38		BH21-8, SS3: Submitted for Reg 153 Metals, CN, EC, and SAR
			SS	4	100	1		87		35		
			SS	5	100	2	3			44		
			VT					86	▲ △			
							4					
	grey below		SS	6	100	0		85		55		
			VT				5		▲ △			
			SS	7	100	0		84		56		
		83.6					6					
	END OF BOREHOLE	6.1										

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▽ No freestanding groundwater measured in open borehole on completion of drilling.

RECORD OF BOREHOLE No. BH21-9

wood.

Project Number:	OESAO2132	Drilling Location:	BH21-9 E:444424.7 N:5015961.2	Logged by:	BC
Project Client:	Canada Post Corporation	Drilling Method:	200 mm Hollow Stem Augering	Compiled by:	KC
Project Name:	Environmental, Geotechnical and Hydrogeological Investigations	Drilling Machine:	Track Mounted Drill CME75	Reviewed by:	KH
Project Location:	88 Leiken Drive, Ottawa (Nepean), Ontario	Date Started:	Jan. 10, 2022 Date Completed: Jan. 10, 2022	Revision No.:	1, 1/31/22

Lithology Plot	DESCRIPTION	Elev.	Depth	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	Field Testing	Lab Testing	Instrumentation Installation	Comments & Grain Size Distribution (%)
	Local Ground Surface Elevation: 89.7 m							Penetration Testing: ○ SPT □ PPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; * Undrained Shear Strength (kPa) 20 40 60 80	Soil Vapour Reading: ▲ COV (LEL) ■ TOV (LEL) 2 4 6 8; △ COV (ppm) □ TOV (ppm) 20 40 60 80; W_P W W_L Plastic Liquid 20 40 60 80		GR SA SI CL
	TOPSOIL some wood fibers	89.6	0.0								Approximately top 0.1 m is frozen
	Brown **FILL - SILTY CLAY**	89.0	0.7	SS	1	38	7		56		
	Grey to brown **SILTY CLAY** trace sand, very soft to stiff			SS	2	100	8		37		
		88	2	SS	3	100	5		34		BH21-9, SS3: Submitted for Reg 153 Metals, CN, EC, and SAR
				SS	4	100	4		33		
		87	3	SS	5	100	2		38		
		86	4	VT				▲ △			
	grey below	85	5	SS	6	100	0		50		
				VT				▲ △			
		84	6	SS	7	100	0		55		
	END OF BOREHOLE	83.6	6.1								

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▽ No freestanding groundwater measured in open borehole on completion of drilling.

Scale: 1 : 42

RECORD OF BOREHOLE No. BH21-10

wood.

Project Number:	OESAO2132	Drilling Location:	BH21-10 E:444520 N:5016203.7	Logged by:	BC
Project Client:	Canada Post Corporation	Drilling Method:	200 mm Hollow Stem Augering	Compiled by:	KC
Project Name:	Environmental, Geotechnical and Hydrogeological Investigations	Drilling Machine:	Track Mounted Drill CME75	Reviewed by:	KH
Project Location:	88 Leiken Drive, Ottawa (Nepean), Ontario	Date Started:	Jan. 7, 2022 Date Completed: Jan. 7, 2022	Revision No.:	1, 1/31/22

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING		COMMENTS & GRAIN SIZE DISTRIBUTION (%)
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	DEPTH (m)	ELEVATION (m)	Penetration Testing: ○ SPT □ PPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; * Undrained Shear Strength (kPa) 20 40 60 80	Soil Vapour Reading: ▲ COV (LEL) ■ TOV (LEL) 2 4 6 8; △ COV (ppm) □ TOV (ppm) 20 40 60 80; W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION	GR SA SI CL
	Local Ground Surface Elevation: 89.8 m										
	TOPSOIL 89.7										Approximately top 0.1 m is frozen
	Brown 0.1 **SILTY CLAY** trace sand, very soft to stiff	SS	1	46	3			○	41		
							89				
	grey to brown below	SS	2	100	8	1		○	31		
							88				BH21-10, SS3: Submitted for Reg 153 Metals, CN, EC, and SAR Dup-2
		SS	3	100	4	2		○	35		
		SS	4	100	3			○	16 42 34		0 6 65 29
							87				
		SS	5	100	3	3		○	37		
		VT					86	▲ △			
						4					
	grey below	SS	6	100	0		85	○	44		
						5					
		VT						▲ △			
		SS	7	100	0		84	○	53		
	83.7					6					
	END OF BOREHOLE 6.1										

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▽ No freestanding groundwater measured in open borehole on completion of drilling.

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying'Explanation of Borehole Log'.

Scale: 1 : 42

RECORD OF BOREHOLE No. MW21-11

wood.

Project Number:	OESAO2132	Drilling Location:	MW21-11 E:444513.5 N:5015922.4	Logged by:	BC
Project Client:	Canada Post Corporation	Drilling Method:	200 mm Hollow Stem Augering	Compiled by:	KC
Project Name:	Environmental, Geotechnical and Hydrogeological Investigations	Drilling Machine:	Track Mounted Drill CME75	Reviewed by:	KH
Project Location:	88 Leiken Drive, Ottawa (Nepean), Ontario	Date Started:	Jan. 10, 2022 Date Completed: Jan. 10, 2022	Revision No.:	1, 1/31/22

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	DEPTH (m)	ELEVATION (m)	FIELD TESTING: Penetration Testing (SPT, PPT, DCPT); MTO Vane* (Intact, Remould); Nilcon Vane* (Intact, Remould); * Undrained Shear Strength (kPa)	LAB TESTING: Soil Vapour Reading (COV (LEL), TOV (LEL), COV (ppm), TOV (ppm)); Plastic (W_P), Liquid (W_L)	INSTRUMENTATION INSTALLATION	COMMENTS & GRAIN SIZE DISTRIBUTION (%)
	Local Ground Surface Elevation: 90.0 m										GR SA SI CL
	TOPSOIL 89.9										Approximately top 0.1 m is frozen
	Brown 0.1 SILTY CLAY trace to some sand, very soft to very stiff	SS	1	58	8				32		
						1	89				
	grey to brown below	SS	2	83	8				31		
		SS	3	100	3	2	88		31		MW21-11, SS3: Submitted for Reg 153 Metals, CN, EC, and SAR
		SS	4	100	3				31		
		SS	5	100	4	3	87		32		
		VT							117.4		Shear vane test exceeded the capacity of measuring device.
						4	86				
	grey below	SS	6	100	2	5	85		54		
		VT									
		SS	7	100	0				64		
	83.9					6	84				
	END OF BOREHOLE 6.1										
	Monitoring Well Installation Details: (50 mm Dia.) Slot #10 Stickup Casing Installed Bentonite: 0.00 - 2.74 m Sand Filter: 2.74 - 6.10 m Screen: 3.05 - 6.10 m										

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▽ No freestanding groundwater measured in open borehole on completion of drilling.

▼ Groundwater depth observed on 1/12/22 at a depth of: 1.7 m.

RECORD OF BOREHOLE No. MW21-12

wood.

Project Number:	OESAO2132	Drilling Location:	MW21-12 E:444314.4 N:5015973.5	Logged by:	BC
Project Client:	Canada Post Corporation	Drilling Method:	200 mm Hollow Stem Augering	Compiled by:	KC
Project Name:	Environmental, Geotechnical and Hydrogeological Investigations	Drilling Machine:	Track Mounted Drill CME75	Reviewed by:	KH
Project Location:	88 Leiken Drive, Ottawa (Nepean), Ontario	Date Started:	Jan. 6, 2022 Date Completed: Jan. 6, 2022	Revision No.:	1, 1/31/22

Lithology Plot	DESCRIPTION	Elev.	Depth	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	Field Testing	Lab Testing	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)
	Local Ground Surface Elevation: 89.5 m										GR SA SI CL
	TOPSOIL	89.4									Approximately top 0.1 m is frozen
	Grey to brown **FILL - SILTY CLAY**	0.1		SS	1	63	6		49		
			1	SS	2	92	7		33		
		88.0									
	Grey to brown **SILTY CLAY** trace sand, very soft to stiff; trace organics (roots)	1.4	2	SS	3	100	2		37		MW21-12, SS3: Submitted for Reg 153 Metals, CN, EC, and SAR
			3	SS	4	100	3		34		
				SS	5	100	2		19 49 41		0 5 57 38
			4	VT							
			5	SS	6	100	0		62		
				VT							
			6	SS	7	100	0		65		
		83.4									
	END OF BOREHOLE	6.1									

Monitoring Well Installation Details:
(50 mm Dia.) Slot #10

Stickup Casing Installed
Bentonite: 0.00 - 2.74 m
Sand Filter: 2.74 - 6.10 m
Screen: 3.05 - 6.10 m

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▽ No freestanding groundwater measured in open borehole on completion of drilling.

▼ Groundwater depth observed on 1/12/22 at a depth of: 1.0 m.

Scale: 1 : 42

RECORD OF BOREHOLE No. MW21-13

wood.

Project Number:	OESAO2132	Drilling Location:	MW21-13 E:444560 N:5016031	Logged by:	BC
Project Client:	Canada Post Corporation	Drilling Method:	200 mm Hollow Stem Augering	Compiled by:	KC
Project Name:	Environmental, Geotechnical and Hydrogeological Investigations	Drilling Machine:	Track Mounted Drill CME75	Reviewed by:	KH
Project Location:	88 Leiken Drive, Ottawa (Nepean), Ontario	Date Started:	Jan. 10, 2022 Date Completed: Jan. 10, 2022	Revision No.:	1, 1/31/22

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	DEPTH (m)	ELEVATION (m)	FIELD TESTING: Penetration Testing (○ SPT □ PPT ● DCPT); MTO Vane* (△ Intact ▲ Remould); Nilcon Vane* (◇ Intact ◆ Remould); * Undrained Shear Strength (kPa) 20 40 60 80	LAB TESTING: Soil Vapour Reading (▲ COV (LEL) ■ TOV (LEL) 2 4 6 8; △ COV (ppm) □ TOV (ppm) 20 40 60 80); W_P W W_L Plastic Liquid 20 40 60 80	INSTRUMENTATION INSTALLATION	COMMENTS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	Local Ground Surface Elevation: 90.1 m										
	TOPSOIL 90.0						90				Approximately top 0.1 m is frozen
	Brown 0.1 **SILTY CLAY** trace sand, very soft to stiff	SS	1	71	10				25		
	grey to brown below	SS	2	67	6	1	89		30		
		SS	3	100	7	2	88		32		MW21-13, SS3: Submitted for Reg 153 Metals, CN, EC, and SAR
		SS	4	100	3				44		
		SS	5	100	2	3	87		35		
		VT						▲ △			
	grey below	SS	6	100	0	4 5	86 85		52		
		VT						▲ △			
		SS	7	100	0	6			53		
	84.0 **END OF BOREHOLE** 6.1										
	Monitoring Well Installation Details: (50 mm Dia.) Slot #10 Stickup Casing Installed Bentonite: 0.00 - 1.22 m Sand Filter: 1.22 - 4.88 m ????? Screen: 1.52 - 4.88 m ????? Bentonite: 0.00 - 1.22 m Sand Filter: 1.22 - 4.57 m Screen: 1.52 - 4.57 m Bentonite: 4.57 - 6.10 m										

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▽ No freestanding groundwater measured in open borehole on completion of drilling.

▼ Groundwater depth observed on 1/12/22 at a depth of: 0.9 m.

Scale: 1 : 42

RECORD OF BOREHOLE No. MW21-14

wood.

Project Number:	OESAO2132	Drilling Location:	MW21-14 E:444470.5 N:5016132.9	Logged by:	BC
Project Client:	Canada Post Corporation	Drilling Method:	200 mm Hollow Stem Augering	Compiled by:	KC
Project Name:	Environmental, Geotechnical and Hydrogeological Investigations	Drilling Machine:	Track Mounted Drill CME75	Reviewed by:	KH
Project Location:	88 Leiken Drive, Ottawa (Nepean), Ontario	Date Started:	Jan. 7, 2022 Date Completed: Jan. 7, 2022	Revision No.:	1, 1/31/22

Local Ground Surface Elevation: 89.7 m

Description	Elev. / Depth (m)	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	Moisture Content W (%)	Comments
ICE	89.4 / 0.2						
TOPSOIL	89.0 / 0.7	SS	1	50	2	39	
Grey to brown **SILTY CLAY** trace sand, very soft to stiff		SS	2	100	7	33	
		SS	3	96	4	37	MW21-14, SS3: Submitted for Reg 153 Metals, CN, EC, and SAR Dup-1
		SS	4	100	2	35	
		SS	5	100	0	37	
		VT					
grey		SS	6	100	0	42	
		VT					
	83.6 / 6.1	SS	7	83	0	57	
END OF BOREHOLE							

Monitoring Well Installation Details:
(50 mm Dia.) Slot #10

Stickup Casing Installed
Bentonite: 0.00 - 1.22 m
Sand Filter: 1.22 - 4.57 m
Screen: 1.52 - 4.57 m
Bentonite: 4.57 - 6.10 m

Field Testing: Penetration Testing (○ SPT, □ PPT, ● DCPT); MTO Vane* (△ Intact, ▲ Remould); Nilcon Vane* (◇ Intact, ◆ Remould); * Undrained Shear Strength (kPa) 20 40 60 80

Lab Testing: Soil Vapour Reading ▲ COV (LEL) ■ TOV (LEL) 2 4 6 8; △ COV (ppm) □ TOV (ppm) 20 40 60 80; W_P W W_L Plastic Liquid 20 40 60 80

Comments & Grain Size Distribution (%): GR SA SI CL

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No freestanding groundwater measured in open borehole on completion of drilling.

Borehole details as presented, do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying'Explanation of Borehole Log'.

Scale: 1 : 42

RECORD OF BOREHOLE No. MW21-15

wood.

Project Number:	OESAO2132	Drilling Location:	MW21-15 E:444597.8 N:5016222.4	Logged by:	BC
Project Client:	Canada Post Corporation	Drilling Method:	200 mm Hollow Stem Augering	Compiled by:	KC
Project Name:	Environmental, Geotechnical and Hydrogeological Investigations	Drilling Machine:	Track Mounted Drill CME75	Reviewed by:	KH
Project Location:	88 Leiken Drive, Ottawa (Nepean), Ontario	Date Started:	Jan. 10, 2022 Date Completed: Jan. 10, 2022	Revision No.:	1, 1/31/22

Local Ground Surface Elevation: 89.9 m

Depth (m)	Description	Elevation (m)	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	Field Testing	Lab Testing	Instrumentation Installation	Comments & Grain Size Distribution (%)
	TOPSOIL	89.8								Approximately top 0.1 m is frozen
	Brown	0.1								
	SILTY CLAY trace sand, very soft to very stiff		SS	1	71	8		24		
	grey to brown below		SS	2	96	7		37		
1		89								
			SS	3	71	7		39		MW21-15, SS3: Submitted for Reg 153 Metals, CN, EC, and SAR
2		88								
			SS	4	54	3		37		
3		87								
			SS	5	63	2		33		
			VT					117.4		Shear vane test exceeded the capacity of measuring device.
4		86								
	grey below		SS	6	0	0				
5		85								
			VT							
			SS	7	100	0		48		
6		84								
		83.9								
	END OF BOREHOLE	6.1								

Monitoring Well Installation Details:
(50 mm Dia.) Slot #10

Stickup Casing Installed
Bentonite: 0.00 - 2.74 m
Sand Filter: 2.74 - 6.10 m
Screen: 3.05 - 6.10 m

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▽ No freestanding groundwater measured in open borehole on completion of drilling.

▼ Groundwater depth observed on 1/12/22 at a depth of: 1.4 m.

Scale: 1 : 42

RECORD OF BOREHOLE No. MW21-16

wood.

Project Number:	OESAO2132	Drilling Location:	MW21-16 E:444361.3 N:5016191.3	Logged by:	BC
Project Client:	Canada Post Corporation	Drilling Method:	200 mm Hollow Stem Augering	Compiled by:	KC
Project Name:	Environmental, Geotechnical and Hydrogeological Investigations	Drilling Machine:	Track Mounted Drill CME75	Reviewed by:	KH
Project Location:	88 Leiken Drive, Ottawa (Nepean), Ontario	Date Started:	Jan. 6, 2022 Date Completed: Jan. 6, 2022	Revision No.:	1, 1/31/22

Local Ground Surface Elevation: 90.0 m

Depth (m)	Description	Elevation (m)	Sample Type	Sample Number	Recovery (%)	SPT 'N' / RQD (%)	Soil Vapour Reading (ppm)	Undrained Shear Strength (kPa)	Instrumentation Installation	Comments & Grain Size Distribution (%)
0	**TOPSOIL** 0.1	89.9								Approximately top 0.6 m is frozen
	Grey to brown **SILTY CLAY** trace sand, very soft to stiff		SS	1	75	4	37			
1		89	SS	2	100	6	30			
			SS	3	100	3	35			MW21-16, SS3: Submitted for Reg 153 Metals, CN, EC, and SAR
2		88	SS	4	100	1	39			
3	grey	87	SS	5	100	0	41			
			VT					△		
4		86								
5		85	SS	6	100	0	57			
			VT					△		
6		84	SS	7	100	0	64			
	83.9									
	END OF BOREHOLE 6.1									

Monitoring Well Installation Details:
(50 mm Dia.) Slot #10

Stickup Casing Installed
Bentonite: 0.00 - 1.22 m
Sand Filter: 1.22 - 4.57 m
Screen: 1.52 - 4.57 m
Bentonite: 4.57 - 6.10 m

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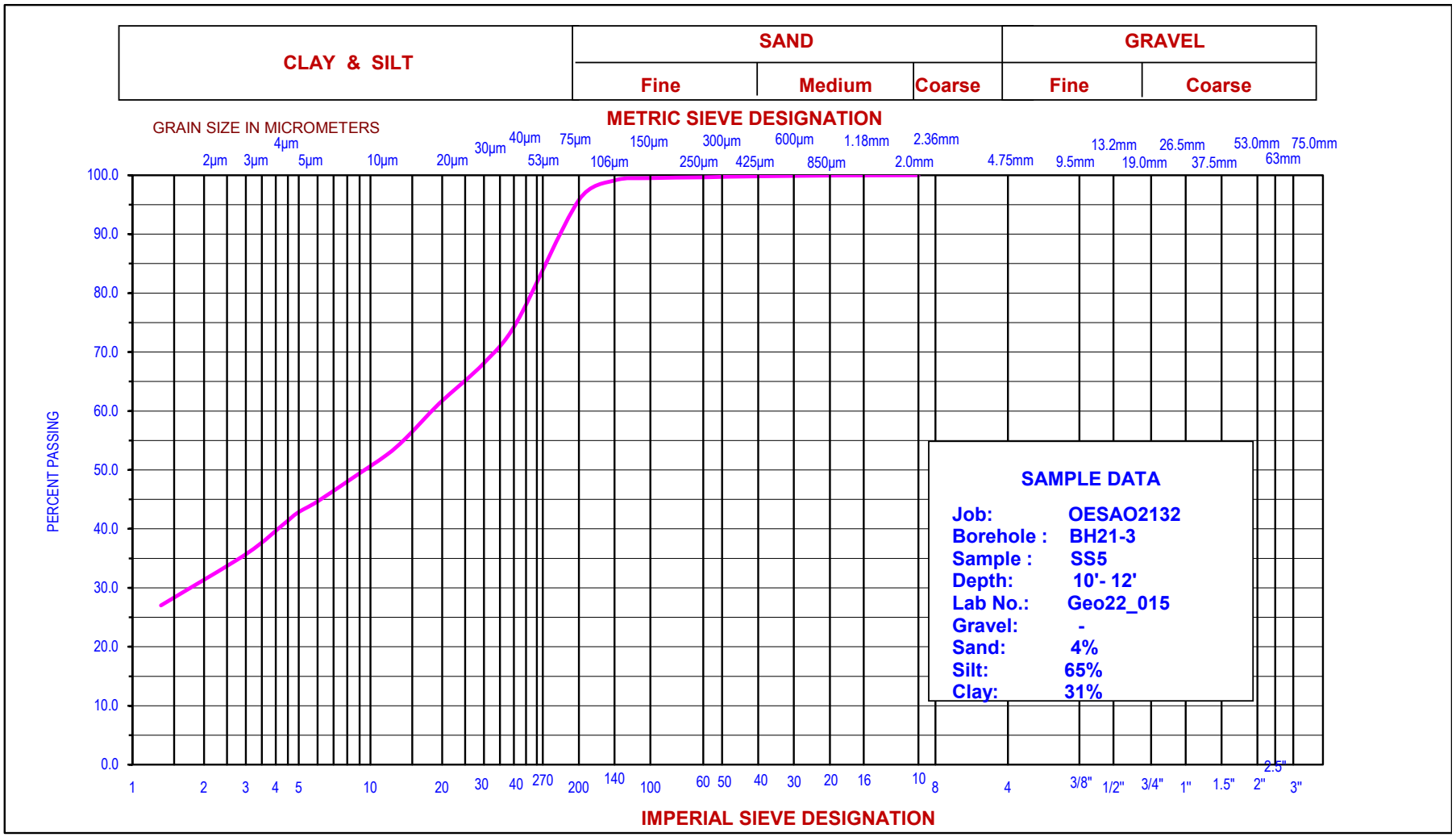
▽ No freestanding groundwater measured in open borehole on completion of drilling.

▼ Groundwater depth observed on 1/12/22 at a depth of: 0.7 m.

Scale: 1 : 42

Appendix D
Grain Size Determinations

UNIFIED SOIL CLASSIFICATION SYSTEM



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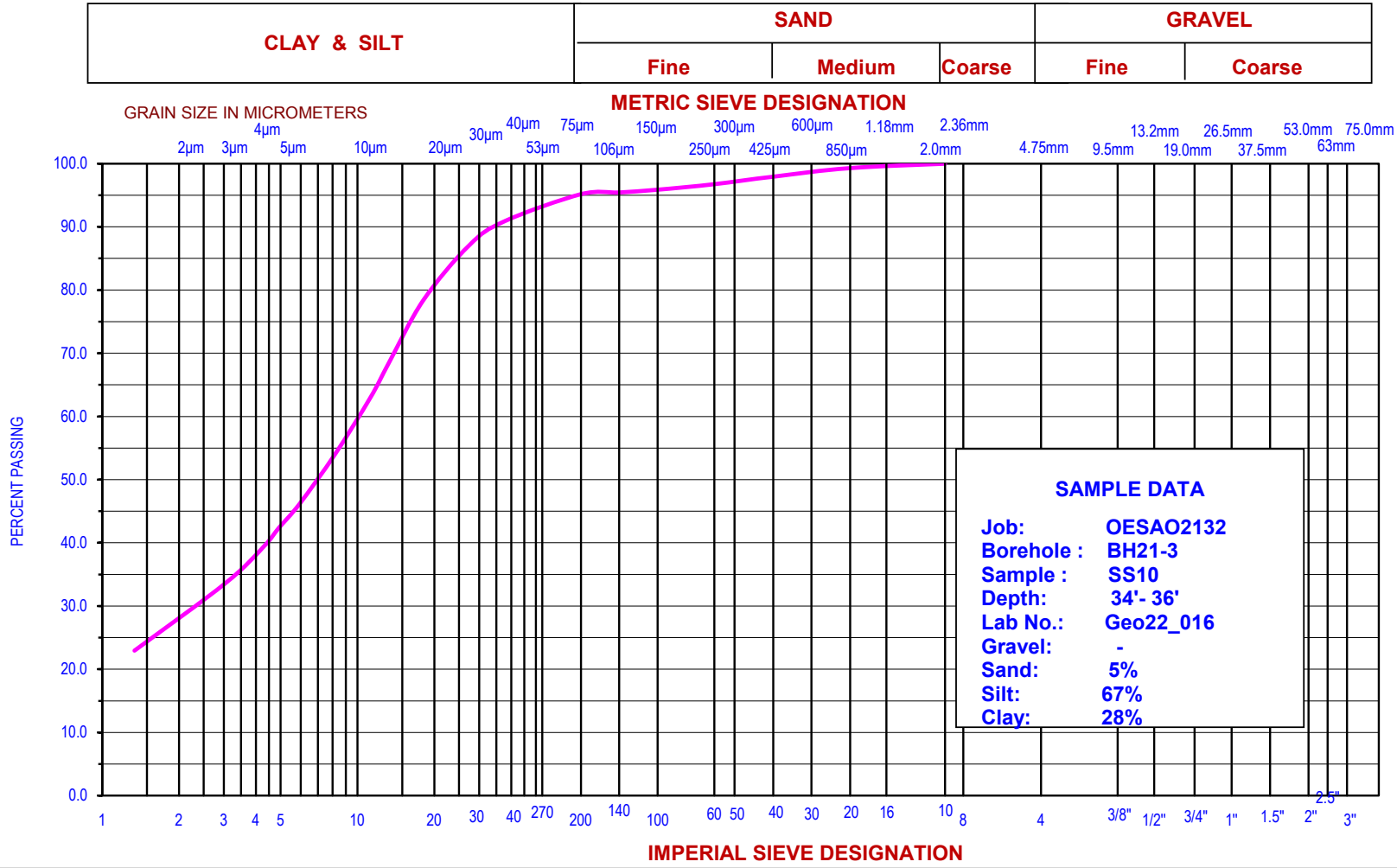
GRAIN SIZE DISTRIBUTION	Client :- Canada Post Corporation	
	Project:- CPC Leiken Drive	
SILTY CLAY trace sand	Location:- 50 Leiken Drive, Ottawa, ON.	
	Lab No. :- Geo22_015	Date :- 21 Jan 2022

UNIFIED SOIL CLASSIFICATION SYSTEM



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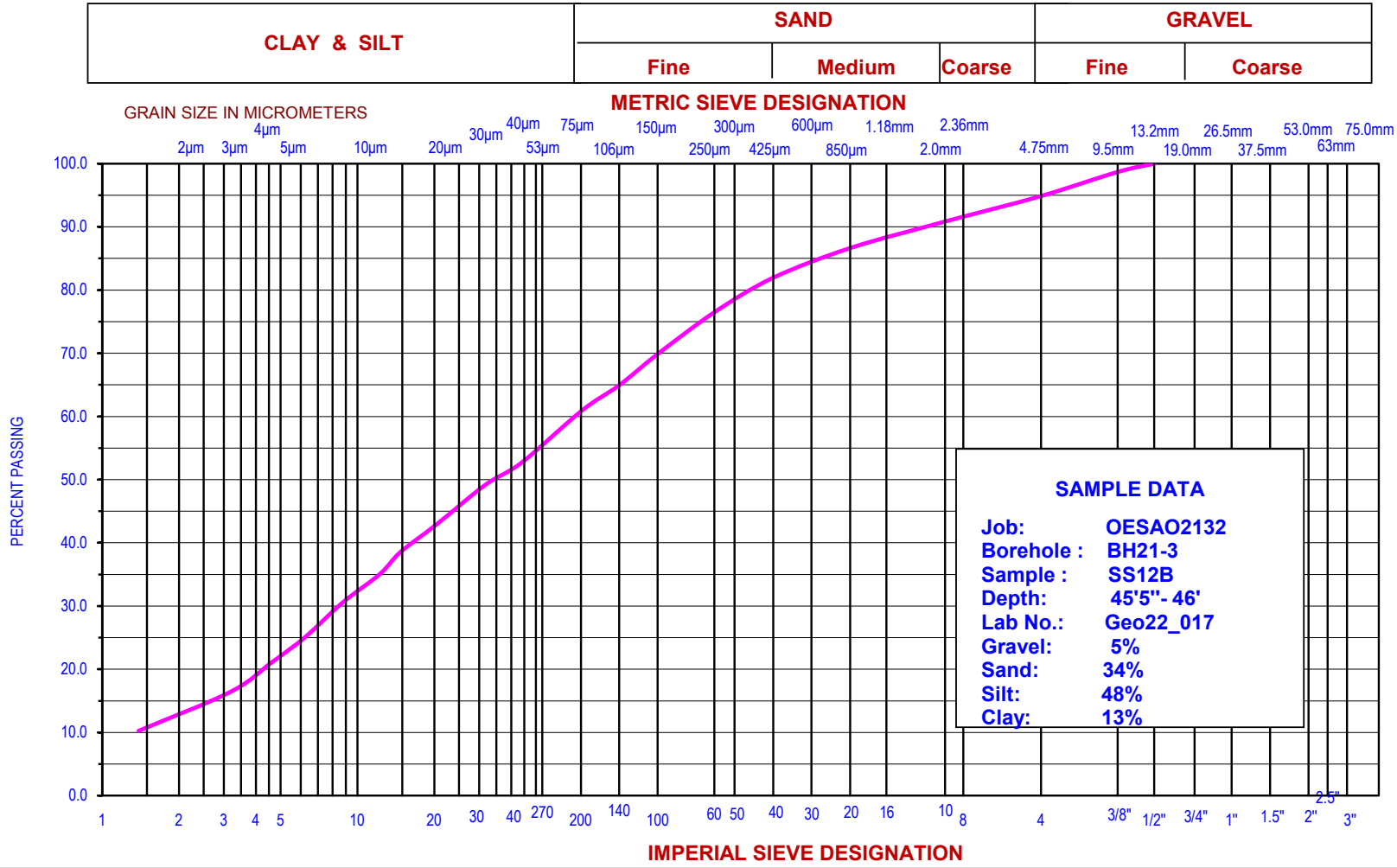
GRAIN SIZE DISTRIBUTION	Client :- Canada Post Corporation	
	Project:- CPC Leiken Drive	
SILTY CLAY trace sand	Location:- 50 Leiken Drive, Ottawa, ON.	
	Lab No. :- Geo22_016	Date :- 21 Jan 2022

UNIFIED SOIL CLASSIFICATION SYSTEM



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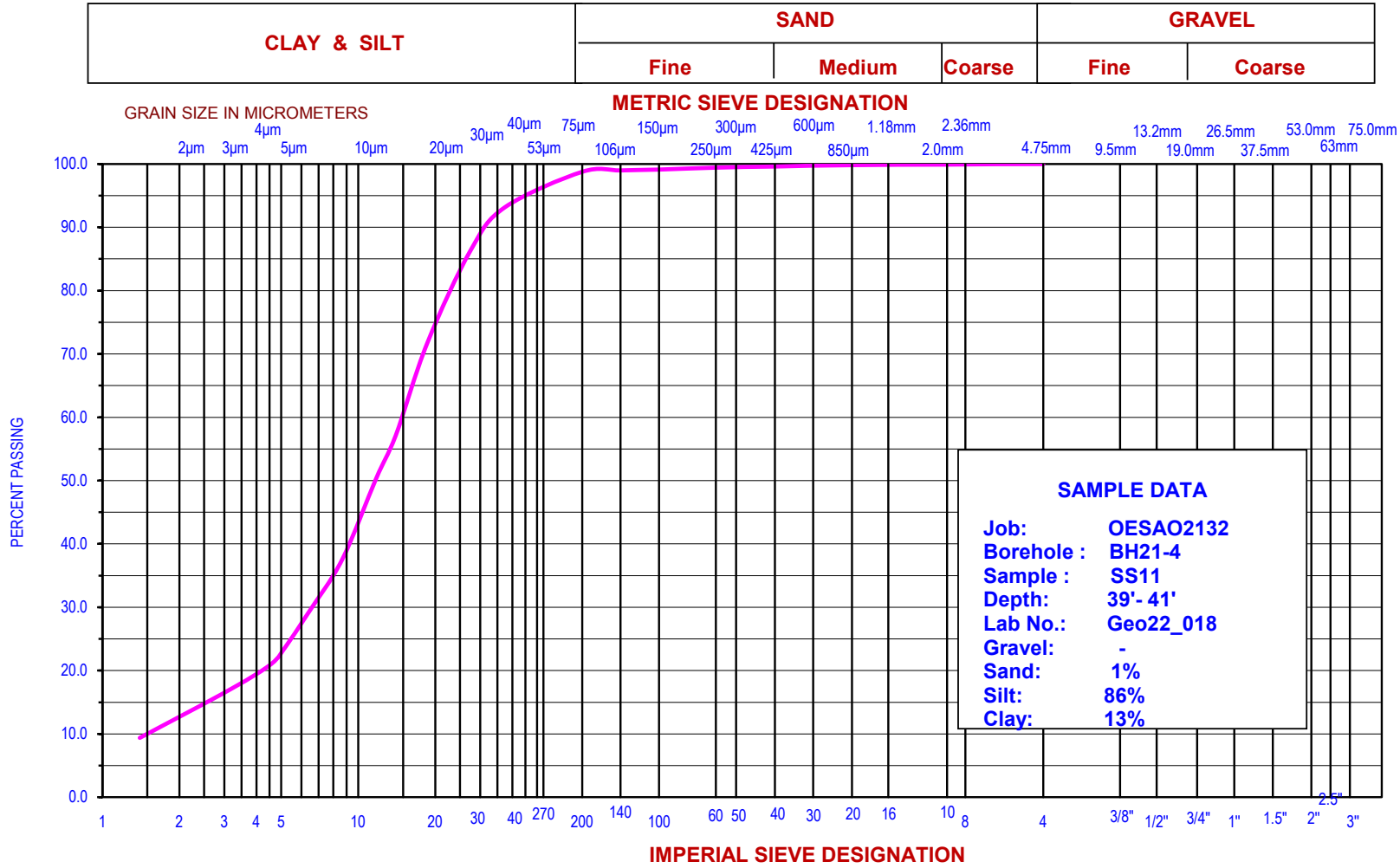
GRAIN SIZE DISTRIBUTION

SANDY SILT

some clay, trace gravel

Client :-	Canada Post Corporation
Project:-	CPC Leiken Drive
Location:-	50 Leiken Drive, Ottawa, ON.
Lab No. :-	Geo22_017
Date :-	21 Jan 2022

UNIFIED SOIL CLASSIFICATION SYSTEM



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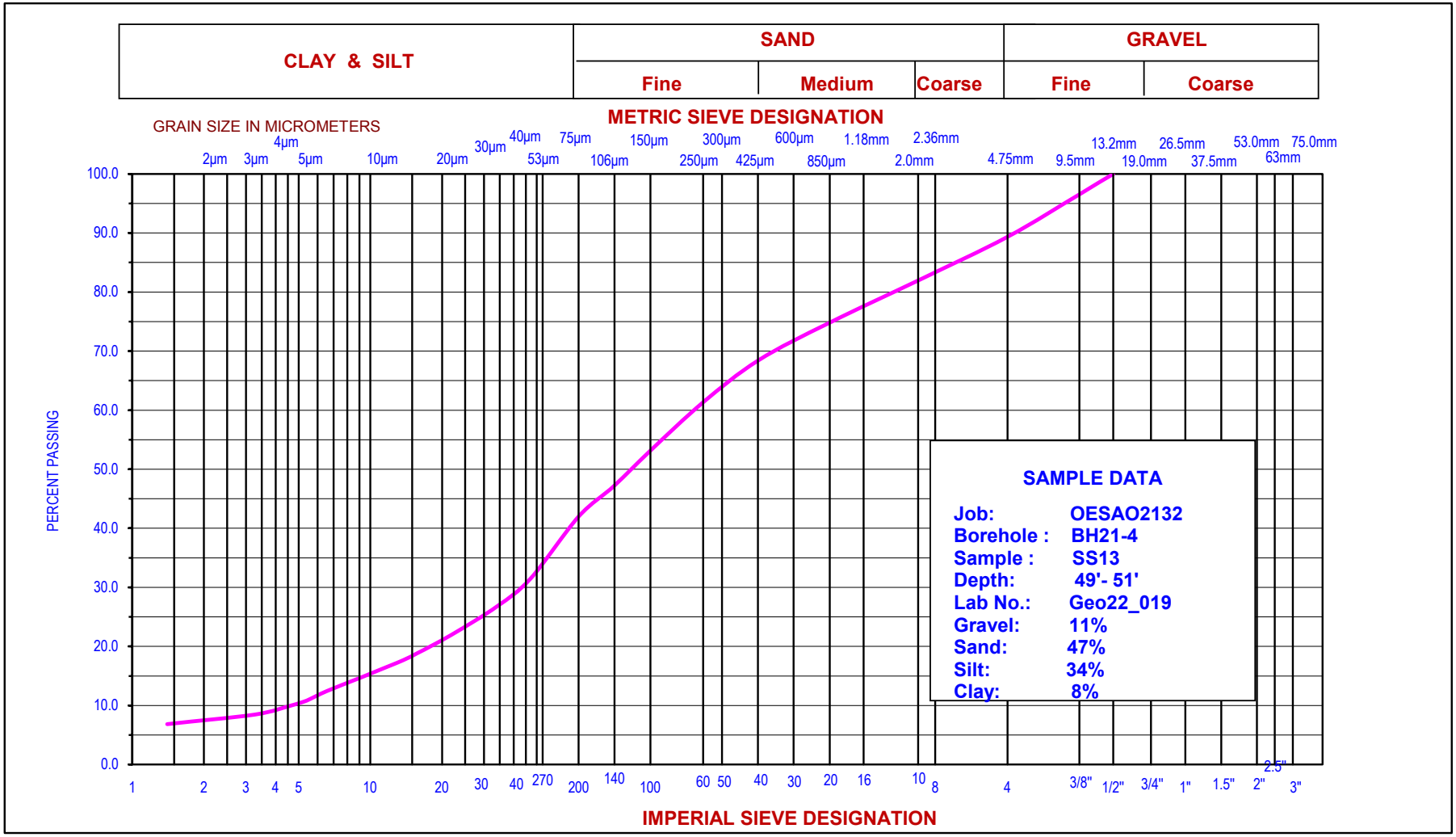
GRAIN SIZE DISTRIBUTION	Client :- Canada Post Corporation
	Project:- CPC Leiken Drive
SILT	Location:- 50 Leiken Drive, Ottawa, ON.
some clay, trace sand	Lab No. :- Geo22_018 / Date :- 21 Jan 2022

UNIFIED SOIL CLASSIFICATION SYSTEM



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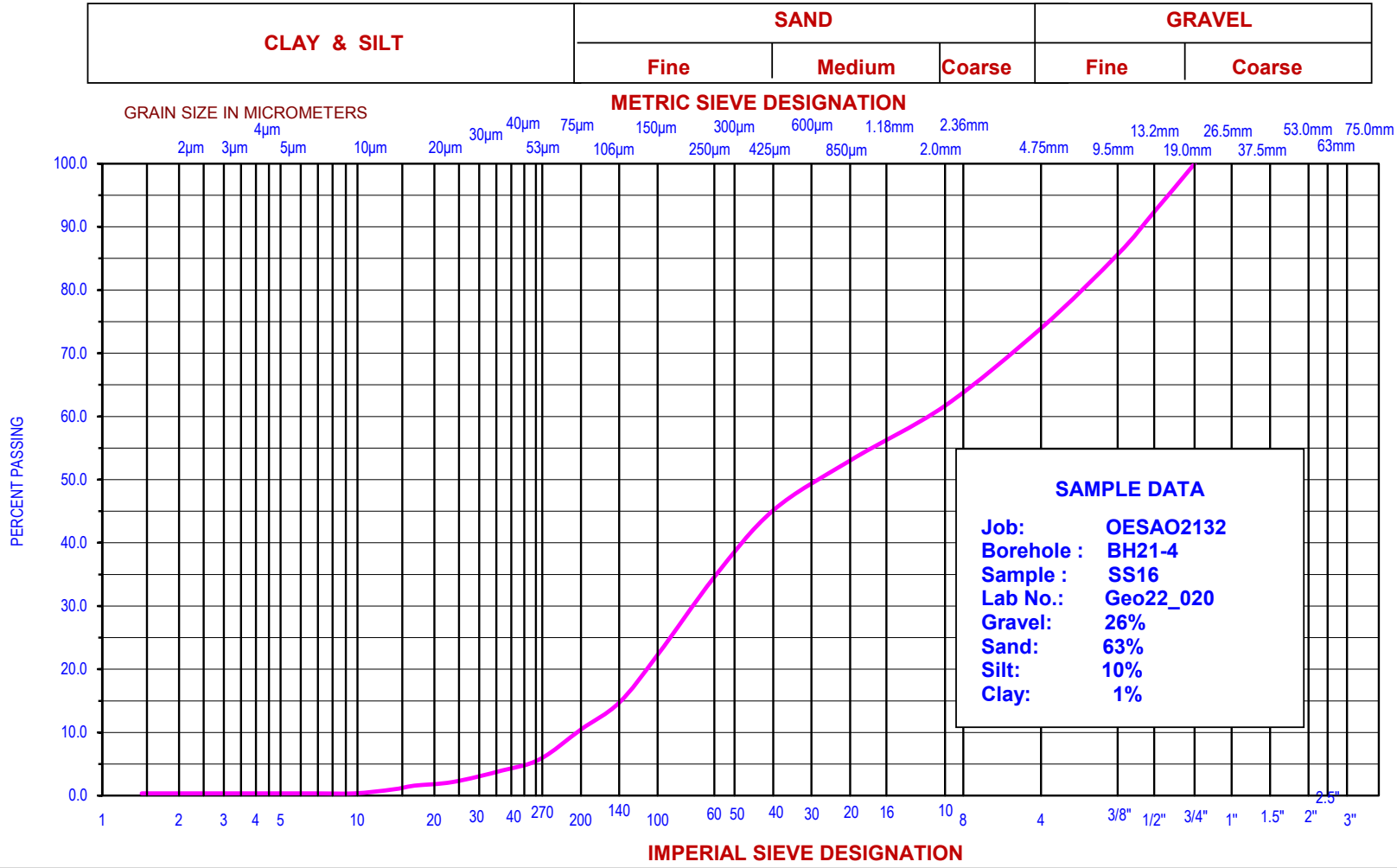
GRAIN SIZE DISTRIBUTION	Client :- Canada Post Corporation
	Project:- CPC Leiken Drive
SILTY SAND	Location:- 50 Leiken Drive, Ottawa, ON.
some gravel, trace clay	Lab No. :- Geo22_019 / Date :- 21 Jan 2022

UNIFIED SOIL CLASSIFICATION SYSTEM



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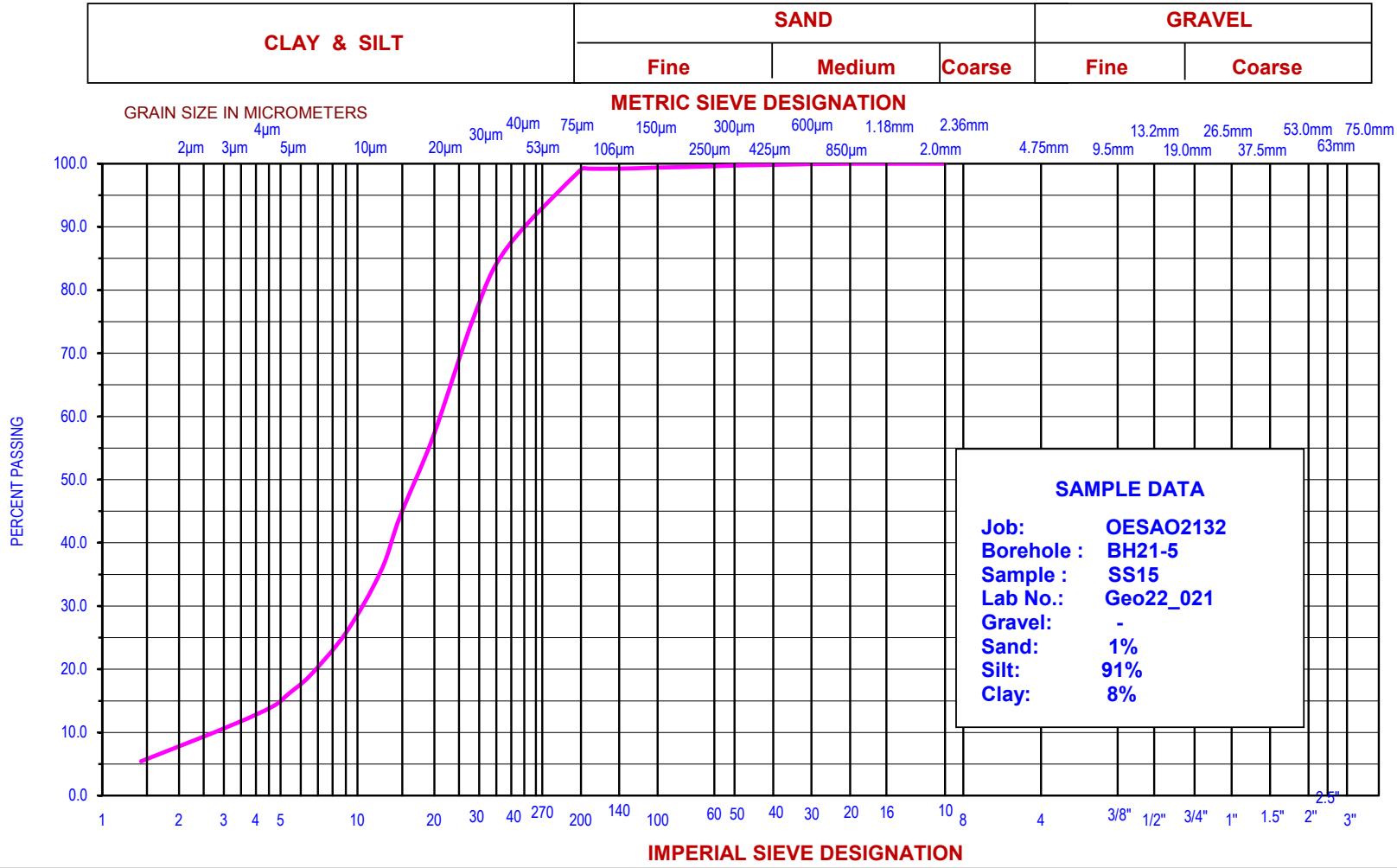
GRAIN SIZE DISTRIBUTION

GRAVELLY SAND

trace silt and clay

Client :-	Canada Post Corporation
Project:-	CPC Leiken Drive
Location:-	50 Leiken Drive, Ottawa, ON.
Lab No. :- Geo22_020	Date :- 21 Jan 2022

UNIFIED SOIL CLASSIFICATION SYSTEM



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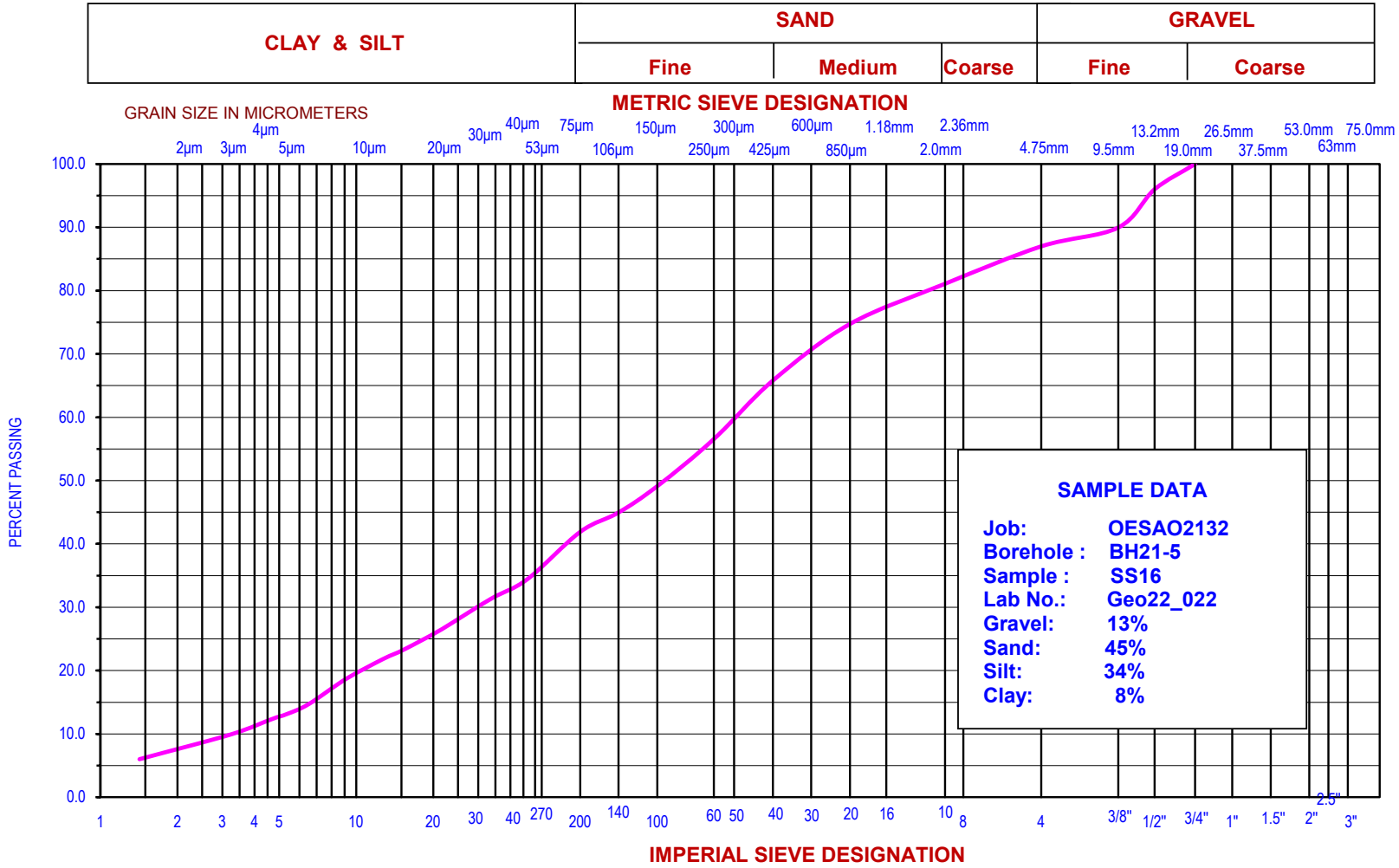
GRAIN SIZE DISTRIBUTION	Client :- Canada Post Corporation
	Project:- CPC Leiken Drive
SILT	Location:- 50 Leiken Drive, Ottawa, ON.
trace sand and clay	Lab No. :- Geo22_021 / Date :- 21 Jan 2022

UNIFIED SOIL CLASSIFICATION SYSTEM



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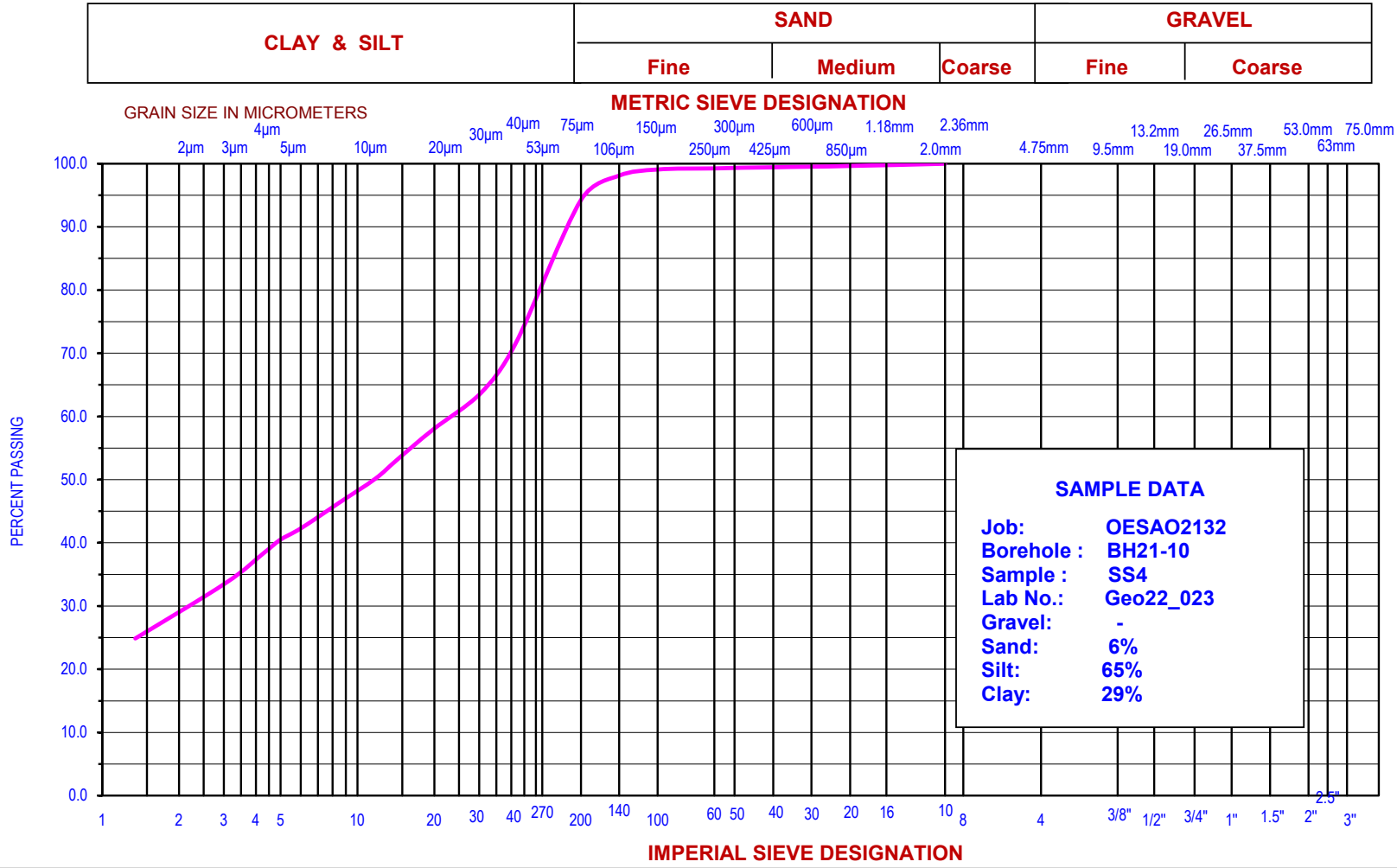
GRAIN SIZE DISTRIBUTION	Client :- Canada Post Corporation
	Project:- CPC Leiken Drive
SILTY SAND	Location:- 50 Leiken Drive, Ottawa, ON.
some gravel, trace clay	Lab No. :- Geo22_022 / Date :- 21 Jan 2022

UNIFIED SOIL CLASSIFICATION SYSTEM



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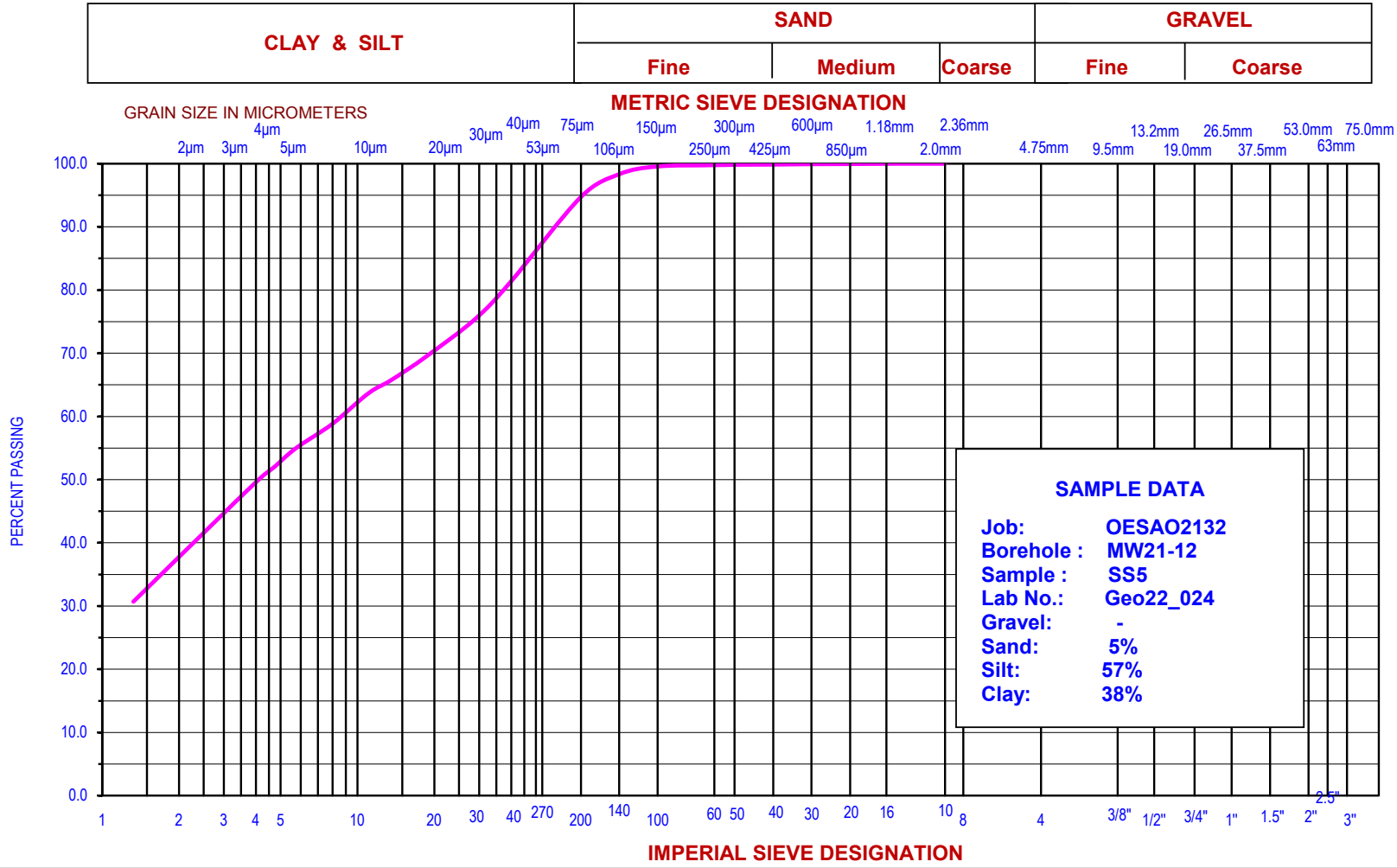
GRAIN SIZE DISTRIBUTION

SILTY CLAY

trace sand

Client :-	Canada Post Corporation
Project:-	CPC Leiken Drive
Location:-	50 Leiken Drive, Ottawa, ON.
Lab No. :- Geo22_023	Date :- 21 Jan 2022

UNIFIED SOIL CLASSIFICATION SYSTEM



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GRAIN SIZE DISTRIBUTION	Client :- Canada Post Corporation	
	Project:- CPC Leiken Drive	
SILTY CLAY trace sand	Location:- 50 Leiken Drive, Ottawa, ON.	
	Lab No. :- Geo22_024	Date :- 21 Jan 2022

Appendix E
Hydraulic Conductivity Test Data

Hydraulic Conductivity of Unconfined Aquifer
For Completely or Partially Penetrating Wells

Project Number: OESAO2132
Monitoring Well ID: MW21-11
Test Date: 1/25/2021

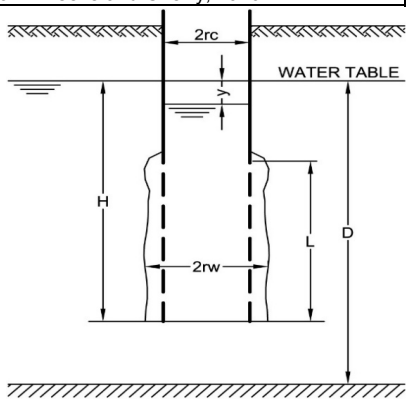
r_a	0.0254	m	Inside radius of well screen
r_w	0.10	m	Radius from well centre to undisturbed aquifer (Borehole diameter)
r_c	0.0626	m	Corrected inside radius of well screen {using $r_c = [r^2_a + n(r^2_w - r^2_a)]^{0.5}$}
n	0.35		Porosity of sand filter pack (40% for most well sands) [1]
L	3.05	m	Length of screen through which water enters
DTW	3.23	mbtoc	Depth to water
DTB	6.10	mbtoc	Depth to bottom of well
H	2.87	m	Depth of monitor well - from static water table to well bottom
D	8.00	m	Saturated thickness of aquifer
t_t	400	sec	Time > t=0 (take from line of best fit on graph below)
h_0	0.25	m	Head in well at t = 0
h_t	0.14952	m	Head in well at t = t_t (take from line of best fit on graph below)

L/r_w	30.50	
A	2.50791	
B	0.38314	A,B,C are dimensionless coefficients that are functions of L/r_w
C	1.95710	

Typical Hydraulic Conductivity Values

Gravel	1 to 10^{-3}	m/sec
Clean Sand	10^{-2} to 10^{-5}	m/sec
Silty Sand	10^{-3} to 10^{-7}	m/sec
Silt	10^{-5} to 10^{-9}	m/sec
Clay	10^{-9} to 10^{-12}	m/sec

from: Freeze and Cherry, 1979



Partially Penetrating Well

Part 1	0.32768	*Part 1 = 1.1/ln(b/r_w)*
Part 2	0.13169	*Part 2 = A + Bln[(D-b)/r_w]/(L/r_w)*
$\ln(R_e/r_w)$	2.17687	*$\ln(R_e/r_w)$ = (Part 1 + Part 2)$^{-1}$*

K* = 1.73E-06 m/sec
0.0015 m/day

T* = 1.39E-05 m^2/sec
0.47901 m^2/day

$$K = \frac{r_c^2 \ln\left(R_e/r_w\right)}{2L} \cdot \frac{1}{t} \cdot \ln\frac{h_o}{h_t}$$

Fully Penetrating Well

Part 1	0.32768	*Part 1 = 1.1/ln(b/r_w)*
Part 2	0.06417	*Part 2 = C/(L/r_w)*
$\ln(R_e/r_w)$	2.55199	*$\ln(R_e/r_w)$ = (Part 1 + Part 2)$^{-1}$*

K = --- m/s
--- m/day

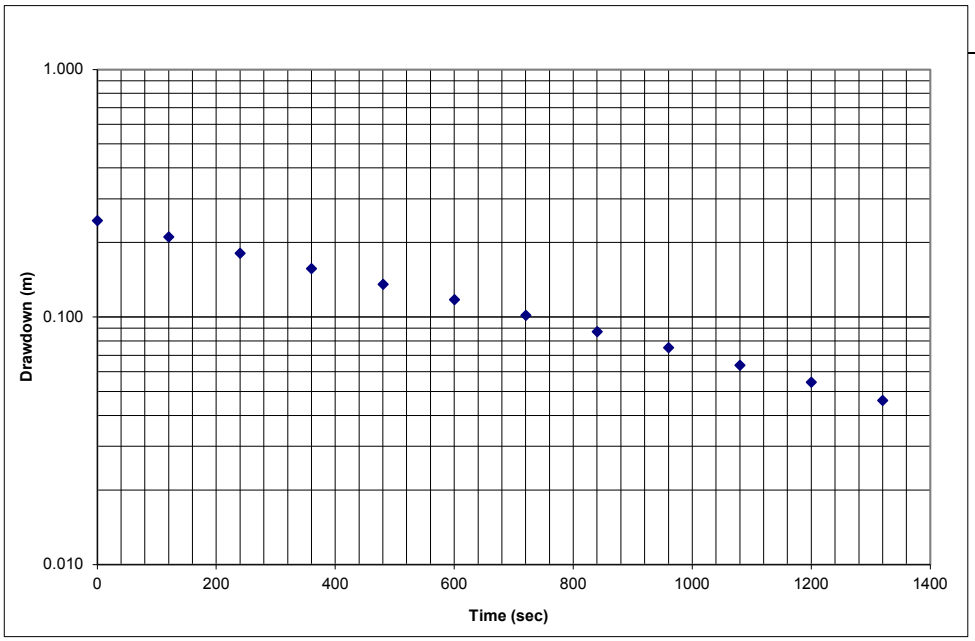
T = --- m^2/sec
--- m^2/day

$$K = \frac{r_c^2 \ln\left(R_e/r_w\right)}{2L} \cdot \frac{1}{t} \cdot \ln\frac{h_o}{h_t}$$

* Do not use this value if an estimation of the aquifer's saturated thickness was used in the input

[1] - Porosity determined from a series of bench scale experiments.

From: A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells. Bouwer, Herman and Rice, R.C., Water Resources Research. Vol 12, No 3, 423-428, June 1976.



No.	Time (sec)	Water Level (m)	Drawdown (m)
	Static	3.230	
1	0	3.475	0.245
2	120	3.441	0.211
3	240	3.411	0.181
4	360	3.387	0.157
5	480	3.366	0.136
6	600	3.348	0.118
7	720	3.332	0.102
8	840	3.317	0.087
9	960	3.305	0.075
10	1080	3.294	0.064
11	1200	3.285	0.054
12	1320	3.276	0.046
13	1440	3.268	0.038
14	1560	3.261	0.031
15	1680	3.255	0.025
16	1800	3.249	0.019
17	1920	3.245	0.015
18	2040	3.240	0.010
19	2160	3.236	0.006
20			
21			
22			
23			
24			
25			

Hydraulic Conductivity of Unconfined Aquifer
For Completely or Partially Penetrating Wells

Project Number: OESAO2132
Monitoring Well ID: MW21-12
Test Date: 1/25/2021

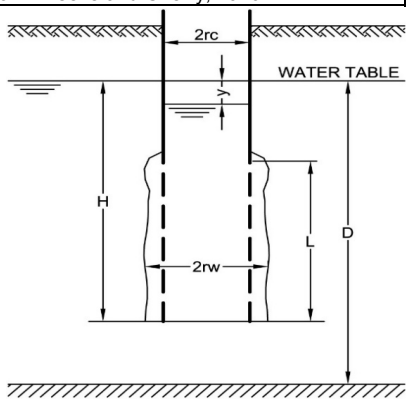
r_a	0.0254	m	Inside radius of well screen
r_w	0.10	m	Radius from well centre to undisturbed aquifer (Borehole diameter)
r_c	0.0626	m	Corrected inside radius of well screen {using $r_c = [r^2_a + n(r^2_w - r^2_a)]^{0.5}$}
n	0.35		Porosity of sand filter pack (40% for most well sands) [1]
L	3.05	m	Length of screen through which water enters
DTW	2.23	mbtoc	Depth to water
DTB	6.10	mbtoc	Depth to bottom of well
H	3.87	m	Depth of monitor well - from static water table to well bottom
D	8.00	m	Saturated thickness of aquifer
t_t	100	sec	Time > t=0 (take from line of best fit on graph below)
h_0	0.34	m	Head in well at t = 0
h_t	0.13270	m	Head in well at t = t_t (take from line of best fit on graph below)

L/r_w	30.50	
A	2.50791	
B	0.38314	A,B,C are dimensionless coefficients that are functions of L/r_w
C	1.95710	

Typical Hydraulic Conductivity Values

Gravel	1 to 10^{-3}	m/sec
Clean Sand	10^{-2} to 10^{-5}	m/sec
Silty Sand	10^{-3} to 10^{-7}	m/sec
Silt	10^{-5} to 10^{-9}	m/sec
Clay	10^{-9} to 10^{-12}	m/sec

from: Freeze and Cherry, 1979



Partially Penetrating Well

Part 1	0.30089	*Part 1 = 1.1/ln(b/r_w)*
Part 2	0.12897	*Part 2 = A + Bln[(D-b)/r_w]/(L/r_w)*
$\ln(R_e/r_w)$	2.32636	*$\ln(R_e/r_w)$ = (Part 1 + Part 2) $^{-1}$*

K* = 1.42E-05 m/sec
0.01229 m/day

T* = 1.14E-04 m^2/sec
3.93291 m^2/day

$$K = \frac{r_c^2 \ln\left(R_e/r_w\right)}{2L} \cdot \frac{1}{t} \cdot \ln\frac{h_o}{h_t}$$

Fully Penetrating Well

Part 1	0.30089	*Part 1 = 1.1/ln(b/r_w)*
Part 2	0.06417	*Part 2 = C/(L/r_w)*
$\ln(R_e/r_w)$	2.73931	*$\ln(R_e/r_w)$ = (Part 1 + Part 2) $^{-1}$*

K = --- m/s
--- m/day

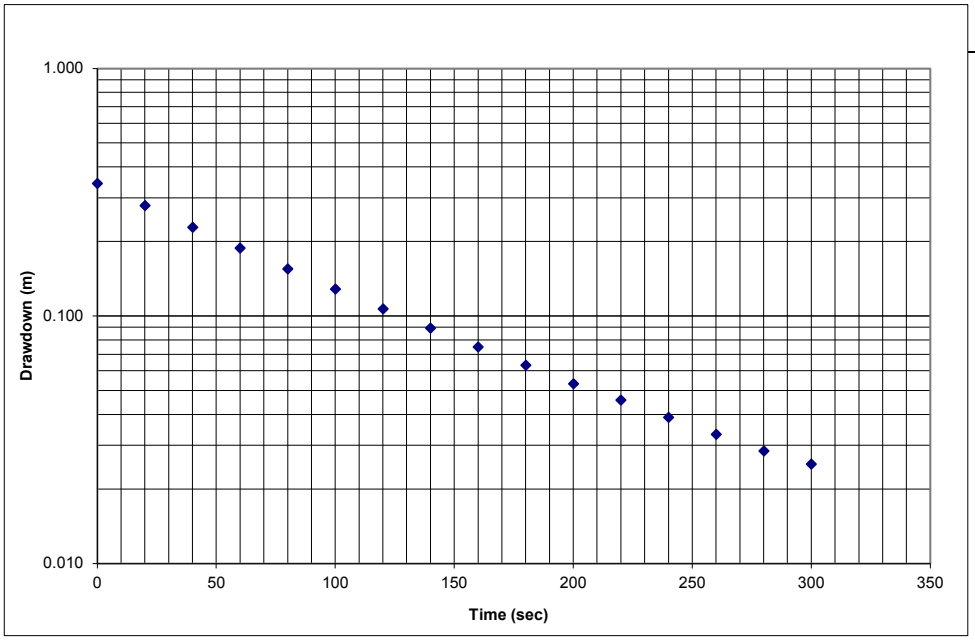
T = --- m^2/sec
--- m^2/day

$$K = \frac{r_c^2 \ln\left(R_e/r_w\right)}{2L} \cdot \frac{1}{t} \cdot \ln\frac{h_o}{h_t}$$

* Do not use this value if an estimation of the aquifer's saturated thickness was used in the input

[1] - Porosity determined from a series of bench scale experiments.

From: A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells. Bouwer, Herman and Rice, R.C., Water Resources Research. Vol 12, No 3, 423-428, June 1976.



No.	Time (sec)	Water Level (m)	Drawdown (m)
	Static	2.230	
1	0	2.574	0.344
2	20	2.510	0.280
3	40	2.459	0.229
4	60	2.418	0.188
5	80	2.385	0.155
6	100	2.359	0.129
7	120	2.337	0.107
8	140	2.319	0.089
9	160	2.305	0.075
10	180	2.293	0.063
11	200	2.283	0.053
12	220	2.276	0.046
13	240	2.269	0.039
14	260	2.263	0.033
15	280	2.259	0.028
16	300	2.255	0.025
17	320	2.252	0.022
18	340	2.249	0.019
19	360	2.247	0.017
20	380	2.245	0.015
21			
22			
23			
24			
25			

Hydraulic Conductivity of Unconfined Aquifer
For Completely or Partially Penetrating Wells

Project Number: OESAO2132
Monitoring Well ID: MW21-15
Test Date: 1/25/2021

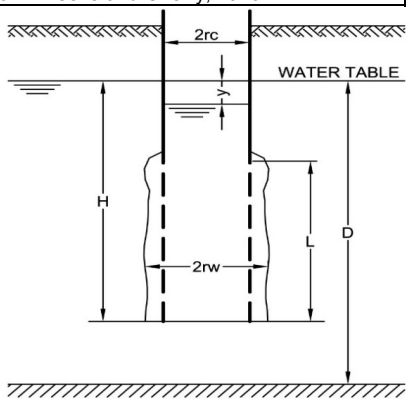
r_a	0.0254	m	Inside radius of well screen
r_w	0.10	m	Radius from well centre to undisturbed aquifer (Borehole diameter)
r_c	0.0626	m	Corrected inside radius of well screen {using $r_c = [r^2_a + n(r^2_w - r^2_a)]^{0.5}$}
n	0.35		Porosity of sand filter pack (40% for most well sands) [1]
L	3.05	m	Length of screen through which water enters
DTW	2.53	mbtoc	Depth to water
DTB	6.10	mbtoc	Depth to bottom of well
H	3.57	m	Depth of monitor well - from static water table to well bottom
D	8.00	m	Saturated thickness of aquifer
t_t	100	sec	Time > t=0 (take from line of best fit on graph below)
h_0	0.32	m	Head in well at t = 0
h_t	0.16843	m	Head in well at t = t_t (take from line of best fit on graph below)

L/r_w	30.50	
A	2.50791	
B	0.38314	A,B,C are dimensionless coefficients that are functions of L/r_w
C	1.95710	

Typical Hydraulic Conductivity Values

Gravel	1 to 10^{-3}	m/sec
Clean Sand	10^{-2} to 10^{-5}	m/sec
Silty Sand	10^{-3} to 10^{-7}	m/sec
Silt	10^{-5} to 10^{-9}	m/sec
Clay	10^{-9} to 10^{-12}	m/sec

from: Freeze and Cherry, 1979



Partially Penetrating Well

Part 1	0.30768	*Part 1 = 1.1/ln(b/r_w)*
Part 2	0.12985	*Part 2 = A + Bln[(D-b)/r_w]/(L/r_w)*
$\ln(R_e/r_w)$	2.28557	*$\ln(R_e/r_w)$ = (Part 1 + Part 2)$^{-1}$*

K* = 9.52E-06 m/sec
0.00823 m/day

T* = 7.62E-05 m^2/sec
2.63242 m^2/day

$$K = \frac{r_c^2 \ln\left(R_e/r_w\right)}{2L} \cdot \frac{1}{t} \cdot \ln\frac{h_o}{h_t}$$

Fully Penetrating Well

Part 1	0.30768	*Part 1 = 1.1/ln(b/r_w)*
Part 2	0.06417	*Part 2 = C/(L/r_w)*
$\ln(R_e/r_w)$	2.68928	*$\ln(R_e/r_w)$ = (Part 1 + Part 2)$^{-1}$*

K = --- m/s
--- m/day

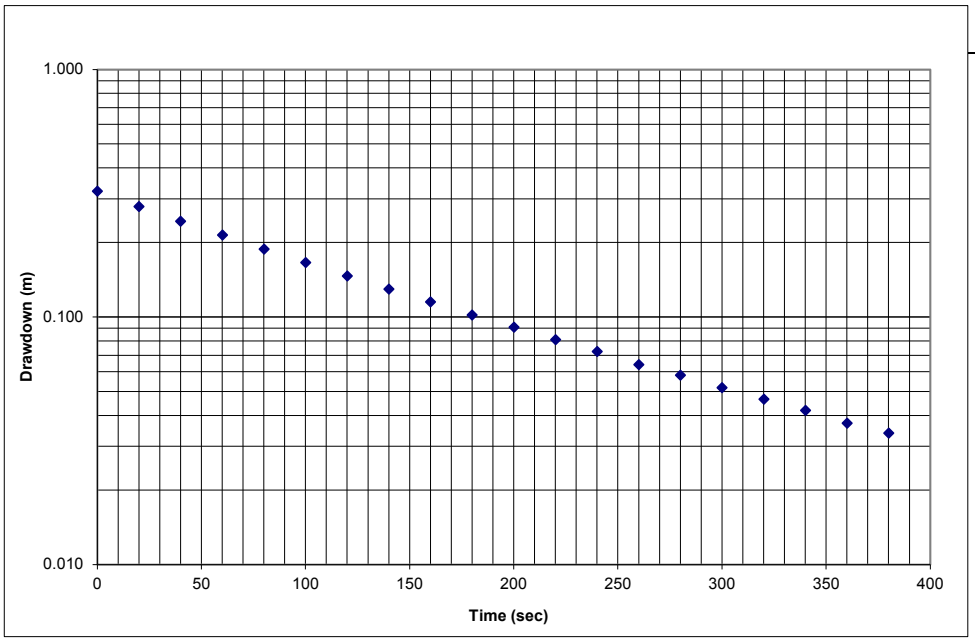
T = --- m^2/sec
--- m^2/day

$$K = \frac{r_c^2 \ln\left(R_e/r_w\right)}{2L} \cdot \frac{1}{t} \cdot \ln\frac{h_o}{h_t}$$

* Do not use this value if an estimation of the aquifer's saturated thickness was used in the input

[1] - Porosity determined from a series of bench scale experiments.

From: A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells. Bouwer, Herman and Rice, R.C., Water Resources Research. Vol 12, No 3, 423-428, June 1976.



No.	Time (sec)	Water Level (m)	Drawdown (m)
	Static	2.530	
1	0	2.852	0.322
2	20	2.809	0.279
3	40	2.774	0.244
4	60	2.744	0.214
5	80	2.718	0.188
6	100	2.696	0.166
7	120	2.677	0.147
8	140	2.660	0.130
9	160	2.645	0.115
10	180	2.632	0.102
11	200	2.621	0.091
12	220	2.611	0.081
13	240	2.603	0.072
14	260	2.594	0.064
15	280	2.588	0.058
16	300	2.582	0.052
17	320	2.577	0.047
18	340	2.572	0.042
19	360	2.567	0.037
20	380	2.564	0.034
21			
22			
23			
24			
25			

Hydraulic Conductivity of Unconfined Aquifer
For Completely or Partially Penetrating Wells

Project Number: OESAO2132
Monitoring Well ID: MW21-16
Test Date: 1/25/2021

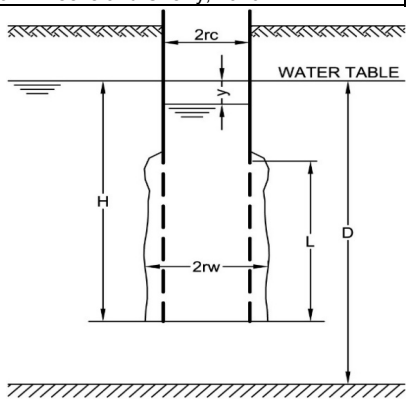
r_a	0.0254	m	Inside radius of well screen
r_w	0.10	m	Radius from well centre to undisturbed aquifer (Borehole diameter)
r_c	0.0626	m	Corrected inside radius of well screen {using $r_c = [r^2_a + n(r^2_w - r^2_a)]^{0.5}$}
n	0.35		Porosity of sand filter pack (40% for most well sands) [1]
L	3.05	m	Length of screen through which water enters
DTW	1.87	mbtoc	Depth to water
DTB	4.57	mbtoc	Depth to bottom of well
H	2.70	m	Depth of monitor well - from static water table to well bottom
D	8.00	m	Saturated thickness of aquifer
t_t	500	sec	Time > t=0 (take from line of best fit on graph below)
h_0	0.33	m	Head in well at t = 0
h_t	0.14235	m	Head in well at t = t_t (take from line of best fit on graph below)

L/r_w	30.50	
A	2.50791	
B	0.38314	A,B,C are dimensionless coefficients that are functions of L/r_w
C	1.95710	

Typical Hydraulic Conductivity Values

Gravel	1 to 10^{-3}	m/sec
Clean Sand	10^{-2} to 10^{-5}	m/sec
Silty Sand	10^{-3} to 10^{-7}	m/sec
Silt	10^{-5} to 10^{-9}	m/sec
Clay	10^{-9} to 10^{-12}	m/sec

from: Freeze and Cherry, 1979



Partially Penetrating Well

Part 1	0.33375	*Part 1 = 1.1/ln(b/r_w)*
Part 2	0.13210	*Part 2 = A + Bln[(D-b)/r_w]/(L/r_w)*
$\ln(R_e/r_w)$	2.14659	*$\ln(R_e/r_w)$ = (Part 1 + Part 2)$^{-1}$*

K* = 2.34E-06 m/sec
0.00202 m/day

T* = 1.87E-05 m^2/sec
0.64746 m^2/day

$$K = \frac{r_c^2 \ln\left(R_e/r_w\right)}{2L} \cdot \frac{1}{t} \cdot \ln\frac{h_o}{h_t}$$

Fully Penetrating Well

Part 1	0.33375	*Part 1 = 1.1/ln(b/r_w)*
Part 2	0.06417	*Part 2 = C/(L/r_w)*
$\ln(R_e/r_w)$	2.51306	*$\ln(R_e/r_w)$ = (Part 1 + Part 2)$^{-1}$*

K = --- m/s
--- m/day

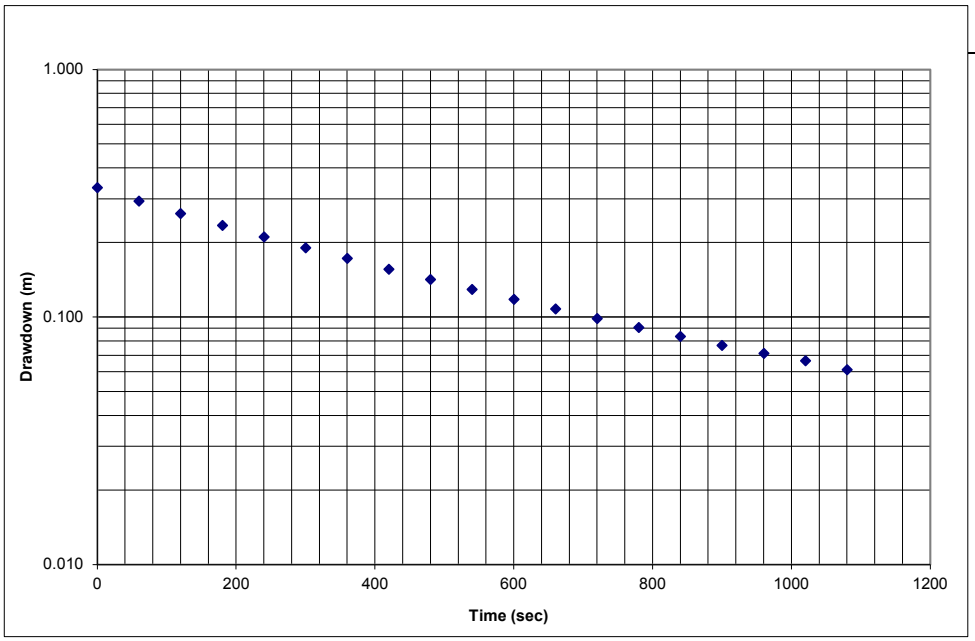
T = --- m^2/sec
--- m^2/day

$$K = \frac{r_c^2 \ln\left(R_e/r_w\right)}{2L} \cdot \frac{1}{t} \cdot \ln\frac{h_o}{h_t}$$

* Do not use this value if an estimation of the aquifer's saturated thickness was used in the input

[1] - Porosity determined from a series of bench scale experiments.

From: A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells. Bouwer, Herman and Rice, R.C., Water Resources Research. Vol 12, No 3, 423-428, June 1976.



No.	Time (sec)	Water Level (m)	Drawdown (m)
	Static	1.870	
1	0	2.203	0.333
2	60	2.164	0.294
3	120	2.132	0.262
4	180	2.104	0.234
5	240	2.081	0.211
6	300	2.060	0.190
7	360	2.042	0.172
8	420	2.026	0.156
9	480	2.012	0.142
10	540	1.999	0.129
11	600	1.988	0.118
12	660	1.978	0.108
13	720	1.969	0.099
14	780	1.961	0.091
15	840	1.953	0.083
16	900	1.947	0.077
17	960	1.941	0.071
18	1020	1.937	0.067
19	1080	1.931	0.061
20			
21			
22			
23			
24			
25			

Appendix F
Certificates of Analysis

Wood Environment & Infrastructure Solutions (Ottawa)
ATTN: Kevin Hicks
210 Colonnade Rd S#300
Ottawa ON K2E7L5

Date Received: 16-DEC-21
Report Date: 31-DEC-21 14:37 (MT)
Version: FINAL

Client Phone: 613-727-0658

Certificate of Analysis

Lab Work Order #: L2673599

Project P.O. #: NOT SUBMITTED
Job Reference: OESAO2132
C of C Numbers: 17-802267, 17-802269
Legal Site Desc:

Gayle Braun
Senior Account Manager

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2673599-1 TP-1 SS-1							
Sampled By: CLIENT on 14-DEC-21							
Matrix: SOIL							
Physical Tests							
Conductivity	1.14		0.0040	mS/cm	30-DEC-21	*0.47	*0.57
% Moisture	8.98		0.25	%	19-DEC-21		
pH	7.49		0.10	pH units	29-DEC-21		
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051
Saturated Paste Extractables							
SAR	2.24		0.10	SAR	29-DEC-21	*1	2.4
Calcium (Ca)	83.7		0.50	mg/L	29-DEC-21		
Magnesium (Mg)	13.7		0.50	mg/L	29-DEC-21		
Sodium (Na)	83.8		0.50	mg/L	29-DEC-21		
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	29-DEC-21	1	1.3
Arsenic (As)	3.7		1.0	ug/g	29-DEC-21	11	18
Barium (Ba)	126		1.0	ug/g	29-DEC-21	210	220
Beryllium (Be)	<0.50		0.50	ug/g	29-DEC-21	2.5	2.5
Boron (B)	10.4		5.0	ug/g	29-DEC-21	36	36
Boron (B), Hot Water Ext.	0.89	FR4	0.10	ug/g	29-DEC-21	36	36
Cadmium (Cd)	<0.50		0.50	ug/g	29-DEC-21	1	1.2
Chromium (Cr)	21.7		1.0	ug/g	29-DEC-21	67	70
Cobalt (Co)	7.5		1.0	ug/g	29-DEC-21	19	21
Copper (Cu)	17.5		1.0	ug/g	29-DEC-21	62	92
Lead (Pb)	15.3		1.0	ug/g	29-DEC-21	45	120
Mercury (Hg)	0.013	DLM	0.010	ug/g	29-DEC-21	0.16	0.27
Molybdenum (Mo)	3.2		1.0	ug/g	29-DEC-21	*2	*2
Nickel (Ni)	18.3		1.0	ug/g	29-DEC-21	37	82
Selenium (Se)	<1.0		1.0	ug/g	29-DEC-21	1.2	1.5
Silver (Ag)	<0.20		0.20	ug/g	29-DEC-21	0.5	0.5
Thallium (Tl)	<0.50		0.50	ug/g	29-DEC-21	1	1
Uranium (U)	<1.0		1.0	ug/g	29-DEC-21	1.9	2.5
Vanadium (V)	35.1		1.0	ug/g	29-DEC-21	86	86
Zinc (Zn)	65.6		5.0	ug/g	29-DEC-21	290	290
Speciated Metals							
Chromium, Hexavalent	<0.20		0.20	ug/g	23-DEC-21	0.66	0.66
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	22-DEC-21	17	25
F2 (C10-C16)	<200	DLM	200	ug/g	28-DEC-21	**10	**10
F3 (C16-C34)	2900		1000	ug/g	28-DEC-21	*240	*240
F4 (C34-C50)	7400		1000	ug/g	28-DEC-21	*120	*120
F4G-SG (GHH-Silica)	14000		250	ug/g	23-DEC-21	*120	*120
Total Hydrocarbons (C6-C50)	10300		1400	ug/g	28-DEC-21		
Chrom. to baseline at nC50	NO			No Unit	28-DEC-21		
Surrogate: 2-Bromobenzotrifluoride	105.4		60-140	%	28-DEC-21		
Surrogate: 3,4-Dichlorotoluene	71.3		60-140	%	22-DEC-21		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2673599-2 TP-2 SS-1							
Sampled By: CLIENT on 14-DEC-21							
Matrix: SOIL							
Physical Tests							
Conductivity	0.215		0.0040	mS/cm	30-DEC-21	0.47	0.57
% Moisture	28.4		0.25	%	19-DEC-21		
pH	7.58		0.10	pH units	29-DEC-21		
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051
Saturated Paste Extractables							
SAR	0.53		0.10	SAR	29-DEC-21	1	2.4
Calcium (Ca)	19.3		0.50	mg/L	29-DEC-21		
Magnesium (Mg)	7.50		0.50	mg/L	29-DEC-21		
Sodium (Na)	10.9		0.50	mg/L	29-DEC-21		
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	29-DEC-21	1	1.3
Arsenic (As)	4.0		1.0	ug/g	29-DEC-21	11	18
Barium (Ba)	263		1.0	ug/g	29-DEC-21	*210	*220
Beryllium (Be)	1.01		0.50	ug/g	29-DEC-21	2.5	2.5
Boron (B)	9.9		5.0	ug/g	29-DEC-21	36	36
Boron (B), Hot Water Ext.	0.67		0.10	ug/g	29-DEC-21	36	36
Cadmium (Cd)	<0.50		0.50	ug/g	29-DEC-21	1	1.2
Chromium (Cr)	81.9		1.0	ug/g	29-DEC-21	*67	*70
Cobalt (Co)	17.1		1.0	ug/g	29-DEC-21	19	21
Copper (Cu)	33.5		1.0	ug/g	29-DEC-21	62	92
Lead (Pb)	12.5		1.0	ug/g	29-DEC-21	45	120
Mercury (Hg)	0.0123		0.0050	ug/g	29-DEC-21	0.16	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	29-DEC-21	2	2
Nickel (Ni)	43.8		1.0	ug/g	29-DEC-21	*37	82
Selenium (Se)	<1.0		1.0	ug/g	29-DEC-21	1.2	1.5
Silver (Ag)	<0.20		0.20	ug/g	29-DEC-21	0.5	0.5
Thallium (Tl)	<0.50		0.50	ug/g	29-DEC-21	1	1
Uranium (U)	1.1		1.0	ug/g	29-DEC-21	1.9	2.5
Vanadium (V)	83.6		1.0	ug/g	29-DEC-21	86	86
Zinc (Zn)	105		5.0	ug/g	29-DEC-21	290	290
Speciated Metals							
Chromium, Hexavalent	1.31		0.20	ug/g	23-DEC-21	*0.66	*0.66
Organochlorine Pesticides							
Aldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
alpha-BHC	<0.020		0.020	ug/g	23-DEC-21		
beta-BHC	<0.020		0.020	ug/g	23-DEC-21		
gamma-hexachlorocyclohexane	<0.010		0.010	ug/g	23-DEC-21		0.01
delta-BHC	<0.020		0.020	ug/g	23-DEC-21		
a-chlordane	<0.020		0.020	ug/g	23-DEC-21		
g-chlordane	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDD	<0.020		0.020	ug/g	23-DEC-21		
pp-DDD	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDE	<0.020		0.020	ug/g	23-DEC-21		
pp-DDE	<0.020		0.020	ug/g	23-DEC-21		
op-DDT	<0.020		0.020	ug/g	23-DEC-21		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2		
L2673599-2	TP-2 SS-1									
Sampled By:	CLIENT on 14-DEC-21									
Matrix:	SOIL									
Organochlorine Pesticides										
	pp-DDT	<0.020		0.020	ug/g	23-DEC-21				
	Dieldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05		
	Endosulfan I	<0.020		0.020	ug/g	23-DEC-21				
	Endosulfan II	<0.020		0.020	ug/g	23-DEC-21				
	Endrin	<0.020		0.020	ug/g	23-DEC-21	0.04	0.04		
	Heptachlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05		
	Heptachlor Epoxide	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05		
	Hexachlorobenzene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01		
	Hexachlorobutadiene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01		
	Hexachloroethane	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01		
	Methoxychlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05		
	Surrogate: Decachlorobiphenyl	107.8		50-150	%	23-DEC-21				
	Surrogate: Tetrachloro-m-xylene	88.9		50-150	%	23-DEC-21				
Herbicides										
	Bromoxynil	<0.080		0.080	mg/kg	28-DEC-21				
	2,4-D	<0.080		0.080	mg/kg	28-DEC-21				
	Dicamba	<0.080		0.080	mg/kg	28-DEC-21				
	Dinoseb	<0.080		0.080	mg/kg	28-DEC-21				
	MCPA	<0.30		0.30	mg/kg	28-DEC-21				
	Mecoprop	<0.30		0.30	mg/kg	28-DEC-21				
	Picloram	<0.080		0.080	mg/kg	28-DEC-21				
	2,4,5-T	<0.080		0.080	mg/kg	28-DEC-21				
	2,4,5-TP	<0.080		0.080	mg/kg	28-DEC-21				
	Surrogate: 2,4-Dichlorophenylacetic Acid	115.0		50-130	%	28-DEC-21				
L2673599-3	TP-3 SS-1									
Sampled By:	CLIENT on 15-DEC-21									
Matrix:	SOIL						#1	#2		
Physical Tests										
	Conductivity	0.201		0.0040	mS/cm	30-DEC-21	0.47	0.57		
	% Moisture	26.2		0.25	%	19-DEC-21				
	pH	7.33		0.10	pH units	29-DEC-21				
Cyanides										
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051		
Saturated Paste Extractables										
	SAR	1.13		0.10	SAR	29-DEC-21	*1	2.4		
	Calcium (Ca)	10.7		0.50	mg/L	29-DEC-21				
	Magnesium (Mg)	4.84		0.50	mg/L	29-DEC-21				
	Sodium (Na)	17.7		0.50	mg/L	29-DEC-21				
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	29-DEC-21	1	1.3		
	Arsenic (As)	3.8		1.0	ug/g	29-DEC-21	11	18		
	Barium (Ba)	360		1.0	ug/g	29-DEC-21	*210	*220		
	Beryllium (Be)	0.89		0.50	ug/g	29-DEC-21	2.5	2.5		
	Boron (B)	6.7		5.0	ug/g	29-DEC-21	36	36		
	Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	29-DEC-21	36	36		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2673599-3 TP-3 SS-1							
Sampled By: CLIENT on 15-DEC-21							
Matrix: SOIL							
Metals							
Cadmium (Cd)	<0.50		0.50	ug/g	29-DEC-21	1	1.2
Chromium (Cr)	84.6		1.0	ug/g	29-DEC-21	*67	*70
Cobalt (Co)	19.2		1.0	ug/g	29-DEC-21	*19	21
Copper (Cu)	41.5		1.0	ug/g	29-DEC-21	62	92
Lead (Pb)	7.0		1.0	ug/g	29-DEC-21	45	120
Mercury (Hg)	0.0082		0.0050	ug/g	29-DEC-21	0.16	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	29-DEC-21	2	2
Nickel (Ni)	46.4		1.0	ug/g	29-DEC-21	*37	82
Selenium (Se)	<1.0		1.0	ug/g	29-DEC-21	1.2	1.5
Silver (Ag)	<0.20		0.20	ug/g	29-DEC-21	0.5	0.5
Thallium (Tl)	<0.50		0.50	ug/g	29-DEC-21	1	1
Uranium (U)	<1.0		1.0	ug/g	29-DEC-21	1.9	2.5
Vanadium (V)	95.5		1.0	ug/g	29-DEC-21	*86	*86
Zinc (Zn)	111		5.0	ug/g	29-DEC-21	290	290
Speciated Metals							
Chromium, Hexavalent	1.13		0.20	ug/g	23-DEC-21	*0.66	*0.66
L2673599-4 TP-3 SS-3							
Sampled By: CLIENT on 15-DEC-21							
Matrix: SOIL							
Physical Tests							
% Moisture	25.5		0.25	%	19-DEC-21		
Organochlorine Pesticides							
Aldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
alpha-BHC	<0.020		0.020	ug/g	23-DEC-21		
beta-BHC	<0.020		0.020	ug/g	23-DEC-21		
gamma-hexachlorocyclohexane	<0.010		0.010	ug/g	23-DEC-21		0.01
delta-BHC	<0.020		0.020	ug/g	23-DEC-21		
a-chlordane	<0.020		0.020	ug/g	23-DEC-21		
g-chlordane	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDD	<0.020		0.020	ug/g	23-DEC-21		
pp-DDD	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDE	<0.020		0.020	ug/g	23-DEC-21		
pp-DDE	<0.020		0.020	ug/g	23-DEC-21		
op-DDT	<0.020		0.020	ug/g	23-DEC-21		
pp-DDT	<0.020		0.020	ug/g	23-DEC-21		
Dieldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Endosulfan I	<0.020		0.020	ug/g	23-DEC-21		
Endosulfan II	<0.020		0.020	ug/g	23-DEC-21		
Endrin	<0.020		0.020	ug/g	23-DEC-21	0.04	0.04
Heptachlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Heptachlor Epoxide	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Hexachlorobenzene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
Hexachlorobutadiene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
Hexachloroethane	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
Methoxychlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2		
L2673599-4	TP-3 SS-3									
Sampled By:	CLIENT on 15-DEC-21									
Matrix:	SOIL									
Organochlorine Pesticides										
	Surrogate: Decachlorobiphenyl	117.7		50-150	%	23-DEC-21				
	Surrogate: Tetrachloro-m-xylene	98.4		50-150	%	23-DEC-21				
Herbicides										
	Bromoxynil	<0.080		0.080	mg/kg	28-DEC-21				
	2,4-D	<0.080		0.080	mg/kg	28-DEC-21				
	Dicamba	<0.080		0.080	mg/kg	28-DEC-21				
	Dinoseb	<0.080		0.080	mg/kg	28-DEC-21				
	MCPA	<0.30		0.30	mg/kg	28-DEC-21				
	Mecoprop	<0.30		0.30	mg/kg	28-DEC-21				
	Picloram	<0.080		0.080	mg/kg	28-DEC-21				
	2,4,5-T	<0.080		0.080	mg/kg	28-DEC-21				
	2,4,5-TP	<0.080		0.080	mg/kg	28-DEC-21				
	Surrogate: 2,4-Dichlorophenylacetic Acid	112.0		50-130	%	28-DEC-21				
L2673599-5	TP-4 SS-1									
Sampled By:	CLIENT on 14-DEC-21									
Matrix:	SOIL						#1	#2		
Physical Tests										
	Conductivity	0.167		0.0040	mS/cm	30-DEC-21	0.47	0.57		
	% Moisture	28.5		0.25	%	19-DEC-21				
	pH	7.58		0.10	pH units	29-DEC-21				
Cyanides										
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051		
Saturated Paste Extractables										
	SAR	1.33		0.10	SAR	29-DEC-21	*1	2.4		
	Calcium (Ca)	17.0		0.50	mg/L	29-DEC-21				
	Magnesium (Mg)	27.1		0.50	mg/L	29-DEC-21				
	Sodium (Na)	37.8		0.50	mg/L	29-DEC-21				
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	29-DEC-21	1	1.3		
	Arsenic (As)	4.1		1.0	ug/g	29-DEC-21	11	18		
	Barium (Ba)	485		1.0	ug/g	29-DEC-21	*210	*220		
	Beryllium (Be)	1.01		0.50	ug/g	29-DEC-21	2.5	2.5		
	Boron (B)	6.0		5.0	ug/g	29-DEC-21	36	36		
	Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	29-DEC-21	36	36		
	Cadmium (Cd)	<0.50		0.50	ug/g	29-DEC-21	1	1.2		
	Chromium (Cr)	121		1.0	ug/g	29-DEC-21	*67	*70		
	Cobalt (Co)	24.7		1.0	ug/g	29-DEC-21	*19	*21		
	Copper (Cu)	51.5		1.0	ug/g	29-DEC-21	62	92		
	Lead (Pb)	7.2		1.0	ug/g	29-DEC-21	45	120		
	Mercury (Hg)	0.0115		0.0050	ug/g	29-DEC-21	0.16	0.27		
	Molybdenum (Mo)	<1.0		1.0	ug/g	29-DEC-21	2	2		
	Nickel (Ni)	64.3		1.0	ug/g	29-DEC-21	*37	82		
	Selenium (Se)	<1.0		1.0	ug/g	29-DEC-21	1.2	1.5		
	Silver (Ag)	<0.20		0.20	ug/g	29-DEC-21	0.5	0.5		
	Thallium (Tl)	<0.50		0.50	ug/g	29-DEC-21	1	1		

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2673599-5 TP-4 SS-1 Sampled By: CLIENT on 14-DEC-21 Matrix: SOIL						#1	#2
Metals							
Uranium (U)	1.1		1.0	ug/g	29-DEC-21	1.9	2.5
Vanadium (V)	118		1.0	ug/g	29-DEC-21	*86	*86
Zinc (Zn)	146		5.0	ug/g	29-DEC-21	290	290
Speciated Metals							
Chromium, Hexavalent	1.45		0.20	ug/g	23-DEC-21	*0.66	*0.66
L2673599-6 TP-5 SS-1 Sampled By: CLIENT on 14-DEC-21 Matrix: SOIL						#1	#2
Physical Tests							
Conductivity	0.146		0.0040	mS/cm	30-DEC-21	0.47	0.57
% Moisture	29.6		0.25	%	19-DEC-21		
pH	7.58		0.10	pH units	29-DEC-21		
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051
Saturated Paste Extractables							
SAR	1.57		0.10	SAR	29-DEC-21	*1	2.4
Calcium (Ca)	6.88		0.50	mg/L	29-DEC-21		
Magnesium (Mg)	10.6		0.50	mg/L	29-DEC-21		
Sodium (Na)	28.1		0.50	mg/L	29-DEC-21		
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	29-DEC-21	1	1.3
Arsenic (As)	4.0		1.0	ug/g	29-DEC-21	11	18
Barium (Ba)	424		1.0	ug/g	29-DEC-21	*210	*220
Beryllium (Be)	0.97		0.50	ug/g	29-DEC-21	2.5	2.5
Boron (B)	6.1		5.0	ug/g	29-DEC-21	36	36
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	29-DEC-21	36	36
Cadmium (Cd)	<0.50		0.50	ug/g	29-DEC-21	1	1.2
Chromium (Cr)	106		1.0	ug/g	29-DEC-21	*67	*70
Cobalt (Co)	22.8		1.0	ug/g	29-DEC-21	*19	*21
Copper (Cu)	52.3		1.0	ug/g	29-DEC-21	62	92
Lead (Pb)	7.1		1.0	ug/g	29-DEC-21	45	120
Mercury (Hg)	0.0129		0.0050	ug/g	29-DEC-21	0.16	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	29-DEC-21	2	2
Nickel (Ni)	57.1		1.0	ug/g	29-DEC-21	*37	82
Selenium (Se)	<1.0		1.0	ug/g	29-DEC-21	1.2	1.5
Silver (Ag)	<0.20		0.20	ug/g	29-DEC-21	0.5	0.5
Thallium (Tl)	<0.50		0.50	ug/g	29-DEC-21	1	1
Uranium (U)	1.0		1.0	ug/g	29-DEC-21	1.9	2.5
Vanadium (V)	108		1.0	ug/g	29-DEC-21	*86	*86
Zinc (Zn)	127		5.0	ug/g	29-DEC-21	290	290
Speciated Metals							
Chromium, Hexavalent	0.98		0.20	ug/g	23-DEC-21	*0.66	*0.66

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
L2673599-7	TP-5 SS-3									
Sampled By:	CLIENT on 14-DEC-21									
Matrix:	SOIL						#1	#2		
Physical Tests										
	% Moisture	30.0		0.25	%	19-DEC-21				
	pH	7.39		0.10	pH units	29-DEC-21				
Organochlorine Pesticides										
	Aldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05		
	alpha-BHC	<0.020		0.020	ug/g	23-DEC-21				
	beta-BHC	<0.020		0.020	ug/g	23-DEC-21				
	gamma-hexachlorocyclohexane	<0.010		0.010	ug/g	23-DEC-21		0.01		
	delta-BHC	<0.020		0.020	ug/g	23-DEC-21				
	a-chlordane	<0.020		0.020	ug/g	23-DEC-21				
	g-chlordane	<0.020		0.020	ug/g	23-DEC-21				
	o,p-DDD	<0.020		0.020	ug/g	23-DEC-21				
	pp-DDD	<0.020		0.020	ug/g	23-DEC-21				
	o,p-DDE	<0.020		0.020	ug/g	23-DEC-21				
	pp-DDE	<0.020		0.020	ug/g	23-DEC-21				
	op-DDT	<0.020		0.020	ug/g	23-DEC-21				
	pp-DDT	<0.020		0.020	ug/g	23-DEC-21				
	Dieldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05		
	Endosulfan I	<0.020		0.020	ug/g	23-DEC-21				
	Endosulfan II	<0.020		0.020	ug/g	23-DEC-21				
	Endrin	<0.020		0.020	ug/g	23-DEC-21	0.04	0.04		
	Heptachlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05		
	Heptachlor Epoxide	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05		
	Hexachlorobenzene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01		
	Hexachlorobutadiene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01		
	Hexachloroethane	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01		
	Methoxychlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05		
	Surrogate: Decachlorobiphenyl	100.2		50-150	%	23-DEC-21				
	Surrogate: Tetrachloro-m-xylene	87.7		50-150	%	23-DEC-21				
Herbicides										
	Bromoxynil	<0.080		0.080	mg/kg	28-DEC-21				
	2,4-D	<0.080		0.080	mg/kg	28-DEC-21				
	Dicamba	<0.080		0.080	mg/kg	28-DEC-21				
	Dinoseb	<0.080		0.080	mg/kg	28-DEC-21				
	MCPA	<0.30		0.30	mg/kg	28-DEC-21				
	Mecoprop	<0.30		0.30	mg/kg	28-DEC-21				
	Picloram	<0.080		0.080	mg/kg	28-DEC-21				
	2,4,5-T	<0.080		0.080	mg/kg	28-DEC-21				
	2,4,5-TP	<0.080		0.080	mg/kg	28-DEC-21				
	Surrogate: 2,4-Dichlorophenylacetic Acid	107.0		50-130	%	28-DEC-21				
L2673599-8	TP-6 SS-1									
Sampled By:	CLIENT on 15-DEC-21									
Matrix:	SOIL						#1	#2		
Physical Tests										
	Conductivity	0.189		0.0040	mS/cm	30-DEC-21	0.47	0.57		
	% Moisture	25.7		0.25	%	19-DEC-21				
	pH	7.00		0.10	pH units	29-DEC-21				

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2673599-8 TP-6 SS-1 Sampled By: CLIENT on 15-DEC-21 Matrix: SOIL							
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051
Saturated Paste Extractables							
SAR	0.86		0.10	SAR	29-DEC-21	1	2.4
Calcium (Ca)	11.2		0.50	mg/L	29-DEC-21		
Magnesium (Mg)	5.63		0.50	mg/L	29-DEC-21		
Sodium (Na)	14.1		0.50	mg/L	29-DEC-21		
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	29-DEC-21	1	1.3
Arsenic (As)	3.9		1.0	ug/g	29-DEC-21	11	18
Barium (Ba)	345		1.0	ug/g	29-DEC-21	*210	*220
Beryllium (Be)	0.94		0.50	ug/g	29-DEC-21	2.5	2.5
Boron (B)	6.5		5.0	ug/g	29-DEC-21	36	36
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	29-DEC-21	36	36
Cadmium (Cd)	<0.50		0.50	ug/g	29-DEC-21	1	1.2
Chromium (Cr)	95.7		1.0	ug/g	29-DEC-21	*67	*70
Cobalt (Co)	18.5		1.0	ug/g	29-DEC-21	19	21
Copper (Cu)	42.4		1.0	ug/g	29-DEC-21	62	92
Lead (Pb)	7.2		1.0	ug/g	29-DEC-21	45	120
Mercury (Hg)	0.0121		0.0050	ug/g	29-DEC-21	0.16	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	29-DEC-21	2	2
Nickel (Ni)	51.3		1.0	ug/g	29-DEC-21	*37	82
Selenium (Se)	<1.0		1.0	ug/g	29-DEC-21	1.2	1.5
Silver (Ag)	<0.20		0.20	ug/g	29-DEC-21	0.5	0.5
Thallium (Tl)	<0.50		0.50	ug/g	29-DEC-21	1	1
Uranium (U)	<1.0		1.0	ug/g	29-DEC-21	1.9	2.5
Vanadium (V)	96.7		1.0	ug/g	29-DEC-21	*86	*86
Zinc (Zn)	114		5.0	ug/g	29-DEC-21	290	290
Speciated Metals							
Chromium, Hexavalent	1.49		0.20	ug/g	23-DEC-21	*0.66	*0.66
Organochlorine Pesticides							
Aldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
alpha-BHC	<0.020		0.020	ug/g	23-DEC-21		
beta-BHC	<0.020		0.020	ug/g	23-DEC-21		
gamma-hexachlorocyclohexane	<0.010		0.010	ug/g	23-DEC-21		0.01
delta-BHC	<0.020		0.020	ug/g	23-DEC-21		
a-chlordane	<0.020		0.020	ug/g	23-DEC-21		
g-chlordane	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDD	<0.020		0.020	ug/g	23-DEC-21		
pp-DDD	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDE	<0.020		0.020	ug/g	23-DEC-21		
pp-DDE	<0.020		0.020	ug/g	23-DEC-21		
op-DDT	<0.020		0.020	ug/g	23-DEC-21		
pp-DDT	<0.020		0.020	ug/g	23-DEC-21		
Dieldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Endosulfan I	<0.020		0.020	ug/g	23-DEC-21		
Endosulfan II	<0.020		0.020	ug/g	23-DEC-21		

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2		
L2673599-8	TP-6 SS-1									
Sampled By:	CLIENT on 15-DEC-21									
Matrix:	SOIL									
Organochlorine Pesticides										
	Endrin	<0.020		0.020	ug/g	23-DEC-21	0.04	0.04		
	Heptachlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05		
	Heptachlor Epoxide	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05		
	Hexachlorobenzene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01		
	Hexachlorobutadiene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01		
	Hexachloroethane	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01		
	Methoxychlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05		
	Surrogate: Decachlorobiphenyl	119.2		50-150	%	23-DEC-21				
	Surrogate: Tetrachloro-m-xylene	98.3		50-150	%	23-DEC-21				
Herbicides										
	Bromoxynil	<0.080		0.080	mg/kg	28-DEC-21				
	2,4-D	<0.080		0.080	mg/kg	28-DEC-21				
	Dicamba	<0.080		0.080	mg/kg	28-DEC-21				
	Dinoseb	<0.080		0.080	mg/kg	28-DEC-21				
	MCPA	<0.30		0.30	mg/kg	28-DEC-21				
	Mecoprop	<0.30		0.30	mg/kg	28-DEC-21				
	Picloram	<0.080		0.080	mg/kg	28-DEC-21				
	2,4,5-T	<0.080		0.080	mg/kg	28-DEC-21				
	2,4,5-TP	<0.080		0.080	mg/kg	28-DEC-21				
	Surrogate: 2,4-Dichlorophenylacetic Acid	127.0		50-130	%	28-DEC-21				
L2673599-9	TP-7 SS-1									
Sampled By:	CLIENT on 15-DEC-21									
Matrix:	SOIL						#1	#2		
Physical Tests										
	Conductivity	0.159		0.0040	mS/cm	31-DEC-21	0.47	0.57		
	% Moisture	25.5		0.25	%	19-DEC-21				
	pH	6.91		0.10	pH units	29-DEC-21				
Cyanides										
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051		
Saturated Paste Extractables										
	SAR	1.37		0.10	SAR	31-DEC-21	*1	2.4		
	Calcium (Ca)	7.57		0.50	mg/L	31-DEC-21				
	Magnesium (Mg)	3.85		0.50	mg/L	31-DEC-21				
	Sodium (Na)	18.5		0.50	mg/L	31-DEC-21				
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	30-DEC-21	1	1.3		
	Arsenic (As)	2.9		1.0	ug/g	30-DEC-21	11	18		
	Barium (Ba)	291		1.0	ug/g	30-DEC-21	*210	*220		
	Beryllium (Be)	1.03		0.50	ug/g	30-DEC-21	2.5	2.5		
	Boron (B)	9.0		5.0	ug/g	30-DEC-21	36	36		
	Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	30-DEC-21	36	36		
	Cadmium (Cd)	<0.50		0.50	ug/g	30-DEC-21	1	1.2		
	Chromium (Cr)	106		1.0	ug/g	30-DEC-21	*67	*70		
	Cobalt (Co)	18.9		1.0	ug/g	30-DEC-21	19	21		
	Copper (Cu)	39.5		1.0	ug/g	30-DEC-21	62	92		

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2673599-9 TP-7 SS-1							
Sampled By: CLIENT on 15-DEC-21							
Matrix: SOIL							
Metals							
Lead (Pb)	8.3		1.0	ug/g	30-DEC-21	45	120
Mercury (Hg)	0.0128		0.0050	ug/g	30-DEC-21	0.16	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	30-DEC-21	2	2
Nickel (Ni)	56.3		1.0	ug/g	30-DEC-21	*37	82
Selenium (Se)	<1.0		1.0	ug/g	30-DEC-21	1.2	1.5
Silver (Ag)	<0.20		0.20	ug/g	30-DEC-21	0.5	0.5
Thallium (Tl)	<0.50		0.50	ug/g	30-DEC-21	1	1
Uranium (U)	<1.0		1.0	ug/g	30-DEC-21	1.9	2.5
Vanadium (V)	85.5		1.0	ug/g	30-DEC-21	86	86
Zinc (Zn)	95.9		5.0	ug/g	30-DEC-21	290	290
Speciated Metals							
Chromium, Hexavalent	2.16		0.20	ug/g	23-DEC-21	*0.66	*0.66
Organochlorine Pesticides							
Aldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
alpha-BHC	<0.020		0.020	ug/g	23-DEC-21		
beta-BHC	<0.020		0.020	ug/g	23-DEC-21		
gamma-hexachlorocyclohexane	<0.010		0.010	ug/g	23-DEC-21		0.01
delta-BHC	<0.020		0.020	ug/g	23-DEC-21		
a-chlordane	<0.020		0.020	ug/g	23-DEC-21		
g-chlordane	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDD	<0.020		0.020	ug/g	23-DEC-21		
pp-DDD	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDE	<0.020		0.020	ug/g	23-DEC-21		
pp-DDE	<0.020		0.020	ug/g	23-DEC-21		
op-DDT	<0.020		0.020	ug/g	23-DEC-21		
pp-DDT	<0.020		0.020	ug/g	23-DEC-21		
Dieldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Endosulfan I	<0.020		0.020	ug/g	23-DEC-21		
Endosulfan II	<0.020		0.020	ug/g	23-DEC-21		
Endrin	<0.020		0.020	ug/g	23-DEC-21	0.04	0.04
Heptachlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Heptachlor Epoxide	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Hexachlorobenzene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
Hexachlorobutadiene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
Hexachloroethane	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
Methoxychlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Surrogate: Decachlorobiphenyl	107.9		50-150	%	23-DEC-21		
Surrogate: Tetrachloro-m-xylene	90.0		50-150	%	23-DEC-21		
Herbicides							
Bromoxynil	<0.080		0.080	mg/kg	28-DEC-21		
2,4-D	<0.080		0.080	mg/kg	28-DEC-21		
Dicamba	<0.080		0.080	mg/kg	28-DEC-21		
Dinoseb	<0.080		0.080	mg/kg	28-DEC-21		
MCPA	<0.30		0.30	mg/kg	28-DEC-21		
Mecoprop	<0.30		0.30	mg/kg	28-DEC-21		
Picloram	<0.080		0.080	mg/kg	28-DEC-21		

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
L2673599-9 TP-7 SS-1									
Sampled By: CLIENT on 15-DEC-21									
Matrix: SOIL						#1	#2		
Herbicides									
2,4,5-T	<0.080		0.080	mg/kg	28-DEC-21				
2,4,5-TP	<0.080		0.080	mg/kg	28-DEC-21				
Surrogate: 2,4-Dichlorophenylacetic Acid	120.0		50-130	%	28-DEC-21				
L2673599-10 TP-8 SS-1									
Sampled By: CLIENT on 15-DEC-21									
Matrix: SOIL						#1	#2		
Physical Tests									
Conductivity	0.172		0.0040	mS/cm	31-DEC-21	0.47	0.57		
% Moisture	26.0		0.25	%	19-DEC-21				
pH	7.13		0.10	pH units	29-DEC-21				
Cyanides									
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051		
Saturated Paste Extractables									
SAR	1.09		0.10	SAR	31-DEC-21	*1	2.4		
Calcium (Ca)	7.74		0.50	mg/L	31-DEC-21				
Magnesium (Mg)	4.50		0.50	mg/L	31-DEC-21				
Sodium (Na)	15.4		0.50	mg/L	31-DEC-21				
Metals									
Antimony (Sb)	<1.0		1.0	ug/g	30-DEC-21	1	1.3		
Arsenic (As)	3.2		1.0	ug/g	30-DEC-21	11	18		
Barium (Ba)	377		1.0	ug/g	30-DEC-21	*210	*220		
Beryllium (Be)	0.94		0.50	ug/g	30-DEC-21	2.5	2.5		
Boron (B)	6.6		5.0	ug/g	30-DEC-21	36	36		
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	30-DEC-21	36	36		
Cadmium (Cd)	<0.50		0.50	ug/g	30-DEC-21	1	1.2		
Chromium (Cr)	101		1.0	ug/g	30-DEC-21	*67	*70		
Cobalt (Co)	20.0		1.0	ug/g	30-DEC-21	*19	21		
Copper (Cu)	44.4		1.0	ug/g	30-DEC-21	62	92		
Lead (Pb)	6.9		1.0	ug/g	30-DEC-21	45	120		
Mercury (Hg)	0.0175		0.0050	ug/g	30-DEC-21	0.16	0.27		
Molybdenum (Mo)	<1.0		1.0	ug/g	30-DEC-21	2	2		
Nickel (Ni)	55.8		1.0	ug/g	30-DEC-21	*37	82		
Selenium (Se)	<1.0		1.0	ug/g	30-DEC-21	1.2	1.5		
Silver (Ag)	<0.20		0.20	ug/g	30-DEC-21	0.5	0.5		
Thallium (Tl)	<0.50		0.50	ug/g	30-DEC-21	1	1		
Uranium (U)	<1.0		1.0	ug/g	30-DEC-21	1.9	2.5		
Vanadium (V)	98.1		1.0	ug/g	30-DEC-21	*86	*86		
Zinc (Zn)	111		5.0	ug/g	30-DEC-21	290	290		
Speciated Metals									
Chromium, Hexavalent	1.08		0.20	ug/g	23-DEC-21	*0.66	*0.66		
L2673599-11 TP-10 SS-2									
Sampled By: CLIENT on 15-DEC-21									
Matrix: SOIL						#1	#2		

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2673599-11	TP-10 SS-2							
Sampled By:	CLIENT on 15-DEC-21							
Matrix:	SOIL							
Physical Tests								
	Conductivity	0.216		0.0040	mS/cm	31-DEC-21	0.47	0.57
	% Moisture	27.0		0.25	%	19-DEC-21		
	pH	6.91		0.10	pH units	29-DEC-21		
Cyanides								
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051
Saturated Paste Extractables								
	SAR	0.69		0.10	SAR	31-DEC-21	1	2.4
	Calcium (Ca)	12.2		0.50	mg/L	31-DEC-21		
	Magnesium (Mg)	7.53		0.50	mg/L	31-DEC-21		
	Sodium (Na)	12.4		0.50	mg/L	31-DEC-21		
Metals								
	Antimony (Sb)	<1.0		1.0	ug/g	30-DEC-21	1	1.3
	Arsenic (As)	3.4		1.0	ug/g	30-DEC-21	11	18
	Barium (Ba)	431		1.0	ug/g	30-DEC-21	*210	*220
	Beryllium (Be)	0.98		0.50	ug/g	30-DEC-21	2.5	2.5
	Boron (B)	5.9		5.0	ug/g	30-DEC-21	36	36
	Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	30-DEC-21	36	36
	Cadmium (Cd)	<0.50		0.50	ug/g	30-DEC-21	1	1.2
	Chromium (Cr)	102		1.0	ug/g	30-DEC-21	*67	*70
	Cobalt (Co)	26.1		1.0	ug/g	30-DEC-21	*19	*21
	Copper (Cu)	48.0		1.0	ug/g	30-DEC-21	62	92
	Lead (Pb)	7.3		1.0	ug/g	30-DEC-21	45	120
	Mercury (Hg)	0.0153		0.0050	ug/g	30-DEC-21	0.16	0.27
	Molybdenum (Mo)	<1.0		1.0	ug/g	30-DEC-21	2	2
	Nickel (Ni)	58.3		1.0	ug/g	30-DEC-21	*37	82
	Selenium (Se)	<1.0		1.0	ug/g	30-DEC-21	1.2	1.5
	Silver (Ag)	<0.20		0.20	ug/g	30-DEC-21	0.5	0.5
	Thallium (Tl)	<0.50		0.50	ug/g	30-DEC-21	1	1
	Uranium (U)	1.0		1.0	ug/g	30-DEC-21	1.9	2.5
	Vanadium (V)	108		1.0	ug/g	30-DEC-21	*86	*86
	Zinc (Zn)	119		5.0	ug/g	30-DEC-21	290	290
Speciated Metals								
	Chromium, Hexavalent	1.23		0.20	ug/g	28-DEC-21	*0.66	*0.66
L2673599-12	TP-11 SS-1							
Sampled By:	CLIENT on 15-DEC-21							
Matrix:	SOIL							
Physical Tests								
	Conductivity	0.256		0.0040	mS/cm	31-DEC-21	0.47	0.57
	% Moisture	26.8		0.25	%	19-DEC-21		
	pH	7.47		0.10	pH units	29-DEC-21		
Cyanides								
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051
Saturated Paste Extractables								
	SAR	0.31		0.10	SAR	31-DEC-21	1	2.4

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2673599-12 TP-11 SS-1							
Sampled By: CLIENT on 15-DEC-21							
Matrix: SOIL							
Saturated Paste Extractables							
Calcium (Ca)	27.6		0.50	mg/L	31-DEC-21		
Magnesium (Mg)	11.3		0.50	mg/L	31-DEC-21		
Sodium (Na)	7.73		0.50	mg/L	31-DEC-21		
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	30-DEC-21	1	1.3
Arsenic (As)	3.3		1.0	ug/g	30-DEC-21	11	18
Barium (Ba)	295		1.0	ug/g	30-DEC-21	*210	*220
Beryllium (Be)	0.94		0.50	ug/g	30-DEC-21	2.5	2.5
Boron (B)	7.7		5.0	ug/g	30-DEC-21	36	36
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	30-DEC-21	36	36
Cadmium (Cd)	<0.50		0.50	ug/g	30-DEC-21	1	1.2
Chromium (Cr)	81.7		1.0	ug/g	30-DEC-21	*67	*70
Cobalt (Co)	18.5		1.0	ug/g	30-DEC-21	19	21
Copper (Cu)	34.5		1.0	ug/g	30-DEC-21	62	92
Lead (Pb)	7.9		1.0	ug/g	30-DEC-21	45	120
Mercury (Hg)	0.0148		0.0050	ug/g	30-DEC-21	0.16	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	30-DEC-21	2	2
Nickel (Ni)	45.5		1.0	ug/g	30-DEC-21	*37	82
Selenium (Se)	<1.0		1.0	ug/g	30-DEC-21	1.2	1.5
Silver (Ag)	<0.20		0.20	ug/g	30-DEC-21	0.5	0.5
Thallium (Tl)	<0.50		0.50	ug/g	30-DEC-21	1	1
Uranium (U)	1.0		1.0	ug/g	30-DEC-21	1.9	2.5
Vanadium (V)	85.9		1.0	ug/g	30-DEC-21	86	86
Zinc (Zn)	96.9		5.0	ug/g	30-DEC-21	290	290
Speciated Metals							
Chromium, Hexavalent	0.73		0.20	ug/g	28-DEC-21	*0.66	*0.66
L2673599-13 TP-12 SS-1							
Sampled By: CLIENT on 15-DEC-21							
Matrix: SOIL							
Physical Tests							
Conductivity	0.230		0.0040	mS/cm	31-DEC-21	0.47	0.57
% Moisture	24.2		0.25	%	19-DEC-21		
pH	7.46		0.10	pH units	29-DEC-21		
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051
Saturated Paste Extractables							
SAR	0.37		0.10	SAR	31-DEC-21	1	2.4
Calcium (Ca)	24.3		0.50	mg/L	31-DEC-21		
Magnesium (Mg)	8.09		0.50	mg/L	31-DEC-21		
Sodium (Na)	8.17		0.50	mg/L	31-DEC-21		
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	30-DEC-21	1	1.3
Arsenic (As)	3.7		1.0	ug/g	30-DEC-21	11	18
Barium (Ba)	256		1.0	ug/g	30-DEC-21	*210	*220

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2673599-13 TP-12 SS-1							
Sampled By: CLIENT on 15-DEC-21							
Matrix: SOIL							
Metals							
Beryllium (Be)	0.85		0.50	ug/g	30-DEC-21	2.5	2.5
Boron (B)	8.7		5.0	ug/g	30-DEC-21	36	36
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	30-DEC-21	36	36
Cadmium (Cd)	<0.50		0.50	ug/g	30-DEC-21	1	1.2
Chromium (Cr)	69.5		1.0	ug/g	30-DEC-21	*67	70
Cobalt (Co)	17.6		1.0	ug/g	30-DEC-21	19	21
Copper (Cu)	33.6		1.0	ug/g	30-DEC-21	62	92
Lead (Pb)	7.6		1.0	ug/g	30-DEC-21	45	120
Mercury (Hg)	0.0107		0.0050	ug/g	30-DEC-21	0.16	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	30-DEC-21	2	2
Nickel (Ni)	39.9		1.0	ug/g	30-DEC-21	*37	82
Selenium (Se)	<1.0		1.0	ug/g	30-DEC-21	1.2	1.5
Silver (Ag)	<0.20		0.20	ug/g	30-DEC-21	0.5	0.5
Thallium (Tl)	<0.50		0.50	ug/g	30-DEC-21	1	1
Uranium (U)	1.0		1.0	ug/g	30-DEC-21	1.9	2.5
Vanadium (V)	83.3		1.0	ug/g	30-DEC-21	86	86
Zinc (Zn)	90.0		5.0	ug/g	30-DEC-21	290	290
Speciated Metals							
Chromium, Hexavalent	0.53		0.20	ug/g	28-DEC-21	0.66	0.66
Organochlorine Pesticides							
Aldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
alpha-BHC	<0.020		0.020	ug/g	23-DEC-21		
beta-BHC	<0.020		0.020	ug/g	23-DEC-21		
gamma-hexachlorocyclohexane	<0.010		0.010	ug/g	23-DEC-21		0.01
delta-BHC	<0.020		0.020	ug/g	23-DEC-21		
a-chlordane	<0.020		0.020	ug/g	23-DEC-21		
g-chlordane	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDD	<0.020		0.020	ug/g	23-DEC-21		
pp-DDD	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDE	<0.020		0.020	ug/g	23-DEC-21		
pp-DDE	<0.020		0.020	ug/g	23-DEC-21		
op-DDT	<0.020		0.020	ug/g	23-DEC-21		
pp-DDT	<0.020		0.020	ug/g	23-DEC-21		
Dieldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Endosulfan I	<0.020		0.020	ug/g	23-DEC-21		
Endosulfan II	<0.020		0.020	ug/g	23-DEC-21		
Endrin	<0.020		0.020	ug/g	23-DEC-21	0.04	0.04
Heptachlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Heptachlor Epoxide	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Hexachlorobenzene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
Hexachlorobutadiene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
Hexachloroethane	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
Methoxychlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Surrogate: Decachlorobiphenyl	108.3		50-150	%	23-DEC-21		
Surrogate: Tetrachloro-m-xylene	93.5		50-150	%	23-DEC-21		
Herbicides							

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2		
L2673599-13 TP-12 SS-1 Sampled By: CLIENT on 15-DEC-21 Matrix: SOIL									
Herbicides									
Bromoxynil	<0.080		0.080	mg/kg	28-DEC-21				
2,4-D	<0.080		0.080	mg/kg	28-DEC-21				
Dicamba	<0.080		0.080	mg/kg	28-DEC-21				
Dinoseb	<0.080		0.080	mg/kg	28-DEC-21				
MCPA	<0.30		0.30	mg/kg	28-DEC-21				
Mecoprop	<0.30		0.30	mg/kg	28-DEC-21				
Picloram	<0.080		0.080	mg/kg	28-DEC-21				
2,4,5-T	<0.080		0.080	mg/kg	28-DEC-21				
2,4,5-TP	<0.080		0.080	mg/kg	28-DEC-21				
Surrogate: 2,4-Dichlorophenylacetic Acid	124.0		50-130	%	28-DEC-21				
L2673599-14 TP-13 SS-1 Sampled By: CLIENT on 14-DEC-21 Matrix: SOIL						#1	#2		
Physical Tests									
Conductivity	0.249		0.0040	mS/cm	31-DEC-21	0.47	0.57		
% Moisture	27.5		0.25	%	19-DEC-21				
pH	7.06		0.10	pH units	29-DEC-21				
Cyanides									
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051		
Saturated Paste Extractables									
SAR	1.00		0.10	SAR	31-DEC-21	1	2.4		
Calcium (Ca)	13.3		0.50	mg/L	31-DEC-21				
Magnesium (Mg)	8.61		0.50	mg/L	31-DEC-21				
Sodium (Na)	19.0		0.50	mg/L	31-DEC-21				
Metals									
Antimony (Sb)	<1.0		1.0	ug/g	30-DEC-21	1	1.3		
Arsenic (As)	3.2		1.0	ug/g	30-DEC-21	11	18		
Barium (Ba)	382		1.0	ug/g	30-DEC-21	*210	*220		
Beryllium (Be)	0.87		0.50	ug/g	30-DEC-21	2.5	2.5		
Boron (B)	5.8		5.0	ug/g	30-DEC-21	36	36		
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	30-DEC-21	36	36		
Cadmium (Cd)	<0.50		0.50	ug/g	30-DEC-21	1	1.2		
Chromium (Cr)	95.5		1.0	ug/g	30-DEC-21	*67	*70		
Cobalt (Co)	20.8		1.0	ug/g	30-DEC-21	*19	21		
Copper (Cu)	48.8		1.0	ug/g	30-DEC-21	62	92		
Lead (Pb)	6.5		1.0	ug/g	30-DEC-21	45	120		
Mercury (Hg)	0.0128		0.0050	ug/g	30-DEC-21	0.16	0.27		
Molybdenum (Mo)	<1.0		1.0	ug/g	30-DEC-21	2	2		
Nickel (Ni)	53.9		1.0	ug/g	30-DEC-21	*37	82		
Selenium (Se)	<1.0		1.0	ug/g	30-DEC-21	1.2	1.5		
Silver (Ag)	<0.20		0.20	ug/g	30-DEC-21	0.5	0.5		
Thallium (Tl)	<0.50		0.50	ug/g	30-DEC-21	1	1		
Uranium (U)	<1.0		1.0	ug/g	30-DEC-21	1.9	2.5		
Vanadium (V)	96.5		1.0	ug/g	30-DEC-21	*86	*86		
Zinc (Zn)	108		5.0	ug/g	30-DEC-21	290	290		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2
L2673599-14	TP-13 SS-1							
Sampled By:	CLIENT on 14-DEC-21							
Matrix:	SOIL							
Speciated Metals								
	Chromium, Hexavalent	1.00		0.20	ug/g	28-DEC-21	*0.66	*0.66
Organochlorine Pesticides								
	Aldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
	alpha-BHC	<0.020		0.020	ug/g	23-DEC-21		
	beta-BHC	<0.020		0.020	ug/g	23-DEC-21		
	gamma-hexachlorocyclohexane	<0.010		0.010	ug/g	23-DEC-21		0.01
	delta-BHC	<0.020		0.020	ug/g	23-DEC-21		
	a-chlordane	<0.020		0.020	ug/g	23-DEC-21		
	g-chlordane	<0.020		0.020	ug/g	23-DEC-21		
	o,p-DDD	<0.020		0.020	ug/g	23-DEC-21		
	pp-DDD	<0.020		0.020	ug/g	23-DEC-21		
	o,p-DDE	<0.020		0.020	ug/g	23-DEC-21		
	pp-DDE	<0.020		0.020	ug/g	23-DEC-21		
	op-DDT	<0.020		0.020	ug/g	23-DEC-21		
	pp-DDT	<0.020		0.020	ug/g	23-DEC-21		
	Dieldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
	Endosulfan I	<0.020		0.020	ug/g	23-DEC-21		
	Endosulfan II	<0.020		0.020	ug/g	23-DEC-21		
	Endrin	<0.020		0.020	ug/g	23-DEC-21	0.04	0.04
	Heptachlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
	Heptachlor Epoxide	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
	Hexachlorobenzene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
	Hexachlorobutadiene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
	Hexachloroethane	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
	Methoxychlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
	Surrogate: Decachlorobiphenyl	110.7		50-150	%	23-DEC-21		
	Surrogate: Tetrachloro-m-xylene	93.8		50-150	%	23-DEC-21		
Herbicides								
	Bromoxynil	<0.080		0.080	mg/kg	28-DEC-21		
	2,4-D	<0.080		0.080	mg/kg	28-DEC-21		
	Dicamba	<0.080		0.080	mg/kg	28-DEC-21		
	Dinoseb	<0.080		0.080	mg/kg	28-DEC-21		
	MCPA	<0.30		0.30	mg/kg	28-DEC-21		
	Mecoprop	<0.30		0.30	mg/kg	28-DEC-21		
	Picloram	<0.080		0.080	mg/kg	28-DEC-21		
	2,4,5-T	<0.080		0.080	mg/kg	28-DEC-21		
	2,4,5-TP	<0.080		0.080	mg/kg	28-DEC-21		
	Surrogate: 2,4-Dichlorophenylacetic Acid	120.0		50-130	%	28-DEC-21		
L2673599-15	TP-14 SS-1							
Sampled By:	CLIENT on 14-DEC-21							
Matrix:	SOIL							
Physical Tests								
	Conductivity	0.189		0.0040	mS/cm	31-DEC-21	0.47	0.57
	% Moisture	25.5		0.25	%	19-DEC-21		
	pH	7.06		0.10	pH units	29-DEC-21		
Cyanides								

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
L2673599-15	TP-14 SS-1									
Sampled By:	CLIENT on 14-DEC-21									
Matrix:	SOIL						#1	#2		
Cyanides										
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051		
Saturated Paste Extractables										
	SAR	2.12		0.10	SAR	31-DEC-21	*1	2.4		
	Calcium (Ca)	6.22		0.50	mg/L	31-DEC-21				
	Magnesium (Mg)	6.24		0.50	mg/L	31-DEC-21				
	Sodium (Na)	31.3		0.50	mg/L	31-DEC-21				
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	30-DEC-21	1	1.3		
	Arsenic (As)	3.4		1.0	ug/g	30-DEC-21	11	18		
	Barium (Ba)	345		1.0	ug/g	30-DEC-21	*210	*220		
	Beryllium (Be)	1.01		0.50	ug/g	30-DEC-21	2.5	2.5		
	Boron (B)	8.0		5.0	ug/g	30-DEC-21	36	36		
	Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	30-DEC-21	36	36		
	Cadmium (Cd)	<0.50		0.50	ug/g	30-DEC-21	1	1.2		
	Chromium (Cr)	110		1.0	ug/g	30-DEC-21	*67	*70		
	Cobalt (Co)	20.5		1.0	ug/g	30-DEC-21	*19	21		
	Copper (Cu)	44.4		1.0	ug/g	30-DEC-21	62	92		
	Lead (Pb)	8.2		1.0	ug/g	30-DEC-21	45	120		
	Mercury (Hg)	0.0169		0.0050	ug/g	30-DEC-21	0.16	0.27		
	Molybdenum (Mo)	<1.0		1.0	ug/g	30-DEC-21	2	2		
	Nickel (Ni)	58.9		1.0	ug/g	30-DEC-21	*37	82		
	Selenium (Se)	<1.0		1.0	ug/g	30-DEC-21	1.2	1.5		
	Silver (Ag)	<0.20		0.20	ug/g	30-DEC-21	0.5	0.5		
	Thallium (Tl)	<0.50		0.50	ug/g	30-DEC-21	1	1		
	Uranium (U)	1.0		1.0	ug/g	30-DEC-21	1.9	2.5		
	Vanadium (V)	97.0		1.0	ug/g	30-DEC-21	*86	*86		
	Zinc (Zn)	111		5.0	ug/g	30-DEC-21	290	290		
Speciated Metals										
	Chromium, Hexavalent	1.18		0.20	ug/g	28-DEC-21	*0.66	*0.66		
L2673599-16	TP-15 SS-1									
Sampled By:	CLIENT on 14-DEC-21									
Matrix:	SOIL						#1	#2		
Physical Tests										
	Conductivity	0.235		0.0040	mS/cm	31-DEC-21	0.47	0.57		
	% Moisture	28.3		0.25	%	19-DEC-21				
	pH	7.47		0.10	pH units	29-DEC-21				
Cyanides										
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051		
Saturated Paste Extractables										
	SAR	0.81		0.10	SAR	31-DEC-21	1	2.4		
	Calcium (Ca)	14.4		0.50	mg/L	31-DEC-21				
	Magnesium (Mg)	8.79		0.50	mg/L	31-DEC-21				
	Sodium (Na)	15.9		0.50	mg/L	31-DEC-21				
Metals										

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2
L2673599-16	TP-15 SS-1							
Sampled By:	CLIENT on 14-DEC-21							
Matrix:	SOIL							
Metals								
	Antimony (Sb)	<1.0		1.0	ug/g	30-DEC-21	1	1.3
	Arsenic (As)	3.4		1.0	ug/g	30-DEC-21	11	18
	Barium (Ba)	385		1.0	ug/g	30-DEC-21	*210	*220
	Beryllium (Be)	0.97		0.50	ug/g	30-DEC-21	2.5	2.5
	Boron (B)	6.4		5.0	ug/g	30-DEC-21	36	36
	Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	30-DEC-21	36	36
	Cadmium (Cd)	<0.50		0.50	ug/g	30-DEC-21	1	1.2
	Chromium (Cr)	105		1.0	ug/g	30-DEC-21	*67	*70
	Cobalt (Co)	22.6		1.0	ug/g	30-DEC-21	*19	*21
	Copper (Cu)	48.9		1.0	ug/g	30-DEC-21	62	92
	Lead (Pb)	7.4		1.0	ug/g	30-DEC-21	45	120
	Mercury (Hg)	0.0146		0.0050	ug/g	30-DEC-21	0.16	0.27
	Molybdenum (Mo)	<1.0		1.0	ug/g	30-DEC-21	2	2
	Nickel (Ni)	58.1		1.0	ug/g	30-DEC-21	*37	82
	Selenium (Se)	<1.0		1.0	ug/g	30-DEC-21	1.2	1.5
	Silver (Ag)	<0.20		0.20	ug/g	30-DEC-21	0.5	0.5
	Thallium (Tl)	<0.50		0.50	ug/g	30-DEC-21	1	1
	Uranium (U)	<1.0		1.0	ug/g	30-DEC-21	1.9	2.5
	Vanadium (V)	104		1.0	ug/g	30-DEC-21	*86	*86
	Zinc (Zn)	113		5.0	ug/g	30-DEC-21	290	290
Speciated Metals								
	Chromium, Hexavalent	0.94		0.20	ug/g	28-DEC-21	*0.66	*0.66
L2673599-17	TP-16 SS-1							
Sampled By:	CLIENT on 14-DEC-21							
Matrix:	SOIL							
Physical Tests								
	Conductivity	0.200		0.0040	mS/cm	31-DEC-21	0.47	0.57
	% Moisture	26.7		0.25	%	19-DEC-21		
	pH	7.35		0.10	pH units	29-DEC-21		
Cyanides								
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051
Saturated Paste Extractables								
	SAR	2.19		0.10	SAR	31-DEC-21	*1	2.4
	Calcium (Ca)	4.88		0.50	mg/L	31-DEC-21		
	Magnesium (Mg)	3.85		0.50	mg/L	31-DEC-21		
	Sodium (Na)	26.7		0.50	mg/L	31-DEC-21		
Metals								
	Antimony (Sb)	<1.0		1.0	ug/g	30-DEC-21	1	1.3
	Arsenic (As)	3.8		1.0	ug/g	30-DEC-21	11	18
	Barium (Ba)	334		1.0	ug/g	30-DEC-21	*210	*220
	Beryllium (Be)	1.06		0.50	ug/g	30-DEC-21	2.5	2.5
	Boron (B)	10.4		5.0	ug/g	30-DEC-21	36	36
	Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	30-DEC-21	36	36
	Cadmium (Cd)	<0.50		0.50	ug/g	30-DEC-21	1	1.2

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* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2673599-17	TP-16 SS-1							
Sampled By:	CLIENT on 14-DEC-21							
Matrix:	SOIL							
Metals								
	Chromium (Cr)	110		1.0	ug/g	30-DEC-21	*67	*70
	Cobalt (Co)	24.0		1.0	ug/g	30-DEC-21	*19	*21
	Copper (Cu)	49.3		1.0	ug/g	30-DEC-21	62	92
	Lead (Pb)	9.1		1.0	ug/g	30-DEC-21	45	120
	Mercury (Hg)	0.0162		0.0050	ug/g	30-DEC-21	0.16	0.27
	Molybdenum (Mo)	<1.0		1.0	ug/g	30-DEC-21	2	2
	Nickel (Ni)	65.3		1.0	ug/g	30-DEC-21	*37	82
	Selenium (Se)	<1.0		1.0	ug/g	30-DEC-21	1.2	1.5
	Silver (Ag)	<0.20		0.20	ug/g	30-DEC-21	0.5	0.5
	Thallium (Tl)	<0.50		0.50	ug/g	30-DEC-21	1	1
	Uranium (U)	<1.0		1.0	ug/g	30-DEC-21	1.9	2.5
	Vanadium (V)	97.3		1.0	ug/g	30-DEC-21	*86	*86
	Zinc (Zn)	100		5.0	ug/g	30-DEC-21	290	290
Speciated Metals								
	Chromium, Hexavalent	0.83		0.20	ug/g	28-DEC-21	*0.66	*0.66
L2673599-18	TP-17 SS-1							
Sampled By:	CLIENT on 14-DEC-21							
Matrix:	SOIL							
Physical Tests								
	Conductivity	0.245		0.0040	mS/cm	31-DEC-21	0.47	0.57
	% Moisture	26.7		0.25	%	19-DEC-21		
	pH	7.31		0.10	pH units	29-DEC-21		
Cyanides								
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051
Saturated Paste Extractables								
	SAR	0.83		0.10	SAR	31-DEC-21	1	2.4
	Calcium (Ca)	11.5		0.50	mg/L	31-DEC-21		
	Magnesium (Mg)	10.6		0.50	mg/L	31-DEC-21		
	Sodium (Na)	16.2		0.50	mg/L	31-DEC-21		
Metals								
	Antimony (Sb)	<1.0		1.0	ug/g	30-DEC-21	1	1.3
	Arsenic (As)	3.2		1.0	ug/g	30-DEC-21	11	18
	Barium (Ba)	354		1.0	ug/g	30-DEC-21	*210	*220
	Beryllium (Be)	0.87		0.50	ug/g	30-DEC-21	2.5	2.5
	Boron (B)	7.0		5.0	ug/g	30-DEC-21	36	36
	Boron (B), Hot Water Ext.	0.10		0.10	ug/g	30-DEC-21	36	36
	Cadmium (Cd)	<0.50		0.50	ug/g	30-DEC-21	1	1.2
	Chromium (Cr)	98.9		1.0	ug/g	30-DEC-21	*67	*70
	Cobalt (Co)	21.6		1.0	ug/g	30-DEC-21	*19	*21
	Copper (Cu)	44.9		1.0	ug/g	30-DEC-21	62	92
	Lead (Pb)	7.0		1.0	ug/g	30-DEC-21	45	120
	Mercury (Hg)	0.0129		0.0050	ug/g	30-DEC-21	0.16	0.27
	Molybdenum (Mo)	<1.0		1.0	ug/g	30-DEC-21	2	2
	Nickel (Ni)	55.9		1.0	ug/g	30-DEC-21	*37	82

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2673599-18 TP-17 SS-1							
Sampled By: CLIENT on 14-DEC-21							
Matrix: SOIL							
Metals							
Selenium (Se)	<1.0		1.0	ug/g	30-DEC-21	1.2	1.5
Silver (Ag)	<0.20		0.20	ug/g	30-DEC-21	0.5	0.5
Thallium (Tl)	<0.50		0.50	ug/g	30-DEC-21	1	1
Uranium (U)	<1.0		1.0	ug/g	30-DEC-21	1.9	2.5
Vanadium (V)	99.7		1.0	ug/g	30-DEC-21	*86	*86
Zinc (Zn)	106		5.0	ug/g	30-DEC-21	290	290
Speciated Metals							
Chromium, Hexavalent	0.40		0.20	ug/g	28-DEC-21	0.66	0.66
Organochlorine Pesticides							
Aldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
alpha-BHC	<0.020		0.020	ug/g	23-DEC-21		
beta-BHC	<0.020		0.020	ug/g	23-DEC-21		
gamma-hexachlorocyclohexane	<0.010		0.010	ug/g	23-DEC-21		0.01
delta-BHC	<0.020		0.020	ug/g	23-DEC-21		
a-chlordane	<0.020		0.020	ug/g	23-DEC-21		
g-chlordane	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDD	<0.020		0.020	ug/g	23-DEC-21		
pp-DDD	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDE	<0.020		0.020	ug/g	23-DEC-21		
pp-DDE	<0.020		0.020	ug/g	23-DEC-21		
op-DDT	<0.020		0.020	ug/g	23-DEC-21		
pp-DDT	<0.020		0.020	ug/g	23-DEC-21		
Dieldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Endosulfan I	<0.020		0.020	ug/g	23-DEC-21		
Endosulfan II	<0.020		0.020	ug/g	23-DEC-21		
Endrin	<0.020		0.020	ug/g	23-DEC-21	0.04	0.04
Heptachlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Heptachlor Epoxide	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Hexachlorobenzene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
Hexachlorobutadiene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
Hexachloroethane	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
Methoxychlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Surrogate: Decachlorobiphenyl	112.6		50-150	%	23-DEC-21		
Surrogate: Tetrachloro-m-xylene	94.9		50-150	%	23-DEC-21		
Herbicides							
Bromoxynil	<0.080		0.080	mg/kg	28-DEC-21		
2,4-D	<0.080		0.080	mg/kg	28-DEC-21		
Dicamba	<0.080		0.080	mg/kg	28-DEC-21		
Dinoseb	<0.080		0.080	mg/kg	28-DEC-21		
MCPA	<0.30		0.30	mg/kg	28-DEC-21		
Mecoprop	<0.30		0.30	mg/kg	28-DEC-21		
Picloram	<0.080		0.080	mg/kg	28-DEC-21		
2,4,5-T	<0.080		0.080	mg/kg	28-DEC-21		
2,4,5-TP	<0.080		0.080	mg/kg	28-DEC-21		
Surrogate: 2,4-Dichlorophenylacetic Acid	117.0		50-130	%	28-DEC-21		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2673599-19 TP-18 SS-1							
Sampled By: CLIENT on 14-DEC-21							
Matrix: SOIL							
Physical Tests							
Conductivity	0.305		0.0040	mS/cm	31-DEC-21	0.47	0.57
% Moisture	27.7		0.25	%	19-DEC-21		
pH	7.34		0.10	pH units	29-DEC-21		
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051
Saturated Paste Extractables							
SAR	0.79		0.10	SAR	31-DEC-21	1	2.4
Calcium (Ca)	18.7		0.50	mg/L	31-DEC-21		
Magnesium (Mg)	13.4		0.50	mg/L	31-DEC-21		
Sodium (Na)	18.3		0.50	mg/L	31-DEC-21		
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	30-DEC-21	1	1.3
Arsenic (As)	3.5		1.0	ug/g	30-DEC-21	11	18
Barium (Ba)	409		1.0	ug/g	30-DEC-21	*210	*220
Beryllium (Be)	0.92		0.50	ug/g	30-DEC-21	2.5	2.5
Boron (B)	6.2		5.0	ug/g	30-DEC-21	36	36
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	30-DEC-21	36	36
Cadmium (Cd)	<0.50		0.50	ug/g	30-DEC-21	1	1.2
Chromium (Cr)	105		1.0	ug/g	30-DEC-21	*67	*70
Cobalt (Co)	25.2		1.0	ug/g	30-DEC-21	*19	*21
Copper (Cu)	54.4		1.0	ug/g	30-DEC-21	62	92
Lead (Pb)	7.1		1.0	ug/g	30-DEC-21	45	120
Mercury (Hg)	0.0104		0.0050	ug/g	30-DEC-21	0.16	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	30-DEC-21	2	2
Nickel (Ni)	61.3		1.0	ug/g	30-DEC-21	*37	82
Selenium (Se)	<1.0		1.0	ug/g	30-DEC-21	1.2	1.5
Silver (Ag)	<0.20		0.20	ug/g	30-DEC-21	0.5	0.5
Thallium (Tl)	<0.50		0.50	ug/g	30-DEC-21	1	1
Uranium (U)	<1.0		1.0	ug/g	30-DEC-21	1.9	2.5
Vanadium (V)	114		1.0	ug/g	30-DEC-21	*86	*86
Zinc (Zn)	119		5.0	ug/g	30-DEC-21	290	290
Speciated Metals							
Chromium, Hexavalent	0.45		0.20	ug/g	28-DEC-21	0.66	0.66
Organochlorine Pesticides							
Aldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
alpha-BHC	<0.020		0.020	ug/g	23-DEC-21		
beta-BHC	<0.020		0.020	ug/g	23-DEC-21		
gamma-hexachlorocyclohexane	<0.010		0.010	ug/g	23-DEC-21		0.01
delta-BHC	<0.020		0.020	ug/g	23-DEC-21		
a-chlordane	<0.020		0.020	ug/g	23-DEC-21		
g-chlordane	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDD	<0.020		0.020	ug/g	23-DEC-21		
pp-DDD	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDE	<0.020		0.020	ug/g	23-DEC-21		
pp-DDE	<0.020		0.020	ug/g	23-DEC-21		
op-DDT	<0.020		0.020	ug/g	23-DEC-21		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2		
L2673599-19	TP-18 SS-1									
Sampled By:	CLIENT on 14-DEC-21									
Matrix:	SOIL									
Organochlorine Pesticides										
	pp-DDT	<0.020		0.020	ug/g	23-DEC-21				
	Dieldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05		
	Endosulfan I	<0.020		0.020	ug/g	23-DEC-21				
	Endosulfan II	<0.020		0.020	ug/g	23-DEC-21				
	Endrin	<0.020		0.020	ug/g	23-DEC-21	0.04	0.04		
	Heptachlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05		
	Heptachlor Epoxide	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05		
	Hexachlorobenzene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01		
	Hexachlorobutadiene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01		
	Hexachloroethane	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01		
	Methoxychlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05		
	Surrogate: Decachlorobiphenyl	113.8		50-150	%	23-DEC-21				
	Surrogate: Tetrachloro-m-xylene	95.9		50-150	%	23-DEC-21				
Herbicides										
	Bromoxynil	<0.080		0.080	mg/kg	28-DEC-21				
	2,4-D	<0.080		0.080	mg/kg	28-DEC-21				
	Dicamba	<0.080		0.080	mg/kg	28-DEC-21				
	Dinoseb	<0.080		0.080	mg/kg	28-DEC-21				
	MCPA	<0.30		0.30	mg/kg	28-DEC-21				
	Mecoprop	<0.30		0.30	mg/kg	28-DEC-21				
	Picloram	<0.080		0.080	mg/kg	28-DEC-21				
	2,4,5-T	<0.080		0.080	mg/kg	28-DEC-21				
	2,4,5-TP	<0.080		0.080	mg/kg	28-DEC-21				
	Surrogate: 2,4-Dichlorophenylacetic Acid	112.0		50-130	%	28-DEC-21				
L2673599-20	TP-19 SS-1									
Sampled By:	CLIENT on 14-DEC-21									
Matrix:	SOIL						#1	#2		
Physical Tests										
	Conductivity	0.214		0.0040	mS/cm	31-DEC-21	0.47	0.57		
	% Moisture	25.6		0.25	%	19-DEC-21				
	pH	7.61		0.10	pH units	29-DEC-21				
Cyanides										
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051		
Saturated Paste Extractables										
	SAR	1.74		0.10	SAR	31-DEC-21	*1	2.4		
	Calcium (Ca)	6.72		0.50	mg/L	31-DEC-21				
	Magnesium (Mg)	4.85		0.50	mg/L	31-DEC-21				
	Sodium (Na)	24.3		0.50	mg/L	31-DEC-21				
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	30-DEC-21	1	1.3		
	Arsenic (As)	3.5		1.0	ug/g	30-DEC-21	11	18		
	Barium (Ba)	418		1.0	ug/g	30-DEC-21	*210	*220		
	Beryllium (Be)	0.94		0.50	ug/g	30-DEC-21	2.5	2.5		
	Boron (B)	6.6		5.0	ug/g	30-DEC-21	36	36		
	Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	30-DEC-21	36	36		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2673599-20	TP-19 SS-1							
Sampled By:	CLIENT on 14-DEC-21							
Matrix:	SOIL							
Metals								
	Cadmium (Cd)	<0.50		0.50	ug/g	30-DEC-21	1	1.2
	Chromium (Cr)	112		1.0	ug/g	30-DEC-21	*67	*70
	Cobalt (Co)	24.6		1.0	ug/g	30-DEC-21	*19	*21
	Copper (Cu)	53.6		1.0	ug/g	30-DEC-21	62	92
	Lead (Pb)	7.4		1.0	ug/g	30-DEC-21	45	120
	Mercury (Hg)	0.0112		0.0050	ug/g	30-DEC-21	0.16	0.27
	Molybdenum (Mo)	<1.0		1.0	ug/g	30-DEC-21	2	2
	Nickel (Ni)	63.0		1.0	ug/g	30-DEC-21	*37	82
	Selenium (Se)	<1.0		1.0	ug/g	30-DEC-21	1.2	1.5
	Silver (Ag)	<0.20		0.20	ug/g	30-DEC-21	0.5	0.5
	Thallium (Tl)	<0.50		0.50	ug/g	30-DEC-21	1	1
	Uranium (U)	<1.0		1.0	ug/g	30-DEC-21	1.9	2.5
	Vanadium (V)	115		1.0	ug/g	30-DEC-21	*86	*86
	Zinc (Zn)	116		5.0	ug/g	30-DEC-21	290	290
Speciated Metals								
	Chromium, Hexavalent	0.68		0.20	ug/g	28-DEC-21	*0.66	*0.66
L2673599-21	TP-20 SS-1							
Sampled By:	CLIENT on 14-DEC-21							
Matrix:	SOIL							
Physical Tests								
	Conductivity	0.117		0.0040	mS/cm	31-DEC-21	0.47	0.57
	% Moisture	26.1		0.25	%	19-DEC-21		
	pH	7.35		0.10	pH units	29-DEC-21		
Cyanides								
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051
Saturated Paste Extractables								
	SAR	1.24		0.10	SAR	31-DEC-21	*1	2.4
	Calcium (Ca)	3.85		0.50	mg/L	31-DEC-21		
	Magnesium (Mg)	3.41		0.50	mg/L	31-DEC-21		
	Sodium (Na)	13.9		0.50	mg/L	31-DEC-21		
Metals								
	Antimony (Sb)	<1.0		1.0	ug/g	30-DEC-21	1	1.3
	Arsenic (As)	3.3		1.0	ug/g	30-DEC-21	11	18
	Barium (Ba)	273		1.0	ug/g	30-DEC-21	*210	*220
	Beryllium (Be)	1.01		0.50	ug/g	30-DEC-21	2.5	2.5
	Boron (B)	8.9		5.0	ug/g	30-DEC-21	36	36
	Boron (B), Hot Water Ext.	0.10		0.10	ug/g	30-DEC-21	36	36
	Cadmium (Cd)	<0.50		0.50	ug/g	30-DEC-21	1	1.2
	Chromium (Cr)	97.8		1.0	ug/g	30-DEC-21	*67	*70
	Cobalt (Co)	19.6		1.0	ug/g	30-DEC-21	*19	21
	Copper (Cu)	41.4		1.0	ug/g	30-DEC-21	62	92
	Lead (Pb)	8.3		1.0	ug/g	30-DEC-21	45	120
	Mercury (Hg)	0.0109		0.0050	ug/g	30-DEC-21	0.16	0.27
	Molybdenum (Mo)	<1.0		1.0	ug/g	30-DEC-21	2	2

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2
L2673599-21	TP-20 SS-1							
Sampled By:	CLIENT on 14-DEC-21							
Matrix:	SOIL							
Metals								
	Nickel (Ni)	56.0		1.0	ug/g	30-DEC-21	*37	82
	Selenium (Se)	<1.0		1.0	ug/g	30-DEC-21	1.2	1.5
	Silver (Ag)	<0.20		0.20	ug/g	30-DEC-21	0.5	0.5
	Thallium (Tl)	<0.50		0.50	ug/g	30-DEC-21	1	1
	Uranium (U)	<1.0		1.0	ug/g	30-DEC-21	1.9	2.5
	Vanadium (V)	89.3		1.0	ug/g	30-DEC-21	*86	*86
	Zinc (Zn)	89.5		5.0	ug/g	30-DEC-21	290	290
Speciated Metals								
	Chromium, Hexavalent	0.62		0.20	ug/g	28-DEC-21	0.66	0.66
Organochlorine Pesticides								
	Aldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
	alpha-BHC	<0.020		0.020	ug/g	23-DEC-21		
	beta-BHC	<0.020		0.020	ug/g	23-DEC-21		
	gamma-hexachlorocyclohexane	<0.010		0.010	ug/g	23-DEC-21		0.01
	delta-BHC	<0.020		0.020	ug/g	23-DEC-21		
	a-chlordane	<0.020		0.020	ug/g	23-DEC-21		
	g-chlordane	<0.020		0.020	ug/g	23-DEC-21		
	o,p-DDD	<0.020		0.020	ug/g	23-DEC-21		
	pp-DDD	<0.020		0.020	ug/g	23-DEC-21		
	o,p-DDE	<0.020		0.020	ug/g	23-DEC-21		
	pp-DDE	<0.020		0.020	ug/g	23-DEC-21		
	op-DDT	<0.020		0.020	ug/g	23-DEC-21		
	pp-DDT	<0.020		0.020	ug/g	23-DEC-21		
	Dieldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
	Endosulfan I	<0.020		0.020	ug/g	23-DEC-21		
	Endosulfan II	<0.020		0.020	ug/g	23-DEC-21		
	Endrin	<0.020		0.020	ug/g	23-DEC-21	0.04	0.04
	Heptachlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
	Heptachlor Epoxide	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
	Hexachlorobenzene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
	Hexachlorobutadiene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
	Hexachloroethane	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
	Methoxychlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
	Surrogate: Decachlorobiphenyl	112.6		50-150	%	23-DEC-21		
	Surrogate: Tetrachloro-m-xylene	95.2		50-150	%	23-DEC-21		
Herbicides								
	Bromoxynil	<0.080		0.080	mg/kg	28-DEC-21		
	2,4-D	<0.080		0.080	mg/kg	28-DEC-21		
	Dicamba	<0.080		0.080	mg/kg	28-DEC-21		
	Dinoseb	<0.080		0.080	mg/kg	28-DEC-21		
	MCPA	<0.30		0.30	mg/kg	28-DEC-21		
	Mecoprop	<0.30		0.30	mg/kg	28-DEC-21		
	Picloram	<0.080		0.080	mg/kg	28-DEC-21		
	2,4,5-T	<0.080		0.080	mg/kg	28-DEC-21		
	2,4,5-TP	<0.080		0.080	mg/kg	28-DEC-21		
	Surrogate: 2,4-Dichlorophenylacetic Acid	104.0		50-130	%	28-DEC-21		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2673599-22 DUP-1 Sampled By: CLIENT on 14-DEC-21 Matrix: SOIL							
Physical Tests							
Conductivity	0.278		0.0040	mS/cm	31-DEC-21	0.47	0.57
% Moisture	25.9		0.25	%	19-DEC-21		
pH	7.58		0.10	pH units	23-DEC-21		
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	23-DEC-21	0.051	0.051
Saturated Paste Extractables							
SAR	0.49		0.10	SAR	31-DEC-21	1	2.4
Calcium (Ca)	31.4		0.50	mg/L	31-DEC-21		
Magnesium (Mg)	9.93		0.50	mg/L	31-DEC-21		
Sodium (Na)	12.3		0.50	mg/L	31-DEC-21		
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	30-DEC-21	1	1.3
Arsenic (As)	3.3		1.0	ug/g	30-DEC-21	11	18
Barium (Ba)	276		1.0	ug/g	30-DEC-21	*210	*220
Beryllium (Be)	0.99		0.50	ug/g	30-DEC-21	2.5	2.5
Boron (B)	9.1		5.0	ug/g	30-DEC-21	36	36
Boron (B), Hot Water Ext.	0.54		0.10	ug/g	30-DEC-21	36	36
Cadmium (Cd)	<0.50		0.50	ug/g	30-DEC-21	1	1.2
Chromium (Cr)	90.3		1.0	ug/g	30-DEC-21	*67	*70
Cobalt (Co)	18.3		1.0	ug/g	30-DEC-21	19	21
Copper (Cu)	35.8		1.0	ug/g	30-DEC-21	62	92
Lead (Pb)	9.2		1.0	ug/g	30-DEC-21	45	120
Mercury (Hg)	0.0155		0.0050	ug/g	30-DEC-21	0.16	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	30-DEC-21	2	2
Nickel (Ni)	49.4		1.0	ug/g	30-DEC-21	*37	82
Selenium (Se)	<1.0		1.0	ug/g	30-DEC-21	1.2	1.5
Silver (Ag)	<0.20		0.20	ug/g	30-DEC-21	0.5	0.5
Thallium (Tl)	<0.50		0.50	ug/g	30-DEC-21	1	1
Uranium (U)	1.0		1.0	ug/g	30-DEC-21	1.9	2.5
Vanadium (V)	86.3		1.0	ug/g	30-DEC-21	*86	*86
Zinc (Zn)	96.9		5.0	ug/g	30-DEC-21	290	290
Speciated Metals							
Chromium, Hexavalent	0.96		0.20	ug/g	28-DEC-21	*0.66	*0.66
Organochlorine Pesticides							
Aldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
alpha-BHC	<0.020		0.020	ug/g	23-DEC-21		
beta-BHC	<0.020		0.020	ug/g	23-DEC-21		
gamma-hexachlorocyclohexane	<0.010		0.010	ug/g	23-DEC-21		0.01
delta-BHC	<0.020		0.020	ug/g	23-DEC-21		
a-chlordane	<0.020		0.020	ug/g	23-DEC-21		
g-chlordane	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDD	<0.020		0.020	ug/g	23-DEC-21		
pp-DDD	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDE	<0.020		0.020	ug/g	23-DEC-21		
pp-DDE	<0.020		0.020	ug/g	23-DEC-21		
op-DDT	<0.020		0.020	ug/g	23-DEC-21		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2673599-22	DUP-1							
Sampled By:	CLIENT on 14-DEC-21							
Matrix:	SOIL							
Organochlorine Pesticides								
	pp-DDT	<0.020		0.020	ug/g	23-DEC-21		
	Dieldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
	Endosulfan I	<0.020		0.020	ug/g	23-DEC-21		
	Endosulfan II	<0.020		0.020	ug/g	23-DEC-21		
	Endrin	<0.020		0.020	ug/g	23-DEC-21	0.04	0.04
	Heptachlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
	Heptachlor Epoxide	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
	Hexachlorobenzene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
	Hexachlorobutadiene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
	Hexachloroethane	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
	Methoxychlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
	Surrogate: Decachlorobiphenyl	100.1		50-150	%	23-DEC-21		
	Surrogate: Tetrachloro-m-xylene	93.6		50-150	%	23-DEC-21		
Herbicides								
	Bromoxynil	<0.080		0.080	mg/kg	28-DEC-21		
	2,4-D	<0.080		0.080	mg/kg	28-DEC-21		
	Dicamba	<0.080		0.080	mg/kg	28-DEC-21		
	Dinoseb	<0.080		0.080	mg/kg	28-DEC-21		
	MCPA	<0.30		0.30	mg/kg	28-DEC-21		
	Mecoprop	<0.30		0.30	mg/kg	28-DEC-21		
	Picloram	<0.080		0.080	mg/kg	28-DEC-21		
	2,4,5-T	<0.080		0.080	mg/kg	28-DEC-21		
	2,4,5-TP	<0.080		0.080	mg/kg	28-DEC-21		
	Surrogate: 2,4-Dichlorophenylacetic Acid	123.0		50-130	%	28-DEC-21		
L2673599-23	DUP-2							
Sampled By:	CLIENT on 14-DEC-21							
Matrix:	SOIL							
							#1	#2
Physical Tests								
	Conductivity	0.308		0.0040	mS/cm	31-DEC-21	0.47	0.57
	% Moisture	25.8		0.25	%	19-DEC-21		
	pH	7.44		0.10	pH units	23-DEC-21		
Cyanides								
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	28-DEC-21	0.051	0.051
Saturated Paste Extractables								
	SAR	0.40		0.10	SAR	31-DEC-21	1	2.4
	Calcium (Ca)	38.0		0.50	mg/L	31-DEC-21		
	Magnesium (Mg)	11.1		0.50	mg/L	31-DEC-21		
	Sodium (Na)	10.8		0.50	mg/L	31-DEC-21		
Metals								
	Antimony (Sb)	<1.0		1.0	ug/g	30-DEC-21	1	1.3
	Arsenic (As)	3.8		1.0	ug/g	30-DEC-21	11	18
	Barium (Ba)	275		1.0	ug/g	30-DEC-21	*210	*220
	Beryllium (Be)	0.90		0.50	ug/g	30-DEC-21	2.5	2.5
	Boron (B)	9.0		5.0	ug/g	30-DEC-21	36	36
	Boron (B), Hot Water Ext.	0.10		0.10	ug/g	30-DEC-21	36	36

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2673599-23 DUP-2							
Sampled By: CLIENT on 14-DEC-21							
Matrix: SOIL							
Metals							
Cadmium (Cd)	<0.50		0.50	ug/g	30-DEC-21	1	1.2
Chromium (Cr)	80.3		1.0	ug/g	30-DEC-21	*67	*70
Cobalt (Co)	19.1		1.0	ug/g	30-DEC-21	*19	21
Copper (Cu)	35.9		1.0	ug/g	30-DEC-21	62	92
Lead (Pb)	8.6		1.0	ug/g	30-DEC-21	45	120
Mercury (Hg)	0.0137		0.0050	ug/g	30-DEC-21	0.16	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	30-DEC-21	2	2
Nickel (Ni)	44.8		1.0	ug/g	30-DEC-21	*37	82
Selenium (Se)	<1.0		1.0	ug/g	30-DEC-21	1.2	1.5
Silver (Ag)	<0.20		0.20	ug/g	30-DEC-21	0.5	0.5
Thallium (Tl)	<0.50		0.50	ug/g	30-DEC-21	1	1
Uranium (U)	1.1		1.0	ug/g	30-DEC-21	1.9	2.5
Vanadium (V)	86.1		1.0	ug/g	30-DEC-21	*86	*86
Zinc (Zn)	93.9		5.0	ug/g	30-DEC-21	290	290
Speciated Metals							
Chromium, Hexavalent	0.40		0.20	ug/g	28-DEC-21	0.66	0.66
Organochlorine Pesticides							
Aldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
alpha-BHC	<0.020		0.020	ug/g	23-DEC-21		
beta-BHC	<0.020		0.020	ug/g	23-DEC-21		
gamma-hexachlorocyclohexane	<0.010		0.010	ug/g	23-DEC-21		0.01
delta-BHC	<0.020		0.020	ug/g	23-DEC-21		
a-chlordane	<0.020		0.020	ug/g	23-DEC-21		
g-chlordane	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDD	<0.020		0.020	ug/g	23-DEC-21		
pp-DDD	<0.020		0.020	ug/g	23-DEC-21		
o,p-DDE	<0.020		0.020	ug/g	23-DEC-21		
pp-DDE	<0.020		0.020	ug/g	23-DEC-21		
op-DDT	<0.020		0.020	ug/g	23-DEC-21		
pp-DDT	<0.020		0.020	ug/g	23-DEC-21		
Dieldrin	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Endosulfan I	<0.020		0.020	ug/g	23-DEC-21		
Endosulfan II	<0.020		0.020	ug/g	23-DEC-21		
Endrin	<0.020		0.020	ug/g	23-DEC-21	0.04	0.04
Heptachlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Heptachlor Epoxide	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Hexachlorobenzene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
Hexachlorobutadiene	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
Hexachloroethane	<0.010		0.010	ug/g	23-DEC-21	0.01	0.01
Methoxychlor	<0.020		0.020	ug/g	23-DEC-21	0.05	0.05
Surrogate: Decachlorobiphenyl	103.5		50-150	%	23-DEC-21		
Surrogate: Tetrachloro-m-xylene	91.9		50-150	%	23-DEC-21		
Herbicides							
Bromoxynil	<0.080		0.080	mg/kg	28-DEC-21		
2,4-D	<0.080		0.080	mg/kg	28-DEC-21		
Dicamba	<0.080		0.080	mg/kg	28-DEC-21		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2		
L2673599-23	DUP-2									
Sampled By:	CLIENT on 14-DEC-21									
Matrix:	SOIL									
Herbicides										
	Dinoseb	<0.080		0.080	mg/kg	28-DEC-21				
	MCPA	<0.30		0.30	mg/kg	28-DEC-21				
	Mecoprop	<0.30		0.30	mg/kg	28-DEC-21				
	Picloram	<0.080		0.080	mg/kg	28-DEC-21				
	2,4,5-T	<0.080		0.080	mg/kg	28-DEC-21				
	2,4,5-TP	<0.080		0.080	mg/kg	28-DEC-21				
	Surrogate: 2,4-Dichlorophenylacetic Acid	107.0		50-130	%	28-DEC-21				

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
FR4	As per applicable reference method(s), soil:water ratio for Fixed Ratio Leach was modified to 1:4 due to high soil organic content.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
B-HWS-R511-WT	Soil	Boron-HWE-O.Reg 153/04 (July 2011)	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 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

CN-WAD-R511-WT	Soil	Cyanide (WAD)-O.Reg 153/04 (July 2011)	MOE 3015/APHA 4500CN I-WAD

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

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 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

CR-CR6-IC-WT	Soil	Hexavalent Chromium in Soil	SW846 3060A/7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

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).

EC-WT	Soil	Conductivity (EC)	MOEE E3138

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

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).

F1-F4-511-CALC-WT	Soil	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-S

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

Reference Information

F1-HS-511-WT	Soil	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

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 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F2-F4-511-WT	Soil	F2-F4-O.Reg 153/04 (July 2011)	CCME Tier 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4.
7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons.
8. This method is validated for use.
9. Data from analysis of validation and quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.

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 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F4G-ADD-511-WT	Soil	F4G SG-O.Reg 153/04 (July 2011)	MOE DECPH-E3398/CCME TIER 1

F4G, gravimetric analysis, is determined if the chromatogram does not return to baseline at or before C50. A soil sample is extracted with a solvent mix, the solvent is evaporated and the weight of the residue is determined.

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 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

HG-200.2-CVAA-WT	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

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).

MET-200.2-CCMS-WT	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020B (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

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), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

MOISTURE-WT	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
OCP-ROUTINE-WT	Soil	OC Pesticides-O.Reg 153/04 (July 2011)	SW846 8270 (511)

Soil sample is extracted in a solvent, after extraction a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.

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), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

Reference Information

PEST-PAHERB-LCMS-WT	Soil	Phenoxy Acid Herbicides by LC/MS-MS	MOE E3552

Soil samples are extracted, the extract is solvent exchanged to methanol in water and analyzed using liquid chromatography tandem mass spectrometry (LC-MS/M

PH-WT	Soil	pH	MOEE E3137A

A minimum 10g portion of the sample 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 and then analyzed using a pH meter and electrode.

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).

SAR-R511-WT	Soil	SAR-O.Reg 153/04 (July 2011)	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.

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 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

*** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody numbers:

17-802267 17-802269

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA		

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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. Guideline limits 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.

Quality Control Report

Workorder: L2673599 Report Date: 31-DEC-21

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Rd S #300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT	Soil							
Batch R5683796								
WG3680056-4 DUP		**L2673367-2**						
Boron (B), Hot Water Ext.		0.43	0.42		ug/g	2.9	30	29-DEC-21
WG3680056-2 IRM		**WT SAR4**						
Boron (B), Hot Water Ext.			111.3		%		70-130	29-DEC-21
WG3680056-3 LCS								
Boron (B), Hot Water Ext.			104.0		%		70-130	29-DEC-21
WG3680056-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	29-DEC-21
Batch R5684300								
WG3680567-4 DUP		**L2673599-9**						
Boron (B), Hot Water Ext.		<0.10	<0.10	RPD-NA	ug/g	N/A	30	30-DEC-21
WG3680567-2 IRM		**WT SAR4**						
Boron (B), Hot Water Ext.			111.7		%		70-130	30-DEC-21
WG3680567-3 LCS								
Boron (B), Hot Water Ext.			105.0		%		70-130	30-DEC-21
WG3680567-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	30-DEC-21
CN-WAD-R511-WT	Soil							
Batch R5683276								
WG3677831-3 DUP		**L2673599-14**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	23-DEC-21
WG3677831-2 LCS								
Cyanide, Weak Acid Diss			95.3		%		80-120	23-DEC-21
WG3677831-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	23-DEC-21
WG3677831-4 MS		**L2673599-14**						
Cyanide, Weak Acid Diss			95.7		%		70-130	23-DEC-21
Batch R5683434								
WG3678027-3 DUP		**L2673673-1**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	28-DEC-21
WG3678027-2 LCS								
Cyanide, Weak Acid Diss			92.1		%		80-120	28-DEC-21
WG3678027-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	28-DEC-21
WG3678027-4 MS		**L2673673-1**						
Cyanide, Weak Acid Diss			84.1		%		70-130	28-DEC-21
CR-CR6-IC-WT	Soil							

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
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Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-IC-WT	Soil							
Batch R5683229								
WG3677701-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			83.4		%		70-130	23-DEC-21
WG3677701-3 DUP		**L2673370-8**						
Chromium, Hexavalent		<0.20	<0.20	RPD-NA	ug/g	N/A	35	23-DEC-21
WG3677701-2 LCS								
Chromium, Hexavalent			97.6		%		80-120	23-DEC-21
WG3677701-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	23-DEC-21
Batch R5683335								
WG3677835-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			80.9		%		70-130	28-DEC-21
WG3677835-3 DUP		**L2673599-14**						
Chromium, Hexavalent		1.00	1.25		ug/g	22	35	28-DEC-21
WG3677835-2 LCS								
Chromium, Hexavalent			86.4		%		80-120	28-DEC-21
WG3677835-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	28-DEC-21
EC-WT	Soil							
Batch R5684081								
WG3680059-4 DUP		**WG3680059-3**						
Conductivity		0.463	0.428		mS/cm	7.9	20	30-DEC-21
WG3680059-2 IRM		**WT SAR4**						
Conductivity			114.3		%		70-130	30-DEC-21
WG3680663-1 LCS								
Conductivity			100.1		%		90-110	30-DEC-21
WG3680059-1 MB								
Conductivity			<0.0040		mS/cm		0.004	30-DEC-21
Batch R5684545								
WG3680576-4 DUP		**WG3680576-3**						
Conductivity		0.189	0.193		mS/cm	1.9	20	31-DEC-21
WG3680576-2 IRM		**WT SAR4**						
Conductivity			114.5		%		70-130	31-DEC-21
WG3681247-1 LCS								
Conductivity			96.6		%		90-110	31-DEC-21
WG3680576-1 MB								
Conductivity			<0.0040		mS/cm		0.004	31-DEC-21
F1-HS-511-WT	Soil							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	Soil							
Batch R5682075								
WG3678255-4 DUP		**WG3678255-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	22-DEC-21
WG3678255-2 LCS								
F1 (C6-C10)			104.8		%		80-120	22-DEC-21
WG3678255-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	22-DEC-21
Surrogate: 3,4-Dichlorotoluene			110.2		%		60-140	22-DEC-21
WG3678255-5 MS		**WG3678255-3**						
F1 (C6-C10)			116.9		%		60-140	22-DEC-21
F2-F4-511-WT	Soil							
Batch R5683349								
WG3679187-3 DUP		**WG3679187-5**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	28-DEC-21
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	28-DEC-21
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	28-DEC-21
WG3679187-2 LCS								
F2 (C10-C16)			96.4		%		80-120	28-DEC-21
F3 (C16-C34)			98.2		%		80-120	28-DEC-21
F4 (C34-C50)			89.0		%		80-120	28-DEC-21
WG3679187-1 MB								
F2 (C10-C16)			<10		ug/g		10	28-DEC-21
F3 (C16-C34)			<50		ug/g		50	28-DEC-21
F4 (C34-C50)			<50		ug/g		50	28-DEC-21
Surrogate: 2-Bromobenzotrifluoride			100.9		%		60-140	28-DEC-21
WG3679187-4 MS		**WG3679187-5**						
F2 (C10-C16)			96.3		%		60-140	28-DEC-21
F3 (C16-C34)			101.8		%		60-140	28-DEC-21
F4 (C34-C50)			99.5		%		60-140	28-DEC-21
F4G-ADD-511-WT	Soil							
Batch R5683735								
WG3680315-2 LCS								
F4G-SG (GHH-Silica)			72.2		%		60-140	23-DEC-21
WG3680315-1 MB								
F4G-SG (GHH-Silica)			<250		ug/g		250	23-DEC-21
HG-200.2-CVAA-WT	Soil							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-200.2-CVAA-WT	Soil							
Batch R5683710								
WG3680053-2 CRM		**WT-SS-2**						
Mercury (Hg)			93.5		%		70-130	29-DEC-21
WG3680053-6 DUP		**WG3680053-5**						
Mercury (Hg)		0.0119	0.0113		ug/g	5.5	40	29-DEC-21
WG3680053-3 LCS								
Mercury (Hg)			93.0		%		80-120	29-DEC-21
WG3680053-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	29-DEC-21
Batch R5684138								
WG3680562-2 CRM		**WT-SS-2**						
Mercury (Hg)			98.3		%		70-130	30-DEC-21
WG3680562-6 DUP		**WG3680562-5**						
Mercury (Hg)		0.0128	0.0144		ug/g	12	40	30-DEC-21
WG3680562-3 LCS								
Mercury (Hg)			102.0		%		80-120	30-DEC-21
WG3680562-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	30-DEC-21
MET-200.2-CCMS-WT	Soil							
Batch R5683907								
WG3680053-2 CRM		**WT-SS-2**						
Antimony (Sb)			96.1		%		70-130	29-DEC-21
Arsenic (As)			99.6		%		70-130	29-DEC-21
Barium (Ba)			104.9		%		70-130	29-DEC-21
Beryllium (Be)			96.7		%		70-130	29-DEC-21
Boron (B)			8.0		mg/kg		3.5-13.5	29-DEC-21
Cadmium (Cd)			91.4		%		70-130	29-DEC-21
Chromium (Cr)			94.0		%		70-130	29-DEC-21
Cobalt (Co)			98.1		%		70-130	29-DEC-21
Copper (Cu)			91.0		%		70-130	29-DEC-21
Lead (Pb)			100.6		%		70-130	29-DEC-21
Molybdenum (Mo)			105.0		%		70-130	29-DEC-21
Nickel (Ni)			94.3		%		70-130	29-DEC-21
Selenium (Se)			0.12		mg/kg		0-0.34	29-DEC-21
Silver (Ag)			82.2		%		70-130	29-DEC-21
Thallium (Tl)			0.068		mg/kg		0.029-0.129	29-DEC-21
Uranium (U)			91.7		%		70-130	29-DEC-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R5683907								
WG3680053-2 CRM		**WT-SS-2**						
Vanadium (V)			96.1		%		70-130	29-DEC-21
Zinc (Zn)			97.5		%		70-130	29-DEC-21
WG3680053-6 DUP		**WG3680053-5**						
Antimony (Sb)		0.27	0.26		ug/g	3.6	30	29-DEC-21
Arsenic (As)		6.47	6.29		ug/g	2.7	30	29-DEC-21
Barium (Ba)		60.1	56.4		ug/g	6.3	40	29-DEC-21
Beryllium (Be)		0.55	0.52		ug/g	5.3	30	29-DEC-21
Boron (B)		12.1	12.1		ug/g	0.2	30	29-DEC-21
Cadmium (Cd)		0.129	0.126		ug/g	2.6	30	29-DEC-21
Chromium (Cr)		19.4	18.8		ug/g	3.2	30	29-DEC-21
Cobalt (Co)		8.68	8.19		ug/g	5.8	30	29-DEC-21
Copper (Cu)		15.8	14.5		ug/g	8.5	30	29-DEC-21
Lead (Pb)		7.76	7.61		ug/g	1.9	40	29-DEC-21
Molybdenum (Mo)		3.10	2.95		ug/g	5.1	40	29-DEC-21
Nickel (Ni)		22.6	21.4		ug/g	5.9	30	29-DEC-21
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	29-DEC-21
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	29-DEC-21
Thallium (Tl)		0.155	0.150		ug/g	3.4	30	29-DEC-21
Uranium (U)		0.892	0.848		ug/g	5.0	30	29-DEC-21
Vanadium (V)		29.0	28.5		ug/g	1.6	30	29-DEC-21
Zinc (Zn)		45.5	43.5		ug/g	4.6	30	29-DEC-21
WG3680053-4 LCS								
Antimony (Sb)			107.1		%		80-120	29-DEC-21
Arsenic (As)			102.1		%		80-120	29-DEC-21
Barium (Ba)			105.0		%		80-120	29-DEC-21
Beryllium (Be)			104.1		%		80-120	29-DEC-21
Boron (B)			103.5		%		80-120	29-DEC-21
Cadmium (Cd)			98.7		%		80-120	29-DEC-21
Chromium (Cr)			97.2		%		80-120	29-DEC-21
Cobalt (Co)			99.98		%		80-120	29-DEC-21
Copper (Cu)			96.1		%		80-120	29-DEC-21
Lead (Pb)			104.1		%		80-120	29-DEC-21
Molybdenum (Mo)			108.1		%		80-120	29-DEC-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R5683907								
WG3680053-4 LCS								
Nickel (Ni)			97.3		%		80-120	29-DEC-21
Selenium (Se)			96.7		%		80-120	29-DEC-21
Silver (Ag)			91.3		%		80-120	29-DEC-21
Thallium (Tl)			106.1		%		80-120	29-DEC-21
Uranium (U)			101.7		%		80-120	29-DEC-21
Vanadium (V)			102.5		%		80-120	29-DEC-21
Zinc (Zn)			97.8		%		80-120	29-DEC-21
WG3680053-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	29-DEC-21
Arsenic (As)			<0.10		mg/kg		0.1	29-DEC-21
Barium (Ba)			<0.50		mg/kg		0.5	29-DEC-21
Beryllium (Be)			<0.10		mg/kg		0.1	29-DEC-21
Boron (B)			<5.0		mg/kg		5	29-DEC-21
Cadmium (Cd)			<0.020		mg/kg		0.02	29-DEC-21
Chromium (Cr)			<0.50		mg/kg		0.5	29-DEC-21
Cobalt (Co)			<0.10		mg/kg		0.1	29-DEC-21
Copper (Cu)			<0.50		mg/kg		0.5	29-DEC-21
Lead (Pb)			<0.50		mg/kg		0.5	29-DEC-21
Molybdenum (Mo)			<0.10		mg/kg		0.1	29-DEC-21
Nickel (Ni)			<0.50		mg/kg		0.5	29-DEC-21
Selenium (Se)			<0.20		mg/kg		0.2	29-DEC-21
Silver (Ag)			<0.10		mg/kg		0.1	29-DEC-21
Thallium (Tl)			<0.050		mg/kg		0.05	29-DEC-21
Uranium (U)			<0.050		mg/kg		0.05	29-DEC-21
Vanadium (V)			<0.20		mg/kg		0.2	29-DEC-21
Zinc (Zn)			<2.0		mg/kg		2	29-DEC-21
Batch R5684247								
WG3680562-2 CRM		**WT-SS-2**						
Antimony (Sb)			95.4		%		70-130	30-DEC-21
Arsenic (As)			96.6		%		70-130	30-DEC-21
Barium (Ba)			105.3		%		70-130	30-DEC-21
Beryllium (Be)			97.1		%		70-130	30-DEC-21
Boron (B)			8.3		mg/kg		3.5-13.5	30-DEC-21
Cadmium (Cd)			94.3		%		70-130	30-DEC-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R5684247								
WG3680562-2 CRM		**WT-SS-2**						
Chromium (Cr)			96.5		%		70-130	30-DEC-21
Cobalt (Co)			102.6		%		70-130	30-DEC-21
Copper (Cu)			106.7		%		70-130	30-DEC-21
Lead (Pb)			99.1		%		70-130	30-DEC-21
Molybdenum (Mo)			99.6		%		70-130	30-DEC-21
Nickel (Ni)			103.1		%		70-130	30-DEC-21
Selenium (Se)			0.12		mg/kg		0-0.34	30-DEC-21
Silver (Ag)			120.6		%		70-130	30-DEC-21
Thallium (Tl)			0.077		mg/kg		0.029-0.129	30-DEC-21
Uranium (U)			98.2		%		70-130	30-DEC-21
Vanadium (V)			99.1		%		70-130	30-DEC-21
Zinc (Zn)			97.9		%		70-130	30-DEC-21
WG3680562-6 DUP		**WG3680562-5**						
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	30-DEC-21
Arsenic (As)		2.90	3.09		ug/g	6.4	30	30-DEC-21
Barium (Ba)		291	298		ug/g	2.3	40	30-DEC-21
Beryllium (Be)		1.03	1.06		ug/g	2.3	30	30-DEC-21
Boron (B)		9.0	9.7		ug/g	7.0	30	30-DEC-21
Cadmium (Cd)		0.096	0.101		ug/g	5.1	30	30-DEC-21
Chromium (Cr)		106	110		ug/g	4.1	30	30-DEC-21
Cobalt (Co)		18.9	19.8		ug/g	4.5	30	30-DEC-21
Copper (Cu)		39.5	41.1		ug/g	4.1	30	30-DEC-21
Lead (Pb)		8.28	8.22		ug/g	0.7	40	30-DEC-21
Molybdenum (Mo)		0.33	0.33		ug/g	0.9	40	30-DEC-21
Nickel (Ni)		56.3	58.6		ug/g	4.1	30	30-DEC-21
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	30-DEC-21
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	30-DEC-21
Thallium (Tl)		0.347	0.333		ug/g	4.3	30	30-DEC-21
Uranium (U)		0.872	0.875		ug/g	0.4	30	30-DEC-21
Vanadium (V)		85.5	89.8		ug/g	4.8	30	30-DEC-21
Zinc (Zn)		95.9	99.5		ug/g	3.7	30	30-DEC-21
WG3680562-4 LCS								
Antimony (Sb)			104.2		%		80-120	30-DEC-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R5684247								
WG3680562-4 LCS								
Arsenic (As)			102.6		%		80-120	30-DEC-21
Barium (Ba)			106.0		%		80-120	30-DEC-21
Beryllium (Be)			97.7		%		80-120	30-DEC-21
Boron (B)			97.1		%		80-120	30-DEC-21
Cadmium (Cd)			98.3		%		80-120	30-DEC-21
Chromium (Cr)			102.2		%		80-120	30-DEC-21
Cobalt (Co)			103.0		%		80-120	30-DEC-21
Copper (Cu)			101.7		%		80-120	30-DEC-21
Lead (Pb)			100.7		%		80-120	30-DEC-21
Molybdenum (Mo)			100.9		%		80-120	30-DEC-21
Nickel (Ni)			101.9		%		80-120	30-DEC-21
Selenium (Se)			97.9		%		80-120	30-DEC-21
Silver (Ag)			86.5		%		80-120	30-DEC-21
Thallium (Tl)			100.2		%		80-120	30-DEC-21
Uranium (U)			99.3		%		80-120	30-DEC-21
Vanadium (V)			104.2		%		80-120	30-DEC-21
Zinc (Zn)			95.4		%		80-120	30-DEC-21
WG3680562-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	30-DEC-21
Arsenic (As)			<0.10		mg/kg		0.1	30-DEC-21
Barium (Ba)			<0.50		mg/kg		0.5	30-DEC-21
Beryllium (Be)			<0.10		mg/kg		0.1	30-DEC-21
Boron (B)			<5.0		mg/kg		5	30-DEC-21
Cadmium (Cd)			<0.020		mg/kg		0.02	30-DEC-21
Chromium (Cr)			<0.50		mg/kg		0.5	30-DEC-21
Cobalt (Co)			<0.10		mg/kg		0.1	30-DEC-21
Copper (Cu)			<0.50		mg/kg		0.5	30-DEC-21
Lead (Pb)			<0.50		mg/kg		0.5	30-DEC-21
Molybdenum (Mo)			<0.10		mg/kg		0.1	30-DEC-21
Nickel (Ni)			<0.50		mg/kg		0.5	30-DEC-21
Selenium (Se)			<0.20		mg/kg		0.2	30-DEC-21
Silver (Ag)			<0.10		mg/kg		0.1	30-DEC-21
Thallium (Tl)			<0.050		mg/kg		0.05	30-DEC-21
Uranium (U)			<0.050		mg/kg		0.05	30-DEC-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R5684247								
WG3680562-1 MB								
Vanadium (V)			<0.20		mg/kg		0.2	30-DEC-21
Zinc (Zn)			<2.0		mg/kg		2	30-DEC-21
MOISTURE-WT	Soil							
Batch R5680902								
WG3677100-3 DUP		**L2673724-5**						
% Moisture		5.38	5.92		%	9.6	20	19-DEC-21
WG3677100-2 LCS								
% Moisture			101.4		%		90-110	19-DEC-21
WG3677100-1 MB								
% Moisture			<0.25		%		0.25	19-DEC-21
Batch R5680905								
WG3677096-3 DUP		**L2673599-9**						
% Moisture		25.5	25.1		%	1.5	20	19-DEC-21
WG3677096-2 LCS								
% Moisture			100.7		%		90-110	19-DEC-21
WG3677096-1 MB								
% Moisture			<0.25		%		0.25	19-DEC-21
OCP-ROUTINE-WT	Soil							
Batch R5682833								
WG3677627-3 DUP		**WG3677627-5**						
Aldrin		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
a-chlordane		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
g-chlordane		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
alpha-BHC		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
beta-BHC		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
delta-BHC		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
o,p-DDD		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
pp-DDD		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
o,p-DDE		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
pp-DDE		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
op-DDT		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
pp-DDT		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
Dieldrin		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
Endosulfan I		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Rd S #300
Ottawa ON K2E 7L5

Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OCP-ROUTINE-WT	Soil							
Batch R5682833								
WG3677627-3 DUP		**WG3677627-5**						
Endosulfan II		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
Endrin		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
gamma-hexachlorocyclohexane		<0.050	<0.050	RPD-NA	ug/g	N/A	50	23-DEC-21
Heptachlor		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
Heptachlor Epoxide		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
Hexachlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	50	23-DEC-21
Hexachlorobutadiene		<0.050	<0.050	RPD-NA	ug/g	N/A	50	23-DEC-21
Hexachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	50	23-DEC-21
Methoxychlor		<0.10	<0.10	RPD-NA	ug/g	N/A	50	23-DEC-21
WG3677627-2 LCS								
Aldrin			95.6		%		50-150	23-DEC-21
a-chlordane			88.1		%		50-150	23-DEC-21
g-chlordane			91.1		%		50-150	23-DEC-21
alpha-BHC			100.5		%		50-150	23-DEC-21
beta-BHC			93.2		%		50-150	23-DEC-21
delta-BHC			100.2		%		50-150	23-DEC-21
o,p-DDD			85.9		%		50-150	23-DEC-21
pp-DDD			94.7		%		50-150	23-DEC-21
o,p-DDE			84.9		%		50-150	23-DEC-21
pp-DDE			90.7		%		50-150	23-DEC-21
op-DDT			96.0		%		50-150	23-DEC-21
pp-DDT			99.4		%		50-150	23-DEC-21
Dieldrin			91.6		%		50-150	23-DEC-21
Endosulfan I			79.3		%		50-150	23-DEC-21
Endosulfan II			84.1		%		50-150	23-DEC-21
Endrin			84.8		%		50-150	23-DEC-21
gamma-hexachlorocyclohexane			97.1		%		50-150	23-DEC-21
Heptachlor			95.5		%		50-150	23-DEC-21
Heptachlor Epoxide			97.2		%		50-150	23-DEC-21
Hexachlorobenzene			95.6		%		50-150	23-DEC-21
Hexachlorobutadiene			101.7		%		50-150	23-DEC-21
Hexachloroethane			106.6		%		50-150	23-DEC-21
Methoxychlor			109.1		%		50-150	23-DEC-21
WG3677627-1 MB								

Client: Wood Environment & Infrastructure Solutions (Ottawa)
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OCP-ROUTINE-WT	Soil							
Batch R5682833								
WG3677627-1 MB								
Aldrin			<0.020		ug/g		0.02	23-DEC-21
a-chlordane			<0.020		ug/g		0.02	23-DEC-21
g-chlordane			<0.020		ug/g		0.02	23-DEC-21
alpha-BHC			<0.020		ug/g		0.02	23-DEC-21
beta-BHC			<0.020		ug/g		0.02	23-DEC-21
delta-BHC			<0.020		ug/g		0.02	23-DEC-21
o,p-DDD			<0.020		ug/g		0.02	23-DEC-21
pp-DDD			<0.020		ug/g		0.02	23-DEC-21
o,p-DDE			<0.020		ug/g		0.02	23-DEC-21
pp-DDE			<0.020		ug/g		0.02	23-DEC-21
op-DDT			<0.020		ug/g		0.02	23-DEC-21
pp-DDT			<0.020		ug/g		0.02	23-DEC-21
Dieldrin			<0.020		ug/g		0.02	23-DEC-21
Endosulfan I			<0.020		ug/g		0.02	23-DEC-21
Endosulfan II			<0.020		ug/g		0.02	23-DEC-21
Endrin			<0.020		ug/g		0.02	23-DEC-21
gamma-hexachlorocyclohexane			<0.010		ug/g		0.01	23-DEC-21
Heptachlor			<0.020		ug/g		0.02	23-DEC-21
Heptachlor Epoxide			<0.020		ug/g		0.02	23-DEC-21
Hexachlorobenzene			<0.010		ug/g		0.01	23-DEC-21
Hexachlorobutadiene			<0.010		ug/g		0.01	23-DEC-21
Hexachloroethane			<0.010		ug/g		0.01	23-DEC-21
Methoxychlor			<0.020		ug/g		0.02	23-DEC-21
Surrogate: Tetrachloro-m-xylene			103.7		%		50-150	23-DEC-21
Surrogate: Decachlorobiphenyl			128.8		%		50-150	23-DEC-21
WG3677627-4 MS		**WG3677627-5**						
Aldrin			87.6		%		50-150	23-DEC-21
a-chlordane			77.5		%		50-150	23-DEC-21
g-chlordane			84.3		%		50-150	23-DEC-21
alpha-BHC			87.0		%		50-150	23-DEC-21
beta-BHC			79.2		%		50-150	23-DEC-21
delta-BHC			87.2		%		50-150	23-DEC-21
o,p-DDD			79.1		%		50-150	23-DEC-21
pp-DDD			90.7		%		50-150	23-DEC-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OCP-ROUTINE-WT	Soil							
Batch R5682833								
WG3677627-4 MS		**WG3677627-5**						
o,p-DDE			77.1		%		50-150	23-DEC-21
pp-DDE			83.2		%		50-150	23-DEC-21
op-DDT			85.2		%		50-150	23-DEC-21
pp-DDT			87.9		%		50-150	23-DEC-21
Dieldrin			82.4		%		50-150	23-DEC-21
Endosulfan I			71.1		%		50-150	23-DEC-21
Endosulfan II			76.5		%		50-150	23-DEC-21
Endrin			67.4		%		50-150	23-DEC-21
gamma-hexachlorocyclohexane			84.3		%		50-150	23-DEC-21
Heptachlor			82.6		%		50-150	23-DEC-21
Heptachlor Epoxide			90.8		%		50-150	23-DEC-21
Hexachlorobenzene			87.5		%		50-150	23-DEC-21
Hexachlorobutadiene			85.8		%		50-150	23-DEC-21
Hexachloroethane			90.6		%		50-150	23-DEC-21
Methoxychlor			97.6		%		50-150	23-DEC-21
Batch R5682844								
WG3677782-3 DUP		**WG3677782-5**						
Aldrin		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
a-chlordane		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
g-chlordane		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
alpha-BHC		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
beta-BHC		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
delta-BHC		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
o,p-DDD		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
pp-DDD		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
o,p-DDE		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
pp-DDE		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
op-DDT		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
pp-DDT		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
Dieldrin		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
Endosulfan I		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
Endosulfan II		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
Endrin		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21

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Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OCP-ROUTINE-WT	Soil							
Batch R5682844								
WG3677782-3 DUP		**WG3677782-5**						
gamma-hexachlorocyclohexane		<0.010	<0.010	RPD-NA	ug/g	N/A	50	23-DEC-21
Heptachlor		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
Heptachlor Epoxide		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
Hexachlorobenzene		<0.010	<0.010	RPD-NA	ug/g	N/A	50	23-DEC-21
Hexachlorobutadiene		<0.010	<0.010	RPD-NA	ug/g	N/A	50	23-DEC-21
Hexachloroethane		<0.010	<0.010	RPD-NA	ug/g	N/A	50	23-DEC-21
Methoxychlor		<0.020	<0.020	RPD-NA	ug/g	N/A	50	23-DEC-21
WG3677782-2 LCS								
Aldrin			86.9		%		50-150	23-DEC-21
a-chlordane			74.5		%		50-150	23-DEC-21
g-chlordane			75.4		%		50-150	23-DEC-21
alpha-BHC			86.8		%		50-150	23-DEC-21
beta-BHC			80.3		%		50-150	23-DEC-21
delta-BHC			87.7		%		50-150	23-DEC-21
o,p-DDD			75.9		%		50-150	23-DEC-21
pp-DDD			90.1		%		50-150	23-DEC-21
o,p-DDE			71.9		%		50-150	23-DEC-21
pp-DDE			77.5		%		50-150	23-DEC-21
op-DDT			68.1		%		50-150	23-DEC-21
pp-DDT			76.4		%		50-150	23-DEC-21
Dieldrin			77.7		%		50-150	23-DEC-21
Endosulfan I			67.2		%		50-150	23-DEC-21
Endosulfan II			67.7		%		50-150	23-DEC-21
Endrin			63.4		%		50-150	23-DEC-21
gamma-hexachlorocyclohexane			84.4		%		50-150	23-DEC-21
Heptachlor			76.9		%		50-150	23-DEC-21
Heptachlor Epoxide			83.0		%		50-150	23-DEC-21
Hexachlorobenzene			82.6		%		50-150	23-DEC-21
Hexachlorobutadiene			86.1		%		50-150	23-DEC-21
Hexachloroethane			91.5		%		50-150	23-DEC-21
Methoxychlor			83.0		%		50-150	23-DEC-21
WG3677782-1 MB								
Aldrin			<0.020		ug/g		0.02	23-DEC-21
a-chlordane			<0.020		ug/g		0.02	23-DEC-21

Client: Wood Environment & Infrastructure Solutions (Ottawa)
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OCP-ROUTINE-WT	Soil							
Batch R5682844								
WG3677782-1 MB								
g-chlordane			<0.020		ug/g		0.02	23-DEC-21
alpha-BHC			<0.020		ug/g		0.02	23-DEC-21
beta-BHC			<0.020		ug/g		0.02	23-DEC-21
delta-BHC			<0.020		ug/g		0.02	23-DEC-21
o,p-DDD			<0.020		ug/g		0.02	23-DEC-21
pp-DDD			<0.020		ug/g		0.02	23-DEC-21
o,p-DDE			<0.020		ug/g		0.02	23-DEC-21
pp-DDE			<0.020		ug/g		0.02	23-DEC-21
op-DDT			<0.020		ug/g		0.02	23-DEC-21
pp-DDT			<0.020		ug/g		0.02	23-DEC-21
Dieldrin			<0.020		ug/g		0.02	23-DEC-21
Endosulfan I			<0.020		ug/g		0.02	23-DEC-21
Endosulfan II			<0.020		ug/g		0.02	23-DEC-21
Endrin			<0.020		ug/g		0.02	23-DEC-21
gamma-hexachlorocyclohexane			<0.010		ug/g		0.01	23-DEC-21
Heptachlor			<0.020		ug/g		0.02	23-DEC-21
Heptachlor Epoxide			<0.020		ug/g		0.02	23-DEC-21
Hexachlorobenzene			<0.010		ug/g		0.01	23-DEC-21
Hexachlorobutadiene			<0.010		ug/g		0.01	23-DEC-21
Hexachloroethane			<0.010		ug/g		0.01	23-DEC-21
Methoxychlor			<0.020		ug/g		0.02	23-DEC-21
Surrogate: Tetrachloro-m-xylene			90.7		%		50-150	23-DEC-21
Surrogate: Decachlorobiphenyl			102.3		%		50-150	23-DEC-21
WG3677782-4 MS		**WG3677782-5**						
Aldrin			84.7		%		50-150	23-DEC-21
a-chlordane			62.0		%		50-150	23-DEC-21
g-chlordane			63.9		%		50-150	23-DEC-21
alpha-BHC			89.3		%		50-150	23-DEC-21
beta-BHC			76.8		%		50-150	23-DEC-21
delta-BHC			89.1		%		50-150	23-DEC-21
o,p-DDD			66.5		%		50-150	23-DEC-21
pp-DDD			85.9		%		50-150	23-DEC-21
o,p-DDE			64.9		%		50-150	23-DEC-21
pp-DDE			67.4		%		50-150	23-DEC-21

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Rd S #300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OCP-ROUTINE-WT	Soil							
Batch R5682844								
WG3677782-4 MS		**WG3677782-5**						
op-DDT			57.2		%		50-150	23-DEC-21
pp-DDT			62.8		%		50-150	23-DEC-21
Dieldrin			64.3		%		50-150	23-DEC-21
Endosulfan I			52.7		%		50-150	23-DEC-21
Endosulfan II			60.8		%		50-150	23-DEC-21
Endrin			60.8		%		50-150	23-DEC-21
gamma-hexachlorocyclohexane			84.3		%		50-150	23-DEC-21
Heptachlor			78.4		%		50-150	23-DEC-21
Heptachlor Epoxide			67.5		%		50-150	23-DEC-21
Hexachlorobenzene			84.6		%		50-150	23-DEC-21
Hexachlorobutadiene			92.7		%		50-150	23-DEC-21
Hexachloroethane			97.3		%		50-150	23-DEC-21
Methoxychlor			77.7		%		50-150	23-DEC-21
PEST-PAHERB-LCMS-WT	Soil							
Batch R5683600								
WG3679650-3 DUP		**WG3679650-5**						
2,4,5-TP		N/A	<0.080	RPD-NA	mg/kg	N/A	50	28-DEC-21
MCPA		N/A	<0.30	RPD-NA	mg/kg	N/A	50	28-DEC-21
Mecoprop		N/A	<0.30	RPD-NA	mg/kg	N/A	50	28-DEC-21
2,4,5-T		N/A	<0.080	RPD-NA	mg/kg	N/A	50	28-DEC-21
2,4-D		N/A	<0.080	RPD-NA	mg/kg	N/A	50	28-DEC-21
Bromoxynil		N/A	<0.080	RPD-NA	mg/kg	N/A	50	28-DEC-21
Dinoseb		N/A	<0.080	RPD-NA	mg/kg	N/A	50	28-DEC-21
Dicamba		N/A	<0.080	RPD-NA	mg/kg	N/A	50	28-DEC-21
Picloram		N/A	<0.080	RPD-NA	mg/kg	N/A	50	28-DEC-21
WG3679650-2 LCS								
2,4,5-TP			120.1		%		60-140	28-DEC-21
MCPA			106.9		%		60-140	28-DEC-21
Mecoprop			136.6		%		60-140	28-DEC-21
2,4,5-T			108.5		%		60-140	28-DEC-21
2,4-D			136.0		%		60-140	28-DEC-21
Bromoxynil			114.2		%		60-140	28-DEC-21
Dinoseb			86.5		%		30-150	28-DEC-21
Dicamba			118.0				60-140	

Client: Wood Environment & Infrastructure Solutions (Ottawa)
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PEST-PAHERB-LCMS-WT	Soil							
Batch R5683600								
WG3679650-2 LCS								
Dicamba			118.0		%		60-140	28-DEC-21
Picloram			132.3		%		30-150	28-DEC-21
WG3679650-1 MB								
2,4,5-TP			<0.080		mg/kg		0.08	28-DEC-21
MCPA			<0.30		mg/kg		0.3	28-DEC-21
Mecoprop			<0.30		mg/kg		0.3	28-DEC-21
2,4,5-T			<0.080		mg/kg		0.08	28-DEC-21
2,4-D			<0.080		mg/kg		0.08	28-DEC-21
Bromoxynil			<0.080		mg/kg		0.08	28-DEC-21
Dinoseb			<0.080		mg/kg		0.08	28-DEC-21
Dicamba			<0.080		mg/kg		0.08	28-DEC-21
Picloram			<0.080		mg/kg		0.08	28-DEC-21
Surrogate: 2,4-Dichlorophenylacetic Acid			122.0		%		50-130	28-DEC-21
WG3679650-4 MS		**WG3679650-5**						
2,4,5-TP			111.5		%		50-150	28-DEC-21
MCPA			112.6		%		50-150	28-DEC-21
Mecoprop			132.3		%		50-150	28-DEC-21
2,4,5-T			107.8		%		50-150	28-DEC-21
2,4-D			119.6		%		50-150	28-DEC-21
Bromoxynil			111.4		%		50-150	28-DEC-21
Dinoseb			99.9		%		30-150	28-DEC-21
Dicamba			115.3		%		50-150	28-DEC-21
Picloram			137.1		%		30-150	28-DEC-21
PH-WT	Soil							
Batch R5682717								
WG3677521-1 DUP		**L2673475-6**						
pH		7.93	7.94	J	pH units	0.01	0.3	23-DEC-21
WG3679013-1 LCS								
pH			7.07		pH units		6.9-7.1	23-DEC-21
Batch R5683668								
WG3677469-1 DUP		**L2673599-2**						
pH		7.58	7.59	J	pH units	0.01	0.3	29-DEC-21
WG3680158-1 LCS								
pH			7.08		pH units		6.9-7.1	29-DEC-21
SAR-R511-WT	Soil							

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Rd S #300
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Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT	Soil							
Batch R5683950								
WG3680059-4 DUP		**WG3680059-3**						
Calcium (Ca)		39.8	36.7		mg/L	8.1	30	29-DEC-21
Sodium (Na)		21.7	20.5		mg/L	5.7	30	29-DEC-21
Magnesium (Mg)		12.2	11.3		mg/L	7.7	30	29-DEC-21
WG3680059-2 IRM		**WT SAR4**						
Calcium (Ca)			94.8		%		70-130	29-DEC-21
Sodium (Na)			95.7		%		70-130	29-DEC-21
Magnesium (Mg)			100.0		%		70-130	29-DEC-21
WG3680059-5 LCS								
Calcium (Ca)			99.0		%		80-120	29-DEC-21
Sodium (Na)			98.4		%		80-120	29-DEC-21
Magnesium (Mg)			96.2		%		80-120	29-DEC-21
WG3680059-1 MB								
Calcium (Ca)			<0.50		mg/L		0.5	29-DEC-21
Sodium (Na)			<0.50		mg/L		0.5	29-DEC-21
Magnesium (Mg)			<0.50		mg/L		0.5	29-DEC-21
Batch R5684613								
WG3680576-4 DUP		**WG3680576-3**						
Calcium (Ca)		6.22	5.44		mg/L	13	30	31-DEC-21
Sodium (Na)		31.3	30.6		mg/L	2.3	30	31-DEC-21
Magnesium (Mg)		6.24	4.95		mg/L	23	30	31-DEC-21
WG3680576-2 IRM		**WT SAR4**						
Calcium (Ca)			112.6		%		70-130	31-DEC-21
Sodium (Na)			95.0		%		70-130	31-DEC-21
Magnesium (Mg)			112.0		%		70-130	31-DEC-21
WG3680576-5 LCS								
Calcium (Ca)			103.3		%		80-120	31-DEC-21
Sodium (Na)			106.4		%		80-120	31-DEC-21
Magnesium (Mg)			101.8		%		80-120	31-DEC-21
WG3680576-1 MB								
Calcium (Ca)			<0.50		mg/L		0.5	31-DEC-21
Sodium (Na)			<0.50		mg/L		0.5	31-DEC-21
Magnesium (Mg)			<0.50		mg/L		0.5	31-DEC-21

Quality Control Report

Workorder: L2673599 Report Date: 31-DEC-21

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Rd S #300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

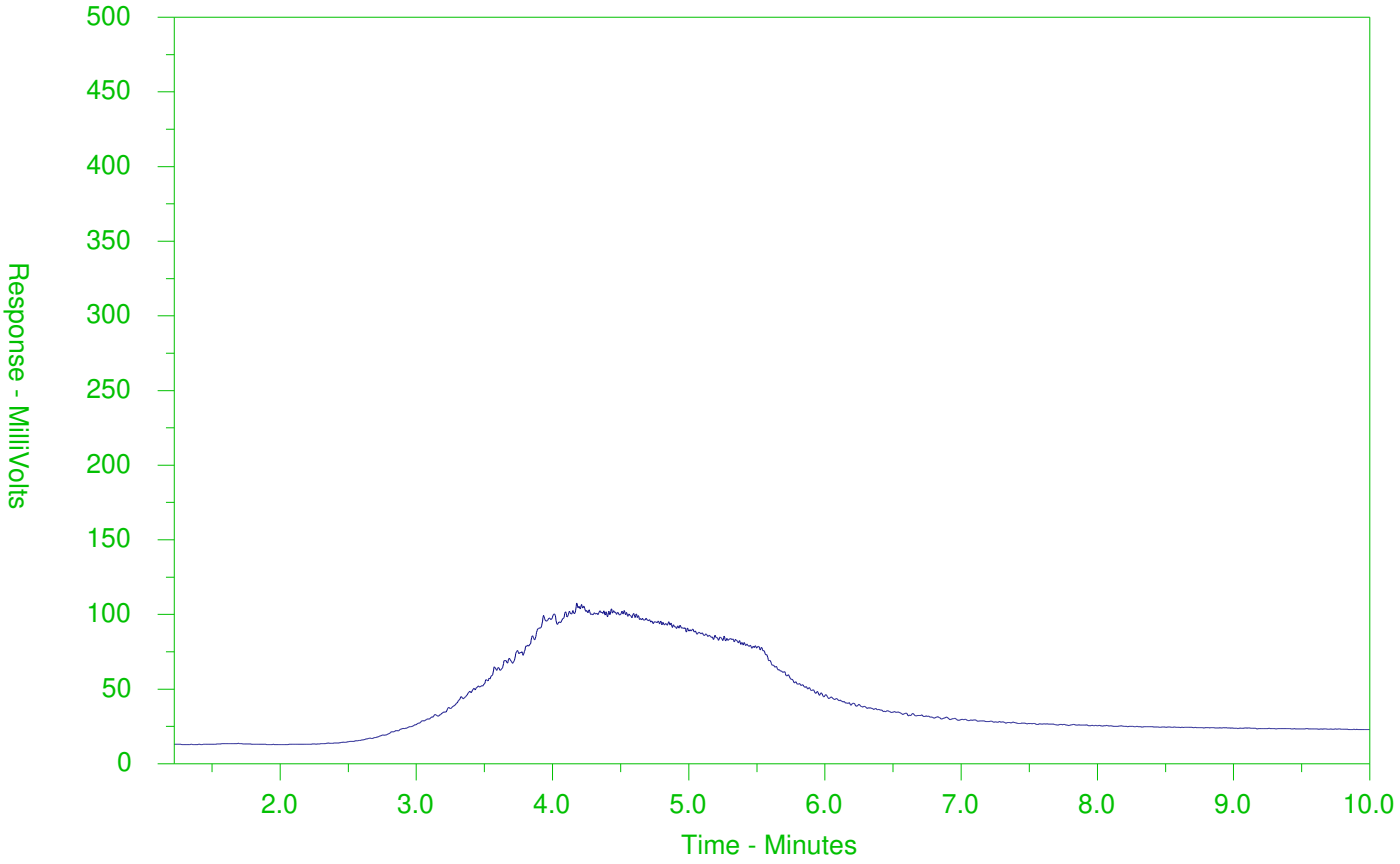
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2673599-1
Client Sample ID: TP-1 SS-1



←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.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2673599-COFC

COC Number: 17 - 802269

Page of

Report To	Contact and company name below will appear on the final report
Company:	Wood
Contact:	Kevin Hicks
Phone:	613-727-0658
	Company address below will appear on the final report
Street:	300-210 Colonnade Rd South
City/Province:	Ottawa, ON
Postal Code:	K2E 1M4
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☒ PDF ☒ EXCEL | EDD (DIGITAL)

Quality Control (QC) Report with Report ☒ YES ☐ NO

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

Select Distribution: ☑ EMAIL | MAIL ☐ FAX

Email 1 or Fax kevin.hicks@woodplc.com

Email 2

Email 3

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax SNA

Email 2

Project Information

ALS Account # / Quote #:

Job #: OE5402132

PO / AFE:

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only): L2673599

ALS Contact: Sampler: BC

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

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

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

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

ALS Sample # (lab 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	PHC F1 - F4	OCP + PHA	pH	TCLP	TCLP-	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	TP-1 SS-1	12-14-21		S	3	X		2		X			
	TP-2 SS-1	12-14-21			1	X			X	X			
	TP-3 SS-1	12-15-21			1	X				X			
	TP-3 SS-3	12-15-21			1				X				
	TP-4 SS-1	12-14-21			1	X				X			
	TP-5 SS-1	12-14-21			1	X							
	TP-5 SS-3	12-14-21			1				X	X			
	TP-6 SS-1	12-15-21			1	X			X				
	TP-7 SS-1	12-15-21			1	X			X	X			
	TP-8 SS-1	12-15-21			1	X							
	TP-10 SS-2	12-15-21			1	X				X			
	TP-11 SS-1	12-15-21			1	X							

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

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

O.Reg 153 table 1

TCLP = flashpoint, metals, inorganics & BaP

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
9	9	X	9	9	

SHIPMENT RELEASE (client use)

Released by: Brian Clark | Date: 16-12-21 | Time: 1145

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: | Date: 16 DEC | Time: 1145

FINAL SHIPMENT RECEPTION (lab use only)

Received by: | Date: 17-DEC-21 | Time: 9:30

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

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

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2673599-COFC

COC Number: 17 - 802267

Page 2 of 2

Report To	Contact and company name below will appear on the final report
Company:	Wood
Contact:	Kevin Hicks
Phone:	613-727-0658
	Company address below will appear on the final report
Street:	300-210 Colonnade Rd South
City/Province:	Ottawa, ON
Postal Code:	K2E 7L5

Invoice To		
	Same as Report To	YES NO
	Copy of Invoice with Report	YES NO
Company:		
Contact:		

Project Information

ALS Account # / Quote #:	
Job #:	CE562132
PO / AFE:	
LSD:	
ALS Lab Work Order # (lab use only):	L2673599

Report Format / Distribution

Select Report Format:	PDF EXCEL EDD (DIGITAL)
Quality Control (QC) Report with Report	YES NO
Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	EMAIL MAIL FAX
Email 1 or Fax	kevin.hicks@woodplc.com
Email 2	
Email 3	

Invoice Distribution

Select Invoice Distribution:	EMAIL MAIL FAX
Email 1 or Fax	AA
Email 2	

Oil and Gas Required Fields (client use)

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

Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ✓ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

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

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

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

ALS Sample # (lab 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	BTEX/PHC	OCP + PAH	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	TP-12 SS-1	12.15.21		S	1	X	X			
	TP-13 SS-1	12.14.21			1	X	X	X		
	TP-14 SS-1	12.14.21			1	X				
	TP-15 SS-1	12.14.21			1	X		X		
	TP-16 SS-1	12.14.21			1	X	X	X		
	TP-17 SS-1	12.14.21			1	X	X			
	TP-18 SS-1	12.14.21			1	X		X		
	TP-19 SS-1	12.14.21			1	X	X			
	TP-20 SS-1	12.14.21			1	X	X	X		
	Dup-1	12			1	X	X			
	Dup-2				2					
	TCLP - see notes	12.15.21								

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

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

TCLP + Flashpoint, metals, inorganics & BaP

O.Reg 153 Table 1

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
9.9	9.9

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Brian Clark	16.12.21	11:45		16 DEC	1945	AP	17-Dec 21	9:30

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

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

Wood Environment & Infrastructure Solutions (Ottawa)
ATTN: Kevin Hicks
210 Colonnade Rd S#300
Ottawa ON K2E7L5

Date Received: 16-DEC-21
Report Date: 05-JAN-22 10:13 (MT)
Version: FINAL

Client Phone: 613-727-0658

Certificate of Analysis

Lab Work Order #: L2673619

Project P.O. #: OESAO2132.****.5130.573000
Job Reference: OESAO2132
C of C Numbers:
Legal Site Desc:

Gayle Braun
Senior Account Manager

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1
L2673619-1 TCLP						
Sampled By: CLIENT on 15-DEC-21						
Matrix: SOIL						
Sample Preparation						
Initial pH	8.47		0.10	pH units	22-DEC-21	
Final pH	4.94		0.10	pH units	22-DEC-21	
Physical Tests						
Air Velocity Of Fume Hood	0.21		0.10	m/sec	20-DEC-21	
Burning Rate	NA		0.010	mm/sec	20-DEC-21	
Ignitability-Class	NON-FLAMMABLE			No Unit	20-DEC-21	
Samp Comment	BROWN CLAYEY SOIL			No Unit	20-DEC-21	
Temperature Of Test Material	20.0		1.0	Deg. C	20-DEC-21	
Time To Ignition	NA		1.0	sec	20-DEC-21	
TCLP Extractables						
Benzo(a)pyrene	<0.0010		0.0010	mg/L	05-JAN-22	0.001
Cyanide, Weak Acid Diss	<0.10		0.10	mg/L	23-DEC-21	20
Fluoride (F)	<10		10	mg/L	22-DEC-21	150.0
Nitrate and Nitrite as N	<4.0		4.0	mg/L	22-DEC-21	1000
Nitrate-N	<2.0		2.0	mg/L	22-DEC-21	
Nitrite-N	<2.0		2.0	mg/L	22-DEC-21	
Surrogate: Chrysene d12	110.5		50-150	%	05-JAN-22	
TCLP Metals						
Arsenic (As)	<0.050		0.050	mg/L	22-DEC-21	2.5
Barium (Ba)	<0.50		0.50	mg/L	22-DEC-21	100
Boron (B)	<2.5		2.5	mg/L	22-DEC-21	500
Cadmium (Cd)	<0.0050		0.0050	mg/L	22-DEC-21	0.5
Chromium (Cr)	<0.050		0.050	mg/L	22-DEC-21	5.0
Lead (Pb)	<0.025		0.025	mg/L	22-DEC-21	5.0
Mercury (Hg)	<0.00010		0.00010	mg/L	22-DEC-21	0.1
Selenium (Se)	<0.025		0.025	mg/L	22-DEC-21	1.0
Silver (Ag)	<0.0050		0.0050	mg/L	22-DEC-21	5.0
Uranium (U)	<0.25		0.25	mg/L	22-DEC-21	10

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Ministry of the Environment, General Waste Control Regulation No. 347/90

#1: Ontario Ministry of the Environment, General Waste Control Regulation No. 347/90

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
BAP-ONT-TCLP-WT	Waste	Benzo(a)pyrene for O. Reg 347	SW 846 8270-GC-MS on TCLP Leachate
CN-TCLP-WT	Waste	Cyanide for O. Reg 347	APHA 4500CN I

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fiber filter. The extract is then analyzed using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

F-TCLP-WT	Waste	Fluoride (F) for O. Reg 347	EPA 300.1

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fiber filter. The extract is then analyzed using procedures adapted from EPA 300.1 and is analyzed by Ion Chromatography with conductivity and/or UV detection.

HG-TCLP-WT	Waste	Mercury (CVAA) for O.Reg 347	EPA 1631E

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 1631E).

IGNITABILITY-WT	Waste	O. Reg 347 Ignitability	EPA SW846, Method 1030, 1996

Preliminary Screening Test:
Prepare a sample "as received" 250 mm long by 20 mm wide by 10 mm high. Apply the tip of the flame to the end of the sample strip.
If the sample is non-metallic, hold the flame tip on the sample until the sample ignites or for a maximum of 2 minutes. If combustion occurs, begin timing with a stop watch and note whether the sample propagates up to the 200 mm mark within the 2 minute test period.
If the sample is metal or metal alloy powder, hold the flame tip on the sample until the sample ignites or for a maximum of 5 minutes. If combusiton occurs, begin timing with a stop watch and note whether the sample propagates up to the 200 mm mark within the 20 minute test period.
Note: If the waste propagates burning of 200 mm of the test strip within 2 minutes (20 minutes for metals), the material must be evaluated by the burning rate test.
Burning Rate Test:
Refer to section 7.2 of EPA Method 1030. Samples that have a burning rate of greater than 2.2 mm/s are considered to have a positive result for ignitability according to DOT regulations. For metallic samples , the burning rate must be greater than 0.17 mm/s.

LEACH-TCLP-WT	Waste	Leachate Procedure for Reg 347	EPA 1311

Inorganic and Semi-Volatile Organic contaminants are leached from waste samples in strict accordance with US EPA Method 1311, "Toxicity Characteristic Leaching Procedure" (TCLP). Test results are reported in leachate concentration units (normally mg/L).

MET-TCLP-WT	Waste	O.Reg 347 TCLP Leachable Metals	EPA 6020B

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter.
Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020B).

N2N3-TCLP-WT	Waste	Nitrate/Nitrite-N for O. Reg 347	EPA 300.1

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fiber filter. The extract is then analyzed using procedures adapted from EPA 300.1 and is analyzed by Ion Chromatography with conductivity and/or UV detection.

*** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody numbers:

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA		

Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2673619 Report Date: 05-JAN-22

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Rd S #300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BAP-ONT-TCLP-WT	Waste							
Batch R5685380								
WG3681175-4 DUP		**WG3681175-3**						
Benzo(a)pyrene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	50	05-JAN-22
WG3681175-2 LCS								
Benzo(a)pyrene			84.2		%		50-150	05-JAN-22
WG3681175-1 MB								
Benzo(a)pyrene			<0.0010		mg/L		0.001	05-JAN-22
Surrogate: Chrysene d12			118.2		%		50-150	05-JAN-22
WG3681175-6 MB								
Benzo(a)pyrene			<0.0010		mg/L		0.001	05-JAN-22
Surrogate: Chrysene d12			106.5		%		50-150	05-JAN-22
WG3681175-5 MS		**WG3681175-3**						
Benzo(a)pyrene			69.1		%		50-150	05-JAN-22
CN-TCLP-WT	Waste							
Batch R5683301								
WG3679062-3 DUP		**L2672820-1**						
Cyanide, Weak Acid Diss		<0.10	<0.10	RPD-NA	mg/L	N/A	50	23-DEC-21
WG3679062-2 LCS								
Cyanide, Weak Acid Diss			103.9		%		70-130	23-DEC-21
WG3679062-1 MB								
Cyanide, Weak Acid Diss			<0.10		mg/L		0.1	23-DEC-21
WG3679062-4 MS		**L2672820-1**						
Cyanide, Weak Acid Diss			96.0		%		50-140	23-DEC-21
F-TCLP-WT	Waste							
Batch R5682590								
WG3678507-3 DUP		**L2672820-1**						
Fluoride (F)		<10	<10	RPD-NA	mg/L	N/A	30	22-DEC-21
WG3678507-2 LCS								
Fluoride (F)			100.4		%		70-130	22-DEC-21
WG3678507-1 MB								
Fluoride (F)			<10		mg/L		10	22-DEC-21
WG3678507-4 MS		**L2672820-1**						
Fluoride (F)			98.4		%		50-150	22-DEC-21
HG-TCLP-WT	Waste							
Batch R5682137								
WG3678494-3 DUP		**L2670118-4**						
Mercury (Hg)		<0.00010	<0.00010	RPD-NA	mg/L	N/A	50	22-DEC-21
WG3678494-2 LCS								

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Rd S #300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-TCLP-WT	Waste							
Batch R5682137								
WG3678494-2 LCS								
Mercury (Hg)			95.3		%		70-130	22-DEC-21
WG3678494-1 MB								
Mercury (Hg)			<0.00010		mg/L		0.0001	22-DEC-21
WG3678494-4 MS		**L2670118-4**						
Mercury (Hg)			88.3		%		50-140	22-DEC-21
MET-TCLP-WT	Waste							
Batch R5682382								
WG3678469-4 DUP		**WG3678469-3**						
Silver (Ag)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	22-DEC-21
Arsenic (As)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	22-DEC-21
Boron (B)		<2.5	<2.5	RPD-NA	mg/L	N/A	50	22-DEC-21
Barium (Ba)		<0.50	<0.50	RPD-NA	mg/L	N/A	50	22-DEC-21
Cadmium (Cd)		0.0062	0.0056		mg/L	9.5	50	22-DEC-21
Chromium (Cr)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	22-DEC-21
Lead (Pb)		<0.025	<0.025	RPD-NA	mg/L	N/A	50	22-DEC-21
Selenium (Se)		<0.025	<0.025	RPD-NA	mg/L	N/A	50	22-DEC-21
Uranium (U)		<0.25	<0.25	RPD-NA	mg/L	N/A	50	22-DEC-21
WG3678469-2 LCS								
Silver (Ag)			97.6		%		70-130	22-DEC-21
Arsenic (As)			104.1		%		70-130	22-DEC-21
Boron (B)			90.1		%		70-130	22-DEC-21
Barium (Ba)			105.9		%		70-130	22-DEC-21
Cadmium (Cd)			102.1		%		70-130	22-DEC-21
Chromium (Cr)			101.9		%		70-130	22-DEC-21
Lead (Pb)			102.1		%		70-130	22-DEC-21
Selenium (Se)			98.1		%		70-130	22-DEC-21
Uranium (U)			101.8		%		70-130	22-DEC-21
WG3678469-1 MB								
Silver (Ag)			<0.0050		mg/L		0.005	22-DEC-21
Arsenic (As)			<0.050		mg/L		0.05	22-DEC-21
Boron (B)			<2.5		mg/L		2.5	22-DEC-21
Barium (Ba)			<0.50		mg/L		0.5	22-DEC-21
Cadmium (Cd)			<0.0050		mg/L		0.005	22-DEC-21
Chromium (Cr)			<0.050		mg/L		0.05	22-DEC-21

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Rd S #300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT	Waste							
Batch R5682382								
WG3678469-1 MB								
Lead (Pb)			<0.025		mg/L		0.025	22-DEC-21
Selenium (Se)			<0.025		mg/L		0.025	22-DEC-21
Uranium (U)			<0.25		mg/L		0.25	22-DEC-21
WG3678469-5 MS		**WG3678469-3**						
Silver (Ag)			108.9		%		50-140	22-DEC-21
Arsenic (As)			107.4		%		50-140	22-DEC-21
Boron (B)			87.6		%		50-140	22-DEC-21
Barium (Ba)			110.1		%		50-140	22-DEC-21
Cadmium (Cd)			102.3		%		50-140	22-DEC-21
Chromium (Cr)			106.4		%		50-140	22-DEC-21
Lead (Pb)			100.9		%		50-140	22-DEC-21
Selenium (Se)			104.9		%		50-140	22-DEC-21
Uranium (U)			104.6		%		50-140	22-DEC-21
N2N3-TCLP-WT	Waste							
Batch R5682590								
WG3678507-3 DUP		**L2672820-1**						
Nitrate-N		<2.0	<2.0	RPD-NA	mg/L	N/A	25	22-DEC-21
Nitrite-N		<2.0	<2.0	RPD-NA	mg/L	N/A	25	22-DEC-21
WG3678507-2 LCS								
Nitrate-N			103.8		%		70-130	22-DEC-21
Nitrite-N			104.3		%		70-130	22-DEC-21
WG3678507-1 MB								
Nitrate-N			<2.0		mg/L		2	22-DEC-21
Nitrite-N			<2.0		mg/L		2	22-DEC-21
WG3678507-4 MS		**L2672820-1**						
Nitrate-N			102.2		%		50-150	22-DEC-21
Nitrite-N			102.9		%		50-150	22-DEC-21

Quality Control Report

Workorder: L2673619 Report Date: 05-JAN-22

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Rd S #300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2673619-COFC

Report To	Contact and company name below will appear on the final report
Company:	Wood
Contact:	Kevin Hicks
Phone:	613-727-0658
	Company address below will appear on the final report
Street:	900-210 Colonnade Rd South
City/Province:	Ottawa, ON
Postal Code:	K2E 7L5

Invoice To		
Same as Report To	☒ YES	☐ NO
Copy of Invoice with Report	☐ YES	☐ NO
Company:		
Contact:		

Report Format / Distribution

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

Quality Control (QC) Report with Report ☒ YES ☐ NO

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

Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax kevin.hicks@woodplc.com

Email 2

Email 3

Invoice Distribution

Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax SAA

Email 2

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ · 3 day [P3-25%] ☐ · 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ · Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

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

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:

Job #: OESA52132

PO / AFE:

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: | PO#

Major/Minor Code: | Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only): L2673619

ALS Contact:

Sampler: BC

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

ALS Sample # (lab 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	BTEX/PHC	OCP + PAH	pH	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	TP-12 SS-1	12.15.21		S		X		X			
	TP-13 SS-1	12.14.21		↓	1	X		X	X		
	TP-14 SS-1	12.14.21			1	X					
	TP-15 SS-1	12.14.21			1	X			X		
	TP-16 SS-1	12.14.21			1	X					
	TP-17 SS-1	12.14.21			1	X		X	X		
	TP-18 SS-1	12.14.21			1	X		X			
	TP-19 SS-1	12.14.21			1	X			X		
	TP-20 SS-1	12.14.21			1	X		X			
	Dup-1	W			1	X		X	X		
	Dup-2				1	X		X			
	TCLP - see notes	12.15.21			2						

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

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

TCLP: Flashpoint, metals, inorganics & BaP

O.Reg 153 Table 1

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☒ · Ice Packs ☒ · Ice Cubes ☐ · Cooling Initiated ☐

SIF Observations Yes ☐ No ☐ · Custody seal intact Yes ☐ No ☐

INITIAL COOLER TEMPERATURES °C: 9.9 · FINAL COOLER TEMPERATURES °C: 9.9

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Brian Clark	Date: 16.12.21	Time: 11:45	Received by: FC	Date: 16 DEC	Time: 1145	Received by: AP	Date: 17-Dec-21	Time: 9:30

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY · YELLOW - CLIENT COPY

JUNE 2018 FRONT

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

Wood Environment & Infrastructure Solutions (Ottawa)
ATTN: Kevin Hicks
210 Colonnade Road South
Suite 300
Ottawa ON K2E7L5

Date Received: 11-JAN-22
Report Date: 21-JAN-22 08:25 (MT)
Version: FINAL

Client Phone: 613-727-0658

Certificate of Analysis

Lab Work Order #: L2678188

Project P.O. #: NOT SUBMITTED
Job Reference: OESA02132.3000.5120.5730.00
C of C Numbers:
Legal Site Desc:

Gayle Braun
Senior Account Manager

Summary of Guideline Exceedances

ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Ontario Regulation 153/04 - April 15, 2011 Standards - T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use						
L2678188-1	BH21-6 SS3	Metals	Barium (Ba)	231	220	ug/g
L2678188-2	BH21-7 SS3	Metals	Barium (Ba)	362	220	ug/g
			Chromium (Cr)	87.9	70	ug/g
			Cobalt (Co)	21.5	21	ug/g
			Vanadium (V)	100	86	ug/g
L2678188-5	BH21-10 SS3	Metals	Barium (Ba)	230	220	ug/g
L2678188-7	MW21-12 SS3	Metals	Barium (Ba)	221	220	ug/g
L2678188-8	MW21-13 SS3	Metals	Barium (Ba)	235	220	ug/g
		Speciated Metals	Chromium, Hexavalent	1.20	0.66	ug/g
L2678188-9	MW21-14 SS3	Metals	Barium (Ba)	239	220	ug/g
		Speciated Metals	Chromium, Hexavalent	0.85	0.66	ug/g
L2678188-10	MW21-15 SS3	Saturated Paste Extractables	SAR	3.82	2.4	SAR
		Metals	Barium (Ba)	529	220	ug/g
			Chromium (Cr)	137	70	ug/g
			Cobalt (Co)	31.6	21	ug/g
			Vanadium (V)	147	86	ug/g
		Speciated Metals	Chromium, Hexavalent	1.27	0.66	ug/g

Physical Tests - SOIL

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID	L2678188-1	L2678188-2	L2678188-3	L2678188-4	L2678188-5	L2678188-6	L2678188-7	L2678188-8	L2678188-9
				Sample Date	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22
				Sample ID	BH21-6 SS3	BH21-7 SS3	BH21-8 SS3	BH21-9 SS3	BH21-10 SS3	MW21-11 SS3	MW21-12 SS3	MW21-13 SS3	MW21-14 SS3
Conductivity	mS/cm	0.57	-		0.218	0.103	0.160	0.141	0.190	0.163	0.229	0.104	0.153
% Moisture	%	-	-		24.8	22.2	26.9	26.5	26.2	24.2	27.0	24.3	25.8
pH	pH units	-	-		7.60	7.58	7.33	7.49	7.56	7.36	7.43	7.17	7.20

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Physical Tests - SOIL

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID: L2678188-10	L2678188-11	L2678188-12	L2678188-13
				Sample Date: 11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22
				Sample ID: MW21-15 SS3	MW21-16 SS3	DUP-1	DUP-2
Conductivity	mS/cm	0.57	-	0.161	0.195	0.133	0.146
% Moisture	%	-	-	26.6	24.8	25.9	25.1
pH	pH units	-	-	7.24	7.61	7.21	7.56

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Cyanides - SOIL

			Lab ID	L2678188-1	L2678188-2	L2678188-3	L2678188-4	L2678188-5	L2678188-6	L2678188-7	L2678188-8	L2678188-9
			Sample Date	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22
			Sample ID	BH21-6 SS3	BH21-7 SS3	BH21-8 SS3	BH21-9 SS3	BH21-10 SS3	MW21-11 SS3	MW21-12 SS3	MW21-13 SS3	MW21-14 SS3
Analyte	Unit	Guide Limits #1	#2									
Cyanide, Weak Acid Diss	ug/g	0.051	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Cyanides - SOIL

		Guide Limits					
Lab ID				L2678188-10	L2678188-11	L2678188-12	L2678188-13
Sample Date				11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22
Sample ID				MW21-15 SS3	MW21-16 SS3	DUP-1	DUP-2
Analyte	**Unit**	**#1**	**#2**				
Cyanide, Weak Acid Diss	ug/g	0.051	-	<0.050	<0.050	<0.050	<0.050

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Saturated Paste Extractables - SOIL

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID	L2678188-1	L2678188-2	L2678188-3	L2678188-4	L2678188-5	L2678188-6	L2678188-7	L2678188-8	L2678188-9
				Sample Date	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22
				Sample ID	BH21-6 SS3	BH21-7 SS3	BH21-8 SS3	BH21-9 SS3	BH21-10 SS3	MW21-11 SS3	MW21-12 SS3	MW21-13 SS3	MW21-14 SS3
SAR	SAR	2.4	-		0.79	1.20	0.44	0.47	0.67	0.60	0.54	0.54	0.52
Calcium (Ca)	mg/L	-	-		16.8	4.83	13.7	13.3	15.7	14.1	21.2	8.78	11.1
Magnesium (Mg)	mg/L	-	-		8.41	3.64	5.47	5.54	8.56	6.03	7.57	3.91	6.16
Sodium (Na)	mg/L	-	-		15.9	14.3	7.67	8.04	13.3	10.7	11.3	7.67	8.75

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Saturated Paste Extractables - SOIL

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID	Sample Date	Sample ID	
				L2678188-10	L2678188-11	L2678188-12	L2678188-13
				11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22
				MW21-15 SS3	MW21-16 SS3	DUP-1	DUP-2
SAR	SAR	2.4	-	3.82	0.53	0.70	0.85
Calcium (Ca)	mg/L	-	-	2.68	16.7	7.71	7.85
Magnesium (Mg)	mg/L	-	-	1.92	8.75	4.43	4.91
Sodium (Na)	mg/L	-	-	33.5	10.7	9.86	12.3

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Metals - SOIL

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID	L2678188-1	L2678188-2	L2678188-3	L2678188-4	L2678188-5	L2678188-6	L2678188-7	L2678188-8	L2678188-9
				Sample Date	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22
				Sample ID	BH21-6 SS3	BH21-7 SS3	BH21-8 SS3	BH21-9 SS3	BH21-10 SS3	MW21-11 SS3	MW21-12 SS3	MW21-13 SS3	MW21-14 SS3
Antimony (Sb)	ug/g	1.3	-		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic (As)	ug/g	18	-		3.9	3.7	3.7	3.7	3.6	4.0	4.4	3.5	4.1
Barium (Ba)	ug/g	220	-		231	362	199	198	230	203	221	235	239
Beryllium (Be)	ug/g	2.5	-		0.63	0.86	0.65	0.62	0.68	0.62	0.67	0.79	0.71
Boron (B)	ug/g	36	-		7.7	6.1	6.9	6.2	5.8	6.3	7.1	6.5	6.9
Boron (B), Hot Water Ext.	ug/g	36	-		0.17	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)	ug/g	1.2	-		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	ug/g	70	-		47.7	87.9	45.2	40.3	49.2	41.4	53.8	54.4	49.0
Cobalt (Co)	ug/g	21	-		12.2	21.5	12.7	12.2	11.9	12.9	12.1	13.6	14.5
Copper (Cu)	ug/g	92	-		27.8	48.2	30.2	26.3	30.6	26.5	29.7	31.1	31.6
Lead (Pb)	ug/g	120	-		6.3	7.4	6.5	6.3	6.8	6.2	6.7	7.3	7.3
Mercury (Hg)	ug/g	0.27	-		0.0057	0.0077	0.0082	<0.0050	0.0072	<0.0050	0.0067	0.0081	0.0076
Molybdenum (Mo)	ug/g	2	-		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel (Ni)	ug/g	82	-		27.1	49.0	26.2	25.7	26.8	25.2	27.3	31.2	30.2
Selenium (Se)	ug/g	1.5	-		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	ug/g	0.5	-		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	ug/g	1	-		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	ug/g	2.5	-		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	ug/g	86	-		68.5	100	64.6	62.9	69.3	63.9	67.4	73.2	75.1
Zinc (Zn)	ug/g	290	-		74.1	113	69.4	66.4	79.6	67.0	75.2	85.2	80.6

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Metals - SOIL

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID: L2678188-10	L2678188-11	L2678188-12	L2678188-13
				Sample Date: 11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22
				Sample ID: MW21-15 SS3	MW21-16 SS3	DUP-1	DUP-2
Antimony (Sb)	ug/g	1.3	-	<1.0	<1.0	<1.0	<1.0
Arsenic (As)	ug/g	18	-	4.5	4.4	4.1	3.1
Barium (Ba)	ug/g	220	-	529	203	198	203
Beryllium (Be)	ug/g	2.5	-	1.00	0.62	0.61	0.64
Boron (B)	ug/g	36	-	5.5	7.0	5.8	6.1
Boron (B), Hot Water Ext.	ug/g	36	-	<0.10	0.12	<0.10	<0.10
Cadmium (Cd)	ug/g	1.2	-	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	ug/g	70	-	137	42.6	40.4	42.1
Cobalt (Co)	ug/g	21	-	31.6	12.4	14.2	11.1
Copper (Cu)	ug/g	92	-	67.7	27.3	27.2	26.0
Lead (Pb)	ug/g	120	-	8.2	6.3	6.5	6.0
Mercury (Hg)	ug/g	0.27	-	0.0068	<0.0050	<0.0050	0.0053
Molybdenum (Mo)	ug/g	2	-	<1.0	<1.0	<1.0	<1.0
Nickel (Ni)	ug/g	82	-	72.3	25.1	26.5	24.9
Selenium (Se)	ug/g	1.5	-	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	ug/g	0.5	-	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	ug/g	1	-	0.51	<0.50	<0.50	<0.50
Uranium (U)	ug/g	2.5	-	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	ug/g	86	-	147	66.4	67.2	58.6
Zinc (Zn)	ug/g	290	-	152	68.7	66.3	69.0

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Speciated Metals - SOIL

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID	Sample Date	Sample ID							
				L2678188-1	L2678188-2	L2678188-3	L2678188-4	L2678188-5	L2678188-6	L2678188-7	L2678188-8	L2678188-9
				11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22
				BH21-6 SS3	BH21-7 SS3	BH21-8 SS3	BH21-9 SS3	BH21-10 SS3	MW21-11 SS3	MW21-12 SS3	MW21-13 SS3	MW21-14 SS3
Chromium, Hexavalent	ug/g	0.66	-	0.26	0.45	0.35	0.42	<0.20	<0.20	0.61	1.20	0.85

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

ANALYTICAL REPORT

Speciated Metals - SOIL

		Guide Limits					
Lab ID				L2678188-10	L2678188-11	L2678188-12	L2678188-13
Sample Date				11-JAN-22	11-JAN-22	11-JAN-22	11-JAN-22
Sample ID				MW21-15 SS3	MW21-16 SS3	DUP-1	DUP-2
Analyte	**Unit**	**#1**	**#2**				
Chromium, Hexavalent	ug/g	0.66	-	1.27	0.42	0.41	0.27

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
B-HWS-R511-WT	Soil	Boron-HWE-O.Reg 153/04 (July 2011)	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 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

CN-WAD-R511-WT	Soil	Cyanide (WAD)-O.Reg 153/04 (July 2011)	MOE 3015/APHA 4500CN I-WAD

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

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 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

CR-CR6-IC-WT	Soil	Hexavalent Chromium in Soil	SW846 3060A/7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

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).

EC-WT	Soil	Conductivity (EC)	MOEE E3138

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

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).

HG-200.2-CVAA-WT	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

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).

MET-200.2-CCMS-WT	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020B (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

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), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

MOISTURE-WT	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
PH-WT	Soil	pH	MOEE E3137A

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

A minimum 10g portion of the sample 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 and then analyzed using a pH meter and electrode.

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).

SAR-R511-WT	Soil	SAR-O.Reg 153/04 (July 2011)	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.

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 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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. Guideline limits 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.

Quality Control Report

Workorder: L2678188 Report Date: 21-JAN-22

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT	Soil							
Batch R5699757								
WG3685875-4 DUP		**L2675517-6**						
Boron (B), Hot Water Ext.		0.25	0.24		ug/g	4.9	30	18-JAN-22
WG3685875-2 IRM		**WT SAR4**						
Boron (B), Hot Water Ext.			121.0		%		70-130	18-JAN-22
WG3685875-3 LCS								
Boron (B), Hot Water Ext.			109.0		%		70-130	18-JAN-22
WG3685875-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	18-JAN-22
Batch R5699776								
WG3685870-4 DUP		**L2678188-11**						
Boron (B), Hot Water Ext.		0.12	0.12		ug/g	3.8	30	18-JAN-22
WG3685870-2 IRM		**WT SAR4**						
Boron (B), Hot Water Ext.			102.3		%		70-130	18-JAN-22
WG3685870-3 LCS								
Boron (B), Hot Water Ext.			106.0		%		70-130	18-JAN-22
WG3685870-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	18-JAN-22
CN-WAD-R511-WT	Soil							
Batch R5699160								
WG3684476-3 DUP		**L2678124-1**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	18-JAN-22
WG3684476-2 LCS								
Cyanide, Weak Acid Diss			90.7		%		80-120	18-JAN-22
WG3684476-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	18-JAN-22
WG3684476-4 MS		**L2678124-1**						
Cyanide, Weak Acid Diss			92.0		%		70-130	18-JAN-22
CR-CR6-IC-WT	Soil							
Batch R5695760								
WG3684559-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			89.7		%		70-130	14-JAN-22
WG3684559-3 DUP		**L2678188-7**						
Chromium, Hexavalent		0.61	2.68	DUP-H	ug/g	126	35	14-JAN-22
WG3684559-2 LCS								
Chromium, Hexavalent			93.6		%		80-120	14-JAN-22
WG3684559-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	14-JAN-22

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-IC-WT	Soil							
Batch R5702917								
WG3686043-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			76.3		%		70-130	20-JAN-22
WG3686043-3 DUP		**L2678119-11**						
Chromium, Hexavalent		0.35	<0.20	RPD-NA	ug/g	N/A	35	20-JAN-22
WG3686043-2 LCS								
Chromium, Hexavalent			82.6		%		80-120	20-JAN-22
WG3686043-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	20-JAN-22
EC-WT	Soil							
Batch R5699362								
WG3685876-4 DUP		**WG3685876-3**						
Conductivity		0.177	0.177		mS/cm	0.1	20	18-JAN-22
WG3685876-2 IRM		**WT SAR4**						
Conductivity			108.5		%		70-130	18-JAN-22
WG3686160-1 LCS								
Conductivity			97.1		%		90-110	18-JAN-22
WG3685876-1 MB								
Conductivity			<0.0040		mS/cm		0.004	18-JAN-22
Batch R5699788								
WG3685869-4 DUP		**WG3685869-3**						
Conductivity		0.658	0.659		mS/cm	0.2	20	18-JAN-22
WG3685869-2 IRM		**WT SAR4**						
Conductivity			102.4		%		70-130	18-JAN-22
WG3686242-1 LCS								
Conductivity			96.9		%		90-110	18-JAN-22
WG3685869-1 MB								
Conductivity			<0.0040		mS/cm		0.004	18-JAN-22
HG-200.2-CVAA-WT	Soil							
Batch R5698978								
WG3685874-2 CRM		**WT-SS-2**						
Mercury (Hg)			91.2		%		70-130	18-JAN-22
WG3685874-6 DUP		**WG3685874-5**						
Mercury (Hg)		0.0076	<0.0050	RPD-NA	ug/g	N/A	40	18-JAN-22
WG3685874-3 LCS								
Mercury (Hg)			91.5		%		80-120	18-JAN-22
WG3685874-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	18-JAN-22

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-200.2-CVAA-WT	Soil							
Batch R5698979								
WG3685883-2 CRM		**WT-SS-2**						
Mercury (Hg)			91.8		%		70-130	18-JAN-22
WG3685883-6 DUP		**WG3685883-5**						
Mercury (Hg)		<0.0050	<0.0050	RPD-NA	ug/g	N/A	40	18-JAN-22
WG3685883-3 LCS								
Mercury (Hg)			92.0		%		80-120	18-JAN-22
WG3685883-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	18-JAN-22
MET-200.2-CCMS-WT	Soil							
Batch R5699062								
WG3685874-2 CRM		**WT-SS-2**						
Antimony (Sb)			100.6		%		70-130	18-JAN-22
Arsenic (As)			113.2		%		70-130	18-JAN-22
Barium (Ba)			122.9		%		70-130	18-JAN-22
Beryllium (Be)			117.6		%		70-130	18-JAN-22
Boron (B)			9.6		mg/kg		3.5-13.5	18-JAN-22
Cadmium (Cd)			107.6		%		70-130	18-JAN-22
Chromium (Cr)			115.5		%		70-130	18-JAN-22
Cobalt (Co)			114.9		%		70-130	18-JAN-22
Copper (Cu)			115.1		%		70-130	18-JAN-22
Lead (Pb)			109.1		%		70-130	18-JAN-22
Molybdenum (Mo)			110.5		%		70-130	18-JAN-22
Nickel (Ni)			115.9		%		70-130	18-JAN-22
Selenium (Se)			0.12		mg/kg		0-0.34	18-JAN-22
Silver (Ag)			117.0		%		70-130	18-JAN-22
Thallium (Tl)			0.077		mg/kg		0.029-0.129	18-JAN-22
Uranium (U)			103.8		%		70-130	18-JAN-22
Vanadium (V)			113.4		%		70-130	18-JAN-22
Zinc (Zn)			114.3		%		70-130	18-JAN-22
WG3685874-6 DUP		**WG3685874-5**						
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	18-JAN-22
Arsenic (As)		4.07	3.96		ug/g	2.8	30	18-JAN-22
Barium (Ba)		239	227		ug/g	5.0	40	18-JAN-22
Beryllium (Be)		0.71	0.71		ug/g	1.0	30	18-JAN-22
Boron (B)		6.9	6.6		ug/g	3.3	30	18-JAN-22

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R5699062								
WG3685874-6 DUP		**WG3685874-5**						
Cadmium (Cd)		0.065	0.058		ug/g	11	30	18-JAN-22
Chromium (Cr)		49.0	46.1		ug/g	6.2	30	18-JAN-22
Cobalt (Co)		14.5	13.3		ug/g	8.5	30	18-JAN-22
Copper (Cu)		31.6	29.3		ug/g	7.3	30	18-JAN-22
Lead (Pb)		7.26	6.91		ug/g	5.0	40	18-JAN-22
Molybdenum (Mo)		0.36	0.33		ug/g	7.1	40	18-JAN-22
Nickel (Ni)		30.2	27.9		ug/g	8.0	30	18-JAN-22
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	18-JAN-22
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	18-JAN-22
Thallium (Tl)		0.235	0.227		ug/g	3.4	30	18-JAN-22
Uranium (U)		0.682	0.661		ug/g	3.1	30	18-JAN-22
Vanadium (V)		75.1	70.3		ug/g	6.6	30	18-JAN-22
Zinc (Zn)		80.6	74.6		ug/g	7.6	30	18-JAN-22
WG3685874-4 LCS								
Antimony (Sb)			110.7		%		80-120	18-JAN-22
Arsenic (As)			108.9		%		80-120	18-JAN-22
Barium (Ba)			110.8		%		80-120	18-JAN-22
Beryllium (Be)			108.5		%		80-120	18-JAN-22
Boron (B)			103.2		%		80-120	18-JAN-22
Cadmium (Cd)			106.4		%		80-120	18-JAN-22
Chromium (Cr)			110.7		%		80-120	18-JAN-22
Cobalt (Co)			110.7		%		80-120	18-JAN-22
Copper (Cu)			109.6		%		80-120	18-JAN-22
Lead (Pb)			112.8		%		80-120	18-JAN-22
Molybdenum (Mo)			110.0		%		80-120	18-JAN-22
Nickel (Ni)			108.7		%		80-120	18-JAN-22
Selenium (Se)			109.4		%		80-120	18-JAN-22
Silver (Ag)			88.2		%		80-120	18-JAN-22
Thallium (Tl)			111.0		%		80-120	18-JAN-22
Uranium (U)			110.9		%		80-120	18-JAN-22
Vanadium (V)			112.4		%		80-120	18-JAN-22
Zinc (Zn)			105.5		%		80-120	18-JAN-22
WG3685874-1 MB								
							0.1	

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R5699062								
WG3685874-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	18-JAN-22
Arsenic (As)			<0.10		mg/kg		0.1	18-JAN-22
Barium (Ba)			<0.50		mg/kg		0.5	18-JAN-22
Beryllium (Be)			<0.10		mg/kg		0.1	18-JAN-22
Boron (B)			<5.0		mg/kg		5	18-JAN-22
Cadmium (Cd)			<0.020		mg/kg		0.02	18-JAN-22
Chromium (Cr)			<0.50		mg/kg		0.5	18-JAN-22
Cobalt (Co)			<0.10		mg/kg		0.1	18-JAN-22
Copper (Cu)			<0.50		mg/kg		0.5	18-JAN-22
Lead (Pb)			<0.50		mg/kg		0.5	18-JAN-22
Molybdenum (Mo)			<0.10		mg/kg		0.1	18-JAN-22
Nickel (Ni)			<0.50		mg/kg		0.5	18-JAN-22
Selenium (Se)			<0.20		mg/kg		0.2	18-JAN-22
Silver (Ag)			<0.10		mg/kg		0.1	18-JAN-22
Thallium (Tl)			<0.050		mg/kg		0.05	18-JAN-22
Uranium (U)			<0.050		mg/kg		0.05	18-JAN-22
Vanadium (V)			<0.20		mg/kg		0.2	18-JAN-22
Zinc (Zn)			<2.0		mg/kg		2	18-JAN-22
Batch R5699358								
WG3685883-2 CRM		**WT-SS-2**						
Antimony (Sb)			95.0		%		70-130	18-JAN-22
Arsenic (As)			102.6		%		70-130	18-JAN-22
Barium (Ba)			109.3		%		70-130	18-JAN-22
Beryllium (Be)			99.9		%		70-130	18-JAN-22
Boron (B)			8.0		mg/kg		3.5-13.5	18-JAN-22
Cadmium (Cd)			126.4		%		70-130	18-JAN-22
Chromium (Cr)			107.9		%		70-130	18-JAN-22
Cobalt (Co)			101.5		%		70-130	18-JAN-22
Copper (Cu)			103.8		%		70-130	18-JAN-22
Lead (Pb)			102.8		%		70-130	18-JAN-22
Molybdenum (Mo)			106.8		%		70-130	18-JAN-22
Nickel (Ni)			102.9		%		70-130	18-JAN-22
Selenium (Se)			0.13		mg/kg		0-0.34	18-JAN-22
Thallium (Tl)			0.073		mg/kg		0.029-0.129	18-JAN-22

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R5699358								
WG3685883-2 CRM		**WT-SS-2**						
Uranium (U)			99.9		%		70-130	18-JAN-22
Vanadium (V)			100.9		%		70-130	18-JAN-22
Zinc (Zn)			101.4		%		70-130	18-JAN-22
WG3685883-6 DUP		**WG3685883-5**						
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	18-JAN-22
Arsenic (As)		4.10	4.35		ug/g	6.1	30	18-JAN-22
Barium (Ba)		198	214		ug/g	7.3	40	18-JAN-22
Beryllium (Be)		0.61	0.67		ug/g	7.9	30	18-JAN-22
Boron (B)		5.8	6.2		ug/g	5.7	30	18-JAN-22
Cadmium (Cd)		0.058	0.061		ug/g	4.7	30	18-JAN-22
Chromium (Cr)		40.4	42.3		ug/g	4.6	30	18-JAN-22
Cobalt (Co)		14.2	14.4		ug/g	1.8	30	18-JAN-22
Copper (Cu)		27.2	27.9		ug/g	2.6	30	18-JAN-22
Lead (Pb)		6.47	6.46		ug/g	0.2	40	18-JAN-22
Molybdenum (Mo)		0.41	0.42		ug/g	2.5	40	18-JAN-22
Nickel (Ni)		26.5	27.1		ug/g	2.2	30	18-JAN-22
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	18-JAN-22
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	18-JAN-22
Thallium (Tl)		0.194	0.198		ug/g	2.0	30	18-JAN-22
Uranium (U)		0.612	0.617		ug/g	0.7	30	18-JAN-22
Vanadium (V)		67.2	70.0		ug/g	4.1	30	18-JAN-22
Zinc (Zn)		66.3	68.4		ug/g	3.0	30	18-JAN-22
WG3685883-4 LCS								
Antimony (Sb)			106.6		%		80-120	18-JAN-22
Arsenic (As)			104.6		%		80-120	18-JAN-22
Barium (Ba)			102.2		%		80-120	18-JAN-22
Beryllium (Be)			96.8		%		80-120	18-JAN-22
Boron (B)			91.2		%		80-120	18-JAN-22
Cadmium (Cd)			102.4		%		80-120	18-JAN-22
Chromium (Cr)			102.4		%		80-120	18-JAN-22
Cobalt (Co)			103.5		%		80-120	18-JAN-22
Copper (Cu)			101.8		%		80-120	18-JAN-22
Lead (Pb)			105.2		%		80-120	18-JAN-22

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R5699358								
WG3685883-4 LCS								
Molybdenum (Mo)			102.4		%		80-120	18-JAN-22
Nickel (Ni)			101.9		%		80-120	18-JAN-22
Selenium (Se)			106.6		%		80-120	18-JAN-22
Silver (Ag)			81.6		%		80-120	18-JAN-22
Thallium (Tl)			102.9		%		80-120	18-JAN-22
Uranium (U)			101.3		%		80-120	18-JAN-22
Vanadium (V)			104.6		%		80-120	18-JAN-22
Zinc (Zn)			102.2		%		80-120	18-JAN-22
WG3685883-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	18-JAN-22
Arsenic (As)			<0.10		mg/kg		0.1	18-JAN-22
Barium (Ba)			<0.50		mg/kg		0.5	18-JAN-22
Beryllium (Be)			<0.10		mg/kg		0.1	18-JAN-22
Boron (B)			<5.0		mg/kg		5	18-JAN-22
Cadmium (Cd)			<0.020		mg/kg		0.02	18-JAN-22
Chromium (Cr)			<0.50		mg/kg		0.5	18-JAN-22
Cobalt (Co)			<0.10		mg/kg		0.1	18-JAN-22
Copper (Cu)			<0.50		mg/kg		0.5	18-JAN-22
Lead (Pb)			<0.50		mg/kg		0.5	18-JAN-22
Molybdenum (Mo)			<0.10		mg/kg		0.1	18-JAN-22
Nickel (Ni)			<0.50		mg/kg		0.5	18-JAN-22
Selenium (Se)			<0.20		mg/kg		0.2	18-JAN-22
Silver (Ag)			<0.10		mg/kg		0.1	18-JAN-22
Thallium (Tl)			<0.050		mg/kg		0.05	18-JAN-22
Uranium (U)			<0.050		mg/kg		0.05	18-JAN-22
Vanadium (V)			<0.20		mg/kg		0.2	18-JAN-22
Zinc (Zn)			<2.0		mg/kg		2	18-JAN-22
MOISTURE-WT	Soil							
Batch R5693526								
WG3684398-3 DUP		**L2678188-1**						
% Moisture		24.8	25.6		%	3.2	20	13-JAN-22
WG3684398-2 LCS								
% Moisture			99.97		%		90-110	13-JAN-22
WG3684398-1 MB								

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	Soil							
Batch R5693526								
WG3684398-1 MB								
% Moisture			<0.25		%		0.25	13-JAN-22
Batch R5693661								
WG3684468-3 DUP		**L2678430-1**						
% Moisture		4.65	4.48		%	3.7	20	12-JAN-22
WG3684468-2 LCS								
% Moisture			99.0		%		90-110	12-JAN-22
WG3684468-1 MB								
% Moisture			<0.25		%		0.25	12-JAN-22
PH-WT	Soil							
Batch R5694116								
WG3684472-1 DUP		**L2678188-7**						
pH		7.43	7.53	J	pH units	0.10	0.3	13-JAN-22
WG3684580-1 LCS								
pH			6.97		pH units		6.9-7.1	13-JAN-22
Batch R5695604								
WG3684550-1 DUP		**L2678485-1**						
pH		7.81	7.90	J	pH units	0.09	0.3	14-JAN-22
WG3685046-1 LCS								
pH			7.01		pH units		6.9-7.1	14-JAN-22
SAR-R511-WT	Soil							
Batch R5699559								
WG3685876-4 DUP		**WG3685876-3**						
Calcium (Ca)		21.7	21.8		mg/L	0.5	30	18-JAN-22
Sodium (Na)		4.24	4.22		mg/L	0.5	30	18-JAN-22
Magnesium (Mg)		6.20	6.17		mg/L	0.5	30	18-JAN-22
WG3685876-2 IRM		**WT SAR4**						
Calcium (Ca)			100.0		%		70-130	18-JAN-22
Sodium (Na)			92.0		%		70-130	18-JAN-22
Magnesium (Mg)			101.7		%		70-130	18-JAN-22
WG3685876-5 LCS								
Calcium (Ca)			95.3		%		80-120	18-JAN-22
Sodium (Na)			101.4		%		80-120	18-JAN-22
Magnesium (Mg)			95.2		%		80-120	18-JAN-22
WG3685876-1 MB								
Calcium (Ca)			<0.50		mg/L		0.5	18-JAN-22

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT	Soil							
Batch R5699559								
WG3685876-1 MB								
Sodium (Na)			<0.50		mg/L		0.5	18-JAN-22
Magnesium (Mg)			<0.50		mg/L		0.5	18-JAN-22
Batch R5699789								
WG3685869-4 DUP		**WG3685869-3**						
Calcium (Ca)		85.6	76.1		mg/L	12	30	18-JAN-22
Sodium (Na)		24.2	23.5		mg/L	2.9	30	18-JAN-22
Magnesium (Mg)		47.0	42.7		mg/L	9.6	30	18-JAN-22
WG3685869-2 IRM		**WT SAR4**						
Calcium (Ca)			95.3		%		70-130	18-JAN-22
Sodium (Na)			95.7		%		70-130	18-JAN-22
Magnesium (Mg)			100.9		%		70-130	18-JAN-22
WG3685869-5 LCS								
Calcium (Ca)			104.3		%		80-120	18-JAN-22
Sodium (Na)			102.2		%		80-120	18-JAN-22
Magnesium (Mg)			102.4		%		80-120	18-JAN-22
WG3685869-1 MB								
Calcium (Ca)			<0.50		mg/L		0.5	18-JAN-22
Sodium (Na)			<0.50		mg/L		0.5	18-JAN-22
Magnesium (Mg)			<0.50		mg/L		0.5	18-JAN-22

Quality Control Report

Workorder: L2678188 Report Date: 21-JAN-22

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2678188-COFC

COC Number: 17 - 802268

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Wood
Contact:	Kevin Hicks
Phone:	613 727 0055
	Company address below will appear on the final report
Street:	210 Colonnade Rd S., Suite 300
City/Province:	Ottawa, ON
Postal Code:	K2E 7L5

Report Format / Distribution

Select Report Format: [x] PDF [x] EXCEL [x] EDD (DIGITAL)
Quality Control (QC) Report with Report [x] YES [ ] NO
[ ] Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: [x] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax: kevin.hicks2@woodplc.com
Email 2
Email 3

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] [x] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] [ ] 3 day [P3-25%] [ ] 2 day [P2-50%] [ ]

EMERGENCY: 1 Business day [E - 100%] [ ] Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] [ ]

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

For tests that can not be performed according to the service level selected, you will be contacted.

Invoice To		
Same as Report To	[x] YES	[ ] NO
Copy of Invoice with Report	[x] YES	[ ] NO
Company:		
Contact:		

Invoice Distribution

Select Invoice Distribution: [ ] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax: SAA
Email 2

Project Information

ALS Account # / Quote #:
Job #: OESA02132.4000.5120. ~~[illegible]~~
PO / AFE:
LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: SAA PO#
Major/Minor Code: Routing Code:
Requisitioner:
Location:

ALS Lab Work Order # (lab use only): L2678188 JD
ALS Contact:
Sampler: BC

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

ALS Sample # (lab 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	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	BH21-6 SS3	11.1.22		S	1	X		
	BH21-7 SS3	↓		↓	↓	X		
	BH21-8 SS3					X		
	BH21-9 SS3					X		
	BH21-10 SS3					X		
	MW21-11 SS3					X		
	MW21-12 SS3					X		
	MW21-13 SS3					X		
	MW21-14 SS3					X		
	MW21-15 SS3					X		
	MW21-16 SS3					X		
	Dup-1 / Dup-2 ← 2 samples					X		

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

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

O Reg 153 table 1

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] SIF Observations Yes [ ] No [ ]
Ice Packs [ ] Ice Cubes [ ] Custody seal intact Yes [ ] No [ ]
Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C: 10.3
FINAL COOLER TEMPERATURES °C: 8.3

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Brian Clark	Date: 11.1.22	Time:	Received by: [illegible]	Date: 1/11/22	Time: 10:55	Received by: [illegible]	Date: 12-JAN-22	Time: 9:30

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

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

Wood Environment & Infrastructure Solutions (Ottawa)
ATTN: Kevin Hicks
210 Colonnade Road South
Suite 300
Ottawa ON K2E7L5

Date Received: 12-JAN-22
Report Date: 20-JAN-22 11:28 (MT)
Version: FINAL

Client Phone: 613-727-0658

Certificate of Analysis

Lab Work Order #: L2678530

Project P.O. #: NOT SUBMITTED
Job Reference: OEASO2132.4000.5120.57500000
C of C Numbers:
Legal Site Desc:

Gayle Braun
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2678530-1 TP-1 SS3 Sampled By: BC on 12-JAN-22 Matrix: SOIL							
Physical Tests							
Conductivity	0.316		0.0040	mS/cm		19-JAN-22	R5701098
% Moisture	23.4		0.25	%	14-JAN-22	15-JAN-22	R5697001
pH	7.17		0.10	pH units		18-JAN-22	R5698980
Resistivity	3160		1.0	ohm*cm		19-JAN-22	
Leachable Anions & Nutrients							
Chloride	33.7		5.0	ug/g	18-JAN-22	18-JAN-22	R5700248
Anions and Nutrients							
Sulphate	237		20	ug/g	18-JAN-22	18-JAN-22	R5700248
L2678530-2 TP-7 SS3 Sampled By: BC on 12-JAN-22 Matrix: SOIL							
Physical Tests							
Conductivity	0.125		0.0040	mS/cm		19-JAN-22	R5701098
% Moisture	25.9		0.25	%	14-JAN-22	15-JAN-22	R5697001
pH	6.84		0.10	pH units		18-JAN-22	R5698980
Resistivity	8030		1.0	ohm*cm		19-JAN-22	
Leachable Anions & Nutrients							
Chloride	<5.0		5.0	ug/g	18-JAN-22	18-JAN-22	R5700248
Anions and Nutrients							
Sulphate	79		20	ug/g	18-JAN-22	18-JAN-22	R5700248
L2678530-3 TP-11 SS3 Sampled By: BC on 12-JAN-22 Matrix: SOIL							
Physical Tests							
Conductivity	0.0784		0.0040	mS/cm		19-JAN-22	R5701098
% Moisture	24.2		0.25	%	14-JAN-22	15-JAN-22	R5697001
pH	7.04		0.10	pH units		18-JAN-22	R5698980
Resistivity	12800		1.0	ohm*cm		19-JAN-22	
Leachable Anions & Nutrients							
Chloride	<5.0		5.0	ug/g	18-JAN-22	18-JAN-22	R5700248
Anions and Nutrients							
Sulphate	26		20	ug/g	18-JAN-22	18-JAN-22	R5700248

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-R511-WT	Soil	Chloride-O.Reg 153/04 (July 2011)	EPA 300.0

5 grams of dried soil is mixed with 10 grams of distilled water for a minimum of 30 minutes. The extract is filtered and analyzed by ion chromatography.

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 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

EC-WT	Soil	Conductivity (EC)	MOEE E3138

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

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).

MOISTURE-WT	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
PH-WT	Soil	pH	MOEE E3137A

A minimum 10g portion of the sample 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 and then analyzed using a pH meter and electrode.

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).

REDOX-POTENTIAL-WT	Soil	Redox Potential	APHA 2580

This analysis is carried out in accordance with the procedure described in the "APHA" method 2580 "Oxidation-Reduction Potential" 2012. Samples are extracted at a fixed ratio with DI water. Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

RESISTIVITY-CALC-WT	Soil	Resistivity Calculation	APHA 2510 B

"Soil Resistivity (calculated)" is determined as the inverse of the conductivity of a 2:1 water:soil leachate (dry weight). This method is intended as a rapid approximation for Soil Resistivity. Where high accuracy results are required, direct measurement of Soil Resistivity by the Wenner Four-Electrode Method (ASTM G57) is recommended.

SO4-WT	Soil	Sulphate	EPA 300.0

5 grams of soil is mixed with 50 mL of distilled water for a minimum of 30 minutes. The extract is filtered and analyzed by ion chromatography.

SULPHIDE-WT	Soil	Sulphide, Acid Volatile	APHA 4500S2J

This analysis is carried out in accordance with the method described in APHA 4500 S2-J. Hydrochloric acid is added to sediment samples within a purge and trap system. The evolved hydrogen sulphide (H2S) is carried into a basic solution by inert gas. The acid volatile sulfide is then determined colourimetrically.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2678530 Report Date: 20-JAN-22

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-R511-WT	Soil							
Batch R5700248								
WG3686096-3 CRM		**AN-CRM-WT**						
Chloride			91.4		%		70-130	18-JAN-22
WG3686096-4 DUP		**L2677696-4**						
Chloride		9.0	8.7		ug/g	3.1	30	18-JAN-22
WG3686096-2 LCS								
Chloride			101.2		%		80-120	18-JAN-22
WG3686096-1 MB								
Chloride			<5.0		ug/g		5	18-JAN-22
EC-WT	Soil							
Batch R5701098								
WG3686219-4 DUP		**WG3686219-3**						
Conductivity		0.187	0.190		mS/cm	1.5	20	19-JAN-22
WG3686219-2 IRM		**WT SAR4**						
Conductivity			112.3		%		70-130	19-JAN-22
WG3686682-1 LCS								
Conductivity			95.7		%		90-110	19-JAN-22
WG3686219-1 MB								
Conductivity			<0.0040		mS/cm		0.004	19-JAN-22
MOISTURE-WT	Soil							
Batch R5697001								
WG3685324-3 DUP		**L2678675-5**						
% Moisture		24.5	25.5		%	3.8	20	15-JAN-22
WG3685324-2 LCS								
% Moisture			99.98		%		90-110	15-JAN-22
WG3685324-1 MB								
% Moisture			<0.25		%		0.25	15-JAN-22
PH-WT	Soil							
Batch R5698980								
WG3685610-1 DUP		**L2678714-3**						
pH		7.78	7.75	J	pH units	0.03	0.3	18-JAN-22
WG3685977-1 LCS								
pH			7.02		pH units		6.9-7.1	18-JAN-22
SO4-WT	Soil							
Batch R5700248								
WG3686096-3 CRM		**AN-CRM-WT**						
Sulphate			102.8		%		60-140	18-JAN-22
WG3686096-4 DUP		**L2677696-4**						

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-WT	Soil							
Batch R5700248								
WG3686096-4 DUP		**L2677696-4**						
Sulphate		<20	<20	RPD-NA	ug/g	N/A	25	18-JAN-22
WG3686096-2 LCS								
Sulphate			102.6		%		70-130	18-JAN-22
WG3686096-1 MB								
Sulphate			<20		ug/g		20	18-JAN-22

Quality Control Report

Workorder: L2678530 Report Date: 20-JAN-22

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody (COC) / Analytical Request Form

L2678530-COFC

COC Number: 15 -

Page 1 of 1

www.alslobal.com

Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report
Company:	Wood (Ottawa) -22724
Contact:	Kevin Hicks
Phone:	613-727-0658 x2295
	Company address below will appear on the final report
Street:	300-210 Colonnade Road South
City/Province:	Ottawa, ON
Postal Code:	K2E 7L5
Invoice To	☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report ☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax
Email 2
Email 3

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax
Email 2

Project Information

ALS Account # / Quote #:	
Job #:	OEASO2132.4000.5120.57500000
PO / AFE:	
LSD:	
ALS Lab Work Order # (lab use only)	L2678530

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact: Gayle Braun	Sampler: BC

Select Service Level Below - Contact your AM to confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4] ☐ | 3 day [P3] ☐ | 2 day [P2] ☐

EMERGENCY: 1 Business day [E1] ☐ | Same Day, Weekend or Statutory holiday [E0] ☐

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

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	pH	EC	Resistivity	Chloride	Sulfate	Number of Containers
	TP-1 SS3	12-Jan-22		S	X	X	X	X	X	2
	TP-4 SS3	↓		↓	X	X	X	X	X	2
	TP-11 SS3	↓		↓	X	X	X	X	X	2

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

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

Are samples for human drinking water use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☑

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
1.7	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Bryan Clark	Date: 12-1-22	Time: 12:30	Received by:	Date: 12 Jan	Time:	Received by:	Date: 1/12/22	Time: 9:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 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.**

Wood Environment & Infrastructure Solutions
(Ottawa)
ATTN: Kevin Hicks
210 Colonnade Road South
Suite 300
Ottawa ON K2E 7L5

Date Received: 20-JAN-22
Report Date: 25-JAN-22 14:14 (MT)
Version: FINAL

Client Phone: 613-727-0658

Certificate of Analysis

Lab Work Order #: L2680371

Project P.O. #: NOT SUBMITTED
Job Reference: OESA02132.3000.****.5120.521000
C of C Numbers:
Legal Site Desc:

Gayle Braun
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2680371-1 MW21-11 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Volatile Organic Compounds							
Acetone	<30		30	ug/L		24-JAN-22	R5705936
Benzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Bromodichloromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
Bromoform	<5.0		5.0	ug/L		24-JAN-22	R5705936
Bromomethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Carbon tetrachloride	<0.20		0.20	ug/L		24-JAN-22	R5705936
Chlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Dibromochloromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
Chloroform	<1.0		1.0	ug/L		24-JAN-22	R5705936
1,2-Dibromoethane	<0.20		0.20	ug/L		24-JAN-22	R5705936
1,2-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,3-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,4-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Dichlorodifluoromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
1,1-Dichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,2-Dichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Methylene Chloride	<5.0		5.0	ug/L		24-JAN-22	R5705936
1,2-Dichloropropane	<0.50		0.50	ug/L		24-JAN-22	R5705936
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		24-JAN-22	R5705936
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		24-JAN-22	R5705936
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		24-JAN-22	
Ethylbenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
n-Hexane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Methyl Ethyl Ketone	<20		20	ug/L		24-JAN-22	R5705936
Methyl Isobutyl Ketone	<20		20	ug/L		24-JAN-22	R5705936
MTBE	<2.0		2.0	ug/L		24-JAN-22	R5705936
Styrene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Tetrachloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Toluene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,1-Trichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,2-Trichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Trichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Trichlorofluoromethane	<5.0		5.0	ug/L		24-JAN-22	R5705936
Vinyl chloride	<0.50		0.50	ug/L		24-JAN-22	R5705936
o-Xylene	<0.30		0.30	ug/L		24-JAN-22	R5705936
m+p-Xylenes	<0.40		0.40	ug/L		24-JAN-22	R5705936

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2680371-1 MW21-11 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Volatile Organic Compounds							
Xylenes (Total)	<0.50		0.50	ug/L		24-JAN-22	
Surrogate: 4-Bromofluorobenzene	100.2		70-130	%		24-JAN-22	R5705936
Surrogate: 1,4-Difluorobenzene	99.3		70-130	%		24-JAN-22	R5705936
Organochlorine Pesticides							
Aldrin	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
gamma-hexachlorocyclohexane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
a-chlordane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Chlordane (Total)	<0.011		0.011	ug/L		25-JAN-22	
g-chlordane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
o,p-DDD	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDD	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDD	<0.0057		0.0057	ug/L		25-JAN-22	
o,p-DDE	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDE	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDE	<0.0057		0.0057	ug/L		25-JAN-22	
op-DDT	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDT	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDT	<0.0057		0.0057	ug/L		25-JAN-22	
DDT+Metabolites	<0.0098		0.0098	ug/L		25-JAN-22	
Dieldrin	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan I	<0.0070		0.0070	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan II	<0.0070		0.0070	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan (Total)	<0.0099		0.0099	ug/L		25-JAN-22	
Endrin	<0.010		0.010	ug/L	21-JAN-22	25-JAN-22	R5707003
Heptachlor	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Heptachlor Epoxide	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachlorobenzene	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachlorobutadiene	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachloroethane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Methoxychlor	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Surrogate: Decachlorobiphenyl	102.8		40-130	%	21-JAN-22	25-JAN-22	R5707003
Surrogate: Tetrachloro-m-xylene	89.2		40-130	%	21-JAN-22	25-JAN-22	R5707003
L2680371-2 MW21-12 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Volatile Organic Compounds							
Acetone	<30		30	ug/L		24-JAN-22	R5705936
Benzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Bromodichloromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
Bromoform	<5.0		5.0	ug/L		24-JAN-22	R5705936
Bromomethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Carbon tetrachloride	<0.20		0.20	ug/L		24-JAN-22	R5705936

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2680371-2 MW21-12 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Volatile Organic Compounds							
Chlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Dibromochloromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
Chloroform	<1.0		1.0	ug/L		24-JAN-22	R5705936
1,2-Dibromoethane	<0.20		0.20	ug/L		24-JAN-22	R5705936
1,2-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,3-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,4-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Dichlorodifluoromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
1,1-Dichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,2-Dichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Methylene Chloride	<5.0		5.0	ug/L		24-JAN-22	R5705936
1,2-Dichloropropane	<0.50		0.50	ug/L		24-JAN-22	R5705936
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		24-JAN-22	R5705936
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		24-JAN-22	R5705936
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		24-JAN-22	
Ethylbenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
n-Hexane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Methyl Ethyl Ketone	<20		20	ug/L		24-JAN-22	R5705936
Methyl Isobutyl Ketone	<20		20	ug/L		24-JAN-22	R5705936
MTBE	<2.0		2.0	ug/L		24-JAN-22	R5705936
Styrene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Tetrachloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Toluene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,1-Trichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,2-Trichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Trichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Trichlorofluoromethane	<5.0		5.0	ug/L		24-JAN-22	R5705936
Vinyl chloride	<0.50		0.50	ug/L		24-JAN-22	R5705936
o-Xylene	<0.30		0.30	ug/L		24-JAN-22	R5705936
m+p-Xylenes	<0.40		0.40	ug/L		24-JAN-22	R5705936
Xylenes (Total)	<0.50		0.50	ug/L		24-JAN-22	
Surrogate: 4-Bromofluorobenzene	103.4		70-130	%		24-JAN-22	R5705936
Surrogate: 1,4-Difluorobenzene	100.0		70-130	%		24-JAN-22	R5705936
Organochlorine Pesticides							
Aldrin	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
gamma-hexachlorocyclohexane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2680371-2 MW21-12 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Organochlorine Pesticides							
a-chlordane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Chlordane (Total)	<0.011		0.011	ug/L		25-JAN-22	
g-chlordane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
o,p-DDD	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDD	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDD	<0.0057		0.0057	ug/L		25-JAN-22	
o,p-DDE	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDE	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDE	<0.0057		0.0057	ug/L		25-JAN-22	
op-DDT	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDT	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDT	<0.0057		0.0057	ug/L		25-JAN-22	
DDT+Metabolites	<0.0098		0.0098	ug/L		25-JAN-22	
Dieldrin	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan I	<0.0070		0.0070	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan II	<0.0070		0.0070	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan (Total)	<0.0099		0.0099	ug/L		25-JAN-22	
Endrin	<0.010		0.010	ug/L	21-JAN-22	25-JAN-22	R5707003
Heptachlor	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Heptachlor Epoxide	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachlorobenzene	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachlorobutadiene	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachloroethane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Methoxychlor	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Surrogate: Decachlorobiphenyl	106.3		40-130	%	21-JAN-22	25-JAN-22	R5707003
Surrogate: Tetrachloro-m-xylene	76.8		40-130	%	21-JAN-22	25-JAN-22	R5707003
L2680371-3 MW21-13 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Volatile Organic Compounds							
Acetone	<30		30	ug/L		24-JAN-22	R5705936
Benzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Bromodichloromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
Bromoform	<5.0		5.0	ug/L		24-JAN-22	R5705936
Bromomethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Carbon tetrachloride	<0.20		0.20	ug/L		24-JAN-22	R5705936
Chlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Dibromochloromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
Chloroform	<1.0		1.0	ug/L		24-JAN-22	R5705936
1,2-Dibromoethane	<0.20		0.20	ug/L		24-JAN-22	R5705936
1,2-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,3-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2680371-3 MW21-13 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Volatile Organic Compounds							
1,4-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Dichlorodifluoromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
1,1-Dichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,2-Dichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Methylene Chloride	<5.0		5.0	ug/L		24-JAN-22	R5705936
1,2-Dichloropropane	<0.50		0.50	ug/L		24-JAN-22	R5705936
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		24-JAN-22	R5705936
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		24-JAN-22	R5705936
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		24-JAN-22	
Ethylbenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
n-Hexane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Methyl Ethyl Ketone	<20		20	ug/L		24-JAN-22	R5705936
Methyl Isobutyl Ketone	<20		20	ug/L		24-JAN-22	R5705936
MTBE	<2.0		2.0	ug/L		24-JAN-22	R5705936
Styrene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Tetrachloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Toluene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,1-Trichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,2-Trichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Trichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Trichlorofluoromethane	<5.0		5.0	ug/L		24-JAN-22	R5705936
Vinyl chloride	<0.50		0.50	ug/L		24-JAN-22	R5705936
o-Xylene	<0.30		0.30	ug/L		24-JAN-22	R5705936
m+p-Xylenes	<0.40		0.40	ug/L		24-JAN-22	R5705936
Xylenes (Total)	<0.50		0.50	ug/L		24-JAN-22	
Surrogate: 4-Bromofluorobenzene	96.7		70-130	%		24-JAN-22	R5705936
Surrogate: 1,4-Difluorobenzene	100.3		70-130	%		24-JAN-22	R5705936
Organochlorine Pesticides							
Aldrin	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
gamma-hexachlorocyclohexane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
a-chlordane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Chlordane (Total)	<0.011		0.011	ug/L		25-JAN-22	
g-chlordane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
o,p-DDD	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDD	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDD	<0.0057		0.0057	ug/L		25-JAN-22	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2680371-3 MW21-13 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Organochlorine Pesticides							
o,p-DDE	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDE	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDE	<0.0057		0.0057	ug/L		25-JAN-22	
op-DDT	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDT	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDT	<0.0057		0.0057	ug/L		25-JAN-22	
DDT+Metabolites	<0.0098		0.0098	ug/L		25-JAN-22	
Dieldrin	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan I	<0.0070		0.0070	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan II	<0.0070		0.0070	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan (Total)	<0.0099		0.0099	ug/L		25-JAN-22	
Endrin	<0.010		0.010	ug/L	21-JAN-22	25-JAN-22	R5707003
Heptachlor	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Heptachlor Epoxide	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachlorobenzene	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachlorobutadiene	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachloroethane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Methoxychlor	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Surrogate: Decachlorobiphenyl	89.4		40-130	%	21-JAN-22	25-JAN-22	R5707003
Surrogate: Tetrachloro-m-xylene	80.6		40-130	%	21-JAN-22	25-JAN-22	R5707003
L2680371-4 MW21-14 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Volatile Organic Compounds							
Acetone	<30		30	ug/L		24-JAN-22	R5705936
Benzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Bromodichloromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
Bromoform	<5.0		5.0	ug/L		24-JAN-22	R5705936
Bromomethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Carbon tetrachloride	<0.20		0.20	ug/L		24-JAN-22	R5705936
Chlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Dibromochloromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
Chloroform	<1.0		1.0	ug/L		24-JAN-22	R5705936
1,2-Dibromoethane	<0.20		0.20	ug/L		24-JAN-22	R5705936
1,2-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,3-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,4-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Dichlorodifluoromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
1,1-Dichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,2-Dichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2680371-4 MW21-14 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Volatile Organic Compounds							
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Methylene Chloride	<5.0		5.0	ug/L		24-JAN-22	R5705936
1,2-Dichloropropane	<0.50		0.50	ug/L		24-JAN-22	R5705936
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		24-JAN-22	R5705936
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		24-JAN-22	R5705936
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		24-JAN-22	
Ethylbenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
n-Hexane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Methyl Ethyl Ketone	<20		20	ug/L		24-JAN-22	R5705936
Methyl Isobutyl Ketone	<20		20	ug/L		24-JAN-22	R5705936
MTBE	<2.0		2.0	ug/L		24-JAN-22	R5705936
Styrene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Tetrachloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Toluene	1.50		0.50	ug/L		24-JAN-22	R5705936
1,1,1-Trichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,2-Trichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Trichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Trichlorofluoromethane	<5.0		5.0	ug/L		24-JAN-22	R5705936
Vinyl chloride	<0.50		0.50	ug/L		24-JAN-22	R5705936
o-Xylene	<0.30		0.30	ug/L		24-JAN-22	R5705936
m+p-Xylenes	<0.40		0.40	ug/L		24-JAN-22	R5705936
Xylenes (Total)	<0.50		0.50	ug/L		24-JAN-22	
Surrogate: 4-Bromofluorobenzene	96.8		70-130	%		24-JAN-22	R5705936
Surrogate: 1,4-Difluorobenzene	99.8		70-130	%		24-JAN-22	R5705936
Organochlorine Pesticides							
Aldrin	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
gamma-hexachlorocyclohexane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
a-chlordane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Chlordane (Total)	<0.011		0.011	ug/L		25-JAN-22	
g-chlordane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
o,p-DDD	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDD	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDD	<0.0057		0.0057	ug/L		25-JAN-22	
o,p-DDE	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDE	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDE	<0.0057		0.0057	ug/L		25-JAN-22	
op-DDT	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDT	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDT	<0.0057		0.0057	ug/L		25-JAN-22	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2680371-4 MW21-14 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Organochlorine Pesticides							
DDT+Metabolites	<0.0098		0.0098	ug/L		25-JAN-22	
Dieldrin	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan I	<0.0070		0.0070	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan II	<0.0070		0.0070	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan (Total)	<0.0099		0.0099	ug/L		25-JAN-22	
Endrin	<0.010		0.010	ug/L	21-JAN-22	25-JAN-22	R5707003
Heptachlor	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Heptachlor Epoxide	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachlorobenzene	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachlorobutadiene	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachloroethane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Methoxychlor	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Surrogate: Decachlorobiphenyl	71.9		40-130	%	21-JAN-22	25-JAN-22	R5707003
Surrogate: Tetrachloro-m-xylene	76.2		40-130	%	21-JAN-22	25-JAN-22	R5707003
L2680371-5 MW21-15 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Volatile Organic Compounds							
Acetone	<30		30	ug/L		24-JAN-22	R5705936
Benzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Bromodichloromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
Bromoform	<5.0		5.0	ug/L		24-JAN-22	R5705936
Bromomethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Carbon tetrachloride	<0.20		0.20	ug/L		24-JAN-22	R5705936
Chlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Dibromochloromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
Chloroform	<1.0		1.0	ug/L		24-JAN-22	R5705936
1,2-Dibromoethane	<0.20		0.20	ug/L		24-JAN-22	R5705936
1,2-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,3-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,4-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Dichlorodifluoromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
1,1-Dichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,2-Dichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Methylene Chloride	<5.0		5.0	ug/L		24-JAN-22	R5705936
1,2-Dichloropropane	<0.50		0.50	ug/L		24-JAN-22	R5705936
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		24-JAN-22	R5705936
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		24-JAN-22	R5705936
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		24-JAN-22	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2680371-5 MW21-15 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Volatile Organic Compounds							
Ethylbenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
n-Hexane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Methyl Ethyl Ketone	<20		20	ug/L		24-JAN-22	R5705936
Methyl Isobutyl Ketone	<20		20	ug/L		24-JAN-22	R5705936
MTBE	<2.0		2.0	ug/L		24-JAN-22	R5705936
Styrene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Tetrachloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Toluene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,1-Trichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,2-Trichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Trichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Trichlorofluoromethane	<5.0		5.0	ug/L		24-JAN-22	R5705936
Vinyl chloride	<0.50		0.50	ug/L		24-JAN-22	R5705936
o-Xylene	<0.30		0.30	ug/L		24-JAN-22	R5705936
m+p-Xylenes	<0.40		0.40	ug/L		24-JAN-22	R5705936
Xylenes (Total)	<0.50		0.50	ug/L		24-JAN-22	
Surrogate: 4-Bromofluorobenzene	99.4		70-130	%		24-JAN-22	R5705936
Surrogate: 1,4-Difluorobenzene	100.6		70-130	%		24-JAN-22	R5705936
Organochlorine Pesticides							
Aldrin	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
gamma-hexachlorocyclohexane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
a-chlordane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Chlordane (Total)	<0.011		0.011	ug/L		25-JAN-22	
g-chlordane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
o,p-DDD	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDD	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDD	<0.0057		0.0057	ug/L		25-JAN-22	
o,p-DDE	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDE	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDE	<0.0057		0.0057	ug/L		25-JAN-22	
op-DDT	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDT	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDT	<0.0057		0.0057	ug/L		25-JAN-22	
DDT+Metabolites	<0.0098		0.0098	ug/L		25-JAN-22	
Dieldrin	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan I	<0.0070		0.0070	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan II	<0.0070		0.0070	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan (Total)	<0.0099		0.0099	ug/L		25-JAN-22	
Endrin	<0.010		0.010	ug/L	21-JAN-22	25-JAN-22	R5707003

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2680371-5 MW21-15 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Organochlorine Pesticides							
Heptachlor	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Heptachlor Epoxide	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachlorobenzene	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachlorobutadiene	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachloroethane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Methoxychlor	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Surrogate: Decachlorobiphenyl	119.6		40-130	%	21-JAN-22	25-JAN-22	R5707003
Surrogate: Tetrachloro-m-xylene	78.3		40-130	%	21-JAN-22	25-JAN-22	R5707003
L2680371-6 MW21-16 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Volatile Organic Compounds							
Acetone	<30		30	ug/L		24-JAN-22	R5705936
Benzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Bromodichloromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
Bromoform	<5.0		5.0	ug/L		24-JAN-22	R5705936
Bromomethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Carbon tetrachloride	<0.20		0.20	ug/L		24-JAN-22	R5705936
Chlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Dibromochloromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
Chloroform	<1.0		1.0	ug/L		24-JAN-22	R5705936
1,2-Dibromoethane	<0.20		0.20	ug/L		24-JAN-22	R5705936
1,2-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,3-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,4-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Dichlorodifluoromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
1,1-Dichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,2-Dichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Methylene Chloride	<5.0		5.0	ug/L		24-JAN-22	R5705936
1,2-Dichloropropane	<0.50		0.50	ug/L		24-JAN-22	R5705936
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		24-JAN-22	R5705936
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		24-JAN-22	R5705936
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		24-JAN-22	
Ethylbenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
n-Hexane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Methyl Ethyl Ketone	<20		20	ug/L		24-JAN-22	R5705936
Methyl Isobutyl Ketone	<20		20	ug/L		24-JAN-22	R5705936
MTBE	<2.0		2.0	ug/L		24-JAN-22	R5705936
Styrene	<0.50		0.50	ug/L		24-JAN-22	R5705936

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2680371-6 MW21-16 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Tetrachloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Toluene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,1-Trichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,2-Trichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Trichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Trichlorofluoromethane	<5.0		5.0	ug/L		24-JAN-22	R5705936
Vinyl chloride	<0.50		0.50	ug/L		24-JAN-22	R5705936
o-Xylene	<0.30		0.30	ug/L		24-JAN-22	R5705936
m+p-Xylenes	<0.40		0.40	ug/L		24-JAN-22	R5705936
Xylenes (Total)	<0.50		0.50	ug/L		24-JAN-22	
Surrogate: 4-Bromofluorobenzene	100.7		70-130	%		24-JAN-22	R5705936
Surrogate: 1,4-Difluorobenzene	99.9		70-130	%		24-JAN-22	R5705936
Organochlorine Pesticides							
Aldrin	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
gamma-hexachlorocyclohexane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
a-chlordane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Chlordane (Total)	<0.011		0.011	ug/L		25-JAN-22	
g-chlordane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
o,p-DDD	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDD	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDD	<0.0057		0.0057	ug/L		25-JAN-22	
o,p-DDE	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDE	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDE	<0.0057		0.0057	ug/L		25-JAN-22	
op-DDT	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDT	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDT	<0.0057		0.0057	ug/L		25-JAN-22	
DDT+Metabolites	<0.0098		0.0098	ug/L		25-JAN-22	
Dieldrin	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan I	<0.0070		0.0070	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan II	<0.0070		0.0070	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan (Total)	<0.0099		0.0099	ug/L		25-JAN-22	
Endrin	<0.010		0.010	ug/L	21-JAN-22	25-JAN-22	R5707003
Heptachlor	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Heptachlor Epoxide	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachlorobenzene	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachlorobutadiene	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachloroethane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Methoxychlor	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2680371-6 MW21-16 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Organochlorine Pesticides							
Surrogate: Decachlorobiphenyl	96.4		40-130	%	21-JAN-22	25-JAN-22	R5707003
Surrogate: Tetrachloro-m-xylene	77.8		40-130	%	21-JAN-22	25-JAN-22	R5707003
L2680371-7 TRIP BLANK Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Volatile Organic Compounds							
Acetone	<30		30	ug/L		24-JAN-22	R5705936
Benzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Bromodichloromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
Bromoform	<5.0		5.0	ug/L		24-JAN-22	R5705936
Bromomethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Carbon tetrachloride	<0.20		0.20	ug/L		24-JAN-22	R5705936
Chlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Dibromochloromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
Chloroform	<1.0		1.0	ug/L		24-JAN-22	R5705936
1,2-Dibromoethane	<0.20		0.20	ug/L		24-JAN-22	R5705936
1,2-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,3-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,4-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Dichlorodifluoromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
1,1-Dichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,2-Dichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Methylene Chloride	<5.0		5.0	ug/L		24-JAN-22	R5705936
1,2-Dichloropropane	<0.50		0.50	ug/L		24-JAN-22	R5705936
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		24-JAN-22	R5705936
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		24-JAN-22	R5705936
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		24-JAN-22	
Ethylbenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
n-Hexane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Methyl Ethyl Ketone	<20		20	ug/L		24-JAN-22	R5705936
Methyl Isobutyl Ketone	<20		20	ug/L		24-JAN-22	R5705936
MTBE	<2.0		2.0	ug/L		24-JAN-22	R5705936
Styrene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Tetrachloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Toluene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,1-Trichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,2-Trichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2680371-7 TRIP BLANK Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Volatile Organic Compounds							
Trichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Trichlorofluoromethane	<5.0		5.0	ug/L		24-JAN-22	R5705936
Vinyl chloride	<0.50		0.50	ug/L		24-JAN-22	R5705936
o-Xylene	<0.30		0.30	ug/L		24-JAN-22	R5705936
m+p-Xylenes	<0.40		0.40	ug/L		24-JAN-22	R5705936
Xylenes (Total)	<0.50		0.50	ug/L		24-JAN-22	
Surrogate: 4-Bromofluorobenzene	98.9		70-130	%		24-JAN-22	R5705936
Surrogate: 1,4-Difluorobenzene	99.6		70-130	%		24-JAN-22	R5705936
L2680371-8 DUP-1 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Volatile Organic Compounds							
Acetone	<30		30	ug/L		24-JAN-22	R5705936
Benzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Bromodichloromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
Bromoform	<5.0		5.0	ug/L		24-JAN-22	R5705936
Bromomethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Carbon tetrachloride	<0.20		0.20	ug/L		24-JAN-22	R5705936
Chlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Dibromochloromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
Chloroform	<1.0		1.0	ug/L		24-JAN-22	R5705936
1,2-Dibromoethane	<0.20		0.20	ug/L		24-JAN-22	R5705936
1,2-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,3-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,4-Dichlorobenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Dichlorodifluoromethane	<2.0		2.0	ug/L		24-JAN-22	R5705936
1,1-Dichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,2-Dichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Methylene Chloride	<5.0		5.0	ug/L		24-JAN-22	R5705936
1,2-Dichloropropane	<0.50		0.50	ug/L		24-JAN-22	R5705936
cis-1,3-Dichloropropene	<0.30		0.30	ug/L		24-JAN-22	R5705936
trans-1,3-Dichloropropene	<0.30		0.30	ug/L		24-JAN-22	R5705936
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		24-JAN-22	
Ethylbenzene	<0.50		0.50	ug/L		24-JAN-22	R5705936
n-Hexane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Methyl Ethyl Ketone	<20		20	ug/L		24-JAN-22	R5705936
Methyl Isobutyl Ketone	<20		20	ug/L		24-JAN-22	R5705936
MTBE	<2.0		2.0	ug/L		24-JAN-22	R5705936
Styrene	<0.50		0.50	ug/L		24-JAN-22	R5705936

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2680371-8 DUP-1 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Tetrachloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Toluene	1.56		0.50	ug/L		24-JAN-22	R5705936
1,1,1-Trichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
1,1,2-Trichloroethane	<0.50		0.50	ug/L		24-JAN-22	R5705936
Trichloroethylene	<0.50		0.50	ug/L		24-JAN-22	R5705936
Trichlorofluoromethane	<5.0		5.0	ug/L		24-JAN-22	R5705936
Vinyl chloride	<0.50		0.50	ug/L		24-JAN-22	R5705936
o-Xylene	<0.30		0.30	ug/L		24-JAN-22	R5705936
m+p-Xylenes	<0.40		0.40	ug/L		24-JAN-22	R5705936
Xylenes (Total)	<0.50		0.50	ug/L		24-JAN-22	
Surrogate: 4-Bromofluorobenzene	101.3		70-130	%		24-JAN-22	R5705936
Surrogate: 1,4-Difluorobenzene	100.0		70-130	%		24-JAN-22	R5705936
Organochlorine Pesticides							
Aldrin	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
gamma-hexachlorocyclohexane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
a-chlordane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Chlordane (Total)	<0.011		0.011	ug/L		25-JAN-22	
g-chlordane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
o,p-DDD	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDD	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDD	<0.0057		0.0057	ug/L		25-JAN-22	
o,p-DDE	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDE	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDE	<0.0057		0.0057	ug/L		25-JAN-22	
op-DDT	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
pp-DDT	<0.0040		0.0040	ug/L	21-JAN-22	25-JAN-22	R5707003
Total DDT	<0.0057		0.0057	ug/L		25-JAN-22	
DDT+Metabolites	<0.0098		0.0098	ug/L		25-JAN-22	
Dieldrin	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan I	<0.0070		0.0070	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan II	<0.0070		0.0070	ug/L	21-JAN-22	25-JAN-22	R5707003
Endosulfan (Total)	<0.0099		0.0099	ug/L		25-JAN-22	
Endrin	<0.010		0.010	ug/L	21-JAN-22	25-JAN-22	R5707003
Heptachlor	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Heptachlor Epoxide	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachlorobenzene	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachlorobutadiene	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Hexachloroethane	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003
Methoxychlor	<0.0080		0.0080	ug/L	21-JAN-22	25-JAN-22	R5707003

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2680371-8 DUP-1 Sampled By: CLIENT on 19-JAN-22 Matrix: WATER							
Organochlorine Pesticides							
Surrogate: Decachlorobiphenyl	82.9		40-130	%	21-JAN-22	25-JAN-22	R5707003
Surrogate: Tetrachloro-m-xylene	85.0		40-130	%	21-JAN-22	25-JAN-22	R5707003

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CHLORDANE-T-CALC-WT	Water	Chlordane Total sums	CALCULATION
Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.			
DDD-DDE-DDT-CALC-WT	Water	DDD, DDE, DDT sums	CALCULATION
Calculation of Total DDD, Total DDE and Total DDT			
ENDOSULFAN-T-CALC-WT	Water	Endosulfan Total sums	CALCULATION
Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.			
OCP-ROUTINE-WT	Water	Pesticides, Organochlorine in Water	SW846 8270
Samples are extracted using a solvent mixture and the resulting extracts are analyzed on GC/MSD			
VOC-1,3-DCP-CALC-WT	Water	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Water	VOC by GCMS HS O.Reg 153/04 (July 2011)	SW846 8260
Liquid samples are analyzed by headspace GC/MSD.			
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 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).			
XYLENES-SUM-CALC-WT	Water	Sum of Xylene Isomer Concentrations	CALCULATION
Total xylenes represents the sum of o-xylene and m&p-xylene.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OCP-ROUTINE-WT	Water							
Batch	**R5707003**							
WG3687520-2	**LCS**							
Aldrin			126.0		%		50-150	25-JAN-22
gamma-hexachlorocyclohexane			113.4		%		50-150	25-JAN-22
a-chlordane			119.4		%		50-150	25-JAN-22
g-chlordane			125.0		%		50-150	25-JAN-22
o,p-DDD			129.9		%		50-150	25-JAN-22
pp-DDD			143.3		%		50-150	25-JAN-22
o,p-DDE			114.3		%		50-150	25-JAN-22
pp-DDE			128.9		%		50-150	25-JAN-22
op-DDT			119.9		%		50-150	25-JAN-22
pp-DDT			97.3		%		50-150	25-JAN-22
Dieldrin			124.4		%		50-150	25-JAN-22
Endosulfan I			110.8		%		50-150	25-JAN-22
Endosulfan II			108.1		%		50-150	25-JAN-22
Endrin			65.8		%		50-150	25-JAN-22
Heptachlor			115.7		%		50-150	25-JAN-22
Heptachlor Epoxide			130.6		%		50-150	25-JAN-22
Hexachlorobenzene			110.7		%		50-150	25-JAN-22
Hexachlorobutadiene			94.6		%		50-150	25-JAN-22
Hexachloroethane			81.0		%		50-150	25-JAN-22
Methoxychlor			99.0		%		50-150	25-JAN-22
WG3687520-1	**MB**							
Aldrin			<0.0080		ug/L		0.008	25-JAN-22
gamma-hexachlorocyclohexane			<0.0080		ug/L		0.008	25-JAN-22
a-chlordane			<0.0080		ug/L		0.008	25-JAN-22
g-chlordane			<0.0080		ug/L		0.008	25-JAN-22
o,p-DDD			<0.0040		ug/L		0.004	25-JAN-22
pp-DDD			<0.0040		ug/L		0.004	25-JAN-22
o,p-DDE			<0.0040		ug/L		0.004	25-JAN-22
pp-DDE			<0.0040		ug/L		0.004	25-JAN-22
op-DDT			<0.0040		ug/L		0.004	25-JAN-22
pp-DDT			<0.0040		ug/L		0.004	25-JAN-22
Dieldrin			<0.0080		ug/L		0.008	25-JAN-22
Endosulfan I			<0.0070		ug/L		0.007	25-JAN-22
Endosulfan II			<0.0070		ug/L		0.007	25-JAN-22

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OCP-ROUTINE-WT	Water							
Batch R5707003								
WG3687520-1 MB								
Endrin			<0.010		ug/L		0.01	25-JAN-22
Heptachlor			<0.0080		ug/L		0.008	25-JAN-22
Heptachlor Epoxide			<0.0080		ug/L		0.008	25-JAN-22
Hexachlorobenzene			<0.0080		ug/L		0.008	25-JAN-22
Hexachlorobutadiene			<0.0080		ug/L		0.008	25-JAN-22
Hexachloroethane			<0.0080		ug/L		0.008	25-JAN-22
Methoxychlor			<0.0080		ug/L		0.008	25-JAN-22
Surrogate: Decachlorobiphenyl			123.1		%		40-130	25-JAN-22
Surrogate: Tetrachloro-m-xylene			70.6		%		40-130	25-JAN-22
VOC-511-HS-WT	Water							
Batch R5705936								
WG3687607-4 DUP		**WG3687607-3**						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	24-JAN-22
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	24-JAN-22
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	24-JAN-22
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	24-JAN-22
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	24-JAN-22
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	24-JAN-22
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R5705936								
WG3687607-4 DUP		**WG3687607-3**						
cis-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	24-JAN-22
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	24-JAN-22
Dichlorodifluoromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	24-JAN-22
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
m+p-Xylenes		<0.40	<0.40	RPD-NA	ug/L	N/A	30	24-JAN-22
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	24-JAN-22
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	24-JAN-22
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	24-JAN-22
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	24-JAN-22
o-Xylene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	24-JAN-22
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
trans-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	24-JAN-22
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	24-JAN-22
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-22
WG3687607-1 LCS								
1,1,1,2-Tetrachloroethane			96.3		%		70-130	24-JAN-22
1,1,2,2-Tetrachloroethane			91.6		%		70-130	24-JAN-22
1,1,1-Trichloroethane			97.3		%		70-130	24-JAN-22
1,1,2-Trichloroethane			95.7		%		70-130	24-JAN-22
1,1-Dichloroethane			106.2		%		70-130	24-JAN-22
1,1-Dichloroethylene			97.1		%		70-130	24-JAN-22
1,2-Dibromoethane			94.5		%		70-130	24-JAN-22
1,2-Dichlorobenzene			98.9		%		70-130	24-JAN-22
1,2-Dichloroethane			94.9		%		70-130	24-JAN-22
1,2-Dichloropropane			96.4		%		70-130	24-JAN-22
1,3-Dichlorobenzene			99.8		%		70-130	24-JAN-22
1,4-Dichlorobenzene			99.5		%		70-130	24-JAN-22
Acetone			103.0		%		60-140	24-JAN-22

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R5705936								
WG3687607-1 LCS								
Benzene			94.6		%		70-130	24-JAN-22
Bromodichloromethane			103.8		%		70-130	24-JAN-22
Bromoform			94.5		%		70-130	24-JAN-22
Bromomethane			96.6		%		60-140	24-JAN-22
Carbon tetrachloride			97.7		%		70-130	24-JAN-22
Chlorobenzene			97.7		%		70-130	24-JAN-22
Chloroform			96.7		%		70-130	24-JAN-22
cis-1,2-Dichloroethylene			96.0		%		70-130	24-JAN-22
cis-1,3-Dichloropropene			92.3		%		70-130	24-JAN-22
Dibromochloromethane			96.6		%		70-130	24-JAN-22
Dichlorodifluoromethane			85.6		%		50-140	24-JAN-22
Ethylbenzene			98.7		%		70-130	24-JAN-22
n-Hexane			95.8		%		70-130	24-JAN-22
m+p-Xylenes			98.6		%		70-130	24-JAN-22
Methyl Ethyl Ketone			91.6		%		60-140	24-JAN-22
Methyl Isobutyl Ketone			96.7		%		60-140	24-JAN-22
Methylene Chloride			95.9		%		70-130	24-JAN-22
MTBE			96.2		%		70-130	24-JAN-22
o-Xylene			99.0		%		70-130	24-JAN-22
Styrene			99.6		%		70-130	24-JAN-22
Tetrachloroethylene			98.1		%		70-130	24-JAN-22
Toluene			97.5		%		70-130	24-JAN-22
trans-1,2-Dichloroethylene			96.6		%		70-130	24-JAN-22
trans-1,3-Dichloropropene			89.3		%		70-130	24-JAN-22
Trichloroethylene			97.0		%		70-130	24-JAN-22
Trichlorofluoromethane			96.9		%		60-140	24-JAN-22
Vinyl chloride			84.2		%		60-140	24-JAN-22
WG3687607-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	24-JAN-22
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	24-JAN-22
1,1,1-Trichloroethane			<0.50		ug/L		0.5	24-JAN-22
1,1,2-Trichloroethane			<0.50		ug/L		0.5	24-JAN-22
1,1-Dichloroethane			<0.50		ug/L		0.5	24-JAN-22
1,1-Dichloroethylene			<0.50		ug/L		0.5	24-JAN-22

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R5705936								
WG3687607-2 MB								
1,2-Dibromoethane			<0.20		ug/L		0.2	24-JAN-22
1,2-Dichlorobenzene			<0.50		ug/L		0.5	24-JAN-22
1,2-Dichloroethane			<0.50		ug/L		0.5	24-JAN-22
1,2-Dichloropropane			<0.50		ug/L		0.5	24-JAN-22
1,3-Dichlorobenzene			<0.50		ug/L		0.5	24-JAN-22
1,4-Dichlorobenzene			<0.50		ug/L		0.5	24-JAN-22
Acetone			<30		ug/L		30	24-JAN-22
Benzene			<0.50		ug/L		0.5	24-JAN-22
Bromodichloromethane			<2.0		ug/L		2	24-JAN-22
Bromoform			<5.0		ug/L		5	24-JAN-22
Bromomethane			<0.50		ug/L		0.5	24-JAN-22
Carbon tetrachloride			<0.20		ug/L		0.2	24-JAN-22
Chlorobenzene			<0.50		ug/L		0.5	24-JAN-22
Chloroform			<1.0		ug/L		1	24-JAN-22
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	24-JAN-22
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	24-JAN-22
Dibromochloromethane			<2.0		ug/L		2	24-JAN-22
Dichlorodifluoromethane			<2.0		ug/L		2	24-JAN-22
Ethylbenzene			<0.50		ug/L		0.5	24-JAN-22
n-Hexane			<0.50		ug/L		0.5	24-JAN-22
m+p-Xylenes			<0.40		ug/L		0.4	24-JAN-22
Methyl Ethyl Ketone			<20		ug/L		20	24-JAN-22
Methyl Isobutyl Ketone			<20		ug/L		20	24-JAN-22
Methylene Chloride			<5.0		ug/L		5	24-JAN-22
MTBE			<2.0		ug/L		2	24-JAN-22
o-Xylene			<0.30		ug/L		0.3	24-JAN-22
Styrene			<0.50		ug/L		0.5	24-JAN-22
Tetrachloroethylene			<0.50		ug/L		0.5	24-JAN-22
Toluene			<0.50		ug/L		0.5	24-JAN-22
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	24-JAN-22
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	24-JAN-22
Trichloroethylene			<0.50		ug/L		0.5	24-JAN-22
Trichlorofluoromethane			<5.0		ug/L		5	24-JAN-22

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R5705936								
WG3687607-2 MB								
Vinyl chloride			<0.50		ug/L		0.5	24-JAN-22
Surrogate: 1,4-Difluorobenzene			100.0		%		70-130	24-JAN-22
Surrogate: 4-Bromofluorobenzene			90.7		%		70-130	24-JAN-22
WG3687607-5 MS		**L2680316-1**						
1,1,1,2-Tetrachloroethane			95.7		%		50-140	24-JAN-22
1,1,2,2-Tetrachloroethane			98.8		%		50-140	24-JAN-22
1,1,1-Trichloroethane			94.6		%		50-140	24-JAN-22
1,1,2-Trichloroethane			99.8		%		50-140	24-JAN-22
1,1-Dichloroethane			91.5		%		50-140	24-JAN-22
1,1-Dichloroethylene			92.6		%		50-140	24-JAN-22
1,2-Dibromoethane			98.9		%		50-140	24-JAN-22
1,2-Dichlorobenzene			97.3		%		50-140	24-JAN-22
1,2-Dichloroethane			97.7		%		50-140	24-JAN-22
1,2-Dichloropropane			96.3		%		50-140	24-JAN-22
1,3-Dichlorobenzene			93.0		%		50-140	24-JAN-22
1,4-Dichlorobenzene			93.4		%		50-140	24-JAN-22
Acetone			106.8		%		50-140	24-JAN-22
Benzene			94.2		%		50-140	24-JAN-22
Bromodichloromethane			102.6		%		50-140	24-JAN-22
Bromoform			98.7		%		50-140	24-JAN-22
Bromomethane			91.9		%		50-140	24-JAN-22
Carbon tetrachloride			93.8		%		50-140	24-JAN-22
Chlorobenzene			96.0		%		50-140	24-JAN-22
Chloroform			96.4		%		50-140	24-JAN-22
cis-1,2-Dichloroethylene			96.5		%		50-140	24-JAN-22
cis-1,3-Dichloropropene			85.8		%		50-140	24-JAN-22
Dibromochloromethane			97.5		%		50-140	24-JAN-22
Dichlorodifluoromethane			74.7		%		50-140	24-JAN-22
Ethylbenzene			96.1		%		50-140	24-JAN-22
n-Hexane			89.0		%		50-140	24-JAN-22
m+p-Xylenes			94.8		%		50-140	24-JAN-22
Methyl Ethyl Ketone			94.6		%		50-140	24-JAN-22
Methyl Isobutyl Ketone			99.0		%		50-140	24-JAN-22
Methylene Chloride			96.9		%		50-140	24-JAN-22

Quality Control Report

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch R5705936								
WG3687607-5 MS		**L2680316-1**						
MTBE			94.8		%		50-140	24-JAN-22
o-Xylene			96.7		%		50-140	24-JAN-22
Styrene			96.7		%		50-140	24-JAN-22
Tetrachloroethylene			95.3		%		50-140	24-JAN-22
Toluene			97.9		%		50-140	24-JAN-22
trans-1,2-Dichloroethylene			91.1		%		50-140	24-JAN-22
trans-1,3-Dichloropropene			83.5		%		50-140	24-JAN-22
Trichloroethylene			93.5		%		50-140	24-JAN-22
Trichlorofluoromethane			91.0		%		50-140	24-JAN-22
Vinyl chloride			78.3		%		50-140	24-JAN-22

Quality Control Report

Workorder: L2680371 Report Date: 25-JAN-22

Client: Wood Environment & Infrastructure Solutions (Ottawa)
210 Colonnade Road South Suite 300
Ottawa ON K2E 7L5
Contact: Kevin Hicks

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

![ALS]

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 66

www.alsglobal.com

L2680371-COFC

COC Number: 15 -

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Wood (Ottawa) -22724
Contact:	Kevin Hickas
Phone:	613-727-0658
	Company address below will appear on the final report
Street:	300-210 Colonnade Road South
City/Province:	Ottawa, ON
Postal Code:	K2E 7L5
Invoice To	☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

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

Quality Control (QC) Report with Report ☐ YES ☐ NO

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax [illegible]

Email 2

Email 3

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax [illegible]

Email 2

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4] ☐ 3 day [P3] ☒ 2 day [P2] ☐

EMERGENCY: 1 Business day [E1] ☐ Same Day, Weekend or Statutory holiday [E0] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:

Job #: OE[illegible]02[illegible].3000.[illegible].500.521000

PO / AFE:

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: | PO#

Major/Minor Code: | Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only) L2680371

ALS Contact: Mary-Lynn | Sampler:

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	VOC	OCP	PAH (CANCELLED)	VOC TRIP BLANK	Number of Containers
	MW21-11	19-Jan-22		WATER	X	X	X		6
	MW21-12	19-Jan-22		WATER	X	X	X		6
	MW21-13	19-Jan-22		WATER	X	X	X		6
	MW21-14	19-Jan-22		WATER	X	X	X		6
	MW21-15	19-Jan-22		WATER	X	X	X		6
	MW21-16	19-Jan-22		WATER	X	X	X		6
	Trip Blank			WATER				X	2
	DUP-1	19-Jan-22		WATER	X	X	X		6
				WATER					5
				WATER					5
				WATER					5
				WATER					5

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

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

Are samples for human drinking water use? ☐ YES ☐ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C: 3.8

FINAL COOLER TEMPERATURES °C: 4.3

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date: 20 JAN	Time: 8:05	Received by:	Date: 21-JAN-22	Time: 10:15

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 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.

Appendix G

Preliminary Excess Soil Data Evaluation

Notes on Excess Soil Analytical Summary Tables

All Units in Micrograms per Gram (µg/g) Except Where Indicated Otherwise.

RDL = Laboratory Analytical Reporting Detection Limit.

RL = MOE 2011 Analytical Protocol Reporting Limit.

- = Not Analyzed or No Published Value.

DUP = Quality Assurance/Quality Control Duplicate Sample.

RPD = Relative Percent Difference (Between Primary and Duplicate Samples).

* Denotes RPD Exceeds Recommended Alert Criterion Exceeded, However, Parameter Concentration Less than 5 Times Laboratory RDL.

< = Less Than Laboratory Analytical Reporting Detection Limit.

(a) The Boron Standards are for Hot Water Soluble Extract for All Surface Soils. For Subsurface Soils the Standards are for Total Boron (Mixed Strong Acid Digest), Since Plant Protection for Soils Below the Root Zone is not a Significant Concern.

(b) Analysis for Methyl Mercury Only Applies When Mercury (Total) Standard is Exceeded.

55	Parameter Concentration May Exceed Applicable Standard Due to Elevated Method Detection Limit.
87	Parameter Concentration Exceeds MECP Table 1 Full Depth Background SCS for Industrial/Commercial/Community/Residential/Parkland/Institutional (I/C/C/R/P/I) Property Use.
183	Parameter Concentration Exceeds MECP Table 3.1 Full Depth Excess Soil Standard for Industrial/Commercial/Community (I/C/C) Property Use.
797	Parameter Concentration Exceeds MECP Table 5.1 Stratified Excess Soil Standard for Industrial/Commercial/Community (I/C/C) Property Use, Subsurface Soil (>1.5 m).

Excess Soil Standards = Rules for Soil Management and Excess Soil Quality Standards, Ontario Ministry of the Environment, Conservation and Parks, 2019.

Table G1. Summary of Excess Soil Analyses

Sample Location / Sample No. / Sample Depth (m) / Laboratory Name / Laboratory Work Order No. / Laboratory Sample ID / Sample Date / Analysis Date					MECP Excess Soil Quality Standards			TP-1 SS-1 0.0 - 0.5 ALS L2673599 L2673599-1 14-Dec-21	TP-2 SS-1 0.0 - 0.5 ALS L2673599 L2673599-2 14-Dec-21	TP-2 DUP-1 0.0 - 0.5 ALS L2673599 L2673599-22 14-Dec-21	TP-2 SS-1 DUP-1 Average	TP-2 SS-1 DUP-1 RPD (%)	TP-3 SS-1 0.0 - 0.5 ALS L2673599 L2673599-3 15-Dec-21	TP-3 SS-3 1.0 - 1.5 ALS L2673599 L2673599-4 15-Dec-21	TP-4 SS-1 0.0 - 0.5 ALS L2673599 L2673599-5 14-Dec-21	TP-5 SS-1 0.0 - 0.5 ALS L2673599 L2673599-6 14-Dec-21	TP-5 SS-3 0.0 - 0.5 ALS L2673599 L2673599-7 14-Dec-21	TP-6 SS-1 0.0 - 0.5 ALS L2673599 L2673599-8 15-Dec-21
					Background	Volume Independent												
					Res / Park / Inst Ind/ Comm / Community Property Use Table 1	Full Depth Non-Potable I/C/C Property Use Table 3.1	Stratified Non-Potable Subsurface I/C/C Property Use Table 5.1											
Parameters	**ATG**	**Units**	**RDL**	**RL**														
Metals																		
Antimony	Metal	µg/g	1	1	1.3	40	63	<1.0	<1.0	<1.0	<1.0	-	<1.0		<1.0	<1.0	-	<1.0
Arsenic	Metal	µg/g	1	1	18	18	39	3.7	4	3.3	3.65	19.2%	3.8		4.1	4	-	3.9
Barium	Metal	µg/g	1	5	220	670	7700	126	263	276	269.5	4.82%	360		485	424	-	345
Beryllium	Metal	µg/g	0.5	2	2.5	8	60	<0.50	1.01	0.99	1	2.00%	0.89		1.01	0.97	-	0.94
Boron (Hot Water Soluble) [a]	Metal	µg/g	0.1	0.5	NA	2	NA	0.89	0.67	0.54	0.605	21.5%	<0.10		<0.10	<0.10	-	<0.10
Boron (total)	Metal	µg/g	5	5	36	120	5000	10.4	9.9	9.1	9.5	8.42%	6.7		6	6.1	-	6.5
Cadmium	Metal	µg/g	0.5	1	1.2	1.9	7.9	<0.50	<0.50	<0.50	<0.50	-	<0.50		<0.50	<0.50	-	<0.50
Chromium Total	Metal	µg/g	1	5	70	160	11000	21.7	81.9	90.3	86.1	9.76%	84.6		121	106	-	95.7
Chromium VI	Metal	µg/g	0.2	0.2	0.66	8	40	<0.20	1.31	0.96	1.135	30.8%	1.13		1.45	0.98	-	1.49
Cobalt	Metal	µg/g	1	2	21	80	2500	7.5	17.1	18.3	17.7	6.78%	19.2		24.7	22.8	-	18.5
Copper	Metal	µg/g	1	5	92	230	1900	17.5	33.5	35.8	34.65	6.64%	41.5		51.5	52.3	-	42.4
Lead	Metal	µg/g	1	10	120	120	1000	15.3	12.5	9.2	10.85	30.4%	7		7.2	7.1	-	7.2
Mercury	Metal	µg/g	0.005	0.1	0.27	0.27	1.9	0.013	0.0123	0.0155	0.0139	23.0%	0.0082		0.0115	0.0129	-	0.0121
Methyl Mercury [b]	Metal	µg/g	-	-	NV	0.00097	0.00097	-	-	-	-	-	-		-	-	-	-
Molybdenum	Metal	µg/g	1	2	2	40	1200	3.2	<1.0	<1.0	<1.0	-	<1.0		<1.0	<1.0	-	<1.0
Nickel	Metal	µg/g	1	5	82	270	510	18.3	43.8	49.4	46.6	12.0%	46.4		64.3	57.1	-	51.3
Selenium	Metal	µg/g	1	1	1.5	5.5	1200	<1.0	<1.0	<1.0	<1.0	-	<1.0		<1.0	<1.0	-	<1.0
Silver	Metal	µg/g	0.2	0.5	0.5	40	490.0	<0.20	<0.20	<0.20	<0.20	-	<0.20		<0.20	<0.20	-	<0.20
Thallium	Metal	µg/g	0.5	1	1	3.3	33	<0.50	<0.50	<0.50	<0.50	-	<0.50		<0.50	<0.50	-	<0.50
Uranium	Metal	µg/g	1	1	2.5	33	300	<1.0	1.1	1	1.05	9.52%	<1.0		1.1	1	-	<1.0
Vanadium	Metal	µg/g	1	10	86	86	160	35.1	83.6	86.3	84.95	3.18%	95.5		118	108	-	96.7
Zinc	Metal	µg/g	5	30	290	340	15000	65.6	105	96.9	100.95	8.02%	111		146	127	-	114
Organochlorine Pesticides																		
Aldrin	OC	µg/g	0.02	0.05	0.05	0.088	6.3	-	<0.020	<0.020	<0.020	-	-	<0.020	-	-	<0.020	<0.020
Chlordane	OC	µg/g	0.2	0.05	0.05	0.05	3.4	-	<0.20	<0.20	<0.20	-	-	<0.20	-	-	<0.20	<0.20
DDD	OC	µg/g	0.04	0.05	0.05	4.6	110	-	<0.040	<0.040	<0.040	-	-	<0.040	-	-	<0.040	<0.040
DDE	OC	µg/g	0.04	0.05	0.05	0.52	110	-	<0.040	<0.040	<0.040	-	-	<0.040	-	-	<0.040	<0.040
DDT	OC	µg/g	0.04	0.05	1.4	1.4	110	-	<0.040	<0.040	<0.040	-	-	<0.040	-	-	<0.040	<0.040
Dieldrin	OC	µg/g	0.02	0.05	0.05	0.088	12.000	-	<0.020	<0.020	<0.020	-	-	<0.020	-	-	<0.020	<0.020
Endosulfan	OC	µg/g	0.04	0.04	0.04	0.04	0.04	-	<0.040	<0.040	<0.040	-	-	<0.040	-	-	<0.040	<0.040
Endrin	OC	µg/g	0.02	0.04	0.04	0.04	7.800	-	<0.020	<0.020	<0.020	-	-	<0.020	-	-	<0.020	<0.020
Heptachlor	OC	µg/g	0.02	0.05	0.05	0.072	0.072	-	<0.020	<0.020	<0.020	-	-	<0.020	-	-	<0.020	<0.020
Heptachlor Epoxide	OC	µg/g	0.02	0.05	0.05	0.05	0.05	-	<0.020	<0.020	<0.020	-	-	<0.020	-	-	<0.020	<0.020
Hexachlorobenzene	OC	µg/g	0.01	0.01	0.01	0.66	1.6	-	<0.010	<0.010	<0.010	-	-	<0.010	-	-	<0.010	<0.010
Hexachlorobutadiene	OC	µg/g	0.01	0.01	0.01	0.01	0.01	-	<0.010	<0.010	<0.010	-	-	<0.010	-	-	<0.010	<0.010
Hexachlorocyclohexane Gamma- (Lindane)	OC	µg/g	0.01	0.01	0.01	0.01	0.01	-	<0.010	<0.010	<0.010	-	-	<0.010	-	-	<0.010	<0.010
Hexachloroethane	OC	µg/g	0.01	0.01	0.01	0.13	0.22	-	<0.010	<0.010	<0.010	-	-	<0.010	-	-	<0.010	<0.010
Methoxychlor	OC	µg/g	0.02	0.05	0.05	0.19	0.19	-	<0.020	<0.020	<0.020	-	-	<0.020	-	-	<0.020	<0.020

Table G1. Summary of Excess Soil Analyses

Sample Location						MECP Excess Soil Quality Standards			TP-7	TP-8	TP-10	TP-11	TP-12	TP-12	TP-12	TP-12	TP-13	TP-14	TP-15
Sample No.						Background	Volume Independent		SS-1	SS-1	SS-2	SS-1	SS-1	DUP-2	SS-1	SS-1	SS-1	SS-1	SS-1
Sample Depth (m)						Res / Park / Inst	Full Depth	Stratified	0.0 - 0.5	0.0 - 0.5	0.5 - 1.0	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	DUP-2	DUP-2	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
Laboratory Name						Ind/ Comm /	Non-Potable	Non-Potable	ALS	ALS	ALS	ALS	ALS	ALS	Average	RPD	ALS	ALS	ALS
Laboratory Work Order No.						Community	I/C/C	Subsurface	L2673599	L2673599	L2673599	L2673599	L2673599	L2673599		(%)	L2673599	L2673599	L2673599
Laboratory Sample ID						Property Use	Property Use	I/C/C	L2673599-9	L2673599-10	L2673599-11	L2673599-12	L2673599-13	L2673599-23			L2673599-14	L2673599-15	L2673599-16
Sample Date						Table 1	Table 3.1	Property Use	15-Dec-21	15-Dec-21	15-Dec-21	15-Dec-21	15-Dec-21	14-Dec-21			14-Dec-21	14-Dec-21	14-Dec-21
Analysis Date								Table 5.1											
Parameters	**ATG**	**Units**	**RDL**	**RL**															
Metals																			
Antimony	Metal	µg/g	1	1	1.3	40	63	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0
Arsenic	Metal	µg/g	1	1	18	18	39	2.9	3.2	3.4	3.3	3.7	3.8	3.75	2.67%	3.2	3.4	3.4	
Barium	Metal	µg/g	1	5	220	670	7700	291	377	431	295	256	275	265.5	7.16%	382	345	385	
Beryllium	Metal	µg/g	0.5	2	2.5	8	60	1.03	0.94	0.98	0.94	0.85	0.9	0.875	5.71%	0.87	1.01	0.97	
Boron (Hot Water Soluble) [a]	Metal	µg/g	0.1	0.5	NA	2	NA	<0.10	<0.10	<0.10	<0.10	<0.10	0.1	0.1	-	<0.10	<0.10	<0.10	
Boron (total)	Metal	µg/g	5	5	36	120	5000	9	6.6	5.9	7.7	8.7	9	8.85	3.39%	5.8	8	6.4	
Cadmium	Metal	µg/g	0.5	1	1.2	1.9	7.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	
Chromium Total	Metal	µg/g	1	5	70	160	11000	106	101	102	81.7	69.5	80.3	74.9	14.4%	95.5	110	105	
Chromium VI	Metal	µg/g	0.2	0.2	0.66	8	40	2.16	1.08	1.23	0.73	0.53	0.4	0.465	28.0%	1	1.18	0.94	
Cobalt	Metal	µg/g	1	2	21	80	2500	18.9	20	26.1	18.5	17.6	19.1	18.35	8.17%	20.8	20.5	22.6	
Copper	Metal	µg/g	1	5	92	230	1900	39.5	44.4	48	34.5	33.6	35.9	34.75	6.62%	48.8	44.4	48.9	
Lead	Metal	µg/g	1	10	120	120	1000	8.3	6.9	7.3	7.9	7.6	8.6	8.1	12.3%	6.5	8.2	7.4	
Mercury	Metal	µg/g	0.005	0.1	0.27	0.27	1.9	0.0128	0.0175	0.0153	0.0148	0.0107	0.0137	0.0122	24.6%	0.0128	0.0169	0.0146	
Methyl Mercury [b]	Metal	µg/g	-	-	NV	0.00097	0.00097	-	-	-	-	-	-	-	-	-	-	-	
Molybdenum	Metal	µg/g	1	2	2	40	1200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	
Nickel	Metal	µg/g	1	5	82	270	510	56.3	55.8	58.3	45.5	39.9	44.8	42.35	11.6%	53.9	58.9	58.1	
Selenium	Metal	µg/g	1	1	1.5	5.5	1200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	
Silver	Metal	µg/g	0.2	0.5	0.5	40	490.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	
Thallium	Metal	µg/g	0.5	1	1	3.3	33	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	
Uranium	Metal	µg/g	1	1	2.5	33	300	<1.0	<1.0	1	1	1	1.1	1.05	9.52%	<1.0	1	<1.0	
Vanadium	Metal	µg/g	1	10	86	86	160	85.5	98.1	108	85.9	83.3	86.1	84.7	3.31%	96.5	97	104	
Zinc	Metal	µg/g	5	30	290	340	15000	95.9	111	119	96.9	90	93.9	91.95	4.24%	108	111	113	
Organochlorine Pesticides																			
Aldrin	OC	µg/g	0.02	0.05	0.05	0.088	6.3	<0.020	-	-	-	<0.020	<0.020	<0.020	-	<0.020	-	-	
Chlordane	OC	µg/g	0.2	0.05	0.05	0.05	3.4	<0.20	-	-	-	<0.20	<0.20	<0.20	-	<0.20	-	-	
DDD	OC	µg/g	0.04	0.05	0.05	4.6	110	<0.040	-	-	-	<0.040	<0.040	<0.040	-	<0.040	-	-	
DDE	OC	µg/g	0.04	0.05	0.05	0.52	110	<0.040	-	-	-	<0.040	<0.040	<0.040	-	<0.040	-	-	
DDT	OC	µg/g	0.04	0.05	1.4	1.4	110	<0.040	-	-	-	<0.040	<0.040	<0.040	-	<0.040	-	-	
Dieldrin	OC	µg/g	0.02	0.05	0.05	0.088	12.000	<0.020	-	-	-	<0.020	<0.020	<0.020	-	<0.020	-	-	
Endosulfan	OC	µg/g	0.04	0.04	0.04	0.04	0.04	<0.040	-	-	-	<0.040	<0.040	<0.040	-	<0.040	-	-	
Endrin	OC	µg/g	0.02	0.04	0.04	0.04	7.800	<0.020	-	-	-	<0.020	<0.020	<0.020	-	<0.020	-	-	
Heptachlor	OC	µg/g	0.02	0.05	0.05	0.072	0.072	<0.020	-	-	-	<0.020	<0.020	<0.020	-	<0.020	-	-	
Heptachlor Epoxide	OC	µg/g	0.02	0.05	0.05	0.05	0.05	<0.020	-	-	-	<0.020	<0.020	<0.020	-	<0.020	-	-	
Hexachlorobenzene	OC	µg/g	0.01	0.01	0.01	0.66	1.6	<0.010	-	-	-	<0.010	<0.010	<0.010	-	<0.010	-	-	
Hexachlorobutadiene	OC	µg/g	0.01	0.01	0.01	0.01	0.01	<0.010	-	-	-	<0.010	<0.010	<0.010	-	<0.010	-	-	
Hexachlorocyclohexane Gamma- (Lindane)	OC	µg/g	0.01	0.01	0.01	0.01	0.01	<0.010	-	-	-	<0.010	<0.010	<0.010	-	<0.010	-	-	
Hexachloroethane	OC	µg/g	0.01	0.01	0.01	0.13	0.22	<0.010	-	-	-	<0.010	<0.010	<0.010	-	<0.010	-	-	
Methoxychlor	OC	µg/g	0.02	0.05	0.05	0.19	0.19	<0.020	-	-	-	<0.020	<0.020	<0.020	-	<0.020	-	-	

Table G1. Summary of Excess Soil Analyses

Sample Location					MECP Excess Soil Quality Standards			TP-16	TP-17	TP-18	TP-19	TP-20	BH21-6	BH21-7	BH21-8	BH21-9	BH21-10	BH21-10
Sample No.					Background	Volume Independent		SS-1	SS-1	SS-1	SS-1	SS-1	SS3	SS3	SS3	SS3	SS3	DUP-2
Sample Depth (m)					Res / Park / Inst	Full Depth	Stratified	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	1.52 - 2.13	1.52 - 2.13	1.52 - 2.13	1.52 - 2.13	1.52 - 2.13	1.52 - 2.13
Laboratory Name					Ind/ Comm /	Non-Potable	Non-Potable	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS
Laboratory Work Order No.					Community	I/C/C	Subsurface	L2673599	L2673599	L2673599	L2673599	L2673599	L2678188	L2678188	L2678188	L2678188	L2678188	L2678188
Laboratory Sample ID					Property Use	Property Use	I/C/C	L2673599-17	L2673599-18	L2673599-19	L2673599-20	L2673599-21	L2678188-1	L2678188-2	L2678188-3	L2678188-4	L2678188-5	L2678188-13
Sample Date					Table 1	Table 3.1	Property Use	14-Dec-21	14-Dec-21	14-Dec-21	14-Dec-21	14-Dec-21						
Analysis Date							Table 5.1											
Parameters	**ATG**	**Units**	**RDL**	**RL**														
Metals																		
Antimony	Metal	µg/g	1	1	1.3	40	63	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	Metal	µg/g	1	1	18	18	39	3.8	3.2	3.5	3.5	3.3	3.9	3.7	3.7	3.7	3.6	3.1
Barium	Metal	µg/g	1	5	220	670	7700	334	354	409	418	273	231	362	199	198	230	203
Beryllium	Metal	µg/g	0.5	2	2.5	8	60	1.06	0.87	0.92	0.94	1.01	0.63	0.86	0.65	0.62	0.68	0.64
Boron (Hot Water Soluble) [a]	Metal	µg/g	0.1	0.5	NA	2	NA	<0.10	0.1	<0.10	<0.10	0.1	0.17	<0.10	<0.10	<0.10	<0.10	<0.10
Boron (total)	Metal	µg/g	5	5	36	120	5000	10.4	7	6.2	6.6	8.9	7.7	6.1	6.9	6.2	5.8	6.1
Cadmium	Metal	µg/g	0.5	1	1.2	1.9	7.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium Total	Metal	µg/g	1	5	70	160	11000	110	98.9	105	112	97.8	47.7	87.9	45.2	40.3	49.2	42.1
Chromium VI	Metal	µg/g	0.2	0.2	0.66	8	40	0.83	0.4	0.45	0.68	0.62	0.26	0.45	0.35	0.42	<0.20	0.27
Cobalt	Metal	µg/g	1	2	21	80	2500	24	21.6	25.2	24.6	19.6	12.2	21.5	12.7	12.2	11.9	11.1
Copper	Metal	µg/g	1	5	92	230	1900	49.3	44.9	54.4	53.6	41.4	27.8	48.2	30.2	26.3	30.6	26
Lead	Metal	µg/g	1	10	120	120	1000	9.1	7	7.1	7.4	8.3	6.3	7.4	6.5	6.3	6.8	6
Mercury	Metal	µg/g	0.005	0.1	0.27	0.27	1.9	0.0162	0.0129	0.0104	0.0112	0.0109	0.0057	0.0077	0.0082	<0.0050	0.0072	0.0053
Methyl Mercury [b]	Metal	µg/g	-	-	NV	0.00097	0.00097	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	Metal	µg/g	1	2	2	40	1200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel	Metal	µg/g	1	5	82	270	510	65.3	55.9	61.3	63	56	27.1	49	26.2	25.7	26.8	24.9
Selenium	Metal	µg/g	1	1	1.5	5.5	1200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver	Metal	µg/g	0.2	0.5	0.5	40	490.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	Metal	µg/g	0.5	1	1	3.3	33	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium	Metal	µg/g	1	1	2.5	33	300	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium	Metal	µg/g	1	10	86	86	160	97.3	99.7	114	115	89.3	68.5	100	64.6	62.9	69.3	58.6
Zinc	Metal	µg/g	5	30	290	340	15000	100	106	119	116	89.5	74.1	113	69.4	66.4	79.6	69
Organochlorine Pesticides																		
Aldrin	OC	µg/g	0.02	0.05	0.05	0.088	6.3	-	<0.020	<0.020	-	<0.020	-	-	-	-	-	-
Chlordane	OC	µg/g	0.2	0.05	0.05	0.05	3.4	-	<0.20	<0.20	-	<0.20	-	-	-	-	-	-
DDD	OC	µg/g	0.04	0.05	0.05	4.6	110	-	<0.040	<0.040	-	<0.040	-	-	-	-	-	-
DDE	OC	µg/g	0.04	0.05	0.05	0.52	110	-	<0.040	<0.040	-	<0.040	-	-	-	-	-	-
DDT	OC	µg/g	0.04	0.05	1.4	1.4	110	-	<0.040	<0.040	-	<0.040	-	-	-	-	-	-
Dieldrin	OC	µg/g	0.02	0.05	0.05	0.088	12.000	-	<0.020	<0.020	-	<0.020	-	-	-	-	-	-
Endosulfan	OC	µg/g	0.04	0.04	0.04	0.04	0.04	-	<0.040	<0.040	-	<0.040	-	-	-	-	-	-
Endrin	OC	µg/g	0.02	0.04	0.04	0.04	7.800	-	<0.020	<0.020	-	<0.020	-	-	-	-	-	-
Heptachlor	OC	µg/g	0.02	0.05	0.05	0.072	0.072	-	<0.020	<0.020	-	<0.020	-	-	-	-	-	-
Heptachlor Epoxide	OC	µg/g	0.02	0.05	0.05	0.05	0.05	-	<0.020	<0.020	-	<0.020	-	-	-	-	-	-
Hexachlorobenzene	OC	µg/g	0.01	0.01	0.01	0.66	1.6	-	<0.010	<0.010	-	<0.010	-	-	-	-	-	-
Hexachlorobutadiene	OC	µg/g	0.01	0.01	0.01	0.01	0.01	-	<0.010	<0.010	-	<0.010	-	-	-	-	-	-
Hexachlorocyclohexane Gamma- (Lindane)	OC	µg/g	0.01	0.01	0.01	0.01	0.01	-	<0.010	<0.010	-	<0.010	-	-	-	-	-	-
Hexachloroethane	OC	µg/g	0.01	0.01	0.01	0.13	0.22	-	<0.010	<0.010	-	<0.010	-	-	-	-	-	-
Methoxychlor	OC	µg/g	0.02	0.05	0.05	0.19	0.19	-	<0.020	<0.020	-	<0.020	-	-	-	-	-	-

Table G1. Summary of Excess Soil Analyses

Sample Location / Sample No. / Sample Depth (m) / Laboratory Name / Laboratory Work Order No. / Laboratory Sample ID / Sample Date / Analysis Date					MECP Excess Soil Quality Standards			BH21-10 SS3 DUP-2 Average	BH21-10 SS3 DUP-2 RPD (%)	MW21-11 SS3 1.52 - 2.13 ALS L2678188 L2678188-6	MW21-12 SS3 1.52 - 2.13 ALS L2678188 L2678188-7	MW21-13 SS3 1.52 - 2.13 ALS L2678188 L2678188-8	MW21-14 SS3 1.52 - 2.13 ALS L2678188 L2678188-9	MW21-14 DUP-1 1.52 - 2.13 ALS L2678188 L2678188-12	MW21-14 SS3 DUP-1 Average	MW21-14 SS3 DUP-1 RPD (%)	MW21-15 SS3 1.52 - 2.13 ALS L2678188 L2678188-10	MW21-16 SS3 1.52 - 2.13 ALS L2678188 L2678188-11
					Background	Volume Independent												
					Res / Park / Inst Ind/ Comm / Community Property Use Table 1	Full Depth Non-Potable I/C/C Property Use Table 3.1	Stratified Non-Potable Subsurface I/C/C Property Use Table 5.1											
Parameters	**ATG**	**Units**	**RDL**	**RL**														
Metals																		
Antimony	Metal	µg/g	1	1	1.3	40	63	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0
Arsenic	Metal	µg/g	1	1	18	18	39	3.35	14.9%	4	4.4	3.5	4.1	4.1	4.1	0.0%	4.5	4.4
Barium	Metal	µg/g	1	5	220	670	7700	216.5	12.5%	203	221	235	239	198	218.5	18.8%	529	203
Beryllium	Metal	µg/g	0.5	2	2.5	8	60	0.66	6.06%	0.62	0.67	0.79	0.71	0.61	0.66	15.2%	1	0.62
Boron (Hot Water Soluble) [a]	Metal	µg/g	0.1	0.5	NA	2	NA	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	-	<0.10	0.12
Boron (total)	Metal	µg/g	5	5	36	120	5000	5.95	5.04%	6.3	7.1	6.5	6.9	5.8	6.35	17.3%	5.5	7
Cadmium	Metal	µg/g	0.5	1	1.2	1.9	7.9	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50
Chromium Total	Metal	µg/g	1	5	70	160	11000	45.65	15.6%	41.4	53.8	54.4	49	40.4	44.7	19.2%	137	42.6
Chromium VI	Metal	µg/g	0.2	0.2	0.66	8	40	0.27	-	<0.20	0.61	1.2	0.85	0.41	0.63	69.8%	1.27	0.42
Cobalt	Metal	µg/g	1	2	21	80	2500	11.5	6.96%	12.9	12.1	13.6	14.5	14.2	14.35	2.09%	31.6	12.4
Copper	Metal	µg/g	1	5	92	230	1900	28.3	16.3%	26.5	29.7	31.1	31.6	27.2	29.4	15.0%	67.7	27.3
Lead	Metal	µg/g	1	10	120	120	1000	6.4	12.5%	6.2	6.7	7.3	7.3	6.5	6.9	11.6%	8.2	6.3
Mercury	Metal	µg/g	0.005	0.1	0.27	0.27	1.9	0.00625	30.4%	<0.0050	0.0067	0.0081	0.0076	<0.0050	0.0076	-	0.0068	<0.0050
Methyl Mercury [b]	Metal	µg/g	-	-	NV	0.00097	0.00097	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	Metal	µg/g	1	2	2	40	1200	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0
Nickel	Metal	µg/g	1	5	82	270	510	25.85	7.35%	25.2	27.3	31.2	30.2	26.5	28.35	13.1%	72.3	25.1
Selenium	Metal	µg/g	1	1	1.5	5.5	1200	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0
Silver	Metal	µg/g	0.2	0.5	0.5	40	490.0	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20
Thallium	Metal	µg/g	0.5	1	1	3.3	33	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	0.51	<0.50
Uranium	Metal	µg/g	1	1	2.5	33	300	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0
Vanadium	Metal	µg/g	1	10	86	86	160	63.95	16.7%	63.9	67.4	73.2	75.1	67.2	71.15	11.1%	147	66.4
Zinc	Metal	µg/g	5	30	290	340	15000	74.3	14.3%	67	75.2	85.2	80.6	66.3	73.45	19.5%	152	68.7
Organochlorine Pesticides																		
Aldrin	OC	µg/g	0.02	0.05	0.05	0.088	6.3	-	-	-	-	-	-	-	-	-	-	-
Chlordane	OC	µg/g	0.2	0.05	0.05	0.05	3.4	-	-	-	-	-	-	-	-	-	-	-
DDD	OC	µg/g	0.04	0.05	0.05	4.6	110	-	-	-	-	-	-	-	-	-	-	-
DDE	OC	µg/g	0.04	0.05	0.05	0.52	110	-	-	-	-	-	-	-	-	-	-	-
DDT	OC	µg/g	0.04	0.05	1.4	1.4	110	-	-	-	-	-	-	-	-	-	-	-
Dieldrin	OC	µg/g	0.02	0.05	0.05	0.088	12.000	-	-	-	-	-	-	-	-	-	-	-
Endosulfan	OC	µg/g	0.04	0.04	0.04	0.04	0.04	-	-	-	-	-	-	-	-	-	-	-
Endrin	OC	µg/g	0.02	0.04	0.04	0.04	7.800	-	-	-	-	-	-	-	-	-	-	-
Heptachlor	OC	µg/g	0.02	0.05	0.05	0.072	0.072	-	-	-	-	-	-	-	-	-	-	-
Heptachlor Epoxide	OC	µg/g	0.02	0.05	0.05	0.05	0.05	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	OC	µg/g	0.01	0.01	0.01	0.66	1.6	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	OC	µg/g	0.01	0.01	0.01	0.01	0.01	-	-	-	-	-	-	-	-	-	-	-
Hexachlorocyclohexane Gamma- (Lindane)	OC	µg/g	0.01	0.01	0.01	0.01	0.01	-	-	-	-	-	-	-	-	-	-	-
Hexachloroethane	OC	µg/g	0.01	0.01	0.01	0.13	0.22	-	-	-	-	-	-	-	-	-	-	-
Methoxychlor	OC	µg/g	0.02	0.05	0.05	0.19	0.19	-	-	-	-	-	-	-	-	-	-	-

Appendix H

Limitations

Limitations

1. The work performed in the preparation of this report and the conclusions presented are subject to the following:
    (a) The Standard Terms and Conditions which form a part of our Professional Services Contract;
    (b) The Scope of Services;
    (c) Time and Budgetary limitations as described in our Contract; and,
    (d) The Limitations stated herein.
2. No other warranties or representations, either expressed or implied, are made as to the professional services provided under the terms of our Contract, or the conclusions presented.
3. The conclusions presented in this report were based, in part, on visual observations of the site and attendant structures. Our conclusions cannot and are not extended to include those portions of the site or structures which were not reasonably available, in Wood's opinion, for direct observation.
4. The environmental conditions at the site were assessed, within the limitations set out above, having due regard for applicable environmental regulations as of the date of the inspection. A review of compliance by past owners or occupants of the site with any applicable local, provincial or federal by-laws, orders-in-council, legislative enactments and regulations was not performed.
5. The site history research included obtaining information from third parties and employees or agents of the owner. No attempt has been made to verify the accuracy of any information provided, unless specifically noted in our report.
6. Where testing was performed, it was carried out in accordance with the terms of our contract providing for testing. Other substances, or different quantities of substances testing for, may be present on site and may be revealed by different of other testing not provided for in our contract.
7. Because of the limitations referred to above, different environmental conditions from those stated in our report may exist. Should such different conditions be encountered, Wood must be notified in order that it may determine if modifications to the conclusions in the report are necessary.
8. The utilization of Wood's services during the implementation of any remedial measures will allow Wood to observe compliance with the conclusions and recommendations contained in the report. Wood's involvement will also allow for changes to be made as necessary to suit field conditions as they are encountered.
9. This report is for the sole use of the party to whom it is addressed unless expressly stated otherwise in the report or contract. Any use which any third party makes of the report, in whole or in part, or any reliance thereon, or decisions made based on any information of conclusions in the report, is the sole responsibility of such third party. Wood accepts no responsibility whatsoever for damages or loss of any nature or kind suffered by any such third party as a result of actions taken or not taken or decisions made in reliance on the report or anything set out therein.
10. This report is not to be given over to any third party for any purpose whatsoever without the written permission of Wood.
11. Provided that the report is still reliable, and less than 12 months old, Wood will issue a third-party reliance letter to parties client identifies in writing, upon payment of the then current fee for such letters. All third parties relying on Wood's report, by such reliance agree to be bound by our proposal and Wood's standard reliance letter. Wood's standard reliance letter indicates that in no event shall Wood be liable for any damages, howsoever arising, relating to third-party reliance on Wood's report. No reliance by any party is permitted without such agreement.