THURBER ENGINEERING LTD.

DRAFT PRELIMINARY GEOTECHNICAL DESIGN REPORT
NAPANEE WATER POLLUTION CONTROL PLANT EXPANSION & UPGRADES
NAPANEE, ONTARIO

Report

to

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1. INTRODUCTION

This preliminary geotechnical design report presents the results of a geotechnical investigation carried out by Thurber Engineering Ltd. (Thurber) and geotechnical recommendations to support the design and construction of upgrades at the Napanee Water Pollution Control Plant (WPCP). The project area is located southwest of the intersection of Water Street W. and Hessford Street, extending to the Napanee River. Thurber carried out the investigation as a sub-consultant to R.V. Anderson Associates Limited (RVA).

It is understood that the project includes construction of new wastewater treatment structures and ancillary buildings on land adjacent to the existing WPCP. In particular the upgrades include:

- Two-storey Headworks Building
- Four Water retaining tanks (up to 8 m below grade)
- Single Storey Tertiary / Ultraviolet Disinfection Building
- Maintenance Building
- Site-wide access roads
- Outfall pipe

The headworks building, water retaining tanks and tertiary/ultraviolet disinfection building are contiguous and differential settlement between these structures must be strictly limited.

The purpose of the investigation was to explore the subsurface conditions within the project limits and based on the data obtained, to provide borehole logs, borehole location plans, record of borehole sheets, laboratory test results, and a written description of the subsurface conditions. Preliminary geotechnical recommendations regarding the design of foundations, shoring systems, open cut utility installation, and asphalt pavement.

A limited analytical testing program was completed on selected soil samples to evaluate the environmental quality and provide preliminary management options for excavated soils that may be generated during the proposed construction works.

It should be noted that a Phase One Environmental Site Assessment (ESA) (or Assessment of Past Uses (APU) under Ontario Regulation 406/19, as amended) was not completed for the Site to identify potentially contaminating activities (PCAs), areas of potential environmental concern (APECs) or the associated contaminants of potential environmental concern (COPCs) on-Site or within the surrounding area. The scope of work for this assignment was limited to soil and groundwater sampling and testing at the borehole and monitoring well locations.

A hydrogeological assessment was completed concurrently for this project. The results of hydrogeological assessment will be reported under a separate cover and should be read in conjunction with this report.

It is a condition of this report that Thurber's performance of its professional services is subject to the attached Statement of Limitations and Conditions.

2. BACKGROUND INFORMATION

2.1 Site Description

The project site is located at 300 Water Street West, Napanee, Ontario. The Property is bounded by Water Street West to the north and the Napanee River to the south. The west and east sides of the property are bounded by the Riverine Retirement Home property line and Hessford Street, respectively.

The ground surface of the project site slopes towards the river to the south and ranges from approximately Elevation 85 m in the north to 75 m in the south of the site. The project area lies within the Napanee River Valley and the valley slope rises north of the project site to approximately Elevation 100 m.

In general, the land use surrounding the project area is residential or vacant. A retirement home lies to the west of the site, while homes, a restaurant, and an apartment building are north and east of the site. The project site itself is industrial and municipal wastewater treatment is conducted on site.

2.2 Geology

Based on the information in *The Physiography of Southern Ontario*[1] by Chapman and Putnam (1984), the site is located within the Napanee Plain physiographic region. The Napanee Plain is characterized by flat-to-undulating limestone with little overburden, except for within stream valleys and along the Napanee River and Salmon River Valleys, which may contain a variety of alluvial deposits. The physiographic landform of the project site is a clay plain, with fine textured glaciolacustrine deposits of silt and clay with minor sands and gravel.

[1] Chapman, L.J. and Putnam, D.F. 1984. The Physiography of Southern Ontario, Ontario Geological Survey Special Volume 2, Third Edition. Accompanied by Map P.2715, Scale 1:600,000.

Based on *Quaternary Geology Map M2588*[2] the surficial deposits in the vicinity are generally deeper water glaciolacustrine deposits of massive to laminated silt and clays with minor sand and gravel.

According to *Paleozoic Geology Map P2497*[3], the underlying bedrock in the area consists of the Bobcaygeon Formation. This formation contains limestone with minor shale partings. This formation ranges from micritic limestone to a course grainstone with abundant reworked clasts and calcareous fossils. Locally, the Bobcaygeon Formation is bounded by a fault which runs along the Napanee River south of the project area.

2.3 Previous Investigation

Reports from three previous investigations completed on the WPCP site were provided by RVA for review. The report references are provided below:

- Geotechnical Investigation (DRAFT), Upgrades to Wastewater Treatment Plant, 300 Water Street West, Napanee, Ontario, by GHD dated June 21, 2018
- Geotechnical Investigation, Proposed Tank Installation, Napanee Plant, 300 Water Street by Inspec-Sol Inc, dated November 15, 1999
- Geotechnical Investigation, Stage 2 Contract Soil Investigation, by Site Investigation Services dated October 5, 1977

A total of 31 sampled boreholes were drilled as part of the referenced geotechnical investigations. All boreholes from these investigations were reviewed and Boreholes BH1-17, BH13-17, BH14-17, MW15-17, BH16-17, MW17-17 BH18-17, BH19-17 and BH20-17 from the GHD were considered most relevant to the current works and have been reproduced and included in Appendix B along with the borehole location drawing. The previous investigations were used to provide supplemental bedrock and groundwater information for design and are noted in the summarized bedrock physical properties.

[2] Leyland, J.G., Russell, T.S., 1983: Quaternary Geology of the Bath-Yorkshire Island Area, Southern Ontario; Ontario Geological Survey, Map P2588, Geological Series-Preliminary Map, Scale 1:50,000.
[3] Carson, D.M., 1982: Paleozoic Geology of the Bath-Yorkshire Island Area, Southern Ontario, Ontario Geological Survey, Map P2497, Geological Series-Preliminary Map, Scale 1:50,000.

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3. INVESTIGATION PROCEDURES

3.1 Borehole Drilling

The current field investigation was carried out between February 22, 2021, to March 2, 2021 and comprised installation of a total of 22 sampled geotechnical boreholes and 4 unsampled auger probes. A summary of borehole and auger probe details are provided in Table 3.1. Borehole details are provided in the Record of Borehole sheets included in Appendix B. The approximate locations of the current boreholes and auger probes are shown on the Borehole Location Plan, Drawing No. 30726-1 provided in Appendix A.

Table 3.1 – Borehole Details

BH/Auger Probe No.	Northing (m)	Easting (m)	GS Elev. (m)	Term. Depth (m)	Term. Elev. (m)	MW Installed?
01	4900363.3	343393.4	80.9	10.2	70.7	N
02	4900376.0	343427.4	79.0	8.8	70.2	Y
03	4900314.4	343421.8	76.4	10.3	66.2	Y
04	4900313.1	343466.0	77.2	10.2	67.0	Y
05	4900278.5	343451.1	76.3	11.6	64.7	N
06	4900323.2	343358.1	78.5	5.8	72.7	Y
07	4900335.5	343376.2	78.5	5.9	72.6	N
08	4900312.0	343386.0	77.2	6.5	70.6	N
09	4900314.9	343400.5	76.8	2.9	73.9	N
10	4900286.0	343480.9	76.5	3.7	72.9	N
11	4900293.0	343503.0	76.4	3.7	72.7	Y
12	4900302.0	343528.0	76.4	3.7	72.7	N
13	4900388.5	343400.4	81.7	3.7	78.1	N
14	4900385.9	343445.9	80.4	3.7	76.7	N
15*	4900334.4	343401.2	77.7	6.3	71.4	N
16*	4900348.3	343451.0	78.2	7.8	70.4	N
17*	4900301.2	343445.0	76.5	9.8	66.7	N
18*	4900305.4	343483.5	76.9	11.3	65.6	N
19	4900314.3	343501.3	77.5	5.2	72.4	N
20	4900375.0	343378.0	80.0	2.9	77.1	N
21	4900395.1	343423.1	80.5	2.9	77.6	N
22	4900334.8	343465.,3	77.7	3.7	74.1	N
23	4900302.4	343359.7	77.5	2.9	74.7	N
24	4900283.0	343428.0	75.9	2.9	73.1	N
25	4900364.7	343500.3	77.7	8.2	69.5	N
26	4900345.9	343514.1	77.4	8.2	69.2	N

Notes:
GS – Ground Surface
Term. – Termination
MW – Monitoring well
* - Auger probes to determine approximate bedrock depth.

The borehole and auger probe locations were established in the field by Thurber using a portable GPS receiver and verified relative to existing site features. All borehole locations were cleared of utilities prior to commencement of drilling. The boreholes were repositioned as necessary in consideration of surface features, underground utilities, and overhead obstructions. Borehole location coordinates are presented in the Universal Transverse Mercator (UTM) system (NAD83, CSRS 2010.0).

The boreholes and auger probes were advanced using hollow stem and solid stem augers, powered by track mounted CME 55 drill rigs operated by GET Drilling. At borehole locations soil samples were obtained at selected intervals using a 50 mm outside diameter split-spoon sampler driven in conjunction with the Standard Penetration Test (SPT). Bedrock core samples were recovered using NQ size diamond drill core barrels.

The field investigation was carried out under the full-time supervision of Thurber technical staff. Soil samples were identified, placed in labelled containers, logged in the field, and transported back to Thurber's laboratory in Oakville for further visual examination and laboratory testing, including moisture content, grain size distribution testing, and Atterberg limits. Where soil samples were selected for analytical testing, one portion of each soil sample was placed into a laboratory-supplied labelled glass jar or vial and stored on ice in an insulated cooler to maintain a cool environment for possible analytical testing. A second portion of the sample was placed inside a labelled plastic bag for screening of headspace soil vapours, visual assessment, classification of the soils and additional geotechnical laboratory testing. The recovered rock core samples were described and photographed in the field, packaged in core boxes, and transported back to Thurber's Oakville laboratory for further examination and testing.

3.2 Groundwater Monitoring and Testing

3.2.1 *Monitoring Well Installation*

Monitoring wells were installed in selected boreholes to permit monitoring of the groundwater levels at the site, to allow for water quality samples to be collected and submitted for analytical testing and to allow for single well response testing. The monitoring wells were installed by an MECP licensed well technician in accordance with O.Reg. 903, as amended. The monitoring wells consisted of 50 mm diameter PVC pipe with a slotted screen sealed at a selected depth within the borehole. The annular space of the borehole around the screen was backfilled with clean filter sand covered by a bentonite seal. The installation details are summarized in Table 3.2 below.

Table 3.2 – Monitoring Well Details

Borehole/ Monitoring Well No.	GS Elev. (m)	Monitoring Well Tip		Slotted Screen Length (m)	Mid-Screen Depth (m)	Mid-Screen Elev. (m)	Screened Material
		Depth (m)	Elev. (m)				
02 Shallow	79.0	5.7	73.3	3.0	4.2	74.8	Silty Clay
02 Deep		8.8	70.2	2.4	7.6	71.4	Bedrock
03 Shallow	76.4	7.2	69.2	3.0	5.7	70.7	Silty Clay / Silt
03 Deep		10.3	66.2	2.4	9.1	67.4	Bedrock
04 Shallow	77.2	6.1	71.1	3.0	4.6	72.6	Silty Clay
04 Deep		10.2	67.0	3.0	8.7	68.5	Silty Clay
06	78.5	5.8	72.7	3.0	4.3	74.2	Silty Clay / Silty Sand
11	76.4	3.1	73.3	1.5	2.3	74.1	Sand / Silty Clay

Notes: GS – Ground surface

The remaining boreholes were backfilled with bentonite to the ground surface in general accordance with O.Reg. 903, as amended.

3.2.2 *Water Level Measurements*

The groundwater conditions at the borehole locations were assessed during drilling by visual examination of the soil, the sampler and the drill rods as the samples were retrieved and when appropriate by measurement of the water level in the open borehole.

Water levels were measured in the monitoring wells using a groundwater level reader.

3.2.3 *Single Well Response Tests and Groundwater sampling*

The hydraulic conductivity of the screened geologic media was estimated through Single Well Response Tests (rising head “slug tests”) in all monitoring wells. Groundwater samples were collected from select monitoring wells for water quality testing. Further discussion of this testing and the results of the testing are available in the Hydrogeological Report.

4. LABORATORY TESTING

4.1 Geotechnical

Geotechnical laboratory testing of soil samples was carried out at Thurber’s laboratory. All recovered soil samples were subjected to visual identification and to natural moisture content determination. Selected samples were also subjected to grain size distribution analysis (hydrometer and/or sieve) and Atterberg Limits testing, where appropriate.

Advanced laboratory testing consisting of consolidation tests was carried out on selected undisturbed Shelby tube samples at Thurber’s laboratory

Geotechnical laboratory testing of rock core samples consisted of point load strength and unconfined compressive strength testing.

Results of the geotechnical soil and rock laboratory testing are presented on the Record of Borehole sheets in Appendix B and in detail in Appendices C and D, respectively.

Selected soil samples were also submitted for analytical testing to assess the corrosion potential of the soil to ductile iron and the potential for sulphate attack on subsurface concrete structures. The analyses were carried out by ALS Laboratory Group (ALS), a Canadian Association for Laboratory Accreditation (CALA) accredited laboratory. The results of the corrosivity testing are summarized in Section 7 and laboratory Certificates of Analysis are included in Appendix F.

4.2 Geo-Environmental

4.2.1 *Field Screening Measurements*

All soil samples recovered from the boreholes were screened for both volatile organic compounds (VOCs), calibrated with isobutylene, and combustible gases, calibrated with hexane, using an RKI Eagle 2 instrument. The field screening was conducted on soil samples contained in sealed,

plastic bags in order to measure the concentrations of gases/vapours in the headspace of the bags.

Field screening of soil was conducted to provide a semi-quantitative assessment of volatile parameters in soil which involves the measurement of undifferentiated organic compounds and does not discriminate among the various organic parameters. As such, the gas/vapour readings are not considered to be actual concentrations of gases and vapours in the soil samples but are indicative of the relative concentrations in the samples. The headspace measurements are typically taken to guide the selection of soil samples for chemical analysis of organic compounds such as volatile constituents and/or petroleum hydrocarbons. A summary of the recorded gas/vapour readings is presented in Table G7 in Appendix G.

4.2.2 *Soil*

Visual and olfactory examination of the soil samples was completed on the recovered samples from the geotechnical field investigation program to identify potential staining and/or odours that may be indicative of hydrocarbon impact or other contamination and are presented on the Record of Borehole Sheets in Appendix B.

To evaluate the general environmental quality of the soils near the proposed excavations, representative samples of the soils recovered from the boreholes were submitted to ALS Laboratory Group for analysis of selected metals and inorganic parameters, petroleum hydrocarbons (PHCs) Fractions F1 to F4, benzene, ethylbenzene, toluene and xylenes (BTEX), and volatile organic compounds (VOCs) as outlined in Table G1, in Appendix G. Five composite soil samples were also submitted to the laboratory for analysis of Synthetic Precipitation Leaching Procedure (SPLP) for select metals and VOCs.

The sample locations and material types selected for testing are summarized in Table G1, included in Appendix G. The results of the analytical testing are discussed Section 7. Analytical summary tables are provided in Appendix G and laboratory Certificates of Analysis are included in Appendix H.

It should be noted that excess soil in Ontario is now regulated under O. Reg. 406/19, as amended, made under the Environmental Protection Act, “On-site and Excess Soil Management” that was initially filed on December 4, 2019 (“Excess Soil Regulation”). The regulation does not apply to the reuse of excavated soils on Site, or to the handling of waste that is regulated by O. Reg. 347/90, as amended, “General – Waste Management”.

To comply with O. Reg. 406/19, as amended, project specific details such as excess soil quantities, soil management strategies and receiving site acceptance criteria are required which are unknown at this time.

The scope of the required testing and planning documentation can vary significantly depending on the quantity of excess soils that will be generated as a result of the final design. Without the final design information and management strategies (i.e. on-site or off-site reuse, actual excess soil quantities, reuse site acceptance criteria), the full requirements of the new regulation may not be met. Therefore, although the proposed work plan has considered aspects of the regulation, it should only be regarded as due diligence sampling and testing at this time. Supplemental sampling and testing, as well as planning documentation, beyond the current program may be necessary to meet the requirements of the Excess Soil Regulation.

4.2.3 *Quality Assurance and Quality Control Measures*

The quality assurance and quality control (QA/QC) program included the use of the laboratory supplied sampling containers, and handling of samples under Chain-of-Custody protocol. The samples were placed directly into laboratory supplied sampling containers that were pre-labelled with analytical parameters and preservatives, where required using dedicated nitrile gloves that were changed between each sample collected. VOC and PHC F1 samples were collected using dedicated Terra Core ® samplers for each sample and placed directly into glass vials containing methanol.

Each soil sample was labeled with sample identification and sampling date and carefully preserved on ice in insulated coolers from the time of collection to the time of delivery to the laboratory to maintain storage temperatures required by Ministry of Environment, Conservation and Parks (MECP's) "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, March 9, 2004, amended as of July 1, 2011".

ALS Labs conducted an internal Quality Assurance program in accordance with O. Reg. 153/04 analytical protocols. This included testing of duplicates and reference material spike samples to verify the precision, accuracy and reliability of the reported analytical test results.

5. DESCRIPTION OF SUBSURFACE CONDITIONS

Details of the encountered soil stratigraphy are presented on the Record of Borehole sheets included in Appendix B. A general summary of the stratigraphy, based on the conditions encountered in the boreholes, is given in the following paragraphs and on the Borehole Location and Stratigraphic Profile drawings in Appendix A. However, the factual data presented on the

Record of Borehole sheets takes precedence over this summary and must be used for interpretation of the site conditions. It should be recognized and expected that soil conditions will vary between and beyond borehole locations.

The subsurface stratigraphy encountered in the boreholes typically consisted of surficial materials (pavement structure, topsoil/organics or fill) overlying silty clay. Silty clay was encountered throughout the site and either directly overlaid the limestone bedrock or overlaid a relatively thin layer of sand/silt which overlaid the limestone bedrock. An upper sand layer overlaid the silty clay unit in several boreholes closest to the river.

More detailed summaries of the individual strata encountered during the investigation are presented below.

5.1 Pavement Structure

The existing pavement structure encountered at the ground surface consisted of asphalt, underlain by granular fill. Pavement was observed at Boreholes BH-14, BH-21, BH-25, and BH-26. The asphalt thickness ranged from approximately 60mm to 150mm, and the granular fill thickness ranged from approximately 0.1 m to 2.1 m. The granular fill was described as sandy gravel, sand and gravel or gravelly sand and contained trace silt. SPT N-values for the granular fill ranged from 4 to 56 blows per 0.3 m of penetration, indicating a loose to very dense relative density. Moisture contents measured in the granular fill ranged from approximately 5 to 18%.

The results of one grain size distribution analysis conducted on a selected sample of the granular fill are presented on Figure C1 of Appendix C. The results of the grain size distribution analysis are summarized in Table 5.1 below.

Table 5.1 – Grain Size Distribution Granular Fill

Soil Particle	Percentage (%)
Gravel	51
Sand	42
Silt & Clay	7

5.2 Topsoil and Organics

An approximately 150mm to 690mm thick layer of topsoil/organics was encountered at the ground surface throughout the site where fill/pavement was not encountered. Topsoil/organics were encountered at the ground surface at following boreholes: 04, 05, 07, 08, 09, and 24. A buried

layer of topsoil approximately 75 mm thick was encountered below a thin layer of fill in Borehole 02.

An approximately 430 mm thick layer of peat was observed at the ground surface at Borehole 03, and the surrounding ground at surface appeared marshy and wet. A buried layer of peat approximately 0.9 m thick was also observed at 1.4 m below ground surface in Borehole 22. The SPT N-values measured in the peat ranged from 2 to 3 blows for 0.3 m of penetration indicating a very soft consistency. Moisture contents in the peat ranged from 72% to 317%.

The topsoil/organics and peat thicknesses will vary between and beyond the borehole locations and the reported thicknesses are not meant to be used for estimating quantities.

5.3 Silty Clay to Clayey Silt Fill

Silty clay to clayey silt fill ranging in thickness from approximately 0.7 m to 2.2 m was found at the ground surface in several boreholes (01, 06, 10, 11, 12, 14, 20, and 23). The cohesive fill approximately 0.8 m thick was found either below a layer of cohesionless fill or the pavement structure in Boreholes 13, 22, 26. The fill contained trace sand to sandy and trace to some gravel, In some locations organic material, brick fragments and/or cobbles were also noted with the fill.

SPT N-values in the cohesive fill ranged from 6 to 36 blows per 0.3 m of penetration, indicating a soft to hard consistency. Surface samples were frozen at the time of drilling which may have artificially increased the N-values in some samples. Natural moisture contents of the sand ranged from 13% to 36%.

The results of grain size distribution analyses conducted on selected samples of the cohesive fill are presented on Figure C2 of Appendix C. The results of the grain size distribution analyses are summarized in Table 5.2 below.

Table 5.2 – Grain Size Distribution Silty Clay to Clayey Silt Fill

Soil Particle	Percentage (%)
Gravel	0 to 3
Sand	13 to 22
Silt	49 to 59
Clay	26 o 28

5.4 Silty Sand to Sandy Silt Fill

Two (2) boreholes, 13 and 22, had a surficial layer of silty sand to sandy silt fill ranging in thickness from 0.6 m to 0.7 m overlying the silty clay fill. In Boreholes 19 and 21 a layer of silty sand to sandy silt fill was found below silty clay fill and pavement structure, respectively. This fill contained trace gravel and trace to some clay.

SPT N-values recorded in this fill ranged from 14 to over 59 blows per 0.3 m of penetration, indicating a compact to very dense relative density. Surface samples were frozen at the time of drilling which may have artificially increased the N-value. Natural moisture contents of the sand ranged from 11% to 19%.

The results of one grain size distribution analysis conducted on a selected sample of the silty sand to sandy silt fill are presented on Figure C3 of Appendix C. The results of the grain size distribution analysis are summarized in Table 5.3 below.

Table 5.3 – Grain Size Distribution Silty Sand to Sandy Silt Fill

Soil Particle	Percentage (%)
Gravel	5
Sand	63
Silt	22
Clay	10

5.5 Silty Clay

Native silty clay was contacted in all boreholes below the pavement structure or fill described above or below the sand/silt layers described below. This unit was contacted at depths of approximately 0.2 to 2.6 m and was fully penetrated at depths of approximately 4.1 to 11.0 m below ground surface, where it overlies bedrock, sand, or silt. The layer contained trace to some sand, occasional gravel, and occasional organic material. Sand and silt seams were noted within this material.

SPT N-values recorded in this layer ranged from 1 to 32 blows per 0.3 m of penetration, indicating a very soft to hard consistency. The moisture content of the silty clay layer ranged from 9 to 59%. It is noted that organic inclusions were encountered within this soil unit in BH-22. The water content of the silty clay extended to 91% due to the organics noted.

The results of grain size distribution analyses conducted on selected samples of the silty clay are presented on Figure C4 to C7 of Appendix C. The results of the grain size distribution analyses are summarized in Table 5.4 below.

Table 5.4 – Grain Size Distribution Silty Clay

Soil Particle	Percentage (%)
Gravel	0 to 2
Sand	0 to 25
Silt	12 to 70
Clay	25 to 81

The results of Atterberg Limits testing carried out on this material indicate that the layer ranges from low to high plastic silty clay (CL, CI, and CH). The ranges of the testing results are presented in Figure C10 and C11 in Appendix C and are summarized in Table 5.5 below.

Table 5.5 – Atterberg Limits Silty Clay

Index Property	Percentage (%)
Liquid Limit	22 to 71
Plastic Limit	14 to 29
Plasticity Index	9 to 46

The results of two consolidation tests completed on the silty clay are summarized below in Table 5.6. Detailed results of the consolidation tests are provided in Appendix C.

Table 5.6 – Consolidation Test Results

BH No.	Depth (m)	Elev. (m)	Natural Moisture Content (%)	Initial Void Ratio	Estimated Effective Overburden Pressure (kPa)	Estimated Preconsolidation Pressure (kPa)	Overconsolidation Ratio
19	4.6 – 5.2	72.7	43.7	1.221	100	900	9.0
22	3.0 – 3.7	77.7	33.7	0.990	70	190	2.7

A total of four insitu shear vane tests were completed within the silty clay deposit in Boreholes 03, 04 and 05. Measured undrained shear strengths ranged from approximately 39 kPa to 78 kPa. The remoulded undrained shear strengths ranged from 20 kPa to 59 kPa. Results of the shear vane tests are provided on the borehole logs in Appendix B.

5.6 Silt to Sand

A layer of sand approximately 0.3 to 1.6 m thick was observed beneath the fill or organic deposits at depths of 0.6 to 1.1 m in Boreholes 05, 09, 10, 11, and 12. This layer contained trace silt to silty, trace clay and trace gravel. A deeper layer of silt to sand was observed overlaying bedrock in Boreholes 01, 03, 05, 06 and 08. This layer contained trace to some clay and trace gravel. This layer was often observed to containing bedding.

SPT N-values recorded in the silt to sand ranged from 0 to 16 blows per 0.3 m of penetration, indicating very loose to compact conditions. The moisture content of the silt to sand layers ranged from 4 to 31%.

The results of grain size distribution analyses conducted on selected samples of the silty sand are presented on Figure C8 and C9 of Appendix C. The results of the grain size distribution analyses are summarized in Table 5.7 below.

Table 5.7 – Grain Size Distribution Silt to Sand

Soil Particle	Percentage (%)
Gravel	0 to 4
Sand	17 to 84
Silt	12 to 71
Clay	1 to 26

5.7 Limestone Bedrock

Limestone bedrock was encountered underlying the overburden soils in many of the boreholes. Bedrock was confirmed in the three boreholes (01, 02 and 03) by coring 3.0 to 3.2 m. Boreholes 04, 05, 06, 07 and 08 were terminated upon auger refusal on probable bedrock and auger probes 15, 16, 17 and 18 were also terminated upon refusal on probable bedrock. The bedrock/probable bedrock surface was encountered at depths ranging from 5.7 to 11.6 m (Elev. 64.7 to 73.8 m) and slopes towards the river. The depths and elevations at which bedrock/probable bedrock was encountered are summarized in Table 5.8, below.

Table 5.8 – Bedrock Contact Depths and Elevations

Borehole	Bedrock Surface	
	Depth (m)	Elevation
01	7.1	73.8
02	5.7	73.3
03	7.2	69.2
04*	10.2	67.0
05*	11.6	64.7
06*	5.8	72.7
07*	5.9	72.6
08*	6.6	70.6
15*	6.3	71.4
16*	7.8	70.4
17*	9.8	66.7
18*	11.3	65.6

*Borehole/auger probe was terminated upon auger refusal on probable bedrock.

The limestone bedrock was visually identified as grey limestone of the Bobcaygeon Formation. The limestone was generally grey and fine grained with fine, wavy interbeds of black shale with occasional 5 mm clasts. The limestone is fossiliferous and has occasional calcite infilling of vugs.

Photographs of the retrieved rock core are provided in Appendix E.

5.7.1 *Physical Properties*

5.7.1.1 Total Core Recovery

Total Core Recovery (TCR) is the total cumulative length of all core recovered in the core barrel expressed as a percentage of the length of the core run and is recorded on a per run basis. Prior to measuring the recovered length, the core was assembled to align joints and rubble zones were reassembled to the extent practicable. The TCR of the rock cores consistently ranged between 93 and 100%.

5.7.1.2 Solid Core Recovery

Solid Core Recovery (SCR) is the total cumulative length of all solid, cylindrical pieces of core recovered in the core barrel expressed as a percentage of the length of the core run and is

recorded on a per run basis. The SCR of the rock cores recovered typically ranged from 77 to 97%.

5.7.1.3 Rock Quality Designation

Rock Quality Designation (RQD) is the total cumulative length of intact core recovered in the core barrel expressed as a percentage of the length of the core run and is recorded on a per run basis. Intact core was measured along the centreline and a 100 mm requisite length was used for the purposes of standardization and comparison. It is considered that with good drilling techniques, the lengths of the core pieces, measured along the centerline, will generally be the same regardless of core diameter since the spacing of natural unbonded joints does not change. The RQD of the rock cores ranged from 70 to 92%, indicating that the RQD was determined to be fair to excellent.

Bedrock within the current investigation area was also historically cored in two boreholes (13-17 and 17-17-d) from the GHD report. The RQD of the rock cores ranged from 83 to 100%, indicating that the RQD was good to excellent.

5.7.1.4 Fracture Index

The fracture index records the number of natural fractures per 0.3 m length of core run. The fracture index of the limestone bedrock ranged from 0 to 4.

5.7.1.5 Weathering

In general, the limestone was judged to be slightly weathered near the contact surface of the bedrock. The rock weathering generally improved with depth, becoming fresh within the first meter of coring. It is noted that a localized highly fractured zones were observed within the core of approximately 50 mm in length.

5.7.2 *Index Properties*

5.7.2.1 Point Load Testing

Point load index strength tests were carried out on selected intact rock core samples. The test results are presented in Appendix D. Determination of the unconfined compressive strength was based on the empirical relationship between unconfined compressive strength and point load index strength as follows:

$$\text{Unconfined compressive strength (MPa)} = 24\ I_{S(60)}$$

Where $I_{S(50)}$ is the point load index strength in MPa for a 50 mm equivalent diameter core. The correlation value of 24 is site specific and was developed based on a comparison of the UCS tests and the point load index tests.

The unconfined compressive strength (UCS) of the rock, estimated from the results of point load tests, varied from 46 to 209 MPa, indicating a medium strong to very strong rock strength classification. In general, the presence of shale did not significantly decrease the strength of the limestone. The results are summarized on the Record of Borehole sheets included in Appendix B and on the Point Load Test Sheets in Appendix D.

5.7.2.2 Unconfined Compressive Strength Testing

Unconfined compressive strength (UCS) testing was completed on a total of 3 limestone samples. The results of the UCS testing are provided in Appendix D and are shown on the Record of Borehole Sheets, provided in Appendix B.

The results of the UCS testing indicate the strength ranges from 105.9 to 130.6 MPa with a mean value of 116.7 MPa.

5.8 Groundwater Conditions

The groundwater conditions at the borehole locations were assessed during drilling by visual examination of the soil, the sampler and the drill rods as the samples were retrieved and when appropriate by measurement of the water level in the open borehole.

The groundwater depths and elevations measured in the monitoring wells installed in the boreholes are summarized in Table 5.9 below.

Table 5.9 – Summary of Groundwater Level Observations

BH/MW No.	Ground Water Depth / Elevation (m)			
	February 26, 2021	March 12, 2021	April 14, 2021	May 11, 2021
02 Shallow	0.7 / 78.3	0.6 / 78.4	0.6 / 78.4	0.54 / 78.5
02 Deep	0.8 / 78.2	0.7 / 78.3	0.8 / 78.2	0.6 / 78.4
03 Shallow	0.2 / 76.3	-0.2* / 76.7	-0.1* / 76.5	-0.2* / 76.7
03 Deep	-0.2* / 76.6	0.7 / 75.8	0.6 / 75.9	0.5 / 76.0
04 Shallow	2.9 / 74.3	1.0 / 76.1	1.2 / 75.9	1.0 / 76.2
04 Deep	1.8 / 75.4	1.8 / 75.4	1.8 / 75.4	1.6 / 75.6
06	-0.8* / 79.3	-1.0* / 79.5	-0.8* / 79.3	-0.9* / 79.4
11	2.2 / 74.2	2.1 / 74.3	2.1 / 74.3	2.1 / 74.3

* Negative water level indicates water level measured above the ground surface.

The above groundwater level measurements are short-term observations and seasonal fluctuations of the groundwater level are to be expected. Further, groundwater levels may be higher after prolonged periods of precipitation.

6. GEOTECHNICAL ENGINEERING DISCUSSION AND RECOMMENDATIONS

This section of the report provides preliminary geotechnical recommendations for the design and construction of the proposed buildings, water storage tanks, access roads and outfall pipe. The recommendations are based on the subsurface soil, bedrock, and groundwater conditions encountered during the investigation. The soil and bedrock conditions may vary between and beyond the borehole locations.

The comments and recommendations in this report should be reviewed to ensure their applicability if there are any changes to the final design.

We understand that grade raises are not included in the current design. If grade raises are required, Thurber should be notified as grade raises are likely to cause settlement.

6.1 Headworks Building, Tertiary / UV Disinfection Building and Water Retaining Tanks

It is understood that the Headworks Building, the Tertiary / UV Disinfection Building and the water retaining tanks are all connected and that differential settlement between them must be limited. Design information provided by RVA indicates that the finished floor elevation of the proposed

Headworks Building will be near 81.4 m, with buried services and tanks extending to a minimum elevation of 75.7 m. The proposed Tertiary / UV Disinfection Building is anticipated to have varying finished floor elevations ranging between 74.8 to 77.4 m. The base of the water retaining tanks has a base of slab elevation ranging between approximately 70 and 71.5 m.

In the general, the subsurface stratigraphy at the Headworks Building, Tertiary/UV Disinfection Building and water retaining tanks comprised surficial topsoil/organics and fill overlying silty clay over limestone bedrock. Layers of silt and/or sand were encountered in several boreholes either above or below the silty clay deposit. The bedrock was contacted at depths of 5.7 to 12.1 m (Elev. 74.3 to 64.7 m). Refer to Drawing 30726-2 for a stratigraphic profile through the long axis of the proposed works.

6.1.1 *Foundation Design*

Based on the finished floor elevations and tank elevations provided, the ground conditions at the floor slabs and tank bases will range from very soft to stiff clay, loose to compact silts and sands and limestone bedrock.

Where the tank base is at or below the top of bedrock specifically at the north end of the tanks, the slab can be founded directly on the limestone bedrock. The parameters to be used for design of a structural slab on sound limestone and are presented in Table 6.1 below.

Table 6.1 – Sound Limestone Properties

Soil Unit	**Sound Limestone**
Factored Bearing Resistance at Ultimate Limit State (ULS) (kPa)	1,000
Coefficient of Friction for Cast-in-Place Concrete, μ	0.55
Poisson's Ratio, *v*	0.25

The Serviceability Limit State (SLS) resistance is not expected to govern the design since the bearing pressure required to mobilize 25 mm of settlement would be greater than the ULS resistance.

When the structure/slab is not to be placed directly on bedrock, consideration was given to supporting the building using the following foundation types:

- Spread footings on overburden soil
- Drilled shafts (caissons)

- Micropiles

The chosen foundation for the structures may be dictated by structural considerations, economic considerations and construction constraints which are not assessed within this report.

6.1.1.1 Spread Footings on Overburden

Due to the need to limit differential settlement between the portion of the tanks founded directly on bedrock and the remaining portion of the tanks and the two buildings and the native very soft to stiff and the loose to compact silts and sands are not considered suitable to support the structures. As such, design recommendations have not been developed for spread footing foundations.

6.1.1.2 Drilled Shafts (Caissons)

Augered/drilled caissons socketed into limestone bedrock are considered feasible for supporting the buildings and tanks.

The socket length of rock-socketed caissons may be relatively short if the purpose is solely to provide axial resistance. However, if the rock socket is also required to provide lateral resistance and/or fixity, a longer rock socket will likely be required. To provide full fixity, it is recommended that the design use rock socketed caissons with a minimum socket length of twice the caisson diameter into sound bedrock. The upper 0.5 m of rock should be assumed to be weathered and neglected in the determination of socket length (i.e. for full fixity a 1 m diameter caisson should be socketed a minimum of 2.5 m into the bedrock). The actual socket length required should be determined based on the required lateral capacity and moment capacity requirements. A deeper socket length may therefore be required. Under no circumstances should the rock socket length be less than 1.0 m.

The limestone bedrock was measured to have an unconfined compressive strength of approximately 105 to 130 MP, indicating that the rock is generally very strong. Below a surficial weathered zone of the bedrock, the RQD results typically classified the rock as good to excellent quality.

Rock socketed caissons at this site may be designed based for the factored geotechnical resistances for axial compression provided in Table 6.2.

Table 6.2 – Axial Compression Geotechnical Resistances for Rock Socketed Caissons

Caisson Diameter (m)	Socket Length (m)	Factored Geotechnical Resistance at ULS (kN) (Axial Compression)	
		Shaft Resistance	End-Bearing Resistance
1.0	1.0	940	See Note*
	1.5	1,880	
	2.0	2,820	
	2.5	3,760	

* Note – Rock socketed caissons on this site would have theoretical factored end-bearing resistances in excess of 10,000 kN at ULS; however, for end-bearing resistances to be relied upon the base of the rock socket will need to be cleaned thoroughly and inspected prior to the placement of concrete, which can be challenging and impractical if water is present in the shaft. In that case, axial displacement (settlement) of the caissons would occur prior to engaging the end-bearing resistance. It is difficult to predict the magnitude of this settlement and therefore it is recommended that end-bearing resistance be neglected in the design (i.e., only shaft resistance is relied upon).

A minimum centre-to-centre spacing of three caisson diameters should be maintained between caissons.

As site grades will not be raised, significant down-drag on the caissons due to negative skin friction is not expected. This should be revisited if grade changes are required.

For uplift resistance, factored shaft resistance values at ULS may be taken as 75% of the shaft resistance values indicated above for axial compressive loads. SLS conditions will not apply.

The caisson equipment supplied by the Contractor must be capable of advancing through existing soils and penetrating or pushing aside potential obstructions. The drilling equipment must also be able to penetrate strong to very strong limestone of generally good to excellent quality.

Rock-socketed caissons will require the use of a steel liner advanced into the upper bedrock to support the sidewalls within the overburden, minimize groundwater inflow and enable machine-cleaning of the socket base. After the liner is installed, the bedrock socket must be advanced to found the caisson in sound bedrock with a minimum embedment length as recommended above.

High volumes of seepage should be anticipated into caisson excavations socketed into bedrock, and measures such as heavy duty pumping to maintain a dry excavation and enable concrete

placement in a dewatered condition may not be practical. It is anticipated that placement of concrete using tremie methods will be required.

Caisson installation must be in accordance with OPSS.MUNI 903.

6.1.1.3 Micropiles

Micropiles socketed into the bedrock are considered feasible for the support of buildings and tanks.

It is recommended that the micropiles be extended into the sound/fresh bedrock underlying the upper 0.5 m of weathered bedrock, to obtain axial compressive support along the rock socket.

The grout-to-rock bond stress recommended for design of the micropiles whin the less weathered bedrock, below the upper 0.5 m of bedrock, is 400 kPa at factored ULS.

For assumed micropile designs with socket diameters of 100, 150 and 200 mm and grouted bond lengths of 5 and 10 m in the less weathered limestone bedrock, the recommended factored geotechnical resistances in compression are provided in Table 6.3.

Table 6.3 – Axial Compression Geotechnical Resistances for Rock Socketed Micropiles

Socket Diameter (mm)	Grouted Bond Length (m)	Factored Compressive Resistance at ULS (kN)
150	5	940
	10	1,880
200	5	1,250
	10	2,500
250	5	1,570
	10	3,140

The grouted bond length and diameter may be varied as appropriate to achieve different design capacities than shown in the table, and to accommodate equipment selection by the contractor.

The factored SLS resistance of the micropiles in the bedrock socket is expected to exceed the factored ULS resistance as the movement required to develop the bond stress is expected to be less than 10 mm. Axial compression of the unbonded length of the micropile section should be computed by the structural designer.

The allowable tensile capacity may be taken as 75% of the compressive capacity.

The lateral capacity of the micropile will be limited by the slenderness of the installation and the variable nature of the floodplain deposits. Sufficient micropiles should be installed with a batter to resist lateral loads.

The micropiles must be provided with corrosion protection.

Micropile installation will require advancing a hole through cohesionless and cohesive deposits below the groundwater table and weathered bedrock containing voids and highly fractured zones, prior to encountering less weathered bedrock. The bedrock consists of limestone. The Contractor must be prepared to penetrate these materials to advance the micropile into bedrock and form the rock socket.

It is anticipated that a casing sealed into the less weathered bedrock will be required to support the excavation sidewalls in the cohesionless overburden soils to prevent materials from falling into the socket, and minimize loss of grout above the bonded zone.

The geotechnical load capacity of a micropile is highly sensitive to the processes used during pile construction, including techniques used for drilling the pile shafts, flushing the drill cuttings and grouting the pile. Micropile load tests prior to and during construction are essential for verification of the assumed grout-to-shale bond stresses. It is recommended that at least one sacrificial pile be installed prior to construction to develop appropriate installation methods and confirm the bond stress/micropile design. Preconstruction and production load testing should be considered an extension of the design.

The Contractor must submit the proposed installation method for review prior to construction. All micropile testing and installation should be witnessed and inspected by qualified geotechnical personnel.

6.1.1.4 Lateral Resistance of Caissons

The geotechnical lateral resistance developed in the cohesive silty clay soil may be calculated using the coefficient of horizontal subgrade reaction (k_s) and ultimate lateral resistance (p_{ult}) estimated as follows:

	k_s	=	67 S_u / D	(kN/m^3)
	p_{ult}	=	9 S_u	(kPa)
where	D	=	caisson diameter (m)	
	S_u	=	undrained shear strength (kPa)	
		=	50 kPa	

The geotechnical lateral resistance of a caisson in the cohesionless sand/silt layer may be calculated using a coefficient of horizontal subgrade reaction (ks) and ultimate lateral resistance (p_{ult}) as follows:

	k_s	=	n_h z / D	(kN/m^3)
	p_{ult}	=	3 γ' z K_p	(kPa)
where	z	=	depth of embedment along caisson (m)	
	D	=	caisson diameter (m)	
	n_h	=	coefficient related to soil density (kN/m^3)	
		=	2500 kN/m^3	
	γ'	=	effective unit weight (kN/m^3)	
		=	11 kN/m^3	
	K_p	=	coefficient of passive lateral earth pressure	
		=	3.0	

The spring constant, K_s, for analysis may be obtained by the expression, $K_s = k_s$ L D (kN/m), where k_s is the coefficient of horizontal subgrade reaction (kN/m^3), D is the caisson diameter (m) and L is the length (m) of caisson segment or element used in the analysis. The ultimate lateral resistance, P_{ult}, may be obtained from the expression, $P_{ult} = p_{ult}$ L D. This represents the ultimate load at which geotechnical failure of the caisson occurs and will not support any additional load at greater displacement.

The modulus of subgrade reaction may have to be reduced based on caisson spacing. The reduction factors to be used for a pile group oriented perpendicular or parallel to the direction of loading are provided in Figure C6.11.3 in the Commentary to the CHBCD 2014.

The lateral resistance that can be mobilized in front of a caisson socket in bedrock may be computed using the coefficient of horizontal subgrade reaction, k_s, and ultimate lateral resistance, p_{ult}, values provided below.

k_s	=	35,000 kN/m^3 in the weathered bedrock (top 0.5 m); and
	=	75,000 kN/m^3 in the less weathered bedrock (below 0.5 m).
p_{ult}	=	650 kPa in the weathered bedrock (top 0.5 m); and
		1,500 kPa in the less weathered bedrock (below 0.5 m).

6.1.2 *Seismic Considerations*

In accordance with Section 4.1.8.4 of the Ontario Building Code (OBC) (2012), the selection of the seismic site class is based on the soil conditions anticipated in the upper 30 m of the ground

profile. The stratigraphy at this site generally consists low to high plastic, very soft to stiff silty clay overlying a thin layer of loose to compact silt and sand overlying limestone bedrock at depths of 5.7 to 12.1 m. As per Table 4.1.8.4.A of the OBC, the site may be classified as Seismic Site Class E (soft soil).

Based on the National Building Code of Canada (NBCC 2015), the peak horizontal ground acceleration (PGA), corresponding to a design earthquake having a 2 percent probability of being exceeded in 50 years (i.e. 2,475 year return period) is 0.095 g at the site. The 2015 National Building Code Seismic Hazard Calculation is included in Appendix I.

Based on a preliminary assessment of the liquefaction potential of the silty clay, using Bray et al.[4] (2004) method, the silty clay at the site may be susceptible to cyclic mobility under seismic hazard with a return period of 2,475 years, as shown on Figure I1, appended.

Therefore, a site-specific response analysis is required to verify the potential for cyclic softening. If the potential for cyclic softening is verified, a Site Class F should be used in the design and a design site specific response spectrum should be developed. If the cyclic softening is refuted by additional analysis, a Site Class E may be possible.

6.1.3 *Subsurface Walls*

We understand that water retaining tanks and the basement of the Tertiary/UV Disinfection Building will be designed as water-tight structures. The subsurface walls for these structures should be designed to withstand hydrostatic pressure, and effective stresses in accordance with the following equation, assuming ground water level at the ground surface:

$$p = K(\gamma' h + q) + \gamma_w h$$

where

K	=	lateral earth pressure coefficient
	=	0.5
γ'	=	buoyant unit weight of soil below design water level
	=	11.7 kN/m^3
γ_w	=	unit weight of water, 9.8 kN/m^3
h	=	depth below final grade (m)

[4] Bray et al., 2004: Liquefaction Susceptibility of Fine-Grained Soils. Proc., 11th Int. Conf. on Soil Dynamics and Earthquake Engineering and 3rd Int. Conf. on Earthquake Geotechnical Engineering.

q = any surcharge load (kN/m^3)

The above parameters assume that the space around the subsurface walls will be backfilled with compacted granular fill.

6.1.4 *Uplift Design*

It is understood that the water retaining tanks and the basement portion of the Tertiary/UV Disinfection Building will be designed as watertight structures, and as the base slab is below the groundwater level, the structure should be designed to resist hydrostatic uplift. Due to the tendency for surface runoff to collect within the subsurface wall backfill zone, the groundwater level should be assumed to be equal to the ground surface for uplift design purposes. Resistance to uplift can be achieved by increasing the weight of the structures, extending the base slab laterally, or providing rock anchors. If caisson or micropiles are used to support these structures the tensile capacity as described in the sections above may be used to resist uplift.

Rock anchors, if required, can be designed with a factored bond stress at ULS of 300 kPa and allowable bond stress of 200 kPa for anchors embedded in the limestone.

The resistance factor for uplift resistance by semi-empirical analysis is 0.3 per the Canadian Foundation Engineering Manual.

It is recommended that the minimum bond length of 3.0 m be used for anchors extending into the sound limestone.

For a single bar anchorage system design, the failure zone of a single bar is defined as a cone shaped mass with sloped sides drawn up on each side of the anchor and from the base of the anchor at 1H:1V (45 degrees from the vertical on each side of the anchor). The spacing of the individual anchors should be beyond this failure zone.

Where failure cones overlap, each adjacent anchor would lose the ballast affect of half of the overburden material within the zone of overlap.

It is recommended that stressing and testing for every anchor be required. Testing should include, at a minimum, performance tests and proof tests. Preproduction testing would be required if higher ultimate bond strengths are required.

Performance tests (1.33 times the design load) should include the first three anchors; thereafter, a minimum of 2% shall be performance tested. In addition, proof load tests (1.33 times the design load) should be conducted on all anchors.

Grout Quality Assurance/Quality Control (QA/QC) should include preproduction lab tests, preproduction field tests and routine QA/QC during production. It is recommended that grouting be completed as soon as possible after drilling.

All work shall be completed in compliance with OPSS 942 “Construction Specification for Prestressed Soil and Rock Anchors” and the Post-Tensioning Institute (PTI), 2014 Recommendations for Prestressed Rock and Soil Anchors, PTI DC35.1-14.

6.1.5 *Base Slabs*

Where the elevation of the base slab of the water retention tanks is at or below the top of bedrock, the structural concrete for the slab can be placed directly on the limestone bedrock. Where the base slab is above the top of bedrock and the tanks are supported on deep foundations on rock, the slab should be constructed as a structural slab. A minimum 300 mm thick layer of well compacted clear stone (or Granular A compacted to 98% of SPMDD) is recommended directly beneath the floor slab.

The Headworks Building and the Tertiary/UV Disinfection Building will be supported on deep foundations. The floor slabs for these buildings should be designed as structural slabs. A minimum 300 mm thick layer of well compacted clear stone (or Granular A compacted to 98% of SPMDD) is recommended directly beneath the floor slab.

A geotextile should be provided between the clear stone underslab fill and the subgrade soils to avoid loss of fine soil particles from the subgrade soil into the voids in the clear stone. Where a geotextile is required, it should consist of a Class II non-woven geotextile with a Filtration Opening Size not exceeding about 100 microns, in accordance with OPSS 1860.

6.2 Maintenance Garage

It is understood that the maintenance garage will be located on the west side of the site (near Boreholes 06, 07 and 08) and will have dimensions of approximately 35 m by 23 m. It is assumed that the building will be founded on shallow spread footings immediately below the frost penetration depth of 1.6 m and will have a slab-on-grade. Based on the surveyed elevation of the boreholes the ground surface elevation varies across the footprint of the building from Elevation 77.2 to 78.5 m. If engineered fill is required to fill low portion of the building footprint Thurber should be consulted prior to proceeding.

6.2.1 *Foundations*

The subsurface conditions at the anticipated founding depth (1.6 m below the ground surface elevation) consist of firm to stiff silty clay. Conventional strip/spread footings 1.5 m wide bearing on the native firm to stiff silty clay may be designed for a geotechnical resistance of 75 kPa at SLS and a factored geotechnical resistance of 110 kPa at ULS.

Care should be taken to avoid disturbance of foundation soils. Any disturbed soils should be removed to sufficient depth as approved by a geotechnical engineer and replaced with lean concrete. Disturbed soils should not be allowed to remain in footing excavations.

The excavated base at the foundation level should be protected from weathering and frost action to prevent deterioration of the soil. Therefore, it is imperative that the footings should be protected against freezing until the building is adequately heated.

All footing excavations should be inspected by qualified geotechnical personnel prior to placing concrete to confirm that the surface exposed at the founding level is consistent with the design assumptions and that the base has been adequately cleaned of disturbed material, and are free of water.

6.2.2 *Floor Slab*

In preparation for the construction of the floor slab, all fill material, organic soils and any remaining loose, wet, and disturbed material should be removed from beneath the floor slab.

For the slab on grade, at least 150 mm of OPSS Granular A should be placed to form the base for the floor slab. Any bulk fill required to raise the grade to the underside of the Granular A should consist of OPSS Granular B Type II, or the Granular A thickened. The underslab fill should be placed in maximum 300 mm thick lifts and should be compacted to at least 98% of the materials SPMDD using suitable vibratory compaction equipment.

6.3 Outfall Pipe

We understand a new outfall pipe will be installed using open cut methods between the Tertiary / UV Disinfection Building and an existing chamber a distance of approximately 50 m. Boreholes 10, 11 and 12 are located along the proposed alignment of the outfall pipe. The proposed diameter of the new pipe is 710 mm and the invert ranges from Elev. 75.9 at the Tertiary / UV Disinfection building to Elev. 74.7 m at the existing chamber. The ground surface elevation along the alignment, based on the surveyed elevation of the boreholes, is approximately 76.5 m meaning

the depth to the pipe invert from existing ground surface ranges from approximately 0.6 m to 1.8 m.

Based on Boreholes 10, 11 and 12, the soils at the base of the trench will consist of very loose to loose silty sand to sand. The groundwater elevation in the area of the outfall pipe is near Elevation 74.3 m based on water level readings from the monitoring well installed in Borehole 11.

Prior to placement of the pipe bedding, the base of the trench should be maintained in a dry condition, free of loose or disturbed material. The pipe must be placed on a uniformly competent subgrade. Pipe bedding materials, compaction, and cover should follow OPSD 802.030 to 803.034, and/or City of Napanee specifications.

In areas where less competent subgrade is encountered, it may be necessary to increase the pipe bedding thickness. Any excessively soft, loose or compressible materials at the pipe subgrade should be subexcavated and replaced with OPSS Granular A material compacted to at least 95% of SPMDD.

Trench backfill materials, above the cover material, should be placed in loose lift thicknesses not exceeding 200 mm and compacted to at least 98% of SPMDD. Portions of the trench located beneath access roads, OPSS Granular A or B material, or unshrinkable fill should be employed as backfill.

For portions of the trench located outside of access roads or other settlement sensitive areas, the portion of the trench above the pipe cover can be backfilled with excavated material provided it is free of organics, debris, and other deleterious materials. The placement moisture content should be within about 2% of the optimum moisture content for efficient compaction.

The fill which will be excavated from the top portion of the trench will generally not be suitable as trench backfill as it contains organic material. The sand to silty sand below the fill should generally be suitable for reuse as trench backfill.

It should be noted that the foregoing comments pertain to material reusability based on geotechnical considerations. Further restrictions on re-use may apply based on geoenvironmental considerations.

Comments on trench excavation and dewatering can be found in the sections below.

6.4 Asphalt Pavement

It is understood the proposed design for this facility will include new light vehicle parking areas, and an access road to be utilized by water/pump truck or dump-truck.

It was assumed water/pump truck with three or four-axles on a single-unit truck will travel within this facility. Using axle load equivalency factors, the different axle-loads and axle-groups are converted to a standard axle load known as an Equivalent Single Axle Load (ESAL). The ESAL calculation was completed in accordance with the MTO Procedures for Estimating Traffic Loads for Pavement Designs. A truck load equivalency factor of 4.0 was considered for water/pump truck. This value is consistent with the Truck Factor used by the MTO for this class of vehicles.

Light Duty Pavement / Parking Area Detailed traffic information was not available for the parking lot; however, for design purposes it has been assumed that the parking lot pavement will be used for light duty vehicles.

6.4.1 *Light Duty Pavement / Parking Areas*

The recommended pavement design for all light-duty pavement areas should comprise a new asphalt and granular base material. Thicknesses of the new asphalt and granular base should consist of:

40 mm	HL3 (HS) Surface Course
50 mm	HL8 Binder Course
150 mm	New Granular A Base
350 mm	New Granular B Subbase

6.4.2 *Heavy Duty Pavement / Access Road*

Detailed traffic information was not available for this facility. For the purposes of developing pavement designs for the access road, it was assumed that 4 truck per hour will be using the access road. An Equivalent Single Axle Load (ESALs) of 1.7 million was calculated for 15-year design life.

The AASHTO procedure for the design of flexible pavements determines a required Structural Number that characterizes the structural capacity of the pavement layers, for a given set of inputs. The following design inputs were used in the AASHTO design analysis for the access road:

- Initial serviceability = 4.2
- Terminal serviceability = 2.0
- Estimated mean soil resilient modulus = 20 MPa
- Reliability level = 85 percent
- Overall standard of deviation = 0.44

The recommended pavement structure for the proposed access road shall consist of

40 mm	HL3 (HS) Surface Course
110 mm	HL8 Binder Course (2 lifts of 55 mm)
150 mm	New Granular A Base
400 mm	New Granular B Subbase

6.4.3 *New Asphalt Materials*

All Hot Mix Asphalt (HMA) material should meet the requirements of OPSS.MUNI 310. All asphalt lifts should be placed and compacted to levels between 92 and 96.5 percent of the Marshall Maximum Relative Density (MRD). The recommended asphalt cement grade for HL3 and HL8 mixes should be PG 58-28, and shall conform to OPSS.MUNI 1101. Aggregates for the asphalt mixes should be in accordance with OPSS.MUNI 1003.

6.4.4 *New Granular Base Materials*

All new granular material should meet the requirements of OPSS.MUNI 1010, be compacted to at least 100 percent of the Standard Proctor Maximum Dry Density (SPMDD), within 2 percent of Optimum Moisture Content (OMC). Quality control testing should be completed during the placement of new granular material, and should be checked for densities, thickness, and gradation.

6.4.5 *Subgrade Preparation*

In all new pavement areas, the surficial organics should be removed. The contractor must be diligent in removing existing topsoil, and care must be taken not to rut and disturb the underlying subgrade soils by operating construction equipment during spring-thaw or wet conditions. The subgrade soils in this project area are prone to softening if subjected to ingress of water.

Construction site drainage must be provided prior to stripping and subgrade preparation to control moisture conditions at the top of subgrade. Construction equipment must not be allowed to travel on prepared subgrade. The prepared subgrade should be graded to a minimum 3 percent crossfall to promote positive drainage toward all drainage features. The pavement parking areas

should be constructed with subdrains beneath the pavement surface to improve subsurface drainage.

The underlying subgrade soils should be graded as required to accommodate the new pavement platform. The exposed subgrade should be compacted and proof-rolled with a heavy roller and examined to identify areas of unstable subgrade. Any soft/wet areas identified should be subexcavated and replaced with approved material (or additional granular base material) within 2 percent of optimum moisture content and compacted to at least 98 percent of SPMDD.

6.4.6 *Pavement Drainage*

In all new pavement areas, positive drainage must be maintained at the top of pavement surface and top of subgrade. Maintaining drainage on the pavement surface, should be completed be grading the paved surface to channel runoff toward drainage features (i.e. catchbasins) and into the storm sewer system.

Subsurface drainage should be managed by grading the top of subgrade toward subdrain pipes installed beneath the curb and gutter at the edge of the pavement platform; although in large pavement areas, additional subdrains may be required crossing the parking area. Construction of new facilities with an urban platform should be in accordance with OPSD 216 series. Subdrains should be constructed using standard 150 mm diameter (minimum) filter cloth wrapped flexible perforated pipe, installed as per the wrapped trench detail in OPSD 216.021.

6.5 Corrosion and Cement Type

Seven analytical tests were conducted to determine the water-soluble sulphate ion (SO_4) content of select soil samples recovered from the boreholes. These tests showed the presence of less than 0.002 to 0.0147 percent water-soluble sulphate ion content in the soil samples indicating that there is low potential for sulphate attack on the subsurface concrete. As a result, CSA Type GU (General Use hydraulic cement) may be used in the subsurface concrete at this project site. The choice of class of concrete must also consider adverse effects of deicing salt.

The recommendations stated above for the subsurface concrete at this site may require further additions and/or modifications due to structural, durability, service life or other considerations that are beyond the geotechnical scope.

In addition, if imported material is required to be used at the site and will be in contact with concrete, it is recommended that the fill soil be tested for sulphate content to determine whether the above stated recommendations remain valid.

The pH, resistivity and chloride concentration provide an indication of the degree of corrosivity of the subsurface environment. The tests results provided in Table F1 may be used to aid in the selection of coatings and corrosion protection systems for buried steel objects. The soil resistivity results indicate the soil has a moderate to high potential for corrosion.

Certificates of analysis presenting the analytical test results are attached in Appendix F.

6.6 Frost Protection

The frost penetration depth at this site is 1.6 m per OPSD 3090.101. Foundation elements (spread footings, pile caps, slabs, etc.) subject to freezing temperatures should be provided with a minimum of 1.6 m of earth cover or provided with an equivalent thickness of thermal insulation as protection against frost action. A 25 mm thick layer of polystyrene insulation is thermally equivalent to 600 mm of soil cover. Insulation must extend a minimum of 1.6 m laterally from the edge of the footings/slabs.

6.7 Construction Considerations

6.7.1 *Excavations and Temporary Shoring*

Shallow excavations for the maintenance building are expected to extend through surficial fill, organics and topsoil and into the underlying silty clay. Shallow excavations for the outfall pipe are expected to extend through surficial fill and into the underlying silty sand to sand. Deeper excavations for the water retention tanks and attached buildings are expected to extend through the surficial fill and organics, the silty clay, the sand and silt layer and into the underlying limestone bedrock.

Use of hydraulic excavator should be suitable for excavation in the fill and native overburden soils. Difficulties in excavating possible debris within the fill should be anticipated. Provision should be made for handling of the existing pavement structure, as well as cobbles and boulders and rock fragments during excavation.

All excavations should be carried out in accordance with the requirements of the Occupational Health and Safety Act (OHSA) and local regulations. For the purposes of OHSA, the soils within the likely depth of excavation may be classified as Type 3 soils for fill above the water table, the firm to stiff silty clay and the loose to compact sands and silts above the water table. The very soft to soft silty clay and the loose to compact sands and silts below the water table should be classified as Type 4 soils under OHSA.

Temporary excavations for the maintenance building and outfall pipe should conform with the requirements of OHSA, but should not be steeper than 1H:1V. Flatter slopes may be required at locations where water seepage or sloughing occurs during excavation. Where space restrictions preclude excavation of inclined slopes, service installation may be carried out using a trench box. Soils should not be stockpiled within a horizontal distance from the trench wall equal to the depth of the excavation.

The excavation for the water retention tanks and attached buildings will extend through the overburden and up to approximately 4 m into the underlying limestone bedrock. Excavations through the overburden can be carried out with the use of a hydraulic excavator as described above. Excavations within bedrock will necessitate conventional rock excavation techniques such as breaking by means of excavator mounted hydraulic hammering equipment (hoe-ram). Near vertical sidewalls may be utilized in the excavation in bedrock and inspection of the bedrock sidewalls and removal of loosened rock fragments should be carried out continually to ensure the safety of workers.

For deeper excavations within the competent bedrock, prefracturing line holes drilled at close spacing into the bedrock can assist with excavations. The actual equipment required and method of excavation within the bedrock will be dependent upon the geometry of the cut and relative depth of excavation into bedrock. The rock excavation should be carried out in such a manner that minimizes fracturing of the bedrock surface. The selection of the method of excavation is the responsibility of the contractor and must be based on their equipment, experience and interpretation of the site conditions.

Care should be taken to avoid structural damage to nearby existing infrastructure during excavation into bedrock. In this regard, it would be prudent to conduct a photographic and condition survey of the nearby infrastructure prior to construction. Further, it is recommended the vibration monitoring of nearby structures be conducted during excavation into bedrock.

Given the depth and size of the excavation, it is anticipated the overburden for the water retention tanks and the attached buildings will have to be undertaken within the confines of an engineered support system that is designed to mitigate groundwater seepage from the overburden into the excavation.

The engineering support system should be designed by a licensed professional engineer experienced in design of shoring systems. The design of all members in the shoring system should include the effects of surcharge loads such as those imposed by adjacent utilities and construction equipment. Soil should not be stockpiled in the vicinity of the excavation.

The engineering support system employed for the conditions at the site should be designed in accordance with the Canadian Foundation Engineering Manual. The following parameters can be used in the design:

Ka	=	0.35 fill
	=	0.38 for silty clay
	=	0.33 for native sand/silt
γ	=	20 kN/m^3 for fill and silty clay
	=	21 kN/m^3 for native sand/silt

For watertight shoring the groundwater level should be assumed to be at the ground surface.

6.7.2 *Subgrade Preparation*

Foundations and outfall pipe bedding must be placed on uniformly competent subgrade that is maintained in a dry condition. The subgrade must consist of undisturbed inorganic native soil or bedrock free of loose or disturbed material. Otherwise, excessive post-construction settlement should be expected.

Preventing subgrade disturbance is ultimately the responsibility of the contractor. To limit the potential for subgrade disturbance from construction traffic and groundwater inflow within the deeper water retention tank excavation, a mud slab of lean concrete, at least 50 mm in thickness, should be provided on the silty clay subgrade surface following review/approval of the sugrade surface by qualified geotechnical personnel.

6.7.3 *Dewatering*

Subgrade preparation, foundation construction, and placement and compaction of bedding/backfill must be carried out in the dry. All excavations for foundation construction must be dewatered prior to the placement of concrete, as per OPSS.MUNI 902.

The excavation for the footings for the maintenance building are expected to extend below the measured groundwater level. However, due to the generally low permeability of the silty clay soils through which the excavation will proceed unwatering from within the footing excavation using sumps and pumps is considered feasible.

The excavation for the outfall pipe is expected to take place above the groundwater level based on the measured groundwater levels in the monitoring well installed in Borehole 11. It is expected

that any seepage into the excavation can be handled by unwatering from within the trench using sumps and pumps.

As previously noted, it is anticipated the excavation for the water retention tanks and associated buildings will take place within the confines of an engineered support system. It is recommended that the support system be water tight in order to cut-off groundwater flows from the sand/silt layer encountered on top of bedrock. Active dewatering of this layer is not recommended as groundwater drawdown within the clay deposit would cause ground surface settlement. Secant pile walls socketed a minimum of 1 m into the limestone bedrock is considered a feasible option for the support system.

In the north part of the excavation where the excavation extends into the bedrock, concentrated seepage may be experienced from fractures and cavities within the limestone bedrock. Grouting of fractures may be required to reduce the flow. The contractor should be prepared to pump groundwater from the bedrock out of the excavation.

In the southern portion of the excavation where the base of the excavation will consist of silty clay, the sand/silt layer and the bedrock will need to be depressurized to prevent subgrade disturbance due basal heave. This could be accomplished using active dewatering wells located outside the excavation or passive relief wells located inside the excavation. The use of passive relief wells is recommended as active dewatering is expected to cause settlement. The design of the dewatering system is the responsibility of the contractor. The contractor should retain a specialized dewatering subcontractor to design the passive relief wells which will need to remain operational and effective until the tanks and buildings are in place and then should be decommissioned and removed. The design of the system should follow OPSS.MUNI 517. The dewatering plan should be reviewed by qualified geotechnical/hydrogeological personnel retained by the owner to confirm that the contractor's dewatering plan meets the design intent, prior to the commencement of excavations.

A hydrogeological assessment to provide recommendations for groundwater control during construction and determine the need for EASR registration or PTTW application was completed concurrently with the geotechnical investigation. A report documenting these findings will be issued under separate cover.

6.7.4 *Construction Inspection and Testing*

The successful performance of the new facilities will depend largely on good workmanship and quality control during construction. It is therefore recommended that geotechnical inspection and testing by qualified personnel be provided during construction. The inspection and testing should

include observation and inspection of foundation subgrade conditions, compaction testing of engineered fill, and concrete and asphalt testing.

7. ENVIRONMENTAL CONSIDERATIONS

A limited analytical testing program was completed on selected soil samples to evaluate the environmental quality and provide preliminary management options for excavated materials that may be generated during the proposed construction works.

For preliminary characterization of the soil samples and potential reuse of the excavated soils on-Site for a beneficial purpose, the “bulk sample” analytical data was compared to the generic Site Condition Standards (SCSs) provided under O.Reg. 153/04 in MECP’s document “Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of Environmental Protection Act”, April 15, 2011 (“2011 MECP Document”). The analytical results were compared to the MECP’s Table 1: Full Depth Generic Site Condition Standards for Residential / Parkland / Institutional / Industrial / Commercial / Community Property Uses (MECP Table 1 Standards) and to the MECP’s Table 2: Full Depth Generic Site Condition Standards for Industrial / Commercial / Community Property Uses (MECP Table 2 Standards). If the final design changes and reuse of soil on-Site is considered within 30 m of the Napanee River, additional evaluation of the environmental quality of the soils would be required.

The MECP filed O.Reg. 406/19 On-Site and Excess Soil Management on December 4, 2019, where the Rules for Soil Management and Excess Soil Quality Standards under this regulation are to be adopted on January 1, 2021, and required Planning Documents and Registration filing will apply for certain projects on January 1, 2022. The Regulation sets out standards for a prescribed list of potential contaminants and the applicable Excess Soil Quality Standards (ESQSs). In general, the applicable ESQS depend on the property use, potable versus non-potable groundwater condition, proximity to areas of natural significance, soil pH and texture, proximity to a water body, and soil depth at the investigation site.

To assess the potential for reuse of excess soils off-Site at locations requiring fill for a beneficial purpose, the analytical results were compared to the MECP Table 1 “Full Depth Background Site Condition Standards” for reuse Site property uses other than agricultural (MECP Table 1 Standards). In addition, the analytical data were compared to MECP’s Table 2.1 of the Excess Soil Quality Standards (ESQSs) for Residential / Parkland / Institutional (RPI) reuse Site property uses and MECP’s Table 2.1 of the Excess Soil Quality Standards (ESQSs) for Industrial / Commercial /Community (ICC) reuse Site property uses provided in Appendix 1 of MECP’s Rules for Soil Management under O.Reg. 406/19.

The “bulk” analytical testing completed is intended as an initial environmental screening of the soils to guide soil management options for the detailed design involving the beneficial reuse of excavated soils that are generated during the proposed construction works and does not meet the testing requirements of O.Reg. 406/19 as this was beyond the scope of this assignment and may or may not be applicable depending on the anticipated project design, reuse of the materials, and schedule. Additional sampling, analytical testing, and associated filing of reports with MECP by O.Reg. 153/04 Qualified Person (QP) may be required if it is determined that the O.Reg. 406/19 is applicable based on the actual project design and schedule.

7.1 General Comments

The foregoing sampling and testing program was completed to obtain a general understanding of the environmental quality of project-related excavated materials in relation to applicable regulatory requirements and does not meet the soil sampling requirements set out by O.Reg. 406/19. Our current understanding of the Site subsurface material conditions was inferred from a limited number of sampling locations in accessible areas that targeted the preliminary environmental characterization of materials. The spatial and vertical extent of the quality of the materials that may be encountered during construction was not accurately delineated. As such, the environmental data and preliminary recommendations were provided as guidance to the contractor on the requirements for reuse or disposal of materials generated during the proposed construction works and should not be used to quantify or estimate the costs related to the management and handling of the materials.

In general, elevated concentrations of Electrical Conductivity (EC) and/or Sodium Adsorption Ratio (SAR) exceeding one or both of the MECP Table 1 Standards are likely related to the application of de-icing salts for safety purposes. Therefore, the reported concentrations of EC and SAR above the MECP Table Standards referenced in this report are not deemed as exceedances and excavated materials with only EC and SAR impacts may be managed for reuse in engineering applications on-Site or off-Site (i.e. site grading fill or backfill) at sites accepting such materials. The material should not be used in landscaped areas in close proximity to vegetation, or within close proximity to water bodies.

Materials encountered during construction which exhibit visual or olfactory evidence of environmental impact (i.e. staining, odours, contains debris or asphalt) are to be handled as waste. Alternatively, these materials will need to be segregated under the direction of QP into separate stockpiles on-Site to determine appropriate handling options. Stockpiled impacted soil will need to be tested by the Contractor and reassessed at that time to determine if the stockpiled materials can be reused or will need to be handled as waste and disposed of at a licensed facility.

Due to the inherent variability of subsurface conditions, inspection will be required during construction in order to confirm that the quality of the excess excavated soils is consistent with the conditions documented during this investigation. Additional analytical testing of excavated soils may be required prior to or during construction to further evaluate the environmental quality of the soil, confirm reuse and disposal options, and meet the requirements of re-use on-Site and/or the receivers of excess soils off-Site.

Where excavation of existing pavement structures is required, asphalt should be removed separately from granular materials and recycled at an approved recycling facility or disposed of appropriately off-Site. Asphalt should not be mixed with excess excavated soil; fill receivers may not accept excess excavated soils if it contains asphalt.

No statement made herein should be construed as relieving the Contractor's responsibility to comply with all applicable federal and provincial regulations, municipal by-laws and guidelines related to the handling or disposal/discharge of excavated materials and/or extracted groundwater. It should be noted that the current regulatory requirements that were considered in this report are subject to change over time.

7.2 On-Site Soil Reuse Option

The reported concentrations of the tested parameters within the 21 submitted soil samples collected from boreholes within the proposed excavation areas were generally below the MECP Table 1 Standards and the MECP Table 2 ICC Standards with the exception of the results listed below:

Samples from BH-01, BH-02, BH-04, BH-05, BH-06, BH-07, BH-14, BH-19, BH-20, BH-23, BH-25, BH-26 contained one or more exceedances of the Table 1 Standards for select metals including barium, chromium VI, cobalt, mercury, silver, and zinc. The sample from BH-14 also exceeded the Table 1 Standard for toluene.

The sample from BH-13 SS1 exceeded the Table 1 Standard for only SAR.

The sample from BH-21 SS3 (1.5 m to 2.1 m) exceeded that Table 2 ICC Standard for Barium and Vanadium. The soils in the vicinity of BH-21 do not meet the Site Condition Standards for re-use on site. The concentration of Barium from BH-21 (783 µg/g) was reported above the MECP Table 3 ICC Standard (670 µg/g) and therefore should be handled as waste and disposed of at an MECP licenced landfill. The horizontal and vertical extent of the metals impacts were not determined during the investigation.

Brick fragments were observed in the collected samples from BH-01 SS2, and BH-06 SS1. Due to the presence of construction debris in the fill samples, the surficial soils at BH-01 and BH-06 should be considered waste and are not suitable for re-use.

Based on the results of the investigation, excavated materials within the proposed excavation areas generally met the MECP Table 2 ICC Site Condition Standards for reuse on-Site, with the exception of soils near BH-21 (Table 2 ICC Soil Exceedances), and soils near BH-01 and BH-06 (presence of debris / construction waste) which should be handled as waste for off-Site disposal.

7.3 Off-Site Reuse Option

For management of excess soils, the analytical data were compared to the Excess Soil Quality Standards (ESQSs) of O. Reg. 406/19 made under the Environmental Protection Act, On-site and Excess Soil Management filed December 4, 2019 ("Excess Soil Regulation"). The results were compared to the O. Reg. 406/19, Table 2.1 for residential/parkland/institutional (RPI) and industrial/commercial/community (ICC) land uses within a potable groundwater condition. Analytical summary tables are provided in Appendix G and the laboratory Certificates of Analysis are included in Appendix H.

The results of the analytical laboratory testing indicate the concentrations of the tested parameters from the submitted samples generally met the applicable ESQSs, with the exception of the samples listed below:

- BH13 SS1: SAR was in exceedances of the Table 2.1 RPI ESQSs (approximate sample depth of 0 m to 0.6 m).
- BH14 SS2: SAR was in exceedances of the Table 2.1 RPI ESQSs, while Mercury and Toluene were in exceedance of both the Table 2.1 RPI and Table 2.1 ICC ESQSs (approximate sample depth of 0.8 m to 1.4 m).
- BH21 SS3: EC, SAR, and Cobalt were in exceedance of the Table 2.1 RPI ESQSs and Barium and Vanadium were in exceedance of both the Table 2.1 RPI and Table 2.1 ICC ESQSs (approximate sample depth of 1.5 m to 2.1 m).

The samples that were reported above the selected ESQSs were located within the northwest quadrant of the proposed construction area and may not be suitable for off-Site reuse and should be treated as waste for disposal at an MECP licenced landfill.

The results of the SPLP analytical laboratory testing indicate the concentrations of the tested parameters from the five composite soil samples, met the Table 2.1 leachate screening level standards (LSLs) for Residential/Parkland/Institutional and Industrial/Commercial/Community

property uses, respectively. The measured values and corresponding LSLs are shown on Table G6 in Appendix G. Laboratory Certificates of Analysis are included in Appendix H.

If excess soil is generated that requires off-site management, project specific details such as the timing of construction, excavation quantities, excess soil management strategies and reuse site requirements need to be known to comply with the regulation, as previously indicated. Without this information, the full requirements of O. Reg. 406/19 may not be met. Therefore, the due diligence level of sampling and testing that was completed at this time should only be considered to provide the preliminary baseline conditions of the environmental quality of excavated soils that may be generated during construction to help assess potential re-use and disposal options. Once the detailed design information is known, supplemental sampling and testing beyond the current program, as well as preparation of planning documents, may be necessary to meet the requirements of the Excess Soil Regulation or the acceptance criteria of the potential reuse site selected by the Contractor.

In this regard, it may be prudent for the contract to include a provision that additional requirements that need to be met to comply with O. Reg. 406, as amended, would be the responsibility of the Contractor.

The assessment for the management of the excess soils as re-useable fill is from an environmental quality perspective only and is not an indicator of the geotechnical suitability of the material for re-use. In this respect, reference should be made to the discussion of the geotechnical parameters in the previous sections of this report.

7.4 Waste Disposal

If the final design dictates that soil may not be re-used on site and an excess soil receival site cannot be obtained, the potential to dispose of the soil at a landfill may be evaluated. Analysis of Toxicity Characteristic Leaching Procedure (TCLP) samples will need to be completed on the actual materials to be landfilled to verify the waste classification and that the acceptance criteria of the waste management facility selected by the Contractor has been met. Specific requirements of the contractors selected disposal site may also include required testing per volume of soil to be disposed of.

It is recommended that the contract include a provision for the handling and disposal of contaminated soils to account for soils with metals impacts and the possibility of encountering isolated zones of contamination during construction. In this regard, excavated materials that exhibit visual or olfactory evidence of environmental impact (i.e. stained, odorous) should be

screened during construction using a soil vapour/gas field screening instrument and segregated into separate stockpiles and tested to verify appropriate handling options involving on-site / off-site reuse, or disposal at a MECP licensed facility (i.e., landfill and/or treatment facilities). The soil screening should be completed under the direction of an O. Reg. 153/04 Qualified Person.

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STATEMENT OF LIMITATIONS AND CONDITIONS

1. STANDARD OF CARE

This Report has been prepared in accordance with generally accepted engineering or environmental consulting practices in the applicable jurisdiction. No other warranty, expressed or implied, is intended or made.

2. COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment are a part of the Report, which is of a summary nature and is not intended to stand alone without reference to the instructions given to Thurber by the Client, communications between Thurber and the Client, and any other reports, proposals or documents prepared by Thurber for the Client relative to the specific site described herein, all of which together constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. THURBER IS NOT RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

3. BASIS OF REPORT

The Report has been prepared for the specific site, development, design objectives and purposes that were described to Thurber by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the Report, subject to the limitations provided herein, are only valid to the extent that the Report expressly addresses proposed development, design objectives and purposes, and then only to the extent that there has been no material alteration to or variation from any of the said descriptions provided to Thurber, unless Thurber is specifically requested by the Client to review and revise the Report in light of such alteration or variation.

4. USE OF THE REPORT

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION THEREOF WITHOUT THURBER'S WRITTEN CONSENT AND SUCH USE SHALL BE ON SUCH TERMS AND CONDITIONS AS THURBER MAY EXPRESSLY APPROVE. Ownership in and copyright for the contents of the Report belong to Thurber. Any use which a third party makes of the Report, is the sole responsibility of such third party. Thurber accepts no responsibility whatsoever for damages suffered by any third party resulting from use of the Report without Thurber's express written permission.

5. INTERPRETATION OF THE REPORT

a) Nature and Exactness of Soil and Contaminant Description: Classification and identification of soils, rocks, geological units, contaminant materials and quantities have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors are judgmental in nature. Comprehensive sampling and testing programs implemented with the appropriate equipment by experienced personnel may fail to locate some conditions. All investigations utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and the Client and all other persons making use of such documents or records with our express written consent should be aware of this risk and the Report is delivered subject to the express condition that such risk is accepted by the Client and such other persons. Some conditions are subject to change over time and those making use of the Report should be aware of this possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. If special concerns exist, or the Client has special considerations or requirements, the Client should disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.

b) Reliance on Provided Information: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to Thurber. Thurber has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, Thurber does not accept responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other persons providing information relied on by Thurber. Thurber is entitled to rely on such representations, information and instructions and is not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.

c) Design Services: The Report may form part of design and construction documents for information purposes even though it may have been issued prior to final design being completed. Thurber should be retained to review final design, project plans and related documents prior to construction to confirm that they are consistent with the intent of the Report. Any differences that may exist between the Report's recommendations and the final design detailed in the contract documents should be reported to Thurber immediately so that Thurber can address potential conflicts.

d) Construction Services: During construction Thurber should be retained to provide field reviews. Field reviews consist of performing sufficient and timely observations of encountered conditions in order to confirm and document that the site conditions do not materially differ from those interpreted conditions considered in the preparation of the report. Adequate field reviews are necessary for Thurber to provide letters of assurance, in accordance with the requirements of many regulatory authorities.

6. RELEASE OF POLLUTANTS OR HAZARDOUS SUBSTANCES

Geotechnical engineering and environmental consulting projects often have the potential to encounter pollutants or hazardous substances and the potential to cause the escape, release or dispersal of those substances. Thurber shall have no liability to the Client under any circumstances, for the escape, release or dispersal of pollutants or hazardous substances, unless such pollutants or hazardous substances have been specifically and accurately identified to Thurber by the Client prior to the commencement of Thurber's professional services.

7. INDEPENDENT JUDGEMENTS OF CLIENT

The information, interpretations and conclusions in the Report are based on Thurber's interpretation of conditions revealed through limited investigation conducted within a defined scope of services. Thurber does not accept responsibility for independent conclusions, interpretations, interpolations and/or decisions of the Client, or others who may come into possession of the Report, or any part thereof, which may be based on information contained in the Report. This restriction of liability includes but is not limited to decisions made to develop, purchase or sell land.

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Appendix A

Borehole Location Plan and Stratigraphic Profile

LEGEND

- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION
- AUGER PROBE LOCATION

DRAFT

20 0 20 40m

SCALE 1:1000

NAPANEE WATER POLLUTION CONTROL PLANT

BOREHOLE LOCATION PLAN

JOB# 30726

THURBER ENGINEERING LTD.

ENGINEER :	DRAWN :	APPROVED :
RB	MFA	MTB
DATE :	SCALE :	DRAWING No.
MAY 2021	1:1000	30726-1

FILENAME: H:\Drafting\30000\30726\TES-30726-BHPL.dwg
PLOTDATE: Jun 29, 2021 - 8:11 PM

NORTH

SOUTH

BH13 BH21 BH01 BH02 BH15 BH16 BH03 BH22 BH17 BH04 BH18 BH05 BH10

APPROX. GRADE

APPROX. TOP OF ROCK

ELEV. (m)

85 80 75 70 65 60

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

LEGEND

- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION
- AUGER PROBE LOCATION

ASPHALT
FILL
TOPSOIL
PEAT
SAND
SILTY SAND
SILT
SILTY CLAY
LIMESTONE

DRAFT

8 0 8 16m

SCALE 1:400

NAPANEE WATER POLLUTION CONTROL PLANT

STRATIGRAPHIC PROFILE A-A

JOB# 30726

THURBER ENGINEERING LTD.

ENGINEER :	DRAWN :	APPROVED :
RB	MFA	MTB
DATE :	SCALE :	DRAWING No.
MAY 2021	1:400	30726-2

FILENAME: H:\Drafting\30000\30726\TES-30726-BHPL.dwg
PLOTDATE: Jun 29, 2021 - 8:11 PM

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Appendix B

Record of Borehole Sheets

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Current Investigation

SYMBOLS, ABBREVIATIONS AND TERMS USED ON RECORDS OF BOREHOLES

1. TEXTURAL CLASSIFICATION OF SOILS

CLASSIFICATION	PARTICLE SIZE	VISUAL IDENTIFICATION
Boulders	Greater than 200mm	same
Cobbles	75 to 200mm	same
Gravel	4.75 to 75mm	5 to 75mm
Sand	0.075 to 4.75mm	Not visible particles to 5mm
Silt	0.002 to 0.075mm	Non-plastic particles, not visible to the naked eye
Clay	Less than 0.002mm	Plastic particles, not visible to the naked eye

2. COARSE GRAIN SOIL DESCRIPTION (50% greater than 0.075mm)

TERMINOLOGY	PROPORTION
Trace or Occasional	Less than 10%
Some	10 to 20%
Adjective (e.g. silty or sandy)	20 to 35%
And (e.g. sand and gravel)	35 to 50%

3. TERMS DESCRIBING CONSISTENCY (COHESIVE SOILS ONLY)

DESCRIPTIVE TERM	UNDRAINED SHEAR STRENGTH (kPa)	APPROXIMATE SPT[(1)] 'N' VALUE
Very Soft	12 or less	Less than 2
Soft	12 to 25	2 to 4
Firm	25 to 50	4 to 8
Stiff	50 to 100	8 to 15
Very Stiff	100 to 200	15 to 30
Hard	Greater than 200	Greater than 30

NOTE: Hierarchy of Soil Strength Prediction

1) Laboratory Triaxial Testing
2) Field Insitu Vane Testing
3) Laboratory Vane Testing
4) SPT value
5) Pocket Penetrometer

4. TERMS DESCRIBING DENSITY (COHESIONLESS SOILS ONLY)

DESCRIPTIVE TERM	SPT "N" VALUE
Very Loose	Less than 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	Greater than 50

5. LEGEND FOR RECORDS OF BOREHOLES

SYMBOLS AND ABBREVIATIONS FOR SAMPLE TYPE	SS Split Spoon Sample	WS Wash Sample	AS Auger (Grab) Sample
	TW Thin Wall Shelby Tube Sample		TP Thin Wall Piston Sample
	PH Sampler Advanced by Hydraulic Pressure		PM Sampler Advanced by Manual Pressure
	WH Sampler Advanced by Self Static Weight	RC Rock Core	SC Soil Core

$$\text{Sensitivity} = \frac{\text{Undisturbed Shear Strength}}{\text{Remoulded Shear Strength}}$$

▼ Water Level

C_{pen} Shear Strength Determination by Pocket Penetrometer

(1) SPT 'N' Value Standard Penetration Test 'N' Value – refers to the number of blows from a 63.5kg hammer free falling a height of 0.76m to advance a standard 50 mm outside diameter split spoon sampler for 0.3 m depth into undisturbed ground.

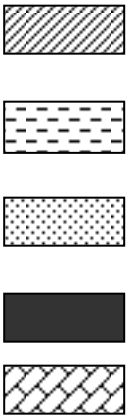
(2) DCPT Dynamic Cone Penetration Test – Continuous penetration of a 50 mm outside diameter, 60° conical steel point attached to "A" size rods driven by a 63.5 kg hammer free falling a height of 0.76 m. The resistance to cone penetration is the number of hammer blows required for each 0.3 m advance of the conical point into undisturbed ground.

EXPLANATION OF ROCK LOGGING TERMS

ROCK WEATHERING CLASSIFICATION

Fresh (FR)	No visible signs of weathering.
Fresh Jointed (FJ)	Weathering limited to the surface of major discontinuities.
Slightly Weathered (SW)	Penetrative weathering developed on open discontinuity surfaces, but only slight weathering of rock material.
Moderately Weathered (MW)	Weathering extends throughout the rock mass, but the rock material is not friable.
Highly Weathered (HW)	Weathering extends throughout the rock mass and the rock is partly friable.
Completely Weathered (CW)	Rock is wholly decomposed and in a friable condition, but the rock texture and structure are preserved.

SYMBOLS



CLAYSTONE

SILTSTONE

SANDSTONE

COAL

Bedrock (general)

DISCONTINUITY SPACING

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

TERMS

Total Core Recovery: (TCR)	Core recovered as a percentage of total core run length.
Solid Core Recovery: (SCR)	Percent Ratio of solid core of full cylindrical shape recovered. Expressed with respect to the total length of core run.
Rock Quality Designation: (RQD)	Total length of sound core recovered in pieces 0.1m in length or larger as a percentage of total core run length.
Uniaxial Compressive Strength (UCS)	Axial stress required to break the specimen
Fracture Index: (FI)	Frequency of natural fractures per 0.3m of core run.

STRENGTH CLASSIFICATION

Rock Strength	Approximate Uniaxial Compressive Strength (MPa)	(psi)	Field Estimation of Hardness*
Extremely Strong	Greater than 250	Greater than 36,000	Specimen can only be chipped with a geological hammer
Very Strong	100-250	15,000 to 36,000	Requires many blows of geological hammer to break
Strong	50-100	7,500 to 15,000	Requires more than one blow of geological hammer to break
Medium Strong	25.0 to 50.0	3,500 to 7,500	Breaks under single blow of geological hammer.
Weak	5.0 to 25.0	750 to 3,500	Can be peeled by a pocket knife with difficulty
Very Weak	1.0 to 5.0	150 to 750	Can be peeled by a pocket knife, crumbles under firm blows of geological pick.
Extremely Weak (Rock)	0.25 to 1.0	35 to 150	Indented by thumbnail

THURBER

RECORD OF BOREHOLE BH-01

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 23, 2021
COMPLETED : February 23, 2021
N 4 900 363.3 E 343 393.4

Project No. 30726
SHEET 1 OF 2
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	COMMENTS	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) 40 80 120 160 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		80.91				DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100			
	Hollow Stem Augers	**CLAY**, silty, trace to some gravel, trace to some sand, trace organics, stiff to very stiff, brown, moist: (FILL)		0.00	1	SS	11		○		
1		occasional brick fragments in SS2			2	SS	9		○		
		occasional cobbles			3	SS	16		○		
2		**CLAY**, silty, trace sand, occasional gravel, frequent sand seams firm to stiff, grey, moist		78.70 2.21	4	SS	4	Grain Size Analysis: Gr 1%/ Sa 37%/ Si 41%/ Cl 21%	⊖		
3					5	SS	8		○		
4		some sand									
5					6	SS	10		○		
		SAND, some silt to silty, trace Gravel, trace clay, loose, brown, wet		75.27 5.64							
6					7	SS	7	Grain Size Analysis: Gr 3%/ Sa 84%/ Si 12%/ Cl 1%	○		
7	I	**LIMESTONE** slightly weathered to fresh, strong to very strong, thinly bedded, grey with black mudstone interbeds and occasional calcite filled vugs (Bobcageon Formation)		73.84 7.06						FI 3 2	
	NQ Coring				1	RUN		UCS = 113.5MPa TCR=100% SCR=88% RQD=87% UCS = 75MPa (Average) (PLT)		1 2 2	
8		subvertical fracture at 8.6 m (125 mm in length)									
9					2	RUN		TCR=100% SCR=92% RQD=92% UCS = 119MPa (Average) (PLT)		3 2 0 2	

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-01

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 23, 2021
COMPLETED : February 23, 2021
N 4 900 363.3 E 343 393.4

Project No. 30726
SHEET 2 OF 2
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✚ Q - ✖ / rem V - ● Cpen ▲) 40 80 120 160 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
				70.72						1	
		END OF BOREHOLE AT 10.2m. BOREHOLE BACKFILLED WITH HOLEPLUG.		10.19							
11											
12											
13											
14											
15											
16											
17											
18											
19											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-02

PROJECT : Napanee Water Pollution Control Plant Expansion — Project No. 30726
LOCATION : 300 Water St West Napanee, ON
STARTED : February 22, 2021 — SHEET 1 OF 2
COMPLETED : February 23, 2021 — N 4 900 376.0 E 343 427.4 — DATUM Geodetic

Depth (m)	Boring Method	Description	Elev. / Depth (m)	Sample No.	Type	Blows/0.3m	Comments	Water Content (%)	Additional Lab. Testing (FI)	Piezometer or Standpipe Installation
		GROUND SURFACE	79.00							
	Hollow Stem Augers	**FILL** (100mm)	0.10							Bentonite
		TOPSOIL (75mm)	0.18							Shallow / Deep (water level)
		CLAY, silty, trace to some sand, very stiff to firm, brown, moist		1	SS	17		○ (~21)		
1				2	SS	17	Grain Size Analysis: Gr 0%/ Sa 18%/ Si 38%/ Cl 44%	○ (~42), wl 53		
2				3	SS	13		○ (~26)		
				4	SS	5		○ (~30)		Filter Sand
3		becoming grey		5	SS	5		○ (~32)		
4										Slotted Screen
5		Frequent sand seams (2-3 mm thick) in SS6		6	SS	15	Grain Size Analysis: Gr 0%/ Sa 1%/ Si 25%/ Cl 74%	○ (~40)		
		rock fragments in SS7	73.31	7	SS	50/ 0.050		○ (~35)		
	NQ Coring	**LIMESTONE**, slightly weathered to fresh, strong to very strong, thinly bedded, flat to wavy foliation, fossiliferous, fine grained matrix with occasional <5mm clasts, with black shale interbeds (15-30mm) and occasional calcite infilling and calcite filled vugs (Bobcageon Formation)	5.69				UCS = 105.9MPa		FI	
6									1	Filter Sand
									3	
				1	RUN		TCR=97% SCR=87% RQD=70% UCS = 113MPa (Average) (PLT)		3	
7									3	
									3	
									1	Slotted Screen
		vertical fracture at 7.7m (125mm long)							4	
8				2	RUN		TCR=98% SCR=89% RQD=82% UCS = 89MPa (Average) (PLT)		2	
									2	
			70.16						1	
		END OF BOREHOLE AT 8.84m.	8.84							
9		Deep Monitoring Well installation consists of 50mm diameter Schedule 40 PVC pipe with a 2.44m slotted screen. Shallow monitoring well was installed in a separate borehole drilled approximately 1m away from the sampled borehole. The shallow well installation consists of a 50mm diameter Schedule 40 PVC pipe with a 3.04								

Shear Strength: Cu, KPa — nat V - ✚ ; rem V - ● ; Q - ✖ ; Cpen ▲ (scale 40, 80, 120, 160)
Dynamic Cone Penetration Resistance Plot (scale 20, 40, 60, 80, 100)
Water Content, Percent — wp ⊢ ○w ⊣ wl (scale 10, 20, 30, 40)

GROUNDWATER ELEVATIONS
▽ WATER LEVEL UPON COMPLETION
▼ WATER LEVEL IN WELL/PIEZOMETER April 14, 2021

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-02

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 22, 2021
COMPLETED : February 23, 2021
N 4 900 376.0 E 343 427.4

Project No. 30726
SHEET 2 OF 2
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) (40 80 120 160) / WATER CONTENT, PERCENT (wp w wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		m slotted screen.									
		DEEP WELL WATER LEVEL READINGS: DATE DEPTH(m) ELEV.(m) Feb 26/2021 0.8 78.20 Mar 03/2021 0.7 78.30 Apr 14/2021 0.6 78.40									
11		SHALLOW WELL WATER LEVEL READINGS: DATE DEPTH(m) ELEV.(m) Feb 26/2021 0.7 78.30 Mar 12/2021 0.6 78.40 Apr 14/2021 0.6 78.40									
12											
13											
14											
15											
16											
17											
18											
19											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION

▼ WATER LEVEL IN WELL/PIEZOMETER
April 14, 2021

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-03

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 23, 2021
COMPLETED : February 24, 2021
N 4 900 314.4 E 343 421.8

Project No. 30726
SHEET 1 OF 2
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	COMMENTS	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) 40 80 120 160 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		76.44				DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100			
		PEAT		0.00							
				76.01	1	SS	2		72		Deep
		CLAY, silty, trace sand, stiff to firm, brown, moist		0.43							
1		trace to some organic material in SS2			2	SS	10				
					3	SS	8				Bentonite
2											
					4	SS	14				
3											
	Hollow Stem Augers	frequent silt lenses (1mm thick) in SS5 and SS6, becoming grey			5	SS	8	Grain Size Analysis: Gr 0%/ Sa 1%/ Si 30%/ Cl 69%	61		
4											Filter Sand
					6	SS	5	Note: Vane test completed in separate borehole adjacent to sampled borehole.			
5											
				70.80							
		SILT, some sand, some clay, trace gravel, frequent sand interbeds, compact, brown, wet		5.64							Slotted Screen
6					7	SS	10	Grain Size Analysis: Gr 1%/ Sa 17%/ Si 68%/ Cl 14%			
7											
				69.23							
		LIMESTONE, fresh, strong to very strong, thinly bedded, flat to wavy foliation, fossiliferous, fine grained matrix with occasional <5mm clasts, interbedded with black mudstone and occasional calcite infilling (Bobcageon Formation)		7.21				UCS = 130.6MPa		FI 1	
	NQ Coring				1	RUN		TCR=93% SCR=97% RQD=92% UCS = 157MPa (Average) (PLT)		2 3 1 1	
8											
9		highly fractured zone at 9.2m			2	RUN		TCR=97% SCR=77% RQD=75% UCS = 104MPa (Average) (PLT)		2 3 3 1	Slotted Screen

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

April 14, 2021

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-03

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 23, 2021
COMPLETED : February 24, 2021
N 4 900 314.4 E 343 421.8

Project No. 30726
SHEET 2 OF 2
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲; 40 80 120 160) / WATER CONTENT, PERCENT (wp w wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
				66.18						3	
		END OF BOREHOLE AT 10.26m.		10.26							

Deep Monitoring Wells installation consists of 50mm diameter Schedule 40 PVC pipe with a 2.44m slotted screen.
Shallow monitoring well installed in a separate borehole drilled approximately 1 m away from the sampled borehole.
Shallow monitoring well installation consists of a 50mm diameter Schedule 40 PVC pipe with a 3.05m slotted screen.

DEEP WELL
WATER LEVEL READINGS:

DATE	DEPTH(m)	ELEV.(m)
Feb 26/2021	-0.2	-
Mar 03/2021	0.7	75.74
Apr 14/2021	0.6	75.84

SHALLOW WELL
WATER LEVEL READINGS:

DATE	DEPTH(m)	ELEV.(m)
Feb 26/2021	0.2	76.24
Mar 12/2021	-0.2	-
Apr 14/2021	-0.1	-

(negative water level indicates water level measured above the ground surface)

11 12 13 14 15 16 17 18 19

GROUNDWATER ELEVATIONS
▽ WATER LEVEL UPON COMPLETION
▼ WATER LEVEL IN WELL/PIEZOMETER
April 14, 2021

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-04

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 24, 2021
COMPLETED : February 24, 2021
N 4 900 313.1 E 343 466.0

Project No. 30726
SHEET 1 OF 2
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) 40 80 120 160 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		77.16				20 40 60 80 100			
		ORGANICS		0.00	1	SS	12				
				76.65							
		CLAY, silty, trace sand, stiff to very soft, brown, moist		0.51							
1					2	SS	9				Shallow Bentonite
					3	SS	11				Deep
2		becoming grey			4	SS	10				
											Filter Sand
3					5	SS	12	Grain Size Analysis: Gr 0%/ Sa 2%/ Si 45%/ Cl 53%			
		frequent silt lenses (1mm thick) in SS5									
4											
											Slotted Screen
5	Hollow Stem Augers				6	SS	3		59		
6											
					7	SS	2				
7											Filter Sand
8		frequent silt/sand lenses in SS8 and SS9			8	SS	1				
											Slotted Screen
9					9	SS	7	Grain Size Analysis: Gr 0%/ Sa 5%/ Si 70%/ Cl 25%			

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION

▼ WATER LEVEL IN WELL/PIEZOMETER

April 14, 2021

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-04

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 24, 2021
COMPLETED : February 24, 2021
N 4 900 313.1 E 343 466.0

Project No. 30726
SHEET 2 OF 2
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) (40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
				67.00							
		END OF BOREHOLE AT 10.16m UPON AUGER REFUSAL ON PROBABLE BEDROCK.		10.16							

Deep Monitoring Well installation consists of 50mm diameter Schedule 40 PVC pipe with a 3.05m slotted screen.
Shallow monitoring well installed in separate borehole drilled approximately 1m away from the sampled borehole.
Shallow monitoring well installation consists of a 50mm diameter Schedule 40 PVC pipe with a 3.05 m slotted screen.

DEEP WELL
WATER LEVEL READINGS:

DATE	DEPTH(m)	ELEV.(m)
Feb 26/2021	1.8	76.36
Mar 02/2021	1.8	76.36
Apr 14/2021	1.8	76.36

SHALLOW WELL
WATER LEVEL READINGS:

DATE	DEPTH(m)	ELEV.(m)
Feb 26/2021	2.9	74.26
Mar 12/2021	1.0	76.16
Apr 14/2021	1.2	75.96

11 12 13 14 15 16 17 18 19

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION

▼ WATER LEVEL IN WELL/PIEZOMETER
April 14, 2021

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-05

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 25, 2021
COMPLETED : February 25, 2021
N 4 900 278.5 E 343 451.1

Project No. 30726
SHEET 1 OF 2
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	COMMENTS / DYNAMIC CONE PENETRATION RESISTANCE PLOT	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) / WATER CONTENT, PERCENT (wp, w, wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		76.30							
	Hollow Stem Augers	**ORGANICS**, some sand, trace silt, trace clay, black, moist, loose		0.00	1	SS	8				
				75.62							
		SAND, some silt, trace clay, very loose, brown, moist		0.69	2	SS	2				
1											
				74.85							
		CLAY, silty, trace sand, stiff to soft, brown, moist		1.45	3	SS	8				
2											
					4	SS	7				
3											
		trace gravel			5	SS	11				
4											
		becoming grey			6	SS	7	Grain Size Analysis: Gr 0%/ Sa 1%/ Si 20%/ Cl 79%	68		
5											
6					7	SS	4				
7											
					8	SS	3				
8											
9											
		varved, becoming very stiff			9	SS	28				

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-05

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 25, 2021
COMPLETED : February 25, 2021
N 4 900 278.5 E 343 451.1

Project No. 30726
SHEET 2 OF 2
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) (40 80 120 160) / WATER CONTENT, PERCENT (wp w wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
11		**SILT**, some sand to sandy, trace to some clay, very loose, wet		65.33 10.97	10	SS	WH	Grain Size Analysis: Gr 0%/ Sa 19%/ Si 71%/ Cl 10%			
		END OF BOREHOLE AT 11.58m UPON AUGER REFUSAL ON PROBABLE BEDROCK. BOREHOLE OPEN UPON COMPLETION. BOREHOLE BACKFILLED WITH BENTONITE TO SURFACE.		64.72 11.58							
12											
13											
14											
15											
16											
17											
18											
19											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-06

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 24, 2021
COMPLETED : February 24, 2021
N 4 900 323.2 E 343 358.1

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) (40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		78.49							
	Hollow Stem Augers	**CLAY**, silty, some gravel, trace sand, some organics, occasional brick fragments firm, reddish brown, moist: (FILL)		0.00	1	SS	6				
				77.83							
		CLAY, silty, trace sand, soft to stiff, brown, moist		0.66	2	SS	3				Bentonite
1											
					3	SS	13	Grain Size Analysis: Gr 0%/ Sa 6%/ Si 56%/ Cl 38%			
2											Filter Sand
					4	SS	7				
3											
					5	SS	8				
4				74.38							
		SAND, silty, some clay to clayey, loose, brown, wet (bedded in 20 to 50 mm layers)		4.11							Slotted Screen
					6	SS	7	Grain Size Analysis: Gr 0%/ Sa 44%/ Si 30%/ Cl 26%			
5											
				72.70							
6		END OF BOREHOLE AT 5.79m UPON AUGER REFUSAL ON PROBABLE BEDROCK.		5.79							
		Monitoring Wells installation consists of 50mm diameter Schedule 40 PVC pipe with a 3.05m slotted screen.									
		WATER LEVEL READINGS:									
		DATE DEPTH(m) ELEV.(m)									
		Feb 26/21 -0.77 -									
7		Mar 12/21 -0.97 -									
		Apr 14/21 -0.80 -									
		(negative water level indicates water level measured above the ground surface)									
8											
9											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-07

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 26, 2021
COMPLETED : February 26, 2021
N 4 900 335.3 E 343 376.2

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) (40 80 120 160) / WATER CONTENT, PERCENT (wp w wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		78.53							
	Hollow Stem Augers	**CLAY** and **ORGANICS**, silty, some sand, moist, firm, black (topsoil)		0.00	1	SS	5		○		
				77.92							
		CLAY, silty, trace to some sand, brown, moist, firm to stiff, frequent sand lenses (1mm thick)		0.61							
1					2	SS	5	Grain Size Analysis: Gr 0%/ Sa 12%/ Si 54%/ Cl 34%	○ ▲		
					3	SS	8		◐		
2					4	SS	13		○ >>▲		
3					5	SS	9	Grain Size Analysis: Gr 0%/ Sa 3%/ Si 48%/ Cl 49%	○ >>▲		▽
4											
					6	SS	11		▲ ○		
5		frequent sand layers (50mm to 75mm thick) in SS6									
				72.64							
6		END OF BOREHOLE AT 5.89m UPON AUGER REFUSAL ON PROBABLE BEDROCK. BOREHOLE OPEN TO 4.88m AND WATER LEVEL AT 3.66m UPON COMPLETION. BOREHOLE BACKFILLED WITH BENTONITE.		5.89							
7											
8											
9											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-08

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 26, 2021
COMPLETED : February 26, 2021
N 4 900 312.0 E 343 386.0

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	COMMENTS	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) 40 80 120 160 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		77.17				DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100			
		TOPSOIL (150mm)		0.00							
		CLAY, silty, some sand, some organics, firm, brown, moist		0.15	1	SS	5				
				76.49							
		CLAY, silty, trace sand, stiff to firm, brown, moist		0.69							
1					2	SS	11				
					3	SS	15	Grain Size Analysis: Gr 0%/ Sa 6%/ Si 57%/ Cl 37%			
2											▽
					4	SS	12				
3	Hollow Stem Augers										
		becoming grey			5	SS	9				
4											
					6	SS	7				
5											
				71.53							
		SILT, sandy (bedded), trace clay, trace gravel, compact, brown, wet		5.64							
6					7	SS	9	Grain Size Analysis: Gr 1%/ Sa 27%/ Si 70%/ Cl 2%			
				70.62							
		END OF BOREHOLE AT 6.55m UPON AUGER REFUSAL ON PROBABLE BEDROCK. BOREHOLE OPEN TO 6.25m AND WATER LEVEL AT 2.44m UPON COMPLETION. BOREHOLE BACKFILLED WITH BENTONITE TO GROUND SURFACE.		6.55							
7											
8											
9											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-09

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 26, 2021
COMPLETED : February 26, 2021
N 4 900 314.9 E 343 400.5

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) / WATER CONTENT, PERCENT (wp, w, wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		76.84							
	Solid Stem Augers	**TOPSOIL** (600mm)		0.00	1	SS	4		65		
				76.23							
		SAND, trace to some silt, trace gravel, loose, brown, wet		0.61							
				75.92							▽
1		**CLAY**, silty, trace sand, stiff, brown, moist		0.91	2	SS	9				
				75.47							
		SAND, some gravel, trace silt, compact, brown, moist		1.37							
				75.01	3	SS	13				
2		**CLAY**, silty, trace sand, stiff, brown, moist		1.83							
				74.55							
		SAND, trace gravel, trace silt, compact, brown, moist		2.29	4	SS	11				
				73.94							
3		END OF BOREHOLE AT 2.90m. BOREHOLE WATER LEVEL AT 0.91m UPON COMPLETION. BOREHOLE BACKFILLED WITH BENTONITE TO GROUND SURFACE.		2.90							
4											
5											
6											
7											
8											
9											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-10

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 25, 2021
COMPLETED : February 25, 2021
N 4 900 286.0 E 343 480.9

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	COMMENTS / DYNAMIC CONE PENETRATION RESISTANCE PLOT	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) / WATER CONTENT, PERCENT (wp, w, wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		76.53							
	Solid Stem Augers	**CLAY**, silty, some gravel, some sand, some organics, stiff, brown, moist: (FILL)		0.00	1	SS	14				
				75.84							
1		**SAND**, silty, trace clay, trace gravel, loose, brown, moist		0.69	2	SS	4				
				75.08							
		CLAY, silty, trace to some sand, stiff, brown, moist; with sand layers up to 100mm thick		1.45	3	SS	13				
2		becoming grey			4	SS	10				
3					5	SS	9	Grain Size Analysis: Gr 0%/ Sa 15%/ Si 24%/ Cl 61%			
				72.87							
		END OF BOREHOLE AT 3.66m. BOREHOLE OPEN AND DRY UPON COMPLETION. BOREHOLE BACKFILLED WITH HOLEPLUG.		3.66							
4											
5											
6											
7											
8											
9											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-11

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 25, 2021
COMPLETED : February 25, 2021
N 4 900 293.0 E 343 503.0

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	COMMENTS
		GROUND SURFACE		76.39				
	Hollow Stem Augers	**CLAY**, silty, some sand, trace gravel, some organics, very stiff to firm, brown, moist Note:SS1 was frozen: (FILL)		0.00	1	SS	31	
1		**SAND**, some silt, trace clay, very loose to loose, brown, moist		75.33 1.07	2	SS	6	
2					3	SS	3	Grain Size Analysis: Gr 0%/ Sa 81%/ Si 13%/ Cl 6%
		CLAY, silty, trace sand, firm, brown, moist		73.80 2.59	4	SS	6	
3					5	SS	5	
		END OF BOREHOLE AT 3.66m. Monitoring Wells installation consists of 50mm diameter Schedule 40 PVC pipe with a 1.54m slotted screen. WATER LEVEL READINGS: DATE DEPTH(m) ELEV.(m) Feb 26/21 2.20 74.19 Mar 03/21 2.09 74.30 Apr 14/21 2.10 74.29		72.73 3.66				
4								
5								
6								
7								
8								
9								

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH: Cu, KPa
nat V - ✚ Q - ✖
rem V - ● Cpen ▲
40 80 120 160

WATER CONTENT, PERCENT
wp w wl
10 20 30 40

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION

Bentonite
Filter Sand
Slotted Screen

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION
▼ WATER LEVEL IN WELL/PIEZOMETER
April 14, 2021

LOGGED : RB
CHECKED : JDA/MTB

THURBER

THURBER2S TEL-30726.GPJ 7/15/21

RECORD OF BOREHOLE BH-12

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 25, 2021
COMPLETED : February 25, 2021
N 4 900 302.0 E 343 528.0

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	COMMENTS / DYNAMIC CONE PENETRATION RESISTANCE PLOT	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) / WATER CONTENT, PERCENT (wp, w, wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		76.40							
	Solid Stem Augers	**CLAY**, silty, trace sand, trace gravel, trace organics, very stiff, brown, moist: (FILL)		0.00	1	SS	16				
				75.64							
1		**SAND**, some silt, trace clay, trace gravel, compact to loose, brown, moist; with layers of find sand/silt (~25mm thick)		0.76	2	SS	16	Grain Size Analysis: Gr 4%/ Sa 75%/ Si 15%/ Cl 6%			
2					3	SS	8				
				74.06							
		CLAY, silty, trace sand, firm, moist, grey		2.34	4	SS	7				
3					5	SS	6				▽
				72.74							
		END OF BOREHOLE AT 3.66m. BOREHOLE OPEN AND WATER LEVEL AT 3.50m UPON COMPLETION. BOREHOLE BACKFILLED WITH HOLEPLUG.		3.66							
4											
5											
6											
7											
8											
9											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-13

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : March 2, 2021
COMPLETED : March 2, 2021
N 4 900 388.5 E 343 400.4

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) (40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		81.75							
	Solid Stem Augers	**SAND**, silty, trace gravel, trace clay, very dense, brown, frozen: (FILL)		0.00	1	SS	59				
				81.14							
		CLAY, silty, trace sand, trace gravel, trace oxidation/rust, stiff, brown, moist: (FILL)		0.61	2	SS	8				
1											
				80.30							
		CLAY, silty, trace sand, trace oxidation, stiff, brown, moist		1.45	3	SS	10				
2											
					4	SS	15				
3											
					5	SS	9				
				78.09							
		END OF BOREHOLE AT 3.66m. BOREHOLE OPEN AND DRY UPON COMPLETION. BOREHOLE BACKFILLED WITH BENTONITE.		3.66							
4											
5											
6											
7											
8											
9											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-14

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : March 1, 2021
COMPLETED : March 1, 2021
N 4 900 385.9 E 343 445.9

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) (40 80 120 160) / WATER CONTENT, PERCENT (wp w wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		80.37							
	Solid Stem Augers	**ASPHALT** (62.5mm)		0.06							
		SAND, gravelly, trace silt, compact to loose, brown, moist (FILL)			1	SS	30		○		
1					2	SS	4		○		
				78.92							
		CLAY, silty, sandy, trace gravel, firm to hard, brown, moist		1.45	3	SS	4	Grain Size Analysis: Gr 2%/ Sa 25%/ Si 48%/ Cl 25%	○		
2											
					4	SS	32		○		
3											
					5	SS	22		○		
				76.71							
		END OF BOREHOLE AT 3.66m. BOREHOLE BACKFILLED WITH HOLEPLUG.		3.66							
4											
5											
6											
7											
8											
9											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-19

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : March 2, 2021
COMPLETED : March 2, 2021
N 4 900 314.3 E 343 501.3

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	COMMENTS	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) / WATER CONTENT, PERCENT (wp, w, wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		77.54				DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	40 80 120 160 / wp w wl 10 20 30 40		
	Solid Stem Augers	**CLAY**, silty, trace to some sand, trace to some gravel, hard to very stiff, brown, moist: (FILL)		0.00	1	SS	36				
1					2	SS	15				
				76.09							
		SAND, silty, trace to some clay, trace gravel, compact, brown, moist (FILL)		1.45	3	SS	14	Grain Size Analysis: Gr 5%/ Sa 63%/ Si 22%/ Cl 10%			
2											
				75.20							
		CLAY, silty, trace sand, very stiff to stiff, brown, moist		2.34	4	SS	17				
3											
					5	SS	14	Grain Size Analysis: Gr 0%/ Sa 6%/ Si 54%/ Cl 40%			
4											
					1	ST		Grain Size Analysis: Gr 0%/ Sa 0%/ Si 19%/ Cl 81%	72		
5				72.35							
		END OF BOREHOLE AT 5.18m. BOREHOLE BACKFILLED WITH BENTONITE.		5.18							
6											
7											
8											
9											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-20

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 26, 2021
COMPLETED : February 26, 2021
N 4 900 375.0 E 343 378.0

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	COMMENTS / DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) 40 80 120 160 / WATER CONTENT, PERCENT (wp, w, wl) 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		79.99							
	Solid Stem Augers	**CLAY**, silty, trace sand, trace gravel, firm, brown, wet: (FILL)		0.00	1	SS	6		○ ▲		
				79.30							
1		**CLAY**, silty, trace sand, very stiff, brown, moist		0.69	2	SS	19		○ ▲		
					3	SS	17		○		
2					4	SS	18	Grain Size Analysis: Gr 0%/ Sa 8%/ Si 44%/ Cl 48%	○		
				77.09							
3		END OF BOREHOLE AT 2.90m. BOREHOLE OPEN TO 2.9m AND DRY UPON COMPLETION. BOREHOLE BACKFILLED WITH BENTONITE.		2.90							
4											
5											
6											
7											
8											
9											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-21

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : March 2, 2021
COMPLETED : March 2, 2021
N 4 900 395.1 E 343 423.1

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) 40 80 120 160 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		80.51				20 40 60 80 100			
	Solid Stem Augers	**ASPHALT** (62.5mm)		0.06							
		GRAVEL, sandy: (FILL)		0.17							
		SILT, sandy, some clay, trace gravel, compact, brown, moist: (FILL)		0.37	1	SS	21				
1		**CLAY**, silty, trace sand, stiff to very stiff, brown, moist			2	SS	11				
					3	SS	12				
2					4	SS	18				
				77.62							
3		END OF BOREHOLE AT 2.90m. BOREHOLE BACKFILLED WITH BENTONITE TO 0.2m AND THEN ASPHALT PATCH TO SURFACE.		2.90							
4											
5											
6											
7											
8											
9											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-22

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : March 2, 2021
COMPLETED : March 2, 2021
N 4 900 334.8 E 343 465.3

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	COMMENTS	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) 40 80 120 160 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		77.72				DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100			
	Solid Stem Augers	**SILT**, sandy, some clay, trace gravel, compact, brown, moist: (FILL)		0.00	1	SS	14				▽
				77.03							
1		**CLAY**, silty, sandy, trace gravel, trace organics, firm, brown, moist: (FILL)		0.69	2	SS	6	Grain Size Analysis: Gr 3%/ Sa 22%/ Si 49%/ Cl 26%	○		
				76.27							
2		**PEAT**, soft, black, wet		1.45	3	SS	3		317○		
				75.38							
		CLAY, silty, some organics, very soft, grey, wet		2.34	4	SS	2		91○		
3					1	ST		Grain Size Analysis: Gr 0%/ Sa 5%/ Si 47%/ Cl 48%	⊢——⊣		
				74.06							
		END OF BOREHOLE AT 3.66m. BOREHOLE OPEN AND WATER LEVEL AT 0.66m UPON COMPLETION. BOREHOLE BACKFILLED WITH BENTONITE TO SURFACE.		3.66							
4											
5											
6											
7											
8											
9											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-23

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 26, 2021
COMPLETED : February 26, 2021
N 4 900 302.4 E 343 359.7

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) (40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		77.55							
1	Solid Stem Augers	**SILT**, clayey, some sand, trace to some gravel, firm, black/brown/red, moist: (FILL)		0.00	1	SS	19				
					2	SS	8				
				76.10							
2		**CLAY**, silty, trace sand, stiff to very stiff, brown, moist		1.45	3	SS	9				
					4	SS	19				
				74.65							
3		END OF BOREHOLE AT 2.90m. BOREHOLE OPEN AND DRY UPON COMPLETION. BOREHOLE BACKFILLED WITH BENTONITE.		2.90							
4											
5											
6											
7											
8											
9											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-24

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : February 25, 2021
COMPLETED : February 25, 2021
N 4 900 283.0 E 343 428.0

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✚ Q - ✖ / rem V - ● Cpen ▲) 40 80 120 160 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		75.94							
0	Solid Stem Augers	**ORGANICS**, **CLAY**, silty, soft, brown, moist		0.00	1	SS	4		○		
				75.26							
1		**CLAY**, silty, trace sand, very stiff to stiff, brown, moist		0.69	2	SS	16		▲ ○		
2					3	SS	13	Grain Size Analysis: Gr 0%/ Sa 6%/ Si 68%/ Cl 26%	○	>>	
					4	SS	21		58 ○ >> ▲		
				73.05							
3		END OF BOREHOLE AT 2.90m. BOREHOLE OPEN AND DRY UPON COMPLETION. BOREHOLE BACKFILLED WITH BENTONITE.		2.90							
4											
5											
6											
7											
8											
9											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-25

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : March 1, 2021
COMPLETED : March 1, 2021
N 4 900 364.7 E 343 500.3

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	COMMENTS	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) 40 80 120 160 / WATER CONTENT, PERCENT wp w wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		77.70				DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100			
		ASPHALT (150mm)		0.00							
		GRAVEL and **SAND**, trace silt, compact to loose, brown to grey, wet: (FILL)		0.15	1	SS	19		○		
1					2	SS	16		○		▽
2					3	SS	8	Grain Size Analysis: Gr 51%/ Sa 42%/ Si & Cl 7%	○		
				75.42							
		CLAY, silty, trace sand, stiff to firm, brown, moist		2.29	4	SS	12		○		
3	Solid Stem Augers				5	SS	6		○		
4											
		becoming grey			6	SS	7		○		
5											
6					7	SS	10	Grain Size Analysis: Gr 2%/ Sa 9%/ Si 12%/ Cl 77%	⊖ 71		
7											
					8	SS	7		○ ○		
8				69.47							
		END OF BOREHOLE AT 8.23m. BOREHOLE OPEN AND WATER LEVEL AT 1.1m UPON COMPLETION. BOREHOLE BACKFILLED WITH BENTONITE TO 0.3m THEN ASPHALT PATCH TO SURFACE.		8.23							
9											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

RECORD OF BOREHOLE BH-26

PROJECT : Napanee Water Pollution Control Plant Expansion
LOCATION : 300 Water St West Napanee, ON
STARTED : March 1, 2021
COMPLETED : March 1, 2021
N 4 900 345.9 E 343 514.1

Project No. 30726
SHEET 1 OF 1
DATUM Geodetic

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	COMMENTS	SHEAR STRENGTH: Cu, KPa (nat V - ✚, rem V - ●, Q - ✖, Cpen ▲) / WATER CONTENT, PERCENT (wp, w, wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		77.38				DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	40 80 120 160 / wp 10 w 20 30 wl 40		
		ASPHALT (60mm)		0.06							
		SAND and **GRAVEL**, trace silt, very dense to compact, brown, moist: (FILL)			1	SS	56		○		
1					2	SS	10		○		
				75.94							
		SILT, clayey, some sand, trace gravel, very stiff, brown, moist (FILL)		1.45	3	SS	16	Grain Size Analysis: Gr 0%/ Sa 13%/ Si 59%/ Cl 28%	○		
2				75.17							
		CLAY, silty, trace gravel, trace sand, stiff to firm, brown, moist		2.21	4	SS	13		○		
3	Solid Stem Augers				5	SS	8		○		
4											
		becoming grey			6	SS	10	Grain Size Analysis: Gr 0%/ Sa 2%/ Si 50%/ Cl 48%	○——○		
5											
6											
					7	SS	7		○		
7											▽
					8	SS	6		○		
8				69.15							
		END OF BOREHOLE AT 8.2m. BOREHOLE OPEN AND WATER LEVEL AT 7.6m UPON COMPLETION. BOREHOLE BACKFILLED WITH HOLEPLUG TO 0.2m, THEN ASPHALT TO SURFACE.		8.23							
9											

GROUNDWATER ELEVATIONS

▽ WATER LEVEL UPON COMPLETION ▼ WATER LEVEL IN WELL/PIEZOMETER

LOGGED : RB
CHECKED : JDA/MTB

THURBER

THURBER

Selected Boreholes from Previous Investigation

Source: Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation, September 2015
Coordinate System: NAD 1983 UTM Zone 18N

0 10 20 30
Meters

Coordinate System:
NAD 1983 UTM Zone 18N

TOWN OF GREATER NAPANEE
300 WATER STREET WEST, NAPANEE ONTARIO
GEOTECHNICAL INVESTIGATION FOR WWTP UPGRADES

NAPANEE WWTP
PROPOSED NEW STRUCTURES

11140477-A2
Jan 4, 2018

FIGURE 3

GIS File: Q:\GIS\PROJECTS\11140000s\11140477\Layouts\001\11140477-A2(001)GIS-OT006.mxd

REFERENCE No.: 11140477-A1 ENCLOSURE No.: 1

BOREHOLE No.: BH1-17
ELEVATION: 78.09 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Town of Greater Napanee C/o EVB Engineering Inc.
PROJECT: Geotechnical Investigation for Upgrades to Napanee Wastewater Treatment Plant
LOCATION: 300 Water Street West, Napanee, On
DESCRIBED BY: S.Wheeler CHECKED BY: S. Dunstan
DATE (START): 15 May 2017 DATE (FINISH): 15 May 2017

LEGEND

- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	78.09		GROUND SURFACE			%	ppm	N	
	78.0		**TOPSOIL-** Brown, damp. (Approximately 75 mm)		SS1	11/24		12	
	77.9		**FILL-** Gravel, some silt, compact, brown, damp.						
1.0			**FILL-** Sandy silt, loose, brown, damp. *Becoming moist.		SS2	11/24		2	
	76.4								
2.0	76.3		**BURIED TOPSOIL-** Brown, moist.		SS3	20/24		2	
			SILTY CLAY- Stiff, grey, moist. *Becoming wet.		FV1				S=3
3.0					SS4	24/24		4	
4.0			*Becoming very stiff.		SS5	24/24		4	
5.0					ST1				
			*Becoming stiff.		SS6	24/24		4	
6.0					SS7	24/24		3	
7.0			*FV > 90 kPa vane capacity.		FV2				
	70.3								
8.0			**SILTY CLAYEY SAND-** Loose, brown, wet.		SS8	24/24		9	
	69.3				SS9	12/18		R	
9.0			Auger refusal at approximately 8.8 m.						
10.0									
11.0									
12.0									
13.0									
14.0									
15.0									
16.0									

NOTES:
*No sheen odour or staining noted in borehole
*Borehole location and elevation surveyed by Hopkins-Chitty Surveying Ltd.
*Pocket penetrometer readings are for internal GHD use only and should not be relied upon by others.

BOREHOLE LOG 11140477-A1, BH LOGS, SW, MAY 30, 2017.GPJ INSPEC_SOL.GDT 5/7/17

REFERENCE No.: 11140477-A2 ENCLOSURE No.: 13

BOREHOLE No.: BH13-17
ELEVATION: 81.07 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Town of Greater Napanee C/o EVB Engineering Inc.
PROJECT: Geotechnical Investigation for Upgrades to Napanee Wastewater Treatment Plant
LOCATION: 300 Water Street West, Napanee, On
DESCRIBED BY: S. Wheeler CHECKED BY: S. Dunstan
DATE (START): 23 November 2017 DATE (FINISH): 23 November 2017

LEGEND

- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- ● N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	81.07		GROUND SURFACE			%	ppm	N	
			FILL- Sandy Silt some Gravel, loose, grey, damp.		SS1	7/24		8	
1.0	80.1		**BURIED TOPSOIL-** (Approximately 50 mm thick)		SS2	14/24		9	
	80.1		**FILL-** Silt some Sand and Gravel, compact, grey, damp. *Becoming Sandy Silt trace Gravel, loose, brown, damp		SS3	15/24		6	
2.0	78.9		**CLAY AND SILT-** Very stiff, brownish grey, damp.		SS4	24/24		7	
3.0					SS5	24/24		9	
4.0			*Becoming grey		SS6	24/24		7	
5.0					SS7	24/24		6	
			*Becoming brown		SS8	24/24		6	
6.0	75.0		**SAND-** Compact, light brown, wet.		SS9	24/24		10	
	74.2		*Becoming Silty Sand						
7.0			**LIMESTONE-** Medium strong, thickly bedded, horizontal, slightly weathered, excellent quality based on RQD.		RC1	63/63		97	
8.0									
9.0					RC2	60/61		93	
10.0	71.1		End of borehole at approximately 10.0 m in limestone.						
11.0									
12.0									
13.0									
14.0									
15.0									
16.0									

NOTES:
*No sheen odour or staining noted in borehole
*Borehole location and elevation surveyed by GHD field staff
*Pocket penetrometer readings are for internal GHD use only and should not be relied upon by others.

REFERENCE No.: 11140477-A2 ENCLOSURE No.: 14

BOREHOLE No.: BH14-17
ELEVATION: 81.09 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Town of Greater Napanee C/o EVB Engineering Inc.
PROJECT: Geotechnical Investigation for Upgrades to Napanee Wastewater Treatment Plant
LOCATION: 300 Water Street West, Napanee, On
DESCRIBED BY: S. Wheeler CHECKED BY: S. Dunstan
DATE (START): 23 November 2017 DATE (FINISH): 23 November 2017

LEGEND

- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- ● N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	81.09		GROUND SURFACE			%	ppm	N	
	80.5		**FILL-** Sandy Silt some Gravel, compact, light brown, damp.		SS1	20/24		16	
1.0	80.5		**BURIED TOPSOIL-** (Approximately 50 mm thick)		SS2	14/14		R	
			FILL- Silty Gravel some Sand, dense, dark grey, damp.						
2.0	79.0		*Becoming Sandy Silt trace Gravel, concrete piece limited recovery		SS3	6/11		R	
			CLAY AND SILT- Very stiff, brownish grey, damp.		SS4	24/24		12	
3.0					SS5	24/24		9	
4.0					SS6	22/24		17	
5.0					SS7	5/24		8	
	75.4				SS8	18/24		20	
6.0			**SAND-** Compact, brown, wet.						
			*Becoming some gravel, very dense, light brown, wet, limestone chips in tip of split spoon.		SS9	14/15		R	
	74.3								
7.0			Auger refusal at approximately 6.8 m.						
8.0									
9.0									
10.0									
11.0									
12.0									
13.0									
14.0									
15.0									
16.0									

NOTES:
*No sheen odour or staining noted in borehole
*Borehole location and elevation surveyed by GHD field staff
*Pocket penetrometer readings are for internal GHD use only and should not be relied upon by others.

BOREHOLE LOG 11140477-A2, BH LOGS, SW, DEC. 5, 2017.GPJ INSPEC_SOL.GDT 11/1/18

REFERENCE No.: 11140477-A2 ENCLOSURE No.: 15

BOREHOLE No.: MW15-17-d

ELEVATION: 78.77 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Town of Greater Napanee C/o EVB Engineering Inc.

PROJECT: Geotechnical Investigation for Upgrades to Napanee Wastewater Treatment Plant

LOCATION: 300 Water Street West, Napanee, On

DESCRIBED BY: S. Wheeler CHECKED BY: S. Dunstan

DATE (START): 23 November 2017 DATE (FINISH): 23 November 2017

LEGEND

- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		MONITOR WELL	SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK		State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	78.77		GROUND SURFACE	0.70 — 0.62 —			%	ppm	N	
	78.7		**TOPSOIL-** (Approximately 50 mm thick)	WL 0.37 — 0.46 —		SS1	18/24		7	
1.0	77.7		**FILL-** Sandy Silt some Gravel, loose, dark brown, damp.			SS2	22/24		5	
	77.7		**BURIED TOPSOIL-** Organic, dark brown to black.			SS3	24/24		15	
2.0			**CLAY AND SILT-** Very stiff, brown, damp.			SS4	24/24		12	
3.0				Bentonite		SS5	24/24		7	
4.0						SS6	24/24		17	
	74.2		**SILTY CLAY-** Very stiff, grey, damp.			SS7	24/24		7	
5.0										
6.0				5.79 — Riser 6.25 —		SS8	24/24		11	
	72.1		**SAND-** Compact, brown, wet, some silt seams (approximately 125 mm thick).	Screen Sand		SS9	24/24		12	
7.0						SS10	24/24		10	
	71.0		Auger refusal at approximately 7.8 m.	7.77 —		SS11	5/5		R	
8.0										
9.0										
10.0										
11.0										
12.0										
13.0										
14.0										
15.0										
16.0										

NOTES:
*No sheen odour or staining noted in borehole
*Borehole location and elevation surveyed by GHD field staff
*Pocket penetrometer readings are for internal GHD use only and should not be relied upon by others.

REFERENCE No.: 11140477-A2 ENCLOSURE No.: 16

BOREHOLE No.: MW15-17-s

ELEVATION: 78.79 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Town of Greater Napanee C/o EVB Engineering Inc.

PROJECT: Geotechnical Investigation for Upgrades to Napanee Wastewater Treatment Plant

LOCATION: 300 Water Street West, Napanee, On

DESCRIBED BY: S. Wheeler CHECKED BY: S. Dunstan

DATE (START): 23 November 2017 DATE (FINISH): 23 November 2017

LEGEND

- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- ● N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		MONITOR WELL	SAMPLE DATA				
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK		State	Type and Number	Recovery	OVC	Penetration Index / RQD
meters	78.79		GROUND SURFACE	0.73 / 0.66			%	ppm	N
	78.7		**TOPSOIL-** (Approximately 50 mm thick)	0.46 / WL 0.61					
1.0	77.7		Inferred fill based on MW15-17-d	Bentonite					
			Inferred clay and silt based on MW15-17-d	Solid Pipe					
2.0				2.74					
3.0				3.05					
4.0				Screen / Silica Sand					
	74.2		End of borehole at approximately 4.6 m.	4.57					
5.0									
6.0									
7.0									
8.0									
9.0									
10.0									
11.0									
12.0									
13.0									
14.0									
15.0									
16.0									

SCALE FOR TEST RESULTS
50kPa 100kPa 150kPa 200kPa
10 20 30 40 50 60 70 80 90

NOTES:
*No sheen odour or staining noted in borehole
*Borehole location and elevation surveyed by GHD field staff
*Pocket penetrometer readings are for internal GHD use only and should not be relied upon by others.

BOREHOLE LOG 11140477-A2, BH LOGS, SW, DEC. 5, 2017.GPJ INSPEC_SOL.GDT 11/1/18

REFERENCE No.: 11140477-A2 ENCLOSURE No.: 17

BOREHOLE No.: BH16-17
ELEVATION: 78.43 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Town of Greater Napanee C/o EVB Engineering Inc.
PROJECT: Geotechnical Investigation for Upgrades to Napanee Wastewater Treatment Plant
LOCATION: 300 Water Street West, Napanee, On
DESCRIBED BY: S. Wheeler CHECKED BY: S. Dunstan
DATE (START): 23 November 2017 DATE (FINISH): 23 November 2017

LEGEND

- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	78.43		GROUND SURFACE			%	ppm	N	
	78.4		**TOPSOIL-** (Approximately 50 mm thick)		SS1	18/24		7	
	77.6		**FILL-** Sandy Silt some Gravel, loose, dark brown, damp.		SS2	24/24		8	
1.0			**CLAY AND SILT-** Very stiff, brown, damp.		SS3	24/24		12	
2.0					SS4	24/24		16	
3.0					SS5	24/24		16	
4.0	74.5		**SILTY CLAY-** Very stiff, grey, damp, trace sand veins.		SS6	24/24		18	
5.0			*Becoming stiff		SS7	24/24		7	
					SS8	24/24		5	
6.0	72.3		**SAND-** Compact, brown, wet, some silt seams (approximately 125 to 150 mm thick).		SS9	24/24		8	
7.0					SS10	24/24		12	
8.0					SS11	24/24		R	
	70.1		Auger refusal at approximately 8.4 m.						
9.0									
10.0									
11.0									
12.0									
13.0									
14.0									
15.0									
16.0									

NOTES:
*No sheen odour or staining noted in borehole
*Borehole location and elevation surveyed by GHD field staff
*Pocket penetrometer readings are for internal GHD use only and should not be relied upon by others.

BOREHOLE LOG 11140477-A2, BH LOGS, SW, DEC. 5, 2017.GPJ INSPEC_SOL.GDT 11/1/18

REFERENCE No.: 11140477-A2 ENCLOSURE No.: 18

BOREHOLE No.: MW17-17-d
ELEVATION: 77.24 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Town of Greater Napanee C/o EVB Engineering Inc.
PROJECT: Geotechnical Investigation for Upgrades to Napanee Wastewater Treatment Plant
LOCATION: 300 Water Street West, Napanee, On
DESCRIBED BY: S. Wheeler CHECKED BY: S. Dunstan
DATE (START): 24 November 2017 DATE (FINISH): 24 November 2017

LEGEND

- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	MONITOR WELL	State	Type and Number	Recovery	OVC	Penetration Index / RQD
meters	77.24		GROUND SURFACE	0.70 / 0.63			%	ppm	N
	77.0		**TOPSOIL-** (Approximately 200 mm thick)	0.46		SS1	12/24		4
	76.4		**FILL-** Sandy Silt, loose, brown, damp.	WL 0.71 / 0.91		SS2	24/24		7
1.0			**CLAY AND SILT-** Very stiff, brown, damp.			SS3	24/24		13
2.0						SS4	24/24		9
3.0	74.2		**SILTY CLAY-** Very stiff, grey, damp, trace sand veins.	Cuttings		SS5	24/24		10
4.0						SS6	24/24		15
5.0			*Becoming stiff			SS7	24/24		5
6.0						SS8	24/24		6
7.0				6.40		SS9	24/24		4
8.0				Bentonite		SS10	24/24		3
9.0			*Becoming firm	8.84 / 9.09		SS11	24/24		5
	68.1		**SAND-** Compact, light brown, wet.	Sand / Screen		SS12	24/24		4
10.0						SS13	24/24		0
	66.6		**LIMESTONE-** Medium strong, thickly bedded, horizontal, slightly weathered, good quality based on RQD.	10.62 / 10.67		SS14	24/24		10
11.0							61/65		83
12.0			*Becoming excellent quality based on RQD	Bentonite Seal in Rock					
13.0							59/59		100
14.0	63.4		End of borehole at approximately 13.8 m in limestone.	13.82					
15.0									
16.0									

SCALE FOR TEST RESULTS
50kPa 100kPa 150kPa 200kPa
10 20 30 40 50 60 70 80 90

NOTES:
*No sheen odour or staining noted in borehole
*Borehole location and elevation surveyed by GHD field staff
*Pocket penetrometer readings are for internal GHD use only and should not be relied upon by others.

BOREHOLE LOG 11140477-A2, BH LOGS, SW, DEC. 5, 2017.GPJ INSPEC_SOL.GDT 11/1/18

REFERENCE No.: 11140477-A2 ENCLOSURE No.: 19

BOREHOLE No.: MW17-17-s

ELEVATION: 77.22 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Town of Greater Napanee C/o EVB Engineering Inc.

PROJECT: Geotechnical Investigation for Upgrades to Napanee Wastewater Treatment Plant

LOCATION: 300 Water Street West, Napanee, On

DESCRIBED BY: S. Wheeler CHECKED BY: S. Dunstan

DATE (START): 24 November 2017 DATE (FINISH): 24 November 2017

LEGEND

- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		MONITOR WELL	SAMPLE DATA				
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK		State	Type and Number	Recovery	OVC	Penetration Index / RQD
meters	77.22		GROUND SURFACE				%	ppm	N
	77.0		**TOPSOIL-** (Approximately 200 mm thick)	0.83 0.76					
1.0	76.4		Inferred fill based on MW17-17-d	0.46 WL 0.62 0.91 Solid Pipe					
2.0			Inferred clay and silt based on MW17-17-d	Cuttings					
3.0	74.2		Inferred silty clay based on MW17-17-d	3.05					
4.0				Bentonite					
5.0				5.72					
6.0				6.10					
7.0				Screen Silica Sand					
	69.6		End of borehole at approximately 7.6 m.	7.62					
8.0									
9.0									
10.0									
11.0									
12.0									
13.0									
14.0									
15.0									
16.0									

SCALE FOR TEST RESULTS

50kPa 100kPa 150kPa 200kPa

10 20 30 40 50 60 70 80 90

NOTES:

*No sheen odour or staining noted in borehole

*Borehole location and elevation surveyed by GHD field staff

*Pocket penetrometer readings are for internal GHD use only and should not be relied upon by others.

BOREHOLE LOG 11140477-A2, BH LOGS, SW, DEC. 5, 2017.GPJ INSPEC_SOL.GDT 11/1/18

REFERENCE No.: 11140477-A2 ENCLOSURE No.: 20

BOREHOLE No.: BH18-17
ELEVATION: 77.62 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Town of Greater Napanee C/o EVB Engineering Inc.
PROJECT: Geotechnical Investigation for Upgrades to Napanee Wastewater Treatment Plant
LOCATION: 300 Water Street West, Napanee, On
DESCRIBED BY: S. Wheeler CHECKED BY: S. Dunstan
DATE (START): 24 November 2017 DATE (FINISH): 24 November 2017

LEGEND

- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	77.62		GROUND SURFACE			%	ppm	N	
			FILL- Gravel, dense, grey, damp. *Becoming Gravel some Sand and Silt, brown and grey.		SS1	20/24		24	
1.0	76.6		*Becoming Gravelly Silt, dark brown, damp		SS2	22/24		11	
			CLAY AND SILT- Very stiff, brown, damp.		SS3	24/24		24	
2.0					SS4	24/24		19	
3.0					SS5	24/24		11	
4.0					SS6	24/24		17	
	73.1		**SILTY CLAY-** Very stiff, grey, damp, trace sand veins.		SS7	24/24		6	
5.0					SS8	24/24		8	
6.0			*Becoming stiff		SS9	24/24		3	
7.0			*Becoming firm, moist		SS10	24/24		4	
8.0					SS11	24/24		3	
					SS12	24/24		4	
9.0	68.5		**SAND-** Loose, light brown, wet, some silt seams (approximately 200 mm thick).		SS13	24/24		7	
10.0					SS14	24/24		10	
11.0					SS15	24/24		R	
	66.3		Auger refusal at approximately 11.3 m.						
12.0									
13.0									
14.0									
15.0									
16.0									

NOTES:
*No sheen odour or staining noted in borehole
*Borehole location and elevation surveyed by GHD field staff
*Pocket penetrometer readings are for internal GHD use only and should not be relied upon by others.

BOREHOLE LOG 11140477-A2, BH LOGS, SW, DEC. 5, 2017.GPJ INSPEC_SOL.GDT 11/1/18

REFERENCE No.: 11140477-A2 ENCLOSURE No.: 21

BOREHOLE No.: BH19-17
ELEVATION: 76.99 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Town of Greater Napanee C/o EVB Engineering Inc.
PROJECT: Geotechnical Investigation for Upgrades to Napanee Wastewater Treatment Plant
LOCATION: 300 Water Street West, Napanee, On
DESCRIBED BY: S. Wheeler CHECKED BY: S. Dunstan
DATE (START): 24 November 2017 DATE (FINISH): 24 November 2017

LEGEND

- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	76.99		GROUND SURFACE			%	ppm	N	
	76.9		**TOPSOIL-** (Approximately 125 mm thick)		SS1	6/24		4	
			FILL- Sand, very loose, brown, damp.						
1.0					SS2	24/24		2	
	75.2		*Becoming wet		SS3	22/24		2	
2.0			**CLAY AND SILT-** Very stiff, brown, damp.						
					SS4	14/24		10	
3.0					SS5	24/24		12	
4.0					SS6	24/24		16	
	72.4		**SILTY CLAY-** Very stiff, grey, damp, trace sand veins.		SS7	24/24		7	
5.0									
					SS8	24/24		15	
6.0			*Becoming stiff and moist		SS9	24/24		4	
7.0					SS10	24/24		9	
					SS11	24/24		1	
8.0			*Becoming firm		SS12	24/24		3	
9.0					FV1				
			*FV > 90 kPa vane capacity.						
10.0	67.1		**SAND-** Dense, light brown, wet.		SS13	24/24		33	
					SS14	24/24		13	
11.0			*Silt seam (approximately 125 mm thick)						
	65.6		Auger refusal at approximately 11.4 m.						
12.0									
13.0									
14.0									
15.0									
16.0									

NOTES:
*No sheen odour or staining noted in borehole
*Borehole location and elevation surveyed by GHD field staff
*Pocket penetrometer readings are for internal GHD use only and should not be relied upon by others.

BOREHOLE LOG 11140477-A2, BH LOGS, SW, DEC. 5, 2017.GPJ INSPEC_SOL.GDT 11/1/18

REFERENCE No.: 11140477-A2 ENCLOSURE No.: 22

BOREHOLE No.: BH20-17
ELEVATION: 77.87 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Town of Greater Napanee C/o EVB Engineering Inc.
PROJECT: Geotechnical Investigation for Upgrades to Napanee Wastewater Treatment Plant
LOCATION: 300 Water Street West, Napanee, On
DESCRIBED BY: S. Wheeler CHECKED BY: S. Dunstan
DATE (START): 27 November 2017 DATE (FINISH): 27 November 2017

LEGEND

- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- ● N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	77.87		GROUND SURFACE			%	ppm	N	
			FILL- Gravelly Sand, loose, brown, damp.		SS1	18/24		8	
1.0	76.9		*Becoming Sandy Silt some Gravel, dark brown		SS2	16/24		4	
	76.9		**BURIED TOPSOIL-** (Approximately 50 mm thick)						
2.0			**FILL-** Sand some Silt, loose, dark brown, damp.		SS3	15/24		5	
	75.2				SS4	20/24		11	
3.0	74.7		**CLAY AND SILT-** Very stiff, brown, damp.						
			SILTY CLAY- Very stiff, grey, damp, trace sand veins.		SS5	24/24		6	
4.0					SS6	24/24		12	
5.0					SS7	24/24		8	
					SS8	24/24		10	
6.0					SS9	24/24		4	
7.0			*Becoming stiff		SS10	24/24		7	
8.0					SS11	24/24		3	
			*Becoming firm		SS12	24/24		3	
9.0					SS13	24/24		3	
10.0	67.7		**SAND SOME SILT AND GRAVEL-** Compact, light brown, wet.		SS14	24/24		13	
11.0			*Becoming Sand, loose		SS15	20/24		6	
			*Becoming compact		SS16	24/24		13	
12.0	65.8		Auger refusal at approximately 12.1 m.						
13.0									
14.0									
15.0									
16.0									

NOTES:
*No sheen odour or staining noted in borehole
*Borehole location and elevation surveyed by GHD field staff
*Pocket penetrometer readings are for internal GHD use only and should not be relied upon by others.

BOREHOLE LOG 11140477-A2, BH LOGS, SW, DEC. 5, 2017.GPJ INSPEC_SOL.GDT 11/1/18

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Appendix C

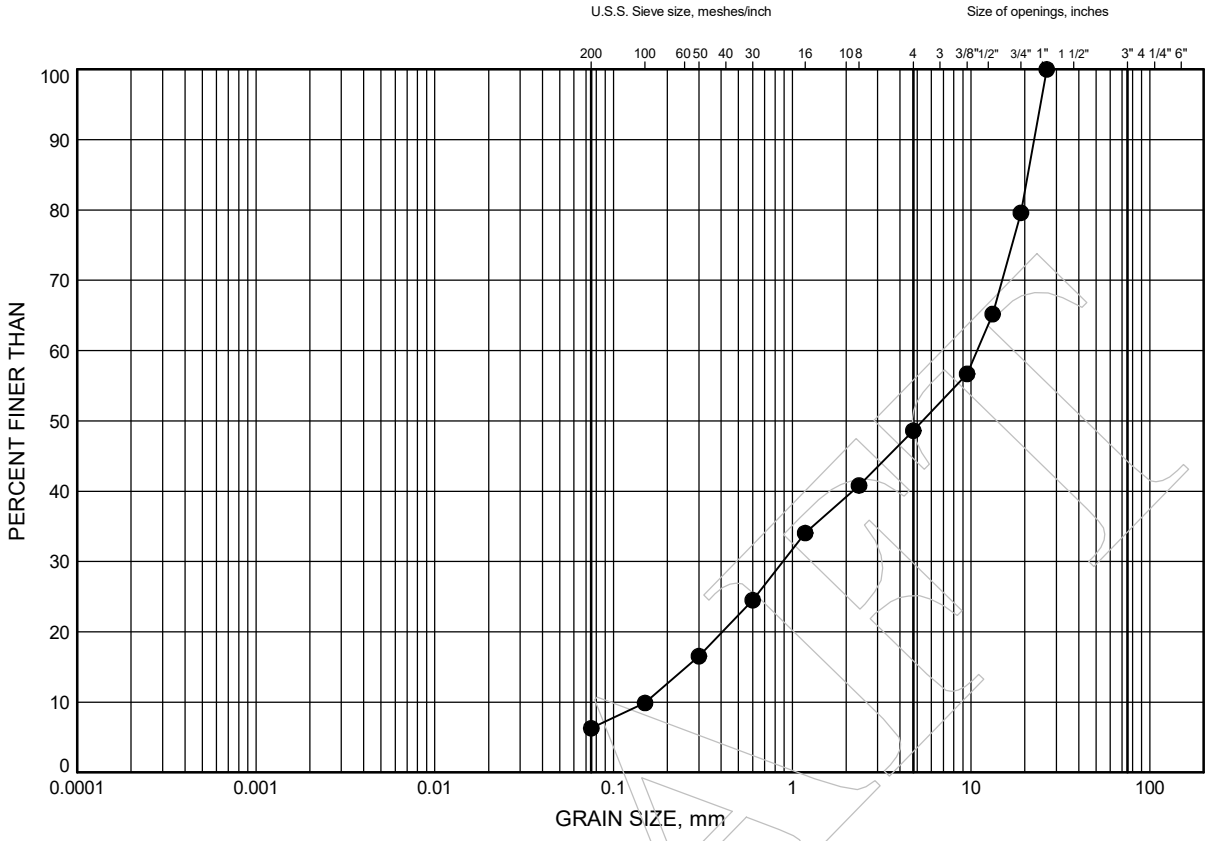
Geotechnical Laboratory Soil Test Results

Napanee Water Pollution Control Plant Expansion

GRAIN SIZE DISTRIBUTION

FIGURE C1

GRANULAR FILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	BH-25	1.83	75.87

Date July 2021

Project 30726

THURBER

Prep'd MFA

Chkd. JA

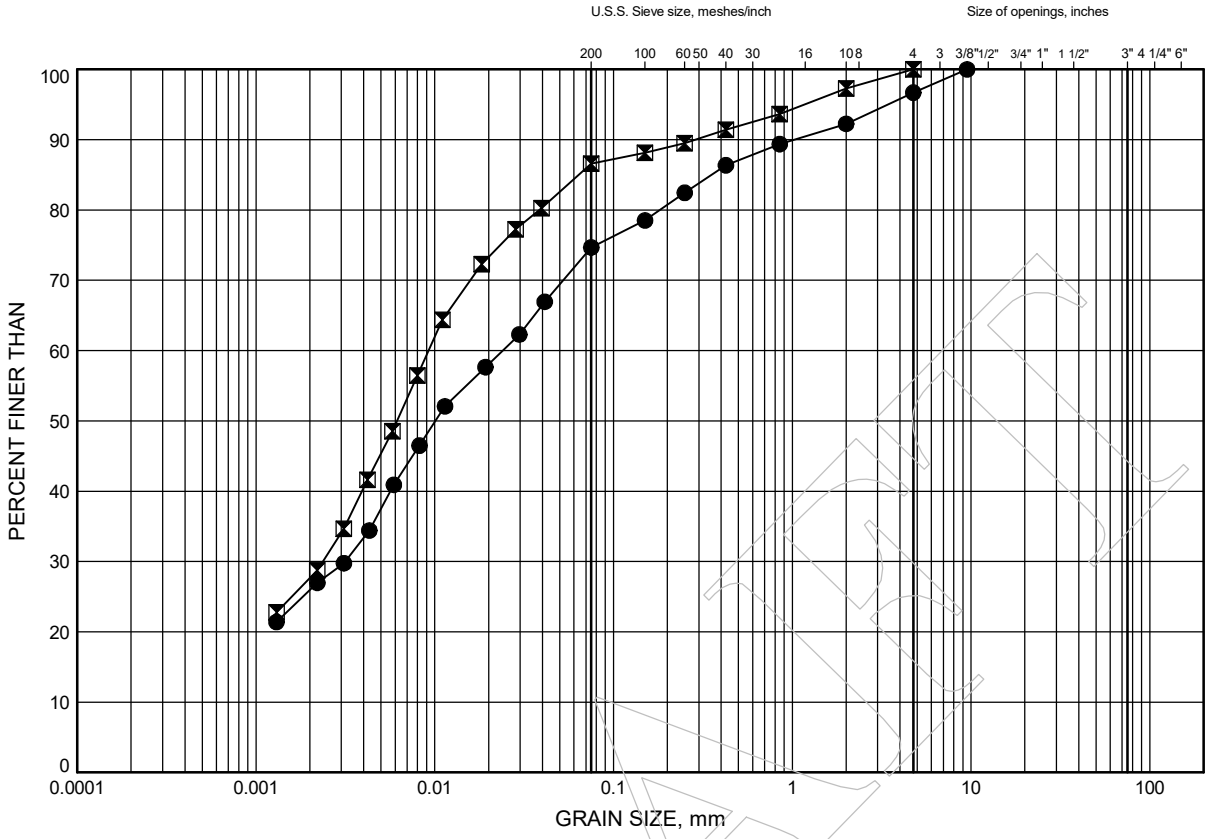
GRAIN SIZE DISTRIBUTION - THURBER TEL-30726.GPJ 7/15/21

Napanee Water Pollution Control Plant Expansion

GRAIN SIZE DISTRIBUTION

FIGURE C2

SILTY CLAY TO CLAYEY SILT FILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	BH-22	1.07	76.65
⊠	BH-26	1.83	75.55

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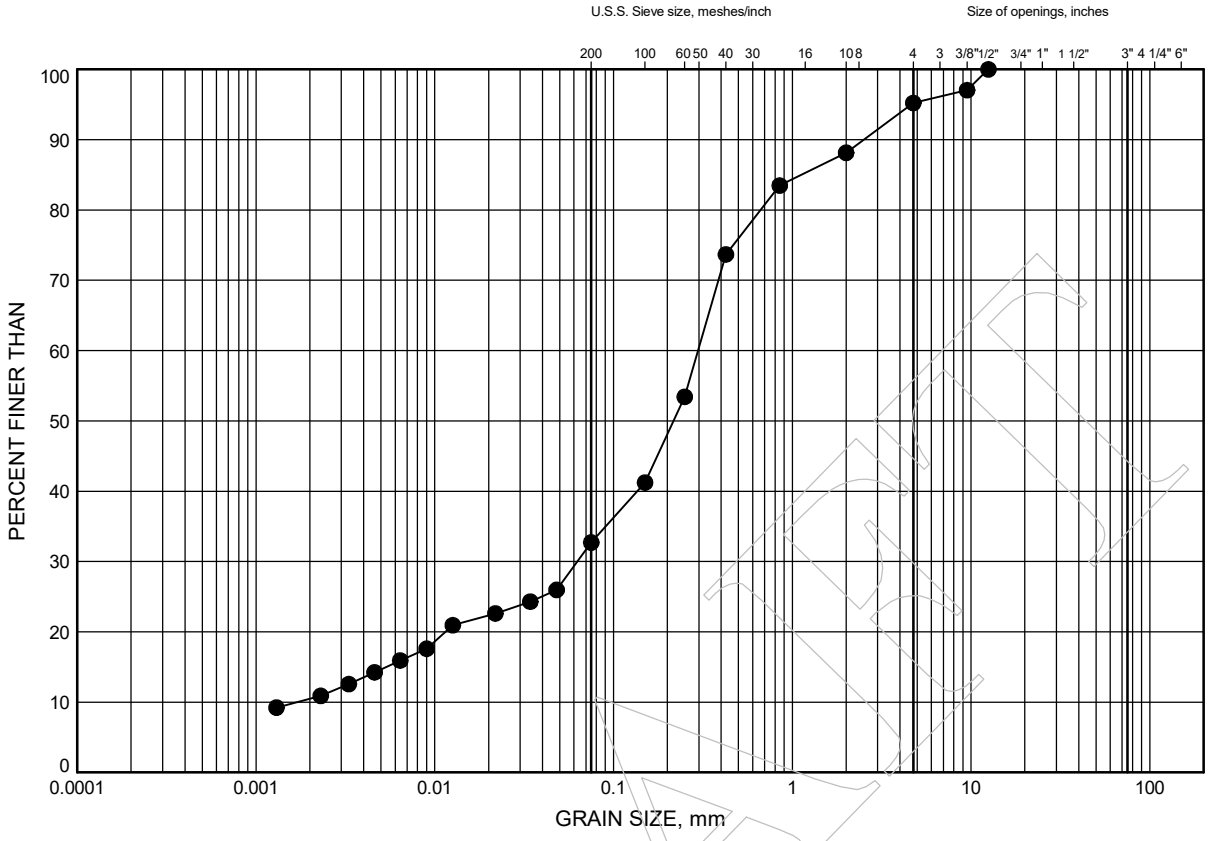
GRAIN SIZE DISTRIBUTION - THURBER TEL-30726.GPJ 7/15/21

Napanee Water Pollution Control Plant Expansion

GRAIN SIZE DISTRIBUTION

FIGURE C3

SILTY SAND TO SANDY SILT FILL



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	BH-19	1.83	75.71

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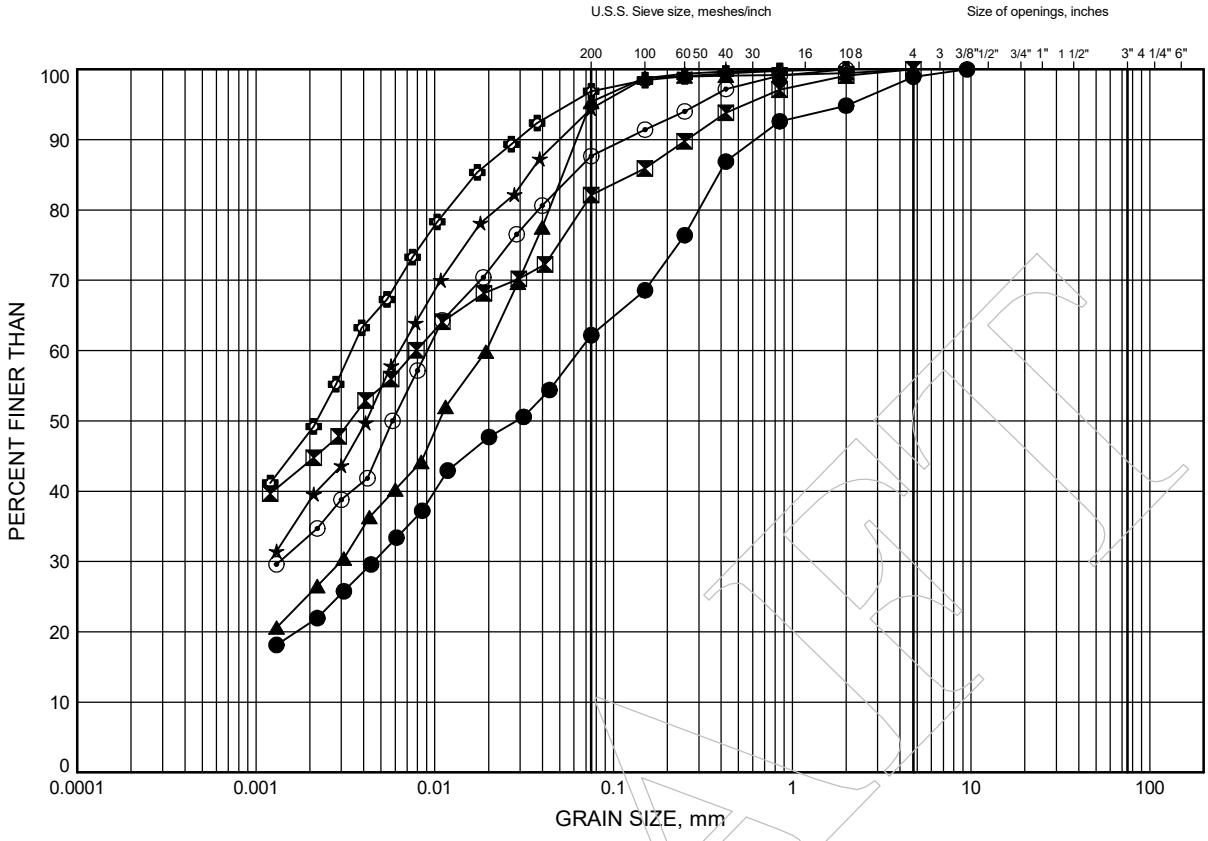
GRAIN SIZE DISTRIBUTION - THURBER TEL-30726.GPJ 7/15/21

Napanee Water Pollution Control Plant Expansion

GRAIN SIZE DISTRIBUTION

FIGURE C4

SILTY CLAY



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	BH-01	2.59	78.31
⊠	BH-02	1.07	77.93
▲	BH-04	9.45	67.71
★	BH-06	1.83	76.66
⊙	BH-07	1.07	77.46
✿	BH-07	3.35	75.17

Date July 2021

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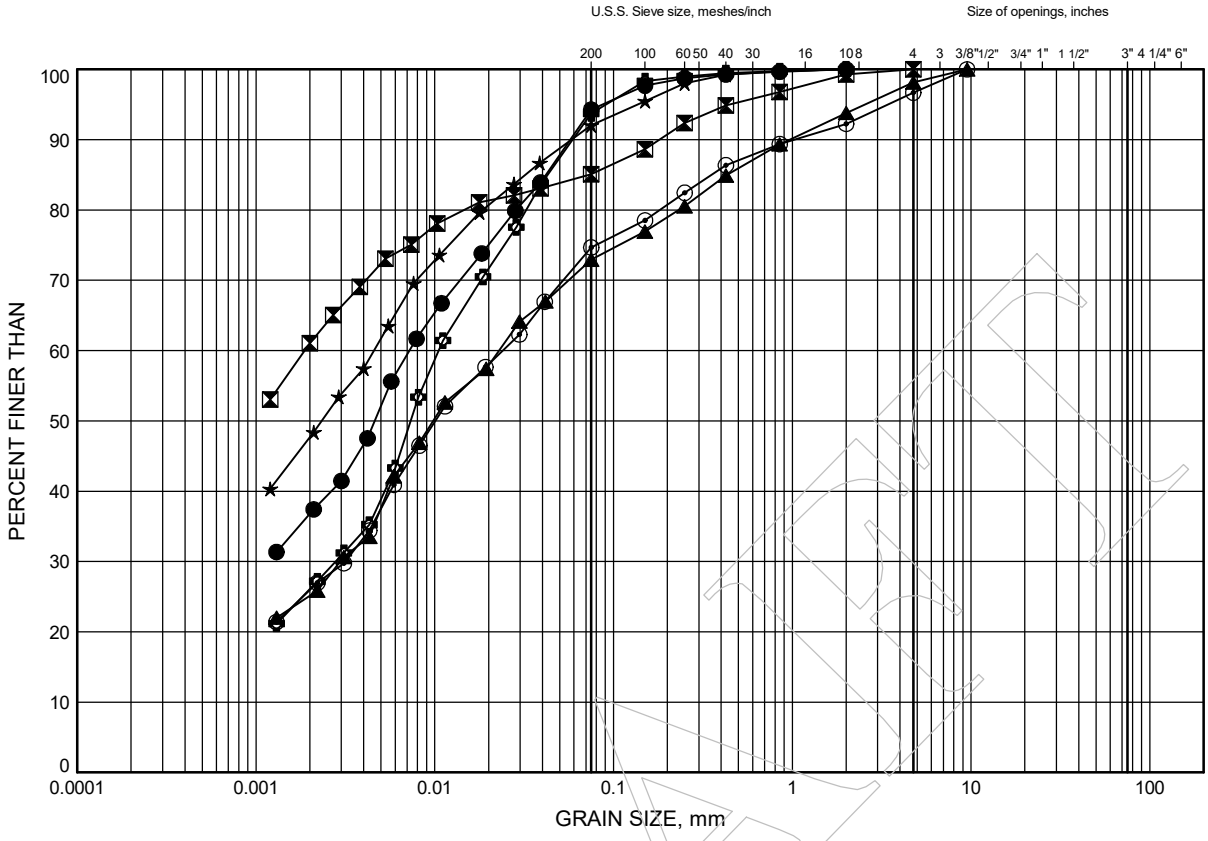
GRAIN SIZE DISTRIBUTION - THURBER TEL-30726.GPJ 7/15/21

Napanee Water Pollution Control Plant Expansion

GRAIN SIZE DISTRIBUTION

FIGURE C5

SILTY CLAY



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	BH-08	1.83	75.34
⊠	BH-10	3.35	73.18
▲	BH-14	1.83	78.54
★	BH-20	2.59	77.39
⊙	BH-22	1.07	76.65
✿	BH-24	1.83	74.11

Date July 2021

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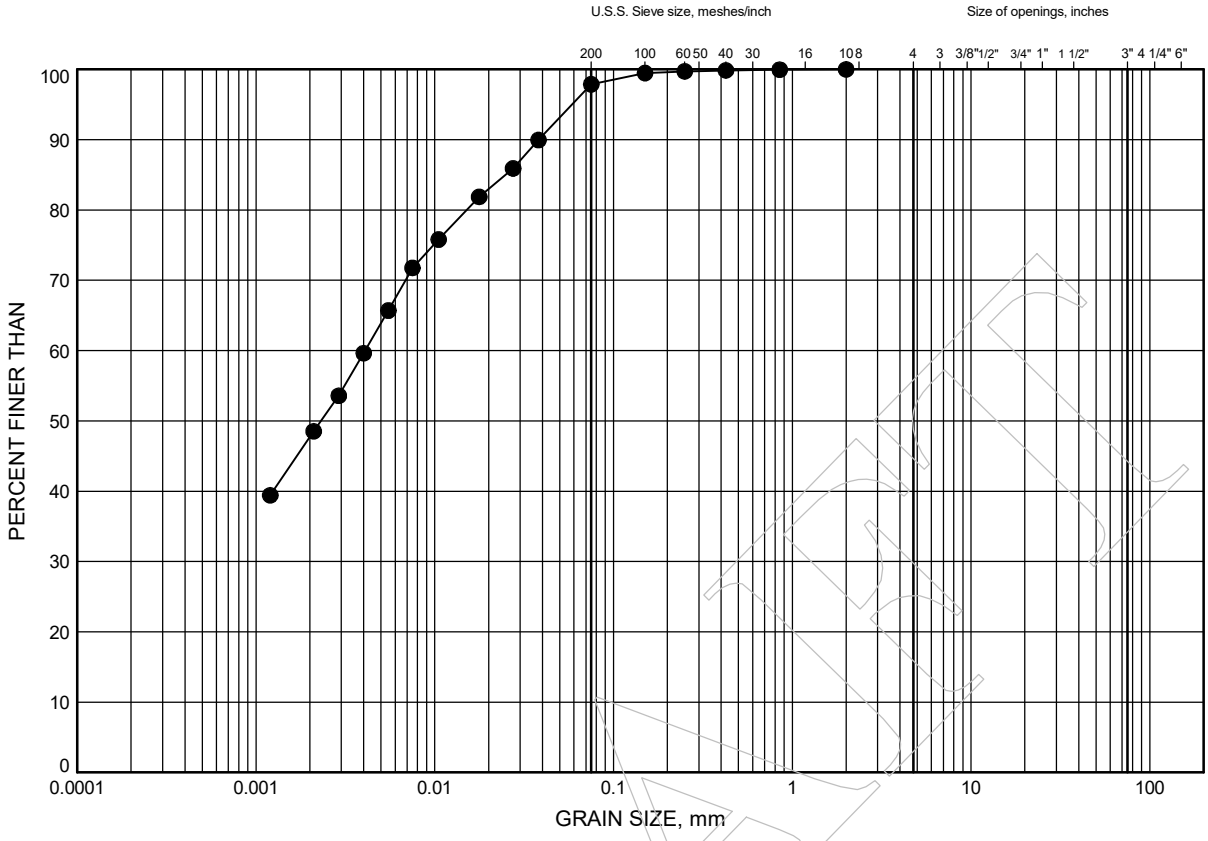
GRAIN SIZE DISTRIBUTION - THURBER TEL-30726.GPJ 7/15/21

Napanee Water Pollution Control Plant Expansion

GRAIN SIZE DISTRIBUTION

FIGURE C6

SILTY CLAY



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	BH-26	4.88	72.51

Date July 2021

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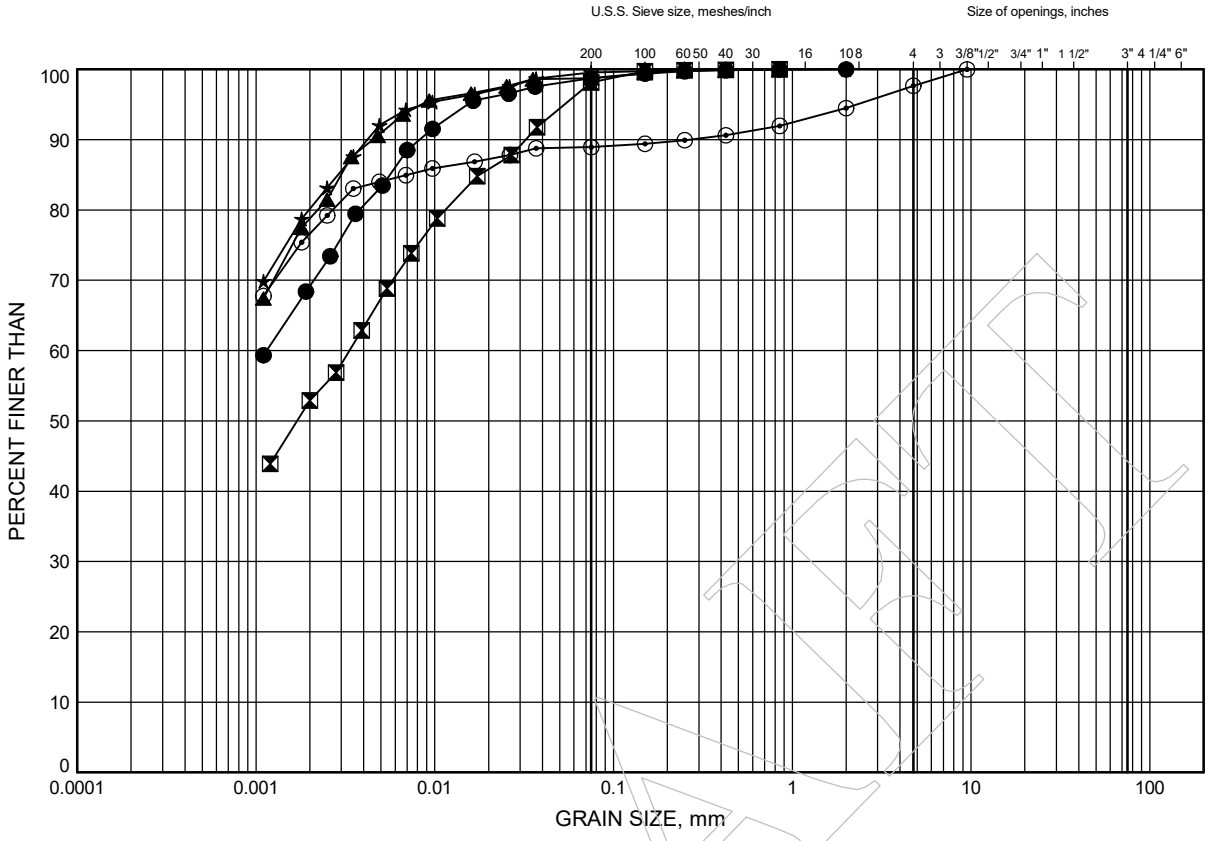
GRAIN SIZE DISTRIBUTION - THURBER TEL-30726.GPJ 7/15/21

Napanee Water Pollution Control Plant Expansion

GRAIN SIZE DISTRIBUTION

FIGURE C7

SILTY CLAY



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	BH-03	3.35	73.09
⊠	BH-04	3.35	73.80
▲	BH-05	4.88	71.43
★	BH-19	4.88	72.66
⊙	BH-25	6.40	71.30

Date July 2021

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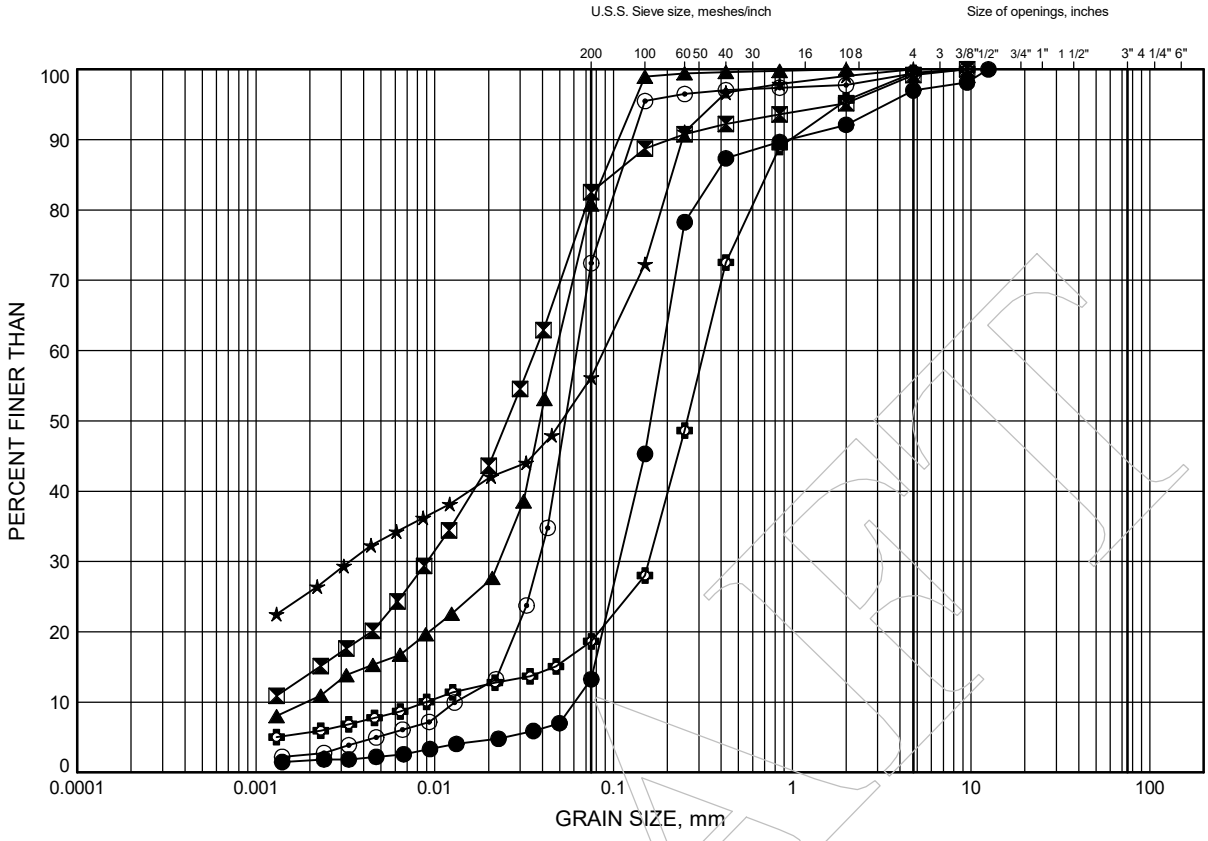
GRAIN SIZE DISTRIBUTION - THURBER TEL-30726.GPJ 7/15/21

Napanee Water Pollution Control Plant Expansion

GRAIN SIZE DISTRIBUTION

FIGURE C8

SILT TO SAND



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	BH-01	6.32	74.58
⊠	BH-03	6.40	70.04
▲	BH-05	11.13	65.18
★	BH-06	4.88	73.62
⊙	BH-08	6.32	70.85
✿	BH-11	1.83	74.56

Date July 2021

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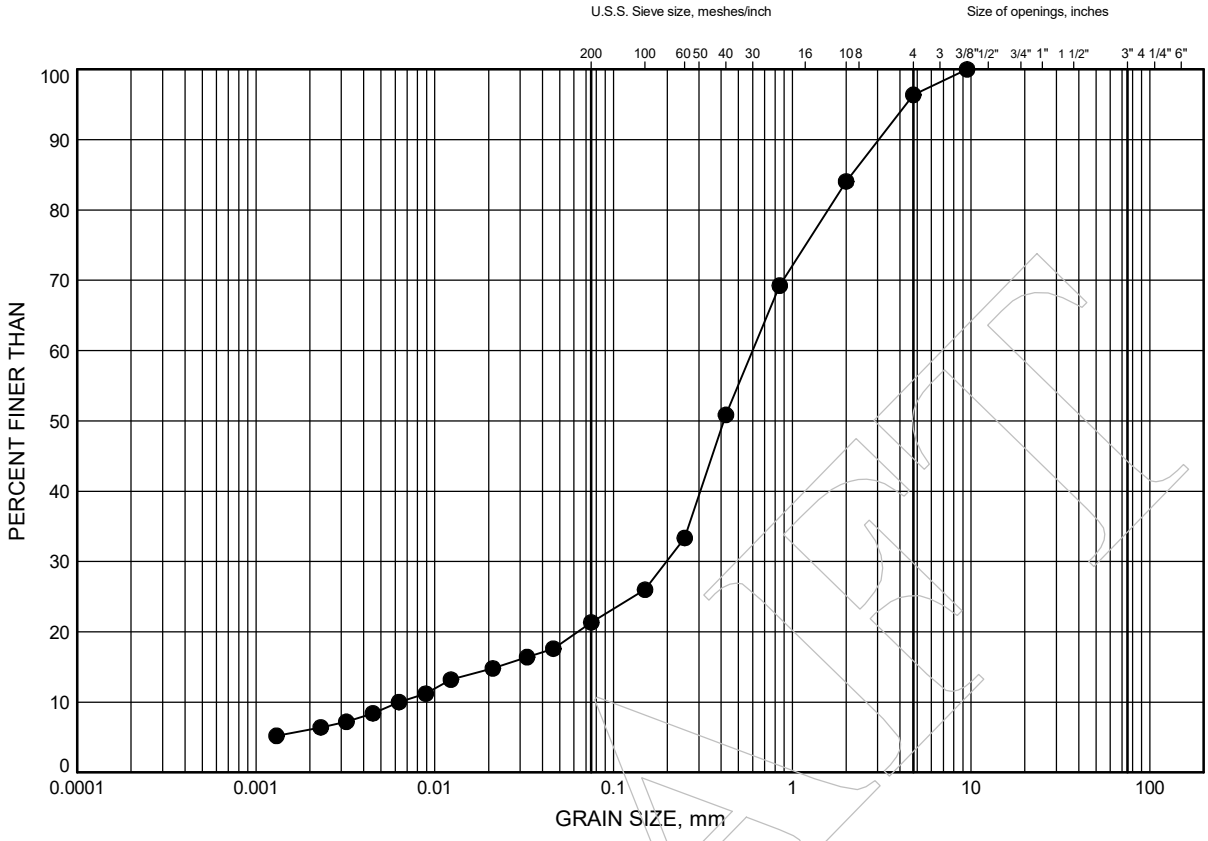
GRAIN SIZE DISTRIBUTION - THURBER TEL-30726.GPJ 7/15/21

Napanee Water Pollution Control Plant Expansion

GRAIN SIZE DISTRIBUTION

FIGURE C9

SILT TO SAND



SILT and CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLE SIZE
FINE GRAINED	SAND			GRAVEL		

LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	BH-12	1.07	75.33

Date July 2021

Project 30726

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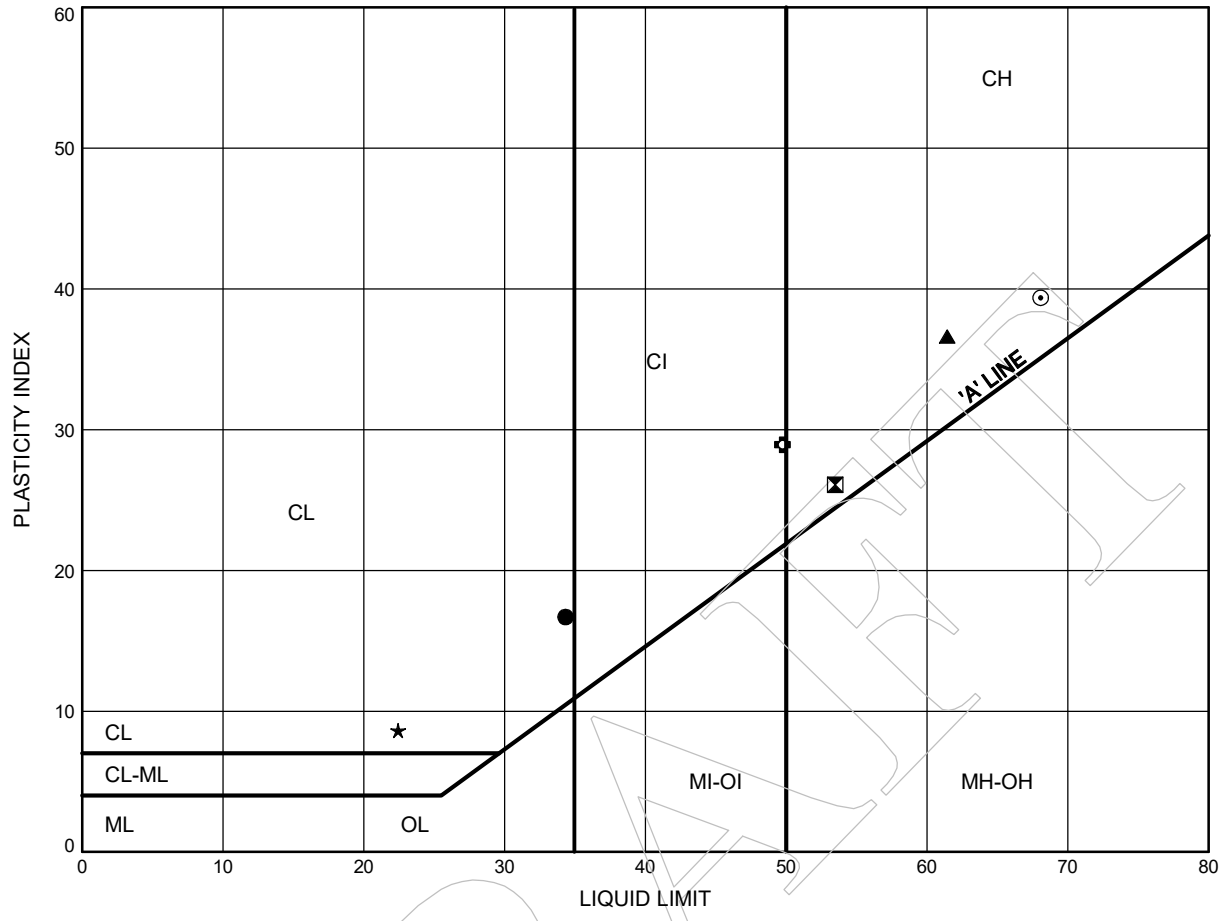
GRAIN SIZE DISTRIBUTION - THURBER TEL-30726.GPJ 7/15/21

Napanee Water Pollution Control Plant Expansion

ATTERBERG LIMITS TEST RESULTS

FIGURE C10

SILTY CLAY



LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	BH-01	2.59	78.31
⊠	BH-02	1.07	77.93
▲	BH-03	3.35	73.09
★	BH-04	9.45	67.71
⊙	BH-05	4.88	71.43
✿	BH-07	3.35	75.17

Date July 2021

Project 30726

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Prep'd MFA

Chkd. JA

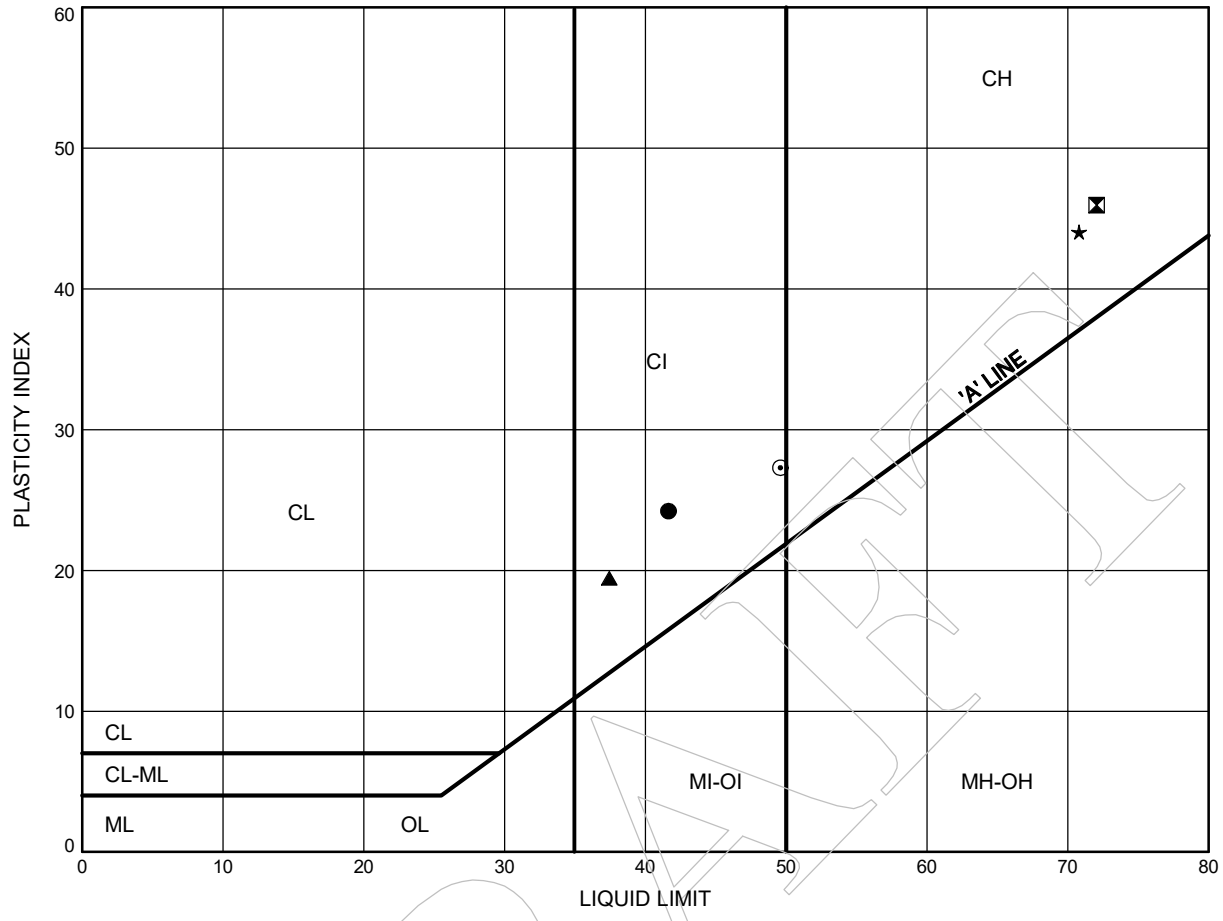
THURBALT TEL-30726.GPJ 7/15/21

Napanee Water Pollution Control Plant Expansion

ATTERBERG LIMITS TEST RESULTS

FIGURE C11

SILTY CLAY



LEGEND

SYMBOL	BOREHOLE	DEPTH (m)	ELEV. (m)
●	BH-19	3.35	74.18
⊠	BH-19	4.88	72.66
▲	BH-22	3.35	74.36
★	BH-25	6.40	71.30
⊙	BH-26	4.88	72.51

Date July 2021

Project 30726

THURBER

Prep'd MFA

Chkd. JA

THURBALT TEL-30726.GPJ 7/15/21

THURBER ENGINEERING LTD.

Consolidation Test Report

CLIENT: R.V. Anderson Associates Ltd. FILE NUMBER: 30726

PROJECT: Napanee Water Pollution Control Plant REPORT DATE: May 3, 2021

TEST DATES: April 15, 2021 - April 25, 2021

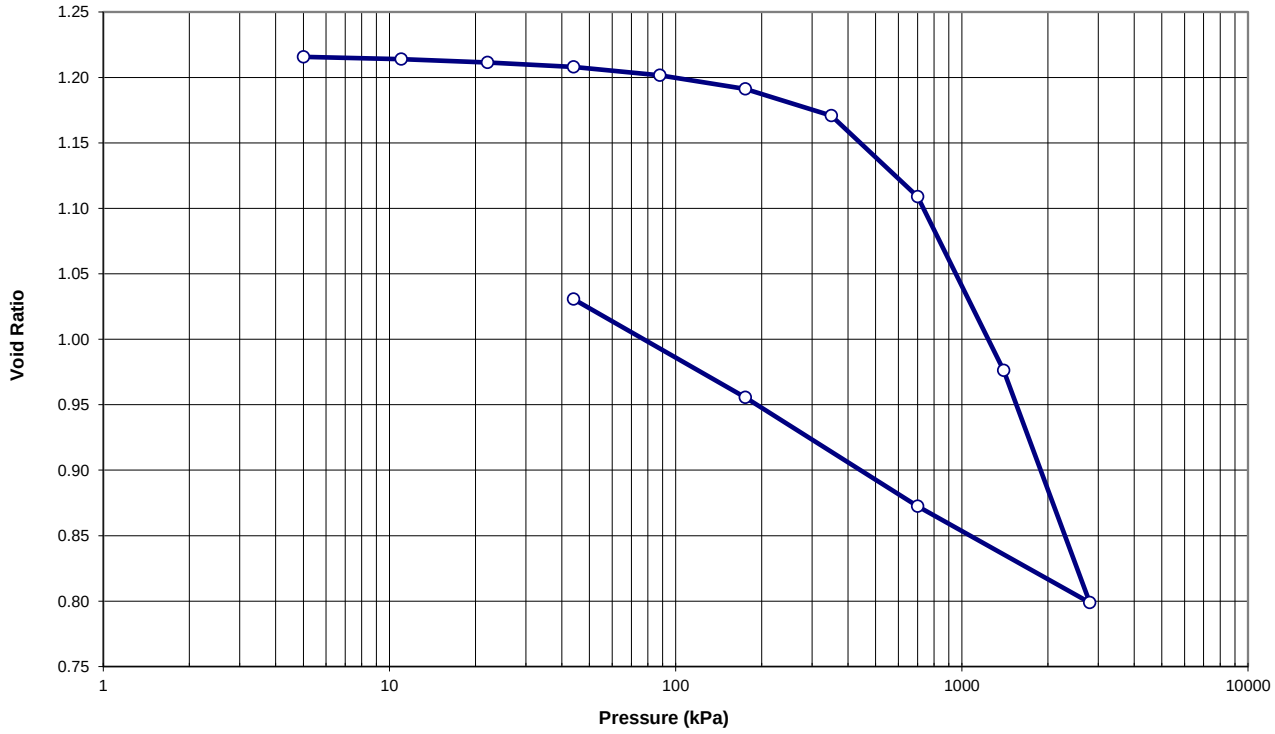
SAMPLE: BH19 ST1 15'-17'
Silty clay, grey, moist
LL = 72.0, PL = 26.1, I_p = 45.9

PROCEDURE: Test carried out in accordance with Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D 2435-11, method B.

	Start of Test	End of Test
Sample Height (mm)	25.40	23.22
Wet Dens. (kg/m^3)	1796.7	1875.4
Dry Dens. (kg/m^3)	1250.7	1368.0
Moisture Cont. (%)	43.7	37.1
Void Ratio	1.221	1.031
Saturation (%)	99.3	100.0

Note: A Specific Gravity (Gs) of 2.778 was obtained for the void ratio and saturation calculations.

Void Ratio vs. Pressure



TEST DONE BY: BT
REVIEWED BY: WM

THURBER ENGINEERING LTD.

Consolidation Test Report

Napanee Water Pollution Control Plant
30726 BH19 ST1 15'-17'

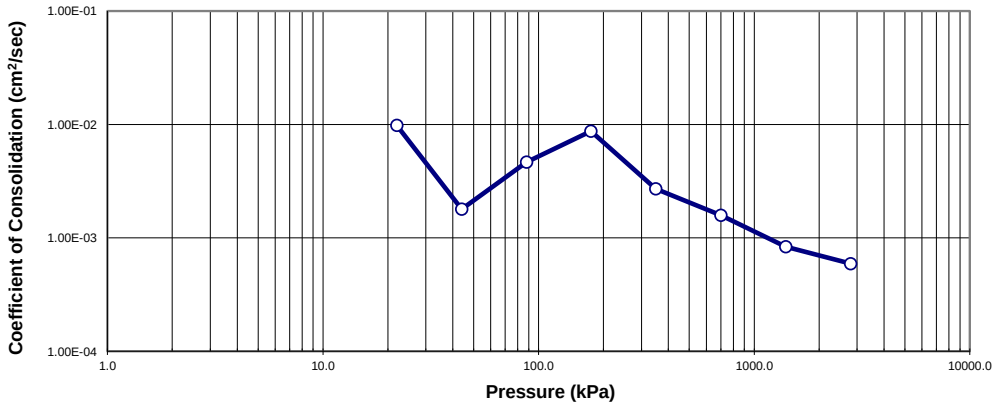
TRIMMING: The Specimen was manually trimmed to the size of consolidation ring, then mounted in a fixed ring consolidometer. The average moisture content of the trimmings was 43.9%.

LOADING: A seating load of 5 kPa was applied and the consolidometer was flooded with distilled water. Sample was monitored to ensure no swelling effect occurred before the start of the test. Subsequent loads were applied after 100% primary consolidation was reached at each load increment.

CALCULATIONS: Coefficients of Consolidation were calculated by the square root time method.

Pressure (kPa)	Corr. H. (mm)	Avg. H. (mm)	D_{90} (mm)	t_{90} (min)	c_v (cm^2/s)	Void Ratio	m_v (m^2/kN)	k (cm/s)
0.0	25.400					1.221		
5.0	25.340	25.370				1.216	4.76E-04	
11.0	25.319	25.329				1.214	1.35E-04	
22.0	25.291	25.305	-0.023	2.31	9.79E-03	1.211	9.95E-05	9.56E-08
44.0	25.251	25.271	-0.033	12.60	1.79E-03	1.208	7.17E-05	1.26E-08
88.0	25.179	25.215	-0.053	4.84	4.64E-03	1.202	6.53E-05	2.97E-08
175.0	25.060	25.119	-0.093	2.56	8.71E-03	1.191	5.42E-05	4.63E-08
350.0	24.826	24.943	-0.187	8.12	2.71E-03	1.171	5.35E-05	1.42E-08
700.0	24.118	24.472	-0.430	13.40	1.58E-03	1.109	8.14E-05	1.26E-08
1400.0	22.600	23.359	-0.980	23.04	8.37E-04	0.976	8.99E-05	7.38E-09
2800.0	20.572	21.586	-1.400	27.77	5.93E-04	0.799	6.41E-05	3.73E-09
700.0	21.413	20.993				0.872		
175.0	22.364	21.888				0.956		
44.0	23.223	22.793				1.031		

Coefficient of Consoildation vs. Pressure



Note: C_v and k calculated using t_{90} values (square root of time method)

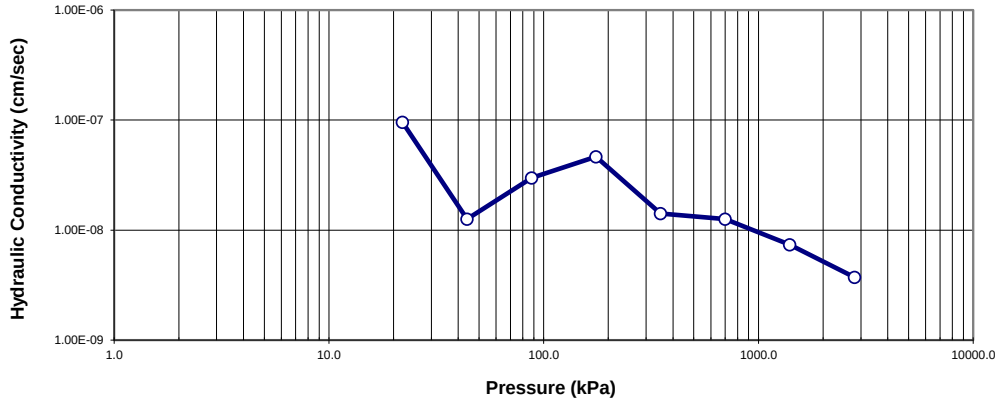
TEST DONE BY: BT
REVIEWED BY: WM

THURBER ENGINEERING LTD.

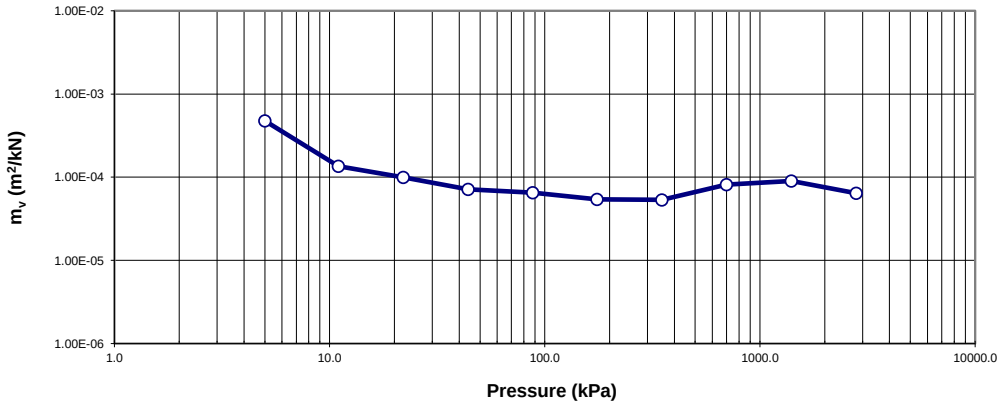
Consolidation Test Report

Napanee Water Pollution Control Plant
30726 BH19 ST1 15'-17'

Hydraulic Conductivity vs. Pressure



m_v vs. Pressure



TEST DONE BY: BT
REVIEWED BY: WM

THURBER ENGINEERING LTD.

Consolidation Test Report

CLIENT: R.V. Anderson Associates Ltd. FILE NUMBER: 30726

PROJECT: Napanee Water Pollution Control Plant REPORT DATE: May 4, 2021

TEST DATES: April 15, 2021 - April 27, 2021

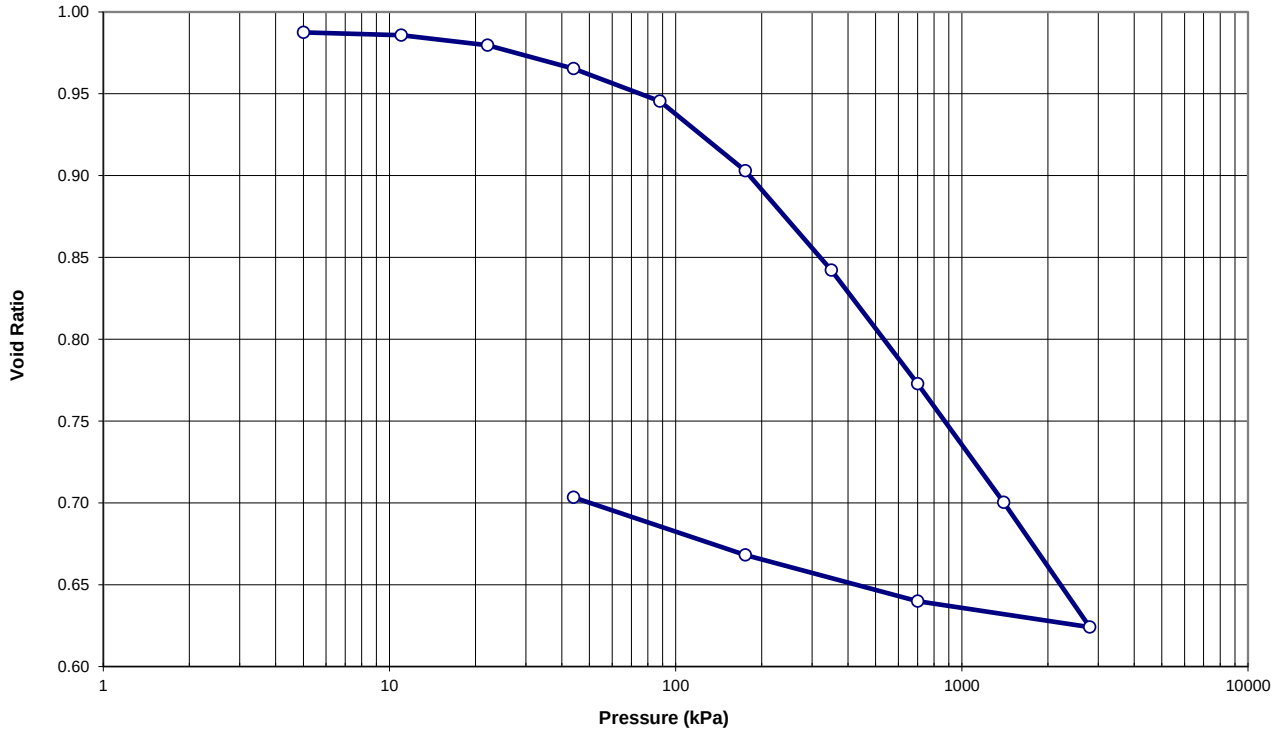
SAMPLE: BH22 ST1 10'-12'
Silty clay, grey, moist
LL = 37.4, PL = 18.0, I_p = 19.4

PROCEDURE: Test carried out in accordance with Standard Test Method for One-Dimensional Consolidation Properties of Soils, ASTM D 2435-11, method B.

	Start of Test	End of Test
Sample Height (mm)	25.40	21.74
Wet Dens. (kg/m^3)	1867.7	2045.3
Dry Dens. (kg/m^3)	1397.3	1632.3
Moisture Cont. (%)	33.7	25.3
Void Ratio	0.990	0.703
Saturation (%)	94.6	100.0

Note: A Specific Gravity (Gs) of 2.781 was obtained for the void ratio and saturation calculations.

Void Ratio vs. Pressure



TEST DONE BY: BT
REVIEWED BY: WM

THURBER ENGINEERING LTD.

Consolidation Test Report

Napanee Water Pollution Control Plant
30726 BH22 ST1 10'-12'

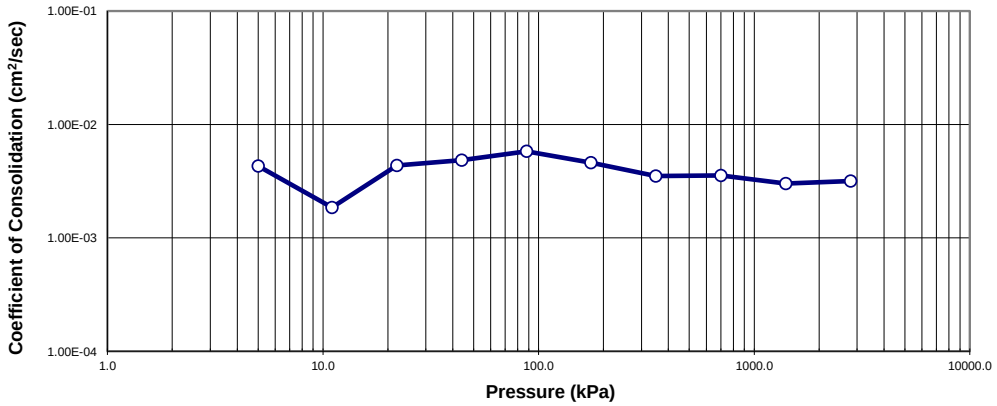
TRIMMING: The Specimen was manually trimmed to the size of consolidation ring, then mounted in a fixed ring consolidometer. The average moisture content of the trimmings was 34.6%.

LOADING: A seating load of 5 kPa was applied and the consolidometer was flooded with distilled water. Sample was monitored to ensure no swelling effect occurred before the start of the test. Subsequent loads were applied after 100% primary consolidation was reached at each load increment.

CALCULATIONS: Coefficients of Consolidation were calculated by the square root time method.

Pressure (kPa)	Corr. H. (mm)	Avg. H. (mm)	D_{90} (mm)	t_{90} (min)	c_v (cm^2/s)	Void Ratio	m_v (m^2/kN)	k (cm/s)
0.0	25.400					0.990		
5.0	25.368	25.384	-0.023	5.29	4.30E-03	0.988	2.50E-04	1.06E-07
11.0	25.347	25.358	-0.051	12.25	1.85E-03	0.986	1.41E-04	2.56E-08
22.0	25.267	25.307	-0.073	5.20	4.35E-03	0.980	2.85E-04	1.22E-07
44.0	25.086	25.177	-0.135	4.62	4.85E-03	0.965	3.26E-04	1.55E-07
88.0	24.832	24.959	-0.210	3.80	5.79E-03	0.945	2.30E-04	1.31E-07
175.0	24.289	24.560	-0.365	4.62	4.61E-03	0.903	2.51E-04	1.14E-07
350.0	23.514	23.902	-0.535	5.76	3.50E-03	0.842	1.82E-04	6.26E-08
700.0	22.629	23.072	-0.605	5.29	3.56E-03	0.773	1.08E-04	3.75E-08
1400.0	21.703	22.166	-0.660	5.76	3.01E-03	0.700	5.85E-05	1.73E-08
2800.0	20.730	21.216	-0.740	5.02	3.17E-03	0.624	3.20E-05	9.95E-09
700.0	20.933	20.832				0.640		
175.0	21.292	21.113				0.668		
44.0	21.743	21.518				0.703		

Coefficient of Consoildation vs. Pressure



Note: C_v and k calculated using t_{90} values (square root of time method)

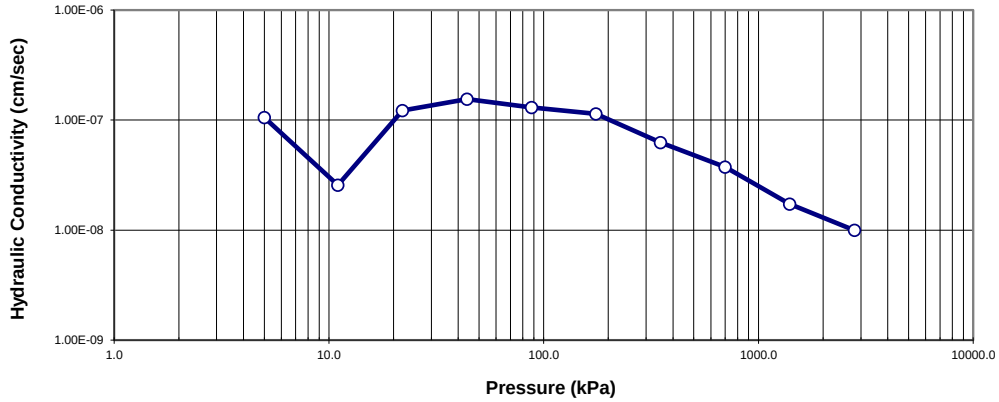
TEST DONE BY: BT
REVIEWED BY: WM

THURBER ENGINEERING LTD.

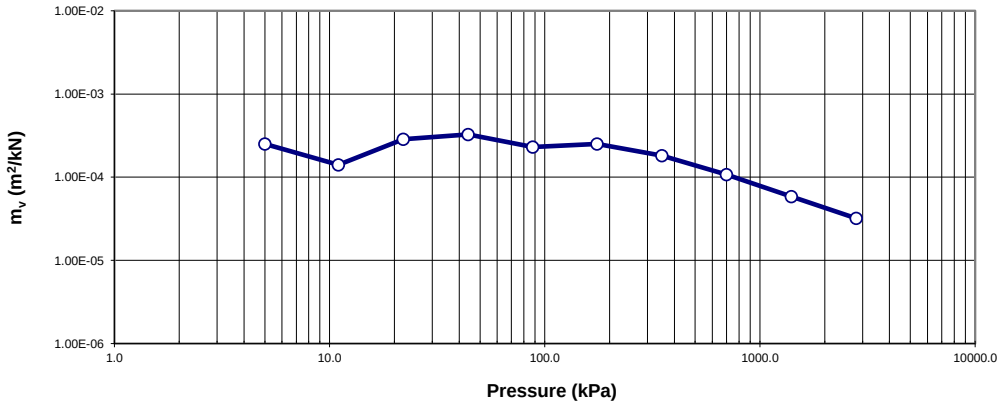
Consolidation Test Report

Napanee Water Pollution Control Plant
30726 BH22 ST1 10'-12'

Hydraulic Conductivity vs. Pressure



m_v vs. Pressure



TEST DONE BY: BT
REVIEWED BY: WM

THURBER

Appendix D

Geotechnical Laboratory Rock Test Results

THURBER ENGINEERING LTD.

POINT LOAD TEST SHEET
ASTM D5731-16

Job No:	30726	**Date Drilled:**	23-Feb-21
Client:	R.V. Anderson Associates	**Date Tested:**	16-Mar-21
Project Name:	Napanee Water Pollution Control Plant	**Tester:**	RB, MC
Core Size:	NQ **BH No :** BH-01	**Reviewed by:**	

Test No.	Run No.	Depth (m)	Axial or Diametral	Gauge (MPa)	Diameter (mm)	Length (mm)	$I_{s(50)}$ (MPa)	UCS (MPa)	Rock Type	Rock Strength (after Hoek & Brown, 1997)
2	1	7.1	Axial	13.3	47.3	46.4	4.6	111.1	mestone and Sha	Very Strong
3	1	8.5	Diametrial	11.4	47.4	71.4	2.8	67.9	mestone and Sha	Strong
4	1	8.6	Axial	5.8	47.4	49.2	1.9	46.0	Limestone	Medium Strong
5	2	9.1	Axial	15.9	47.2	44.2	5.8	138.2	Limestone	Very Strong
6	2	9.2	Axial	13.3	47.3	46.4	4.6	111.1	Limestone	Very Strong
7	2	9.6	Axial	13.3	47.3	47.7	4.5	108.3	Limestone	Very Strong
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* It is ideal to perform axial test on core specimens with D/L ratio of 1.1 ± 0.1
Long pieces of core can be tested diametrically to produce suitable lengths for axial testing

* Diametral Test should have 0.7 x D on either side of test point.

* Correlation factor to obtain UCS values is 24.

Last Modified: October 28, 2020

THURBER ENGINEERING LTD.

POINT LOAD TEST SHEET
ASTM D5731-16

Job No:	30726	**Date Drilled:**	23-Feb-21
Client:	R.V. Anderson Associates	**Date Tested:**	16-Mar-21
Project Name:	Napanee Water Pollution Control Plant	**Tester:**	RB, MC
Core Size:	NQ **BH No :** BH-02	**Reviewed by:**	

Test No.	Run No.	Depth (m)	Axial or Diametral	Gauge (MPa)	Diameter (mm)	Length (mm)	$I_{s(50)}$ (MPa)	UCS (MPa)	Rock Type	Rock Strength (after Hoek & Brown, 1997)
2	1	6.4	Diametrial	8.5	47.6	69.0	2.2	52.2	mestone and Sha	Strong
3	1	6.2	Axial	18.9	47.5	46.9	6.5	156.2	mestone and Sha	Very Strong
4	1	6.8	Axial	17.1	47.4	51.4	5.5	131.5	mestone and Sha	Very Strong
5	2	7.4	Axial	11.8	47.4	51.0	3.8	91.4	Limestone	Strong
6	2	8.2	Axial	7.8	47.3	45.7	2.7	65.9	mestone and Sha	Strong
7	2	8.7	Axial	12.7	47.4	44.5	4.6	109.8	mestone and Sha	Very Strong
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* It is ideal to perform axial test on core specimens with D/L ratio of 1.1 ± 0.1
Long pieces of core can be tested diametrically to produce suitable lengths for axial testing

* Diametral Test should have 0.7 x D on either side of test point.

* Correlation factor to obtain UCS values is 24.

Last Modified: October 28, 2020

THURBER ENGINEERING LTD.

POINT LOAD TEST SHEET
ASTM D5731-16

Job No:	30726	**Date Drilled:**	23-Feb-21
Client:	R.V. Anderson Associates	**Date Tested:**	16-Mar-21
Project Name:	Napanee Water Pollution Control Plant	**Tester:**	RB, MC
Core Size:	NQ **BH No :** BH-02	**Reviewed by:**	

Test No.	Run No.	Depth (m)	Axial or Diametral	Gauge (MPa)	Diameter (mm)	Length (mm)	$I_{s(50)}$ (MPa)	UCS (MPa)	Rock Type	Rock Strength (after Hoek & Brown, 1997)
2	1	7.2	Diametrial	13.3	47.1	67.1	3.5	83.7	mestone and Sha	Strong
3	1	7.9	Axial	23.8	47.1	54.0	7.4	177.2	Limestone	Very Strong
4	1	8.7	Axial	23.8	47.2	43.6	8.7	208.9	mestone and Sha	Very Strong
5	2	8.9	Axial	10.7	47.3	44.5	3.9	92.6	mestone and Sha	Strong
6	2	9.3	Axial	14.4	47.3	43.4	5.3	126.8	mestone and Sha	Very Strong
7	2	10.2	Axial	11.8	47.4	49.4	3.9	93.8	mestone and Sha	Strong
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* It is ideal to perform axial test on core specimens with D/L ratio of 1.1 ± 0.1
Long pieces of core can be tested diametrically to produce suitable lengths for axial testing

* Diametral Test should have 0.7 x D on either side of test point.

* Correlation factor to obtain UCS values is 24.

Last Modified: October 28, 2020

THURBER ENGINEERING LTD.

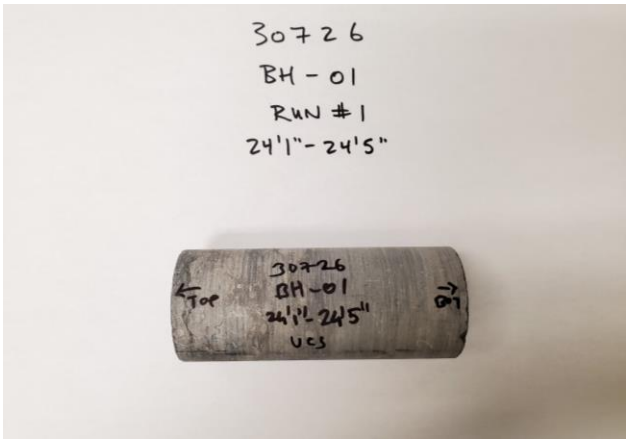
UNCONFINED COMPRESSION TEST REPORT

ASTM D7012-14

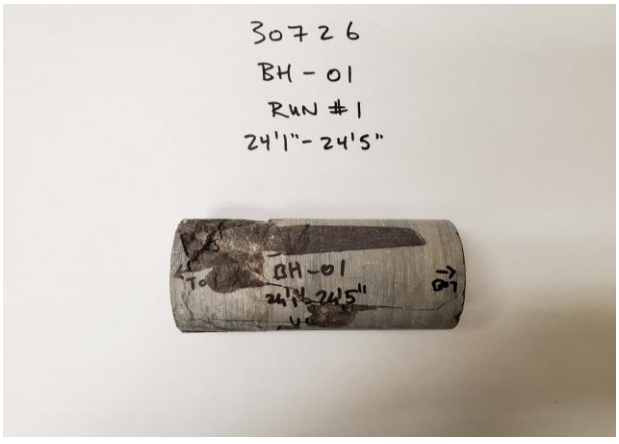
CLIENT:	R.V. Anderson Associates	FILE NUMBER:	30726
PROJECT NAME:	Napanee Water Pollution Control Plant	REPORT DATE:	28-Jun-21
BOREHOLE No.:	BH-01	TEST DATE:	28-Jun-21
SAMPLE No.:	NQ Run 1		
SAMPLE DEPTH:	24'1" - 24'5"		
DESCRIPTION:	Limestone		

Avg. Height (cm):	10.5	Weight (g):	499.1
Avg. Diameter (cm):	4.7	Wet Density (kg/m^3):	2,685
H. to Dia. Ratio**:	2.2:1	Dry Density (kg/m^3):	2,685
Cross Sectional Area (cm^2):	17.62	Moisture Content* (%):	N/A
Sample Volume (cm^3):	185.91		

ORIGINAL SPECIMEN



FRACTURED SPECIMEN



AVERAGE LOADING RATE TO FAILURE:	0.250	MPa/s
MAXIMUM COMPRESSIVE LOAD:	200.0	kN
UNCONFINED COMPRESSIVE STRENGTH:	113.5	MPa

Note: * Dimensions of Specimen conform to ASTM D 4543-04.

TEST DONE BY: BT
REVIEWED BY: WM

THURBER ENGINEERING LTD.

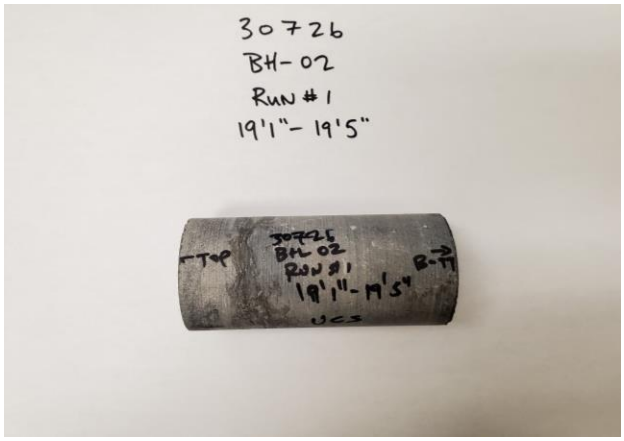
UNCONFINED COMPRESSION TEST REPORT

ASTM D7012-14

CLIENT:	R.V. Anderson Associates	FILE NUMBER:	30726
PROJECT NAME:	Napanee Water Pollution Control Plant	REPORT DATE:	28-Jun-21
BOREHOLE No.:	BH-02	TEST DATE:	28-Jun-21
SAMPLE No.:	NQ Run 1		
SAMPLE DEPTH:	19'1" - 19'5"		
DESCRIPTION:	Limestone		

Avg. Height (cm):	9.8	Weight (g):	465.2
Avg. Diameter (cm):	4.7	Wet Density (kg/m^3):	2,698
H. to Dia. Ratio**:	2.1:1	Dry Density (kg/m^3):	2,698
Cross Sectional Area (cm^2):	17.58	Moisture Content* (%):	N/A
Sample Volume (cm^3):	172.45		

ORIGINAL SPECIMEN



FRACTURED SPECIMEN

AVERAGE LOADING RATE TO FAILURE:	0.250	MPa/s
MAXIMUM COMPRESSIVE LOAD:	186.2	kN
UNCONFINED COMPRESSIVE STRENGTH:	105.9	MPa

Note: * Dimensions of Specimen conform to ASTM D 4543-04.

TEST DONE BY: BT
REVIEWED BY: WM

THURBER ENGINEERING LTD.

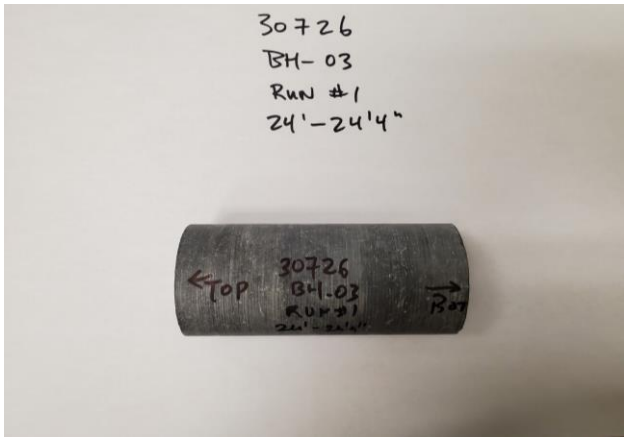
UNCONFINED COMPRESSION TEST REPORT

ASTM D7012-14

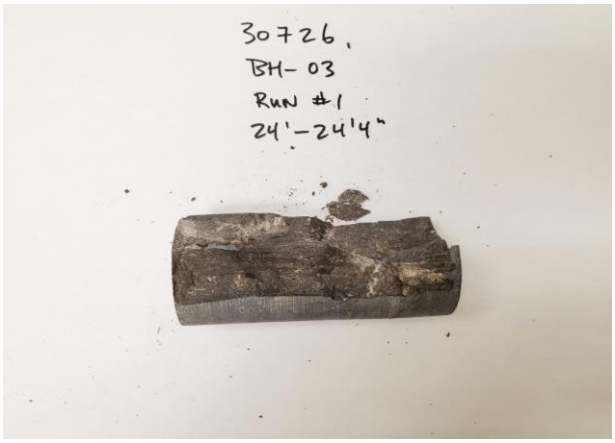
CLIENT:	R.V. Anderson Associates	FILE NUMBER:	30726
PROJECT NAME:	Napanee Water Pollution Control Plant	REPORT DATE:	28-Jun-21
BOREHOLE No.:	BH-03	TEST DATE:	28-Jun-21
SAMPLE No.:	NQ Run 1		
SAMPLE DEPTH:	24'0" - 24'4"		
DESCRIPTION:	Limestone		

Avg. Height (cm):	10.3	Weight (g):	488.8
Avg. Diameter (cm):	4.7	Wet Density (kg/m^3):	2,693
H. to Dia. Ratio**:	2.2:1	Dry Density (kg/m^3):	2,693
Cross Sectional Area (cm^2):	17.57	Moisture Content* (%):	N/A
Sample Volume (cm^3):	181.51		

ORIGINAL SPECIMEN



FRACTURED SPECIMEN



AVERAGE LOADING RATE TO FAILURE:	0.250	MPa/s
MAXIMUM COMPRESSIVE LOAD:	229.5	kN
UNCONFINED COMPRESSIVE STRENGTH:	130.6	MPa

Note: * Dimensions of Specimen conform to ASTM D 4543-04.

TEST DONE BY: BT
REVIEWED BY: WM

THURBER

Appendix E

Bedrock Core Photographs

Napanee Water Pollution Control Plant
Photographs of Rock Core

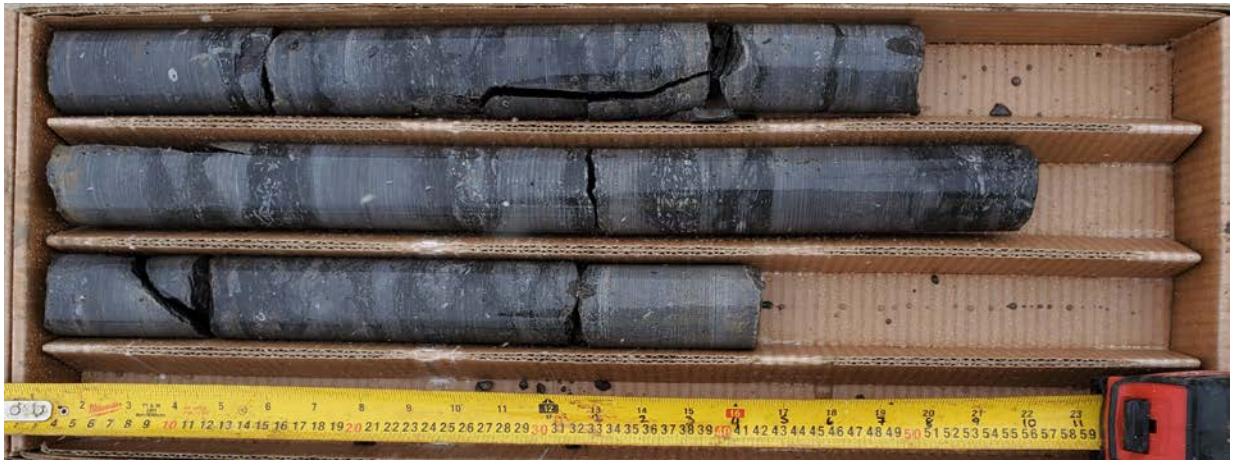
Borehole BH-01 – Run 1 – 7.06-8.59 m

Borehole BH-01 – Run 2 – 8.59-10.19m

Napanee Water Pollution Control Plant
Photographs of Rock Core

Borehole BH-02 – Run 1 – 5.69-7.39 m

Borehole BH-02 – Run 2 – 7.39-8.84 m



Napanee Water Pollution Control Plant
Photographs of Rock Core

Borehole BH-03 – Run 1 – 7.21-8.74 m

Borehole BH-03 – Run 2 – 8.74-10.26 m

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Appendix F

Soil Aggressiveness

Napanee Water Pollution Control Plant Expansion

Table F1 – Summary of Corrosivity Test Results

Sample ID	Depth (m)	Description	Chloride (µg/g)	Sulphate (µg/g)	pH	Conductivity (mS/cm)	Resistivity (ohm.cm)	Redox Potential (mV)	Acid Volatile Sulphides (mg/kg)
BH 01 SS2 CORR	0.8 – 1.4	Silty Clay Fill	12.4	88	7.78	0.393	2540	241	0.81
BH 03 SS2 CORR	0.8 1.4	Silty Clay	43.3	33	7.63	0.261	3830	260	0.36
BH 05 SS3 CORR	1.5 – 2.1	Silty Clay	30.7	26	7.70	0.208	4810	263	<0.20
BH 08 SS1 CORR	0 – 0.6	Silty Clay	7.0	<20	6.98	0.229	4370	286	<0.20
BH 19 SS1 CORR	0 – 0.6	Silty Clay Fill	14.7	147	7.64	0.319	3130	290	0.22
BH 25 SS3 CORR	1.5- 2.1	Granular Fill	114	45	10.04	0.603	1660	108	0.38
BH 26 SS3 CORR	1.5 – 2.1	Clayey Silt Fill	422	55	7.75	0.889	1120	245	0.20

Thurber Engineering Ltd. (Oakville)
ATTN: Rachel Bourssa
2010 Winston Park Drive
Unit 103
Oakville ON L6H 5R7

Date Received: 05-MAR-21
Report Date: 17-MAR-21 15:44 (MT)
Version: FINAL

Client Phone: 905-829-8666

Certificate of Analysis

Lab Work Order #: L2564163

Project P.O. #: NOT SUBMITTED
Job Reference: 30726
C of C Numbers:
Legal Site Desc:

Amanda Overholster
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2564163-1 BH 03 SS2 CORR Sampled By: CLIENT on 23-FEB-21 @ 15:00 Matrix: SOIL							
Physical Tests							
Conductivity	0.261		0.0040	mS/cm		16-MAR-21	R5401922
% Moisture	23.4		0.25	%	11-MAR-21	11-MAR-21	R5399499
pH	7.63		0.10	pH units		15-MAR-21	R5401396
Redox Potential	260		-1000	mV		15-MAR-21	R5401275
Resistivity	3830		1.0	ohm*cm		16-MAR-21	
Leachable Anions & Nutrients							
Chloride	43.3		5.0	ug/g	12-MAR-21	13-MAR-21	R5402621
Anions and Nutrients							
Sulphate	33		20	mg/kg	09-MAR-21	09-MAR-21	R5398993
Inorganic Parameters							
Acid Volatile Sulphides	0.36		0.20	mg/kg	09-MAR-21	09-MAR-21	R5398510
L2564163-2 BH 05 SS3 CORR Sampled By: CLIENT on 23-FEB-21 @ 15:00 Matrix: SOIL							
Physical Tests							
Conductivity	0.208		0.0040	mS/cm		16-MAR-21	R5401922
% Moisture	23.1		0.25	%	11-MAR-21	11-MAR-21	R5399499
pH	7.70		0.10	pH units		15-MAR-21	R5401396
Redox Potential	263		-1000	mV		15-MAR-21	R5401275
Resistivity	4810		1.0	ohm*cm		16-MAR-21	
Leachable Anions & Nutrients							
Chloride	30.7		5.0	ug/g	12-MAR-21	13-MAR-21	R5402621
Anions and Nutrients							
Sulphate	26		20	mg/kg	09-MAR-21	09-MAR-21	R5398993
Inorganic Parameters							
Acid Volatile Sulphides	<0.20		0.20	mg/kg	09-MAR-21	09-MAR-21	R5398510
L2564163-3 BH 08 SS1 CORR Sampled By: CLIENT on 26-FEB-21 @ 16:00 Matrix: SOIL							
Physical Tests							
Conductivity	0.229		0.0040	mS/cm		16-MAR-21	R5401922
% Moisture	19.2		0.25	%	11-MAR-21	11-MAR-21	R5399499
pH	6.98		0.10	pH units		15-MAR-21	R5401396
Redox Potential	286		-1000	mV		15-MAR-21	R5401275
Resistivity	4370		1.0	ohm*cm		16-MAR-21	
Leachable Anions & Nutrients							
Chloride	7.0		5.0	ug/g	12-MAR-21	13-MAR-21	R5402621
Anions and Nutrients							
Sulphate	<20		20	mg/kg	09-MAR-21	09-MAR-21	R5398993
Inorganic Parameters							
Acid Volatile Sulphides	<0.20		0.20	mg/kg	10-MAR-21	10-MAR-21	R5399173
L2564163-4 BH 19 SS1 CORR Sampled By: CLIENT on 02-MAR-21 @ 09:00 Matrix: SOIL							

* 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
L2564163-4 BH 19 SS1 CORR Sampled By: CLIENT on 02-MAR-21 @ 09:00 Matrix: SOIL							
Physical Tests							
Conductivity	0.319		0.0040	mS/cm		16-MAR-21	R5401922
% Moisture	14.5		0.25	%	11-MAR-21	11-MAR-21	R5399499
pH	7.64		0.10	pH units		15-MAR-21	R5401396
Redox Potential	290		-1000	mV		15-MAR-21	R5401275
Resistivity	3130		1.0	ohm*cm		16-MAR-21	
Leachable Anions & Nutrients							
Chloride	14.7		5.0	ug/g	12-MAR-21	13-MAR-21	R5402621
Anions and Nutrients							
Sulphate	147		20	mg/kg	09-MAR-21	09-MAR-21	R5398993
Inorganic Parameters							
Acid Volatile Sulphides	0.22		0.20	mg/kg	11-MAR-21	11-MAR-21	R5399796
L2564163-5 BH 25 SS3 CORR Sampled By: CLIENT on 01-MAR-21 @ 17:00 Matrix: SOIL							
Physical Tests							
Conductivity	0.603		0.0040	mS/cm		16-MAR-21	R5401922
% Moisture	11.6		0.25	%	11-MAR-21	11-MAR-21	R5399499
pH	10.04		0.10	pH units		15-MAR-21	R5401396
Redox Potential	108		-1000	mV		15-MAR-21	R5401276
Resistivity	1660		1.0	ohm*cm		16-MAR-21	
Leachable Anions & Nutrients							
Chloride	114		5.0	ug/g	12-MAR-21	13-MAR-21	R5402621
Anions and Nutrients							
Sulphate	45		20	mg/kg	09-MAR-21	09-MAR-21	R5398993
Inorganic Parameters							
Acid Volatile Sulphides	0.38		0.20	mg/kg	11-MAR-21	11-MAR-21	R5399796
L2564163-6 BH 26 SS3 CORR Sampled By: CLIENT on 01-MAR-21 @ 13:00 Matrix: SOIL							
Physical Tests							
Conductivity	0.889		0.0040	mS/cm		16-MAR-21	R5401922
% Moisture	15.8		0.25	%	11-MAR-21	11-MAR-21	R5399499
pH	7.75		0.10	pH units		15-MAR-21	R5401396
Redox Potential	245		-1000	mV		15-MAR-21	R5401276
Resistivity	1120		1.0	ohm*cm		16-MAR-21	
Leachable Anions & Nutrients							
Chloride	422		5.0	ug/g	12-MAR-21	13-MAR-21	R5402621
Anions and Nutrients							
Sulphate	55		20	mg/kg	09-MAR-21	09-MAR-21	R5398993
Inorganic Parameters							
Acid Volatile Sulphides	0.20		0.20	mg/kg	11-MAR-21	11-MAR-21	R5399796
L2564163-7 BH 01 SS2 CORR Sampled By: CLIENT on 22-FEB-21 @ 08:00 Matrix: SOIL							

* 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
L2564163-7 BH 01 SS2 CORR Sampled By: CLIENT on 22-FEB-21 @ 08:00 Matrix: SOIL							
Physical Tests							
Conductivity	0.393		0.0040	mS/cm		16-MAR-21	R5401922
% Moisture	14.8		0.25	%	11-MAR-21	11-MAR-21	R5399499
pH	7.78		0.10	pH units		15-MAR-21	R5401396
Redox Potential	241		-1000	mV		15-MAR-21	R5401276
Resistivity	2540		1.0	ohm*cm		16-MAR-21	
Leachable Anions & Nutrients							
Chloride	12.4		5.0	ug/g	12-MAR-21	13-MAR-21	R5402621
Anions and Nutrients							
Sulphate	88		20	mg/kg	09-MAR-21	09-MAR-21	R5398993
Inorganic Parameters							
Acid Volatile Sulphides	0.81		0.20	mg/kg	08-MAR-21	08-MAR-21	R5397981

* 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).

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

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-R511-WT	**Soil**							
Batch R5402621								
WG3501458-3 CRM		**AN-CRM-WT**						
Chloride			110.1		%		70-130	13-MAR-21
WG3501458-4 DUP		**L2563776-5**						
Chloride		158	157		ug/g	0.2	30	13-MAR-21
WG3501458-2 LCS								
Chloride			99.6		%		80-120	13-MAR-21
WG3501458-1 MB								
Chloride			<5.0		ug/g		5	13-MAR-21
EC-WT	**Soil**							
Batch R5401922								
WG3502008-4 DUP		**WG3502008-3**						
Conductivity		0.170	0.180		mS/cm	5.7	20	16-MAR-21
WG3502008-2 IRM		**WT SAR4**						
Conductivity			104.2		%		70-130	16-MAR-21
WG3503074-1 LCS								
Conductivity			97.8		%		90-110	16-MAR-21
WG3502008-1 MB								
Conductivity			<0.0040		mS/cm		0.004	16-MAR-21
MOISTURE-WT	**Soil**							
Batch R5399499								
WG3500313-3 DUP		**L2564016-20**						
% Moisture		19.9	19.6		%	1.3	20	11-MAR-21
WG3500313-2 LCS								
% Moisture			100.2		%		90-110	11-MAR-21
WG3500313-1 MB								
% Moisture			<0.25		%		0.25	11-MAR-21
PH-WT	**Soil**							
Batch R5401396								
WG3500317-1 DUP		**L2564016-21**						
pH		7.98	7.94	J	pH units	0.04	0.3	15-MAR-21
WG3502480-1 LCS								
pH			7.02		pH units		6.9-7.1	15-MAR-21
REDOX-POTENTIAL-WT	**Soil**							
Batch R5401275								
WG3502204-1 CRM		**WT-REDOX**						
Redox Potential			102.7		%		80-120	15-MAR-21
WG3499681-2 DUP		**L2563836-1**						

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
REDOX-POTENTIAL-WT	**Soil**							
Batch R5401275								
WG3499681-2 DUP		**L2563836-1**						
Redox Potential		305	279		mV	8.9	25	15-MAR-21
Batch R5401276								
WG3502206-1 CRM		**WT-REDOX**						
Redox Potential			105.5		%		80-120	15-MAR-21
WG3500936-1 DUP		**L2563776-5**						
Redox Potential		257	237		mV	8.1	25	15-MAR-21
SO4-WT	**Soil**							
Batch R5398993								
WG3498947-4 CRM		**AN-CRM-WT**						
Sulphate			126.4		%		60-140	09-MAR-21
WG3498947-3 DUP		**L2564163-1**						
Sulphate		33	34		mg/kg	2.9	30	09-MAR-21
WG3498947-2 LCS								
Sulphate			101.4		%		80-120	09-MAR-21
WG3498947-1 MB								
Sulphate			<20		mg/kg		20	09-MAR-21
SULPHIDE-WT	**Soil**							
Batch R5397981								
WG3498428-3 DUP		**L2563017-1**						
Acid Volatile Sulphides		<0.20	<0.20	RPD-NA	mg/kg	N/A	45	08-MAR-21
WG3498428-2 LCS								
Acid Volatile Sulphides			103.8		%		70-130	08-MAR-21
WG3498428-1 MB								
Acid Volatile Sulphides			<0.20		mg/kg		0.2	08-MAR-21
Batch R5398510								
WG3499108-3 DUP		**L2563254-12**						
Acid Volatile Sulphides		0.50	0.55		mg/kg	8.6	45	09-MAR-21
WG3499108-2 LCS								
Acid Volatile Sulphides			109.6		%		70-130	09-MAR-21
WG3499108-1 MB								
Acid Volatile Sulphides			<0.20		mg/kg		0.2	09-MAR-21
Batch R5399173								
WG3499762-3 DUP		**L2563776-1**						
Acid Volatile Sulphides		6.9	7.2		mg/kg	4.3	45	10-MAR-21
WG3499762-2 LCS								

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SULPHIDE-WT	**Soil**							
Batch R5399173								
WG3499762-2 LCS								
Acid Volatile Sulphides			85.6		%		70-130	10-MAR-21
WG3499762-1 MB								
Acid Volatile Sulphides			<0.20		mg/kg		0.2	10-MAR-21
Batch R5399796								
WG3500439-3 DUP		**L2564163-4**						
Acid Volatile Sulphides		0.22	0.23		mg/kg	5.2	45	11-MAR-21
WG3500439-2 LCS								
Acid Volatile Sulphides			94.2		%		70-130	11-MAR-21
WG3500439-1 MB								
Acid Volatile Sulphides			<0.20		mg/kg		0.2	11-MAR-21

Quality Control Report

Workorder: L2564163 Report Date: 17-MAR-21

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

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

L2564163-COFC

COC Number: 20 -

Page 1 of 1

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Report To	Contact and company name below will appear on the final report
Company:	Thurber Engineering Ltd.
Contact:	Rachel Bourassa
Phone:	~~905 829 8866~~ 416 523 1015
	Company address below will appear on the final report
Street:	2010 Winston Park Drive, Suite 103
City/Province:	Oakville, Ontario
Postal Code:	L6H 5R7
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Thurber Engineering Ltd.
Contact:	

Project Information

ALS Account # / Quote #:	25053 / 84199
Job #:	30726
PO / AFE:	
LSD:	

ALS Lab Work Order # (lab use only): L2564163

Reports / Recipients

Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☑ YES ☐ NO ☐ N/A
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	rbourassa@thurber.ca
Email 2	
Email 3	

Invoice Recipients

Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	accountingON@thurber.ca
Email 2	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Contact: Amanda Overholster **Sampler:**

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush resuests on weekends, statutory holidays and non-routine tests

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

For tests that can not be performed according to the TAT requested, you will be contacted.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Analysis Request

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	O. Reg. 153/04 Metals & Inorganics	O. Reg. 153/04 BTEX/PHC F1-F4	O. Reg. 153/04 VOCs	Corrosivity	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	BH 03 SS2 Corr	23 Feb 21	3:00	Soil	1				✓			
	BH 05 SS3 Corr	23-Feb-21	3:00	"	1				✓			
	BH 08 SS1 Corr	26-Feb-21	4:00	"	1				✓			
	BH 19 SS1 Corr	02-Mar-21	9:00	"	1				✓			
	BH 25 SS3 Corr	01-Mar-21	5:00	"	1				✓			
	BH 26 SS3 Corr	01-Mar-21	1:00	"	1				✓			
	BH 01 SS2 Corr	[redacted]	8:00	"	1				✓			
		22-Feb-21		[redacted]								

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

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

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

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

SAMPLE RECEIPT DETAILS (lab use only)

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

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				8.5			

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
Rachel Bourassa	March 5 /2021	

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
	M 5/21	16:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 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**.

THURBER

Appendix G

Soil and Groundwater Environmental Quality

Table G1
Summary of Soil Analytical Testing

BH Number	Sample ID	Sample Depth		Soil Description	Metals & Inorganics	PHCs	BTEX	VOCs	SPLP
		From (m)	To (m)						
BH-01	BH-01 SS1 (0'-2')	0.0	0.6	Silty Clay Fill	x	x	x		
BH-01	BH01 SPLP	NA	NA	Composite					x
BH-02	BH-02 SS5 (10'-12')	3.0	3.7	Silty Clay	x	x	x	x	
BH-03	BH-03 SS1 (0'-2')	0.0	0.6	Peat	x	x	x		
BH-04	BH-04 SS2 (2'6"-4'6")	0.8	1.4	Silty Clay	x	x	x	x	
BH-05	BH-05 SS8 (25'-27')	7.6	8.2	Clay Some Silt	x	x	x		
BH-05	BH05 SPLP	NA	NA	Composite					x
BH-06	BH-06 SS1 (0'-2')	0.0	0.6	Silty Clay Fill	x	x	x		
BH-06	BH-06 SS2 (2'6"-4'6")	0.8	1.4	Silty Clay			x	x	
BH-07	BH-07 SS6 (15'-17')	4.6	5.2	Silty Clay	x	x	x		
BH-08	BH-08 SS2 (2'6"-4'6")	0.8	1.4	Silt and Clay	x	x	x	x	
BH-08	BH08 SPLP	NA	NA	Composite					x
BH-10	BH-10 SS4 (7'6"-9'6")	2.3	2.9	Silty Clay	x	x	x	x	
BH-11	BH-11 SS1 (0'-2')	0.0	0.6	Clay	x	x	x		
BH-12	BH-12 SS3 (5'-7')	1.5	2.1	Sand some silt	x	x	x	x	
BH-12	BH12 SPLP	NA	NA	Composite					x
BH-13	BH-13 SS1 (0'-2')	0.0	0.6	Sand Fill	x	x	x		
BH-14	BH-14 SS2 (2'6"-4'6")	0.8	1.4	Clayey Silt	x	x	x	x	
BH-19	BH-19 SS4 (7'6" - 9'6")	2.3	2.9	Silt and Clay	x	x	x		
BH-20	BH-20 SS1 (0'-2')	0.0	0.6	Silty Clay	x	x	x		
BH-21	BH-21 SS3(5'-7')	1.5	2.1	Silty Clay	x	x	x	x	
BH-23	BH-23 SS1 (0'-2')	0.0	0.6	Clay Fill	x	x	x	x	
BH-24	BH-24 SS1 (0'-2')	0.0	0.6	Clay and Organics	x	x	x		
BH-25	BH-25 SS4 (7'6"-9'6")	2.3	2.9	Clay Some Silt	x	x	x	x	
BH-25	BH25	NA	NA	Composite					x
BH-26	BH-26 SS5 (10'-12')	3.0	3.7	Silt and Clay	x	x	x		

Table G2
Summary of O.Reg 153/04 Metals and Inorganics Results

				Client Sample ID	BH01 SS1 (0'-2')	BH02 SS5 (10-12)	BH03 SS1 (0'-2')	BH04 SS2 (2'6"-4'6")	BH 05 SS8 (25'-27')	BH06 SS1 (0'-2')	BH07 SS6 (15'-17')	BH08 SS2 (2'6"-4'6")	BH10 SS4 (7'6"-9'6")	BH11 SS1 (0'-2')	BH12 SS3 (5'-7')	BH13 SS1 (0'-2')
				Date Sampled	23-Feb-2021	22-Feb-2021	23-Feb-2021	24-Feb-2021	25-Feb-2021	24-Feb-2021	26-Feb-2021	26-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	2-Mar-2021
				Time Sampled	13:00	14:00	17:00	15:00	12:00	11:00	11:30	9:15	12:00	12:00	14:00	12:00
				ALS Sample ID	L2564179-1	L2564179-2	L2564179-3	L2564179-4	L2564179-5	L2564179-6	L2564179-8	L2564179-9	L2564179-10	L2564179-11	L2564179-12	L2564179-13
Parameter	Lowest Detection Limit	Units	MECP Table 1	MECP Table 2 ICC	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Physical Tests (Soil)																
Conductivity	0.004	mS/cm	0.57	1.4	0.215	0.3	0.416	0.15	0.266	0.262	0.235	0.136	0.18	0.198	0.126	0.46
% Moisture	0.25	%			19.8	24.2	39.6	25.1	25.5	26	24.7	14.6	22.9	11.5	5.81	8.29
pH	0.1	pH units	5-9 (5-11)	5-9 (5-11)	7.71	7.89	7.32	7.52	8.25	7.34	7.85	7.65	7.84	7.26	8.19	7.76
Cyanides (Soil)																
Cyanide, Weak Acid Diss	0.05	ug/g	0.051	0.051	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Saturated Paste Extractables (Soil)																
SAR	0.1	SAR	2.4	12	1.57	0.46	1.45	0.42	0.34	<0.10	0.56	0.36	0.61	<0.10	0.11	***6.77***
Calcium (Ca)	0.5	mg/L			16.8	39.8	44.1	18.9	15.1	41.1	23.3	17.8	16.6	32.9	20	10.4
Magnesium (Mg)	0.5	mg/L			4.25	8.2	6.91	3.54	20.6	3.65	4.27	3.01	4.38	3.87	2.02	0.64
Sodium (Na)	0.5	mg/L			27.8	12.2	39.1	7.56	8.77	1.33	11.2	6.3	10.9	1.22	1.91	83.2
Metals (Soil)																
Antimony (Sb)	1	ug/g	1.3	40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic (As)	1	ug/g	18	18	4	2.5	3	4.5	2.5	4.7	1.5	3.4	2	5.7	1.3	1.3
Barium (Ba)	1	ug/g	220	670	***359***	***280***	210	***275***	***275***	***264***	***246***	206	171	104	41.5	58.8
Beryllium (Be)	0.5	ug/g	2.5	8	1.09	0.86	0.58	0.88	0.7	0.77	0.5	0.78	0.67	<0.50	<0.50	<0.50
Boron (B), Hot Water Ext.	0.1	ug/g	36	2	<0.10	<0.10	0.56	0.19	0.29	0.24	<0.10	0.1	<0.10	0.31	0.11	<0.10
Boron (B)	5	ug/g	36	120	16.9	12.8	8.9	10.1	18.5	10.4	7.8	12.2	10.8	7.9	8.6	6.6
Cadmium (Cd)	0.5	ug/g	1.2	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	1	ug/g	70	160	54.7	45.7	30.6	50.6	42.7	43.4	27.9	41	33.9	23.2	13.2	15.5
Cobalt (Co)	1	ug/g	21	80	17.8	14.3	8.3	12.4	11	12.7	10	11.5	11	7.5	3.7	5.4
Copper (Cu)	1	ug/g	92	230	34.3	28.1	26.6	29.5	21.7	31	18.9	26.3	21.6	17	9.8	11.5
Lead (Pb)	1	ug/g	120	120	11.9	7.8	59.1	7.9	6.2	62.4	4.9	6.5	6.4	22.6	5.7	3.7
Mercury (Hg)	0.005	ug/g	0.27	3.9	0.0116	0.0072	0.089	0.0126	<0.0050	0.122	<0.0050	0.0138	0.0067	0.0739	0.0642	0.0067
Molybdenum (Mo)	1	ug/g	2	40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel (Ni)	1	ug/g	82	270	37.7	29.6	18.1	29.7	23.2	26.3	19.6	23.6	21.7	14.5	7.7	8.8
Selenium (Se)	1	ug/g	1.5	5.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	0.2	ug/g	0.5	40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	0.5	ug/g	1	3.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	1	ug/g	2.5	33	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	1	ug/g	86	86	78.2	66.1	39.7	69.2	61.6	58.4	42.1	65.2	51.7	37.4	22.4	28.7
Zinc (Zn)	5	ug/g	290	340	93.5	75	148	72.9	55.2	135	51.4	56.3	55.1	60.8	23.6	29.2
Speciated Metals (Soil)																
Chromium, Hexavalent	0.2	ug/g	0.66	8	0.37	0.27	0.48	***1.1***	<0.20	0.33	<0.20	0.34	0.26	0.29	<0.20	0.27

BOLD	Vaule exceeds the MECP Table 1 Site Condition Standards
BOLD	Vaule exceeds the MECP Table 2 I/C/C Site Condition Standards

Table G2
Summary of O.Reg 153/04 Metals and Inorganics Results

				Client Sample ID	BH14 SS2 (2'6"-4'6")	BH19 SS4 (7'6"-9'-6")	BH20 SS1 (0'-2')	BH21 SS3 (5'-7')	BH23 SS1 (0'-2')	BH24 SS1 (0'-2')	BH25 SS4 (7'6"-9'6")	BH26 SS5 (10'-12')
				Date Sampled	1-Mar-2021	2-Mar-2021	26-Feb-2021	2-Mar-2021	26-Feb-2021	25-Feb-2021	1-Mar-2021	1-Mar-2021
				Time Sampled	14:00	14:00	12:00	11:00	10:00	16:00	11:00	15:30
				ALS Sample ID	L2564179-14	L2564179-15	L2564179-16	L2564179-17	L2564179-18	L2564179-19	L2564179-20	L2564179-21
Parameter	Lowest Detection Limit	Units	MECP Table 1	MECP Table 2 ICC	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Physical Tests (Soil)												
Conductivity	0.004	mS/cm	0.57	1.4	***0.675***	0.379	0.296	***0.778***	0.405	0.34	0.289	0.238
% Moisture	0.25	%			27.4	26.9	27.1	27.5	16.2	20.5	28.4	23.2
pH	0.1	pH units	5-9 (5-11)	5-9 (5-11)	7.51	7.61	7.37	7.63	7.13	7.45	8.38	7.69
Cyanides (Soil)												
Cyanide, Weak Acid Diss	0.05	ug/g	0.051	0.051	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Saturated Paste Extractables (Soil)												
SAR	0.1	SAR	2.4	12	***7.16***	0.99	0.4	***8.93***	<0.10	0.97	0.88	1.24
Calcium (Ca)	0.5	mg/L			19.7	35.1	37.3	18	62.8	33.3	29.4	19.6
Magnesium (Mg)	0.5	mg/L			1.19	7.85	5.45	1.72	5.28	5.81	7.38	4.01
Sodium (Na)	0.5	mg/L			121	25	9.82	148	1.35	23.1	20.6	23.1
Metals (Soil)												
Antimony (Sb)	1	ug/g	1.3	40	<1.0	<1.0	<1.0	<1.0	1	<1.0	<1.0	<1.0
Arsenic (As)	1	ug/g	18	18	3	3.5	3	5	5.4	4.7	3.5	3.6
Barium (Ba)	1	ug/g	220	670	159	***298***	***276***	***783***	***248***	204	***380***	***242***
Beryllium (Be)	0.5	ug/g	2.5	8	0.63	0.94	0.79	1.43	0.74	0.69	1.09	0.76
Boron (B), Hot Water Ext.	0.1	ug/g	36	2	0.16	<0.10	0.35	0.11	0.47	0.24	<0.10	<0.10
Boron (B)	5	ug/g	36	120	9.3	13.2	12.3	14.5	11.3	10.9	17.2	11.1
Cadmium (Cd)	0.5	ug/g	1.2	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	1	ug/g	70	160	32.5	49.1	43.1	***70.8***	37.1	35.8	59.8	41.7
Cobalt (Co)	1	ug/g	21	80	9.3	16.8	10.9	***25.2***	11.8	11.5	17.9	14.4
Copper (Cu)	1	ug/g	92	230	39.6	31.2	25.9	48.3	31	24.1	36.2	26.6
Lead (Pb)	1	ug/g	120	120	69.5	8.8	10.7	13.4	62.6	13.9	9.8	7.4
Mercury (Hg)	0.005	ug/g	0.27	3.9	***1.06***	0.0094	0.0223	0.0102	0.187	0.0252	0.0228	0.0067
Molybdenum (Mo)	1	ug/g	2	40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel (Ni)	1	ug/g	82	270	19.6	34.3	23.9	51.6	24.1	23.5	38.8	29.4
Selenium (Se)	1	ug/g	1.5	5.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	0.2	ug/g	0.5	40	***0.99***	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	0.5	ug/g	1	3.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	1	ug/g	2.5	33	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	1	ug/g	86	86	46.9	73	59.8	***96.2***	53.5	55.3	83.1	64.4
Zinc (Zn)	5	ug/g	290	340	***326***	87.7	67	130	119	68.9	107	69.2
Speciated Metals (Soil)												
Chromium, Hexavalent	0.2	ug/g	0.66	8	0.36	0.41	***1.63***	0.38	<0.20	0.25	0.47	0.33

BOLD	Vaule exceeds the MECP Table 1 Site Condition Standards
BOLD	Vaule exceeds the MECP Table 2 I/C/C Site Condition Standards

Table G3
Summary of O.Reg 153/04 PHCs/VOCs Results

				Client Sample ID	BH01 SS1 (0'-2')	BH02 SS5 (10-12)	BH03 SS1 (0'-2')	BH04 SS2 (2'6"-4'6")	BH 05 SS8 (25'-27')
				Date Sampled	23-Feb-2021	22-Feb-2021	23-Feb-2021	24-Feb-2021	25-Feb-2021
				Time Sampled	13:00	14:00	17:00	15:00	12:00
				ALS Sample ID	L2564179-1	L2564179-2	L2564179-3	L2564179-4	L2564179-5
Parameter	Lowest Detection Limit	Units	MECP Table 1	MECP Table 2 ICC	Soil	Soil	Soil	Soil	Soil
Volatile Organic Compounds (Soil)									
Acetone	0.5	ug/g	0.5	16		<0.50		<0.50	
Benzene	0.0068	ug/g	0.02	0.32	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Bromodichloromethane	0.05	ug/g	0.05	1.5		<0.050		<0.050	
Bromoform	0.05	ug/g	0.05	0.61		<0.050		<0.050	
Bromomethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Carbon tetrachloride	0.05	ug/g	0.05	0.21		<0.050		<0.050	
Chlorobenzene	0.05	ug/g	0.05	2.4		<0.050		<0.050	
Dibromochloromethane	0.05	ug/g	0.05	2.3		<0.050		<0.050	
Chloroform	0.05	ug/g	0.05	0.47		<0.050		<0.050	
1,2-Dibromoethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,2-Dichlorobenzene	0.05	ug/g	0.05	1.2		<0.050		<0.050	
1,3-Dichlorobenzene	0.05	ug/g	0.05	9.6		<0.050		<0.050	
1,4-Dichlorobenzene	0.05	ug/g	0.05	0.2		<0.050		<0.050	
Dichlorodifluoromethane	0.05	ug/g	0.05	16		<0.050		<0.050	
1,1-Dichloroethane	0.05	ug/g	0.05	0.47		<0.050		<0.050	
1,2-Dichloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,1-Dichloroethylene	0.05	ug/g	0.05	0.064		<0.050		<0.050	
cis-1,2-Dichloroethylene	0.05	ug/g	0.05	1.9		<0.050		<0.050	
trans-1,2-Dichloroethylene	0.05	ug/g	0.05	1.3		<0.050		<0.050	
Methylene Chloride	0.05	ug/g	0.05	1.6		<0.050		<0.050	
1,2-Dichloropropane	0.05	ug/g	0.05	0.16		<0.050		<0.050	
cis-1,3-Dichloropropene	0.03	ug/g	NV	NV		<0.030		<0.030	
trans-1,3-Dichloropropene	0.03	ug/g	NV	NV		<0.030		<0.030	
1,3-Dichloropropene (cis & trans)	0.042	ug/g	0.05	0.059		<0.042		<0.042	
Ethylbenzene	0.018	ug/g	0.05	1.1	<0.018	<0.018	<0.018	<0.018	<0.018
n-Hexane	0.05	ug/g	0.05	46		<0.050		<0.050	
Methyl Ethyl Ketone	0.5	ug/g	0.5	70		<0.50		<0.50	
Methyl Isobutyl Ketone	0.5	ug/g	0.5	31		<0.50		<0.50	
MTBE	0.05	ug/g	0.05	1.6		<0.050		<0.050	
Styrene	0.05	ug/g	0.05	34		<0.050		<0.050	
1,1,1,2-Tetrachloroethane	0.05	ug/g	0.05	0.087		<0.050		<0.050	
1,1,2,2-Tetrachloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Tetrachloroethylene	0.05	ug/g	0.05	1.9		<0.050		<0.050	
Toluene	0.08	ug/g	0.2	6.4	<0.080	<0.080	<0.080	<0.080	<0.080
1,1,1-Trichloroethane	0.05	ug/g	0.05	6.1		<0.050		<0.050	
1,1,2-Trichloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Trichloroethylene	0.01	ug/g	0.05	0.55		<0.010		<0.010	
Trichlorofluoromethane	0.05	ug/g	0.25	4		<0.050		<0.050	
Vinyl chloride	0.02	ug/g	0.02	0.032		<0.020		<0.020	
o-Xylene	0.02	ug/g	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020
m+p-Xylenes	0.03	ug/g	NV	NV	<0.030	<0.030	<0.030	<0.030	<0.030
Xylenes (Total)	0.05	ug/g	0.05	26	<0.050	<0.050	<0.050	<0.050	<0.050
Hydrocarbons (Soil)									
F1 (C6-C10)	5	ug/g	25	55	<5.0	<5.0	<5.0	<5.0	<5.0
F1-BTEX	5	ug/g	25	55	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	10	ug/g	10	230	<10	<10	<10	<10	<10
F3 (C16-C34)	50	ug/g	240	1700	136	<50	<50	<50	<50
F4 (C34-C50)	50	ug/g	120	3300	***290***	<50	<50	<50	<50
F4G-SG (GHH-Silica)	250	ug/g	120	3300	***1040***				
Total Hydrocarbons (C6-C50)	72	ug/g	NV	NV	426	<72	<72	<72	<72

BOLD Vaule exceeds the MECP Table 1 Site Condition Standards

BOLD Vaule exceeds the MECP Table 2 I/C/C Site Condition Standards

Table G3
Summary of O.Reg 153/04 PHCs/VOCs Results

				Client Sample ID	BH06 SS1 (0'-2')	BH06 SS2 (2'6"-4'6")	BH07 SS6 (15'-17')	BH08 SS2 (2'6"-4'6")	BH10 SS4 (7'6"-9'6")
				Date Sampled	24-Feb-2021	24-Feb-2021	26-Feb-2021	26-Feb-2021	25-Feb-2021
				Time Sampled	11:00	11:10	11:30	9:15	12:00
				ALS Sample ID	L2564179-6	L2564179-7	L2564179-8	L2564179-9	L2564179-10
Parameter	Lowest Detection Limit	Units	MECP Table 1	MECP Table 2 ICC	Soil	Soil	Soil	Soil	Soil
Volatile Organic Compounds (Soil)									
Acetone	0.5	ug/g	0.5	16		<0.50		<0.50	<0.50
Benzene	0.0068	ug/g	0.02	0.32	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Bromodichloromethane	0.05	ug/g	0.05	1.5		<0.050		<0.050	<0.050
Bromoform	0.05	ug/g	0.05	0.61		<0.050		<0.050	<0.050
Bromomethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
Carbon tetrachloride	0.05	ug/g	0.05	0.21		<0.050		<0.050	<0.050
Chlorobenzene	0.05	ug/g	0.05	2.4		<0.050		<0.050	<0.050
Dibromochloromethane	0.05	ug/g	0.05	2.3		<0.050		<0.050	<0.050
Chloroform	0.05	ug/g	0.05	0.47		<0.050		<0.050	<0.050
1,2-Dibromoethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
1,2-Dichlorobenzene	0.05	ug/g	0.05	1.2		<0.050		<0.050	<0.050
1,3-Dichlorobenzene	0.05	ug/g	0.05	9.6		<0.050		<0.050	<0.050
1,4-Dichlorobenzene	0.05	ug/g	0.05	0.2		<0.050		<0.050	<0.050
Dichlorodifluoromethane	0.05	ug/g	0.05	16		<0.050		<0.050	<0.050
1,1-Dichloroethane	0.05	ug/g	0.05	0.47		<0.050		<0.050	<0.050
1,2-Dichloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
1,1-Dichloroethylene	0.05	ug/g	0.05	0.064		<0.050		<0.050	<0.050
cis-1,2-Dichloroethylene	0.05	ug/g	0.05	1.9		<0.050		<0.050	<0.050
trans-1,2-Dichloroethylene	0.05	ug/g	0.05	1.3		<0.050		<0.050	<0.050
Methylene Chloride	0.05	ug/g	0.05	1.6		<0.050		<0.050	<0.050
1,2-Dichloropropane	0.05	ug/g	0.05	0.16		<0.050		<0.050	<0.050
cis-1,3-Dichloropropene	0.03	ug/g	NV	NV		<0.030		<0.030	<0.030
trans-1,3-Dichloropropene	0.03	ug/g	NV	NV		<0.030		<0.030	<0.030
1,3-Dichloropropene (cis & trans)	0.042	ug/g	0.05	0.059		<0.042		<0.042	<0.042
Ethylbenzene	0.018	ug/g	0.05	1.1	<0.018	<0.018	<0.018	<0.018	<0.018
n-Hexane	0.05	ug/g	0.05	46		<0.050		<0.050	<0.050
Methyl Ethyl Ketone	0.5	ug/g	0.5	70		<0.50		<0.50	<0.50
Methyl Isobutyl Ketone	0.5	ug/g	0.5	31		<0.50		<0.50	<0.50
MTBE	0.05	ug/g	0.05	1.6		<0.050		<0.050	<0.050
Styrene	0.05	ug/g	0.05	34		<0.050		<0.050	<0.050
1,1,1,2-Tetrachloroethane	0.05	ug/g	0.05	0.087		<0.050		<0.050	<0.050
1,1,2,2-Tetrachloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
Tetrachloroethylene	0.05	ug/g	0.05	1.9		<0.050		<0.050	<0.050
Toluene	0.08	ug/g	0.2	6.4	<0.080	<0.080	<0.080	<0.080	<0.080
1,1,1-Trichloroethane	0.05	ug/g	0.05	6.1		<0.050		<0.050	<0.050
1,1,2-Trichloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
Trichloroethylene	0.01	ug/g	0.05	0.55		<0.010		<0.010	<0.010
Trichlorofluoromethane	0.05	ug/g	0.25	4		<0.050		<0.050	<0.050
Vinyl chloride	0.02	ug/g	0.02	0.032		<0.020		<0.020	<0.020
o-Xylene	0.02	ug/g	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020
m+p-Xylenes	0.03	ug/g	NV	NV	<0.030	<0.030	<0.030	<0.030	<0.030
Xylenes (Total)	0.05	ug/g	0.05	26	<0.050	<0.050	<0.050	<0.050	<0.050
Hydrocarbons (Soil)									
F1 (C6-C10)	5	ug/g	25	55	<5.0		<5.0	<5.0	<5.0
F1-BTEX	5	ug/g	25	55	<5.0		<5.0	<5.0	<5.0
F2 (C10-C16)	10	ug/g	10	230	<10		<10	<10	<10
F3 (C16-C34)	50	ug/g	240	1700	<50		<50	<50	<50
F4 (C34-C50)	50	ug/g	120	3300	<50		<50	<50	<50
F4G-SG (GHH-Silica)	250	ug/g	120	3300					
Total Hydrocarbons (C6-C50)	72	ug/g	NV	NV	<72		<72	<72	<72

BOLD Vaule exceeds the MECP Table 1 Site Condition Standards

BOLD Vaule exceeds the MECP Table 2 I/C/C Site Condition Standards

Table G3
Summary of O.Reg 153/04 PHCs/VOCs Results

				Client Sample ID	BH11 SS1 (0'-2')	BH12 SS3 (5'-7')	BH13 SS1 (0'-2')	BH14 SS2 (2'6"-4'6")	BH19 SS4 (7'6"-9'-6")
				Date Sampled	25-Feb-2021	25-Feb-2021	2-Mar-2021	1-Mar-2021	2-Mar-2021
				Time Sampled	12:00	14:00	12:00	14:00	14:00
				ALS Sample ID	L2564179-11	L2564179-12	L2564179-13	L2564179-14	L2564179-15
Parameter	Lowest Detection Limit	Units	MECP Table 1	MECP Table 2 ICC	Soil	Soil	Soil	Soil	Soil
Volatile Organic Compounds (Soil)									
Acetone	0.5	ug/g	0.5	16		<0.50		<0.50	
Benzene	0.0068	ug/g	0.02	0.32	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Bromodichloromethane	0.05	ug/g	0.05	1.5		<0.050		<0.050	
Bromoform	0.05	ug/g	0.05	0.61		<0.050		<0.050	
Bromomethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Carbon tetrachloride	0.05	ug/g	0.05	0.21		<0.050		<0.050	
Chlorobenzene	0.05	ug/g	0.05	2.4		<0.050		<0.050	
Dibromochloromethane	0.05	ug/g	0.05	2.3		<0.050		<0.050	
Chloroform	0.05	ug/g	0.05	0.47		<0.050		<0.050	
1,2-Dibromoethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,2-Dichlorobenzene	0.05	ug/g	0.05	1.2		<0.050		<0.050	
1,3-Dichlorobenzene	0.05	ug/g	0.05	9.6		<0.050		<0.050	
1,4-Dichlorobenzene	0.05	ug/g	0.05	0.2		<0.050		<0.050	
Dichlorodifluoromethane	0.05	ug/g	0.05	16		<0.050		<0.050	
1,1-Dichloroethane	0.05	ug/g	0.05	0.47		<0.050		<0.050	
1,2-Dichloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,1-Dichloroethylene	0.05	ug/g	0.05	0.064		<0.050		<0.050	
cis-1,2-Dichloroethylene	0.05	ug/g	0.05	1.9		<0.050		<0.050	
trans-1,2-Dichloroethylene	0.05	ug/g	0.05	1.3		<0.050		<0.050	
Methylene Chloride	0.05	ug/g	0.05	1.6		<0.050		<0.050	
1,2-Dichloropropane	0.05	ug/g	0.05	0.16		<0.050		<0.050	
cis-1,3-Dichloropropene	0.03	ug/g	NV	NV		<0.030		<0.030	
trans-1,3-Dichloropropene	0.03	ug/g	NV	NV		<0.030		<0.030	
1,3-Dichloropropene (cis & trans)	0.042	ug/g	0.05	0.059		<0.042		<0.042	
Ethylbenzene	0.018	ug/g	0.05	1.1	<0.018	<0.018	<0.018	<0.018	<0.018
n-Hexane	0.05	ug/g	0.05	46		<0.050		<0.050	
Methyl Ethyl Ketone	0.5	ug/g	0.5	70		<0.50		<0.50	
Methyl Isobutyl Ketone	0.5	ug/g	0.5	31		<0.50		<0.50	
MTBE	0.05	ug/g	0.05	1.6		<0.050		<0.050	
Styrene	0.05	ug/g	0.05	34		<0.050		<0.050	
1,1,1,2-Tetrachloroethane	0.05	ug/g	0.05	0.087		<0.050		<0.050	
1,1,2,2-Tetrachloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Tetrachloroethylene	0.05	ug/g	0.05	1.9		<0.050		<0.050	
Toluene	0.08	ug/g	0.2	6.4	<0.080	<0.080	<0.080	***0.275***	<0.080
1,1,1-Trichloroethane	0.05	ug/g	0.05	6.1		<0.050		<0.050	
1,1,2-Trichloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Trichloroethylene	0.01	ug/g	0.05	0.55		<0.010		<0.010	
Trichlorofluoromethane	0.05	ug/g	0.25	4		<0.050		<0.050	
Vinyl chloride	0.02	ug/g	0.02	0.032		<0.020		<0.020	
o-Xylene	0.02	ug/g	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020
m+p-Xylenes	0.03	ug/g	NV	NV	<0.030	<0.030	<0.030	<0.030	<0.030
Xylenes (Total)	0.05	ug/g	0.05	26	<0.050	<0.050	<0.050	<0.050	<0.050
Hydrocarbons (Soil)									
F1 (C6-C10)	5	ug/g	25	55	<5.0	<5.0	<5.0	<5.0	<5.0
F1-BTEX	5	ug/g	25	55	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	10	ug/g	10	230	<10	<10	<10	<10	<10
F3 (C16-C34)	50	ug/g	240	1700	56	<50	<50	57	<50
F4 (C34-C50)	50	ug/g	120	3300	71	<50	<50	68	<50
F4G-SG (GHH-Silica)	250	ug/g	120	3300					
Total Hydrocarbons (C6-C50)	72	ug/g	NV	NV	127	<72	<72	125	<72

BOLD Vaule exceeds the MECP Table 1 Site Condition Standards

BOLD Vaule exceeds the MECP Table 2 I/C/C Site Condition Standards

Table G3
Summary of O.Reg 153/04 PHCs/VOCs Results

				Client Sample ID	BH20 SS1 (0'-2')	BH21 SS3 (5'-7')	BH23 SS1 (0'-2')	BH24 SS1 (0'-2')	BH25 SS4 (7'6"-9'6")
				Date Sampled	26-Feb-2021	2-Mar-2021	26-Feb-2021	25-Feb-2021	1-Mar-2021
				Time Sampled	12:00	11:00	10:00	16:00	11:00
				ALS Sample ID	L2564179-16	L2564179-17	L2564179-18	L2564179-19	L2564179-20
Parameter	Lowest Detection Limit	Units	MECP Table 1	MECP Table 2 ICC	Soil	Soil	Soil	Soil	Soil
Volatile Organic Compounds (Soil)									
Acetone	0.5	ug/g	0.5	16		<0.50	<0.50		<0.50
Benzene	0.0068	ug/g	0.02	0.32	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Bromodichloromethane	0.05	ug/g	0.05	1.5		<0.050	<0.050		<0.050
Bromoform	0.05	ug/g	0.05	0.61		<0.050	<0.050		<0.050
Bromomethane	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
Carbon tetrachloride	0.05	ug/g	0.05	0.21		<0.050	<0.050		<0.050
Chlorobenzene	0.05	ug/g	0.05	2.4		<0.050	<0.050		<0.050
Dibromochloromethane	0.05	ug/g	0.05	2.3		<0.050	<0.050		<0.050
Chloroform	0.05	ug/g	0.05	0.47		<0.050	<0.050		<0.050
1,2-Dibromoethane	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
1,2-Dichlorobenzene	0.05	ug/g	0.05	1.2		<0.050	<0.050		<0.050
1,3-Dichlorobenzene	0.05	ug/g	0.05	9.6		<0.050	<0.050		<0.050
1,4-Dichlorobenzene	0.05	ug/g	0.05	0.2		<0.050	<0.050		<0.050
Dichlorodifluoromethane	0.05	ug/g	0.05	16		<0.050	<0.050		<0.050
1,1-Dichloroethane	0.05	ug/g	0.05	0.47		<0.050	<0.050		<0.050
1,2-Dichloroethane	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
1,1-Dichloroethylene	0.05	ug/g	0.05	0.064		<0.050	<0.050		<0.050
cis-1,2-Dichloroethylene	0.05	ug/g	0.05	1.9		<0.050	<0.050		<0.050
trans-1,2-Dichloroethylene	0.05	ug/g	0.05	1.3		<0.050	<0.050		<0.050
Methylene Chloride	0.05	ug/g	0.05	1.6		<0.050	<0.050		<0.050
1,2-Dichloropropane	0.05	ug/g	0.05	0.16		<0.050	<0.050		<0.050
cis-1,3-Dichloropropene	0.03	ug/g	NV	NV		<0.030	<0.030		<0.030
trans-1,3-Dichloropropene	0.03	ug/g	NV	NV		<0.030	<0.030		<0.030
1,3-Dichloropropene (cis & trans)	0.042	ug/g	0.05	0.059		<0.042	<0.042		<0.042
Ethylbenzene	0.018	ug/g	0.05	1.1	<0.018	<0.018	<0.018	<0.018	<0.018
n-Hexane	0.05	ug/g	0.05	46		<0.050	<0.050		<0.050
Methyl Ethyl Ketone	0.5	ug/g	0.5	70		<0.50	<0.50		<0.50
Methyl Isobutyl Ketone	0.5	ug/g	0.5	31		<0.50	<0.50		<0.50
MTBE	0.05	ug/g	0.05	1.6		<0.050	<0.050		<0.050
Styrene	0.05	ug/g	0.05	34		<0.050	<0.050		<0.050
1,1,1,2-Tetrachloroethane	0.05	ug/g	0.05	0.087		<0.050	<0.050		<0.050
1,1,2,2-Tetrachloroethane	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
Tetrachloroethylene	0.05	ug/g	0.05	1.9		<0.050	<0.050		<0.050
Toluene	0.08	ug/g	0.2	6.4	<0.080	<0.080	<0.080	<0.080	<0.080
1,1,1-Trichloroethane	0.05	ug/g	0.05	6.1		<0.050	<0.050		<0.050
1,1,2-Trichloroethane	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
Trichloroethylene	0.01	ug/g	0.05	0.55		<0.010	<0.010		<0.010
Trichlorofluoromethane	0.05	ug/g	0.25	4		<0.050	<0.050		<0.050
Vinyl chloride	0.02	ug/g	0.02	0.032		<0.020	<0.020		<0.020
o-Xylene	0.02	ug/g	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020
m+p-Xylenes	0.03	ug/g	NV	NV	<0.030	<0.030	<0.030	<0.030	<0.030
Xylenes (Total)	0.05	ug/g	0.05	26	<0.050	<0.050	<0.050	<0.050	<0.050
Hydrocarbons (Soil)									
F1 (C6-C10)	5	ug/g	25	55	<5.0	<5.0	<5.0	<5.0	<5.0
F1-BTEX	5	ug/g	25	55	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	10	ug/g	10	230	<10	<10	<10	<10	<10
F3 (C16-C34)	50	ug/g	240	1700	<50	<50	<50	<50	<50
F4 (C34-C50)	50	ug/g	120	3300	<50	<50	<50	<50	<50
F4G-SG (GHH-Silica)	250	ug/g	120	3300					
Total Hydrocarbons (C6-C50)	72	ug/g	NV	NV	<72	<72	<72	<72	<72

BOLD Vaule exceeds the MECP Table 1 Site Condition Standards

BOLD Vaule exceeds the MECP Table 2 I/C/C Site Condition Standards

Table G3
Summary of O.Reg 153/04 PHCs/VOCs Results

				Client Sample ID	BH26 SS5 (10'-12')
				Date Sampled	1-Mar-2021
				Time Sampled	15:30
				ALS Sample ID	L2564179-21
Parameter	Lowest Detection Limit	Units	MECP Table 1	MECP Table 2 ICC	Soil
Volatile Organic Compounds (Soil)					
Acetone	0.5	ug/g	0.5	16	
Benzene	0.0068	ug/g	0.02	0.32	<0.0068
Bromodichloromethane	0.05	ug/g	0.05	1.5	
Bromoform	0.05	ug/g	0.05	0.61	
Bromomethane	0.05	ug/g	0.05	0.05	
Carbon tetrachloride	0.05	ug/g	0.05	0.21	
Chlorobenzene	0.05	ug/g	0.05	2.4	
Dibromochloromethane	0.05	ug/g	0.05	2.3	
Chloroform	0.05	ug/g	0.05	0.47	
1,2-Dibromoethane	0.05	ug/g	0.05	0.05	
1,2-Dichlorobenzene	0.05	ug/g	0.05	1.2	
1,3-Dichlorobenzene	0.05	ug/g	0.05	9.6	
1,4-Dichlorobenzene	0.05	ug/g	0.05	0.2	
Dichlorodifluoromethane	0.05	ug/g	0.05	16	
1,1-Dichloroethane	0.05	ug/g	0.05	0.47	
1,2-Dichloroethane	0.05	ug/g	0.05	0.05	
1,1-Dichloroethylene	0.05	ug/g	0.05	0.064	
cis-1,2-Dichloroethylene	0.05	ug/g	0.05	1.9	
trans-1,2-Dichloroethylene	0.05	ug/g	0.05	1.3	
Methylene Chloride	0.05	ug/g	0.05	1.6	
1,2-Dichloropropane	0.05	ug/g	0.05	0.16	
cis-1,3-Dichloropropene	0.03	ug/g	NV	NV	
trans-1,3-Dichloropropene	0.03	ug/g	NV	NV	
1,3-Dichloropropene (cis & trans)	0.042	ug/g	0.05	0.059	
Ethylbenzene	0.018	ug/g	0.05	1.1	<0.018
n-Hexane	0.05	ug/g	0.05	46	
Methyl Ethyl Ketone	0.5	ug/g	0.5	70	
Methyl Isobutyl Ketone	0.5	ug/g	0.5	31	
MTBE	0.05	ug/g	0.05	1.6	
Styrene	0.05	ug/g	0.05	34	
1,1,1,2-Tetrachloroethane	0.05	ug/g	0.05	0.087	
1,1,2,2-Tetrachloroethane	0.05	ug/g	0.05	0.05	
Tetrachloroethylene	0.05	ug/g	0.05	1.9	
Toluene	0.08	ug/g	0.2	6.4	<0.080
1,1,1-Trichloroethane	0.05	ug/g	0.05	6.1	
1,1,2-Trichloroethane	0.05	ug/g	0.05	0.05	
Trichloroethylene	0.01	ug/g	0.05	0.55	
Trichlorofluoromethane	0.05	ug/g	0.25	4	
Vinyl chloride	0.02	ug/g	0.02	0.032	
o-Xylene	0.02	ug/g	NV	NV	<0.020
m+p-Xylenes	0.03	ug/g	NV	NV	<0.030
Xylenes (Total)	0.05	ug/g	0.05	26	<0.050
Hydrocarbons (Soil)					
F1 (C6-C10)	5	ug/g	25	55	<5.0
F1-BTEX	5	ug/g	25	55	<5.0
F2 (C10-C16)	10	ug/g	10	230	<10
F3 (C16-C34)	50	ug/g	240	1700	<50
F4 (C34-C50)	50	ug/g	120	3300	<50
F4G-SG (GHH-Silica)	250	ug/g	120	3300	
Total Hydrocarbons (C6-C50)	72	ug/g	NV	NV	<72

BOLD Vaule exceeds the MECP Table 1 Site Condition Standards

BOLD Vaule exceeds the MECP Table 2 I/C/C Site Condition Standards

Table G4
Summary of O.Reg 406/19 Metals and Inorganics Results

				Client Sample ID	BH01 SS1 (0'-2')	BH02 SS5 (10-12)	BH03 SS1 (0'-2')	BH04 SS2 (2'6"-4'6")	BH 05 SS8 (25'-27')	BH06 SS1 (0'-2')	BH07 SS6 (15'-17')	BH08 SS2 (2'6"-4'6")	BH10 SS4 (7'6"-9'6")	BH11 SS1 (0'-2')	BH12 SS3 (5'-7')
				Date Sampled	23-Feb-2021	22-Feb-2021	23-Feb-2021	24-Feb-2021	25-Feb-2021	24-Feb-2021	26-Feb-2021	26-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021
				Time Sampled	13:00	14:00	17:00	15:00	12:00	11:00	11:30	9:15	12:00	12:00	14:00
				ALS Sample ID	L2564179-1	L2564179-2	L2564179-3	L2564179-4	L2564179-5	L2564179-6	L2564179-8	L2564179-9	L2564179-10	L2564179-11	L2564179-12
Parameter	Lowest Detection Limit	Units	O.Reg 406 Table 2.1 RPI	O.Reg 406 Table 2.1 ICC	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Physical Tests (Soil)															
Conductivity	0.004	mS/cm	0.7	1.4	0.215	0.3	0.416	0.15	0.266	0.262	0.235	0.136	0.18	0.198	0.126
% Moisture	0.25	%			19.8	24.2	39.6	25.1	25.5	26	24.7	14.6	22.9	11.5	5.81
pH	0.1	pH units	5-9 (5-11)	5-9 (5-11)	7.71	7.89	7.32	7.52	8.25	7.34	7.85	7.65	7.84	7.26	8.19
Cyanides (Soil)															
Cyanide, Weak Acid Diss	0.05	ug/g	0.051	0.051	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Saturated Paste Extractables (Soil)															
SAR	0.1	SAR	5	12	1.57	0.46	1.45	0.42	0.34	<0.10	0.56	0.36	0.61	<0.10	0.11
Calcium (Ca)	0.5	mg/L			16.8	39.8	44.1	18.9	15.1	41.1	23.3	17.8	16.6	32.9	20
Magnesium (Mg)	0.5	mg/L			4.25	8.2	6.91	3.54	20.6	3.65	4.27	3.01	4.38	3.87	2.02
Sodium (Na)	0.5	mg/L			27.8	12.2	39.1	7.56	8.77	1.33	11.2	6.3	10.9	1.22	1.91
Metals (Soil)															
Antimony (Sb)	1	ug/g	7.5	40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic (As)	1	ug/g	18	18	4	2.5	3	4.5	2.5	4.7	1.5	3.4	2	5.7	1.3
Barium (Ba)	1	ug/g	390	670	359	280	210	275	275	264	246	206	171	104	41.5
Beryllium (Be)	0.5	ug/g	4	8	1.09	0.86	0.58	0.88	0.7	0.77	0.5	0.78	0.67	<0.50	<0.50
Boron (B), Hot Water Ext.	0.1	ug/g	1.5	2	<0.10	<0.10	0.56	0.19	0.29	0.24	<0.10	0.1	<0.10	0.31	0.11
Boron (B)	5	ug/g	120	120	16.9	12.8	8.9	10.1	18.5	10.4	7.8	12.2	10.8	7.9	8.6
Cadmium (Cd)	0.5	ug/g	1.2	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	1	ug/g	160	160	54.7	45.7	30.6	50.6	42.7	43.4	27.9	41	33.9	23.2	13.2
Cobalt (Co)	1	ug/g	22	80	17.8	14.3	8.3	12.4	11	12.7	10	11.5	11	7.5	3.7
Copper (Cu)	1	ug/g	140	230	34.3	28.1	26.6	29.5	21.7	31	18.9	26.3	21.6	17	9.8
Lead (Pb)	1	ug/g	120	120	11.9	7.8	59.1	7.9	6.2	62.4	4.9	6.5	6.4	22.6	5.7
Mercury (Hg)	0.005	ug/g	0.27	0.27	0.0116	0.0072	0.089	0.0126	<0.0050	0.122	<0.0050	0.0138	0.0067	0.0739	0.0642
Molybdenum (Mo)	1	ug/g	6.9	40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel (Ni)	1	ug/g	100	270	37.7	29.6	18.1	29.7	23.2	26.3	19.6	23.6	21.7	14.5	7.7
Selenium (Se)	1	ug/g	2.4	5.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	0.2	ug/g	20	40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	0.5	ug/g	1	3.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	1	ug/g	23	33	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	1	ug/g	86	86	78.2	66.1	39.7	69.2	61.6	58.4	42.1	65.2	51.7	37.4	22.4
Zinc (Zn)	5	ug/g	340	340	93.5	75	148	72.9	55.2	135	51.4	56.3	55.1	60.8	23.6
Speciated Metals (Soil)															
Chromium, Hexavalent	0.2	ug/g	8	8	0.37	0.27	0.48	1.1	<0.20	0.33	<0.20	0.34	0.26	0.29	<0.20

BOLD Exceeds O.Reg 406/19 Table 2.1 RPI Standards
BOLD Exceeds O.Reg 406/19 Table 2.1 ICC Standards

Table G4
Summary of O.Reg 406/19 Metals and Inorganics Results

Parameter	Lowest Detection Limit	Units	O.Reg 406 Table 2.1 RPI	O.Reg 406 Table 2.1 ICC	BH13 SS1 (0'-2')	BH14 SS2 (2'6"-4'6")	BH19 SS4 (7'6"-9'-6")	BH20 SS1 (0'-2')	BH21 SS3 (5'-7')	BH23 SS1 (0'-2')	BH24 SS1 (0'-2')	BH25 SS4 (7'6"-9'6")	BH26 SS5 (10'-12')
Client Sample ID					BH13 SS1 (0'-2')	BH14 SS2 (2'6"-4'6")	BH19 SS4 (7'6"-9'-6")	BH20 SS1 (0'-2')	BH21 SS3 (5'-7')	BH23 SS1 (0'-2')	BH24 SS1 (0'-2')	BH25 SS4 (7'6"-9'6")	BH26 SS5 (10'-12')
Date Sampled					2-Mar-2021	1-Mar-2021	2-Mar-2021	26-Feb-2021	2-Mar-2021	26-Feb-2021	25-Feb-2021	1-Mar-2021	1-Mar-2021
Time Sampled					12:00	14:00	14:00	12:00	11:00	10:00	16:00	11:00	15:30
ALS Sample ID					L2564179-13	L2564179-14	L2564179-15	L2564179-16	L2564179-17	L2564179-18	L2564179-19	L2564179-20	L2564179-21
					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Physical Tests (Soil)													
Conductivity	0.004	mS/cm	0.7	1.4	0.46	0.675	0.379	0.296	***0.778***	0.405	0.34	0.289	0.238
% Moisture	0.25	%			8.29	27.4	26.9	27.1	27.5	16.2	20.5	28.4	23.2
pH	0.1	pH units	5-9 (5-11)	5-9 (5-11)	7.76	7.51	7.61	7.37	7.63	7.13	7.45	8.38	7.69
Cyanides (Soil)													
Cyanide, Weak Acid Diss	0.05	ug/g	0.051	0.051	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Saturated Paste Extractables (Soil)													
SAR	0.1	SAR	5	12	***6.77***	***7.16***	0.99	0.4	***8.93***	<0.10	0.97	0.88	1.24
Calcium (Ca)	0.5	mg/L			10.4	19.7	35.1	37.3	18	62.8	33.3	29.4	19.6
Magnesium (Mg)	0.5	mg/L			0.64	1.19	7.85	5.45	1.72	5.28	5.81	7.38	4.01
Sodium (Na)	0.5	mg/L			83.2	121	25	9.82	148	1.35	23.1	20.6	23.1
Metals (Soil)													
Antimony (Sb)	1	ug/g	7.5	40	<1.0	<1.0	<1.0	<1.0	<1.0	1	<1.0	<1.0	<1.0
Arsenic (As)	1	ug/g	18	18	1.3	3	3.5	3	5	5.4	4.7	3.5	3.6
Barium (Ba)	1	ug/g	390	670	58.8	159	298	276	***783***	248	204	380	242
Beryllium (Be)	0.5	ug/g	4	8	<0.50	0.63	0.94	0.79	1.43	0.74	0.69	1.09	0.76
Boron (B), Hot Water Ext.	0.1	ug/g	1.5	2	<0.10	0.16	<0.10	0.35	0.11	0.47	0.24	<0.10	<0.10
Boron (B)	5	ug/g	120	120	6.6	9.3	13.2	12.3	14.5	11.3	10.9	17.2	11.1
Cadmium (Cd)	0.5	ug/g	1.2	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	1	ug/g	160	160	15.5	32.5	49.1	43.1	70.8	37.1	35.8	59.8	41.7
Cobalt (Co)	1	ug/g	22	80	5.4	9.3	16.8	10.9	***25.2***	11.8	11.5	17.9	14.4
Copper (Cu)	1	ug/g	140	230	11.5	39.6	31.2	25.9	48.3	31	24.1	36.2	26.6
Lead (Pb)	1	ug/g	120	120	3.7	69.5	8.8	10.7	13.4	62.6	13.9	9.8	7.4
Mercury (Hg)	0.005	ug/g	0.27	0.27	0.0067	***1.06***	0.0094	0.0223	0.0102	0.187	0.0252	0.0228	0.0067
Molybdenum (Mo)	1	ug/g	6.9	40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel (Ni)	1	ug/g	100	270	8.8	19.6	34.3	23.9	51.6	24.1	23.5	38.8	29.4
Selenium (Se)	1	ug/g	2.4	5.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	0.2	ug/g	20	40	<0.20	0.99	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	0.5	ug/g	1	3.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	1	ug/g	23	33	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	1	ug/g	86	86	28.7	46.9	73	59.8	***96.2***	53.5	55.3	83.1	64.4
Zinc (Zn)	5	ug/g	340	340	29.2	326	87.7	67	130	119	68.9	107	69.2
Speciated Metals (Soil)													
Chromium, Hexavalent	0.2	ug/g	8	8	0.27	0.36	0.41	1.63	0.38	<0.20	0.25	0.47	0.33

BOLD Exceeds O.Reg 406/19 Table 2.1 RPI Standards
BOLD Exceeds O.Reg 406/19 Table 2.1 ICC Standards

Table G5
Summary of O.Reg 406/19 PHCs/VOCs Results

				Client Sample ID	BH01 SS1 (0'-2')	BH02 SS5 (10-12)	BH03 SS1 (0'-2')	BH04 SS2 (2'6"-4'6")	BH 05 SS8 (25'-27')
				Date Sampled	23-Feb-2021	22-Feb-2021	23-Feb-2021	24-Feb-2021	25-Feb-2021
				Time Sampled	13:00	14:00	17:00	15:00	12:00
				ALS Sample ID	L2564179-1	L2564179-2	L2564179-3	L2564179-4	L2564179-5
Parameter	Lowest Detection Limit	Units	O.Reg 406 Table 2.1 RPI	O.Reg 406 Table 2.1 ICC	Soil	Soil	Soil	Soil	Soil
Volatile Organic Compounds (Soil)									
Acetone	0.5	ug/g	0.5	0.5		<0.50		<0.50	
Benzene	0.0068	ug/g	0.02	0.02	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Bromodichloromethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Bromoform	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Bromomethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Carbon tetrachloride	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Chlorobenzene	0.05	ug/g	0.083	0.083		<0.050		<0.050	
Dibromochloromethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Chloroform	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,2-Dibromoethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,2-Dichlorobenzene	0.05	ug/g	3.4	6.8		<0.050		<0.050	
1,3-Dichlorobenzene	0.05	ug/g	0.26	0.26		<0.050		<0.050	
1,4-Dichlorobenzene	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Dichlorodifluoromethane	0.05	ug/g	1.5	1.5		<0.050		<0.050	
1,1-Dichloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,2-Dichloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,1-Dichloroethylene	0.05	ug/g	0.05	0.05		<0.050		<0.050	
cis-1,2-Dichloroethylene	0.05	ug/g	0.05	0.05		<0.050		<0.050	
trans-1,2-Dichloroethylene	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Methylene Chloride	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,2-Dichloropropane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
cis-1,3-Dichloropropene	0.03	ug/g	NV	NV		<0.030		<0.030	
trans-1,3-Dichloropropene	0.03	ug/g	NV	NV		<0.030		<0.030	
1,3-Dichloropropene (cis & trans)	0.042	ug/g	0.05	0.05		<0.042		<0.042	
Ethylbenzene	0.018	ug/g	0.05	0.05	<0.018	<0.018	<0.018	<0.018	<0.018
n-Hexane	0.05	ug/g	2.5	2.5		<0.050		<0.050	
Methyl Ethyl Ketone	0.5	ug/g	0.5	0.5		<0.50		<0.50	
Methyl Isobutyl Ketone	0.5	ug/g	0.5	0.5		<0.50		<0.50	
MTBE	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Styrene	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,1,1,2-Tetrachloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,1,2,2-Tetrachloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Tetrachloroethylene	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Toluene	0.08	ug/g	0.2	0.2	<0.080	<0.080	<0.080	<0.080	<0.080
1,1,1-Trichloroethane	0.05	ug/g	0.11	0.12		<0.050		<0.050	
1,1,2-Trichloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Trichloroethylene	0.01	ug/g	0.05	0.05		<0.010		<0.010	
Trichlorofluoromethane	0.05	ug/g	0.25	0.25		<0.050		<0.050	
Vinyl chloride	0.02	ug/g	0.02	0.02		<0.020		<0.020	
o-Xylene	0.02	ug/g	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020
m+p-Xylenes	0.03	ug/g	NV	NV	<0.030	<0.030	<0.030	<0.030	<0.030
Xylenes (Total)	0.05	ug/g	0.091	0.091	<0.050	<0.050	<0.050	<0.050	<0.050
Hydrocarbons (Soil)									
F1 (C6-C10)	5	ug/g	25	25	<5.0	<5.0	<5.0	<5.0	<5.0
F1-BTEX	5	ug/g	25	25	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	10	ug/g	10	26	<10	<10	<10	<10	<10
F3 (C16-C34)	50	ug/g	240	240	136	<50	<50	<50	<50
F4 (C34-C50)	50	ug/g	2800	3300	290	<50	<50	<50	<50
F4G-SG (GHH-Silica)	250	ug/g	2800	3300	1040				
Total Hydrocarbons (C6-C50)	72	ug/g	NV	NV	426	<72	<72	<72	<72

BOLD Exceeds O.Reg 406/19 Table 2.1 RPI Standards

BOLD Exceeds O.Reg 406/19 Table 2.1 ICC Standards

Table G5
Summary of O.Reg 406/19 PHCs/VOCs Results

				Client Sample ID	BH06 SS1 (0'-2')	BH06 SS2 (2'6"-4'6")	BH07 SS6 (15'-17')	BH08 SS2 (2'6"-4'6")	BH10 SS4 (7'6"-9'6")
				Date Sampled	24-Feb-2021	24-Feb-2021	26-Feb-2021	26-Feb-2021	25-Feb-2021
				Time Sampled	11:00	11:10	11:30	9:15	12:00
				ALS Sample ID	L2564179-6	L2564179-7	L2564179-8	L2564179-9	L2564179-10
Parameter	Lowest Detection Limit	Units	O.Reg 406 Table 2.1 RPI	O.Reg 406 Table 2.1 ICC	Soil	Soil	Soil	Soil	Soil
Volatile Organic Compounds (Soil)									
Acetone	0.5	ug/g	0.5	0.5		<0.50		<0.50	<0.50
Benzene	0.0068	ug/g	0.02	0.02	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Bromodichloromethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
Bromoform	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
Bromomethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
Carbon tetrachloride	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
Chlorobenzene	0.05	ug/g	0.083	0.083		<0.050		<0.050	<0.050
Dibromochloromethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
Chloroform	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
1,2-Dibromoethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
1,2-Dichlorobenzene	0.05	ug/g	3.4	6.8		<0.050		<0.050	<0.050
1,3-Dichlorobenzene	0.05	ug/g	0.26	0.26		<0.050		<0.050	<0.050
1,4-Dichlorobenzene	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
Dichlorodifluoromethane	0.05	ug/g	1.5	1.5		<0.050		<0.050	<0.050
1,1-Dichloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
1,2-Dichloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
1,1-Dichloroethylene	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
cis-1,2-Dichloroethylene	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
trans-1,2-Dichloroethylene	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
Methylene Chloride	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
1,2-Dichloropropane	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
cis-1,3-Dichloropropene	0.03	ug/g	NV	NV		<0.030		<0.030	<0.030
trans-1,3-Dichloropropene	0.03	ug/g	NV	NV		<0.030		<0.030	<0.030
1,3-Dichloropropene (cis & trans)	0.042	ug/g	0.05	0.05		<0.042		<0.042	<0.042
Ethylbenzene	0.018	ug/g	0.05	0.05	<0.018	<0.018	<0.018	<0.018	<0.018
n-Hexane	0.05	ug/g	2.5	2.5		<0.050		<0.050	<0.050
Methyl Ethyl Ketone	0.5	ug/g	0.5	0.5		<0.50		<0.50	<0.50
Methyl Isobutyl Ketone	0.5	ug/g	0.5	0.5		<0.50		<0.50	<0.50
MTBE	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
Styrene	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
1,1,1,2-Tetrachloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
1,1,2,2-Tetrachloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
Tetrachloroethylene	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
Toluene	0.08	ug/g	0.2	0.2	<0.080	<0.080	<0.080	<0.080	<0.080
1,1,1-Trichloroethane	0.05	ug/g	0.11	0.12		<0.050		<0.050	<0.050
1,1,2-Trichloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	<0.050
Trichloroethylene	0.01	ug/g	0.05	0.05		<0.010		<0.010	<0.010
Trichlorofluoromethane	0.05	ug/g	0.25	0.25		<0.050		<0.050	<0.050
Vinyl chloride	0.02	ug/g	0.02	0.02		<0.020		<0.020	<0.020
o-Xylene	0.02	ug/g	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020
m+p-Xylenes	0.03	ug/g	NV	NV	<0.030	<0.030	<0.030	<0.030	<0.030
Xylenes (Total)	0.05	ug/g	0.091	0.091	<0.050	<0.050	<0.050	<0.050	<0.050
Hydrocarbons (Soil)									
F1 (C6-C10)	5	ug/g	25	25	<5.0		<5.0	<5.0	<5.0
F1-BTEX	5	ug/g	25	25	<5.0		<5.0	<5.0	<5.0
F2 (C10-C16)	10	ug/g	10	26	<10		<10	<10	<10
F3 (C16-C34)	50	ug/g	240	240	<50		<50	<50	<50
F4 (C34-C50)	50	ug/g	2800	3300	<50		<50	<50	<50
F4G-SG (GHH-Silica)	250	ug/g	2800	3300					
Total Hydrocarbons (C6-C50)	72	ug/g	NV	NV	<72		<72	<72	<72

BOLD Exceeds O.Reg 406/19 Table 2.1 RPI Standards

BOLD Exceeds O.Reg 406/19 Table 2.1 ICC Standards

Table G5
Summary of O.Reg 406/19 PHCs/VOCs Results

				Client Sample ID	BH11 SS1 (0'-2')	BH12 SS3 (5'-7')	BH13 SS1 (0'-2')	BH14 SS2 (2'6"-4'6")	BH19 SS4 (7'6"-9'-6")
				Date Sampled	25-Feb-2021	25-Feb-2021	2-Mar-2021	1-Mar-2021	2-Mar-2021
				Time Sampled	12:00	14:00	12:00	14:00	14:00
				ALS Sample ID	L2564179-11	L2564179-12	L2564179-13	L2564179-14	L2564179-15
Parameter	Lowest Detection Limit	Units	O.Reg 406 Table 2.1 RPI	O.Reg 406 Table 2.1 ICC	Soil	Soil	Soil	Soil	Soil
Volatile Organic Compounds (Soil)									
Acetone	0.5	ug/g	0.5	0.5		<0.50		<0.50	
Benzene	0.0068	ug/g	0.02	0.02	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Bromodichloromethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Bromoform	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Bromomethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Carbon tetrachloride	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Chlorobenzene	0.05	ug/g	0.083	0.083		<0.050		<0.050	
Dibromochloromethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Chloroform	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,2-Dibromoethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,2-Dichlorobenzene	0.05	ug/g	3.4	6.8		<0.050		<0.050	
1,3-Dichlorobenzene	0.05	ug/g	0.26	0.26		<0.050		<0.050	
1,4-Dichlorobenzene	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Dichlorodifluoromethane	0.05	ug/g	1.5	1.5		<0.050		<0.050	
1,1-Dichloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,2-Dichloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,1-Dichloroethylene	0.05	ug/g	0.05	0.05		<0.050		<0.050	
cis-1,2-Dichloroethylene	0.05	ug/g	0.05	0.05		<0.050		<0.050	
trans-1,2-Dichloroethylene	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Methylene Chloride	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,2-Dichloropropane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
cis-1,3-Dichloropropene	0.03	ug/g	NV	NV		<0.030		<0.030	
trans-1,3-Dichloropropene	0.03	ug/g	NV	NV		<0.030		<0.030	
1,3-Dichloropropene (cis & trans)	0.042	ug/g	0.05	0.05		<0.042		<0.042	
Ethylbenzene	0.018	ug/g	0.05	0.05	<0.018	<0.018	<0.018	<0.018	<0.018
n-Hexane	0.05	ug/g	2.5	2.5		<0.050		<0.050	
Methyl Ethyl Ketone	0.5	ug/g	0.5	0.5		<0.50		<0.50	
Methyl Isobutyl Ketone	0.5	ug/g	0.5	0.5		<0.50		<0.50	
MTBE	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Styrene	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,1,1,2-Tetrachloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
1,1,2,2-Tetrachloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Tetrachloroethylene	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Toluene	0.08	ug/g	0.2	0.2	<0.080	<0.080	<0.080	***0.275***	<0.080
1,1,1-Trichloroethane	0.05	ug/g	0.11	0.12		<0.050		<0.050	
1,1,2-Trichloroethane	0.05	ug/g	0.05	0.05		<0.050		<0.050	
Trichloroethylene	0.01	ug/g	0.05	0.05		<0.010		<0.010	
Trichlorofluoromethane	0.05	ug/g	0.25	0.25		<0.050		<0.050	
Vinyl chloride	0.02	ug/g	0.02	0.02		<0.020		<0.020	
o-Xylene	0.02	ug/g	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020
m+p-Xylenes	0.03	ug/g	NV	NV	<0.030	<0.030	<0.030	<0.030	<0.030
Xylenes (Total)	0.05	ug/g	0.091	0.091	<0.050	<0.050	<0.050	<0.050	<0.050
Hydrocarbons (Soil)									
F1 (C6-C10)	5	ug/g	25	25	<5.0	<5.0	<5.0	<5.0	<5.0
F1-BTEX	5	ug/g	25	25	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	10	ug/g	10	26	<10	<10	<10	<10	<10
F3 (C16-C34)	50	ug/g	240	240	56	<50	<50	57	<50
F4 (C34-C50)	50	ug/g	2800	3300	71	<50	<50	68	<50
F4G-SG (GHH-Silica)	250	ug/g	2800	3300					
Total Hydrocarbons (C6-C50)	72	ug/g	NV	NV	127	<72	<72	125	<72

BOLD Exceeds O.Reg 406/19 Table 2.1 RPI Standards

BOLD Exceeds O.Reg 406/19 Table 2.1 ICC Standards

Table G5
Summary of O.Reg 406/19 PHCs/VOCs Results

				Client Sample ID	BH20 SS1 (0'-2')	BH21 SS3 (5'-7')	BH23 SS1 (0'-2')	BH24 SS1 (0'-2')	BH25 SS4 (7'6"-9'6")
				Date Sampled	26-Feb-2021	2-Mar-2021	26-Feb-2021	25-Feb-2021	1-Mar-2021
				Time Sampled	12:00	11:00	10:00	16:00	11:00
				ALS Sample ID	L2564179-16	L2564179-17	L2564179-18	L2564179-19	L2564179-20
Parameter	Lowest Detection Limit	Units	O.Reg 406 Table 2.1 RPI	O.Reg 406 Table 2.1 ICC	Soil	Soil	Soil	Soil	Soil
Volatile Organic Compounds (Soil)									
Acetone	0.5	ug/g	0.5	0.5		<0.50	<0.50		<0.50
Benzene	0.0068	ug/g	0.02	0.02	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Bromodichloromethane	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
Bromoform	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
Bromomethane	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
Carbon tetrachloride	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
Chlorobenzene	0.05	ug/g	0.083	0.083		<0.050	<0.050		<0.050
Dibromochloromethane	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
Chloroform	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
1,2-Dibromoethane	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
1,2-Dichlorobenzene	0.05	ug/g	3.4	6.8		<0.050	<0.050		<0.050
1,3-Dichlorobenzene	0.05	ug/g	0.26	0.26		<0.050	<0.050		<0.050
1,4-Dichlorobenzene	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
Dichlorodifluoromethane	0.05	ug/g	1.5	1.5		<0.050	<0.050		<0.050
1,1-Dichloroethane	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
1,2-Dichloroethane	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
1,1-Dichloroethylene	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
cis-1,2-Dichloroethylene	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
trans-1,2-Dichloroethylene	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
Methylene Chloride	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
1,2-Dichloropropane	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
cis-1,3-Dichloropropene	0.03	ug/g	NV	NV		<0.030	<0.030		<0.030
trans-1,3-Dichloropropene	0.03	ug/g	NV	NV		<0.030	<0.030		<0.030
1,3-Dichloropropene (cis & trans)	0.042	ug/g	0.05	0.05		<0.042	<0.042		<0.042
Ethylbenzene	0.018	ug/g	0.05	0.05	<0.018	<0.018	<0.018	<0.018	<0.018
n-Hexane	0.05	ug/g	2.5	2.5		<0.050	<0.050		<0.050
Methyl Ethyl Ketone	0.5	ug/g	0.5	0.5		<0.50	<0.50		<0.50
Methyl Isobutyl Ketone	0.5	ug/g	0.5	0.5		<0.50	<0.50		<0.50
MTBE	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
Styrene	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
1,1,1,2-Tetrachloroethane	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
1,1,2,2-Tetrachloroethane	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
Tetrachloroethylene	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
Toluene	0.08	ug/g	0.2	0.2	<0.080	<0.080	<0.080	<0.080	<0.080
1,1,1-Trichloroethane	0.05	ug/g	0.11	0.12		<0.050	<0.050		<0.050
1,1,2-Trichloroethane	0.05	ug/g	0.05	0.05		<0.050	<0.050		<0.050
Trichloroethylene	0.01	ug/g	0.05	0.05		<0.010	<0.010		<0.010
Trichlorofluoromethane	0.05	ug/g	0.25	0.25		<0.050	<0.050		<0.050
Vinyl chloride	0.02	ug/g	0.02	0.02		<0.020	<0.020		<0.020
o-Xylene	0.02	ug/g	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020
m+p-Xylenes	0.03	ug/g	NV	NV	<0.030	<0.030	<0.030	<0.030	<0.030
Xylenes (Total)	0.05	ug/g	0.091	0.091	<0.050	<0.050	<0.050	<0.050	<0.050
Hydrocarbons (Soil)									
F1 (C6-C10)	5	ug/g	25	25	<5.0	<5.0	<5.0	<5.0	<5.0
F1-BTEX	5	ug/g	25	25	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	10	ug/g	10	26	<10	<10	<10	<10	<10
F3 (C16-C34)	50	ug/g	240	240	<50	<50	<50	<50	<50
F4 (C34-C50)	50	ug/g	2800	3300	<50	<50	<50	<50	<50
F4G-SG (GHH-Silica)	250	ug/g	2800	3300					
Total Hydrocarbons (C6-C50)	72	ug/g	NV	NV	<72	<72	<72	<72	<72

BOLD Exceeds O.Reg 406/19 Table 2.1 RPI Standards

BOLD Exceeds O.Reg 406/19 Table 2.1 ICC Standards

Table G5
Summary of O.Reg 406/19 PHCs/VOCs Results

				Client Sample ID	BH26 SS5 (10'-12')
				Date Sampled	1-Mar-2021
				Time Sampled	15:30
				ALS Sample ID	L2564179-21
Parameter	Lowest Detection Limit	Units	O.Reg 406 Table 2.1 RPI	O.Reg 406 Table 2.1 ICC	Soil
Volatile Organic Compounds (Soil)					
Acetone	0.5	ug/g	0.5	0.5	
Benzene	0.0068	ug/g	0.02	0.02	<0.0068
Bromodichloromethane	0.05	ug/g	0.05	0.05	
Bromoform	0.05	ug/g	0.05	0.05	
Bromomethane	0.05	ug/g	0.05	0.05	
Carbon tetrachloride	0.05	ug/g	0.05	0.05	
Chlorobenzene	0.05	ug/g	0.083	0.083	
Dibromochloromethane	0.05	ug/g	0.05	0.05	
Chloroform	0.05	ug/g	0.05	0.05	
1,2-Dibromoethane	0.05	ug/g	0.05	0.05	
1,2-Dichlorobenzene	0.05	ug/g	3.4	6.8	
1,3-Dichlorobenzene	0.05	ug/g	0.26	0.26	
1,4-Dichlorobenzene	0.05	ug/g	0.05	0.05	
Dichlorodifluoromethane	0.05	ug/g	1.5	1.5	
1,1-Dichloroethane	0.05	ug/g	0.05	0.05	
1,2-Dichloroethane	0.05	ug/g	0.05	0.05	
1,1-Dichloroethylene	0.05	ug/g	0.05	0.05	
cis-1,2-Dichloroethylene	0.05	ug/g	0.05	0.05	
trans-1,2-Dichloroethylene	0.05	ug/g	0.05	0.05	
Methylene Chloride	0.05	ug/g	0.05	0.05	
1,2-Dichloropropane	0.05	ug/g	0.05	0.05	
cis-1,3-Dichloropropene	0.03	ug/g	NV	NV	
trans-1,3-Dichloropropene	0.03	ug/g	NV	NV	
1,3-Dichloropropene (cis & trans)	0.042	ug/g	0.05	0.05	
Ethylbenzene	0.018	ug/g	0.05	0.05	<0.018
n-Hexane	0.05	ug/g	2.5	2.5	
Methyl Ethyl Ketone	0.5	ug/g	0.5	0.5	
Methyl Isobutyl Ketone	0.5	ug/g	0.5	0.5	
MTBE	0.05	ug/g	0.05	0.05	
Styrene	0.05	ug/g	0.05	0.05	
1,1,1,2-Tetrachloroethane	0.05	ug/g	0.05	0.05	
1,1,2,2-Tetrachloroethane	0.05	ug/g	0.05	0.05	
Tetrachloroethylene	0.05	ug/g	0.05	0.05	
Toluene	0.08	ug/g	0.2	0.2	<0.080
1,1,1-Trichloroethane	0.05	ug/g	0.11	0.12	
1,1,2-Trichloroethane	0.05	ug/g	0.05	0.05	
Trichloroethylene	0.01	ug/g	0.05	0.05	
Trichlorofluoromethane	0.05	ug/g	0.25	0.25	
Vinyl chloride	0.02	ug/g	0.02	0.02	
o-Xylene	0.02	ug/g	NV	NV	<0.020
m+p-Xylenes	0.03	ug/g	NV	NV	<0.030
Xylenes (Total)	0.05	ug/g	0.091	0.091	<0.050
Hydrocarbons (Soil)					
F1 (C6-C10)	5	ug/g	25	25	<5.0
F1-BTEX	5	ug/g	25	25	<5.0
F2 (C10-C16)	10	ug/g	10	26	<10
F3 (C16-C34)	50	ug/g	240	240	<50
F4 (C34-C50)	50	ug/g	2800	3300	<50
F4G-SG (GHH-Silica)	250	ug/g	2800	3300	
Total Hydrocarbons (C6-C50)	72	ug/g	NV	NV	<72

BOLD Exceeds O.Reg 406/19 Table 2.1 RPI Standards

BOLD Exceeds O.Reg 406/19 Table 2.1 ICC Standards

Table G6
Summary of SPLP Results

				Client Sample ID	BH01 SPLP	BH05 SPLP	BH08 SPLP	BH12 SPLP	BH25 SPLP
				Date Sampled	23-Feb-2021	25-Feb-2021	26-Feb-2021	25-Feb-2021	1-Mar-2021
				Time Sampled	14:00	17:00	12:00	14:00	11:30
				ALS Sample ID	L2564174-1	L2564174-2	L2564174-3	L2564174-4	L2564174-5
Parameter	Table 2.1 RPI LSL	Table 2.1 ICC LSL	Lowest Detection Limit	Units	Composite Soil	Composite Soil	Composite Soil	Composite Soil	Composite Soil
Volatile Organic Compounds									
1,3-Dichloropropene (cis & trans)	NV	NV	0.5	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50
Sample Preparation									
Initial pH	NV	NV	0.1	pH units	9.21	9.18	9.42	9.06	9.39
Final pH	NV	NV	0.1	pH units	9.05	8.95	9.08	9.07	9.37
SPLP Metals									
Antimony (Sb)	6	6	5	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0
Arsenic (As)	NV	NV	5	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0
Barium (Ba)	1000	1000	100	ug/L	<100	<100	<100	<100	<100
Beryllium (Be)	4	4	2	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0
Boron (B)	5000	5000	500	ug/L	<500	<500	<500	<500	<500
Cadmium (Cd)	NV	0.5	0.1	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium (Cr)	50	50	5	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt (Co)	3.8	3.8	2	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0
Copper (Cu)	14	14	10	ug/L	<10	<10	<10	<10	<10
Lead (Pb)	NV	NV	2	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0
Molybdenum (Mo)	23	23	10	ug/L	<10	<10	<10	<10	<10
Nickel (Ni)	78	78	20	ug/L	<20	<20	<20	<20	<20
Selenium (Se)	10	10	1	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	0.3	0.3	0.25	ug/L	<0.25	<0.25	<0.25	<0.25	<0.25
Thallium (Tl)	2	2	0.8	ug/L	<0.80	<0.80	<0.80	<0.80	<0.80
Uranium (U)	20	20	15	ug/L	<15	<15	<15	<15	<15
Vanadium (V)	NV	NV	5	ug/L	11.2	<5.0	6.5	8	7.8
Zinc (Zn)	180	180	30	ug/L	<30	<30	<30	<30	<30
SPLP VOCs									
Bromomethane	0.5	0.5	0.5	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon tetrachloride	0.2	0.2	0.2	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	NV	NV	1	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylene dibromide	0.2	0.2	0.2	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	0.55	0.55	0.5	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	0.5	0.5	0.5	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethane	NV	NV	0.5	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloroethane	0.5	0.5	0.5	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	0.5	0.5	0.5	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,2-Dichloroethylene	0.5	0.5	0.5	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,2-Dichloroethylene	0.5	0.5	0.5	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	0.5	0.5	0.5	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,3-Dichloropropene	NV	NV	0.2	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20
trans-1,3-Dichloropropene	NV	NV	0.2	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1,2-Tetrachloroethane	NV	NV	0.5	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	0.5	0.5	0.5	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	0.5	0.5	0.5	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	NV	NV	0.5	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	0.5	0.5	0.5	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50

BOLD Exceeds O.Reg 406/19 Table 2.1 RPI Leachate Screening Levels

BOLD Exceeds O.Reg 406/19 Table 2.1 ICC Leachate Screening Levels

Table G7

Summary of Soil Gas/Vapour Headspace Readings

BH ID	BH01		BH02		BH03		BH04		BH05		BH06		BH07		BH08		BH09		BH10		BH11	
Sample ID	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)
SS1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SS2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	---	---
SS3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SS4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	0
SS5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0	0
SS6	0	0	0	0	0	0	0	0	0	0	0	0			0	0						
SS7	0	0	0	0	0	0	0	0	0	0					0	0						
SS8							0	0	0	0												
SS9									0	0												
SS10									0	0												

BH ID	BH12		BH13		BH14		BH19		BH20		BH21		BH22		BH23		BH24		BH25		BH26	
Sample ID	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)	HEX (ppm)	IBL (ppm)
SS1	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SS2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SS3	0	0	0	0	0	0	0	0	0	0	0	0	---	---	0	0	0	0	0	0	0	0
SS4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SS5	0	0	0	0	0	0	0	0											0	0	0	0
SS6																			0	0	0	0
SS7																			0	0	0	0
SS8																			0	0	0	0
SS9																						
SS10																						

THURBER

Appendix H

Laboratory Certificates of Analysis

Thurber Engineering Ltd. (Oakville)
ATTN: Rachel Bourssa
2010 Winston Park Drive
Unit 103
Oakville ON L6H 5R7

Date Received: 05-MAR-21
Report Date: 07-APR-21 11:58 (MT)
Version: FINAL REV. 2

Client Phone: 905-829-8666

Certificate of Analysis

Lab Work Order #: L2564179

Project P.O. #: NOT SUBMITTED
Job Reference: 30726
C of C Numbers:
Legal Site Desc:

Comments: 07-APR-21 Revised report comparing to Reg 153 Table 1&2 RPIICC per client request. - A.Overholster

Amanda Overholster
Account Manager

ANALYTICAL REPORT

SOIL - Ontario Regulation 153/04 - April 15, 2011 Standards

		ALS ID	L2564179-1	L2564179-2	L2564179-3	L2564179-4	L2564179-5	L2564179-6	L2564179-7	L2564179-8	L2564179-9	L2564179-10
		Sampled Date	23-FEB-21	22-FEB-21	23-FEB-21	24-FEB-21	25-FEB-21	24-FEB-21	24-FEB-21	26-FEB-21	26-FEB-21	25-FEB-21
		Sampled Time	13:00	14:00	17:00	15:00	12:00	11:00	11:10	11:30	09:15	12:00
		Sample ID	BH01 SS1 (0'-2')	BH02 SS5 (10-12)	BH03 SS1 (0'-2')	BH04 SS2 (2'6"-4'6")	BH 05 SS8 (25'-27')	BH06 SS1 (0'-2')	BH06 SS2 (2'6"-4'6")	BH07 SS6 (15'-17')	BH08 SS2 (2'6"-4'6")	BH10 SS4 (7'6"-9'6")
Grouping	Analyte	Unit										
Physical Tests	Conductivity	mS/cm	0.215	0.300	0.416	0.150	0.266	0.262		0.235	0.136	0.180
	% Moisture	%	19.8	24.2	39.6	25.1	25.5	26.0	24.1	24.7	14.6	22.9
	pH	pH units	7.71	7.89	7.32	7.52	8.25	7.34		7.85	7.65	7.84
Cyanides	Cyanide, Weak Acid Diss	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050		<0.050	<0.050	<0.050
Saturated Paste Extractables	SAR	SAR	1.57	0.46	1.45	0.42	0.34	<0.10		0.56	0.36	0.61
	Calcium (Ca)	mg/L	16.8	39.8	44.1	18.9	15.1	41.1		23.3	17.8	16.6
	Magnesium (Mg)	mg/L	4.25	8.20	6.91	3.54	20.6	3.65		4.27	3.01	4.38
	Sodium (Na)	mg/L	27.8	12.2	39.1	7.56	8.77	1.33		11.2	6.30	10.9
Metals	Antimony (Sb)	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0
	Arsenic (As)	ug/g	4.0	2.5	3.0	4.5	2.5	4.7		1.5	3.4	2.0
	Barium (Ba)	ug/g	359	280	210	275	275	264		246	206	171
	Beryllium (Be)	ug/g	1.09	0.86	0.58	0.88	0.70	0.77		0.50	0.78	0.67
	Boron (B)	ug/g	16.9	12.8	8.9	10.1	18.5	10.4		7.8	12.2	10.8
	Boron (B), Hot Water Ext.	ug/g	<0.10	<0.10	0.56	0.19	0.29	0.24		<0.10	0.10	<0.10
	Cadmium (Cd)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50
	Chromium (Cr)	ug/g	54.7	45.7	30.6	50.6	42.7	43.4		27.9	41.0	33.9
	Cobalt (Co)	ug/g	17.8	14.3	8.3	12.4	11.0	12.7		10.0	11.5	11.0
	Copper (Cu)	ug/g	34.3	28.1	26.6	29.5	21.7	31.0		18.9	26.3	21.6
	Lead (Pb)	ug/g	11.9	7.8	59.1	7.9	6.2	62.4		4.9	6.5	6.4
	Mercury (Hg)	ug/g	0.0116	0.0072	0.0890	0.0126	<0.0050	0.122		<0.0050	0.0138	0.0067
	Molybdenum (Mo)	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0
	Nickel (Ni)	ug/g	37.7	29.6	18.1	29.7	23.2	26.3		19.6	23.6	21.7
	Selenium (Se)	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0
	Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		<0.20	<0.20	<0.20

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.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

SOIL - Ontario Regulation 153/04 - April 15, 2011 Standards

			ALS ID	L2564179-11	L2564179-12	L2564179-13	L2564179-14	L2564179-15	L2564179-16	L2564179-17	L2564179-18	L2564179-19	L2564179-20
			Sampled Date	25-FEB-21	25-FEB-21	02-MAR-21	01-MAR-21	02-MAR-21	26-FEB-21	02-MAR-21	26-FEB-21	25-FEB-21	01-MAR-21
			Sampled Time	12:00	14:00	12:00	14:00	14:00	12:00	11:00	10:00	16:00	11:00
			Sample ID	BH11 SS1 (0'-2')	BH12 SS3 (5'-7')	BH13 SS1 (0'-2')	BH14 SS2 (2'6"-4'6")	BH19 SS4 (7'6"-9'-6")	BH20 SS1 (0'-2')	BH21 SS3 (5'-7')	BH23 SS1 (0'-2')	BH24 SS1 (0'-2')	BH25 SS4 (7'6"-9'6")
Grouping	Analyte	Unit											
Physical Tests	Conductivity	mS/cm		0.198	0.126	0.460	0.675	0.379	0.296	0.778	0.405	0.340	0.289
	% Moisture	%		11.5	5.81	8.29	27.4	26.9	27.1	27.5	16.2	20.5	28.4
	pH	pH units		7.26	8.19	7.76	7.51	7.61	7.37	7.63	7.13	7.45	8.38
Cyanides	Cyanide, Weak Acid Diss	ug/g		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Saturated Paste Extractables	SAR	SAR		<0.10	0.11	6.77	7.16	0.99	0.40	8.93	<0.10	0.97	0.88
	Calcium (Ca)	mg/L		32.9	20.0	10.4	19.7	35.1	37.3	18.0	62.8	33.3	29.4
	Magnesium (Mg)	mg/L		3.87	2.02	0.64	1.19	7.85	5.45	1.72	5.28	5.81	7.38
	Sodium (Na)	mg/L		1.22	1.91	83.2	121	25.0	9.82	148	1.35	23.1	20.6
Metals	Antimony (Sb)	ug/g		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0
	Arsenic (As)	ug/g		5.7	1.3	1.3	3.0	3.5	3.0	5.0	5.4	4.7	3.5
	Barium (Ba)	ug/g		104	41.5	58.8	159	298	276	783	248	204	380
	Beryllium (Be)	ug/g		<0.50	<0.50	<0.50	0.63	0.94	0.79	1.43	0.74	0.69	1.09
	Boron (B)	ug/g		7.9	8.6	6.6	9.3	13.2	12.3	14.5	11.3	10.9	17.2
	Boron (B), Hot Water Ext.	ug/g		0.31	0.11	<0.10	0.16	<0.10	0.35	0.11	0.47	0.24	<0.10
	Cadmium (Cd)	ug/g		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	Chromium (Cr)	ug/g		23.2	13.2	15.5	32.5	49.1	43.1	70.8	37.1	35.8	59.8
	Cobalt (Co)	ug/g		7.5	3.7	5.4	9.3	16.8	10.9	25.2	11.8	11.5	17.9
	Copper (Cu)	ug/g		17.0	9.8	11.5	39.6	31.2	25.9	48.3	31.0	24.1	36.2
	Lead (Pb)	ug/g		22.6	5.7	3.7	69.5	8.8	10.7	13.4	62.6	13.9	9.8
	Mercury (Hg)	ug/g		0.0739	0.0642	0.0067	DLHC 1.06	0.0094	0.0223	0.0102	0.187	0.0252	0.0228
	Molybdenum (Mo)	ug/g		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Nickel (Ni)	ug/g		14.5	7.7	8.8	19.6	34.3	23.9	51.6	24.1	23.5	38.8
	Selenium (Se)	ug/g		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Silver (Ag)	ug/g		<0.20	<0.20	<0.20	0.99	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

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.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

SOIL - Ontario Regulation 153/04 - April 15, 2011 Standards

		ALS ID	L2564179-21
		Sampled Date	01-MAR-21
		Sampled Time	15:30
		Sample ID	**BH26 SS5 (10'-12')**
Grouping	Analyte	Unit	
Physical Tests	Conductivity	mS/cm	0.238
	% Moisture	%	23.2
	pH	pH units	7.69
Cyanides	Cyanide, Weak Acid Diss	ug/g	<0.050
Saturated Paste Extractables	SAR	SAR	1.24
	Calcium (Ca)	mg/L	19.6
	Magnesium (Mg)	mg/L	4.01
	Sodium (Na)	mg/L	23.1
Metals	Antimony (Sb)	ug/g	<1.0
	Arsenic (As)	ug/g	3.6
	Barium (Ba)	ug/g	242
	Beryllium (Be)	ug/g	0.76
	Boron (B)	ug/g	11.1
	Boron (B), Hot Water Ext.	ug/g	<0.10
	Cadmium (Cd)	ug/g	<0.50
	Chromium (Cr)	ug/g	41.7
	Cobalt (Co)	ug/g	14.4
	Copper (Cu)	ug/g	26.6
	Lead (Pb)	ug/g	7.4
	Mercury (Hg)	ug/g	0.0067
	Molybdenum (Mo)	ug/g	<1.0
	Nickel (Ni)	ug/g	29.4
	Selenium (Se)	ug/g	<1.0
	Silver (Ag)	ug/g	<0.20

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.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

SOIL - Ontario Regulation 153/04 - April 15, 2011 Standards

		ALS ID	L2564179-1	L2564179-2	L2564179-3	L2564179-4	L2564179-5	L2564179-6	L2564179-7	L2564179-8	L2564179-9	L2564179-10
		Sampled Date	23-FEB-21	22-FEB-21	23-FEB-21	24-FEB-21	25-FEB-21	24-FEB-21	24-FEB-21	26-FEB-21	26-FEB-21	25-FEB-21
		Sampled Time	13:00	14:00	17:00	15:00	12:00	11:00	11:10	11:30	09:15	12:00
		Sample ID	BH01 SS1 (0'-2')	BH02 SS5 (10-12)	BH03 SS1 (0'-2')	BH04 SS2 (2'6"-4'6")	BH 05 SS8 (25'-27')	BH06 SS1 (0'-2')	BH06 SS2 (2'6"-4'6")	BH07 SS6 (15'-17')	BH08 SS2 (2'6"-4'6")	BH10 SS4 (7'6"-9'6")
Grouping	Analyte	Unit										
Metals	Thallium (Tl)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50
	Uranium (U)	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0
	Vanadium (V)	ug/g	78.2	66.1	39.7	69.2	61.6	58.4		42.1	65.2	51.7
	Zinc (Zn)	ug/g	93.5	75.0	148	72.9	55.2	135		51.4	56.3	55.1
Speciated Metals	Chromium, Hexavalent	ug/g	0.37	0.27	0.48	1.10	<0.20	0.33		<0.20	0.34	0.26
Volatile Organic Compounds	Acetone	ug/g		<0.50		<0.50			<0.50		<0.50	<0.50
	Benzene	ug/g	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
	Bromodichloromethane	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050
	Bromoform	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050
	Bromomethane	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050
	Carbon tetrachloride	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050
	Chlorobenzene	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050
	Dibromochloromethane	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050
	Chloroform	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050
	1,2-Dibromoethane	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050
	1,2-Dichlorobenzene	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050
	1,3-Dichlorobenzene	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050
	1,4-Dichlorobenzene	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050
	Dichlorodifluoromethane	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050
	1,1-Dichloroethane	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050
	1,2-Dichloroethane	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050
	1,1-Dichloroethylene	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050
	cis-1,2-Dichloroethylene	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050
	trans-1,2-Dichloroethylene	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050

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.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

SOIL - Ontario Regulation 153/04 - April 15, 2011 Standards

			ALS ID	L2564179-11	L2564179-12	L2564179-13	L2564179-14	L2564179-15	L2564179-16	L2564179-17	L2564179-18	L2564179-19	L2564179-20
			Sampled Date	25-FEB-21	25-FEB-21	02-MAR-21	01-MAR-21	02-MAR-21	26-FEB-21	02-MAR-21	26-FEB-21	25-FEB-21	01-MAR-21
			Sampled Time	12:00	14:00	12:00	14:00	14:00	12:00	11:00	10:00	16:00	11:00
			Sample ID	BH11 SS1 (0'-2')	BH12 SS3 (5'-7')	BH13 SS1 (0'-2')	BH14 SS2 (2'6"-4'6")	BH19 SS4 (7'6"-9'-6")	BH20 SS1 (0'-2')	BH21 SS3 (5'-7')	BH23 SS1 (0'-2')	BH24 SS1 (0'-2')	BH25 SS4 (7'6"-9'6")
Grouping	Analyte	Unit											
Metals	Thallium (Tl)	ug/g		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U)	ug/g		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Vanadium (V)	ug/g		37.4	22.4	28.7	46.9	73.0	59.8	96.2	53.5	55.3	83.1
	Zinc (Zn)	ug/g		60.8	23.6	29.2	326	87.7	67.0	130	119	68.9	107
Speciated Metals	Chromium, Hexavalent	ug/g		0.29	<0.20	0.27	0.36	0.41	1.63	0.38	<0.20	0.25	0.47
Volatile Organic Compounds	Acetone	ug/g			<0.50		<0.50			<0.50	<0.50		<0.50
	Benzene	ug/g		<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
	Bromodichloromethane	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050
	Bromoform	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050
	Bromomethane	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050
	Carbon tetrachloride	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050
	Chlorobenzene	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050
	Dibromochloromethane	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050
	Chloroform	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050
	1,2-Dibromoethane	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050
	1,2-Dichlorobenzene	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050
	1,3-Dichlorobenzene	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050
	1,4-Dichlorobenzene	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050
	Dichlorodifluoromethane	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050
	1,1-Dichloroethane	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050
	1,2-Dichloroethane	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050
	1,1-Dichloroethylene	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050
	cis-1,2-Dichloroethylene	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050
	trans-1,2-Dichloroethylene	ug/g			<0.050		<0.050			<0.050	<0.050		<0.050

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.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

SOIL - Ontario Regulation 153/04 - April 15, 2011 Standards

			ALS ID	L2564179-21
			Sampled Date	01-MAR-21
			Sampled Time	15:30
			Sample ID	BH26 SS5 (10'-12')
Grouping	Analyte	Unit		
Metals	Thallium (Tl)	ug/g		<0.50
	Uranium (U)	ug/g		<1.0
	Vanadium (V)	ug/g		64.4
	Zinc (Zn)	ug/g		69.2
Speciated Metals	Chromium, Hexavalent	ug/g		0.33
Volatile Organic Compounds	Acetone	ug/g		
	Benzene	ug/g		<0.0068
	Bromodichloromethane	ug/g		
	Bromoform	ug/g		
	Bromomethane	ug/g		
	Carbon tetrachloride	ug/g		
	Chlorobenzene	ug/g		
	Dibromochloromethane	ug/g		
	Chloroform	ug/g		
	1,2-Dibromoethane	ug/g		
	1,2-Dichlorobenzene	ug/g		
	1,3-Dichlorobenzene	ug/g		
	1,4-Dichlorobenzene	ug/g		
	Dichlorodifluoromethane	ug/g		
	1,1-Dichloroethane	ug/g		
	1,2-Dichloroethane	ug/g		
	1,1-Dichloroethylene	ug/g		
	cis-1,2-Dichloroethylene	ug/g		
	trans-1,2-Dichloroethylene	ug/g		

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.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

SOIL - Ontario Regulation 153/04 - April 15, 2011 Standards

			ALS ID	L2564179-1	L2564179-2	L2564179-3	L2564179-4	L2564179-5	L2564179-6	L2564179-7	L2564179-8	L2564179-9	L2564179-10
			Sampled Date	23-FEB-21	22-FEB-21	23-FEB-21	24-FEB-21	25-FEB-21	24-FEB-21	24-FEB-21	26-FEB-21	26-FEB-21	25-FEB-21
			Sampled Time	13:00	14:00	17:00	15:00	12:00	11:00	11:10	11:30	09:15	12:00
			Sample ID	BH01 SS1 (0'-2')	BH02 SS5 (10-12)	BH03 SS1 (0'-2')	BH04 SS2 (2'6"-4'6")	BH 05 SS8 (25'-27')	BH06 SS1 (0'-2')	BH06 SS2 (2'6"-4'6")	BH07 SS6 (15'-17')	BH08 SS2 (2'6"-4'6")	BH10 SS4 (7'6"-9'6")
Grouping	Analyte	Unit											
Volatile Organic Compounds	Methylene Chloride	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050	
	1,2-Dichloropropane	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050	
	cis-1,3-Dichloropropene	ug/g		<0.030		<0.030			<0.030		<0.030	<0.030	
	trans-1,3-Dichloropropene	ug/g		<0.030		<0.030			<0.030		<0.030	<0.030	
	1,3-Dichloropropene (cis & trans)	ug/g		<0.042		<0.042			<0.042		<0.042	<0.042	
	Ethylbenzene	ug/g	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	
	n-Hexane	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050	
	Methyl Ethyl Ketone	ug/g		<0.50		<0.50			<0.50		<0.50	<0.50	
	Methyl Isobutyl Ketone	ug/g		<0.50		<0.50			<0.50		<0.50	<0.50	
	MTBE	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050	
	Styrene	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050	
	1,1,1,2-Tetrachloroethane	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050	
	1,1,2,2-Tetrachloroethane	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050	
	Tetrachloroethylene	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050	
	Toluene	ug/g	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	
	1,1,1-Trichloroethane	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050	
	1,1,2-Trichloroethane	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050	
	Trichloroethylene	ug/g		<0.010		<0.010			<0.010		<0.010	<0.010	
	Trichlorofluoromethane	ug/g		<0.050		<0.050			<0.050		<0.050	<0.050	
	Vinyl chloride	ug/g		<0.020		<0.020			<0.020		<0.020	<0.020	
	o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	
	m+p-Xylenes	ug/g	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	
	Xylenes (Total)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
	Surrogate: 4-Bromofluorobenzene	%	104.9	94.3	102.6	91.1	100.1	102.3	91.9	96.0	94.4	93.8	

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.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

SOIL - Ontario Regulation 153/04 - April 15, 2011 Standards

			ALS ID	L2564179-11	L2564179-12	L2564179-13	L2564179-14	L2564179-15	L2564179-16	L2564179-17	L2564179-18	L2564179-19	L2564179-20
			Sampled Date	25-FEB-21	25-FEB-21	02-MAR-21	01-MAR-21	02-MAR-21	26-FEB-21	02-MAR-21	26-FEB-21	25-FEB-21	01-MAR-21
			Sampled Time	12:00	14:00	12:00	14:00	14:00	12:00	11:00	10:00	16:00	11:00
			Sample ID	BH11 SS1 (0'-2')	BH12 SS3 (5'-7')	BH13 SS1 (0'-2')	BH14 SS2 (2'6"-4'6")	BH19 SS4 (7'6"-9'-6")	BH20 SS1 (0'-2')	BH21 SS3 (5'-7')	BH23 SS1 (0'-2')	BH24 SS1 (0'-2')	BH25 SS4 (7'6"-9'6")
Grouping	Analyte	Unit											
Volatile Organic Compounds	Methylene Chloride	ug/g		<0.050		<0.050				<0.050	<0.050		<0.050
	1,2-Dichloropropane	ug/g		<0.050		<0.050				<0.050	<0.050		<0.050
	cis-1,3-Dichloropropene	ug/g		<0.030		<0.030				<0.030	<0.030		<0.030
	trans-1,3-Dichloropropene	ug/g		<0.030		<0.030				<0.030	<0.030		<0.030
	1,3-Dichloropropene (cis & trans)	ug/g		<0.042		<0.042				<0.042	<0.042		<0.042
	Ethylbenzene	ug/g	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
	n-Hexane	ug/g		<0.050		<0.050				<0.050	<0.050		<0.050
	Methyl Ethyl Ketone	ug/g		<0.50		<0.50				<0.50	<0.50		<0.50
	Methyl Isobutyl Ketone	ug/g		<0.50		<0.50				<0.50	<0.50		<0.50
	MTBE	ug/g		<0.050		<0.050				<0.050	<0.050		<0.050
	Styrene	ug/g		<0.050		<0.050				<0.050	<0.050		<0.050
	1,1,1,2-Tetrachloroethane	ug/g		<0.050		<0.050				<0.050	<0.050		<0.050
	1,1,2,2-Tetrachloroethane	ug/g		<0.050		<0.050				<0.050	<0.050		<0.050
	Tetrachloroethylene	ug/g		<0.050		<0.050				<0.050	<0.050		<0.050
	Toluene	ug/g	<0.080	<0.080	<0.080	0.275	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	
	1,1,1-Trichloroethane	ug/g		<0.050		<0.050				<0.050	<0.050		<0.050
	1,1,2-Trichloroethane	ug/g		<0.050		<0.050				<0.050	<0.050		<0.050
	Trichloroethylene	ug/g		<0.010		<0.010				<0.010	<0.010		<0.010
	Trichlorofluoromethane	ug/g		<0.050		<0.050				<0.050	<0.050		<0.050
	Vinyl chloride	ug/g		<0.020		<0.020				<0.020	<0.020		<0.020
	o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	m+p-Xylenes	ug/g	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
	Xylenes (Total)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Surrogate: 4-Bromofluorobenzene	%	103.2	99.9	108.1	100.0	104.9	97.1	94.7	108.6	104.0	90.0	

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.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

SOIL - Ontario Regulation 153/04 - April 15, 2011 Standards

			ALS ID	L2564179-21
			Sampled Date	01-MAR-21
			Sampled Time	15:30
			Sample ID	BH26 SS5 (10'-12')
Grouping	Analyte	Unit		
Volatile Organic Compounds	Methylene Chloride	ug/g		
	1,2-Dichloropropane	ug/g		
	cis-1,3-Dichloropropene	ug/g		
	trans-1,3-Dichloropropene	ug/g		
	1,3-Dichloropropene (cis & trans)	ug/g		
	Ethylbenzene	ug/g		<0.018
	n-Hexane	ug/g		
	Methyl Ethyl Ketone	ug/g		
	Methyl Isobutyl Ketone	ug/g		
	MTBE	ug/g		
	Styrene	ug/g		
	1,1,1,2-Tetrachloroethane	ug/g		
	1,1,2,2-Tetrachloroethane	ug/g		
	Tetrachloroethylene	ug/g		
	Toluene	ug/g		<0.080
	1,1,1-Trichloroethane	ug/g		
	1,1,2-Trichloroethane	ug/g		
	Trichloroethylene	ug/g		
	Trichlorofluoromethane	ug/g		
	Vinyl chloride	ug/g		
	o-Xylene	ug/g		<0.020
	m+p-Xylenes	ug/g		<0.030
	Xylenes (Total)	ug/g		<0.050
	Surrogate: 4-Bromofluorobenzene	%		106.7

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.

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ANALYTICAL REPORT

SOIL - Ontario Regulation 153/04 - April 15, 2011 Standards

			ALS ID	L2564179-1	L2564179-2	L2564179-3	L2564179-4	L2564179-5	L2564179-6	L2564179-7	L2564179-8	L2564179-9	L2564179-10
			Sampled Date	23-FEB-21	22-FEB-21	23-FEB-21	24-FEB-21	25-FEB-21	24-FEB-21	24-FEB-21	26-FEB-21	26-FEB-21	25-FEB-21
			Sampled Time	13:00	14:00	17:00	15:00	12:00	11:00	11:10	11:30	09:15	12:00
			Sample ID	BH01 SS1 (0'-2')	BH02 SS5 (10-12)	BH03 SS1 (0'-2')	BH04 SS2 (2'6"-4'6")	BH 05 SS8 (25'-27')	BH06 SS1 (0'-2')	BH06 SS2 (2'6"-4'6")	BH07 SS6 (15'-17')	BH08 SS2 (2'6"-4'6")	BH10 SS4 (7'6"-9'6")
Grouping	Analyte	Unit											
Volatile Organic Compounds	Surrogate: 1,4-Difluorobenzene	%		99.2	99.8	97.3	92.7	94.2	97.1	97.7	90.4	97.6	94.6
Hydrocarbons	F1 (C6-C10)	ug/g		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0		<5.0	<5.0	<5.0
	F1-BTEX	ug/g		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0		<5.0	<5.0	<5.0
	F2 (C10-C16)	ug/g		<10	<10	<10	<10	<10	<10		<10	<10	<10
	F3 (C16-C34)	ug/g		136	<50	<50	<50	<50	<50		<50	<50	<50
	F4 (C34-C50)	ug/g		290	<50	<50	<50	<50	<50		<50	<50	<50
	F4G-SG (GHH-Silica)	ug/g		1040									
	Total Hydrocarbons (C6-C50)	ug/g		426	<72	<72	<72	<72	<72		<72	<72	<72
	Chrom. to baseline at nC50			NO	YES	YES	YES	YES	YES		YES	YES	YES
	Surrogate: 2-Bromobenzotrifluoride	%		80.2	91.8	95.9	92.5	95.2	88.6		96.3	92.3	94.7
	Surrogate: 3,4-Dichlorotoluene	%		70.2	107.2	82.2	97.3	79.9	85.2		77.2	81.0	SURR-ND 49.5

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.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

SOIL - Ontario Regulation 153/04 - April 15, 2011 Standards

			ALS ID	L2564179-11	L2564179-12	L2564179-13	L2564179-14	L2564179-15	L2564179-16	L2564179-17	L2564179-18	L2564179-19	L2564179-20
			Sampled Date	25-FEB-21	25-FEB-21	02-MAR-21	01-MAR-21	02-MAR-21	26-FEB-21	02-MAR-21	26-FEB-21	25-FEB-21	01-MAR-21
			Sampled Time	12:00	14:00	12:00	14:00	14:00	12:00	11:00	10:00	16:00	11:00
			Sample ID	BH11 SS1 (0'-2')	BH12 SS3 (5'-7')	BH13 SS1 (0'-2')	BH14 SS2 (2'6"-4'6")	BH19 SS4 (7'6"-9'-6")	BH20 SS1 (0'-2')	BH21 SS3 (5'-7')	BH23 SS1 (0'-2')	BH24 SS1 (0'-2')	BH25 SS4 (7'6"-9'6")
Grouping	Analyte	Unit											
Volatile Organic Compounds	Surrogate: 1,4-Difluorobenzene	%		101.9	106.9	105.9	107.0	103.5	95.3	100.5	115.8	103.4	105.5
Hydrocarbons	F1 (C6-C10)	ug/g		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	F1-BTEX	ug/g		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	F2 (C10-C16)	ug/g		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	F3 (C16-C34)	ug/g		56	<50	<50	57	<50	<50	<50	<50	<50	<50
	F4 (C34-C50)	ug/g		71	<50	<50	68	<50	<50	<50	<50	<50	<50
	F4G-SG (GHH-Silica)	ug/g											
	Total Hydrocarbons (C6-C50)	ug/g		127	<72	<72	125	<72	<72	<72	<72	<72	<72
	Chrom. to baseline at nC50			YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
	Surrogate: 2-Bromobenzotrifluoride	%		92.6	91.5	91.7	89.5	92.5	90.0	93.9	91.0	89.1	90.1
	Surrogate: 3,4-Dichlorotoluene	%		80.5	105.7	86.2	99.8	82.1	77.4	63.9	75.2	77.9	80.8

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.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

SOIL - Ontario Regulation 153/04 - April 15, 2011 Standards

		ALS ID	L2564179-21
		Sampled Date	01-MAR-21
		Sampled Time	15:30
		Sample ID	**BH26 SS5 (10'-12')**
Grouping	Analyte	Unit	
Volatile Organic Compounds	Surrogate: 1,4-Difluorobenzene	%	103.9
Hydrocarbons	F1 (C6-C10)	ug/g	<5.0
	F1-BTEX	ug/g	<5.0
	F2 (C10-C16)	ug/g	<10
	F3 (C16-C34)	ug/g	<50
	F4 (C34-C50)	ug/g	<50
	F4G-SG (GHH-Silica)	ug/g	
	Total Hydrocarbons (C6-C50)	ug/g	<72
	Chrom. to baseline at nC50		YES
	Surrogate: 2-Bromobenzotrifluoride	%	93.9
	Surrogate: 3,4-Dichlorotoluene	%	85.0

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.

Summary of Guideline Exceedances: Ontario Regulation 153/04 - April 15, 2011 Standards

Guideline ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use						
L2564179-1	BH01 SS1 (0'-2')	Metals	Barium (Ba)	359	220	ug/g
		Hydrocarbons	F4 (C34-C50)	290	120	ug/g
			F4G-SG (GHH-Silica)	1040	120	ug/g
L2564179-2	BH02 SS5 (10-12)	Metals	Barium (Ba)	280	220	ug/g
L2564179-4	BH04 SS2 (2'6"-4'6")	Metals	Barium (Ba)	275	220	ug/g
		Speciated Metals	Chromium, Hexavalent	1.10	0.66	ug/g
L2564179-5	BH 05 SS8 (25'-27')	Metals	Barium (Ba)	275	220	ug/g
L2564179-6	BH06 SS1 (0'-2')	Metals	Barium (Ba)	264	220	ug/g
L2564179-8	BH07 SS6 (15'-17')	Metals	Barium (Ba)	246	220	ug/g
L2564179-13	BH13 SS1 (0'-2')	Saturated Paste Extractables	SAR	6.77	2.4	SAR
L2564179-14	BH14 SS2 (2'6"-4'6")	Physical Tests	Conductivity	0.675	0.57	mS/cm
		Saturated Paste Extractables	SAR	7.16	2.4	SAR
		Metals	Mercury (Hg)	1.06	0.27	ug/g
			Silver (Ag)	0.99	0.5	ug/g
			Zinc (Zn)	326	290	ug/g
		Volatile Organic Compounds	Toluene	0.275	0.2	ug/g
L2564179-15	BH19 SS4 (7'6"-9'-6")	Metals	Barium (Ba)	298	220	ug/g
L2564179-16	BH20 SS1 (0'-2')	Metals	Barium (Ba)	276	220	ug/g
		Speciated Metals	Chromium, Hexavalent	1.63	0.66	ug/g
L2564179-17	BH21 SS3 (5'-7')	Physical Tests	Conductivity	0.778	0.57	mS/cm
		Saturated Paste Extractables	SAR	8.93	2.4	SAR
		Metals	Barium (Ba)	783	220	ug/g
			Chromium (Cr)	70.8	70	ug/g
			Cobalt (Co)	25.2	21	ug/g
			Vanadium (V)	96.2	86	ug/g
L2564179-18	BH23 SS1 (0'-2')	Metals	Barium (Ba)	248	220	ug/g
L2564179-20	BH25 SS4 (7'6"-9'6")	Metals	Barium (Ba)	380	220	ug/g
L2564179-21	BH26 SS5 (10'-12')	Metals	Barium (Ba)	242	220	ug/g
T2-Soil-Ind/Com/Commu Property Use (Coarse)						
L2564179-17	BH21 SS3 (5'-7')	Metals	Barium (Ba)	783	670	ug/g
			Vanadium (V)	96.2	86	ug/g
T2-Soil-Ind/Com/Commu Property Use (Fine)						
L2564179-17	BH21 SS3 (5'-7')	Metals	Barium (Ba)	783	670	ug/g

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Summary of Guideline Exceedances: Ontario Regulation 153/04 - April 15, 2011 Standards

ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
T2-Soil-Ind/Com/Commu Property Use (Fine)						
L2564179-17	BH21 SS3 (5'-7')	Metals	Vanadium (V)	96.2	86	ug/g
T2-Soil-Res/Park/Inst. Property Use (Coarse)						
L2564179-13	BH13 SS1 (0'-2')	Saturated Paste Extractables	SAR	6.77	5	SAR
L2564179-14	BH14 SS2 (2'6"-4'6")	Saturated Paste Extractables	SAR	7.16	5	SAR
		Metals	Mercury (Hg)	1.06	0.27	ug/g
L2564179-17	BH21 SS3 (5'-7')	Physical Tests	Conductivity	0.778	0.7	mS/cm
		Saturated Paste Extractables	SAR	8.93	5	SAR
		Metals	Barium (Ba)	783	390	ug/g
			Cobalt (Co)	25.2	22	ug/g
			Vanadium (V)	96.2	86	ug/g
T2-Soil-Res/Park/Inst. Property Use (Fine)						
L2564179-13	BH13 SS1 (0'-2')	Saturated Paste Extractables	SAR	6.77	5	SAR
L2564179-14	BH14 SS2 (2'6"-4'6")	Saturated Paste Extractables	SAR	7.16	5	SAR
L2564179-17	BH21 SS3 (5'-7')	Physical Tests	Conductivity	0.778	0.7	mS/cm
		Saturated Paste Extractables	SAR	8.93	5	SAR
		Metals	Barium (Ba)	783	390	ug/g
			Cobalt (Co)	25.2	22	ug/g
			Vanadium (V)	96.2	86	ug/g

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
SURR-ND	Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

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).

BTX-511-HS-WT	Soil	BTEX-O.Reg 153/04 (July 2011)	SW846 8260

BTX is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-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).

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).

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

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

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.

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), 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), 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).

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)

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

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

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).

VOC-1,3-DCP-CALC-WT	Soil	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Soil	VOC-O.Reg 153/04 (July 2011)	SW846 8260 (511)

Soil and sediment samples are extracted in methanol and analyzed by headspace-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).

XYLENES-SUM-CALC-WT	Soil	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.

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

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.

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: L2564179 Report Date: 07-APR-21

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT	**Soil**							
Batch R5401946								
WG3502651-4 DUP		**L2564031-1**						
Boron (B), Hot Water Ext.		0.14	0.12		ug/g	17	30	16-MAR-21
WG3502651-2 IRM		**WT SAR4**						
Boron (B), Hot Water Ext.			101.5		%		70-130	16-MAR-21
WG3502651-3 LCS								
Boron (B), Hot Water Ext.			106.0		%		70-130	16-MAR-21
WG3502651-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	16-MAR-21
Batch R5402042								
WG3502647-4 DUP		**L2564218-2**						
Boron (B), Hot Water Ext.		0.21	0.21		ug/g	1.0	30	16-MAR-21
WG3502647-2 IRM		**WT SAR4**						
Boron (B), Hot Water Ext.			98.2		%		70-130	16-MAR-21
WG3502647-3 LCS								
Boron (B), Hot Water Ext.			107.0		%		70-130	16-MAR-21
WG3502647-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	16-MAR-21
BTX-511-HS-WT	**Soil**							
Batch R5398896								
WG3498828-4 DUP		**WG3498828-3**						
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	10-MAR-21
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	10-MAR-21
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	10-MAR-21
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	10-MAR-21
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	10-MAR-21
WG3498828-2 LCS								
Benzene			115.1		%		70-130	10-MAR-21
Ethylbenzene			110.5		%		70-130	10-MAR-21
m+p-Xylenes			101.9		%		70-130	10-MAR-21
o-Xylene			109.2		%		70-130	10-MAR-21
Toluene			108.9		%		70-130	10-MAR-21
WG3498828-1 MB								
Benzene			<0.0068		ug/g		0.0068	10-MAR-21
Ethylbenzene			<0.018		ug/g		0.018	10-MAR-21
m+p-Xylenes			<0.030		ug/g		0.03	10-MAR-21
o-Xylene			<0.020		ug/g		0.02	10-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-511-HS-WT	**Soil**							
Batch R5398896								
WG3498828-1 MB								
Toluene			<0.080		ug/g		0.08	10-MAR-21
Surrogate: 1,4-Difluorobenzene			110.1		%		50-140	10-MAR-21
Surrogate: 4-Bromofluorobenzene			111.9		%		50-140	10-MAR-21
WG3498828-5 MS		**WG3498828-3**						
Benzene			113.4		%		60-140	10-MAR-21
Ethylbenzene			114.0		%		60-140	10-MAR-21
m+p-Xylenes			106.0		%		60-140	10-MAR-21
o-Xylene			112.4		%		60-140	10-MAR-21
Toluene			112.0		%		60-140	10-MAR-21
Batch R5398899								
WG3498953-4 DUP		**WG3498953-3**						
Benzene		0.101	0.102		ug/g	0.9	40	10-MAR-21
Ethylbenzene		0.097	0.097		ug/g	0.7	40	10-MAR-21
m+p-Xylenes		0.283	0.285		ug/g	1.0	40	10-MAR-21
o-Xylene		0.156	0.157		ug/g	0.8	40	10-MAR-21
Toluene		0.261	0.264		ug/g	1.3	40	10-MAR-21
WG3498953-2 LCS								
Benzene			105.8		%		70-130	10-MAR-21
Ethylbenzene			98.7		%		70-130	10-MAR-21
m+p-Xylenes			90.8		%		70-130	10-MAR-21
o-Xylene			98.0		%		70-130	10-MAR-21
Toluene			97.7		%		70-130	10-MAR-21
WG3498953-1 MB								
Benzene			<0.0068		ug/g		0.0068	10-MAR-21
Ethylbenzene			<0.018		ug/g		0.018	10-MAR-21
m+p-Xylenes			<0.030		ug/g		0.03	10-MAR-21
o-Xylene			<0.020		ug/g		0.02	10-MAR-21
Toluene			<0.080		ug/g		0.08	10-MAR-21
Surrogate: 1,4-Difluorobenzene			107.6		%		50-140	10-MAR-21
Surrogate: 4-Bromofluorobenzene			108.8		%		50-140	10-MAR-21
WG3498953-5 MS		**WG3498953-3**						
Benzene			108.5		%		60-140	10-MAR-21
Ethylbenzene			106.2		%		60-140	10-MAR-21
m+p-Xylenes			97.9		%		60-140	10-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-511-HS-WT	**Soil**							
Batch R5398899								
WG3498953-5 MS		**WG3498953-3**						
o-Xylene			105.4		%		60-140	10-MAR-21
Toluene			104.2		%		60-140	10-MAR-21
CN-WAD-R511-WT	**Soil**							
Batch R5399837								
WG3500283-3 DUP		**L2565660-16**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	11-MAR-21
WG3500283-2 LCS								
Cyanide, Weak Acid Diss			100.7		%		80-120	11-MAR-21
WG3500283-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	11-MAR-21
WG3500283-4 MS		**L2565660-16**						
Cyanide, Weak Acid Diss			100.4		%		70-130	11-MAR-21
Batch R5401739								
WG3500674-3 DUP		**L2564179-12**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	16-MAR-21
WG3500674-2 LCS								
Cyanide, Weak Acid Diss			88.2		%		80-120	16-MAR-21
WG3500674-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	16-MAR-21
WG3500674-4 MS		**L2564179-12**						
Cyanide, Weak Acid Diss			87.5		%		70-130	16-MAR-21
CR-CR6-IC-WT	**Soil**							
Batch R5401299								
WG3500856-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			99.9		%		70-130	15-MAR-21
WG3500856-3 DUP		**L2564179-12**						
Chromium, Hexavalent		<0.20	<0.20	RPD-NA	ug/g	N/A	35	15-MAR-21
WG3500856-2 LCS								
Chromium, Hexavalent			96.0		%		80-120	15-MAR-21
WG3500856-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	15-MAR-21
Batch R5401748								
WG3501011-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			102.9		%		70-130	16-MAR-21
WG3501011-3 DUP		**L2564504-9**						
Chromium, Hexavalent		0.76	0.86		ug/g	12	35	16-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-IC-WT	**Soil**							
Batch R5401748								
WG3501011-2 LCS								
Chromium, Hexavalent			103.8		%		80-120	16-MAR-21
WG3501011-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	16-MAR-21
EC-WT	**Soil**							
Batch R5402036								
WG3502653-4 DUP		**WG3502653-3**						
Conductivity		0.875	0.868		mS/cm	0.8	20	16-MAR-21
WG3502653-2 IRM		**WT SAR4**						
Conductivity			100.0		%		70-130	16-MAR-21
WG3503260-1 LCS								
Conductivity			97.1		%		90-110	16-MAR-21
WG3502653-1 MB								
Conductivity			<0.0040		mS/cm		0.004	16-MAR-21
Batch R5402040								
WG3502649-4 DUP		**WG3502649-3**						
Conductivity		0.185	0.200		mS/cm	7.6	20	16-MAR-21
WG3502649-2 IRM		**WT SAR4**						
Conductivity			100.8		%		70-130	16-MAR-21
WG3503198-1 LCS								
Conductivity			97.3		%		90-110	16-MAR-21
WG3502649-1 MB								
Conductivity			<0.0040		mS/cm		0.004	16-MAR-21
F1-HS-511-WT	**Soil**							
Batch R5398464								
WG3498335-4 DUP		**WG3498335-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	09-MAR-21
WG3498335-2 LCS								
F1 (C6-C10)			109.1		%		80-120	10-MAR-21
WG3498335-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	09-MAR-21
Surrogate: 3,4-Dichlorotoluene			117.7		%		60-140	09-MAR-21
WG3498335-5 MS		**WG3498335-3**						
F1 (C6-C10)			79.4		%		60-140	09-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	**Soil**							
Batch R5398896								
WG3498828-4 DUP		**WG3498828-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	10-MAR-21
WG3498828-2 LCS								
F1 (C6-C10)			92.8		%		80-120	10-MAR-21
WG3498828-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	10-MAR-21
Surrogate: 3,4-Dichlorotoluene			93.2		%		60-140	10-MAR-21
WG3498828-5 MS		**WG3498828-3**						
F1 (C6-C10)			91.3		%		60-140	10-MAR-21
Batch R5398899								
WG3498953-4 DUP		**WG3498953-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	10-MAR-21
WG3498953-2 LCS								
F1 (C6-C10)			89.9		%		80-120	10-MAR-21
WG3498953-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	10-MAR-21
Surrogate: 3,4-Dichlorotoluene			85.2		%		60-140	10-MAR-21
WG3498953-5 MS		**WG3498953-3**						
F1 (C6-C10)			86.6		%		60-140	10-MAR-21
F2-F4-511-WT	**Soil**							
Batch R5399892								
WG3499263-3 DUP		**WG3499263-5**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	11-MAR-21
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	11-MAR-21
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	11-MAR-21
WG3499263-2 LCS								
F2 (C10-C16)			102.1		%		80-120	11-MAR-21
F3 (C16-C34)			106.1		%		80-120	11-MAR-21
F4 (C34-C50)			106.1		%		80-120	11-MAR-21
WG3499263-1 MB								
F2 (C10-C16)			<10		ug/g		10	11-MAR-21
F3 (C16-C34)			<50		ug/g		50	11-MAR-21
F4 (C34-C50)			<50		ug/g		50	11-MAR-21
Surrogate: 2-Bromobenzotrifluoride			97.0		%		60-140	11-MAR-21
WG3499263-4 MS		**WG3499263-5**						
F2 (C10-C16)			101.1		%		60-140	11-MAR-21
F3 (C16-C34)			104.0		%		60-140	11-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT	**Soil**							
Batch R5399892								
WG3499263-4 MS		**WG3499263-5**						
F4 (C34-C50)			106.2		%		60-140	11-MAR-21
Batch R5400242								
WG3500062-3 DUP		**WG3500062-5**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	12-MAR-21
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	12-MAR-21
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	12-MAR-21
WG3500062-2 LCS								
F2 (C10-C16)			85.8		%		80-120	12-MAR-21
F3 (C16-C34)			87.1		%		80-120	12-MAR-21
F4 (C34-C50)			91.3		%		80-120	12-MAR-21
WG3500062-1 MB								
F2 (C10-C16)			<10		ug/g		10	12-MAR-21
F3 (C16-C34)			<50		ug/g		50	12-MAR-21
F4 (C34-C50)			<50		ug/g		50	12-MAR-21
Surrogate: 2-Bromobenzotrifluoride			88.7		%		60-140	12-MAR-21
WG3500062-4 MS		**WG3500062-5**						
F2 (C10-C16)			84.9		%		60-140	12-MAR-21
F3 (C16-C34)			89.3		%		60-140	12-MAR-21
F4 (C34-C50)			93.2		%		60-140	12-MAR-21
Batch R5400519								
WG3500598-3 DUP		**WG3500598-5**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	12-MAR-21
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	12-MAR-21
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	12-MAR-21
WG3500598-2 LCS								
F2 (C10-C16)			97.1		%		80-120	12-MAR-21
F3 (C16-C34)			98.3		%		80-120	12-MAR-21
F4 (C34-C50)			97.4		%		80-120	12-MAR-21
WG3500598-1 MB								
F2 (C10-C16)			<10		ug/g		10	12-MAR-21
F3 (C16-C34)			<50		ug/g		50	12-MAR-21
F4 (C34-C50)			<50		ug/g		50	12-MAR-21
Surrogate: 2-Bromobenzotrifluoride			98.7		%		60-140	12-MAR-21
WG3500598-4 MS		**WG3500598-5**						

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT	**Soil**							
Batch R5400519								
WG3500598-4 MS		**WG3500598-5**						
F2 (C10-C16)			95.0		%		60-140	12-MAR-21
F3 (C16-C34)			95.0		%		60-140	12-MAR-21
F4 (C34-C50)			95.6		%		60-140	12-MAR-21
F4G-ADD-511-WT	**Soil**							
Batch R5400350								
WG3501376-2 LCS								
F4G-SG (GHH-Silica)			71.6		%		60-140	11-MAR-21
WG3501376-1 MB								
F4G-SG (GHH-Silica)			<250		ug/g		250	11-MAR-21
HG-200.2-CVAA-WT	**Soil**							
Batch R5401795								
WG3502645-2 CRM		**WT-SS-2**						
Mercury (Hg)			102.7		%		70-130	16-MAR-21
WG3502645-6 DUP		**WG3502645-5**						
Mercury (Hg)		0.0121	0.0134		ug/g	10	40	16-MAR-21
WG3502645-3 LCS								
Mercury (Hg)			96.0		%		80-120	16-MAR-21
WG3502645-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	16-MAR-21
Batch R5401802								
WG3502639-2 CRM		**WT-SS-2**						
Mercury (Hg)			103.2		%		70-130	16-MAR-21
WG3502639-6 DUP		**WG3502639-5**						
Mercury (Hg)		0.0081	0.0092		ug/g	13	40	16-MAR-21
WG3502639-3 LCS								
Mercury (Hg)			105.0		%		80-120	16-MAR-21
WG3502639-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	16-MAR-21
MET-200.2-CCMS-WT	**Soil**							
Batch R5402526								
WG3502639-2 CRM		**WT-SS-2**						
Antimony (Sb)			101.1		%		70-130	16-MAR-21
Arsenic (As)			103.5		%		70-130	16-MAR-21
Barium (Ba)			106.9		%		70-130	16-MAR-21
Beryllium (Be)			101.7		%		70-130	16-MAR-21
Boron (B)			9.3		mg/kg		3.5-13.5	16-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5402526								
WG3502639-2 CRM		**WT-SS-2**						
Cadmium (Cd)			98.2		%		70-130	16-MAR-21
Chromium (Cr)			102.1		%		70-130	16-MAR-21
Cobalt (Co)			102.5		%		70-130	16-MAR-21
Copper (Cu)			96.2		%		70-130	16-MAR-21
Lead (Pb)			100.2		%		70-130	16-MAR-21
Molybdenum (Mo)			97.6		%		70-130	16-MAR-21
Nickel (Ni)			99.7		%		70-130	16-MAR-21
Selenium (Se)			0.15		mg/kg		0-0.34	16-MAR-21
Silver (Ag)			111.1		%		70-130	16-MAR-21
Thallium (Tl)			0.080		mg/kg		0.029-0.129	16-MAR-21
Uranium (U)			97.4		%		70-130	16-MAR-21
Vanadium (V)			104.2		%		70-130	16-MAR-21
Zinc (Zn)			95.6		%		70-130	16-MAR-21
WG3502639-6 DUP		**WG3502639-5**						
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	16-MAR-21
Arsenic (As)		2.86	2.53		ug/g	12	30	16-MAR-21
Barium (Ba)		47.9	41.9		ug/g	13	40	16-MAR-21
Beryllium (Be)		0.43	0.38		ug/g	11	30	16-MAR-21
Boron (B)		7.4	6.5		ug/g	13	30	16-MAR-21
Cadmium (Cd)		0.072	0.074		ug/g	2.3	30	16-MAR-21
Chromium (Cr)		13.1	13.4		ug/g	2.2	30	16-MAR-21
Cobalt (Co)		6.68	5.84		ug/g	13	30	16-MAR-21
Copper (Cu)		13.4	11.5		ug/g	16	30	16-MAR-21
Lead (Pb)		5.96	5.20		ug/g	14	40	16-MAR-21
Molybdenum (Mo)		0.29	0.23		ug/g	22	40	16-MAR-21
Nickel (Ni)		13.8	11.8		ug/g	16	30	16-MAR-21
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	16-MAR-21
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	16-MAR-21
Thallium (Tl)		0.112	0.096		ug/g	15	30	16-MAR-21
Uranium (U)		0.511	0.438		ug/g	15	30	16-MAR-21
Vanadium (V)		30.2	26.6		ug/g	13	30	16-MAR-21
Zinc (Zn)		32.5	28.6		ug/g	13	30	16-MAR-21
WG3502639-4 LCS								

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5402526								
WG3502639-4 LCS								
Antimony (Sb)			111.2		%		80-120	16-MAR-21
Arsenic (As)			111.3		%		80-120	16-MAR-21
Barium (Ba)			104.2		%		80-120	16-MAR-21
Beryllium (Be)			104.2		%		80-120	16-MAR-21
Boron (B)			101.4		%		80-120	16-MAR-21
Cadmium (Cd)			102.9		%		80-120	16-MAR-21
Chromium (Cr)			106.7		%		80-120	16-MAR-21
Cobalt (Co)			105.6		%		80-120	16-MAR-21
Copper (Cu)			104.1		%		80-120	16-MAR-21
Lead (Pb)			107.4		%		80-120	16-MAR-21
Molybdenum (Mo)			107.8		%		80-120	16-MAR-21
Nickel (Ni)			104.3		%		80-120	16-MAR-21
Selenium (Se)			110.1		%		80-120	16-MAR-21
Silver (Ag)			108.0		%		80-120	16-MAR-21
Thallium (Tl)			110.0		%		80-120	16-MAR-21
Uranium (U)			104.7		%		80-120	16-MAR-21
Vanadium (V)			110.6		%		80-120	16-MAR-21
Zinc (Zn)			103.0		%		80-120	16-MAR-21
WG3502639-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	16-MAR-21
Arsenic (As)			<0.10		mg/kg		0.1	16-MAR-21
Barium (Ba)			<0.50		mg/kg		0.5	16-MAR-21
Beryllium (Be)			<0.10		mg/kg		0.1	16-MAR-21
Boron (B)			<5.0		mg/kg		5	16-MAR-21
Cadmium (Cd)			<0.020		mg/kg		0.02	16-MAR-21
Chromium (Cr)			<0.50		mg/kg		0.5	16-MAR-21
Cobalt (Co)			<0.10		mg/kg		0.1	16-MAR-21
Copper (Cu)			<0.50		mg/kg		0.5	16-MAR-21
Lead (Pb)			<0.50		mg/kg		0.5	16-MAR-21
Molybdenum (Mo)			<0.10		mg/kg		0.1	16-MAR-21
Nickel (Ni)			<0.50		mg/kg		0.5	16-MAR-21
Selenium (Se)			<0.20		mg/kg		0.2	16-MAR-21
Silver (Ag)			<0.10		mg/kg		0.1	16-MAR-21
Thallium (Tl)			<0.050		mg/kg		0.05	16-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5402526								
WG3502639-1 MB								
Uranium (U)			<0.050		mg/kg		0.05	16-MAR-21
Vanadium (V)			<0.20		mg/kg		0.2	16-MAR-21
Zinc (Zn)			<2.0		mg/kg		2	16-MAR-21
Batch R5402569								
WG3502645-2 CRM		**WT-SS-2**						
Antimony (Sb)			90.7		%		70-130	16-MAR-21
Arsenic (As)			101.9		%		70-130	16-MAR-21
Barium (Ba)			109.4		%		70-130	16-MAR-21
Beryllium (Be)			98.9		%		70-130	16-MAR-21
Boron (B)			8.7		mg/kg		3.5-13.5	16-MAR-21
Cadmium (Cd)			98.5		%		70-130	16-MAR-21
Chromium (Cr)			107.4		%		70-130	16-MAR-21
Cobalt (Co)			102.1		%		70-130	16-MAR-21
Copper (Cu)			99.1		%		70-130	16-MAR-21
Lead (Pb)			95.7		%		70-130	16-MAR-21
Molybdenum (Mo)			95.9		%		70-130	16-MAR-21
Nickel (Ni)			101.9		%		70-130	16-MAR-21
Selenium (Se)			0.18		mg/kg		0-0.34	16-MAR-21
Silver (Ag)			78.6		%		70-130	16-MAR-21
Thallium (Tl)			0.068		mg/kg		0.029-0.129	16-MAR-21
Uranium (U)			87.8		%		70-130	16-MAR-21
Vanadium (V)			107.9		%		70-130	16-MAR-21
Zinc (Zn)			100.3		%		70-130	16-MAR-21
WG3502645-6 DUP		**WG3502645-5**						
Antimony (Sb)		0.14	0.11		ug/g	23	30	16-MAR-21
Arsenic (As)		6.60	5.51		ug/g	18	30	16-MAR-21
Barium (Ba)		119	97.8		ug/g	19	40	16-MAR-21
Beryllium (Be)		0.59	0.50		ug/g	17	30	16-MAR-21
Boron (B)		11.6	10.3		ug/g	12	30	16-MAR-21
Cadmium (Cd)		0.095	0.085		ug/g	10	30	16-MAR-21
Chromium (Cr)		22.2	18.4		ug/g	19	30	16-MAR-21
Cobalt (Co)		11.9	10.1		ug/g	17	30	16-MAR-21
Copper (Cu)		39.7	33.5		ug/g	17	30	16-MAR-21
Lead (Pb)		9.40	8.36		ug/g	12	40	16-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5402569								
WG3502645-6 DUP		**WG3502645-5**						
Molybdenum (Mo)		0.46	0.38		ug/g	18	40	16-MAR-21
Nickel (Ni)		24.2	20.2		ug/g	18	30	16-MAR-21
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	16-MAR-21
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	16-MAR-21
Thallium (Tl)		0.131	0.108		ug/g	19	30	16-MAR-21
Uranium (U)		0.573	0.509		ug/g	12	30	16-MAR-21
Vanadium (V)		35.7	29.2		ug/g	20	30	16-MAR-21
Zinc (Zn)		58.0	48.9		ug/g	17	30	16-MAR-21
WG3502645-4 LCS								
Antimony (Sb)			105.1		%		80-120	16-MAR-21
Arsenic (As)			108.8		%		80-120	16-MAR-21
Barium (Ba)			104.7		%		80-120	16-MAR-21
Beryllium (Be)			102.9		%		80-120	16-MAR-21
Boron (B)			100.8		%		80-120	16-MAR-21
Cadmium (Cd)			103.3		%		80-120	16-MAR-21
Chromium (Cr)			104.9		%		80-120	16-MAR-21
Cobalt (Co)			106.0		%		80-120	16-MAR-21
Copper (Cu)			104.2		%		80-120	16-MAR-21
Lead (Pb)			103.3		%		80-120	16-MAR-21
Molybdenum (Mo)			106.2		%		80-120	16-MAR-21
Nickel (Ni)			104.6		%		80-120	16-MAR-21
Selenium (Se)			110.0		%		80-120	16-MAR-21
Silver (Ag)			103.7		%		80-120	16-MAR-21
Thallium (Tl)			105.2		%		80-120	16-MAR-21
Uranium (U)			97.7		%		80-120	16-MAR-21
Vanadium (V)			110.3		%		80-120	16-MAR-21
Zinc (Zn)			107.3		%		80-120	16-MAR-21
WG3502645-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	16-MAR-21
Arsenic (As)			<0.10		mg/kg		0.1	16-MAR-21
Barium (Ba)			<0.50		mg/kg		0.5	16-MAR-21
Beryllium (Be)			<0.10		mg/kg		0.1	16-MAR-21
Boron (B)			<5.0		mg/kg		5	16-MAR-21
Cadmium (Cd)			<0.020		mg/kg		0.02	16-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5402569								
WG3502645-1 MB								
Chromium (Cr)			<0.50		mg/kg		0.5	16-MAR-21
Cobalt (Co)			<0.10		mg/kg		0.1	16-MAR-21
Copper (Cu)			<0.50		mg/kg		0.5	16-MAR-21
Lead (Pb)			<0.50		mg/kg		0.5	16-MAR-21
Molybdenum (Mo)			<0.10		mg/kg		0.1	16-MAR-21
Nickel (Ni)			<0.50		mg/kg		0.5	16-MAR-21
Selenium (Se)			<0.20		mg/kg		0.2	16-MAR-21
Silver (Ag)			<0.10		mg/kg		0.1	16-MAR-21
Thallium (Tl)			<0.050		mg/kg		0.05	16-MAR-21
Uranium (U)			<0.050		mg/kg		0.05	16-MAR-21
Vanadium (V)			<0.20		mg/kg		0.2	16-MAR-21
Zinc (Zn)			<2.0		mg/kg		2	16-MAR-21
MOISTURE-WT	**Soil**							
Batch R5399508								
WG3499986-3 DUP		**L2564179-1**						
% Moisture		19.8	18.2		%	8.2	20	11-MAR-21
WG3499986-2 LCS								
% Moisture			99.6		%		90-110	11-MAR-21
WG3499986-1 MB								
% Moisture			<0.25		%		0.25	11-MAR-21
Batch R5400107								
WG3501016-3 DUP		**L2564177-2**						
% Moisture		19.5	18.8		%	3.4	20	12-MAR-21
WG3501016-2 LCS								
% Moisture			99.4		%		90-110	12-MAR-21
WG3501016-1 MB								
% Moisture			<0.25		%		0.25	12-MAR-21
PH-WT	**Soil**							
Batch R5400397								
WG3500902-1 DUP		**L2564179-12**						
pH		8.19	8.10	J	pH units	0.09	0.3	12-MAR-21
WG3501252-1 LCS								
pH			6.96		pH units		6.9-7.1	12-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-WT	**Soil**							
Batch R5401412								
WG3500681-1 DUP		**L2564265-15**						
pH		7.90	7.85	J	pH units	0.05	0.3	15-MAR-21
WG3502485-1 LCS								
pH			7.00		pH units		6.9-7.1	15-MAR-21
Batch R5401939								
WG3500944-1 DUP		**L2564179-13**						
pH		7.76	7.80	J	pH units	0.04	0.3	16-MAR-21
WG3502923-1 LCS								
pH			6.95		pH units		6.9-7.1	16-MAR-21
SAR-R511-WT	**Soil**							
Batch R5401950								
WG3502649-4 DUP		**WG3502649-3**						
Calcium (Ca)		14.7	15.2		mg/L	3.3	30	16-MAR-21
Sodium (Na)		27.6	28.8		mg/L	4.3	30	16-MAR-21
Magnesium (Mg)		1.41	1.44		mg/L	2.1	30	16-MAR-21
WG3502649-2 IRM		**WT SAR4**						
Calcium (Ca)			108.2		%		70-130	16-MAR-21
Sodium (Na)			93.3		%		70-130	16-MAR-21
Magnesium (Mg)			106.0		%		70-130	16-MAR-21
WG3502649-5 LCS								
Calcium (Ca)			105.3		%		80-120	16-MAR-21
Sodium (Na)			101.6		%		80-120	16-MAR-21
Magnesium (Mg)			101.2		%		80-120	16-MAR-21
WG3502649-1 MB								
Calcium (Ca)			<0.50		mg/L		0.5	16-MAR-21
Sodium (Na)			<0.50		mg/L		0.5	16-MAR-21
Magnesium (Mg)			<0.50		mg/L		0.5	16-MAR-21
Batch R5402045								
WG3502653-4 DUP		**WG3502653-3**						
Calcium (Ca)		78.8	78.5		mg/L	0.4	30	16-MAR-21
Sodium (Na)		85.9	85.2		mg/L	0.8	30	16-MAR-21
Magnesium (Mg)		10.1	10.0		mg/L	1.0	30	16-MAR-21
WG3502653-2 IRM		**WT SAR4**						
Calcium (Ca)			97.7		%		70-130	16-MAR-21
Sodium (Na)			95.7		%		70-130	16-MAR-21
Magnesium (Mg)			100.9		%		70-130	16-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT	**Soil**							
Batch R5402045								
WG3502653-5 LCS								
Calcium (Ca)			106.7		%		80-120	16-MAR-21
Sodium (Na)			102.0		%		80-120	16-MAR-21
Magnesium (Mg)			102.0		%		80-120	16-MAR-21
WG3502653-1 MB								
Calcium (Ca)			<0.50		mg/L		0.5	16-MAR-21
Sodium (Na)			<0.50		mg/L		0.5	16-MAR-21
Magnesium (Mg)			<0.50		mg/L		0.5	16-MAR-21
VOC-511-HS-WT	**Soil**							
Batch R5398464								
WG3498335-4 DUP		**WG3498335-3**						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	09-MAR-21
Benzene		0.0068	0.0073		ug/g	6.5	40	09-MAR-21
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	09-MAR-21
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21

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Oakville ON L6H 5R7
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5398464								
WG3498335-4 DUP		**WG3498335-3**						
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	09-MAR-21
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	09-MAR-21
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	09-MAR-21
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	09-MAR-21
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	09-MAR-21
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	09-MAR-21
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	09-MAR-21
Trichloroethylene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	09-MAR-21
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	09-MAR-21
WG3498335-2 LCS								
1,1,1,2-Tetrachloroethane			101.0		%		60-130	09-MAR-21
1,1,2,2-Tetrachloroethane			66.0		%		60-130	09-MAR-21
1,1,1-Trichloroethane			104.1		%		60-130	09-MAR-21
1,1,2-Trichloroethane			93.9		%		60-130	09-MAR-21
1,1-Dichloroethane			101.1		%		60-130	09-MAR-21
1,1-Dichloroethylene			102.4		%		60-130	09-MAR-21
1,2-Dibromoethane			97.7		%		70-130	09-MAR-21
1,2-Dichlorobenzene			106.2		%		70-130	09-MAR-21
1,2-Dichloroethane			94.0		%		60-130	09-MAR-21
1,2-Dichloropropane			99.9		%		70-130	09-MAR-21
1,3-Dichlorobenzene			121.2		%		70-130	09-MAR-21
1,4-Dichlorobenzene			120.6		%		70-130	09-MAR-21
Acetone			98.5		%		60-140	09-MAR-21
Benzene			99.8		%		70-130	09-MAR-21
Bromodichloromethane			102.0		%		50-140	09-MAR-21

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Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5398464								
WG3498335-2 LCS								
Bromoform			85.9		%		70-130	09-MAR-21
Bromomethane			93.4		%		50-140	09-MAR-21
Carbon tetrachloride			108.5		%		70-130	09-MAR-21
Chlorobenzene			104.1		%		70-130	09-MAR-21
Chloroform			103.6		%		70-130	09-MAR-21
cis-1,2-Dichloroethylene			103.2		%		70-130	09-MAR-21
cis-1,3-Dichloropropene			97.1		%		70-130	09-MAR-21
Dibromochloromethane			96.9		%		60-130	09-MAR-21
Dichlorodifluoromethane			65.1		%		50-140	09-MAR-21
Ethylbenzene			107.9		%		70-130	09-MAR-21
n-Hexane			97.1		%		70-130	09-MAR-21
Methylene Chloride			99.2		%		70-130	09-MAR-21
MTBE			102.2		%		70-130	09-MAR-21
m+p-Xylenes			108.0		%		70-130	09-MAR-21
Methyl Ethyl Ketone			85.6		%		60-140	09-MAR-21
Methyl Isobutyl Ketone			84.6		%		60-140	09-MAR-21
o-Xylene			115.6		%		70-130	09-MAR-21
Styrene			103.0		%		70-130	09-MAR-21
Tetrachloroethylene			107.7		%		60-130	09-MAR-21
Toluene			104.8		%		70-130	09-MAR-21
trans-1,2-Dichloroethylene			103.3		%		60-130	09-MAR-21
trans-1,3-Dichloropropene			101.4		%		70-130	09-MAR-21
Trichloroethylene			105.0		%		60-130	09-MAR-21
Trichlorofluoromethane			100.5		%		50-140	09-MAR-21
Vinyl chloride			98.5		%		60-140	09-MAR-21
WG3498335-1 MB								
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1,1-Trichloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1,2-Trichloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1-Dichloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1-Dichloroethylene			<0.050		ug/g		0.05	09-MAR-21
1,2-Dibromoethane			<0.050		ug/g		0.05	09-MAR-21
1,2-Dichlorobenzene			<0.050		ug/g		0.05	09-MAR-21

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Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5398464								
WG3498335-1 MB								
1,2-Dichloroethane			<0.050		ug/g		0.05	09-MAR-21
1,2-Dichloropropane			<0.050		ug/g		0.05	09-MAR-21
1,3-Dichlorobenzene			<0.050		ug/g		0.05	09-MAR-21
1,4-Dichlorobenzene			<0.050		ug/g		0.05	09-MAR-21
Acetone			<0.50		ug/g		0.5	09-MAR-21
Benzene			<0.0068		ug/g		0.0068	09-MAR-21
Bromodichloromethane			<0.050		ug/g		0.05	09-MAR-21
Bromoform			<0.050		ug/g		0.05	09-MAR-21
Bromomethane			<0.050		ug/g		0.05	09-MAR-21
Carbon tetrachloride			<0.050		ug/g		0.05	09-MAR-21
Chlorobenzene			<0.050		ug/g		0.05	09-MAR-21
Chloroform			<0.050		ug/g		0.05	09-MAR-21
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	09-MAR-21
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	09-MAR-21
Dibromochloromethane			<0.050		ug/g		0.05	09-MAR-21
Dichlorodifluoromethane			<0.050		ug/g		0.05	09-MAR-21
Ethylbenzene			<0.018		ug/g		0.018	09-MAR-21
n-Hexane			<0.050		ug/g		0.05	09-MAR-21
Methylene Chloride			<0.050		ug/g		0.05	09-MAR-21
MTBE			<0.050		ug/g		0.05	09-MAR-21
m+p-Xylenes			<0.030		ug/g		0.03	09-MAR-21
Methyl Ethyl Ketone			<0.50		ug/g		0.5	09-MAR-21
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	09-MAR-21
o-Xylene			<0.020		ug/g		0.02	09-MAR-21
Styrene			<0.050		ug/g		0.05	09-MAR-21
Tetrachloroethylene			<0.050		ug/g		0.05	09-MAR-21
Toluene			<0.080		ug/g		0.08	09-MAR-21
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	09-MAR-21
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	09-MAR-21
Trichloroethylene			<0.010		ug/g		0.01	09-MAR-21
Trichlorofluoromethane			<0.050		ug/g		0.05	09-MAR-21
Vinyl chloride			<0.020		ug/g		0.02	09-MAR-21
Surrogate: 1,4-Difluorobenzene			115.9		%		50-140	09-MAR-21

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2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5398464								
WG3498335-1 MB								
Surrogate: 4-Bromofluorobenzene			112.0		%		50-140	09-MAR-21
WG3498335-5 MS		**WG3498335-3**						
1,1,1,2-Tetrachloroethane			111.3		%		50-140	10-MAR-21
1,1,2,2-Tetrachloroethane			105.3		%		50-140	10-MAR-21
1,1,1-Trichloroethane			111.9		%		50-140	10-MAR-21
1,1,2-Trichloroethane			102.9		%		50-140	10-MAR-21
1,1-Dichloroethane			100.5		%		50-140	10-MAR-21
1,1-Dichloroethylene			99.6		%		50-140	10-MAR-21
1,2-Dibromoethane			113.1		%		50-140	10-MAR-21
1,2-Dichlorobenzene			111.5		%		50-140	10-MAR-21
1,2-Dichloroethane			104.8		%		50-140	10-MAR-21
1,2-Dichloropropane			100.9		%		50-140	10-MAR-21
1,3-Dichlorobenzene			114.3		%		50-140	10-MAR-21
1,4-Dichlorobenzene			116.9		%		50-140	10-MAR-21
Acetone			107.3		%		50-140	10-MAR-21
Benzene			104.1		%		50-140	10-MAR-21
Bromodichloromethane			115.3		%		50-140	10-MAR-21
Bromoform			120.3		%		50-140	10-MAR-21
Bromomethane			103.3		%		50-140	10-MAR-21
Carbon tetrachloride			119.6		%		50-140	10-MAR-21
Chlorobenzene			109.2		%		50-140	10-MAR-21
Chloroform			112.0		%		50-140	10-MAR-21
cis-1,2-Dichloroethylene			114.9		%		50-140	10-MAR-21
cis-1,3-Dichloropropene			103.3		%		50-140	10-MAR-21
Dibromochloromethane			111.8		%		50-140	10-MAR-21
Dichlorodifluoromethane			98.0		%		50-140	10-MAR-21
Ethylbenzene			101.7		%		50-140	10-MAR-21
n-Hexane			83.7		%		50-140	10-MAR-21
Methylene Chloride			102.3		%		50-140	10-MAR-21
MTBE			106.2		%		50-140	10-MAR-21
m+p-Xylenes			102.8		%		50-140	10-MAR-21
Methyl Ethyl Ketone			112.9		%		50-140	10-MAR-21
Methyl Isobutyl Ketone			95.4		%		50-140	10-MAR-21
o-Xylene			112.3		%		50-140	10-MAR-21

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2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5398464								
WG3498335-5 MS		**WG3498335-3**						
Styrene			106.1		%		50-140	10-MAR-21
Tetrachloroethylene			112.0		%		50-140	10-MAR-21
Toluene			99.1		%		50-140	10-MAR-21
trans-1,2-Dichloroethylene			90.9		%		50-140	10-MAR-21
trans-1,3-Dichloropropene			95.1		%		50-140	10-MAR-21
Trichloroethylene			119.8		%		50-140	10-MAR-21
Trichlorofluoromethane			108.9		%		50-140	10-MAR-21
Vinyl chloride			96.7		%		50-140	10-MAR-21
COMMENTS: RRQC-Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.								
Batch R5399216								
WG3498942-4 DUP		**WG3498942-3**						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	10-MAR-21
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	10-MAR-21
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	10-MAR-21

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Oakville ON L6H 5R7
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5399216								
WG3498942-4 DUP		**WG3498942-3**						
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	10-MAR-21
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	10-MAR-21
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	10-MAR-21
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	10-MAR-21
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	10-MAR-21
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	10-MAR-21
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	10-MAR-21
Trichloroethylene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	10-MAR-21
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	10-MAR-21
WG3498942-2 LCS								
1,1,1,2-Tetrachloroethane			99.2		%		60-130	09-MAR-21
1,1,2,2-Tetrachloroethane			118.0		%		60-130	09-MAR-21
1,1,1-Trichloroethane			97.5		%		60-130	09-MAR-21
1,1,2-Trichloroethane			105.1		%		60-130	09-MAR-21
1,1-Dichloroethane			101.2		%		60-130	09-MAR-21
1,1-Dichloroethylene			97.7		%		60-130	09-MAR-21
1,2-Dibromoethane			105.2		%		70-130	09-MAR-21
1,2-Dichlorobenzene			103.1		%		70-130	09-MAR-21
1,2-Dichloroethane			99.5		%		60-130	09-MAR-21
1,2-Dichloropropane			101.5		%		70-130	09-MAR-21
1,3-Dichlorobenzene			102.0		%		70-130	09-MAR-21
1,4-Dichlorobenzene			102.6		%		70-130	09-MAR-21
Acetone			114.2		%		60-140	09-MAR-21
Benzene			98.1		%		70-130	09-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5399216								
WG3498942-2 LCS								
Bromodichloromethane			106.3		%		50-140	09-MAR-21
Bromoform			109.1		%		70-130	09-MAR-21
Bromomethane			97.0		%		50-140	09-MAR-21
Carbon tetrachloride			99.7		%		70-130	09-MAR-21
Chlorobenzene			99.5		%		70-130	09-MAR-21
Chloroform			101.9		%		70-130	09-MAR-21
cis-1,2-Dichloroethylene			106.7		%		70-130	09-MAR-21
cis-1,3-Dichloropropene			108.6		%		70-130	09-MAR-21
Dibromochloromethane			100.9		%		60-130	09-MAR-21
Dichlorodifluoromethane			70.5		%		50-140	09-MAR-21
Ethylbenzene			100.3		%		70-130	09-MAR-21
n-Hexane			92.1		%		70-130	09-MAR-21
Methylene Chloride			102.6		%		70-130	09-MAR-21
MTBE			101.5		%		70-130	09-MAR-21
m+p-Xylenes			99.3		%		70-130	09-MAR-21
Methyl Ethyl Ketone			108.2		%		60-140	09-MAR-21
Methyl Isobutyl Ketone			109.7		%		60-140	09-MAR-21
o-Xylene			108.8		%		70-130	09-MAR-21
Styrene			102.1		%		70-130	09-MAR-21
Tetrachloroethylene			99.2		%		60-130	09-MAR-21
Toluene			99.98		%		70-130	09-MAR-21
trans-1,2-Dichloroethylene			101.1		%		60-130	09-MAR-21
trans-1,3-Dichloropropene			108.0		%		70-130	09-MAR-21
Trichloroethylene			99.8		%		60-130	09-MAR-21
Trichlorofluoromethane			95.3		%		50-140	09-MAR-21
Vinyl chloride			99.3		%		60-140	09-MAR-21
WG3498942-1 MB								
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1,1-Trichloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1,2-Trichloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1-Dichloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1-Dichloroethylene			<0.050		ug/g		0.05	09-MAR-21
1,2-Dibromoethane			<0.050		ug/g		0.05	09-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5399216								
WG3498942-1 MB								
1,2-Dichlorobenzene			<0.050		ug/g		0.05	09-MAR-21
1,2-Dichloroethane			<0.050		ug/g		0.05	09-MAR-21
1,2-Dichloropropane			<0.050		ug/g		0.05	09-MAR-21
1,3-Dichlorobenzene			<0.050		ug/g		0.05	09-MAR-21
1,4-Dichlorobenzene			<0.050		ug/g		0.05	09-MAR-21
Acetone			<0.50		ug/g		0.5	09-MAR-21
Benzene			<0.0068		ug/g		0.0068	09-MAR-21
Bromodichloromethane			<0.050		ug/g		0.05	09-MAR-21
Bromoform			<0.050		ug/g		0.05	09-MAR-21
Bromomethane			<0.050		ug/g		0.05	09-MAR-21
Carbon tetrachloride			<0.050		ug/g		0.05	09-MAR-21
Chlorobenzene			<0.050		ug/g		0.05	09-MAR-21
Chloroform			<0.050		ug/g		0.05	09-MAR-21
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	09-MAR-21
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	09-MAR-21
Dibromochloromethane			<0.050		ug/g		0.05	09-MAR-21
Dichlorodifluoromethane			<0.050		ug/g		0.05	09-MAR-21
Ethylbenzene			<0.018		ug/g		0.018	09-MAR-21
n-Hexane			<0.050		ug/g		0.05	09-MAR-21
Methylene Chloride			<0.050		ug/g		0.05	09-MAR-21
MTBE			<0.050		ug/g		0.05	09-MAR-21
m+p-Xylenes			<0.030		ug/g		0.03	09-MAR-21
Methyl Ethyl Ketone			<0.50		ug/g		0.5	09-MAR-21
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	09-MAR-21
o-Xylene			<0.020		ug/g		0.02	09-MAR-21
Styrene			<0.050		ug/g		0.05	09-MAR-21
Tetrachloroethylene			<0.050		ug/g		0.05	09-MAR-21
Toluene			<0.080		ug/g		0.08	09-MAR-21
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	09-MAR-21
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	09-MAR-21
Trichloroethylene			<0.010		ug/g		0.01	09-MAR-21
Trichlorofluoromethane			<0.050		ug/g		0.05	09-MAR-21
Vinyl chloride			<0.020		ug/g		0.02	09-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5399216								
WG3498942-1 MB								
Surrogate: 1,4-Difluorobenzene			118.5		%		50-140	09-MAR-21
Surrogate: 4-Bromofluorobenzene			111.5		%		50-140	09-MAR-21
WG3498942-5 MS		**WG3498942-3**						
1,1,1,2-Tetrachloroethane			104.0		%		50-140	10-MAR-21
1,1,2,2-Tetrachloroethane			115.5		%		50-140	10-MAR-21
1,1,1-Trichloroethane			103.1		%		50-140	10-MAR-21
1,1,2-Trichloroethane			107.6		%		50-140	10-MAR-21
1,1-Dichloroethane			103.2		%		50-140	10-MAR-21
1,1-Dichloroethylene			104.9		%		50-140	10-MAR-21
1,2-Dibromoethane			107.0		%		50-140	10-MAR-21
1,2-Dichlorobenzene			106.2		%		50-140	10-MAR-21
1,2-Dichloroethane			102.2		%		50-140	10-MAR-21
1,2-Dichloropropane			104.9		%		50-140	10-MAR-21
1,3-Dichlorobenzene			104.6		%		50-140	10-MAR-21
1,4-Dichlorobenzene			104.9		%		50-140	10-MAR-21
Acetone			113.4		%		50-140	10-MAR-21
Benzene			102.6		%		50-140	10-MAR-21
Bromodichloromethane			109.6		%		50-140	10-MAR-21
Bromoform			111.4		%		50-140	10-MAR-21
Bromomethane			104.5		%		50-140	10-MAR-21
Carbon tetrachloride			106.0		%		50-140	10-MAR-21
Chlorobenzene			103.4		%		50-140	10-MAR-21
Chloroform			106.1		%		50-140	10-MAR-21
cis-1,2-Dichloroethylene			110.8		%		50-140	10-MAR-21
cis-1,3-Dichloropropene			109.2		%		50-140	10-MAR-21
Dibromochloromethane			104.3		%		50-140	10-MAR-21
Dichlorodifluoromethane			101.3		%		50-140	10-MAR-21
Ethylbenzene			105.4		%		50-140	10-MAR-21
n-Hexane			102.1		%		50-140	10-MAR-21
Methylene Chloride			105.5		%		50-140	10-MAR-21
MTBE			105.7		%		50-140	10-MAR-21
m+p-Xylenes			103.9		%		50-140	10-MAR-21
Methyl Ethyl Ketone			103.4		%		50-140	10-MAR-21
Methyl Isobutyl Ketone			109.6		%		50-140	10-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5399216								
WG3498942-5 MS		**WG3498942-3**						
o-Xylene			114.2		%		50-140	10-MAR-21
Styrene			105.5		%		50-140	10-MAR-21
Tetrachloroethylene			103.7		%		50-140	10-MAR-21
Toluene			105.3		%		50-140	10-MAR-21
trans-1,2-Dichloroethylene			105.2		%		50-140	10-MAR-21
trans-1,3-Dichloropropene			108.6		%		50-140	10-MAR-21
Trichloroethylene			104.2		%		50-140	10-MAR-21
Trichlorofluoromethane			105.9		%		50-140	10-MAR-21
Vinyl chloride			112.0		%		50-140	10-MAR-21

Quality Control Report

Workorder: L2564179 Report Date: 07-APR-21

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

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.

Quality Control Report

Workorder: L2564179 Report Date: 07-APR-21

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Cyanides							
Cyanide (WAD)-O.Reg 153/04 (July 2011)							
	1	23-FEB-21 13:00	11-MAR-21 13:00	14	16	days	EHT
	2	22-FEB-21 14:00	10-MAR-21 19:00	14	16	days	EHT
	3	23-FEB-21 17:00	11-MAR-21 13:00	14	16	days	EHT
	4	24-FEB-21 15:00	11-MAR-21 13:00	14	15	days	EHT
	6	24-FEB-21 11:00	11-MAR-21 13:00	14	15	days	EHT
Hydrocarbons							
F2-F4-O.Reg 153/04 (July 2011)							
	1	23-FEB-21 13:00	10-MAR-21 14:00	14	15	days	EHT
	2	22-FEB-21 14:00	09-MAR-21 14:00	14	15	days	EHT
	3	23-FEB-21 17:00	11-MAR-21 13:00	14	16	days	EHT
	4	24-FEB-21 15:00	11-MAR-21 13:00	14	15	days	EHT
	6	24-FEB-21 11:00	11-MAR-21 13:00	14	15	days	EHT

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2564179 were received on 05-MAR-21 16:00.

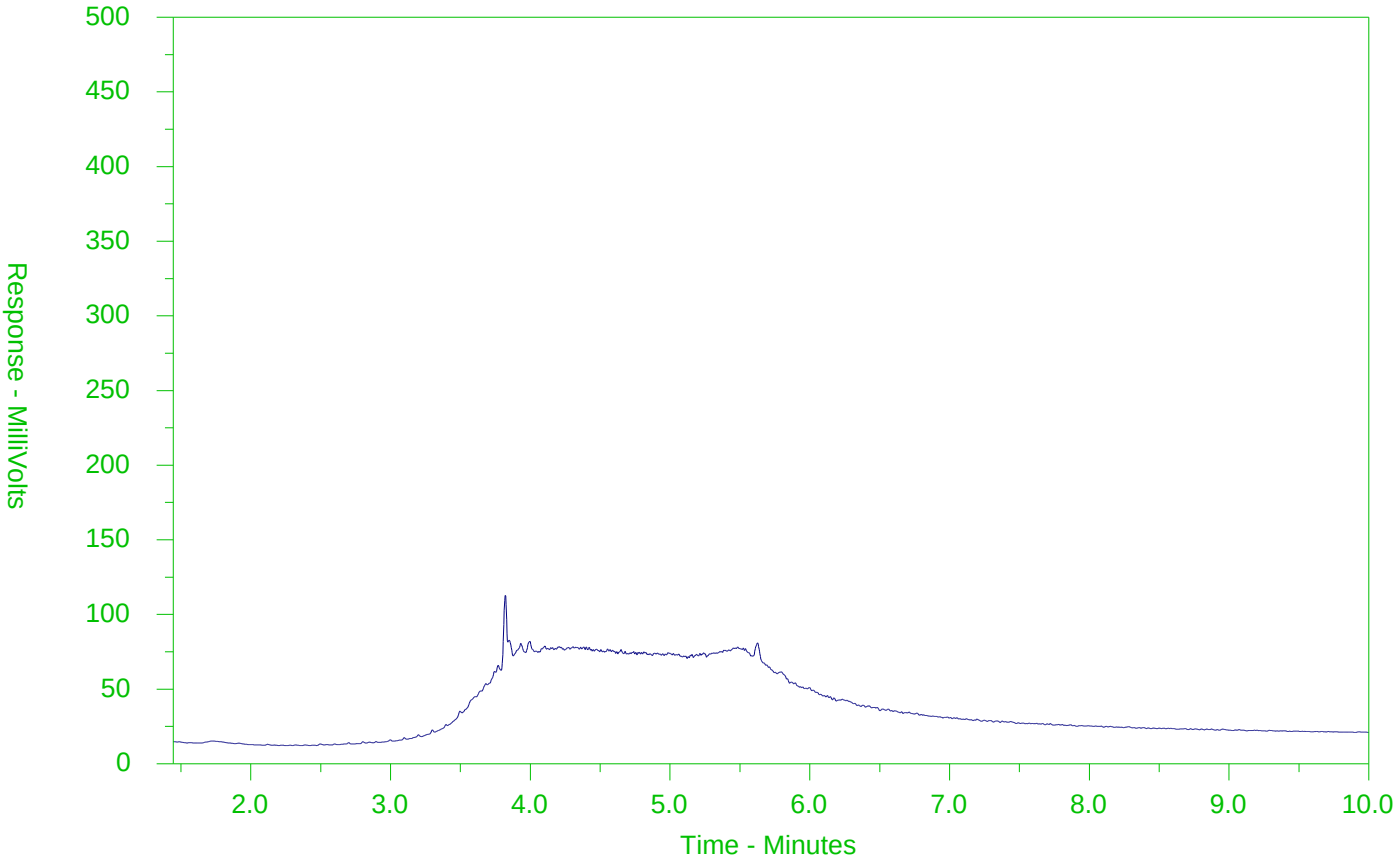
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where 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: L2564179-1
Client Sample ID: BH01 SS1 (0'-2')



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

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

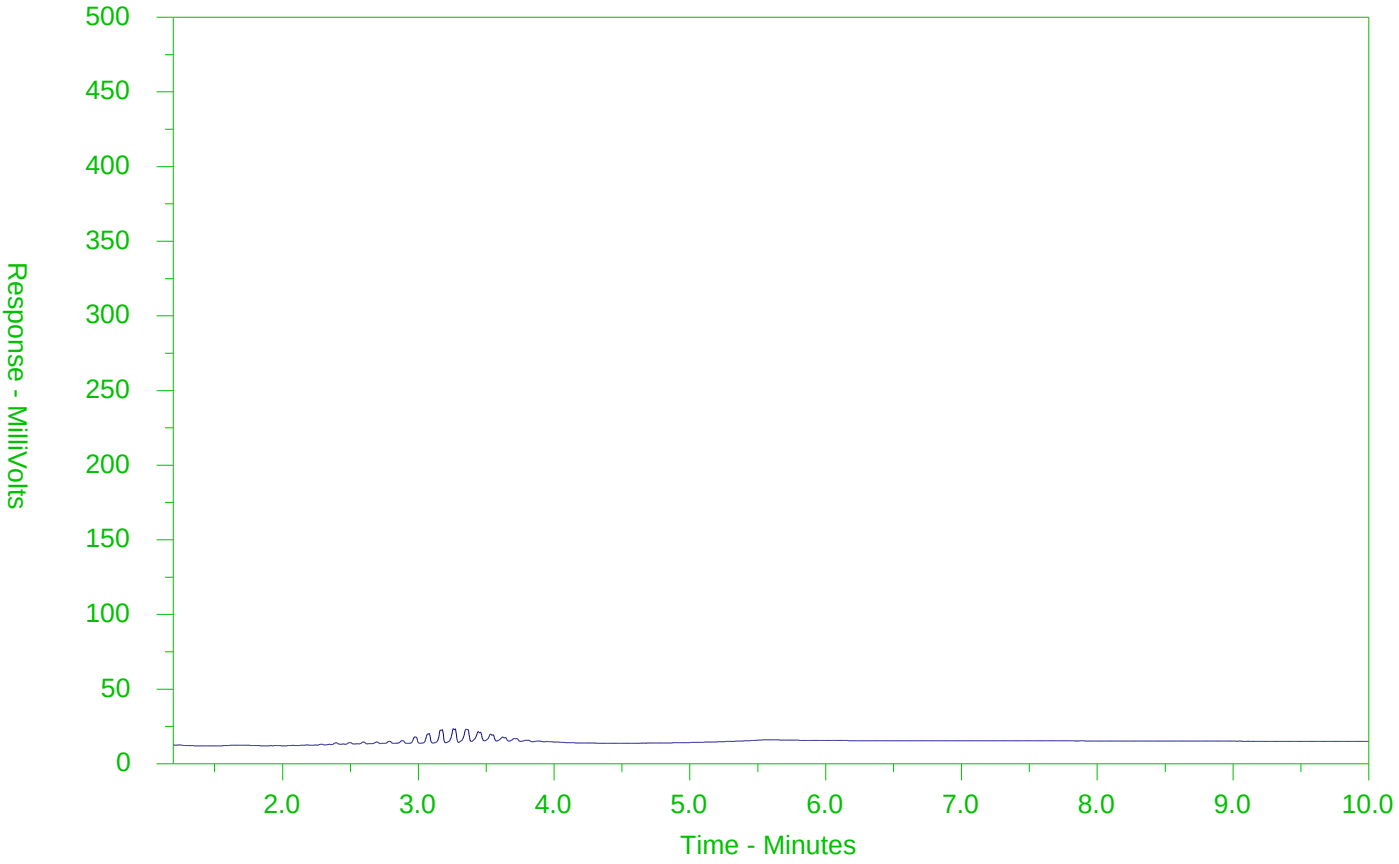
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-2
Client Sample ID: BH02 SS5 (10-12)



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

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

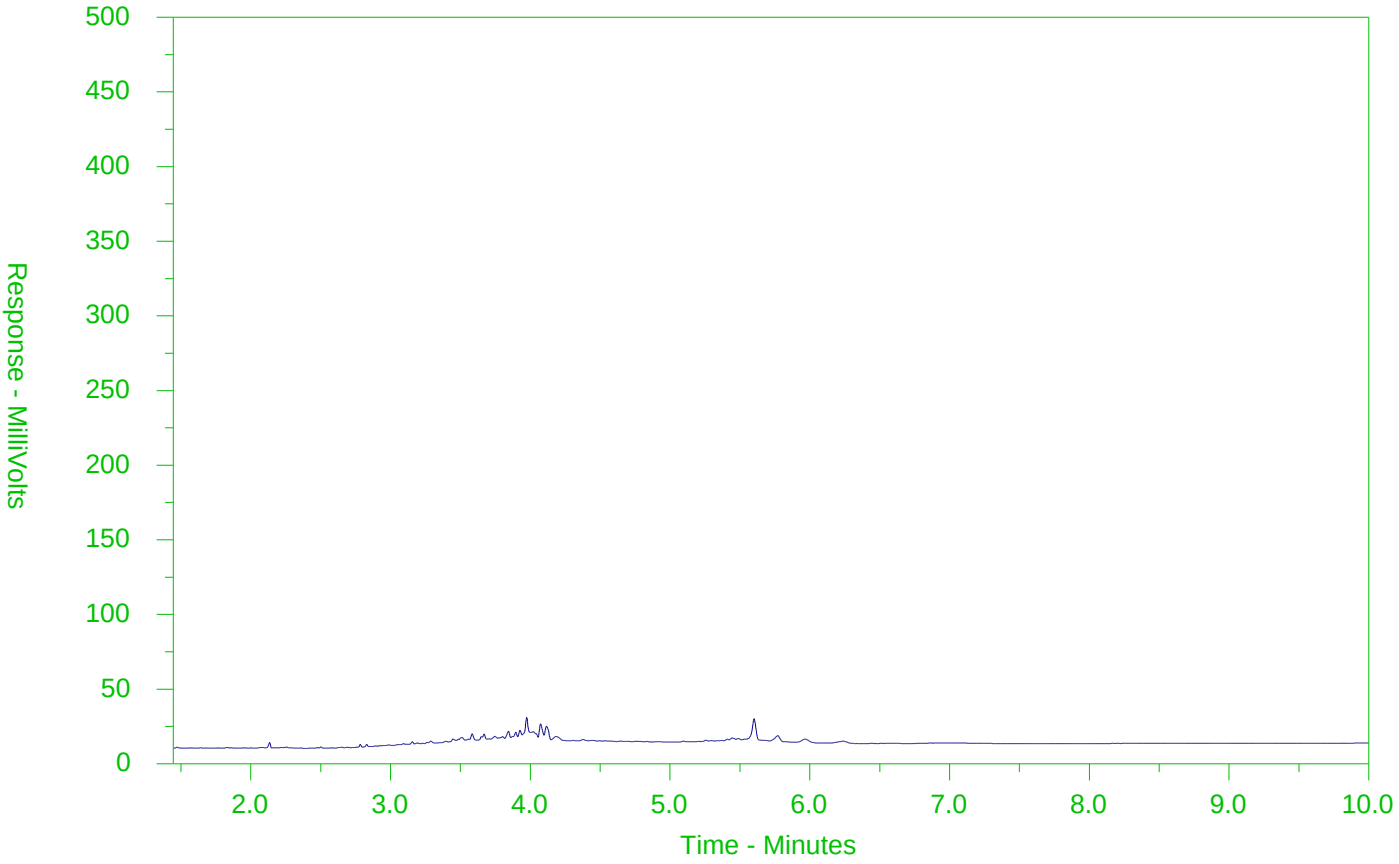
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-3
Client Sample ID: BH03 SS1 (0'-2')



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

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

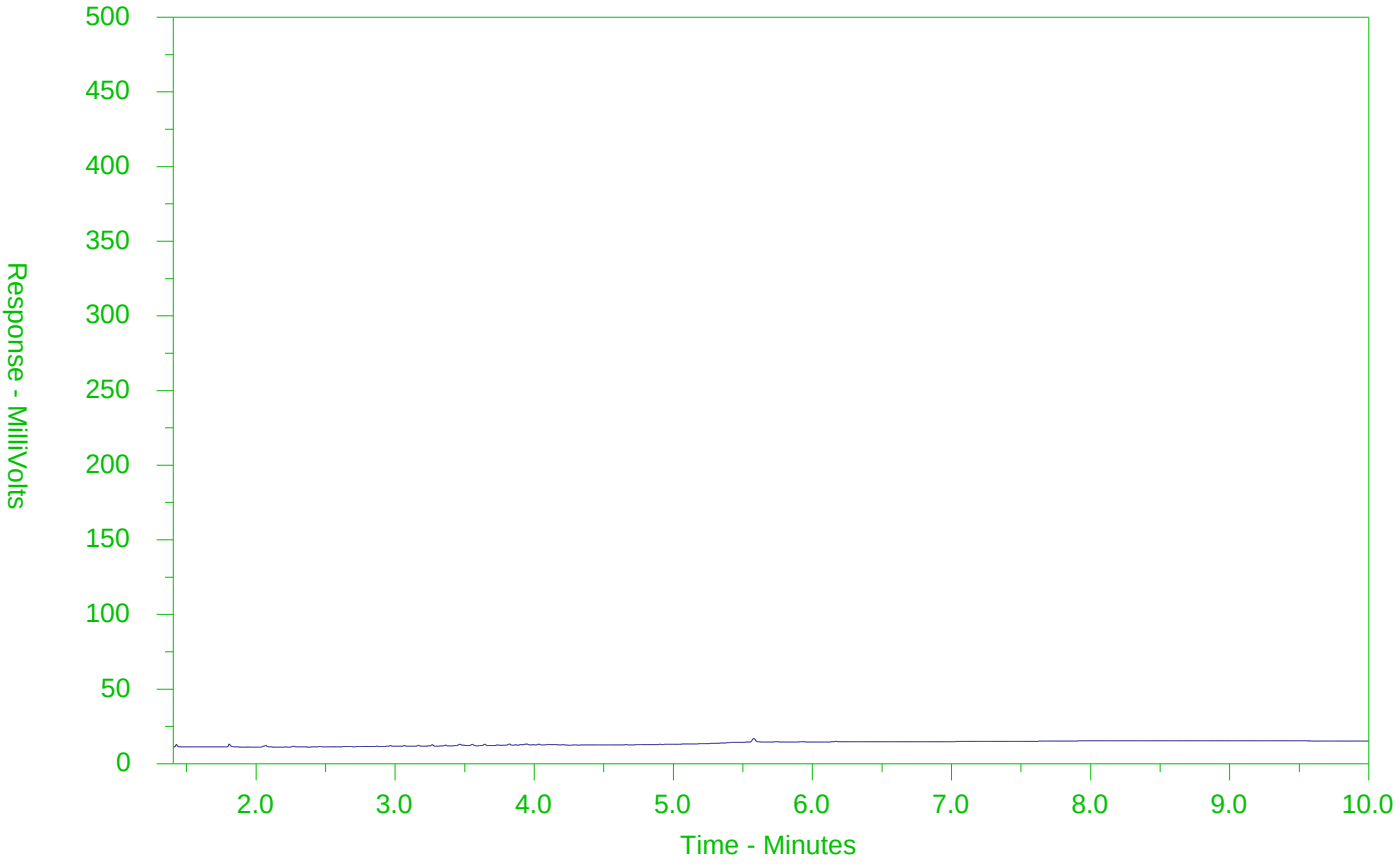
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-4
Client Sample ID: BH04 SS2 (2'6"-4'6")



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

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

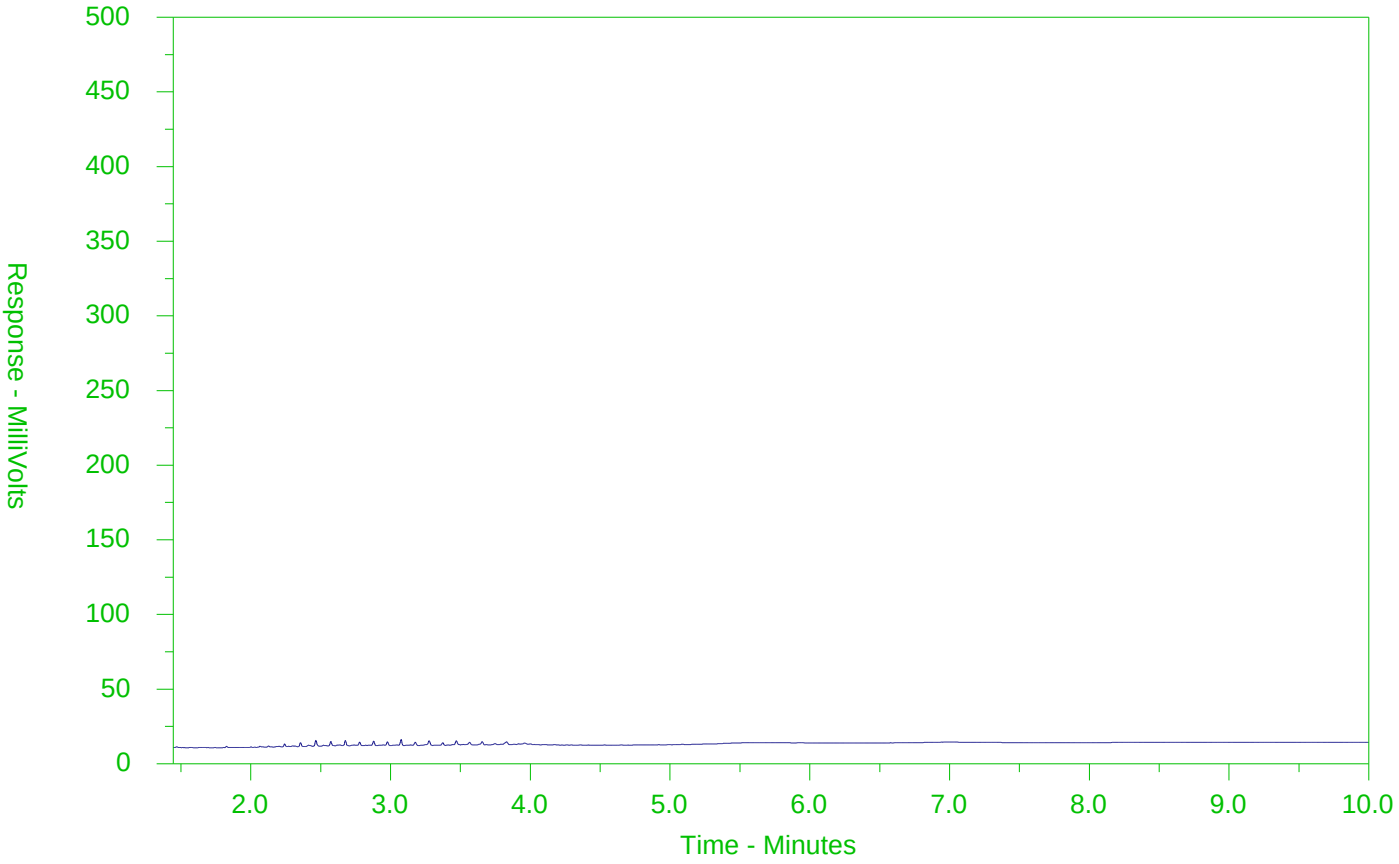
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-5
Client Sample ID: BH 05 SS8 (25'-27')



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

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

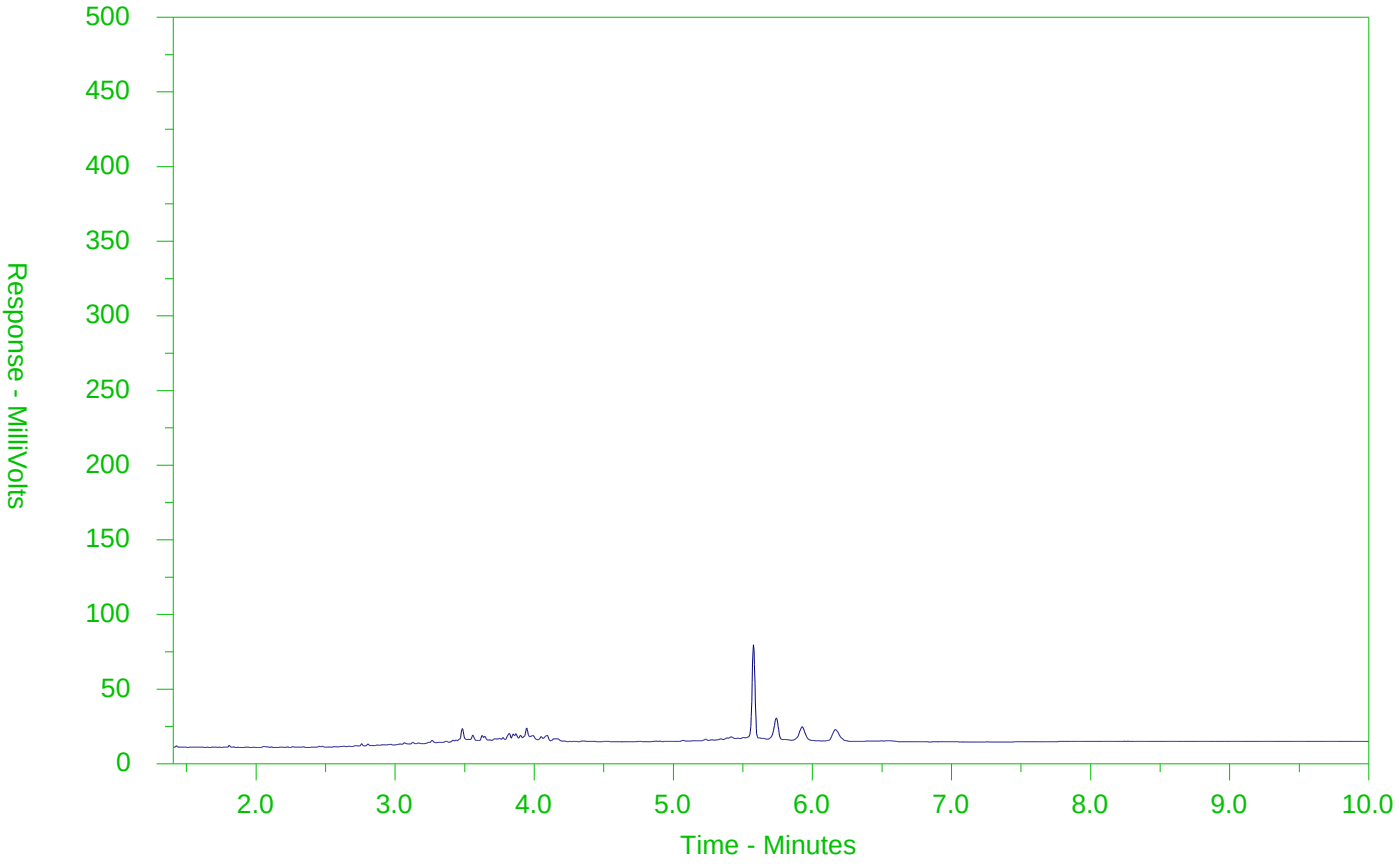
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-6
Client Sample ID: BH06 SS1 (0'-2')



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

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

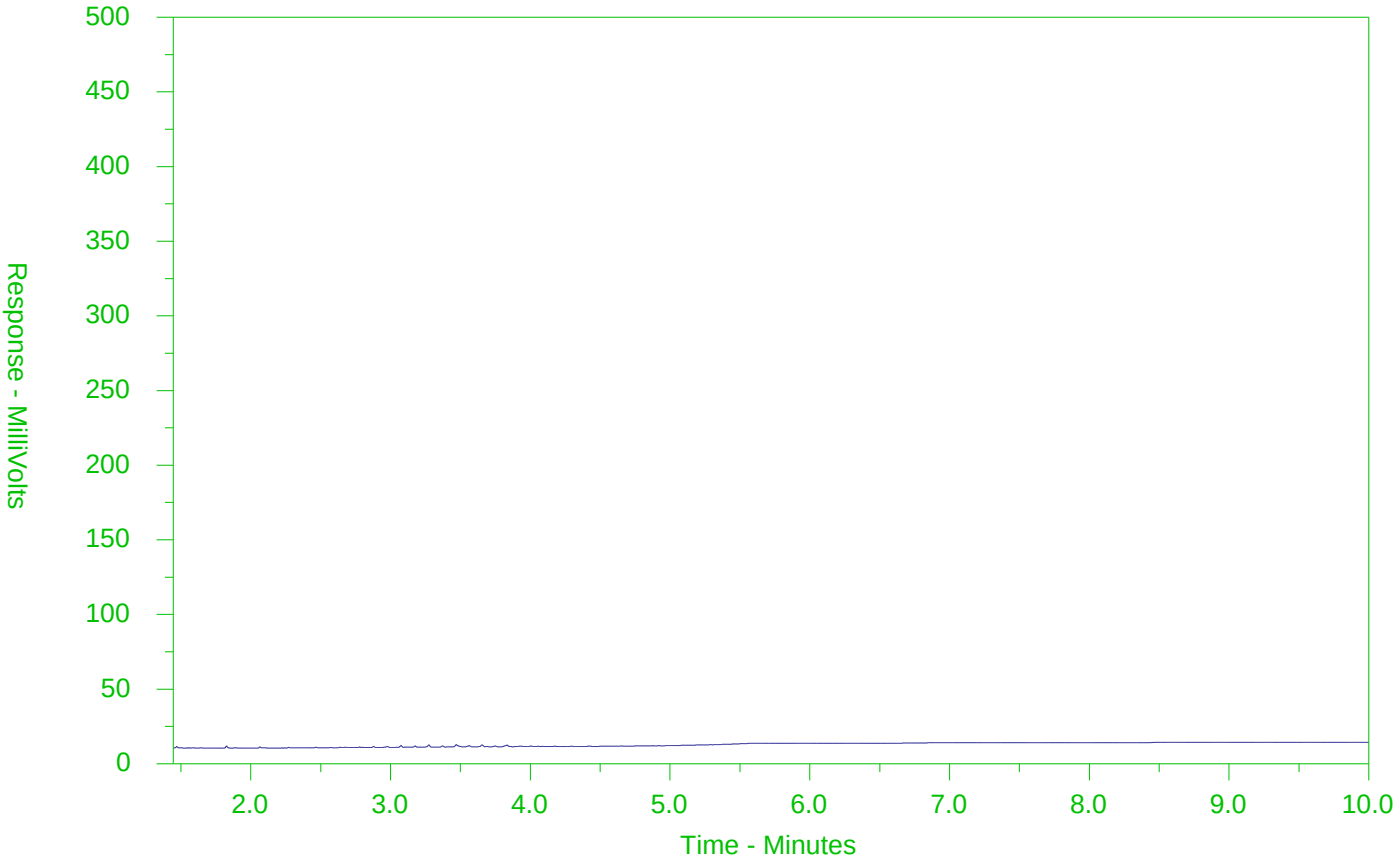
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-8
Client Sample ID: BH07 SS6 (15'-17')



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

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

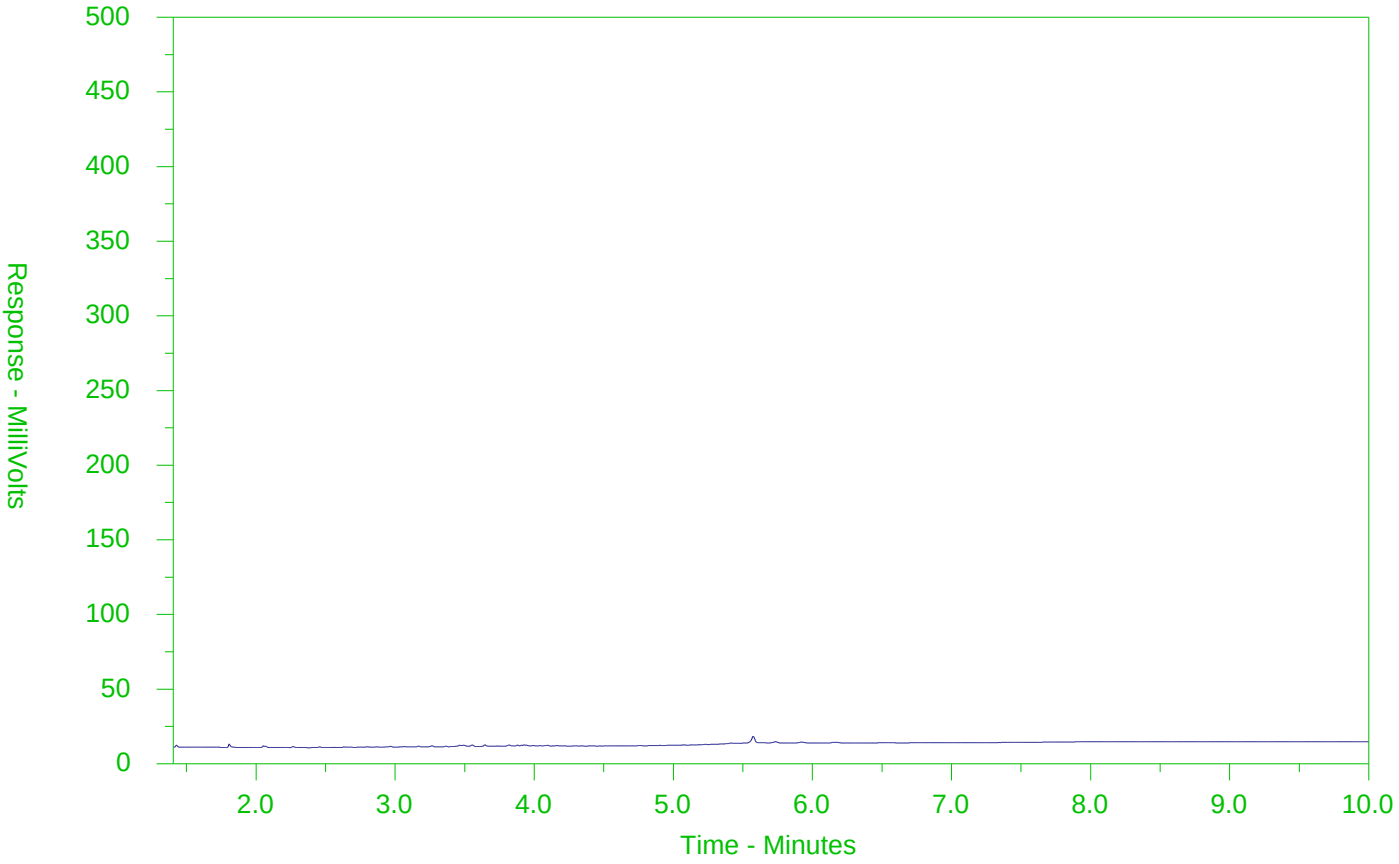
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-9
Client Sample ID: BH08 SS2 (2'6"-4'6")



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

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

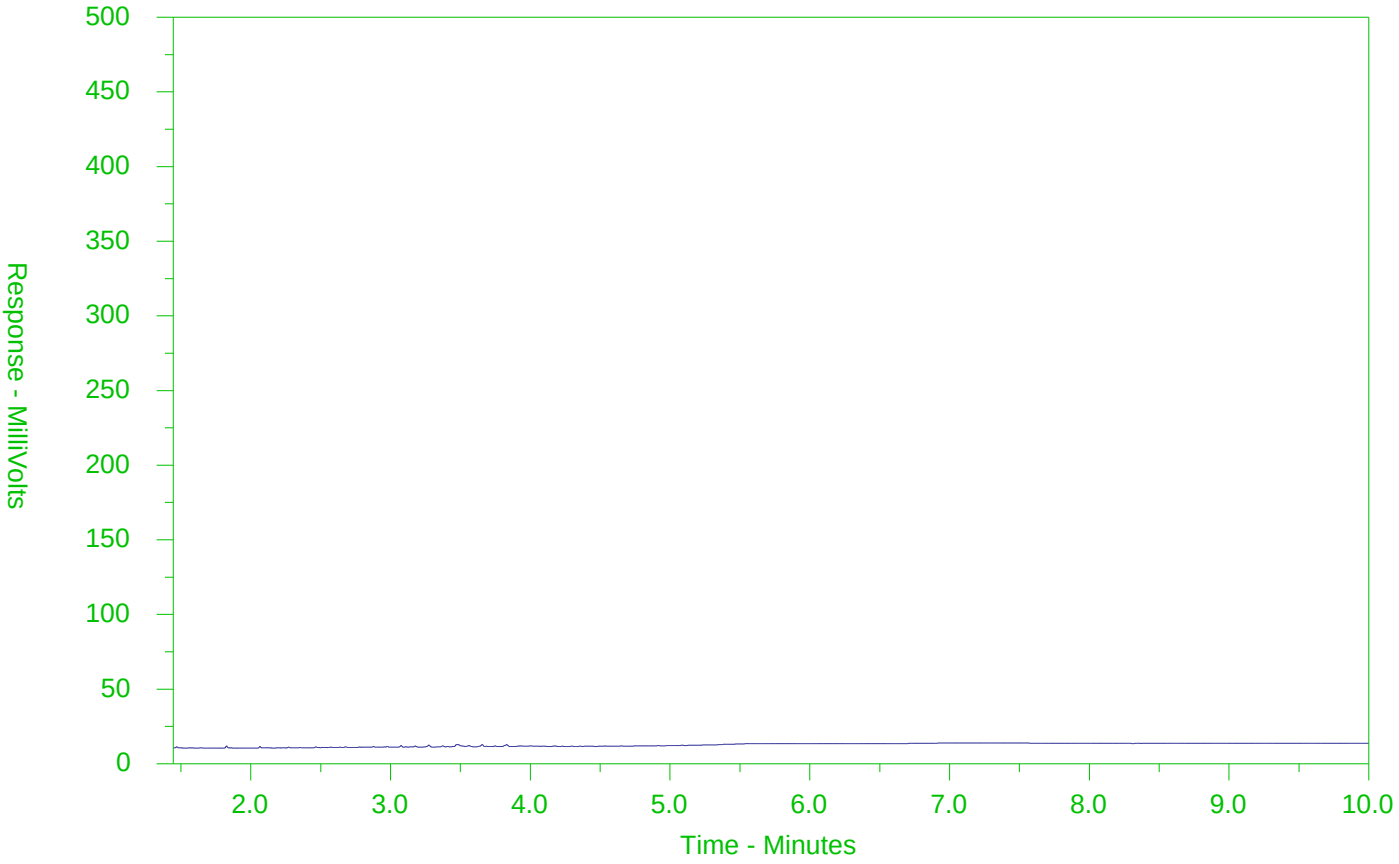
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-10
Client Sample ID: BH10 SS4 (7'6"-9'6")



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

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

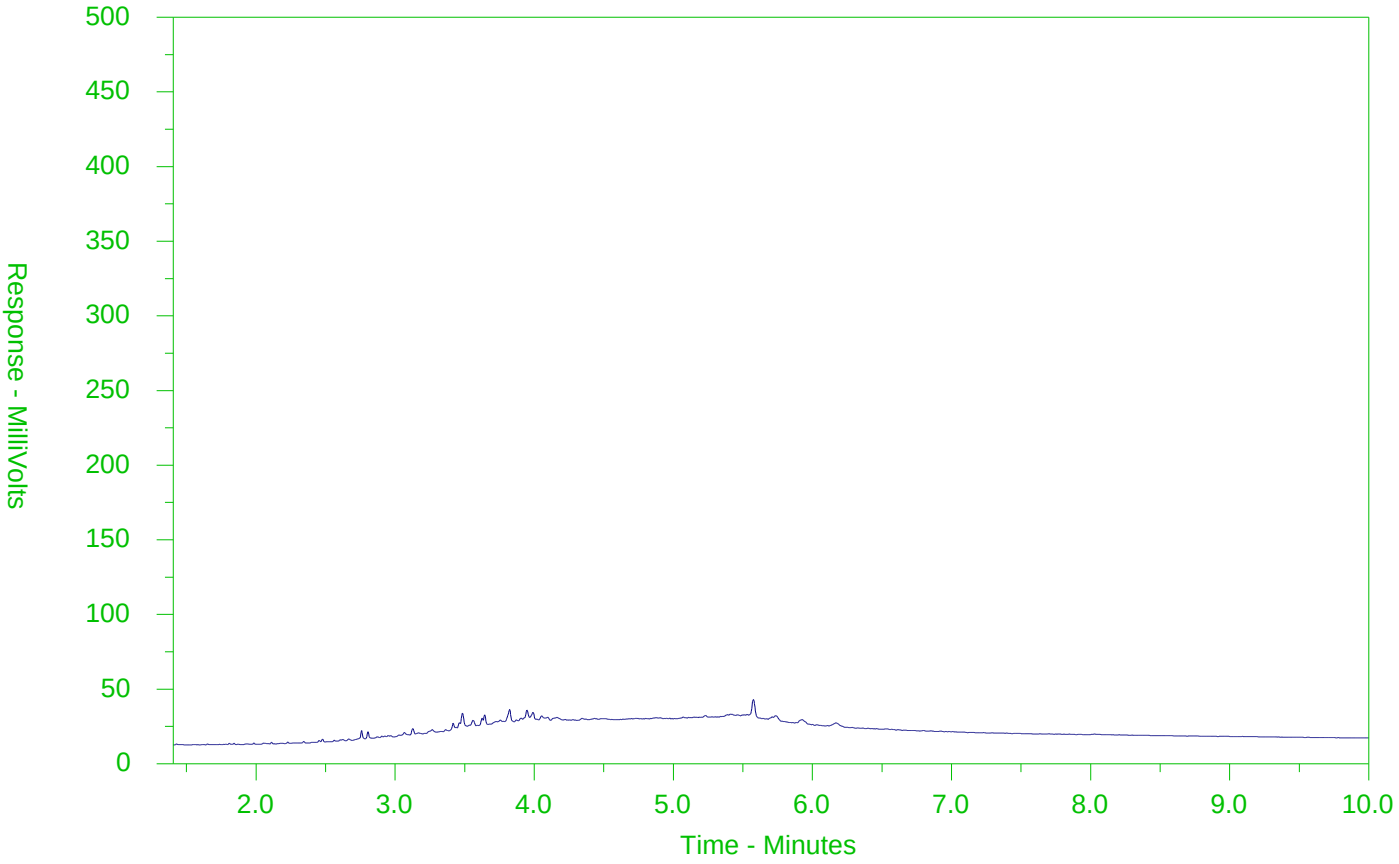
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-11
Client Sample ID: BH11 SS1 (0'-2')



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

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

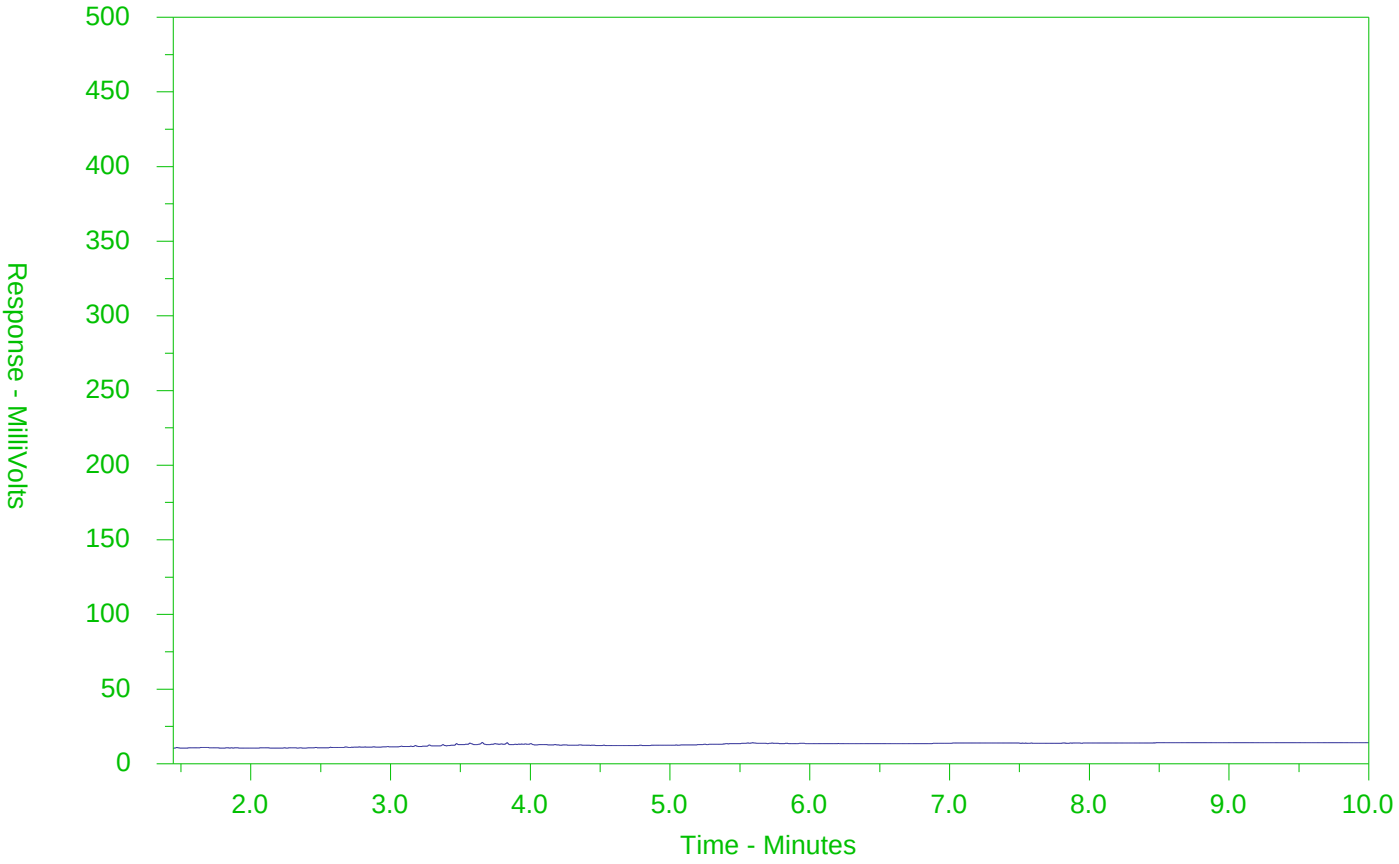
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-12
Client Sample ID: BH12 SS3 (5'-7')



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

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

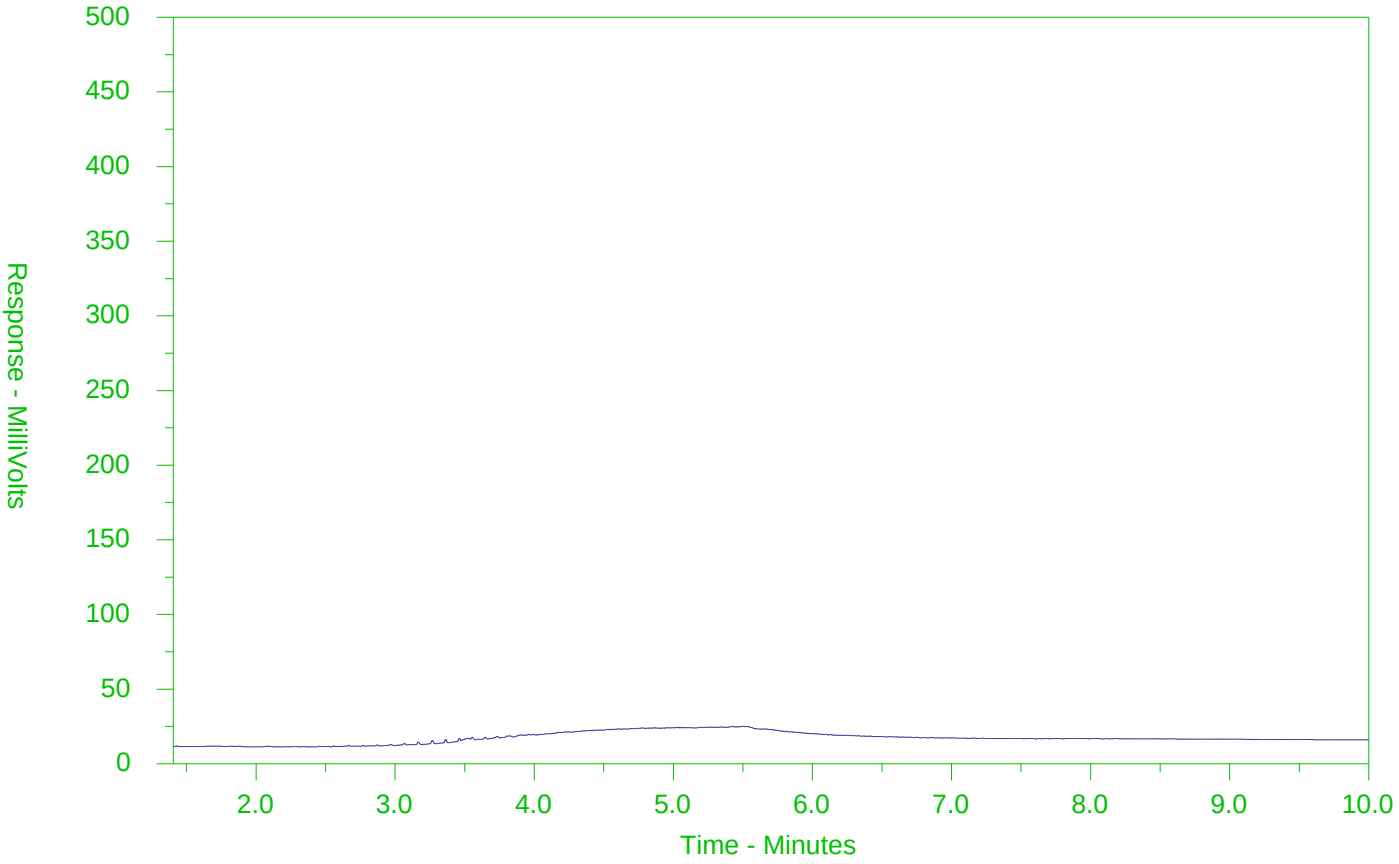
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-13
Client Sample ID: BH13 SS1 (0'-2')



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

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

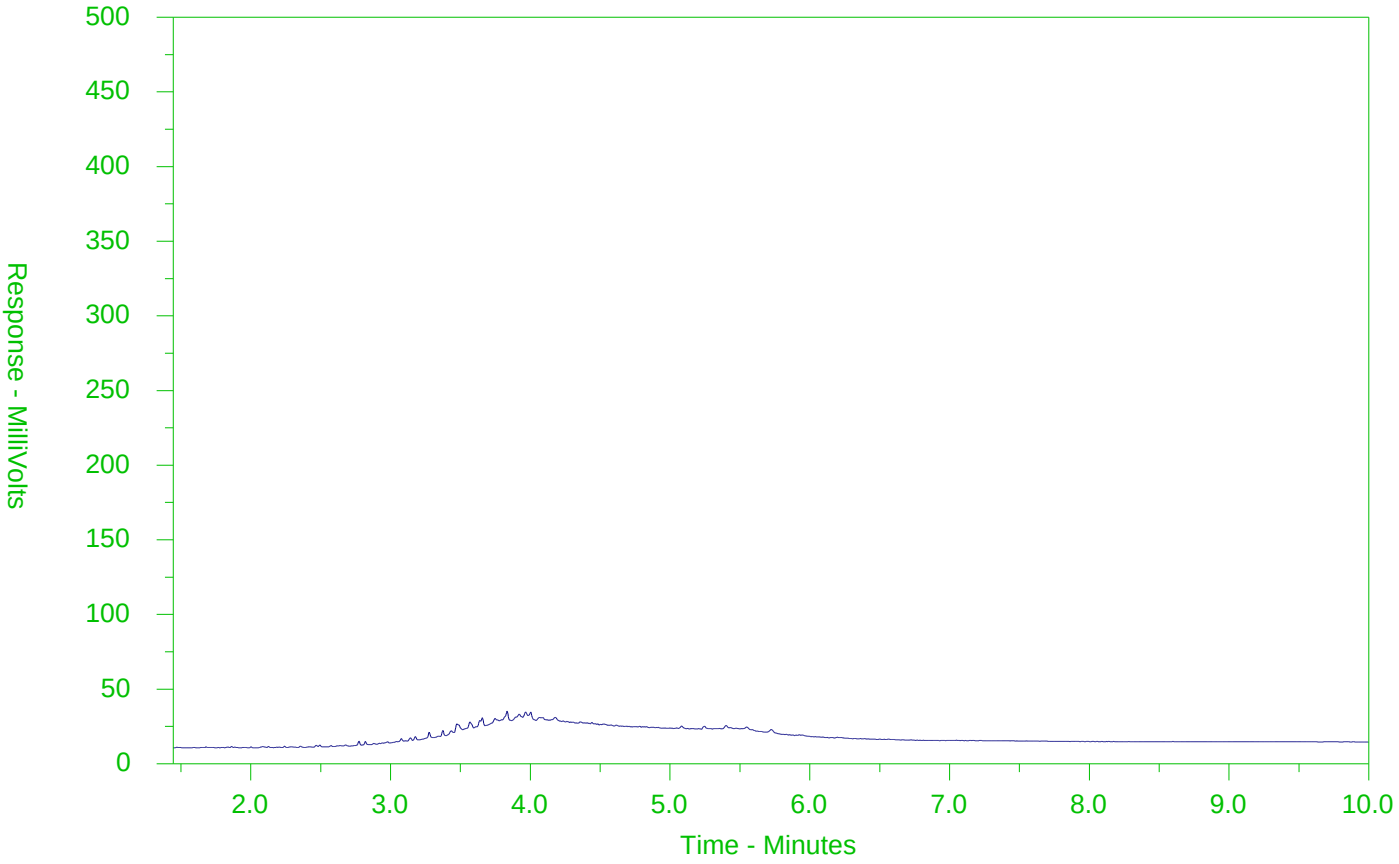
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-14
Client Sample ID: BH14 SS2 (2'6"-4'6")



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

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

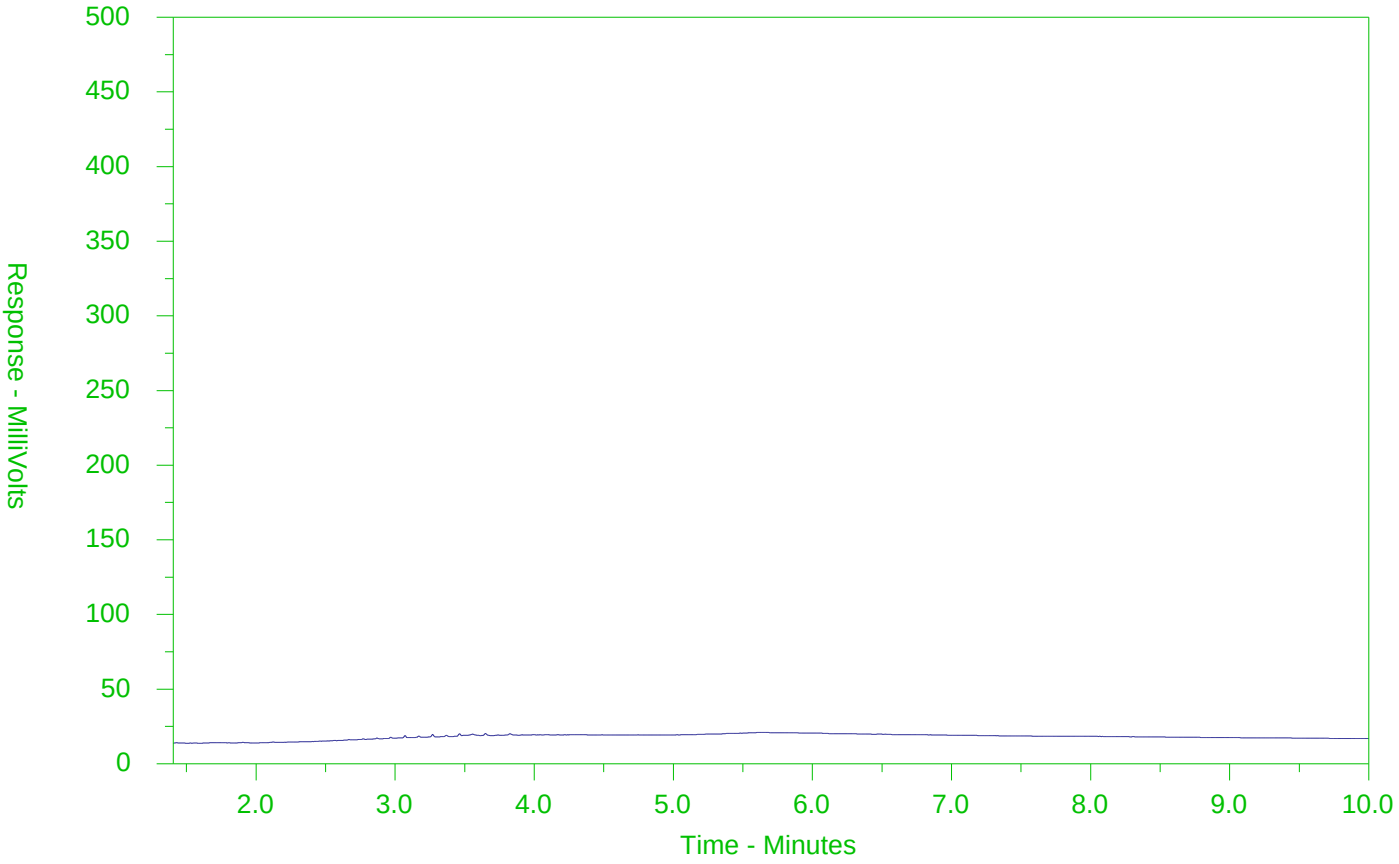
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-15
Client Sample ID: BH19 SS4 (7'6"-9'-6")



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

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

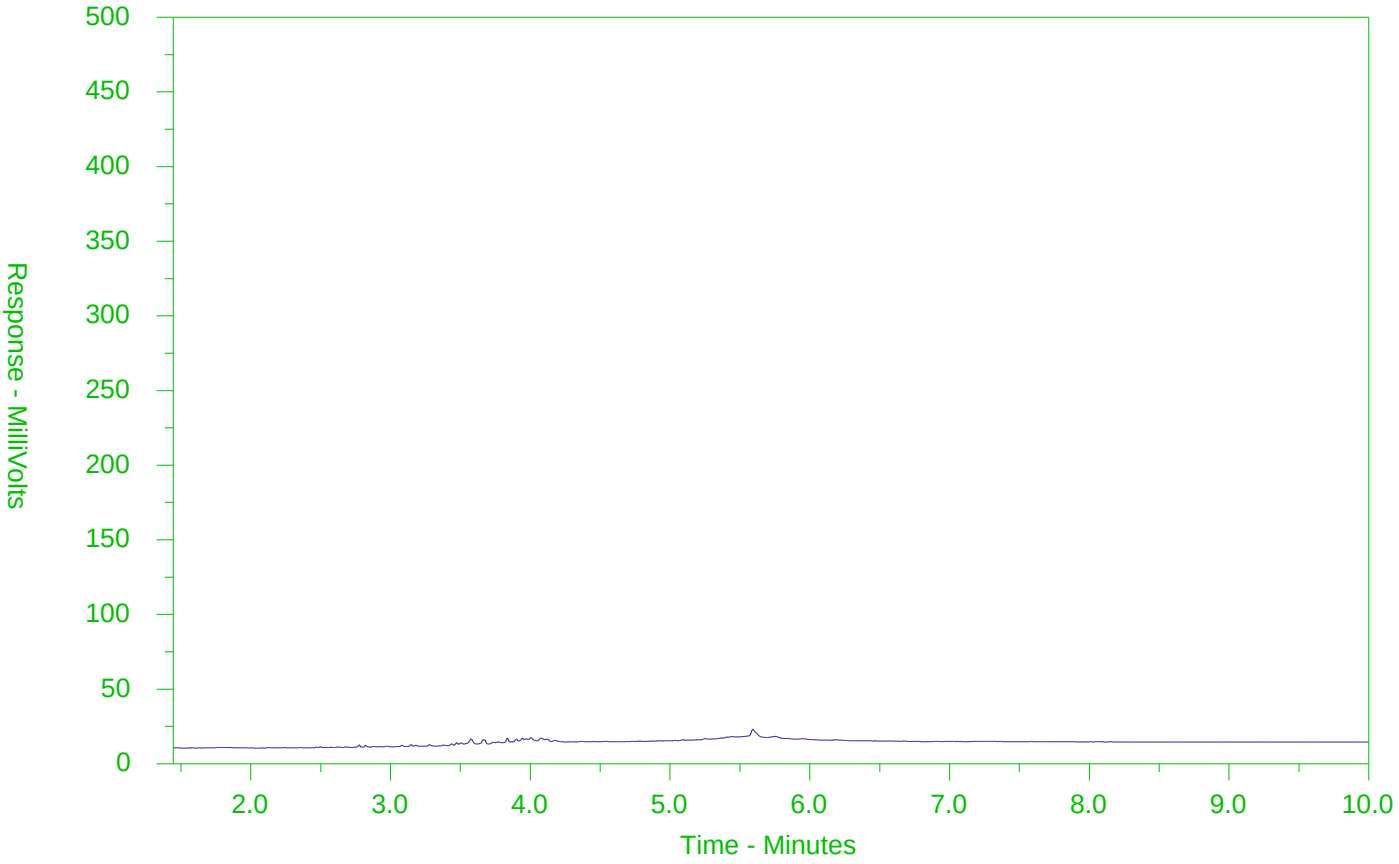
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-16
Client Sample ID: BH20 SS1 (0'-2')



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

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

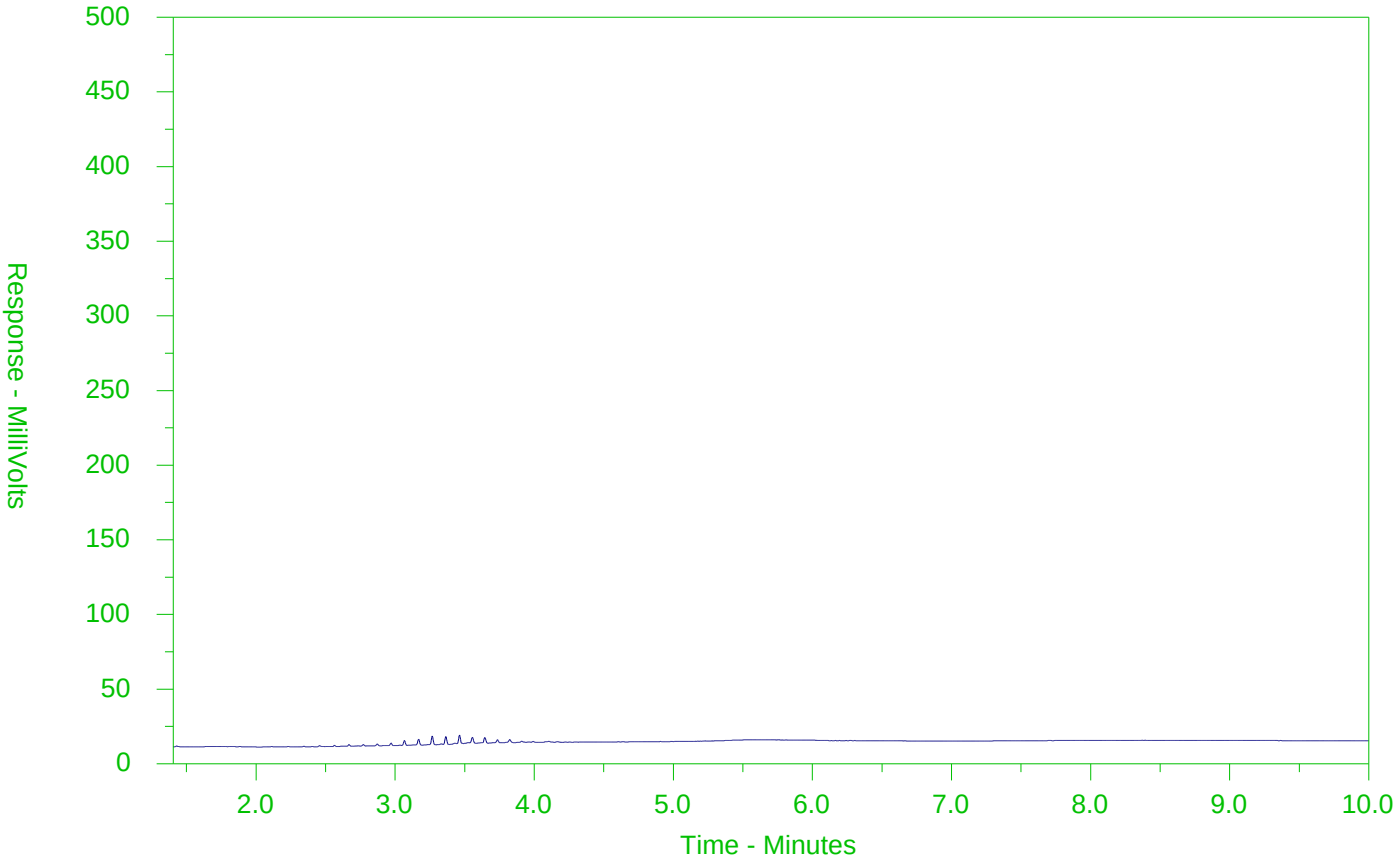
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-17
Client Sample ID: BH21 SS3 (5'-7')



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

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

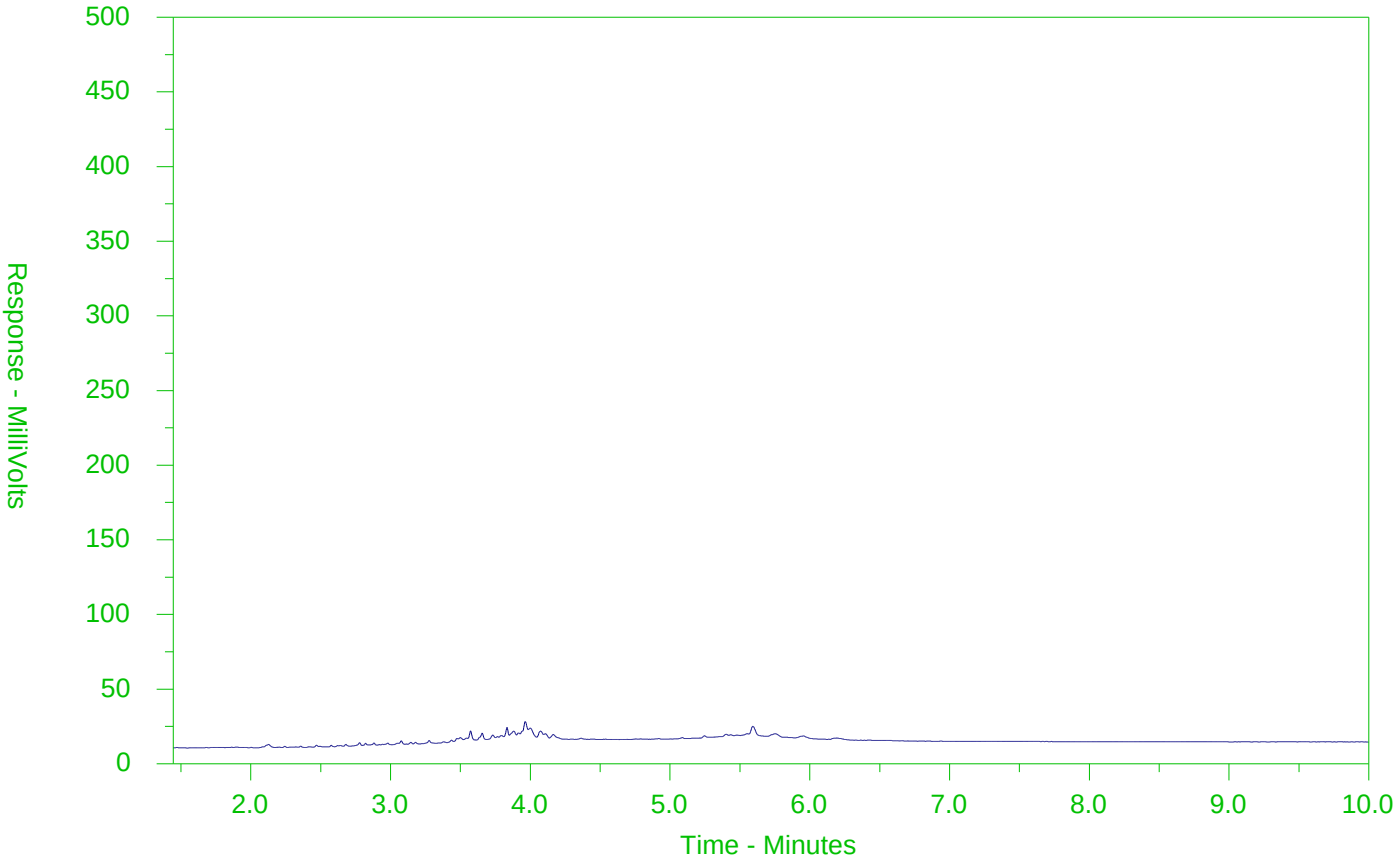
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-18
Client Sample ID: BH23 SS1 (0'-2')



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

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

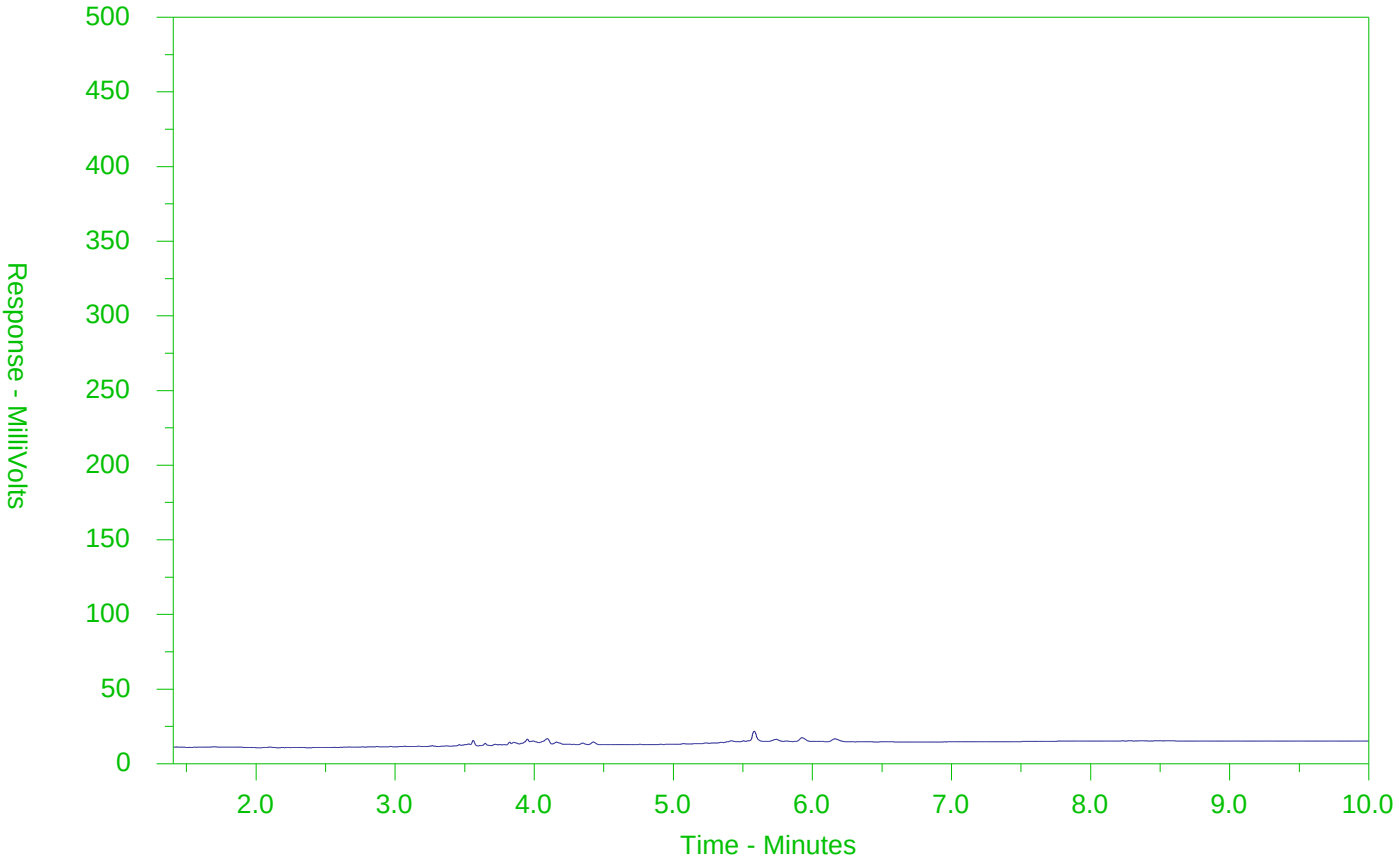
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-19
Client Sample ID: BH24 SS1 (0'-2')



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

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

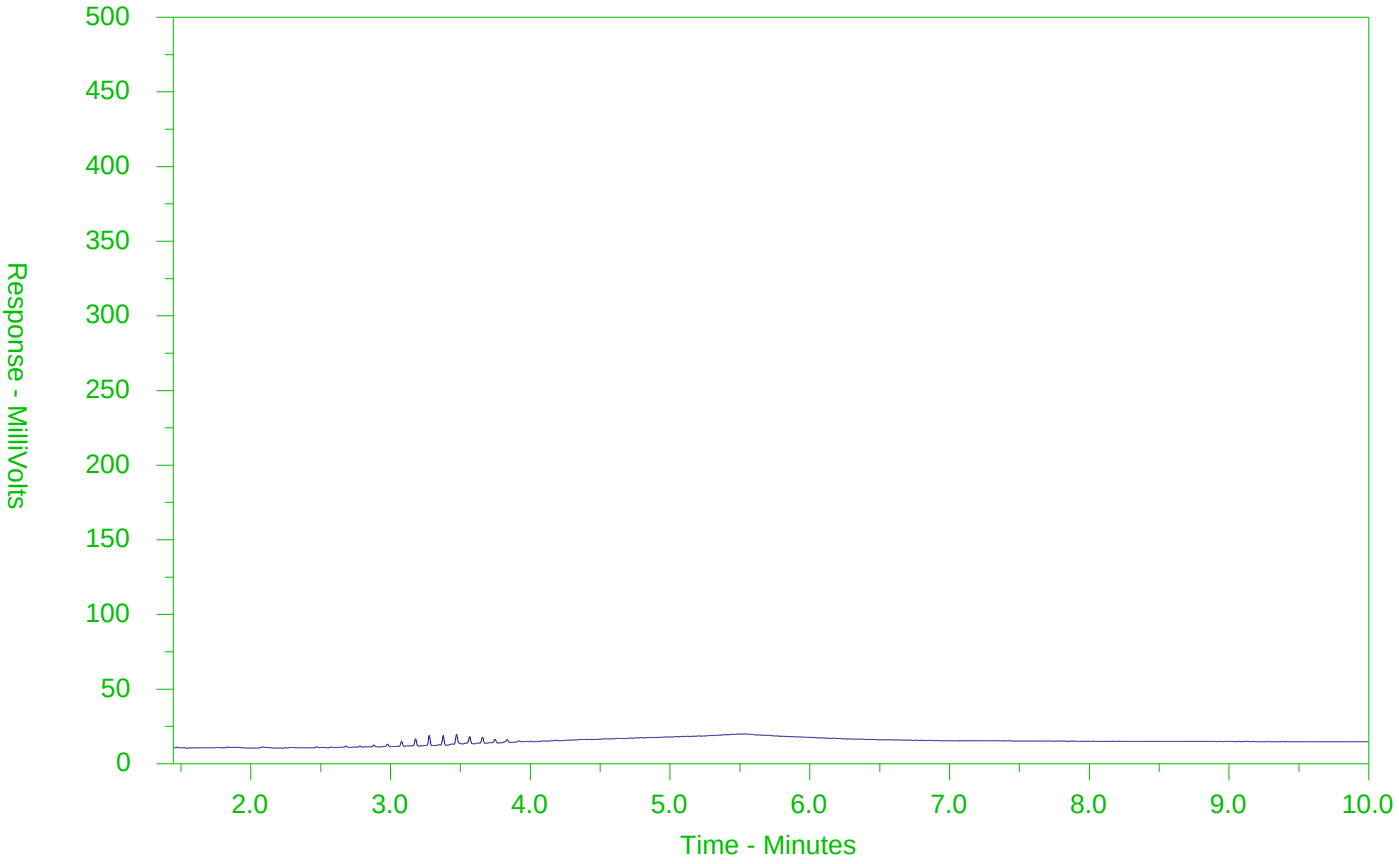
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-20
Client Sample ID: BH25 SS4 (7'6"-9'6")



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

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

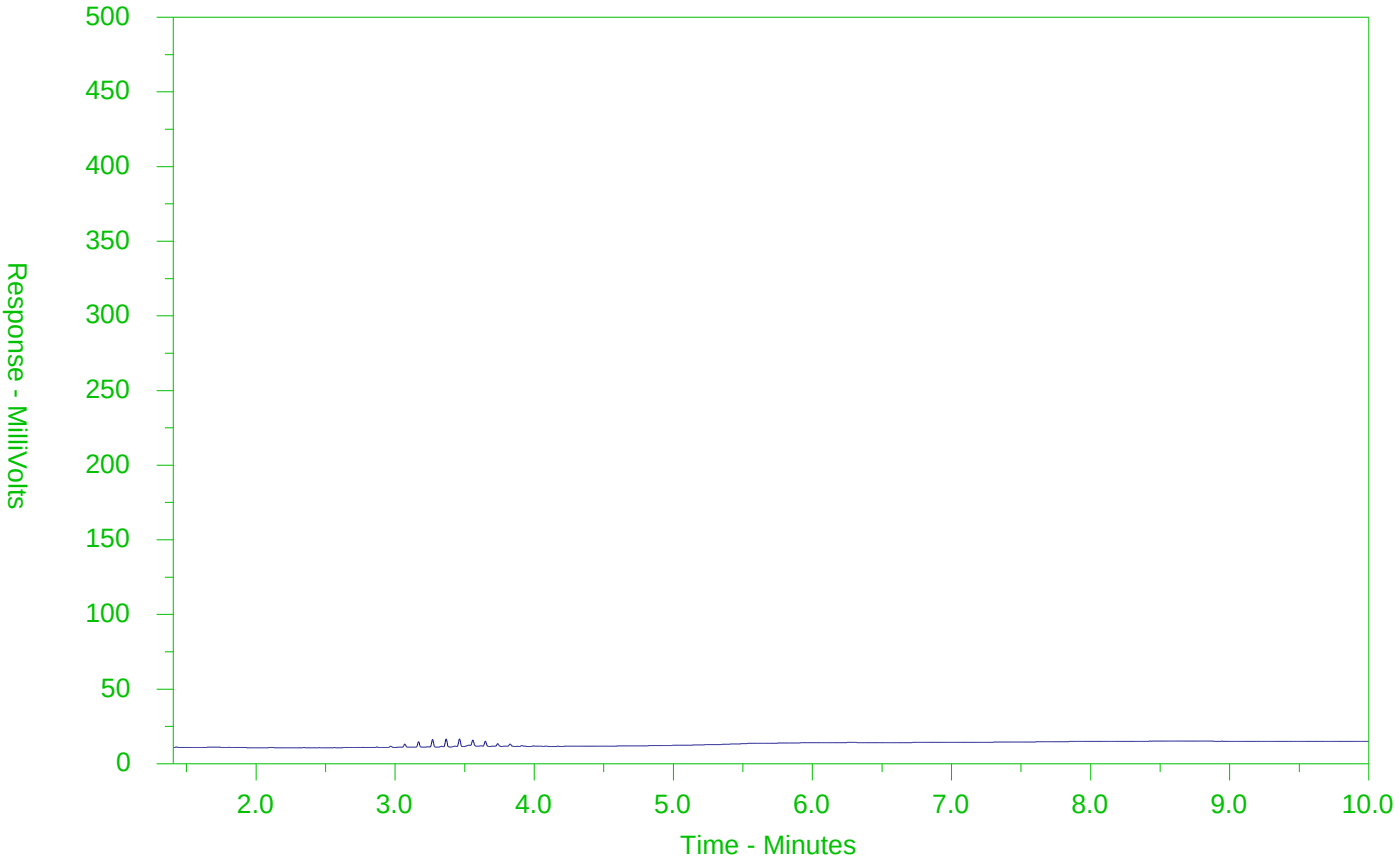
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-21
Client Sample ID: BH26 SS5 (10'-12')



←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.

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L2564179-COFC

COC Number: 20 -

Page 1 of 2

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Report To	Contact and company name below will appear on the final report
Company:	Thurber Engineering Ltd.
Contact:	Rachel Bourassa
Phone:	~~905-829-8000~~ 4/6 523 1015
	Company address below will appear on the final report
Street:	2010 Winston Park Drive, Suite 103
City/Province:	Oakville, Ontario
Postal Code:	L6H 5R7
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Thurber Engineering Ltd.
Contact:	

Reports / Recipients	
Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☑ YES ☐ NO ☐ N/A
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	rbourassa@thurber.ca
Email 2	
Email 3	

Invoice Recipients	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	accountingON@thurber.ca
Email 2	

Turnaround Time (TAT) Requested
☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge. Additional
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush resuests on weekends, statutory holidays and non-routine tests
Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm
For tests that can not be performed according to the TAT requested, you will be contacted.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information	
ALS Account # / Quote #:	25053 / 84199
Job #:	
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): L2564179

ALS Contact: Amanda Overholster Sampler:

Analysis Request

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	O. Reg. 153/04 Metals & Inorganics	O. Reg. 153/04 BTEX/PHC F1-F4	O. Reg. 153/04 VOCs	Corrosivity	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
1	BH01 SS1 (0'-2')	23-Feb-21	1:00	Soil	4	✓	✓					
2	BH02 SS5 (10-12)	22-feb-21	2:00	"	7	✓	✓	✓				
3	BH03 SS1 (0'-2')	23-feb-21	5:00	"	4	✓	✓					
4	BH04 SS2 (2'6"-4'6")	24-feb-21	3:00	"	7	✓	✓	✓				
5	BH05 SS8 (25'-27')	25-feb-21	12:00	"	4	✓	✓					
6	BH06 SS1 (0'-2')	24-feb-21	11:00	"	4	✓	✓					
7	BH06 SS2 (2'6-4'6")	24-Feb-21	11:10	"	3			✓				
8	BH07 SS6 (15'-17')	26-feb-21	11:30	"	4	✓	✓					
9	BH08 SS2 (2'6"-4'6")	26-feb-21	9:15	"	7	✓	✓	✓				
10	BH10 SS4 (7'6"-9'6")	25-feb-21	12:00	"	7	✓	✓	✓				
11	BH11 SS1 (0'-2')	25-feb-21	12:00	"	4	✓	✓					
12	BH12 ~~SS4 (7'6"-9'6")~~ SS3 (5'-7')	25-feb-21	2:00	"	7	✓	✓	✓				

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

SAMPLE RECEIPT DETAILS (lab use only)

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

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C				
				8.3				

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Rachel Bourassa	Date: March 5, 21	Time:	Received by:	Date:	Time:	Received by:	Date: Mar 5/21	Time: 13:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 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.**

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L2564179-COFC

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COC Number: 20 -

ALS www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	Thurber Engineering Ltd.
Contact:	Rachel Bourassa
Phone:	~~905-829-0666~~ 416 523 1015
	Company address below will appear on the final report
Street:	2010 Winston Park Drive, Suite 103
City/Province:	Oakville, Ontario
Postal Code:	L6H 5R7
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Thurber Engineering Ltd.
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA ☑ YES ☐ NO ☐ N/A
☑ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: rbourassa@thurber.ca
Email 2:
Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: accountingON@thurber.ca
Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush resuests on weekends, statutory holidays and non-routine tests

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

For tests that can not be performed according to the TAT requested, you will be contacted.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #: 25053 / 84199
Job #: 30726
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): L2564179

ALS Contact: Amanda Overholster 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	NUMBER OF CONTAINERS	O. Reg. 153/04 Metals & Inorganics	O. Reg. 153/04 BTEX/PHC F1-F4	O. Reg. 153/04 VOCs	Corrosivity	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	[redacted]							✓				
13	BH 13 SS1 (0'-2')	2-Mar-21	12:00	Soil	4	✓	✓					
14	BH 14 SS2 (2'6"-4'6")	1-Mar-21	2:00	"	7	✓	✓	✓				
15	BH 19 SS4 (7'6"-9'6")	2-Mar-21	2:00	"	4	✓	✓					
16	BH 20 SS1 (0'-2')	26-Feb-21	12:00	"	4	✓	✓					
17	BH 21 SS3 (5'-7')	2-Mar-21	11:00	"	7	✓	✓	✓				
18	BH 23 SS1 (0'-2')	26-Feb-21	10:00	"	7	✓	✓	✓				
19	BH 24 SS1 (0'-2')	25-Feb-21	4:00	"	4	✓	✓					
20	BH 25 SS4 (7'6"-9'6")	01-Mar-21	11:00	Soil	7	✓	✓	✓				
21	BH 26 SS5 (10'-12')	1-Mar-21	3:30	"	4	✓	✓					

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

Are samples taken from a Regulated DW System? ☐ YES ☐ NO
Are samples for human consumption/ use? ☐ YES ☐ NO

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

SAMPLE RECEIPT DETAILS (lab use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED
Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO
Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
	8.3

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
Rachel Bourassa	March 5/21	

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
	Mar 5/21	16:00

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**.

Thurber Engineering Ltd. (Oakville)
ATTN: Rachel Bourssa
2010 Winston Park Drive
Unit 103
Oakville ON L6H 5R7

Date Received: 05-MAR-21
Report Date: 07-APR-21 12:23 (MT)
Version: FINAL REV. 3

Client Phone: 905-829-8666

Certificate of Analysis

Lab Work Order #: L2564179

Project P.O. #: NOT SUBMITTED
Job Reference: 30726
C of C Numbers:
Legal Site Desc:

Comments: 07-APR-21 Revised report comparing to Reg 153 Table 1&2 RPIICC per client request. - A.Overholster
07-APR-21 Revised report comparing to Reg 406 Table 2.1 per client request. - A.Overholster

Amanda Overholster
Account Manager

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-1 BH01 SS1 (0'-2')								
Sampled By: CLIENT on 23-FEB-21 @ 13:00								
Matrix: SOIL								
Physical Tests								
Conductivity	0.215		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	19.8		0.25	%	11-MAR-21			
pH	7.71		0.10	pH units	15-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	1.57		0.10	SAR	16-MAR-21	5	5	12
Calcium (Ca)	16.8		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	4.25		0.50	mg/L	16-MAR-21			
Sodium (Na)	27.8		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	4.0		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	359		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	1.09		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	16.9		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	54.7		1.0	ug/g	16-MAR-21	160	160	160
Cobalt (Co)	17.8		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	34.3		1.0	ug/g	16-MAR-21	140	140	230
Lead (Pb)	11.9		1.0	ug/g	16-MAR-21	45	120	120
Mercury (Hg)	0.0116		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	37.7		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	78.2		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	93.5		5.0	ug/g	16-MAR-21	340	340	340
Speciated Metals								
Chromium, Hexavalent	0.37		0.20	ug/g	15-MAR-21	8	8	8
Volatile Organic Compounds								
Benzene	<0.0068		0.0068	ug/g	10-MAR-21	0.02	0.02	0.02
Ethylbenzene	<0.018		0.018	ug/g	10-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	10-MAR-21	0.2	0.2	0.2
o-Xylene	<0.020		0.020	ug/g	10-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	10-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	104.9		50-140	%	10-MAR-21			
Surrogate: 1,4-Difluorobenzene	99.2		50-140	%	10-MAR-21			
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	10-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25

** 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 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-1 BH01 SS1 (0'-2')								
Sampled By: CLIENT on 23-FEB-21 @ 13:00								
Matrix: SOIL								
Hydrocarbons								
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	136		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	290		50	ug/g	12-MAR-21	2800	2800	3300
F4G-SG (GHH-Silica)	1040		250	ug/g	11-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	426		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	NO			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	80.2		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	70.2		60-140	%	10-MAR-21			
L2564179-2 BH02 SS5 (10-12)								
Sampled By: CLIENT on 22-FEB-21 @ 14:00								
Matrix: SOIL						#1	#2	#3
Physical Tests								
Conductivity	0.300		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	24.2		0.25	%	11-MAR-21			
pH	7.89		0.10	pH units	15-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	11-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	0.46		0.10	SAR	16-MAR-21	5	5	12
Calcium (Ca)	39.8		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	8.20		0.50	mg/L	16-MAR-21			
Sodium (Na)	12.2		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	2.5		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	280		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	0.86		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	12.8		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	45.7		1.0	ug/g	16-MAR-21	160	160	160
Cobalt (Co)	14.3		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	28.1		1.0	ug/g	16-MAR-21	140	140	230
Lead (Pb)	7.8		1.0	ug/g	16-MAR-21	45	120	120
Mercury (Hg)	0.0072		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	29.6		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	66.1		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	75.0		5.0	ug/g	16-MAR-21	340	340	340
Speciated 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 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-2 BH02 SS5 (10-12)								
Sampled By: CLIENT on 22-FEB-21 @ 14:00								
Matrix: SOIL								
Speciated Metals								
Chromium, Hexavalent	0.27		0.20	ug/g	15-MAR-21	8	8	8
Volatile Organic Compounds								
Acetone	<0.50		0.50	ug/g	09-MAR-21	0.5	0.5	0.5
Benzene	<0.0068		0.0068	ug/g	09-MAR-21	0.02	0.02	0.02
Bromodichloromethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Bromoform	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Bromomethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Chlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.083	0.083	0.083
Dibromochloromethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Chloroform	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dibromoethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	3.4	3.4	6.8
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.26	0.26	0.26
1,4-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAR-21	1.5	1.5	1.5
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Methylene Chloride	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAR-21			
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAR-21			
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	11-MAR-21	0.05	0.05	0.05
Ethylbenzene	<0.018		0.018	ug/g	09-MAR-21	0.05	0.05	0.05
n-Hexane	<0.050		0.050	ug/g	09-MAR-21	2.5	2.5	2.5
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAR-21	0.5	0.5	0.5
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAR-21	0.5	0.5	0.5
MTBE	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Styrene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	09-MAR-21	0.2	0.2	0.2
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.11	0.11	0.12
1,1,2-Trichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Trichloroethylene	<0.010		0.010	ug/g	09-MAR-21	0.05	0.05	0.05
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAR-21	0.17	0.25	0.25
Vinyl chloride	<0.020		0.020	ug/g	09-MAR-21	0.02	0.02	0.02
o-Xylene	<0.020		0.020	ug/g	09-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	09-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	94.3		50-140	%	09-MAR-21			
Surrogate: 1,4-Difluorobenzene	99.8		50-140	%	09-MAR-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 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use

#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-2 BH02 SS5 (10-12)								
Sampled By: CLIENT on 22-FEB-21 @ 14:00								
Matrix: SOIL								
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	11-MAR-21	17	25	25
F2 (C10-C16)	<10		10	ug/g	11-MAR-21	10	10	26
F3 (C16-C34)	<50		50	ug/g	11-MAR-21	240	240	240
F4 (C34-C50)	<50		50	ug/g	11-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	<72		72	ug/g	11-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	11-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	91.8		60-140	%	11-MAR-21			
Surrogate: 3,4-Dichlorotoluene	107.2		60-140	%	09-MAR-21			
L2564179-3 BH03 SS1 (0'-2')								
Sampled By: CLIENT on 23-FEB-21 @ 17:00								
Matrix: SOIL						#1	#2	#3
Physical Tests								
Conductivity	0.416		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	39.6		0.25	%	11-MAR-21			
pH	7.32		0.10	pH units	15-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	1.45		0.10	SAR	16-MAR-21	5	5	12
Calcium (Ca)	44.1		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	6.91		0.50	mg/L	16-MAR-21			
Sodium (Na)	39.1		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	3.0		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	210		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	0.58		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	8.9		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	0.56		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	30.6		1.0	ug/g	16-MAR-21	160	160	160
Cobalt (Co)	8.3		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	26.6		1.0	ug/g	16-MAR-21	140	140	230
Lead (Pb)	59.1		1.0	ug/g	16-MAR-21	*45	120	120
Mercury (Hg)	0.0890		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	18.1		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	39.7		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	148		5.0	ug/g	16-MAR-21	340	340	340
Speciated 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 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use

#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-3 BH03 SS1 (0'-2')								
Sampled By: CLIENT on 23-FEB-21 @ 17:00								
Matrix: SOIL								
Speciated Metals								
Chromium, Hexavalent	0.48		0.20	ug/g	15-MAR-21	8	8	8
Volatile Organic Compounds								
Benzene	<0.0068		0.0068	ug/g	10-MAR-21	0.02	0.02	0.02
Ethylbenzene	<0.018		0.018	ug/g	10-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	10-MAR-21	0.2	0.2	0.2
o-Xylene	<0.020		0.020	ug/g	10-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	10-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	102.6		50-140	%	10-MAR-21			
Surrogate: 1,4-Difluorobenzene	97.3		50-140	%	10-MAR-21			
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	10-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	<50		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	<50		50	ug/g	12-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	<72		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	95.9		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	82.2		60-140	%	10-MAR-21			
L2564179-4 BH04 SS2 (2'6"-4'6")								
Sampled By: CLIENT on 24-FEB-21 @ 15:00								
Matrix: SOIL						#1	#2	#3
Physical Tests								
Conductivity	0.150		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	25.1		0.25	%	11-MAR-21			
pH	7.52		0.10	pH units	15-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	0.42		0.10	SAR	16-MAR-21	5	5	12
Calcium (Ca)	18.9		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	3.54		0.50	mg/L	16-MAR-21			
Sodium (Na)	7.56		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	4.5		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	275		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	0.88		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	10.1		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	0.19		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	50.6		1.0	ug/g	16-MAR-21	160	160	160
Cobalt (Co)	12.4		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	29.5		1.0	ug/g	16-MAR-21	140	140	230

** 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 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use

#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-4 BH04 SS2 (2'6"-4'6")								
Sampled By: CLIENT on 24-FEB-21 @ 15:00								
Matrix: SOIL								
Metals								
Lead (Pb)	7.9		1.0	ug/g	16-MAR-21	45	120	120
Mercury (Hg)	0.0126		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	29.7		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	69.2		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	72.9		5.0	ug/g	16-MAR-21	340	340	340
Speciated Metals								
Chromium, Hexavalent	1.10		0.20	ug/g	15-MAR-21	8	8	8
Volatile Organic Compounds								
Acetone	<0.50		0.50	ug/g	09-MAR-21	0.5	0.5	0.5
Benzene	<0.0068		0.0068	ug/g	09-MAR-21	0.02	0.02	0.02
Bromodichloromethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Bromoform	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Bromomethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Chlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.083	0.083	0.083
Dibromochloromethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Chloroform	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dibromoethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	3.4	3.4	6.8
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.26	0.26	0.26
1,4-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAR-21	1.5	1.5	1.5
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Methylene Chloride	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAR-21			
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAR-21			
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	11-MAR-21	0.05	0.05	0.05
Ethylbenzene	<0.018		0.018	ug/g	09-MAR-21	0.05	0.05	0.05
n-Hexane	<0.050		0.050	ug/g	09-MAR-21	2.5	2.5	2.5
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAR-21	0.5	0.5	0.5
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAR-21	0.5	0.5	0.5
MTBE	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Styrene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-4 BH04 SS2 (2'6"-4'6")								
Sampled By: CLIENT on 24-FEB-21 @ 15:00								
Matrix: SOIL								
Volatile Organic Compounds								
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	09-MAR-21	0.2	0.2	0.2
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.11	0.11	0.12
1,1,2-Trichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Trichloroethylene	<0.010		0.010	ug/g	09-MAR-21	0.05	0.05	0.05
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAR-21	0.17	0.25	0.25
Vinyl chloride	<0.020		0.020	ug/g	09-MAR-21	0.02	0.02	0.02
o-Xylene	<0.020		0.020	ug/g	09-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	09-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	91.1		50-140	%	09-MAR-21			
Surrogate: 1,4-Difluorobenzene	92.7		50-140	%	09-MAR-21			
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	<50		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	<50		50	ug/g	12-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	<72		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	92.5		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	97.3		60-140	%	09-MAR-21			
L2564179-5 BH 05 SS8 (25'-27')								
Sampled By: CLIENT on 25-FEB-21 @ 12:00								
Matrix: SOIL						#1	#2	#3
Physical Tests								
Conductivity	0.266		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	25.5		0.25	%	11-MAR-21			
pH	8.25		0.10	pH units	15-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	0.34		0.10	SAR	16-MAR-21	5	5	12
Calcium (Ca)	15.1		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	20.6		0.50	mg/L	16-MAR-21			
Sodium (Na)	8.77		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	2.5		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	275		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	0.70		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	18.5		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	0.29		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	42.7		1.0	ug/g	16-MAR-21	160	160	160

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use

#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-5 BH 05 SS8 (25'-27')								
Sampled By: CLIENT on 25-FEB-21 @ 12:00								
Matrix: SOIL								
Metals								
Cobalt (Co)	11.0		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	21.7		1.0	ug/g	16-MAR-21	140	140	230
Lead (Pb)	6.2		1.0	ug/g	16-MAR-21	45	120	120
Mercury (Hg)	<0.0050		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	23.2		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	61.6		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	55.2		5.0	ug/g	16-MAR-21	340	340	340
Speciated Metals								
Chromium, Hexavalent	<0.20		0.20	ug/g	15-MAR-21	8	8	8
Volatile Organic Compounds								
Benzene	<0.0068		0.0068	ug/g	10-MAR-21	0.02	0.02	0.02
Ethylbenzene	<0.018		0.018	ug/g	10-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	10-MAR-21	0.2	0.2	0.2
o-Xylene	<0.020		0.020	ug/g	10-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	10-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	100.1		50-140	%	10-MAR-21			
Surrogate: 1,4-Difluorobenzene	94.2		50-140	%	10-MAR-21			
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	10-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	<50		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	<50		50	ug/g	12-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	<72		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	95.2		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	79.9		60-140	%	10-MAR-21			
L2564179-6 BH06 SS1 (0'-2')								
Sampled By: CLIENT on 24-FEB-21 @ 11:00								
Matrix: SOIL								
Physical Tests								
Conductivity	0.262		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	26.0		0.25	%	11-MAR-21			
pH	7.34		0.10	pH units	15-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	<0.10		0.10	SAR	16-MAR-21	5	5	12

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3	
L2564179-6 BH06 SS1 (0'-2')									
Sampled By: CLIENT on 24-FEB-21 @ 11:00									
Matrix: SOIL									
Saturated Paste Extractables									
Calcium (Ca)	41.1		0.50	mg/L	16-MAR-21				
Magnesium (Mg)	3.65		0.50	mg/L	16-MAR-21				
Sodium (Na)	1.33		0.50	mg/L	16-MAR-21				
Metals									
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40	
Arsenic (As)	4.7		1.0	ug/g	16-MAR-21	11	18	18	
Barium (Ba)	264		1.0	ug/g	16-MAR-21	390	390	670	
Beryllium (Be)	0.77		0.50	ug/g	16-MAR-21	4	4	8	
Boron (B)	10.4		5.0	ug/g	16-MAR-21	120	120	120	
Boron (B), Hot Water Ext.	0.24		0.10	ug/g	16-MAR-21	1.5	1.5	2	
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9	
Chromium (Cr)	43.4		1.0	ug/g	16-MAR-21	160	160	160	
Cobalt (Co)	12.7		1.0	ug/g	16-MAR-21	22	22	80	
Copper (Cu)	31.0		1.0	ug/g	16-MAR-21	140	140	230	
Lead (Pb)	62.4		1.0	ug/g	16-MAR-21	*45	120	120	
Mercury (Hg)	0.122		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27	
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40	
Nickel (Ni)	26.3		1.0	ug/g	16-MAR-21	100	100	270	
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5	
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40	
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3	
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33	
Vanadium (V)	58.4		1.0	ug/g	16-MAR-21	86	86	86	
Zinc (Zn)	135		5.0	ug/g	16-MAR-21	340	340	340	
Speciated Metals									
Chromium, Hexavalent	0.33		0.20	ug/g	15-MAR-21	8	8	8	
Volatile Organic Compounds									
Benzene	<0.0068		0.0068	ug/g	10-MAR-21	0.02	0.02	0.02	
Ethylbenzene	<0.018		0.018	ug/g	10-MAR-21	0.05	0.05	0.05	
Toluene	<0.080		0.080	ug/g	10-MAR-21	0.2	0.2	0.2	
o-Xylene	<0.020		0.020	ug/g	10-MAR-21				
m+p-Xylenes	<0.030		0.030	ug/g	10-MAR-21				
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091	
Surrogate: 4-Bromofluorobenzene	102.3		50-140	%	10-MAR-21				
Surrogate: 1,4-Difluorobenzene	97.1		50-140	%	10-MAR-21				
Hydrocarbons									
F1 (C6-C10)	<5.0		5.0	ug/g	10-MAR-21	17	25	25	
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25	
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26	
F3 (C16-C34)	<50		50	ug/g	12-MAR-21	240	240	240	
F4 (C34-C50)	<50		50	ug/g	12-MAR-21	2800	2800	3300	
Total Hydrocarbons (C6-C50)	<72		72	ug/g	12-MAR-21				
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21				
Surrogate: 2-Bromobenzotrifluoride	88.6		60-140	%	12-MAR-21				
Surrogate: 3,4-Dichlorotoluene	85.2		60-140	%	10-MAR-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 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use

#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-7 BH06 SS2 (2'6"-4'6")								
Sampled By: CLIENT on 24-FEB-21 @ 11:10								
Matrix: SOIL								
Physical Tests								
% Moisture	24.1		0.25	%	11-MAR-21			
Volatile Organic Compounds								
Acetone	<0.50		0.50	ug/g	10-MAR-21	0.5	0.5	0.5
Benzene	<0.0068		0.0068	ug/g	10-MAR-21	0.02	0.02	0.02
Bromodichloromethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Bromoform	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Bromomethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Carbon tetrachloride	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Chlorobenzene	<0.050		0.050	ug/g	10-MAR-21	0.083	0.083	0.083
Dibromochloromethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Chloroform	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dibromoethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dichlorobenzene	<0.050		0.050	ug/g	10-MAR-21	3.4	3.4	6.8
1,3-Dichlorobenzene	<0.050		0.050	ug/g	10-MAR-21	0.26	0.26	0.26
1,4-Dichlorobenzene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Dichlorodifluoromethane	<0.050		0.050	ug/g	10-MAR-21	1.5	1.5	1.5
1,1-Dichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,1-Dichloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Methylene Chloride	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dichloropropane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	10-MAR-21			
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	10-MAR-21			
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	11-MAR-21	0.05	0.05	0.05
Ethylbenzene	<0.018		0.018	ug/g	10-MAR-21	0.05	0.05	0.05
n-Hexane	<0.050		0.050	ug/g	10-MAR-21	2.5	2.5	2.5
Methyl Ethyl Ketone	<0.50		0.50	ug/g	10-MAR-21	0.5	0.5	0.5
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	10-MAR-21	0.5	0.5	0.5
MTBE	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Styrene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Tetrachloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	10-MAR-21	0.2	0.2	0.2
1,1,1-Trichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.11	0.11	0.12
1,1,2-Trichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Trichloroethylene	<0.010		0.010	ug/g	10-MAR-21	0.05	0.05	0.05
Trichlorofluoromethane	<0.050		0.050	ug/g	10-MAR-21	0.17	0.25	0.25
Vinyl chloride	<0.020		0.020	ug/g	10-MAR-21	0.02	0.02	0.02
o-Xylene	<0.020		0.020	ug/g	10-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	10-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	91.9		50-140	%	10-MAR-21			
Surrogate: 1,4-Difluorobenzene	97.7		50-140	%	10-MAR-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 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-8 BH07 SS6 (15'-17')								
Sampled By: CLIENT on 26-FEB-21 @ 11:30								
Matrix: SOIL								
Physical Tests								
Conductivity	0.235		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	24.7		0.25	%	11-MAR-21			
pH	7.85		0.10	pH units	15-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	0.56		0.10	SAR	16-MAR-21	5	5	12
Calcium (Ca)	23.3		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	4.27		0.50	mg/L	16-MAR-21			
Sodium (Na)	11.2		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	1.5		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	246		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	0.50		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	7.8		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	27.9		1.0	ug/g	16-MAR-21	160	160	160
Cobalt (Co)	10.0		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	18.9		1.0	ug/g	16-MAR-21	140	140	230
Lead (Pb)	4.9		1.0	ug/g	16-MAR-21	45	120	120
Mercury (Hg)	<0.0050		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	19.6		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	42.1		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	51.4		5.0	ug/g	16-MAR-21	340	340	340
Speciated Metals								
Chromium, Hexavalent	<0.20		0.20	ug/g	15-MAR-21	8	8	8
Volatile Organic Compounds								
Benzene	<0.0068		0.0068	ug/g	10-MAR-21	0.02	0.02	0.02
Ethylbenzene	<0.018		0.018	ug/g	10-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	10-MAR-21	0.2	0.2	0.2
o-Xylene	<0.020		0.020	ug/g	10-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	10-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	96.0		50-140	%	10-MAR-21			
Surrogate: 1,4-Difluorobenzene	90.4		50-140	%	10-MAR-21			
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	10-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25

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

Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-8 BH07 SS6 (15'-17')								
Sampled By: CLIENT on 26-FEB-21 @ 11:30								
Matrix: SOIL								
Hydrocarbons								
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	<50		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	<50		50	ug/g	12-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	<72		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	96.3		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	77.2		60-140	%	10-MAR-21			
L2564179-9 BH08 SS2 (2'6"-4'6")								
Sampled By: CLIENT on 26-FEB-21 @ 09:15								
Matrix: SOIL						#1	#2	#3
Physical Tests								
Conductivity	0.136		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	14.6		0.25	%	11-MAR-21			
pH	7.65		0.10	pH units	15-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	0.36		0.10	SAR	16-MAR-21	5	5	12
Calcium (Ca)	17.8		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	3.01		0.50	mg/L	16-MAR-21			
Sodium (Na)	6.30		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	3.4		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	206		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	0.78		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	12.2		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	0.10		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	41.0		1.0	ug/g	16-MAR-21	160	160	160
Cobalt (Co)	11.5		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	26.3		1.0	ug/g	16-MAR-21	140	140	230
Lead (Pb)	6.5		1.0	ug/g	16-MAR-21	45	120	120
Mercury (Hg)	0.0138		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	23.6		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	65.2		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	56.3		5.0	ug/g	16-MAR-21	340	340	340
Speciated Metals								
Chromium, Hexavalent	0.34		0.20	ug/g	15-MAR-21	8	8	8

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use

#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-9 BH08 SS2 (2'6"-4'6")								
Sampled By: CLIENT on 26-FEB-21 @ 09:15								
Matrix: SOIL								
Volatile Organic Compounds								
Acetone	<0.50		0.50	ug/g	09-MAR-21	0.5	0.5	0.5
Benzene	<0.0068		0.0068	ug/g	09-MAR-21	0.02	0.02	0.02
Bromodichloromethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Bromoform	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Bromomethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Chlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.083	0.083	0.083
Dibromochloromethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Chloroform	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dibromoethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	3.4	3.4	6.8
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.26	0.26	0.26
1,4-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAR-21	1.5	1.5	1.5
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Methylene Chloride	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAR-21			
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAR-21			
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	11-MAR-21	0.05	0.05	0.05
Ethylbenzene	<0.018		0.018	ug/g	09-MAR-21	0.05	0.05	0.05
n-Hexane	<0.050		0.050	ug/g	09-MAR-21	2.5	2.5	2.5
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAR-21	0.5	0.5	0.5
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAR-21	0.5	0.5	0.5
MTBE	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Styrene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	09-MAR-21	0.2	0.2	0.2
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.11	0.11	0.12
1,1,2-Trichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Trichloroethylene	<0.010		0.010	ug/g	09-MAR-21	0.05	0.05	0.05
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAR-21	0.17	0.25	0.25
Vinyl chloride	<0.020		0.020	ug/g	09-MAR-21	0.02	0.02	0.02
o-Xylene	<0.020		0.020	ug/g	09-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	09-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	94.4		50-140	%	09-MAR-21			
Surrogate: 1,4-Difluorobenzene	97.6		50-140	%	09-MAR-21			
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAR-21	17	25	25

** 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 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use

#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-9 BH08 SS2 (2'6"-4'6")								
Sampled By: CLIENT on 26-FEB-21 @ 09:15								
Matrix: SOIL								
Hydrocarbons								
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	<50		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	<50		50	ug/g	12-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	<72		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	92.3		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	81.0		60-140	%	09-MAR-21			
L2564179-10 BH10 SS4 (7'6"-9'6")								
Sampled By: CLIENT on 25-FEB-21 @ 12:00								
Matrix: SOIL						#1	#2	#3
Physical Tests								
Conductivity	0.180		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	22.9		0.25	%	11-MAR-21			
pH	7.84		0.10	pH units	15-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	0.61		0.10	SAR	16-MAR-21	5	5	12
Calcium (Ca)	16.6		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	4.38		0.50	mg/L	16-MAR-21			
Sodium (Na)	10.9		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	2.0		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	171		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	0.67		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	10.8		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	33.9		1.0	ug/g	16-MAR-21	160	160	160
Cobalt (Co)	11.0		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	21.6		1.0	ug/g	16-MAR-21	140	140	230
Lead (Pb)	6.4		1.0	ug/g	16-MAR-21	45	120	120
Mercury (Hg)	0.0067		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	21.7		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	51.7		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	55.1		5.0	ug/g	16-MAR-21	340	340	340
Speciated 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 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-10 BH10 SS4 (7'6"-9'6")								
Sampled By: CLIENT on 25-FEB-21 @ 12:00								
Matrix: SOIL								
Speciated Metals								
Chromium, Hexavalent	0.26		0.20	ug/g	15-MAR-21	8	8	8
Volatile Organic Compounds								
Acetone	<0.50		0.50	ug/g	10-MAR-21	0.5	0.5	0.5
Benzene	<0.0068		0.0068	ug/g	10-MAR-21	0.02	0.02	0.02
Bromodichloromethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Bromoform	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Bromomethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Carbon tetrachloride	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Chlorobenzene	<0.050		0.050	ug/g	10-MAR-21	0.083	0.083	0.083
Dibromochloromethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Chloroform	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dibromoethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	3.4	3.4	6.8
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.26	0.26	0.26
1,4-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Dichlorodifluoromethane	<0.050		0.050	ug/g	10-MAR-21	1.5	1.5	1.5
1,1-Dichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,1-Dichloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Methylene Chloride	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dichloropropane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	10-MAR-21			
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	10-MAR-21			
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	11-MAR-21	0.05	0.05	0.05
Ethylbenzene	<0.018		0.018	ug/g	10-MAR-21	0.05	0.05	0.05
n-Hexane	<0.050		0.050	ug/g	10-MAR-21	2.5	2.5	2.5
Methyl Ethyl Ketone	<0.50		0.50	ug/g	10-MAR-21	0.5	0.5	0.5
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	10-MAR-21	0.5	0.5	0.5
MTBE	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Styrene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Tetrachloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	10-MAR-21	0.2	0.2	0.2
1,1,1-Trichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.11	0.11	0.12
1,1,2-Trichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Trichloroethylene	<0.010		0.010	ug/g	10-MAR-21	0.05	0.05	0.05
Trichlorofluoromethane	<0.050		0.050	ug/g	10-MAR-21	0.17	0.25	0.25
Vinyl chloride	<0.020		0.020	ug/g	10-MAR-21	0.02	0.02	0.02
o-Xylene	<0.020		0.020	ug/g	10-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	10-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	93.8		50-140	%	09-MAR-21			
Surrogate: 1,4-Difluorobenzene	94.6		50-140	%	09-MAR-21			

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-10 BH10 SS4 (7'6"-9'6") Sampled By: CLIENT on 25-FEB-21 @ 12:00 Matrix: SOIL								
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	10-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	<50		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	<50		50	ug/g	12-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	<72		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	94.7		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	49.5	SURR-ND	60-140	%	10-MAR-21			
L2564179-11 BH11 SS1 (0'-2') Sampled By: CLIENT on 25-FEB-21 @ 12:00 Matrix: SOIL						#1	#2	#3
Physical Tests								
Conductivity	0.198		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	11.5		0.25	%	11-MAR-21			
pH	7.26		0.10	pH units	12-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	<0.10		0.10	SAR	16-MAR-21	5	5	12
Calcium (Ca)	32.9		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	3.87		0.50	mg/L	16-MAR-21			
Sodium (Na)	1.22		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	5.7		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	104		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	<0.50		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	7.9		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	0.31		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	23.2		1.0	ug/g	16-MAR-21	160	160	160
Cobalt (Co)	7.5		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	17.0		1.0	ug/g	16-MAR-21	140	140	230
Lead (Pb)	22.6		1.0	ug/g	16-MAR-21	45	120	120
Mercury (Hg)	0.0739		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	14.5		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	37.4		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	60.8		5.0	ug/g	16-MAR-21	340	340	340

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-11 BH11 SS1 (0'-2')								
Sampled By: CLIENT on 25-FEB-21 @ 12:00								
Matrix: SOIL								
Speciated Metals								
Chromium, Hexavalent	0.29		0.20	ug/g	15-MAR-21	8	8	8
Volatile Organic Compounds								
Benzene	<0.0068		0.0068	ug/g	10-MAR-21	0.02	0.02	0.02
Ethylbenzene	<0.018		0.018	ug/g	10-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	10-MAR-21	0.2	0.2	0.2
o-Xylene	<0.020		0.020	ug/g	10-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	10-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	103.2		50-140	%	10-MAR-21			
Surrogate: 1,4-Difluorobenzene	101.9		50-140	%	10-MAR-21			
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	10-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	56		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	71		50	ug/g	12-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	127		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	92.6		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	80.5		60-140	%	10-MAR-21			
L2564179-12 BH12 SS3 (5'-7')								
Sampled By: CLIENT on 25-FEB-21 @ 14:00								
Matrix: SOIL						#1	#2	#3
Physical Tests								
Conductivity	0.126		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	5.81		0.25	%	11-MAR-21			
pH	8.19		0.10	pH units	12-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	0.11		0.10	SAR	16-MAR-21	5	5	12
Calcium (Ca)	20.0		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	2.02		0.50	mg/L	16-MAR-21			
Sodium (Na)	1.91		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	1.3		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	41.5		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	<0.50		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	8.6		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	0.11		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	13.2		1.0	ug/g	16-MAR-21	160	160	160
Cobalt (Co)	3.7		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	9.8		1.0	ug/g	16-MAR-21	140	140	230

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-12 BH12 SS3 (5'-7')								
Sampled By: CLIENT on 25-FEB-21 @ 14:00								
Matrix: SOIL								
Metals								
Lead (Pb)	5.7		1.0	ug/g	16-MAR-21	45	120	120
Mercury (Hg)	0.0642		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	7.7		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	22.4		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	23.6		5.0	ug/g	16-MAR-21	340	340	340
Speciated Metals								
Chromium, Hexavalent	<0.20		0.20	ug/g	15-MAR-21	8	8	8
Volatile Organic Compounds								
Acetone	<0.50		0.50	ug/g	10-MAR-21	0.5	0.5	0.5
Benzene	<0.0068		0.0068	ug/g	10-MAR-21	0.02	0.02	0.02
Bromodichloromethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Bromoform	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Bromomethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Carbon tetrachloride	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Chlorobenzene	<0.050		0.050	ug/g	10-MAR-21	0.083	0.083	0.083
Dibromochloromethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Chloroform	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dibromoethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dichlorobenzene	<0.050		0.050	ug/g	10-MAR-21	3.4	3.4	6.8
1,3-Dichlorobenzene	<0.050		0.050	ug/g	10-MAR-21	0.26	0.26	0.26
1,4-Dichlorobenzene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Dichlorodifluoromethane	<0.050		0.050	ug/g	10-MAR-21	1.5	1.5	1.5
1,1-Dichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,1-Dichloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Methylene Chloride	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dichloropropane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	10-MAR-21			
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	10-MAR-21			
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	11-MAR-21	0.05	0.05	0.05
Ethylbenzene	<0.018		0.018	ug/g	10-MAR-21	0.05	0.05	0.05
n-Hexane	<0.050		0.050	ug/g	10-MAR-21	2.5	2.5	2.5
Methyl Ethyl Ketone	<0.50		0.50	ug/g	10-MAR-21	0.5	0.5	0.5
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	10-MAR-21	0.5	0.5	0.5
MTBE	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Styrene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-12 BH12 SS3 (5'-7')								
Sampled By: CLIENT on 25-FEB-21 @ 14:00								
Matrix: SOIL								
Volatile Organic Compounds								
Tetrachloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	10-MAR-21	0.2	0.2	0.2
1,1,1-Trichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.11	0.11	0.12
1,1,2-Trichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Trichloroethylene	<0.010		0.010	ug/g	10-MAR-21	0.05	0.05	0.05
Trichlorofluoromethane	<0.050		0.050	ug/g	10-MAR-21	0.17	0.25	0.25
Vinyl chloride	<0.020		0.020	ug/g	10-MAR-21	0.02	0.02	0.02
o-Xylene	<0.020		0.020	ug/g	10-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	10-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	99.9		50-140	%	10-MAR-21			
Surrogate: 1,4-Difluorobenzene	106.9		50-140	%	10-MAR-21			
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	<50		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	<50		50	ug/g	12-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	<72		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	91.5		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	105.7		60-140	%	09-MAR-21			
L2564179-13 BH13 SS1 (0'-2')								
Sampled By: CLIENT on 02-MAR-21 @ 12:00								
Matrix: SOIL								
Physical Tests								
Conductivity	0.460		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	8.29		0.25	%	11-MAR-21			
pH	7.76		0.10	pH units	16-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	6.77		0.10	SAR	16-MAR-21	*5	*5	12
Calcium (Ca)	10.4		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	0.64		0.50	mg/L	16-MAR-21			
Sodium (Na)	83.2		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	1.3		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	58.8		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	<0.50		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	6.6		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	15.5		1.0	ug/g	16-MAR-21	160	160	160

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use

#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-13 BH13 SS1 (0'-2')								
Sampled By: CLIENT on 02-MAR-21 @ 12:00								
Matrix: SOIL								
Metals								
Cobalt (Co)	5.4		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	11.5		1.0	ug/g	16-MAR-21	140	140	230
Lead (Pb)	3.7		1.0	ug/g	16-MAR-21	45	120	120
Mercury (Hg)	0.0067		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	8.8		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	28.7		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	29.2		5.0	ug/g	16-MAR-21	340	340	340
Speciated Metals								
Chromium, Hexavalent	0.27		0.20	ug/g	15-MAR-21	8	8	8
Volatile Organic Compounds								
Benzene	<0.0068		0.0068	ug/g	10-MAR-21	0.02	0.02	0.02
Ethylbenzene	<0.018		0.018	ug/g	10-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	10-MAR-21	0.2	0.2	0.2
o-Xylene	<0.020		0.020	ug/g	10-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	10-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	108.1		50-140	%	10-MAR-21			
Surrogate: 1,4-Difluorobenzene	105.9		50-140	%	10-MAR-21			
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	10-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	<50		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	<50		50	ug/g	12-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	<72		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	91.7		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	86.2		60-140	%	10-MAR-21			
L2564179-14 BH14 SS2 (2'6"-4'6")								
Sampled By: CLIENT on 01-MAR-21 @ 14:00								
Matrix: SOIL						#1	#2	#3
Physical Tests								
Conductivity	0.675		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	27.4		0.25	%	11-MAR-21			
pH	7.51		0.10	pH units	16-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	7.16		0.10	SAR	16-MAR-21	*5	*5	12

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use

#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-14 BH14 SS2 (2'6"-4'6")								
Sampled By: CLIENT on 01-MAR-21 @ 14:00								
Matrix: SOIL								
Saturated Paste Extractables								
Calcium (Ca)	19.7		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	1.19		0.50	mg/L	16-MAR-21			
Sodium (Na)	121		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	3.0		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	159		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	0.63		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	9.3		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	0.16		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	32.5		1.0	ug/g	16-MAR-21	160	160	160
Cobalt (Co)	9.3		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	39.6		1.0	ug/g	16-MAR-21	140	140	230
Lead (Pb)	69.5		1.0	ug/g	16-MAR-21	*45	120	120
Mercury (Hg)	1.06	DLHC	0.050	ug/g	16-MAR-21	*0.24	*0.27	*0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	19.6		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	0.99		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	46.9		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	326		5.0	ug/g	16-MAR-21	340	340	340
Speciated Metals								
Chromium, Hexavalent	0.36		0.20	ug/g	15-MAR-21	8	8	8
Volatile Organic Compounds								
Acetone	<0.50		0.50	ug/g	10-MAR-21	0.5	0.5	0.5
Benzene	<0.0068		0.0068	ug/g	10-MAR-21	0.02	0.02	0.02
Bromodichloromethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Bromoform	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Bromomethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Carbon tetrachloride	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Chlorobenzene	<0.050		0.050	ug/g	10-MAR-21	0.083	0.083	0.083
Dibromochloromethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Chloroform	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dibromoethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dichlorobenzene	<0.050		0.050	ug/g	10-MAR-21	3.4	3.4	6.8
1,3-Dichlorobenzene	<0.050		0.050	ug/g	10-MAR-21	0.26	0.26	0.26
1,4-Dichlorobenzene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Dichlorodifluoromethane	<0.050		0.050	ug/g	10-MAR-21	1.5	1.5	1.5
1,1-Dichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,1-Dichloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-14 BH14 SS2 (2'6"-4'6")								
Sampled By: CLIENT on 01-MAR-21 @ 14:00								
Matrix: SOIL								
Volatile Organic Compounds								
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Methylene Chloride	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dichloropropane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	10-MAR-21			
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	10-MAR-21			
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	11-MAR-21	0.05	0.05	0.05
Ethylbenzene	<0.018		0.018	ug/g	10-MAR-21	0.05	0.05	0.05
n-Hexane	<0.050		0.050	ug/g	10-MAR-21	2.5	2.5	2.5
Methyl Ethyl Ketone	<0.50		0.50	ug/g	10-MAR-21	0.5	0.5	0.5
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	10-MAR-21	0.5	0.5	0.5
MTBE	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Styrene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Tetrachloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Toluene	0.275		0.080	ug/g	10-MAR-21	*0.2	*0.2	*0.2
1,1,1-Trichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.11	0.11	0.12
1,1,2-Trichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Trichloroethylene	<0.010		0.010	ug/g	10-MAR-21	0.05	0.05	0.05
Trichlorofluoromethane	<0.050		0.050	ug/g	10-MAR-21	0.17	0.25	0.25
Vinyl chloride	<0.020		0.020	ug/g	10-MAR-21	0.02	0.02	0.02
o-Xylene	<0.020		0.020	ug/g	10-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	10-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	100.0		50-140	%	10-MAR-21			
Surrogate: 1,4-Difluorobenzene	107.0		50-140	%	10-MAR-21			
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	57		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	68		50	ug/g	12-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	125		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	89.5		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	99.8		60-140	%	09-MAR-21			
L2564179-15 BH19 SS4 (7'6"-9'-6")								
Sampled By: CLIENT on 02-MAR-21 @ 14:00								
Matrix: SOIL						#1	#2	#3
Physical Tests								
Conductivity	0.379		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	26.9		0.25	%	11-MAR-21			
pH	7.61		0.10	pH units	16-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-15 BH19 SS4 (7'6"-9'-6")								
Sampled By: CLIENT on 02-MAR-21 @ 14:00								
Matrix: SOIL								
Saturated Paste Extractables								
SAR	0.99		0.10	SAR	16-MAR-21	5	5	12
Calcium (Ca)	35.1		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	7.85		0.50	mg/L	16-MAR-21			
Sodium (Na)	25.0		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	3.5		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	298		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	0.94		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	13.2		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	49.1		1.0	ug/g	16-MAR-21	160	160	160
Cobalt (Co)	16.8		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	31.2		1.0	ug/g	16-MAR-21	140	140	230
Lead (Pb)	8.8		1.0	ug/g	16-MAR-21	45	120	120
Mercury (Hg)	0.0094		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	34.3		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	73.0		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	87.7		5.0	ug/g	16-MAR-21	340	340	340
Speciated Metals								
Chromium, Hexavalent	0.41		0.20	ug/g	15-MAR-21	8	8	8
Volatile Organic Compounds								
Benzene	<0.0068		0.0068	ug/g	10-MAR-21	0.02	0.02	0.02
Ethylbenzene	<0.018		0.018	ug/g	10-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	10-MAR-21	0.2	0.2	0.2
o-Xylene	<0.020		0.020	ug/g	10-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	10-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	104.9		50-140	%	10-MAR-21			
Surrogate: 1,4-Difluorobenzene	103.5		50-140	%	10-MAR-21			
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	10-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	<50		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	<50		50	ug/g	12-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	<72		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	92.5		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	82.1		60-140	%	10-MAR-21			

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#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-15 BH19 SS4 (7'6"-9'-6") Sampled By: CLIENT on 02-MAR-21 @ 14:00 Matrix: SOIL								
L2564179-16 BH20 SS1 (0'-2') Sampled By: CLIENT on 26-FEB-21 @ 12:00 Matrix: SOIL						#1	#2	#3
Physical Tests								
Conductivity	0.296		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	27.1		0.25	%	11-MAR-21			
pH	7.37		0.10	pH units	16-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	0.40		0.10	SAR	16-MAR-21	5	5	12
Calcium (Ca)	37.3		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	5.45		0.50	mg/L	16-MAR-21			
Sodium (Na)	9.82		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	3.0		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	276		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	0.79		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	12.3		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	0.35		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	43.1		1.0	ug/g	16-MAR-21	160	160	160
Cobalt (Co)	10.9		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	25.9		1.0	ug/g	16-MAR-21	140	140	230
Lead (Pb)	10.7		1.0	ug/g	16-MAR-21	45	120	120
Mercury (Hg)	0.0223		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	23.9		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	59.8		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	67.0		5.0	ug/g	16-MAR-21	340	340	340
Speciated Metals								
Chromium, Hexavalent	1.63		0.20	ug/g	15-MAR-21	8	8	8
Volatile Organic Compounds								
Benzene	<0.0068		0.0068	ug/g	10-MAR-21	0.02	0.02	0.02
Ethylbenzene	<0.018		0.018	ug/g	10-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	10-MAR-21	0.2	0.2	0.2
o-Xylene	<0.020		0.020	ug/g	10-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	10-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	97.1		50-140	%	10-MAR-21			
Surrogate: 1,4-Difluorobenzene	95.3		50-140	%	10-MAR-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 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-16 BH20 SS1 (0'-2')								
Sampled By: CLIENT on 26-FEB-21 @ 12:00								
Matrix: SOIL								
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	10-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	<50		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	<50		50	ug/g	12-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	<72		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	90.0		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	77.4		60-140	%	10-MAR-21			
L2564179-17 BH21 SS3 (5'-7')								
Sampled By: CLIENT on 02-MAR-21 @ 11:00								
Matrix: SOIL						#1	#2	#3
Physical Tests								
Conductivity	0.778		0.0040	mS/cm	16-MAR-21	*0.7	*0.7	1.4
% Moisture	27.5		0.25	%	11-MAR-21			
pH	7.63		0.10	pH units	16-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	8.93		0.10	SAR	16-MAR-21	*5	*5	12
Calcium (Ca)	18.0		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	1.72		0.50	mg/L	16-MAR-21			
Sodium (Na)	148		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	5.0		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	783		1.0	ug/g	16-MAR-21	*390	*390	*670
Beryllium (Be)	1.43		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	14.5		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	0.11		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	70.8		1.0	ug/g	16-MAR-21	160	160	160
Cobalt (Co)	25.2		1.0	ug/g	16-MAR-21	*22	*22	80
Copper (Cu)	48.3		1.0	ug/g	16-MAR-21	140	140	230
Lead (Pb)	13.4		1.0	ug/g	16-MAR-21	45	120	120
Mercury (Hg)	0.0102		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	51.6		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	96.2		1.0	ug/g	16-MAR-21	*86	*86	*86
Zinc (Zn)	130		5.0	ug/g	16-MAR-21	340	340	340
Speciated Metals								

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use

#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-17 BH21 SS3 (5'-7')								
Sampled By: CLIENT on 02-MAR-21 @ 11:00								
Matrix: SOIL								
Speciated Metals								
Chromium, Hexavalent	0.38		0.20	ug/g	15-MAR-21	8	8	8
Volatile Organic Compounds								
Acetone	<0.50		0.50	ug/g	09-MAR-21	0.5	0.5	0.5
Benzene	<0.0068		0.0068	ug/g	09-MAR-21	0.02	0.02	0.02
Bromodichloromethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Bromoform	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Bromomethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Chlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.083	0.083	0.083
Dibromochloromethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Chloroform	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dibromoethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	3.4	3.4	6.8
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.26	0.26	0.26
1,4-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAR-21	1.5	1.5	1.5
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Methylene Chloride	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAR-21			
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAR-21			
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	11-MAR-21	0.05	0.05	0.05
Ethylbenzene	<0.018		0.018	ug/g	09-MAR-21	0.05	0.05	0.05
n-Hexane	<0.050		0.050	ug/g	09-MAR-21	2.5	2.5	2.5
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAR-21	0.5	0.5	0.5
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAR-21	0.5	0.5	0.5
MTBE	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Styrene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	09-MAR-21	0.2	0.2	0.2
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.11	0.11	0.12
1,1,2-Trichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Trichloroethylene	<0.010		0.010	ug/g	09-MAR-21	0.05	0.05	0.05
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAR-21	0.17	0.25	0.25
Vinyl chloride	<0.020		0.020	ug/g	09-MAR-21	0.02	0.02	0.02
o-Xylene	<0.020		0.020	ug/g	09-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	09-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	94.7		50-140	%	09-MAR-21			
Surrogate: 1,4-Difluorobenzene	100.5		50-140	%	09-MAR-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 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use

#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-17 BH21 SS3 (5'-7')								
Sampled By: CLIENT on 02-MAR-21 @ 11:00								
Matrix: SOIL								
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	<50		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	<50		50	ug/g	12-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	<72		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	93.9		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	63.9		60-140	%	09-MAR-21			
L2564179-18 BH23 SS1 (0'-2')								
Sampled By: CLIENT on 26-FEB-21 @ 10:00								
Matrix: SOIL								
Physical Tests								
Conductivity	0.405		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	16.2		0.25	%	11-MAR-21			
pH	7.13		0.10	pH units	16-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	<0.10		0.10	SAR	16-MAR-21	5	5	12
Calcium (Ca)	62.8		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	5.28		0.50	mg/L	16-MAR-21			
Sodium (Na)	1.35		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	5.4		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	248		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	0.74		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	11.3		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	0.47		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	37.1		1.0	ug/g	16-MAR-21	160	160	160
Cobalt (Co)	11.8		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	31.0		1.0	ug/g	16-MAR-21	140	140	230
Lead (Pb)	62.6		1.0	ug/g	16-MAR-21	*45	120	120
Mercury (Hg)	0.187		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	24.1		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	53.5		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	119		5.0	ug/g	16-MAR-21	340	340	340
Speciated 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 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-18 BH23 SS1 (0'-2')								
Sampled By: CLIENT on 26-FEB-21 @ 10:00								
Matrix: SOIL								
Speciated Metals								
Chromium, Hexavalent	<0.20		0.20	ug/g	16-MAR-21	8	8	8
Volatile Organic Compounds								
Acetone	<0.50		0.50	ug/g	09-MAR-21	0.5	0.5	0.5
Benzene	<0.0068		0.0068	ug/g	09-MAR-21	0.02	0.02	0.02
Bromodichloromethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Bromoform	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Bromomethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Carbon tetrachloride	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Chlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.083	0.083	0.083
Dibromochloromethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Chloroform	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dibromoethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	3.4	3.4	6.8
1,3-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.26	0.26	0.26
1,4-Dichlorobenzene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Dichlorodifluoromethane	<0.050		0.050	ug/g	09-MAR-21	1.5	1.5	1.5
1,1-Dichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,1-Dichloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Methylene Chloride	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,2-Dichloropropane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAR-21			
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	09-MAR-21			
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	11-MAR-21	0.05	0.05	0.05
Ethylbenzene	<0.018		0.018	ug/g	09-MAR-21	0.05	0.05	0.05
n-Hexane	<0.050		0.050	ug/g	09-MAR-21	2.5	2.5	2.5
Methyl Ethyl Ketone	<0.50		0.50	ug/g	09-MAR-21	0.5	0.5	0.5
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	09-MAR-21	0.5	0.5	0.5
MTBE	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Styrene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Tetrachloroethylene	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	09-MAR-21	0.2	0.2	0.2
1,1,1-Trichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.11	0.11	0.12
1,1,2-Trichloroethane	<0.050		0.050	ug/g	09-MAR-21	0.05	0.05	0.05
Trichloroethylene	<0.010		0.010	ug/g	09-MAR-21	0.05	0.05	0.05
Trichlorofluoromethane	<0.050		0.050	ug/g	09-MAR-21	0.17	0.25	0.25
Vinyl chloride	<0.020		0.020	ug/g	09-MAR-21	0.02	0.02	0.02
o-Xylene	<0.020		0.020	ug/g	09-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	09-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	108.6		50-140	%	09-MAR-21			
Surrogate: 1,4-Difluorobenzene	115.8		50-140	%	09-MAR-21			

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

Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use

#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3	
L2564179-18 BH23 SS1 (0'-2')									
Sampled By: CLIENT on 26-FEB-21 @ 10:00									
Matrix: SOIL									
Hydrocarbons									
F1 (C6-C10)	<5.0		5.0	ug/g	09-MAR-21	17	25	25	
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25	
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26	
F3 (C16-C34)	<50		50	ug/g	12-MAR-21	240	240	240	
F4 (C34-C50)	<50		50	ug/g	12-MAR-21	2800	2800	3300	
Total Hydrocarbons (C6-C50)	<72		72	ug/g	12-MAR-21				
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21				
Surrogate: 2-Bromobenzotrifluoride	91.0		60-140	%	12-MAR-21				
Surrogate: 3,4-Dichlorotoluene	75.2		60-140	%	09-MAR-21				
L2564179-19 BH24 SS1 (0'-2')									
Sampled By: CLIENT on 25-FEB-21 @ 16:00									
Matrix: SOIL						#1	#2	#3	
Physical Tests									
Conductivity	0.340		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4	
% Moisture	20.5		0.25	%	11-MAR-21				
pH	7.45		0.10	pH units	16-MAR-21				
Cyanides									
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051	
Saturated Paste Extractables									
SAR	0.97		0.10	SAR	16-MAR-21	5	5	12	
Calcium (Ca)	33.3		0.50	mg/L	16-MAR-21				
Magnesium (Mg)	5.81		0.50	mg/L	16-MAR-21				
Sodium (Na)	23.1		0.50	mg/L	16-MAR-21				
Metals									
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40	
Arsenic (As)	4.7		1.0	ug/g	16-MAR-21	11	18	18	
Barium (Ba)	204		1.0	ug/g	16-MAR-21	390	390	670	
Beryllium (Be)	0.69		0.50	ug/g	16-MAR-21	4	4	8	
Boron (B)	10.9		5.0	ug/g	16-MAR-21	120	120	120	
Boron (B), Hot Water Ext.	0.24		0.10	ug/g	16-MAR-21	1.5	1.5	2	
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9	
Chromium (Cr)	35.8		1.0	ug/g	16-MAR-21	160	160	160	
Cobalt (Co)	11.5		1.0	ug/g	16-MAR-21	22	22	80	
Copper (Cu)	24.1		1.0	ug/g	16-MAR-21	140	140	230	
Lead (Pb)	13.9		1.0	ug/g	16-MAR-21	45	120	120	
Mercury (Hg)	0.0252		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27	
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40	
Nickel (Ni)	23.5		1.0	ug/g	16-MAR-21	100	100	270	
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5	
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40	
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3	
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33	
Vanadium (V)	55.3		1.0	ug/g	16-MAR-21	86	86	86	
Zinc (Zn)	68.9		5.0	ug/g	16-MAR-21	340	340	340	
Speciated Metals									

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-19 BH24 SS1 (0'-2')								
Sampled By: CLIENT on 25-FEB-21 @ 16:00								
Matrix: SOIL								
Speciated Metals								
Chromium, Hexavalent	0.25		0.20	ug/g	16-MAR-21	8	8	8
Volatile Organic Compounds								
Benzene	<0.0068		0.0068	ug/g	10-MAR-21	0.02	0.02	0.02
Ethylbenzene	<0.018		0.018	ug/g	10-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	10-MAR-21	0.2	0.2	0.2
o-Xylene	<0.020		0.020	ug/g	10-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	10-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	104.0		50-140	%	10-MAR-21			
Surrogate: 1,4-Difluorobenzene	103.4		50-140	%	10-MAR-21			
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	10-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	<50		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	<50		50	ug/g	12-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	<72		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	89.1		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	77.9		60-140	%	10-MAR-21			
L2564179-20 BH25 SS4 (7'6"-9'6")								
Sampled By: CLIENT on 01-MAR-21 @ 11:00								
Matrix: SOIL						#1	#2	#3
Physical Tests								
Conductivity	0.289		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	28.4		0.25	%	11-MAR-21			
pH	8.38		0.10	pH units	16-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	0.88		0.10	SAR	16-MAR-21	5	5	12
Calcium (Ca)	29.4		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	7.38		0.50	mg/L	16-MAR-21			
Sodium (Na)	20.6		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	3.5		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	380		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	1.09		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	17.2		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	59.8		1.0	ug/g	16-MAR-21	160	160	160
Cobalt (Co)	17.9		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	36.2		1.0	ug/g	16-MAR-21	140	140	230

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-20 BH25 SS4 (7'6"-9'6")								
Sampled By: CLIENT on 01-MAR-21 @ 11:00								
Matrix: SOIL								
Metals								
Lead (Pb)	9.8		1.0	ug/g	16-MAR-21	45	120	120
Mercury (Hg)	0.0228		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	38.8		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	83.1		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	107		5.0	ug/g	16-MAR-21	340	340	340
Speciated Metals								
Chromium, Hexavalent	0.47		0.20	ug/g	16-MAR-21	8	8	8
Volatile Organic Compounds								
Acetone	<0.50		0.50	ug/g	10-MAR-21	0.5	0.5	0.5
Benzene	<0.0068		0.0068	ug/g	10-MAR-21	0.02	0.02	0.02
Bromodichloromethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Bromoform	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Bromomethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Carbon tetrachloride	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Chlorobenzene	<0.050		0.050	ug/g	10-MAR-21	0.083	0.083	0.083
Dibromochloromethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Chloroform	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dibromoethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dichlorobenzene	<0.050		0.050	ug/g	10-MAR-21	3.4	3.4	6.8
1,3-Dichlorobenzene	<0.050		0.050	ug/g	10-MAR-21	0.26	0.26	0.26
1,4-Dichlorobenzene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Dichlorodifluoromethane	<0.050		0.050	ug/g	10-MAR-21	1.5	1.5	1.5
1,1-Dichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,1-Dichloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Methylene Chloride	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,2-Dichloropropane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	10-MAR-21			
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	10-MAR-21			
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	11-MAR-21	0.05	0.05	0.05
Ethylbenzene	<0.018		0.018	ug/g	10-MAR-21	0.05	0.05	0.05
n-Hexane	<0.050		0.050	ug/g	10-MAR-21	2.5	2.5	2.5
Methyl Ethyl Ketone	<0.50		0.50	ug/g	10-MAR-21	0.5	0.5	0.5
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	10-MAR-21	0.5	0.5	0.5
MTBE	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Styrene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-20 BH25 SS4 (7'6"-9'6")								
Sampled By: CLIENT on 01-MAR-21 @ 11:00								
Matrix: SOIL								
Volatile Organic Compounds								
Tetrachloroethylene	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	10-MAR-21	0.2	0.2	0.2
1,1,1-Trichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.11	0.11	0.12
1,1,2-Trichloroethane	<0.050		0.050	ug/g	10-MAR-21	0.05	0.05	0.05
Trichloroethylene	<0.010		0.010	ug/g	10-MAR-21	0.05	0.05	0.05
Trichlorofluoromethane	<0.050		0.050	ug/g	10-MAR-21	0.17	0.25	0.25
Vinyl chloride	<0.020		0.020	ug/g	10-MAR-21	0.02	0.02	0.02
o-Xylene	<0.020		0.020	ug/g	10-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	10-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	11-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	90.0		50-140	%	10-MAR-21			
Surrogate: 1,4-Difluorobenzene	105.5		50-140	%	10-MAR-21			
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	10-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	<50		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	<50		50	ug/g	12-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	<72		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	90.1		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	80.8		60-140	%	10-MAR-21			
L2564179-21 BH26 SS5 (10'-12')								
Sampled By: CLIENT on 01-MAR-21 @ 15:30								
Matrix: SOIL						#1	#2	#3
Physical Tests								
Conductivity	0.238		0.0040	mS/cm	16-MAR-21	0.7	0.7	1.4
% Moisture	23.2		0.25	%	12-MAR-21			
pH	7.69		0.10	pH units	16-MAR-21			
Cyanides								
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	16-MAR-21	0.051	0.051	0.051
Saturated Paste Extractables								
SAR	1.24		0.10	SAR	16-MAR-21	5	5	12
Calcium (Ca)	19.6		0.50	mg/L	16-MAR-21			
Magnesium (Mg)	4.01		0.50	mg/L	16-MAR-21			
Sodium (Na)	23.1		0.50	mg/L	16-MAR-21			
Metals								
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-21	7.5	7.5	40
Arsenic (As)	3.6		1.0	ug/g	16-MAR-21	11	18	18
Barium (Ba)	242		1.0	ug/g	16-MAR-21	390	390	670
Beryllium (Be)	0.76		0.50	ug/g	16-MAR-21	4	4	8
Boron (B)	11.1		5.0	ug/g	16-MAR-21	120	120	120
Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	16-MAR-21	1.5	1.5	2
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-21	1	1.2	1.9
Chromium (Cr)	41.7		1.0	ug/g	16-MAR-21	160	160	160

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Ontario Regulation 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use **#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use**

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3
L2564179-21 BH26 SS5 (10'-12')								
Sampled By: CLIENT on 01-MAR-21 @ 15:30								
Matrix: SOIL								
Metals								
Cobalt (Co)	14.4		1.0	ug/g	16-MAR-21	22	22	80
Copper (Cu)	26.6		1.0	ug/g	16-MAR-21	140	140	230
Lead (Pb)	7.4		1.0	ug/g	16-MAR-21	45	120	120
Mercury (Hg)	0.0067		0.0050	ug/g	16-MAR-21	0.24	0.27	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-21	6.9	6.9	40
Nickel (Ni)	29.4		1.0	ug/g	16-MAR-21	100	100	270
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-21	2.4	2.4	5.5
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-21	20	20	40
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-21	1	1	3.3
Uranium (U)	<1.0		1.0	ug/g	16-MAR-21	23	23	33
Vanadium (V)	64.4		1.0	ug/g	16-MAR-21	86	86	86
Zinc (Zn)	69.2		5.0	ug/g	16-MAR-21	340	340	340
Speciated Metals								
Chromium, Hexavalent	0.33		0.20	ug/g	16-MAR-21	8	8	8
Volatile Organic Compounds								
Benzene	<0.0068		0.0068	ug/g	10-MAR-21	0.02	0.02	0.02
Ethylbenzene	<0.018		0.018	ug/g	10-MAR-21	0.05	0.05	0.05
Toluene	<0.080		0.080	ug/g	10-MAR-21	0.2	0.2	0.2
o-Xylene	<0.020		0.020	ug/g	10-MAR-21			
m+p-Xylenes	<0.030		0.030	ug/g	10-MAR-21			
Xylenes (Total)	<0.050		0.050	ug/g	12-MAR-21	0.091	0.091	0.091
Surrogate: 4-Bromofluorobenzene	106.7		50-140	%	10-MAR-21			
Surrogate: 1,4-Difluorobenzene	103.9		50-140	%	10-MAR-21			
Hydrocarbons								
F1 (C6-C10)	<5.0		5.0	ug/g	10-MAR-21	17	25	25
F1-BTEX	<5.0		5.0	ug/g	12-MAR-21	17	25	25
F2 (C10-C16)	<10		10	ug/g	12-MAR-21	10	10	26
F3 (C16-C34)	<50		50	ug/g	12-MAR-21	240	240	240
F4 (C34-C50)	<50		50	ug/g	12-MAR-21	2800	2800	3300
Total Hydrocarbons (C6-C50)	<72		72	ug/g	12-MAR-21			
Chrom. to baseline at nC50	YES			No Unit	12-MAR-21			
Surrogate: 2-Bromobenzotrifluoride	93.9		60-140	%	12-MAR-21			
Surrogate: 3,4-Dichlorotoluene	85.0		60-140	%	10-MAR-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 406/19 - Excess Soils - 17-December-20 = [Suite] - ON-406-T2.1-SOIL-ALL-AG/RPI/ICC

#1: T2.1 - Volume Independent Soil - Agricultural or Other Property Use

#2: T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

#3: T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
SURR-ND	Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

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).

BTX-511-HS-WT	Soil	BTEX-O.Reg 153/04 (July 2011)	SW846 8260

BTX is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-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).

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).

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).

Reference Information

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.

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), 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), 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).

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).

Reference Information

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

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).

VOC-1,3-DCP-CALC-WT	Soil	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Soil	VOC-O.Reg 153/04 (July 2011)	SW846 8260 (511)

Soil and sediment samples are extracted in methanol and analyzed by headspace-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).

XYLENES-SUM-CALC-WT	Soil	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.

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.

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: L2564179 Report Date: 07-APR-21

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT	**Soil**							
Batch R5401946								
WG3502651-4 DUP		**L2564031-1**						
Boron (B), Hot Water Ext.		0.14	0.12		ug/g	17	30	16-MAR-21
WG3502651-2 IRM		**WT SAR4**						
Boron (B), Hot Water Ext.			101.5		%		70-130	16-MAR-21
WG3502651-3 LCS								
Boron (B), Hot Water Ext.			106.0		%		70-130	16-MAR-21
WG3502651-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	16-MAR-21
Batch R5402042								
WG3502647-4 DUP		**L2564218-2**						
Boron (B), Hot Water Ext.		0.21	0.21		ug/g	1.0	30	16-MAR-21
WG3502647-2 IRM		**WT SAR4**						
Boron (B), Hot Water Ext.			98.2		%		70-130	16-MAR-21
WG3502647-3 LCS								
Boron (B), Hot Water Ext.			107.0		%		70-130	16-MAR-21
WG3502647-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	16-MAR-21
BTX-511-HS-WT	**Soil**							
Batch R5398896								
WG3498828-4 DUP		**WG3498828-3**						
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	10-MAR-21
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	10-MAR-21
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	10-MAR-21
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	10-MAR-21
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	10-MAR-21
WG3498828-2 LCS								
Benzene			115.1		%		70-130	10-MAR-21
Ethylbenzene			110.5		%		70-130	10-MAR-21
m+p-Xylenes			101.9		%		70-130	10-MAR-21
o-Xylene			109.2		%		70-130	10-MAR-21
Toluene			108.9		%		70-130	10-MAR-21
WG3498828-1 MB								
Benzene			<0.0068		ug/g		0.0068	10-MAR-21
Ethylbenzene			<0.018		ug/g		0.018	10-MAR-21
m+p-Xylenes			<0.030		ug/g		0.03	10-MAR-21
o-Xylene			<0.020		ug/g		0.02	10-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-511-HS-WT	**Soil**							
Batch R5398896								
WG3498828-1 MB								
Toluene			<0.080		ug/g		0.08	10-MAR-21
Surrogate: 1,4-Difluorobenzene			110.1		%		50-140	10-MAR-21
Surrogate: 4-Bromofluorobenzene			111.9		%		50-140	10-MAR-21
WG3498828-5 MS		**WG3498828-3**						
Benzene			113.4		%		60-140	10-MAR-21
Ethylbenzene			114.0		%		60-140	10-MAR-21
m+p-Xylenes			106.0		%		60-140	10-MAR-21
o-Xylene			112.4		%		60-140	10-MAR-21
Toluene			112.0		%		60-140	10-MAR-21
Batch R5398899								
WG3498953-4 DUP		**WG3498953-3**						
Benzene		0.101	0.102		ug/g	0.9	40	10-MAR-21
Ethylbenzene		0.097	0.097		ug/g	0.7	40	10-MAR-21
m+p-Xylenes		0.283	0.285		ug/g	1.0	40	10-MAR-21
o-Xylene		0.156	0.157		ug/g	0.8	40	10-MAR-21
Toluene		0.261	0.264		ug/g	1.3	40	10-MAR-21
WG3498953-2 LCS								
Benzene			105.8		%		70-130	10-MAR-21
Ethylbenzene			98.7		%		70-130	10-MAR-21
m+p-Xylenes			90.8		%		70-130	10-MAR-21
o-Xylene			98.0		%		70-130	10-MAR-21
Toluene			97.7		%		70-130	10-MAR-21
WG3498953-1 MB								
Benzene			<0.0068		ug/g		0.0068	10-MAR-21
Ethylbenzene			<0.018		ug/g		0.018	10-MAR-21
m+p-Xylenes			<0.030		ug/g		0.03	10-MAR-21
o-Xylene			<0.020		ug/g		0.02	10-MAR-21
Toluene			<0.080		ug/g		0.08	10-MAR-21
Surrogate: 1,4-Difluorobenzene			107.6		%		50-140	10-MAR-21
Surrogate: 4-Bromofluorobenzene			108.8		%		50-140	10-MAR-21
WG3498953-5 MS		**WG3498953-3**						
Benzene			108.5		%		60-140	10-MAR-21
Ethylbenzene			106.2		%		60-140	10-MAR-21
m+p-Xylenes			97.9		%		60-140	10-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-511-HS-WT	**Soil**							
Batch R5398899								
WG3498953-5 MS		**WG3498953-3**						
o-Xylene			105.4		%		60-140	10-MAR-21
Toluene			104.2		%		60-140	10-MAR-21
CN-WAD-R511-WT	**Soil**							
Batch R5399837								
WG3500283-3 DUP		**L2565660-16**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	11-MAR-21
WG3500283-2 LCS								
Cyanide, Weak Acid Diss			100.7		%		80-120	11-MAR-21
WG3500283-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	11-MAR-21
WG3500283-4 MS		**L2565660-16**						
Cyanide, Weak Acid Diss			100.4		%		70-130	11-MAR-21
Batch R5401739								
WG3500674-3 DUP		**L2564179-12**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	16-MAR-21
WG3500674-2 LCS								
Cyanide, Weak Acid Diss			88.2		%		80-120	16-MAR-21
WG3500674-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	16-MAR-21
WG3500674-4 MS		**L2564179-12**						
Cyanide, Weak Acid Diss			87.5		%		70-130	16-MAR-21
CR-CR6-IC-WT	**Soil**							
Batch R5401299								
WG3500856-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			99.9		%		70-130	15-MAR-21
WG3500856-3 DUP		**L2564179-12**						
Chromium, Hexavalent		<0.20	<0.20	RPD-NA	ug/g	N/A	35	15-MAR-21
WG3500856-2 LCS								
Chromium, Hexavalent			96.0		%		80-120	15-MAR-21
WG3500856-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	15-MAR-21
Batch R5401748								
WG3501011-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			102.9		%		70-130	16-MAR-21
WG3501011-3 DUP		**L2564504-9**						
Chromium, Hexavalent		0.76	0.86		ug/g	12	35	16-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-IC-WT	**Soil**							
Batch R5401748								
WG3501011-2 LCS								
Chromium, Hexavalent			103.8		%		80-120	16-MAR-21
WG3501011-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	16-MAR-21
EC-WT	**Soil**							
Batch R5402036								
WG3502653-4 DUP		**WG3502653-3**						
Conductivity		0.875	0.868		mS/cm	0.8	20	16-MAR-21
WG3502653-2 IRM		**WT SAR4**						
Conductivity			100.0		%		70-130	16-MAR-21
WG3503260-1 LCS								
Conductivity			97.1		%		90-110	16-MAR-21
WG3502653-1 MB								
Conductivity			<0.0040		mS/cm		0.004	16-MAR-21
Batch R5402040								
WG3502649-4 DUP		**WG3502649-3**						
Conductivity		0.185	0.200		mS/cm	7.6	20	16-MAR-21
WG3502649-2 IRM		**WT SAR4**						
Conductivity			100.8		%		70-130	16-MAR-21
WG3503198-1 LCS								
Conductivity			97.3		%		90-110	16-MAR-21
WG3502649-1 MB								
Conductivity			<0.0040		mS/cm		0.004	16-MAR-21
F1-HS-511-WT	**Soil**							
Batch R5398464								
WG3498335-4 DUP		**WG3498335-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	09-MAR-21
WG3498335-2 LCS								
F1 (C6-C10)			109.1		%		80-120	10-MAR-21
WG3498335-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	09-MAR-21
Surrogate: 3,4-Dichlorotoluene			117.7		%		60-140	09-MAR-21
WG3498335-5 MS		**WG3498335-3**						
F1 (C6-C10)			79.4		%		60-140	09-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	**Soil**							
Batch R5398896								
WG3498828-4 DUP		**WG3498828-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	10-MAR-21
WG3498828-2 LCS								
F1 (C6-C10)			92.8		%		80-120	10-MAR-21
WG3498828-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	10-MAR-21
Surrogate: 3,4-Dichlorotoluene			93.2		%		60-140	10-MAR-21
WG3498828-5 MS		**WG3498828-3**						
F1 (C6-C10)			91.3		%		60-140	10-MAR-21
Batch R5398899								
WG3498953-4 DUP		**WG3498953-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	10-MAR-21
WG3498953-2 LCS								
F1 (C6-C10)			89.9		%		80-120	10-MAR-21
WG3498953-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	10-MAR-21
Surrogate: 3,4-Dichlorotoluene			85.2		%		60-140	10-MAR-21
WG3498953-5 MS		**WG3498953-3**						
F1 (C6-C10)			86.6		%		60-140	10-MAR-21
F2-F4-511-WT	**Soil**							
Batch R5399892								
WG3499263-3 DUP		**WG3499263-5**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	11-MAR-21
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	11-MAR-21
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	11-MAR-21
WG3499263-2 LCS								
F2 (C10-C16)			102.1		%		80-120	11-MAR-21
F3 (C16-C34)			106.1		%		80-120	11-MAR-21
F4 (C34-C50)			106.1		%		80-120	11-MAR-21
WG3499263-1 MB								
F2 (C10-C16)			<10		ug/g		10	11-MAR-21
F3 (C16-C34)			<50		ug/g		50	11-MAR-21
F4 (C34-C50)			<50		ug/g		50	11-MAR-21
Surrogate: 2-Bromobenzotrifluoride			97.0		%		60-140	11-MAR-21
WG3499263-4 MS		**WG3499263-5**						
F2 (C10-C16)			101.1		%		60-140	11-MAR-21
F3 (C16-C34)			104.0		%		60-140	11-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT	**Soil**							
Batch R5399892								
WG3499263-4 MS		**WG3499263-5**						
F4 (C34-C50)			106.2		%		60-140	11-MAR-21
Batch R5400242								
WG3500062-3 DUP		**WG3500062-5**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	12-MAR-21
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	12-MAR-21
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	12-MAR-21
WG3500062-2 LCS								
F2 (C10-C16)			85.8		%		80-120	12-MAR-21
F3 (C16-C34)			87.1		%		80-120	12-MAR-21
F4 (C34-C50)			91.3		%		80-120	12-MAR-21
WG3500062-1 MB								
F2 (C10-C16)			<10		ug/g		10	12-MAR-21
F3 (C16-C34)			<50		ug/g		50	12-MAR-21
F4 (C34-C50)			<50		ug/g		50	12-MAR-21
Surrogate: 2-Bromobenzotrifluoride			88.7		%		60-140	12-MAR-21
WG3500062-4 MS		**WG3500062-5**						
F2 (C10-C16)			84.9		%		60-140	12-MAR-21
F3 (C16-C34)			89.3		%		60-140	12-MAR-21
F4 (C34-C50)			93.2		%		60-140	12-MAR-21
Batch R5400519								
WG3500598-3 DUP		**WG3500598-5**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	12-MAR-21
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	12-MAR-21
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	12-MAR-21
WG3500598-2 LCS								
F2 (C10-C16)			97.1		%		80-120	12-MAR-21
F3 (C16-C34)			98.3		%		80-120	12-MAR-21
F4 (C34-C50)			97.4		%		80-120	12-MAR-21
WG3500598-1 MB								
F2 (C10-C16)			<10		ug/g		10	12-MAR-21
F3 (C16-C34)			<50		ug/g		50	12-MAR-21
F4 (C34-C50)			<50		ug/g		50	12-MAR-21
Surrogate: 2-Bromobenzotrifluoride			98.7		%		60-140	12-MAR-21
WG3500598-4 MS		**WG3500598-5**						

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT	**Soil**							
Batch R5400519								
WG3500598-4 MS		**WG3500598-5**						
F2 (C10-C16)			95.0		%		60-140	12-MAR-21
F3 (C16-C34)			95.0		%		60-140	12-MAR-21
F4 (C34-C50)			95.6		%		60-140	12-MAR-21
F4G-ADD-511-WT	**Soil**							
Batch R5400350								
WG3501376-2 LCS								
F4G-SG (GHH-Silica)			71.6		%		60-140	11-MAR-21
WG3501376-1 MB								
F4G-SG (GHH-Silica)			<250		ug/g		250	11-MAR-21
HG-200.2-CVAA-WT	**Soil**							
Batch R5401795								
WG3502645-2 CRM		**WT-SS-2**						
Mercury (Hg)			102.7		%		70-130	16-MAR-21
WG3502645-6 DUP		**WG3502645-5**						
Mercury (Hg)		0.0121	0.0134		ug/g	10	40	16-MAR-21
WG3502645-3 LCS								
Mercury (Hg)			96.0		%		80-120	16-MAR-21
WG3502645-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	16-MAR-21
Batch R5401802								
WG3502639-2 CRM		**WT-SS-2**						
Mercury (Hg)			103.2		%		70-130	16-MAR-21
WG3502639-6 DUP		**WG3502639-5**						
Mercury (Hg)		0.0081	0.0092		ug/g	13	40	16-MAR-21
WG3502639-3 LCS								
Mercury (Hg)			105.0		%		80-120	16-MAR-21
WG3502639-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	16-MAR-21
MET-200.2-CCMS-WT	**Soil**							
Batch R5402526								
WG3502639-2 CRM		**WT-SS-2**						
Antimony (Sb)			101.1		%		70-130	16-MAR-21
Arsenic (As)			103.5		%		70-130	16-MAR-21
Barium (Ba)			106.9		%		70-130	16-MAR-21
Beryllium (Be)			101.7		%		70-130	16-MAR-21
Boron (B)			9.3		mg/kg		3.5-13.5	16-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5402526								
WG3502639-2 CRM		**WT-SS-2**						
Cadmium (Cd)			98.2		%		70-130	16-MAR-21
Chromium (Cr)			102.1		%		70-130	16-MAR-21
Cobalt (Co)			102.5		%		70-130	16-MAR-21
Copper (Cu)			96.2		%		70-130	16-MAR-21
Lead (Pb)			100.2		%		70-130	16-MAR-21
Molybdenum (Mo)			97.6		%		70-130	16-MAR-21
Nickel (Ni)			99.7		%		70-130	16-MAR-21
Selenium (Se)			0.15		mg/kg		0-0.34	16-MAR-21
Silver (Ag)			111.1		%		70-130	16-MAR-21
Thallium (Tl)			0.080		mg/kg		0.029-0.129	16-MAR-21
Uranium (U)			97.4		%		70-130	16-MAR-21
Vanadium (V)			104.2		%		70-130	16-MAR-21
Zinc (Zn)			95.6		%		70-130	16-MAR-21
WG3502639-6 DUP		**WG3502639-5**						
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	16-MAR-21
Arsenic (As)		2.86	2.53		ug/g	12	30	16-MAR-21
Barium (Ba)		47.9	41.9		ug/g	13	40	16-MAR-21
Beryllium (Be)		0.43	0.38		ug/g	11	30	16-MAR-21
Boron (B)		7.4	6.5		ug/g	13	30	16-MAR-21
Cadmium (Cd)		0.072	0.074		ug/g	2.3	30	16-MAR-21
Chromium (Cr)		13.1	13.4		ug/g	2.2	30	16-MAR-21
Cobalt (Co)		6.68	5.84		ug/g	13	30	16-MAR-21
Copper (Cu)		13.4	11.5		ug/g	16	30	16-MAR-21
Lead (Pb)		5.96	5.20		ug/g	14	40	16-MAR-21
Molybdenum (Mo)		0.29	0.23		ug/g	22	40	16-MAR-21
Nickel (Ni)		13.8	11.8		ug/g	16	30	16-MAR-21
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	16-MAR-21
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	16-MAR-21
Thallium (Tl)		0.112	0.096		ug/g	15	30	16-MAR-21
Uranium (U)		0.511	0.438		ug/g	15	30	16-MAR-21
Vanadium (V)		30.2	26.6		ug/g	13	30	16-MAR-21
Zinc (Zn)		32.5	28.6		ug/g	13	30	16-MAR-21
WG3502639-4 LCS								

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5402526								
WG3502639-4 LCS								
Antimony (Sb)			111.2		%		80-120	16-MAR-21
Arsenic (As)			111.3		%		80-120	16-MAR-21
Barium (Ba)			104.2		%		80-120	16-MAR-21
Beryllium (Be)			104.2		%		80-120	16-MAR-21
Boron (B)			101.4		%		80-120	16-MAR-21
Cadmium (Cd)			102.9		%		80-120	16-MAR-21
Chromium (Cr)			106.7		%		80-120	16-MAR-21
Cobalt (Co)			105.6		%		80-120	16-MAR-21
Copper (Cu)			104.1		%		80-120	16-MAR-21
Lead (Pb)			107.4		%		80-120	16-MAR-21
Molybdenum (Mo)			107.8		%		80-120	16-MAR-21
Nickel (Ni)			104.3		%		80-120	16-MAR-21
Selenium (Se)			110.1		%		80-120	16-MAR-21
Silver (Ag)			108.0		%		80-120	16-MAR-21
Thallium (Tl)			110.0		%		80-120	16-MAR-21
Uranium (U)			104.7		%		80-120	16-MAR-21
Vanadium (V)			110.6		%		80-120	16-MAR-21
Zinc (Zn)			103.0		%		80-120	16-MAR-21
WG3502639-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	16-MAR-21
Arsenic (As)			<0.10		mg/kg		0.1	16-MAR-21
Barium (Ba)			<0.50		mg/kg		0.5	16-MAR-21
Beryllium (Be)			<0.10		mg/kg		0.1	16-MAR-21
Boron (B)			<5.0		mg/kg		5	16-MAR-21
Cadmium (Cd)			<0.020		mg/kg		0.02	16-MAR-21
Chromium (Cr)			<0.50		mg/kg		0.5	16-MAR-21
Cobalt (Co)			<0.10		mg/kg		0.1	16-MAR-21
Copper (Cu)			<0.50		mg/kg		0.5	16-MAR-21
Lead (Pb)			<0.50		mg/kg		0.5	16-MAR-21
Molybdenum (Mo)			<0.10		mg/kg		0.1	16-MAR-21
Nickel (Ni)			<0.50		mg/kg		0.5	16-MAR-21
Selenium (Se)			<0.20		mg/kg		0.2	16-MAR-21
Silver (Ag)			<0.10		mg/kg		0.1	16-MAR-21
Thallium (Tl)			<0.050		mg/kg		0.05	16-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5402526								
WG3502639-1 MB								
Uranium (U)			<0.050		mg/kg		0.05	16-MAR-21
Vanadium (V)			<0.20		mg/kg		0.2	16-MAR-21
Zinc (Zn)			<2.0		mg/kg		2	16-MAR-21
Batch R5402569								
WG3502645-2 CRM		**WT-SS-2**						
Antimony (Sb)			90.7		%		70-130	16-MAR-21
Arsenic (As)			101.9		%		70-130	16-MAR-21
Barium (Ba)			109.4		%		70-130	16-MAR-21
Beryllium (Be)			98.9		%		70-130	16-MAR-21
Boron (B)			8.7		mg/kg		3.5-13.5	16-MAR-21
Cadmium (Cd)			98.5		%		70-130	16-MAR-21
Chromium (Cr)			107.4		%		70-130	16-MAR-21
Cobalt (Co)			102.1		%		70-130	16-MAR-21
Copper (Cu)			99.1		%		70-130	16-MAR-21
Lead (Pb)			95.7		%		70-130	16-MAR-21
Molybdenum (Mo)			95.9		%		70-130	16-MAR-21
Nickel (Ni)			101.9		%		70-130	16-MAR-21
Selenium (Se)			0.18		mg/kg		0-0.34	16-MAR-21
Silver (Ag)			78.6		%		70-130	16-MAR-21
Thallium (Tl)			0.068		mg/kg		0.029-0.129	16-MAR-21
Uranium (U)			87.8		%		70-130	16-MAR-21
Vanadium (V)			107.9		%		70-130	16-MAR-21
Zinc (Zn)			100.3		%		70-130	16-MAR-21
WG3502645-6 DUP		**WG3502645-5**						
Antimony (Sb)		0.14	0.11		ug/g	23	30	16-MAR-21
Arsenic (As)		6.60	5.51		ug/g	18	30	16-MAR-21
Barium (Ba)		119	97.8		ug/g	19	40	16-MAR-21
Beryllium (Be)		0.59	0.50		ug/g	17	30	16-MAR-21
Boron (B)		11.6	10.3		ug/g	12	30	16-MAR-21
Cadmium (Cd)		0.095	0.085		ug/g	10	30	16-MAR-21
Chromium (Cr)		22.2	18.4		ug/g	19	30	16-MAR-21
Cobalt (Co)		11.9	10.1		ug/g	17	30	16-MAR-21
Copper (Cu)		39.7	33.5		ug/g	17	30	16-MAR-21
Lead (Pb)		9.40	8.36		ug/g	12	40	16-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5402569								
WG3502645-6 DUP		**WG3502645-5**						
Molybdenum (Mo)		0.46	0.38		ug/g	18	40	16-MAR-21
Nickel (Ni)		24.2	20.2		ug/g	18	30	16-MAR-21
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	16-MAR-21
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	16-MAR-21
Thallium (Tl)		0.131	0.108		ug/g	19	30	16-MAR-21
Uranium (U)		0.573	0.509		ug/g	12	30	16-MAR-21
Vanadium (V)		35.7	29.2		ug/g	20	30	16-MAR-21
Zinc (Zn)		58.0	48.9		ug/g	17	30	16-MAR-21
WG3502645-4 LCS								
Antimony (Sb)			105.1		%		80-120	16-MAR-21
Arsenic (As)			108.8		%		80-120	16-MAR-21
Barium (Ba)			104.7		%		80-120	16-MAR-21
Beryllium (Be)			102.9		%		80-120	16-MAR-21
Boron (B)			100.8		%		80-120	16-MAR-21
Cadmium (Cd)			103.3		%		80-120	16-MAR-21
Chromium (Cr)			104.9		%		80-120	16-MAR-21
Cobalt (Co)			106.0		%		80-120	16-MAR-21
Copper (Cu)			104.2		%		80-120	16-MAR-21
Lead (Pb)			103.3		%		80-120	16-MAR-21
Molybdenum (Mo)			106.2		%		80-120	16-MAR-21
Nickel (Ni)			104.6		%		80-120	16-MAR-21
Selenium (Se)			110.0		%		80-120	16-MAR-21
Silver (Ag)			103.7		%		80-120	16-MAR-21
Thallium (Tl)			105.2		%		80-120	16-MAR-21
Uranium (U)			97.7		%		80-120	16-MAR-21
Vanadium (V)			110.3		%		80-120	16-MAR-21
Zinc (Zn)			107.3		%		80-120	16-MAR-21
WG3502645-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	16-MAR-21
Arsenic (As)			<0.10		mg/kg		0.1	16-MAR-21
Barium (Ba)			<0.50		mg/kg		0.5	16-MAR-21
Beryllium (Be)			<0.10		mg/kg		0.1	16-MAR-21
Boron (B)			<5.0		mg/kg		5	16-MAR-21
Cadmium (Cd)			<0.020		mg/kg		0.02	16-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5402569								
WG3502645-1 MB								
Chromium (Cr)			<0.50		mg/kg		0.5	16-MAR-21
Cobalt (Co)			<0.10		mg/kg		0.1	16-MAR-21
Copper (Cu)			<0.50		mg/kg		0.5	16-MAR-21
Lead (Pb)			<0.50		mg/kg		0.5	16-MAR-21
Molybdenum (Mo)			<0.10		mg/kg		0.1	16-MAR-21
Nickel (Ni)			<0.50		mg/kg		0.5	16-MAR-21
Selenium (Se)			<0.20		mg/kg		0.2	16-MAR-21
Silver (Ag)			<0.10		mg/kg		0.1	16-MAR-21
Thallium (Tl)			<0.050		mg/kg		0.05	16-MAR-21
Uranium (U)			<0.050		mg/kg		0.05	16-MAR-21
Vanadium (V)			<0.20		mg/kg		0.2	16-MAR-21
Zinc (Zn)			<2.0		mg/kg		2	16-MAR-21
MOISTURE-WT	**Soil**							
Batch R5399508								
WG3499986-3 DUP		**L2564179-1**						
% Moisture		19.8	18.2		%	8.2	20	11-MAR-21
WG3499986-2 LCS								
% Moisture			99.6		%		90-110	11-MAR-21
WG3499986-1 MB								
% Moisture			<0.25		%		0.25	11-MAR-21
Batch R5400107								
WG3501016-3 DUP		**L2564177-2**						
% Moisture		19.5	18.8		%	3.4	20	12-MAR-21
WG3501016-2 LCS								
% Moisture			99.4		%		90-110	12-MAR-21
WG3501016-1 MB								
% Moisture			<0.25		%		0.25	12-MAR-21
PH-WT	**Soil**							
Batch R5400397								
WG3500902-1 DUP		**L2564179-12**						
pH		8.19	8.10	J	pH units	0.09	0.3	12-MAR-21
WG3501252-1 LCS								
pH			6.96		pH units		6.9-7.1	12-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-WT	**Soil**							
Batch R5401412								
WG3500681-1 DUP		**L2564265-15**						
pH		7.90	7.85	J	pH units	0.05	0.3	15-MAR-21
WG3502485-1 LCS								
pH			7.00		pH units		6.9-7.1	15-MAR-21
Batch R5401939								
WG3500944-1 DUP		**L2564179-13**						
pH		7.76	7.80	J	pH units	0.04	0.3	16-MAR-21
WG3502923-1 LCS								
pH			6.95		pH units		6.9-7.1	16-MAR-21
SAR-R511-WT	**Soil**							
Batch R5401950								
WG3502649-4 DUP		**WG3502649-3**						
Calcium (Ca)		14.7	15.2		mg/L	3.3	30	16-MAR-21
Sodium (Na)		27.6	28.8		mg/L	4.3	30	16-MAR-21
Magnesium (Mg)		1.41	1.44		mg/L	2.1	30	16-MAR-21
WG3502649-2 IRM		**WT SAR4**						
Calcium (Ca)			108.2		%		70-130	16-MAR-21
Sodium (Na)			93.3		%		70-130	16-MAR-21
Magnesium (Mg)			106.0		%		70-130	16-MAR-21
WG3502649-5 LCS								
Calcium (Ca)			105.3		%		80-120	16-MAR-21
Sodium (Na)			101.6		%		80-120	16-MAR-21
Magnesium (Mg)			101.2		%		80-120	16-MAR-21
WG3502649-1 MB								
Calcium (Ca)			<0.50		mg/L		0.5	16-MAR-21
Sodium (Na)			<0.50		mg/L		0.5	16-MAR-21
Magnesium (Mg)			<0.50		mg/L		0.5	16-MAR-21
Batch R5402045								
WG3502653-4 DUP		**WG3502653-3**						
Calcium (Ca)		78.8	78.5		mg/L	0.4	30	16-MAR-21
Sodium (Na)		85.9	85.2		mg/L	0.8	30	16-MAR-21
Magnesium (Mg)		10.1	10.0		mg/L	1.0	30	16-MAR-21
WG3502653-2 IRM		**WT SAR4**						
Calcium (Ca)			97.7		%		70-130	16-MAR-21
Sodium (Na)			95.7		%		70-130	16-MAR-21
Magnesium (Mg)			100.9		%		70-130	16-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT	**Soil**							
Batch R5402045								
WG3502653-5 LCS								
Calcium (Ca)			106.7		%		80-120	16-MAR-21
Sodium (Na)			102.0		%		80-120	16-MAR-21
Magnesium (Mg)			102.0		%		80-120	16-MAR-21
WG3502653-1 MB								
Calcium (Ca)			<0.50		mg/L		0.5	16-MAR-21
Sodium (Na)			<0.50		mg/L		0.5	16-MAR-21
Magnesium (Mg)			<0.50		mg/L		0.5	16-MAR-21
VOC-511-HS-WT	**Soil**							
Batch R5398464								
WG3498335-4 DUP		**WG3498335-3**						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	09-MAR-21
Benzene		0.0068	0.0073		ug/g	6.5	40	09-MAR-21
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	09-MAR-21
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5398464								
WG3498335-4 DUP		**WG3498335-3**						
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	09-MAR-21
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	09-MAR-21
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	09-MAR-21
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	09-MAR-21
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	09-MAR-21
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	09-MAR-21
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	09-MAR-21
Trichloroethylene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	09-MAR-21
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	09-MAR-21
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	09-MAR-21
WG3498335-2 LCS								
1,1,1,2-Tetrachloroethane			101.0		%		60-130	09-MAR-21
1,1,2,2-Tetrachloroethane			66.0		%		60-130	09-MAR-21
1,1,1-Trichloroethane			104.1		%		60-130	09-MAR-21
1,1,2-Trichloroethane			93.9		%		60-130	09-MAR-21
1,1-Dichloroethane			101.1		%		60-130	09-MAR-21
1,1-Dichloroethylene			102.4		%		60-130	09-MAR-21
1,2-Dibromoethane			97.7		%		70-130	09-MAR-21
1,2-Dichlorobenzene			106.2		%		70-130	09-MAR-21
1,2-Dichloroethane			94.0		%		60-130	09-MAR-21
1,2-Dichloropropane			99.9		%		70-130	09-MAR-21
1,3-Dichlorobenzene			121.2		%		70-130	09-MAR-21
1,4-Dichlorobenzene			120.6		%		70-130	09-MAR-21
Acetone			98.5		%		60-140	09-MAR-21
Benzene			99.8		%		70-130	09-MAR-21
Bromodichloromethane			102.0		%		50-140	09-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5398464								
WG3498335-2 LCS								
Bromoform			85.9		%		70-130	09-MAR-21
Bromomethane			93.4		%		50-140	09-MAR-21
Carbon tetrachloride			108.5		%		70-130	09-MAR-21
Chlorobenzene			104.1		%		70-130	09-MAR-21
Chloroform			103.6		%		70-130	09-MAR-21
cis-1,2-Dichloroethylene			103.2		%		70-130	09-MAR-21
cis-1,3-Dichloropropene			97.1		%		70-130	09-MAR-21
Dibromochloromethane			96.9		%		60-130	09-MAR-21
Dichlorodifluoromethane			65.1		%		50-140	09-MAR-21
Ethylbenzene			107.9		%		70-130	09-MAR-21
n-Hexane			97.1		%		70-130	09-MAR-21
Methylene Chloride			99.2		%		70-130	09-MAR-21
MTBE			102.2		%		70-130	09-MAR-21
m+p-Xylenes			108.0		%		70-130	09-MAR-21
Methyl Ethyl Ketone			85.6		%		60-140	09-MAR-21
Methyl Isobutyl Ketone			84.6		%		60-140	09-MAR-21
o-Xylene			115.6		%		70-130	09-MAR-21
Styrene			103.0		%		70-130	09-MAR-21
Tetrachloroethylene			107.7		%		60-130	09-MAR-21
Toluene			104.8		%		70-130	09-MAR-21
trans-1,2-Dichloroethylene			103.3		%		60-130	09-MAR-21
trans-1,3-Dichloropropene			101.4		%		70-130	09-MAR-21
Trichloroethylene			105.0		%		60-130	09-MAR-21
Trichlorofluoromethane			100.5		%		50-140	09-MAR-21
Vinyl chloride			98.5		%		60-140	09-MAR-21
WG3498335-1 MB								
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1,1-Trichloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1,2-Trichloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1-Dichloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1-Dichloroethylene			<0.050		ug/g		0.05	09-MAR-21
1,2-Dibromoethane			<0.050		ug/g		0.05	09-MAR-21
1,2-Dichlorobenzene			<0.050		ug/g		0.05	09-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5398464								
WG3498335-1 MB								
1,2-Dichloroethane			<0.050		ug/g		0.05	09-MAR-21
1,2-Dichloropropane			<0.050		ug/g		0.05	09-MAR-21
1,3-Dichlorobenzene			<0.050		ug/g		0.05	09-MAR-21
1,4-Dichlorobenzene			<0.050		ug/g		0.05	09-MAR-21
Acetone			<0.50		ug/g		0.5	09-MAR-21
Benzene			<0.0068		ug/g		0.0068	09-MAR-21
Bromodichloromethane			<0.050		ug/g		0.05	09-MAR-21
Bromoform			<0.050		ug/g		0.05	09-MAR-21
Bromomethane			<0.050		ug/g		0.05	09-MAR-21
Carbon tetrachloride			<0.050		ug/g		0.05	09-MAR-21
Chlorobenzene			<0.050		ug/g		0.05	09-MAR-21
Chloroform			<0.050		ug/g		0.05	09-MAR-21
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	09-MAR-21
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	09-MAR-21
Dibromochloromethane			<0.050		ug/g		0.05	09-MAR-21
Dichlorodifluoromethane			<0.050		ug/g		0.05	09-MAR-21
Ethylbenzene			<0.018		ug/g		0.018	09-MAR-21
n-Hexane			<0.050		ug/g		0.05	09-MAR-21
Methylene Chloride			<0.050		ug/g		0.05	09-MAR-21
MTBE			<0.050		ug/g		0.05	09-MAR-21
m+p-Xylenes			<0.030		ug/g		0.03	09-MAR-21
Methyl Ethyl Ketone			<0.50		ug/g		0.5	09-MAR-21
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	09-MAR-21
o-Xylene			<0.020		ug/g		0.02	09-MAR-21
Styrene			<0.050		ug/g		0.05	09-MAR-21
Tetrachloroethylene			<0.050		ug/g		0.05	09-MAR-21
Toluene			<0.080		ug/g		0.08	09-MAR-21
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	09-MAR-21
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	09-MAR-21
Trichloroethylene			<0.010		ug/g		0.01	09-MAR-21
Trichlorofluoromethane			<0.050		ug/g		0.05	09-MAR-21
Vinyl chloride			<0.020		ug/g		0.02	09-MAR-21
Surrogate: 1,4-Difluorobenzene			115.9		%		50-140	09-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5398464								
WG3498335-1 MB								
Surrogate: 4-Bromofluorobenzene			112.0		%		50-140	09-MAR-21
WG3498335-5 MS		**WG3498335-3**						
1,1,1,2-Tetrachloroethane			111.3		%		50-140	10-MAR-21
1,1,2,2-Tetrachloroethane			105.3		%		50-140	10-MAR-21
1,1,1-Trichloroethane			111.9		%		50-140	10-MAR-21
1,1,2-Trichloroethane			102.9		%		50-140	10-MAR-21
1,1-Dichloroethane			100.5		%		50-140	10-MAR-21
1,1-Dichloroethylene			99.6		%		50-140	10-MAR-21
1,2-Dibromoethane			113.1		%		50-140	10-MAR-21
1,2-Dichlorobenzene			111.5		%		50-140	10-MAR-21
1,2-Dichloroethane			104.8		%		50-140	10-MAR-21
1,2-Dichloropropane			100.9		%		50-140	10-MAR-21
1,3-Dichlorobenzene			114.3		%		50-140	10-MAR-21
1,4-Dichlorobenzene			116.9		%		50-140	10-MAR-21
Acetone			107.3		%		50-140	10-MAR-21
Benzene			104.1		%		50-140	10-MAR-21
Bromodichloromethane			115.3		%		50-140	10-MAR-21
Bromoform			120.3		%		50-140	10-MAR-21
Bromomethane			103.3		%		50-140	10-MAR-21
Carbon tetrachloride			119.6		%		50-140	10-MAR-21
Chlorobenzene			109.2		%		50-140	10-MAR-21
Chloroform			112.0		%		50-140	10-MAR-21
cis-1,2-Dichloroethylene			114.9		%		50-140	10-MAR-21
cis-1,3-Dichloropropene			103.3		%		50-140	10-MAR-21
Dibromochloromethane			111.8		%		50-140	10-MAR-21
Dichlorodifluoromethane			98.0		%		50-140	10-MAR-21
Ethylbenzene			101.7		%		50-140	10-MAR-21
n-Hexane			83.7		%		50-140	10-MAR-21
Methylene Chloride			102.3		%		50-140	10-MAR-21
MTBE			106.2		%		50-140	10-MAR-21
m+p-Xylenes			102.8		%		50-140	10-MAR-21
Methyl Ethyl Ketone			112.9		%		50-140	10-MAR-21
Methyl Isobutyl Ketone			95.4		%		50-140	10-MAR-21
o-Xylene			112.3		%		50-140	10-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5398464								
WG3498335-5 MS		**WG3498335-3**						
Styrene			106.1		%		50-140	10-MAR-21
Tetrachloroethylene			112.0		%		50-140	10-MAR-21
Toluene			99.1		%		50-140	10-MAR-21
trans-1,2-Dichloroethylene			90.9		%		50-140	10-MAR-21
trans-1,3-Dichloropropene			95.1		%		50-140	10-MAR-21
Trichloroethylene			119.8		%		50-140	10-MAR-21
Trichlorofluoromethane			108.9		%		50-140	10-MAR-21
Vinyl chloride			96.7		%		50-140	10-MAR-21
COMMENTS: RRQC-Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.								
Batch R5399216								
WG3498942-4 DUP		**WG3498942-3**						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	10-MAR-21
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	10-MAR-21
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	10-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5399216								
WG3498942-4 DUP		**WG3498942-3**						
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	10-MAR-21
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	10-MAR-21
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	10-MAR-21
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	10-MAR-21
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	10-MAR-21
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	10-MAR-21
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	10-MAR-21
Trichloroethylene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	10-MAR-21
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	10-MAR-21
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	10-MAR-21
WG3498942-2 LCS								
1,1,1,2-Tetrachloroethane			99.2		%		60-130	09-MAR-21
1,1,2,2-Tetrachloroethane			118.0		%		60-130	09-MAR-21
1,1,1-Trichloroethane			97.5		%		60-130	09-MAR-21
1,1,2-Trichloroethane			105.1		%		60-130	09-MAR-21
1,1-Dichloroethane			101.2		%		60-130	09-MAR-21
1,1-Dichloroethylene			97.7		%		60-130	09-MAR-21
1,2-Dibromoethane			105.2		%		70-130	09-MAR-21
1,2-Dichlorobenzene			103.1		%		70-130	09-MAR-21
1,2-Dichloroethane			99.5		%		60-130	09-MAR-21
1,2-Dichloropropane			101.5		%		70-130	09-MAR-21
1,3-Dichlorobenzene			102.0		%		70-130	09-MAR-21
1,4-Dichlorobenzene			102.6		%		70-130	09-MAR-21
Acetone			114.2		%		60-140	09-MAR-21
Benzene			98.1		%		70-130	09-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5399216								
WG3498942-2 LCS								
Bromodichloromethane			106.3		%		50-140	09-MAR-21
Bromoform			109.1		%		70-130	09-MAR-21
Bromomethane			97.0		%		50-140	09-MAR-21
Carbon tetrachloride			99.7		%		70-130	09-MAR-21
Chlorobenzene			99.5		%		70-130	09-MAR-21
Chloroform			101.9		%		70-130	09-MAR-21
cis-1,2-Dichloroethylene			106.7		%		70-130	09-MAR-21
cis-1,3-Dichloropropene			108.6		%		70-130	09-MAR-21
Dibromochloromethane			100.9		%		60-130	09-MAR-21
Dichlorodifluoromethane			70.5		%		50-140	09-MAR-21
Ethylbenzene			100.3		%		70-130	09-MAR-21
n-Hexane			92.1		%		70-130	09-MAR-21
Methylene Chloride			102.6		%		70-130	09-MAR-21
MTBE			101.5		%		70-130	09-MAR-21
m+p-Xylenes			99.3		%		70-130	09-MAR-21
Methyl Ethyl Ketone			108.2		%		60-140	09-MAR-21
Methyl Isobutyl Ketone			109.7		%		60-140	09-MAR-21
o-Xylene			108.8		%		70-130	09-MAR-21
Styrene			102.1		%		70-130	09-MAR-21
Tetrachloroethylene			99.2		%		60-130	09-MAR-21
Toluene			99.98		%		70-130	09-MAR-21
trans-1,2-Dichloroethylene			101.1		%		60-130	09-MAR-21
trans-1,3-Dichloropropene			108.0		%		70-130	09-MAR-21
Trichloroethylene			99.8		%		60-130	09-MAR-21
Trichlorofluoromethane			95.3		%		50-140	09-MAR-21
Vinyl chloride			99.3		%		60-140	09-MAR-21
WG3498942-1 MB								
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1,1-Trichloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1,2-Trichloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1-Dichloroethane			<0.050		ug/g		0.05	09-MAR-21
1,1-Dichloroethylene			<0.050		ug/g		0.05	09-MAR-21
1,2-Dibromoethane			<0.050		ug/g		0.05	09-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5399216								
WG3498942-1 MB								
1,2-Dichlorobenzene			<0.050		ug/g		0.05	09-MAR-21
1,2-Dichloroethane			<0.050		ug/g		0.05	09-MAR-21
1,2-Dichloropropane			<0.050		ug/g		0.05	09-MAR-21
1,3-Dichlorobenzene			<0.050		ug/g		0.05	09-MAR-21
1,4-Dichlorobenzene			<0.050		ug/g		0.05	09-MAR-21
Acetone			<0.50		ug/g		0.5	09-MAR-21
Benzene			<0.0068		ug/g		0.0068	09-MAR-21
Bromodichloromethane			<0.050		ug/g		0.05	09-MAR-21
Bromoform			<0.050		ug/g		0.05	09-MAR-21
Bromomethane			<0.050		ug/g		0.05	09-MAR-21
Carbon tetrachloride			<0.050		ug/g		0.05	09-MAR-21
Chlorobenzene			<0.050		ug/g		0.05	09-MAR-21
Chloroform			<0.050		ug/g		0.05	09-MAR-21
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	09-MAR-21
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	09-MAR-21
Dibromochloromethane			<0.050		ug/g		0.05	09-MAR-21
Dichlorodifluoromethane			<0.050		ug/g		0.05	09-MAR-21
Ethylbenzene			<0.018		ug/g		0.018	09-MAR-21
n-Hexane			<0.050		ug/g		0.05	09-MAR-21
Methylene Chloride			<0.050		ug/g		0.05	09-MAR-21
MTBE			<0.050		ug/g		0.05	09-MAR-21
m+p-Xylenes			<0.030		ug/g		0.03	09-MAR-21
Methyl Ethyl Ketone			<0.50		ug/g		0.5	09-MAR-21
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	09-MAR-21
o-Xylene			<0.020		ug/g		0.02	09-MAR-21
Styrene			<0.050		ug/g		0.05	09-MAR-21
Tetrachloroethylene			<0.050		ug/g		0.05	09-MAR-21
Toluene			<0.080		ug/g		0.08	09-MAR-21
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	09-MAR-21
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	09-MAR-21
Trichloroethylene			<0.010		ug/g		0.01	09-MAR-21
Trichlorofluoromethane			<0.050		ug/g		0.05	09-MAR-21
Vinyl chloride			<0.020		ug/g		0.02	09-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5399216								
WG3498942-1 MB								
Surrogate: 1,4-Difluorobenzene			118.5		%		50-140	09-MAR-21
Surrogate: 4-Bromofluorobenzene			111.5		%		50-140	09-MAR-21
WG3498942-5 MS		**WG3498942-3**						
1,1,1,2-Tetrachloroethane			104.0		%		50-140	10-MAR-21
1,1,2,2-Tetrachloroethane			115.5		%		50-140	10-MAR-21
1,1,1-Trichloroethane			103.1		%		50-140	10-MAR-21
1,1,2-Trichloroethane			107.6		%		50-140	10-MAR-21
1,1-Dichloroethane			103.2		%		50-140	10-MAR-21
1,1-Dichloroethylene			104.9		%		50-140	10-MAR-21
1,2-Dibromoethane			107.0		%		50-140	10-MAR-21
1,2-Dichlorobenzene			106.2		%		50-140	10-MAR-21
1,2-Dichloroethane			102.2		%		50-140	10-MAR-21
1,2-Dichloropropane			104.9		%		50-140	10-MAR-21
1,3-Dichlorobenzene			104.6		%		50-140	10-MAR-21
1,4-Dichlorobenzene			104.9		%		50-140	10-MAR-21
Acetone			113.4		%		50-140	10-MAR-21
Benzene			102.6		%		50-140	10-MAR-21
Bromodichloromethane			109.6		%		50-140	10-MAR-21
Bromoform			111.4		%		50-140	10-MAR-21
Bromomethane			104.5		%		50-140	10-MAR-21
Carbon tetrachloride			106.0		%		50-140	10-MAR-21
Chlorobenzene			103.4		%		50-140	10-MAR-21
Chloroform			106.1		%		50-140	10-MAR-21
cis-1,2-Dichloroethylene			110.8		%		50-140	10-MAR-21
cis-1,3-Dichloropropene			109.2		%		50-140	10-MAR-21
Dibromochloromethane			104.3		%		50-140	10-MAR-21
Dichlorodifluoromethane			101.3		%		50-140	10-MAR-21
Ethylbenzene			105.4		%		50-140	10-MAR-21
n-Hexane			102.1		%		50-140	10-MAR-21
Methylene Chloride			105.5		%		50-140	10-MAR-21
MTBE			105.7		%		50-140	10-MAR-21
m+p-Xylenes			103.9		%		50-140	10-MAR-21
Methyl Ethyl Ketone			103.4		%		50-140	10-MAR-21
Methyl Isobutyl Ketone			109.6		%		50-140	10-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R5399216								
WG3498942-5 MS		**WG3498942-3**						
o-Xylene			114.2		%		50-140	10-MAR-21
Styrene			105.5		%		50-140	10-MAR-21
Tetrachloroethylene			103.7		%		50-140	10-MAR-21
Toluene			105.3		%		50-140	10-MAR-21
trans-1,2-Dichloroethylene			105.2		%		50-140	10-MAR-21
trans-1,3-Dichloropropene			108.6		%		50-140	10-MAR-21
Trichloroethylene			104.2		%		50-140	10-MAR-21
Trichlorofluoromethane			105.9		%		50-140	10-MAR-21
Vinyl chloride			112.0		%		50-140	10-MAR-21

Quality Control Report

Workorder: L2564179 Report Date: 07-APR-21

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

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.

Quality Control Report

Workorder: L2564179 Report Date: 07-APR-21

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Cyanides							
Cyanide (WAD)-O.Reg 153/04 (July 2011)							
	1	23-FEB-21 13:00	11-MAR-21 13:00	14	16	days	EHT
	2	22-FEB-21 14:00	10-MAR-21 19:00	14	16	days	EHT
	3	23-FEB-21 17:00	11-MAR-21 13:00	14	16	days	EHT
	4	24-FEB-21 15:00	11-MAR-21 13:00	14	15	days	EHT
	6	24-FEB-21 11:00	11-MAR-21 13:00	14	15	days	EHT
Hydrocarbons							
F2-F4-O.Reg 153/04 (July 2011)							
	1	23-FEB-21 13:00	10-MAR-21 14:00	14	15	days	EHT
	2	22-FEB-21 14:00	09-MAR-21 14:00	14	15	days	EHT
	3	23-FEB-21 17:00	11-MAR-21 13:00	14	16	days	EHT
	4	24-FEB-21 15:00	11-MAR-21 13:00	14	15	days	EHT
	6	24-FEB-21 11:00	11-MAR-21 13:00	14	15	days	EHT

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2564179 were received on 05-MAR-21 16:00.

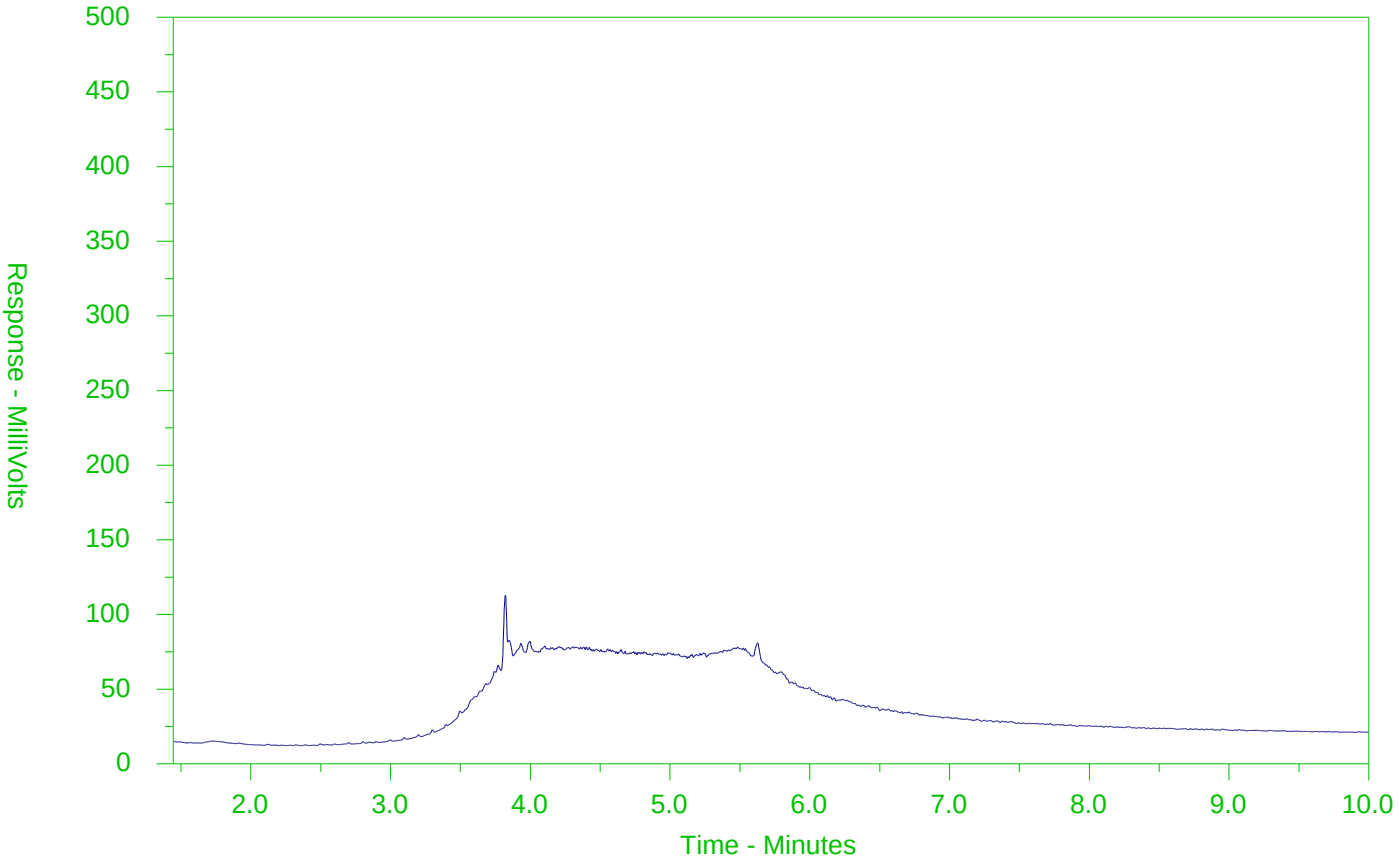
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where 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: L2564179-1
Client Sample ID: BH01 SS1 (0'-2')



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

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

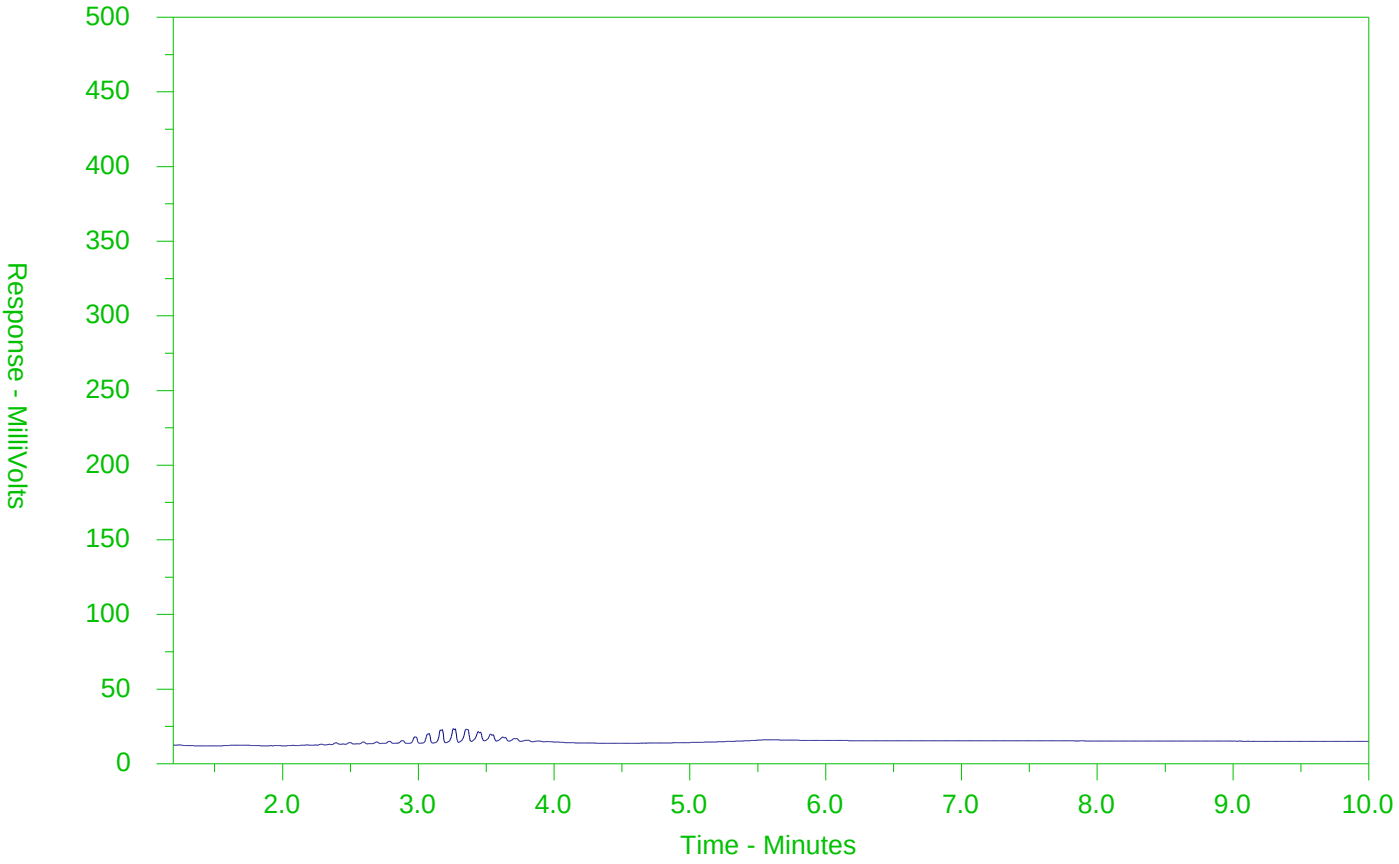
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-2
Client Sample ID: BH02 SS5 (10-12)



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

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

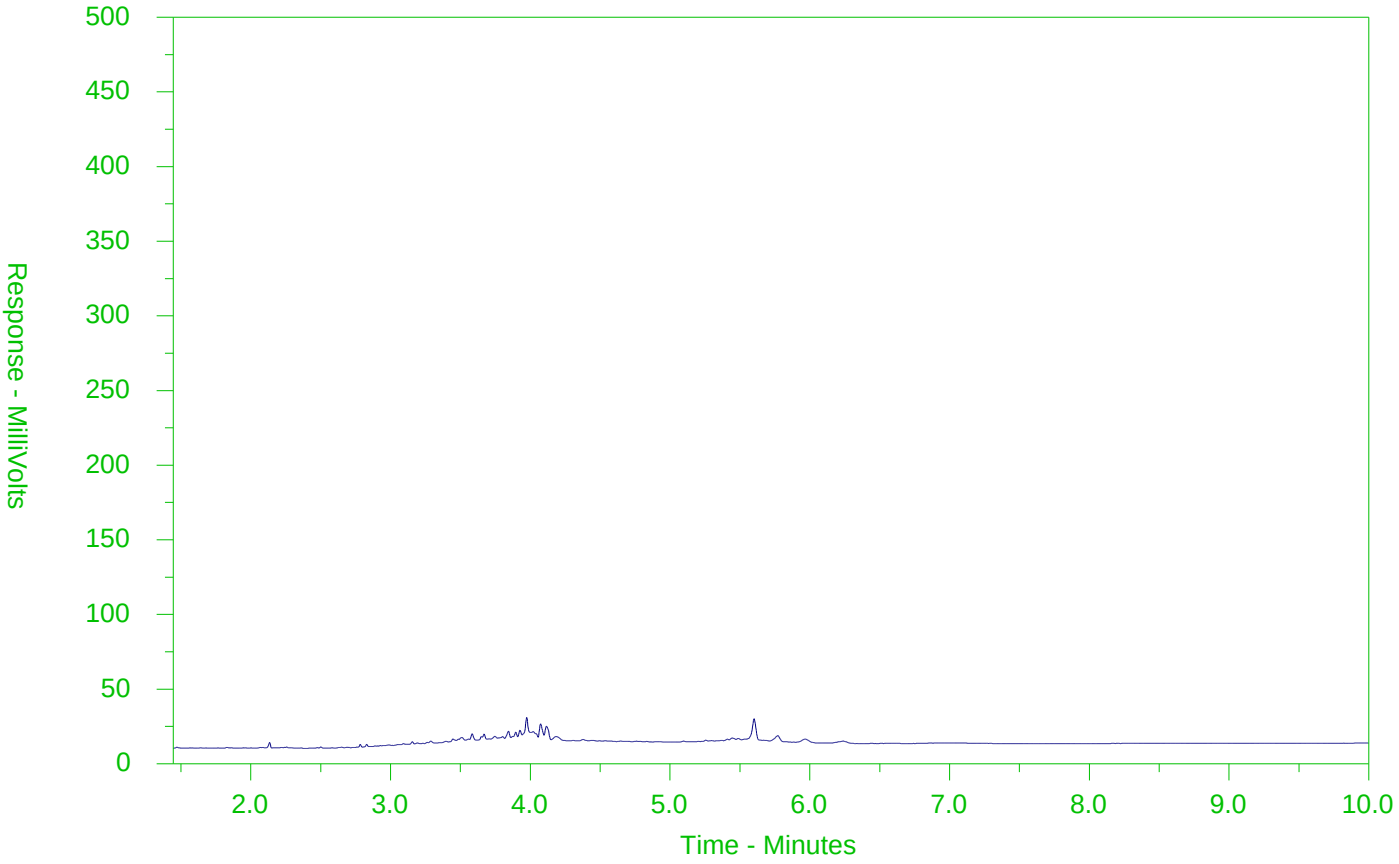
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-3
Client Sample ID: BH03 SS1 (0'-2')



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

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

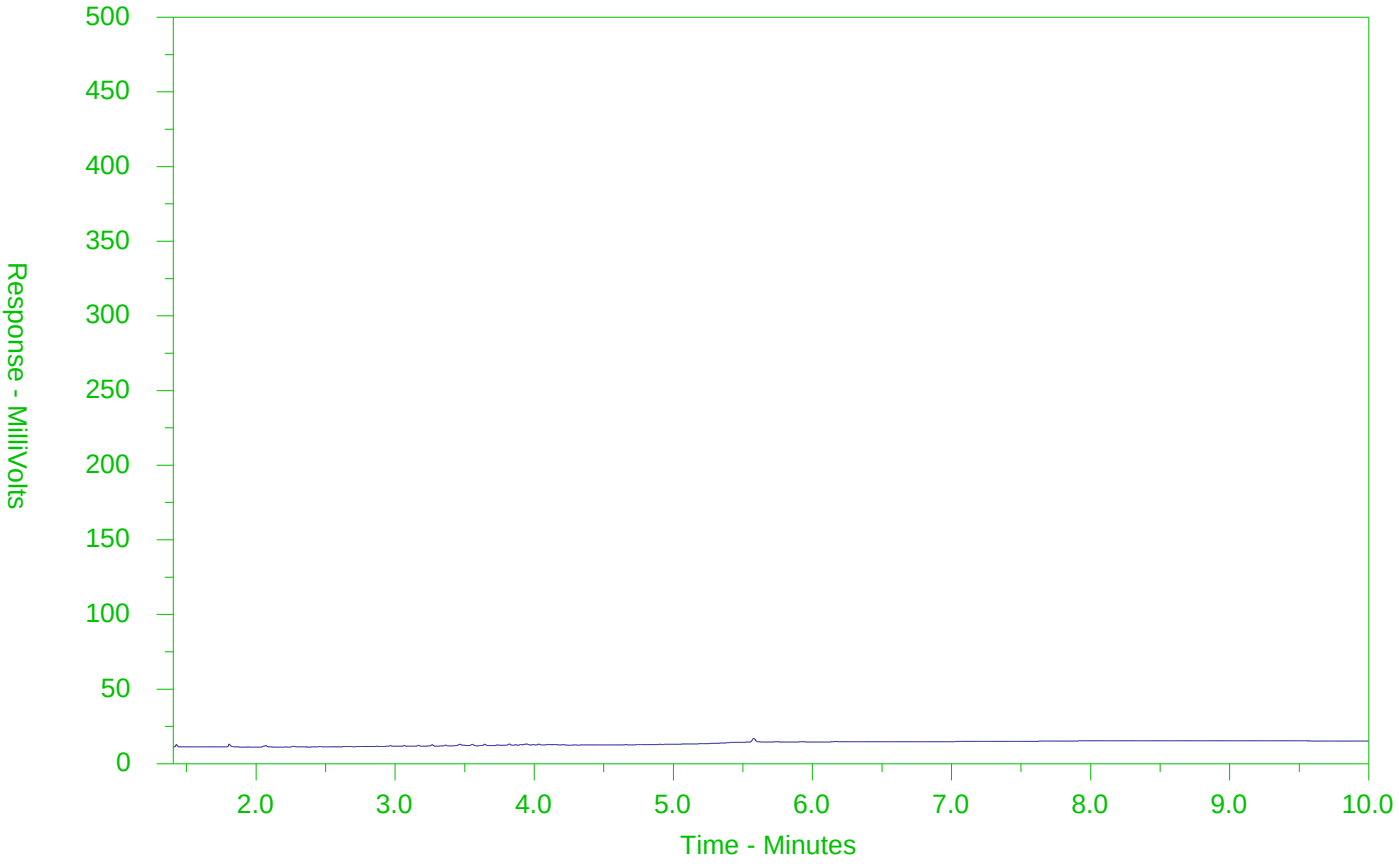
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-4
Client Sample ID: BH04 SS2 (2'6"-4'6")



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

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

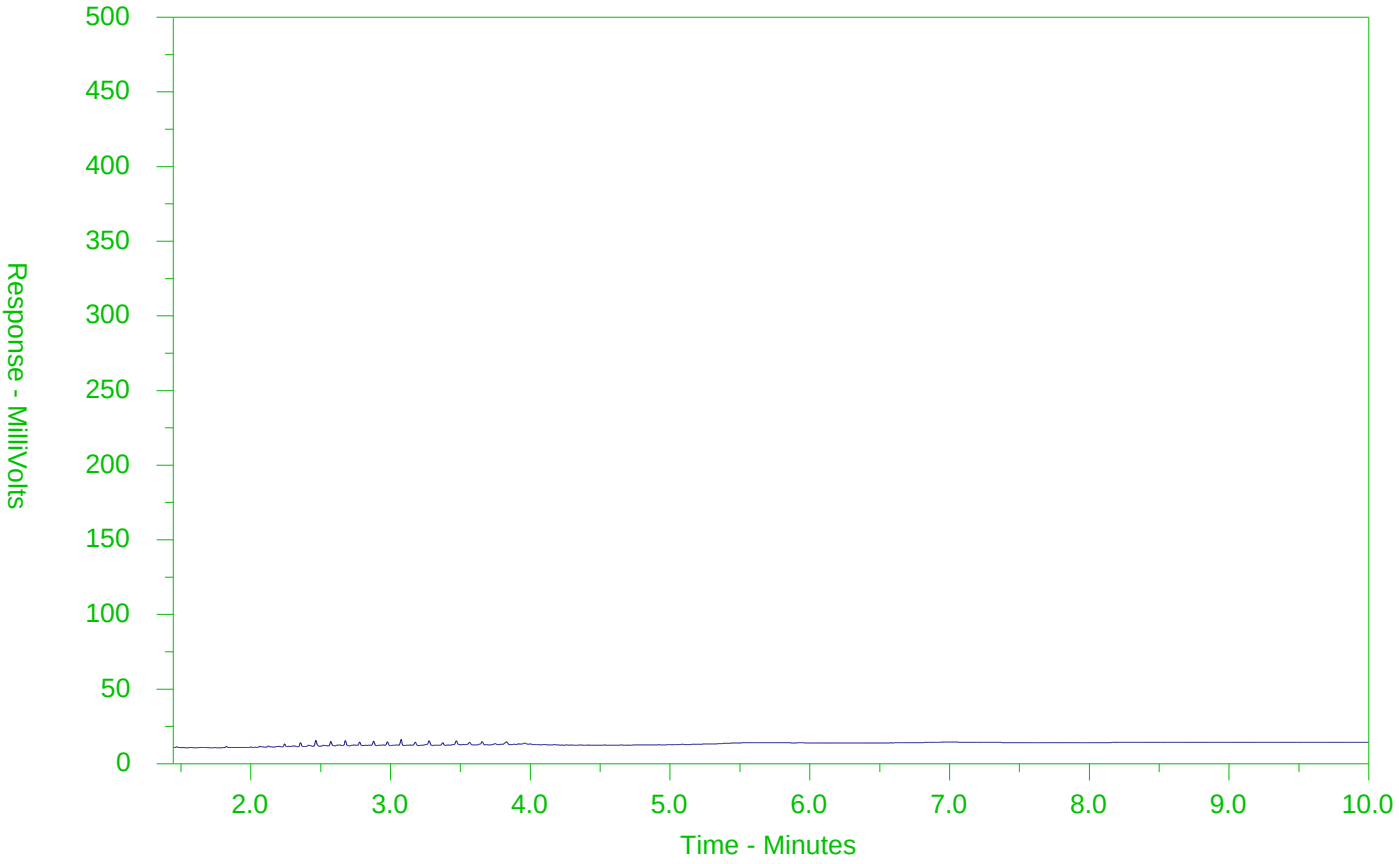
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-5
Client Sample ID: BH 05 SS8 (25'-27')



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

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

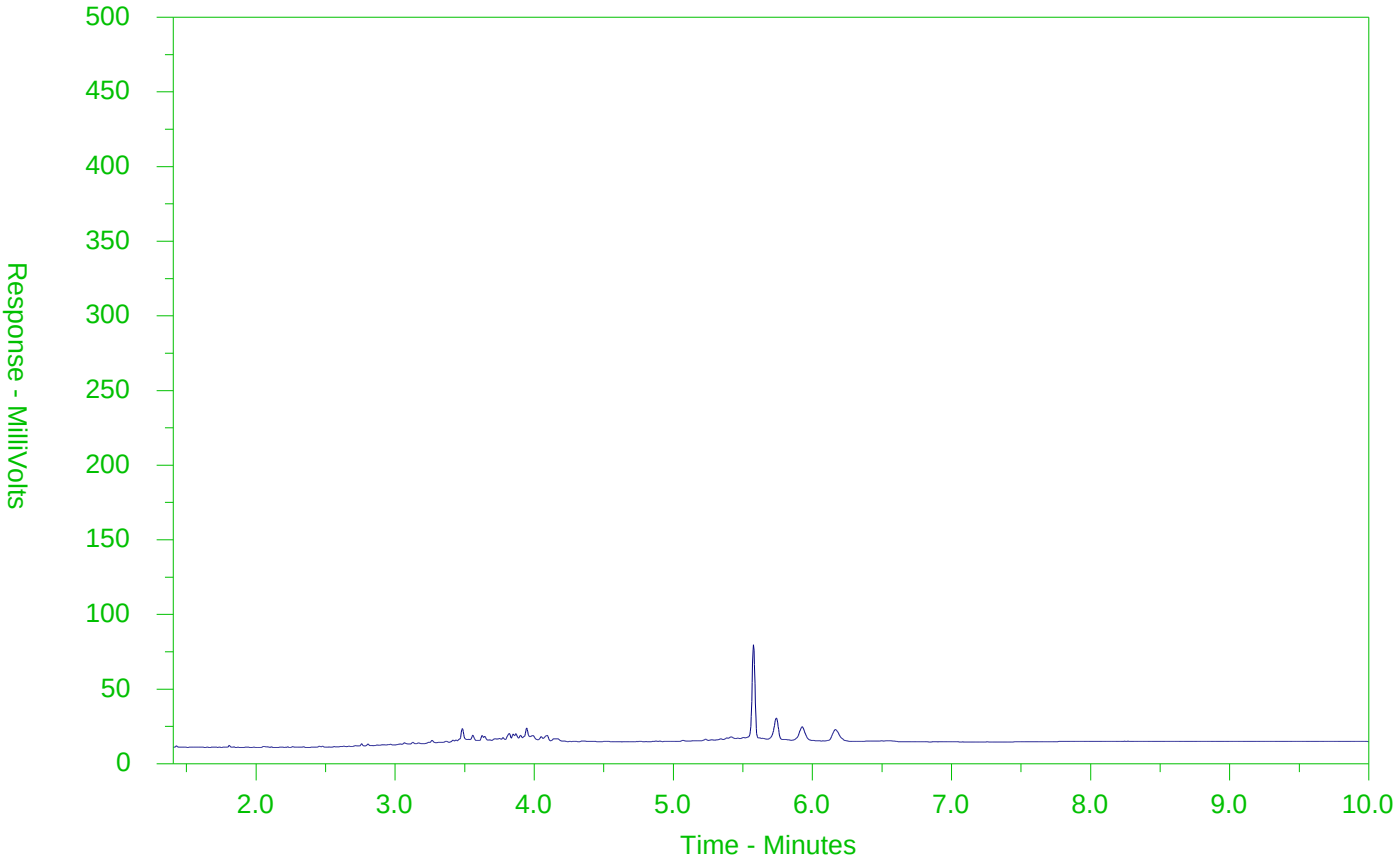
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-6
Client Sample ID: BH06 SS1 (0'-2')



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

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

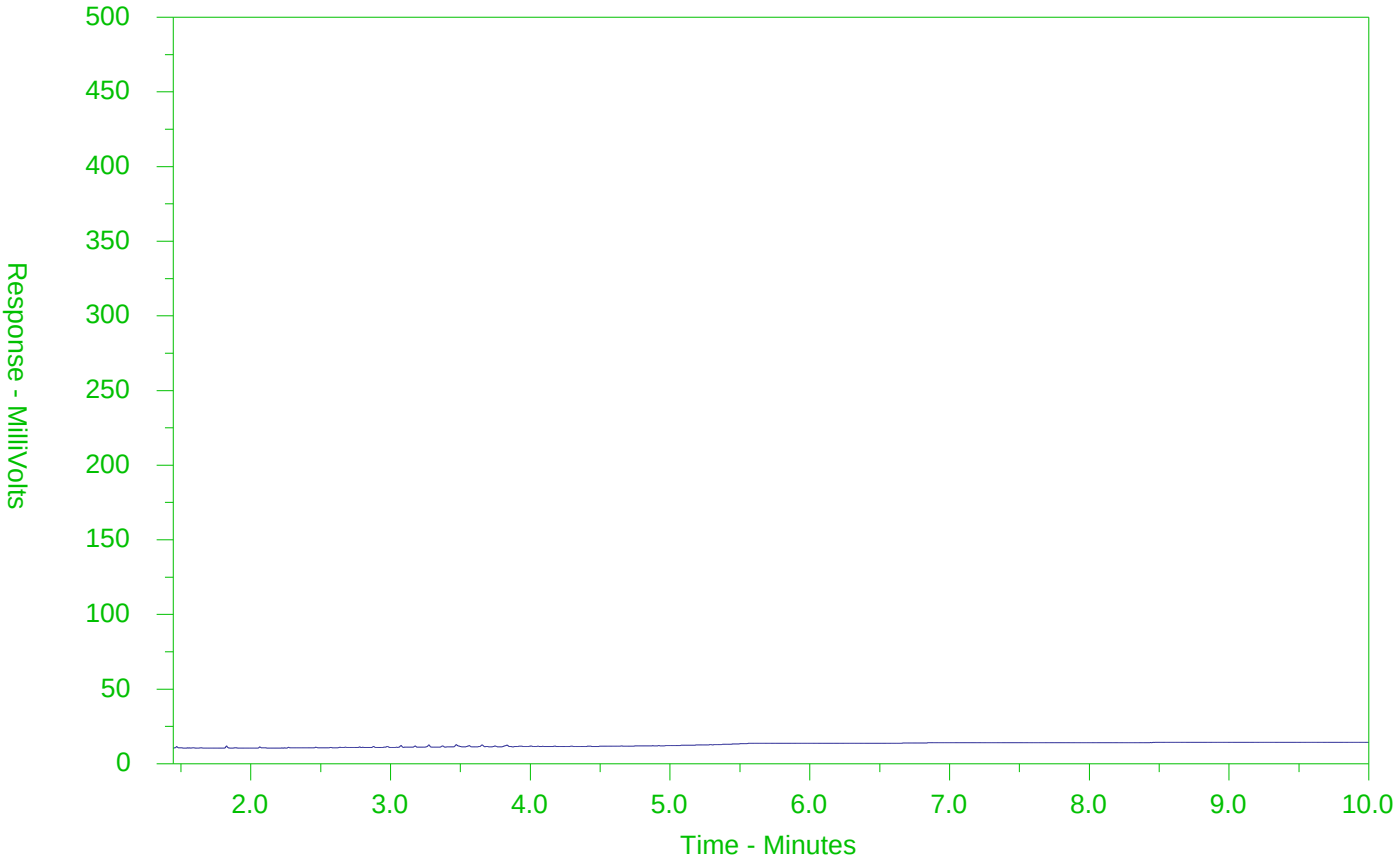
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-8
Client Sample ID: BH07 SS6 (15'-17')



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

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

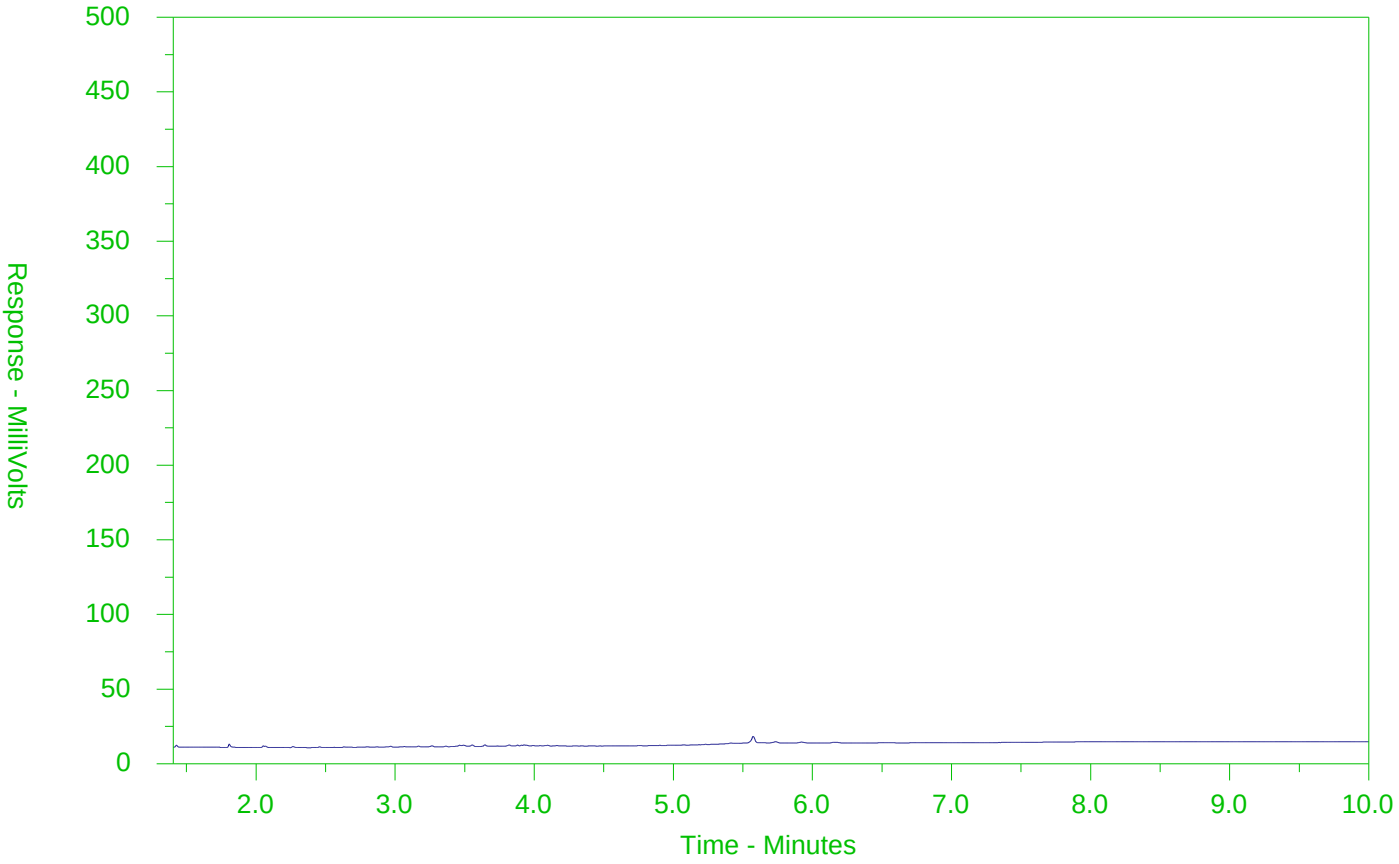
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-9
Client Sample ID: BH08 SS2 (2'6"-4'6")



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

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

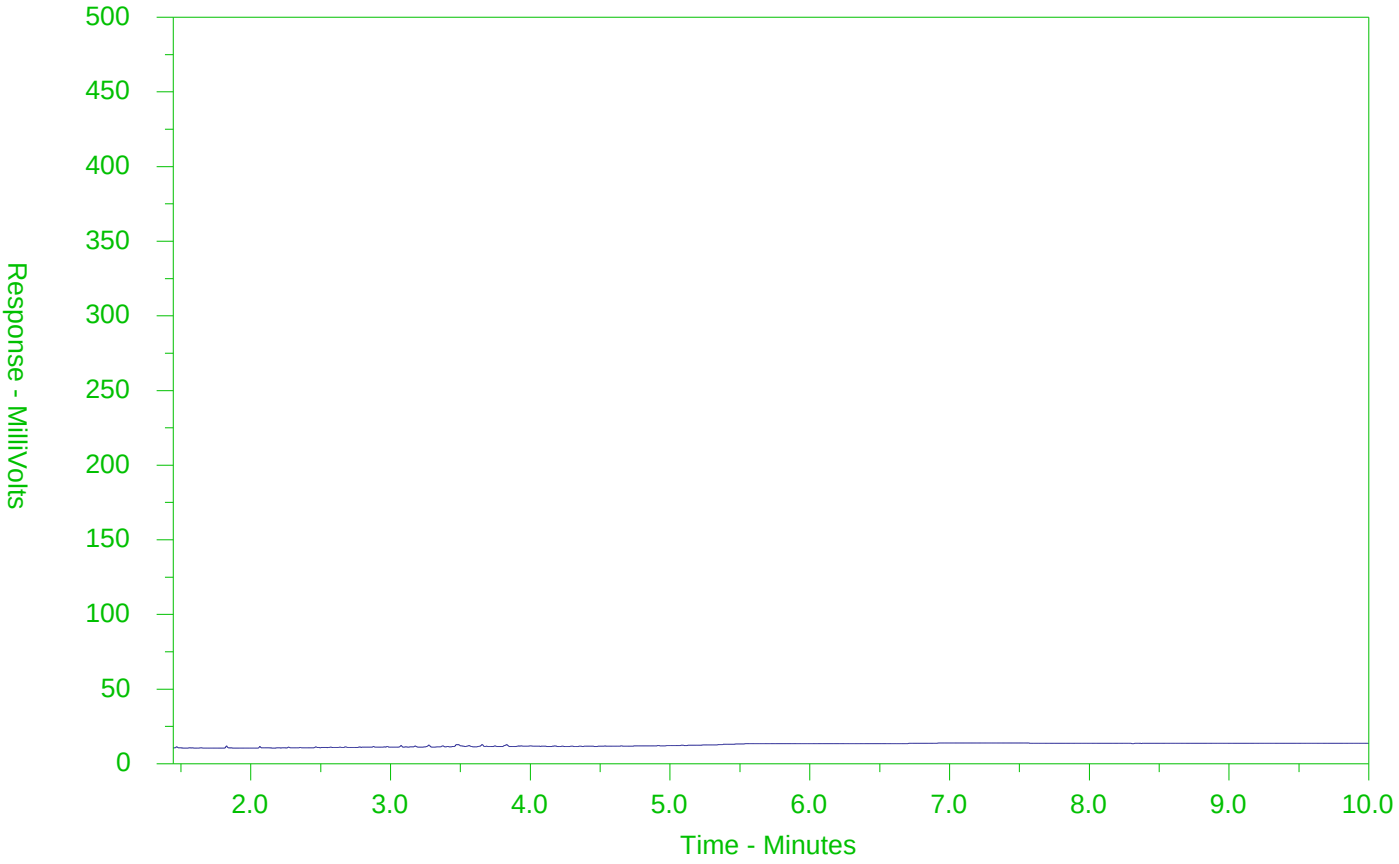
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-10
Client Sample ID: BH10 SS4 (7'6"-9'6")



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

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

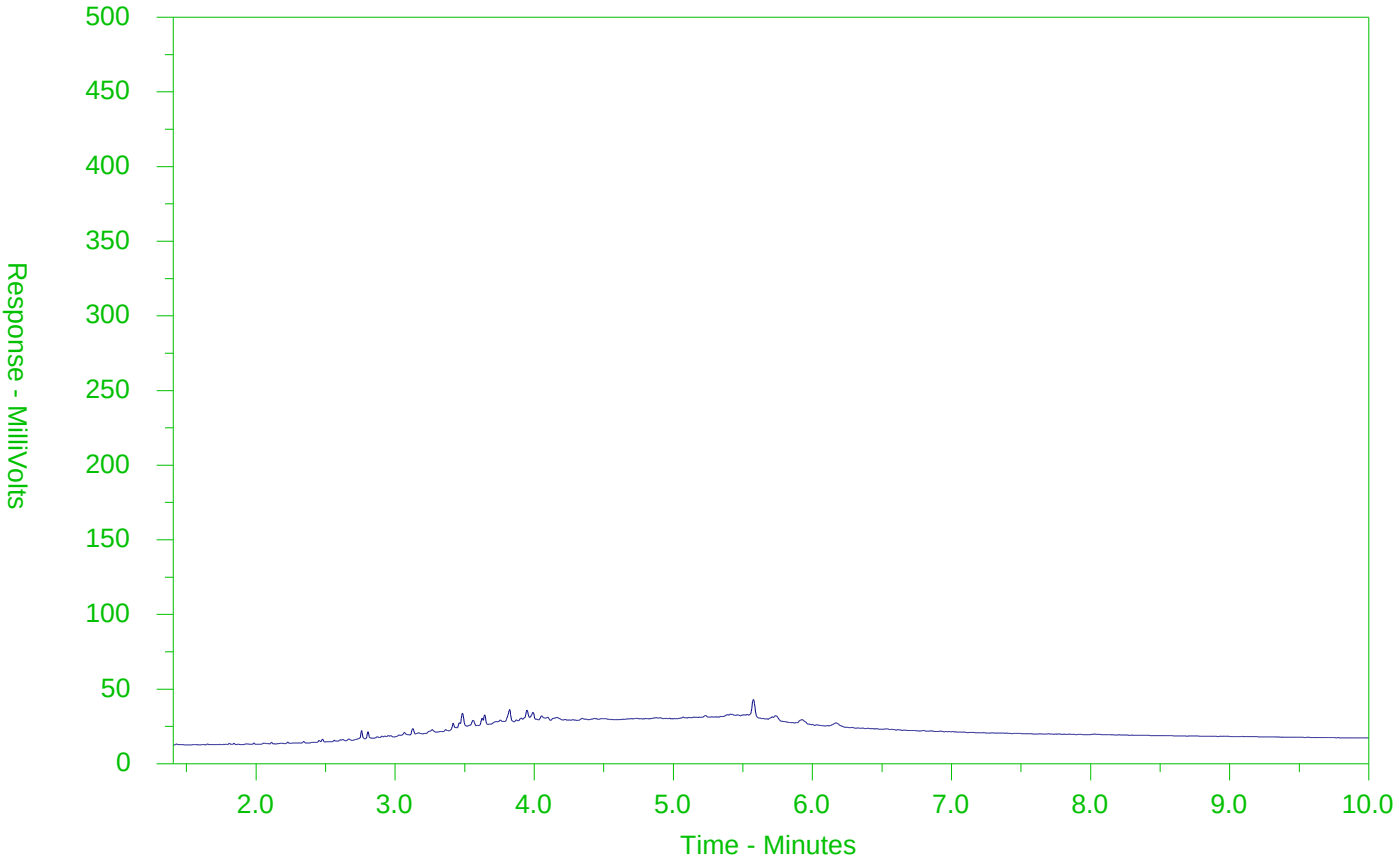
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-11
Client Sample ID: BH11 SS1 (0'-2')



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

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

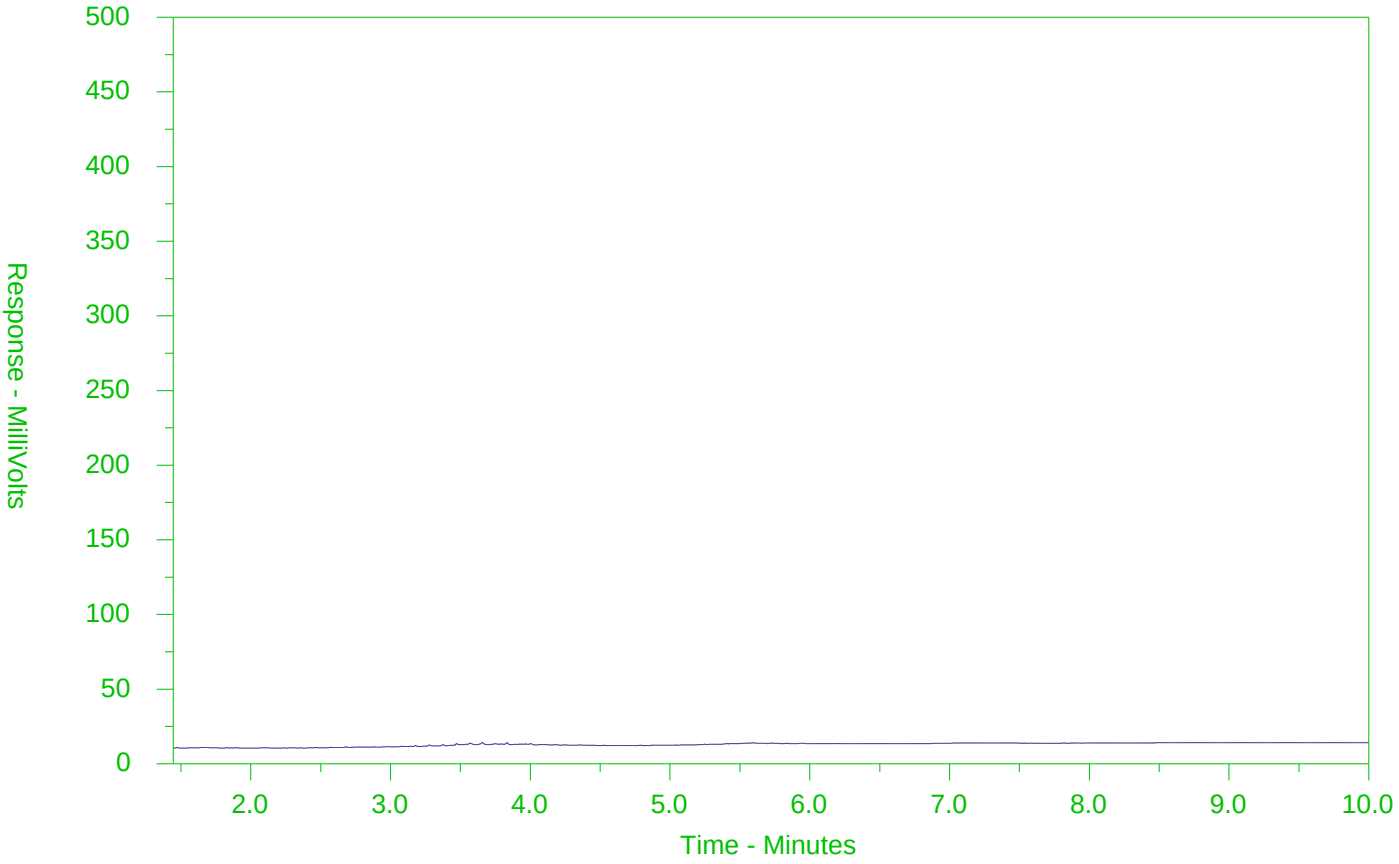
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-12
Client Sample ID: BH12 SS3 (5'-7')



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

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

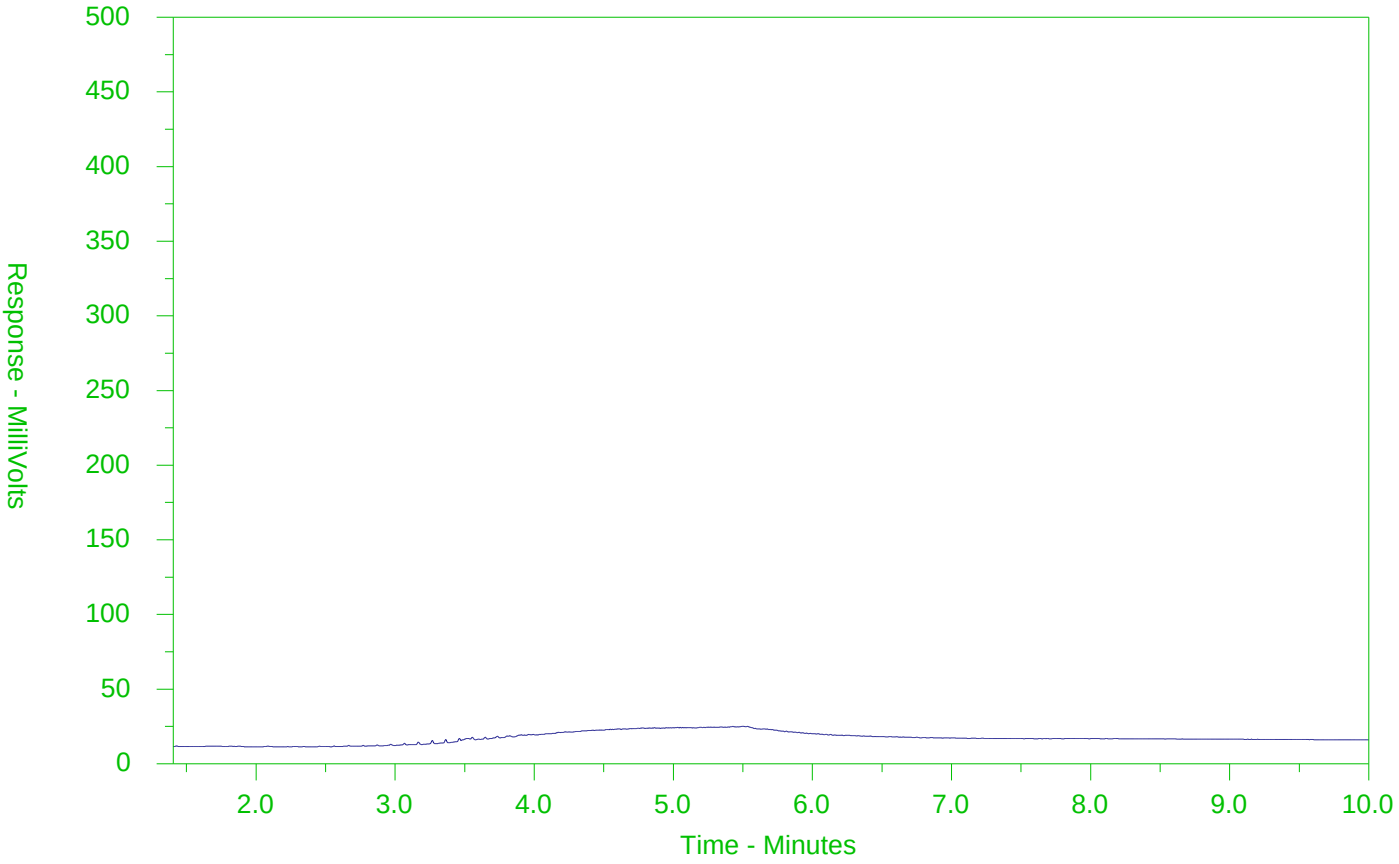
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-13
Client Sample ID: BH13 SS1 (0'-2')



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

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

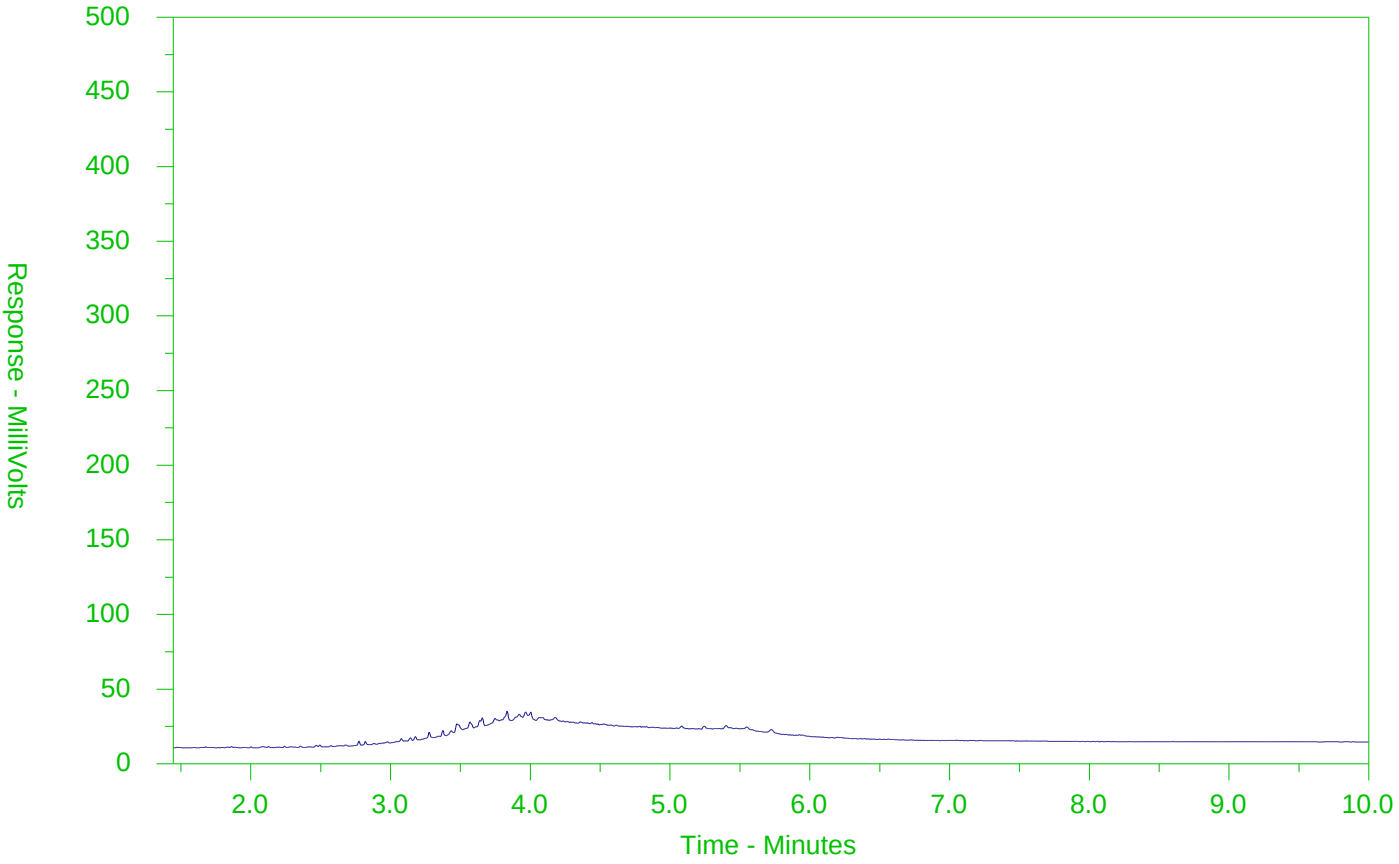
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-14
Client Sample ID: BH14 SS2 (2'6"-4'6")



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

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

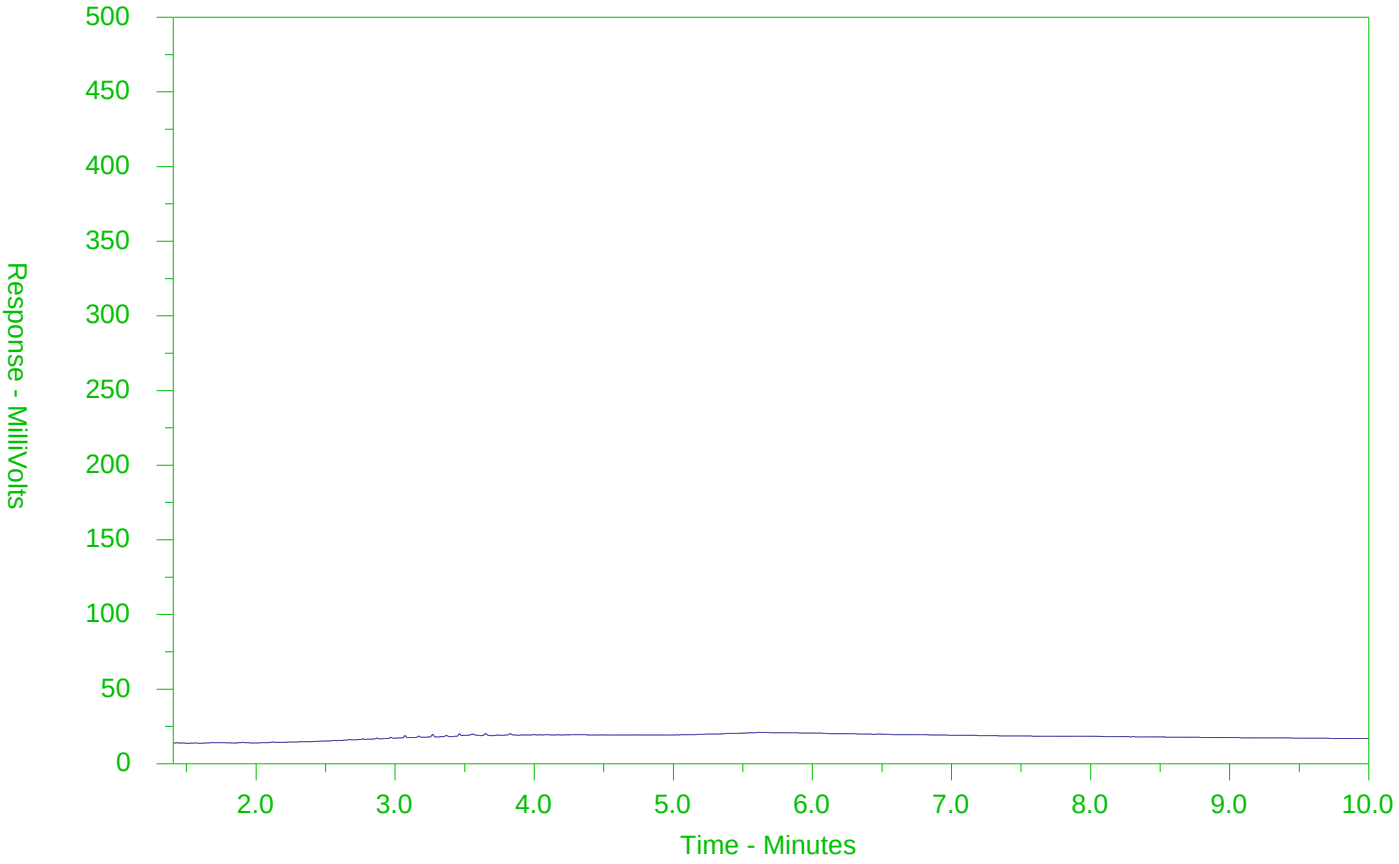
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-15
Client Sample ID: BH19 SS4 (7'6"-9'-6")



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

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

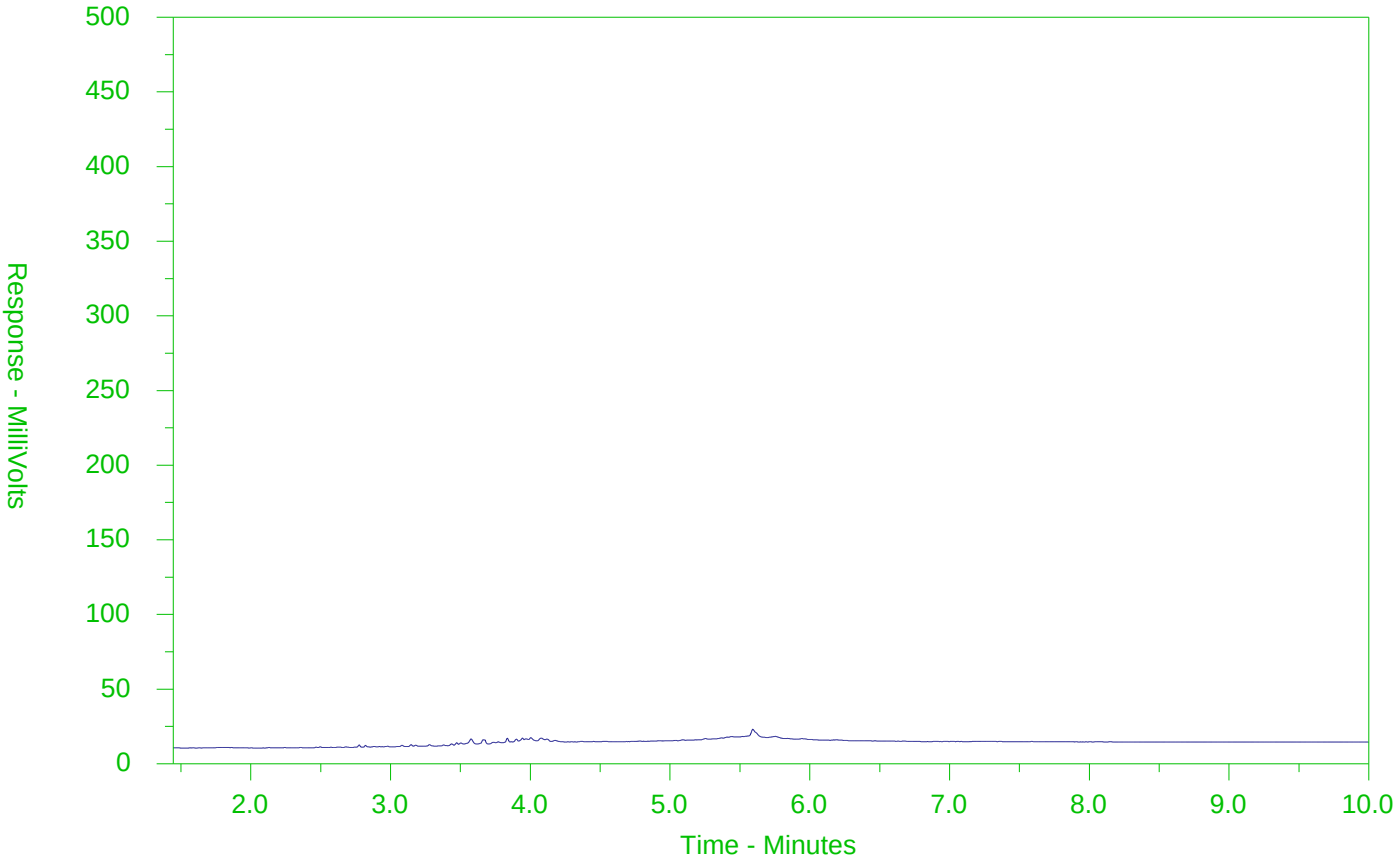
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-16
Client Sample ID: BH20 SS1 (0'-2')



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

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

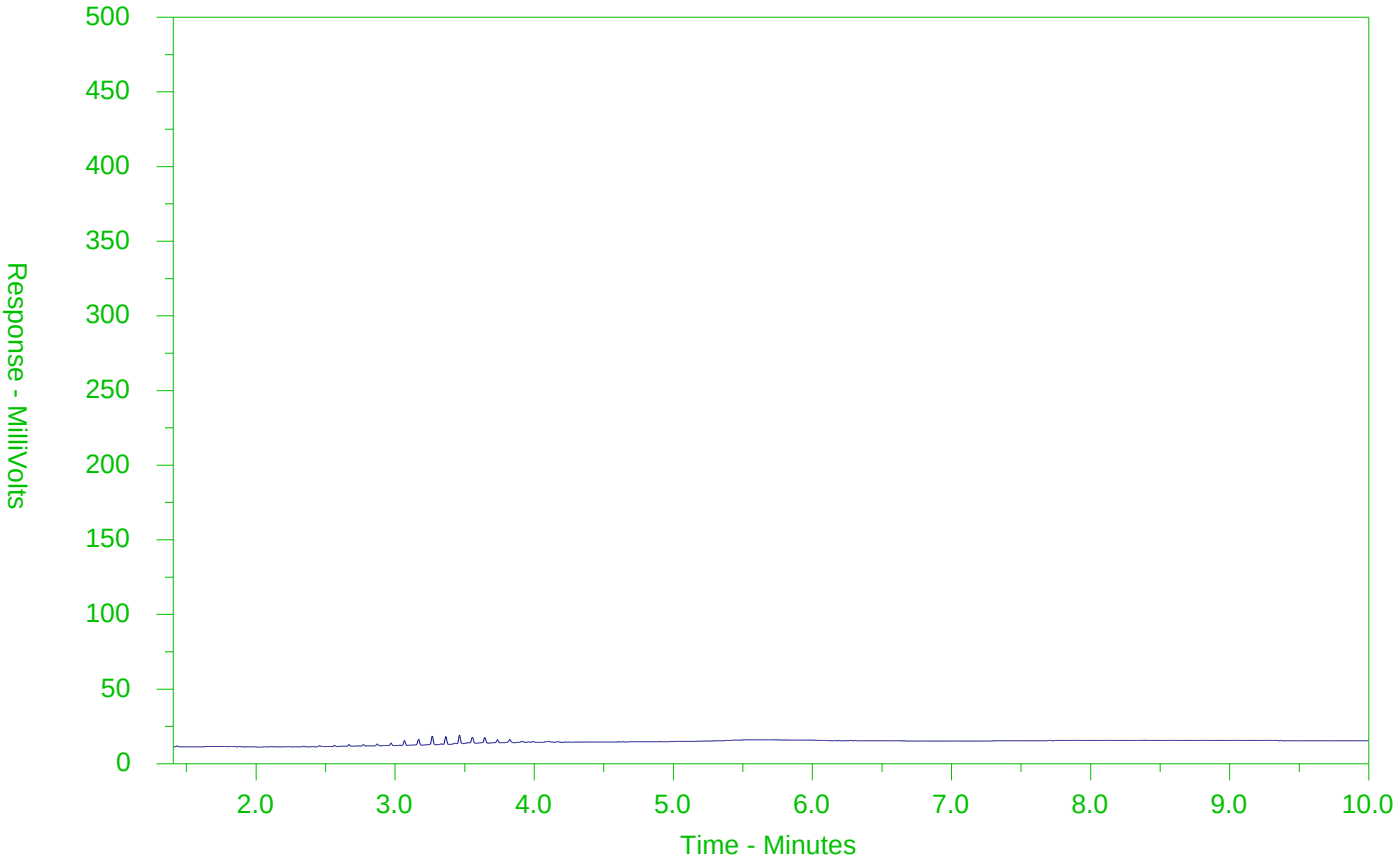
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-17
Client Sample ID: BH21 SS3 (5'-7')



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

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

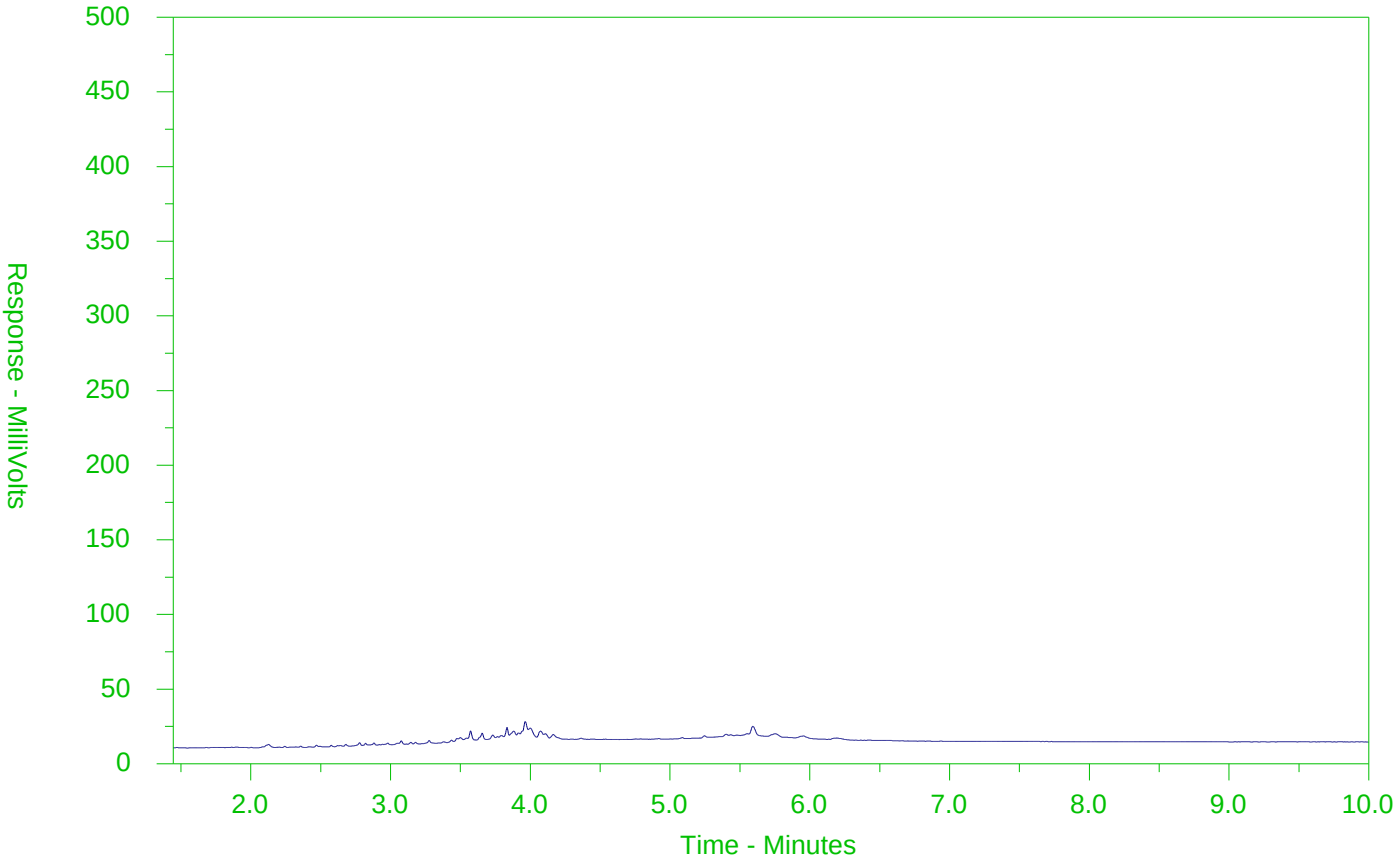
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-18
Client Sample ID: BH23 SS1 (0'-2')



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

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

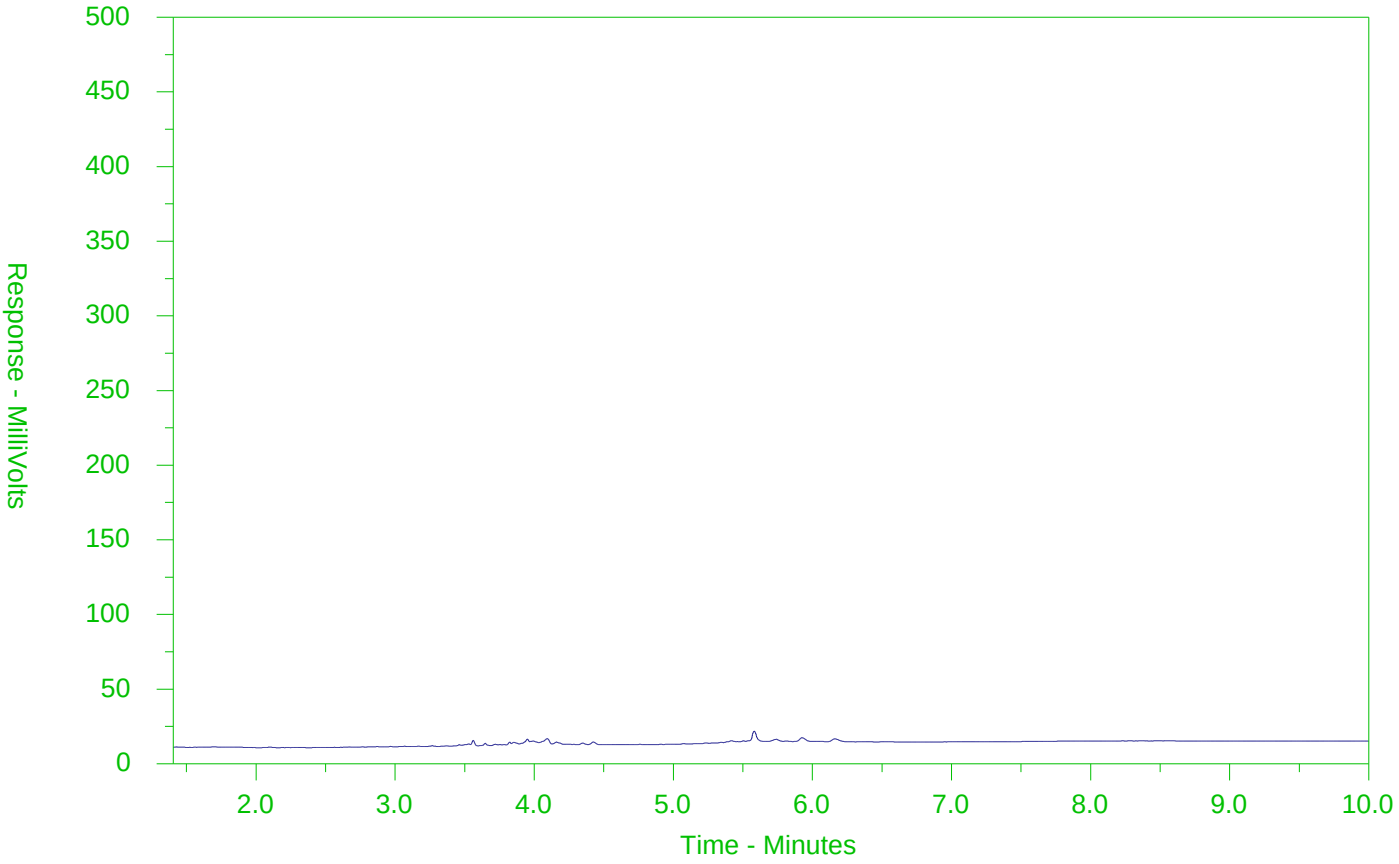
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-19
Client Sample ID: BH24 SS1 (0'-2')



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

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

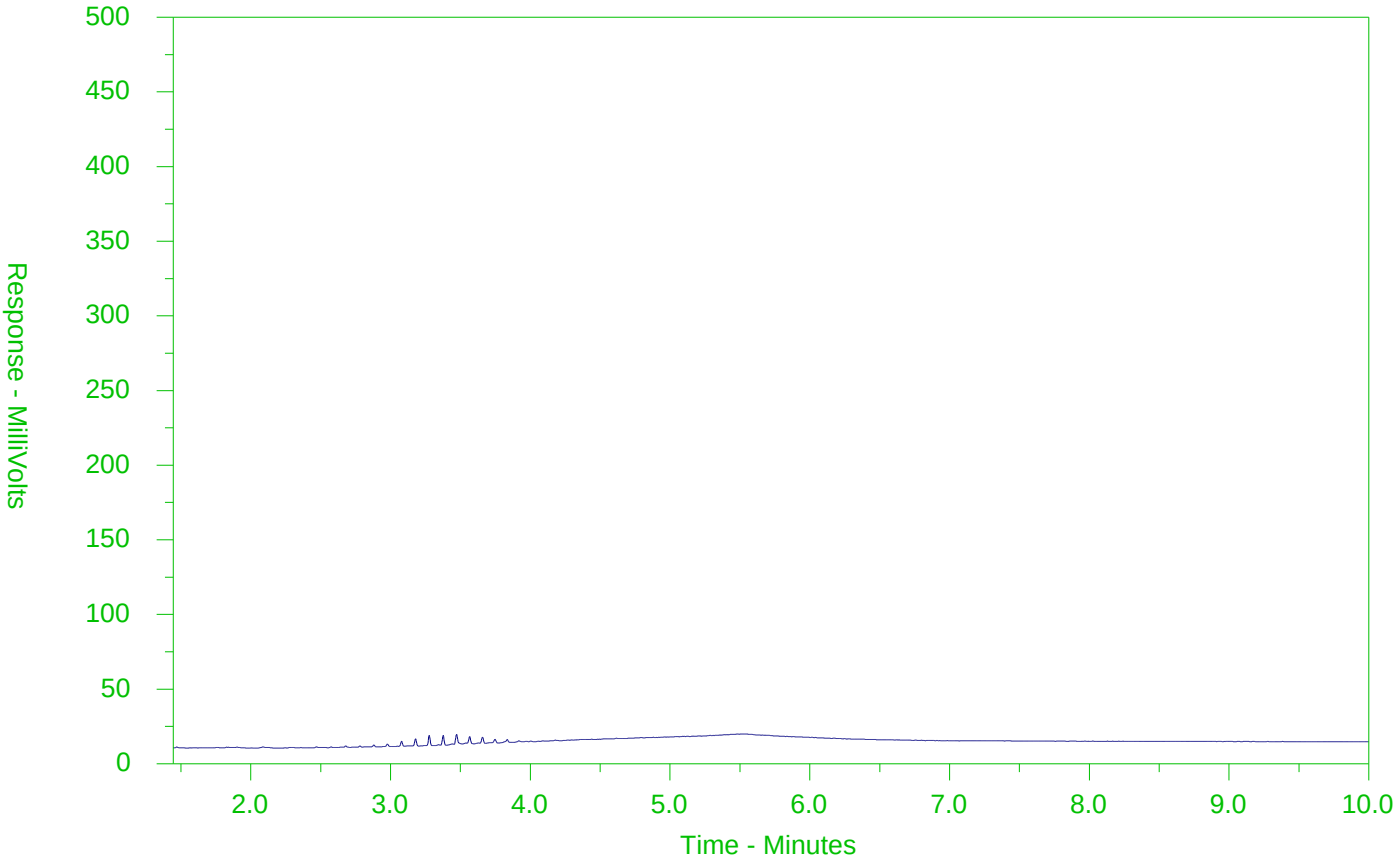
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-20
Client Sample ID: BH25 SS4 (7'6"-9'6")



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

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

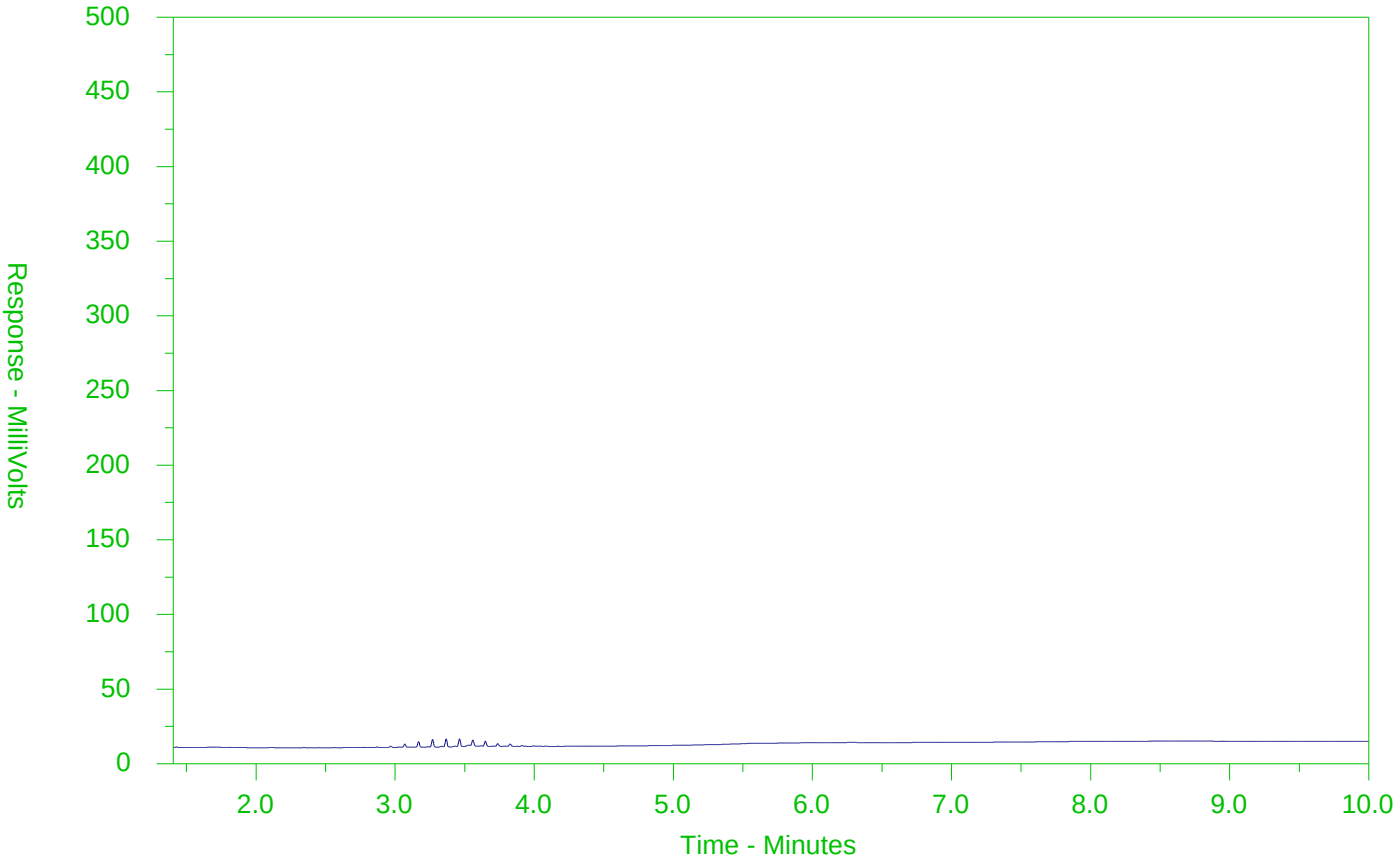
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564179-21
Client Sample ID: BH26 SS5 (10'-12')



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

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

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

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

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

Chain of (

L2564179-COFC

COC Number: 20 -

Page 1 of 2

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	Thurber Engineering Ltd.
Contact:	Rachel Bourassa
Phone:	~~905-829-8000~~ 4/6 523 1015
	Company address below will appear on the final report
Street:	2010 Winston Park Drive, Suite 103
City/Province:	Oakville, Ontario
Postal Code:	L6H 5R7
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Thurber Engineering Ltd.
Contact:	

Reports / Recipients	
Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☑ YES ☐ NO ☐ N/A
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	rbourassa@thurber.ca
Email 2	
Email 3	

Invoice Recipients	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	accountingON@thurber.ca
Email 2	

Turnaround Time (TAT) Requested
☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge. Additional
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush resuests on weekends, statutory holidays and non-routine tests
Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm
For tests that can not be performed according to the TAT requested, you will be contacted.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information	
ALS Account # / Quote #:	25053 / 84199
Job #:	
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): L2564179

ALS Contact: Amanda Overholster Sampler:

Analysis Request

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	O. Reg. 153/04 Metals & Inorganics	O. Reg. 153/04 BTEX/PHC F1-F4	O. Reg. 153/04 VOCs	Corrosivity	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
1	BH01 SS1 (0'-2')	23-Feb-21	1:00	Soil	4	✓	✓					
2	BH02 SS5 (10-12)	22-feb-21	2:00	"	7	✓	✓	✓				
3	BH03 SS1 (0'-2')	23-feb-21	5:00	"	4	✓	✓					
4	BH04 SS2 (2'6"-4'6")	24-feb-21	3:00	"	7	✓	✓	✓				
5	BH05 SS8 (25'-27')	25-feb-21	12:00	"	4	✓	✓					
6	BH06 SS1 (0'-2')	24-feb-21	11:00	"	4	✓	✓					
7	BH06 SS2 (2'6-4'6")	24-Feb-21	11:10	"	3			✓				
8	BH07 SS6 (15'-17')	26-feb-21	11:30	"	4	✓	✓					
9	BH08 SS2 (2'6"-4'6")	26-feb-21	9:15	"	7	✓	✓	✓				
10	BH10 SS4 (7'6"-9'6")	25-feb-21	12:00	"	7	✓	✓	✓				
11	BH11 SS1 (0'-2')	25-feb-21	12:00	"	4	✓	✓					
12	BH12 ~~SS4 (7'6"-9'6")~~ SS3 (5'-7')	25-feb-21	2:00	"	7	✓	✓	✓				

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

SAMPLE RECEIPT DETAILS (lab use only)

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

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C				
				8.3				

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Rachel Bourassa	Date: March 5, 21	Time:	Received by:	Date:	Time:	Received by:	Date: Mar 5/21	Time: 13:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 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.**

Chai

L2564179-COFC

n

COC Number: 20 -

ALS www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	Thurber Engineering Ltd.
Contact:	Rachel Bourassa
Phone:	~~905-829-0666~~ 416 523 1015
	Company address below will appear on the final report
Street:	2010 Winston Park Drive, Suite 103
City/Province:	Oakville, Ontario
Postal Code:	L6H 5R7
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Thurber Engineering Ltd.
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA ☑ YES ☐ NO ☐ N/A
☑ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: rbourassa@thurber.ca
Email 2:
Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: accountingON@thurber.ca
Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush resuests on weekends, statutory holidays and non-routine tests

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

For tests that can not be performed according to the TAT requested, you will be contacted.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #: 25053 / 84199
Job #: 30726
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): L2564179

ALS Contact: Amanda Overholster 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	NUMBER OF CONTAINERS	O. Reg. 153/04 Metals & Inorganics	O. Reg. 153/04 BTEX/PHC F1-F4	O. Reg. 153/04 VOCs	Corrosivity	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	[redacted]							✓				
13	BH 13 SS1 (0'-2')	2-Mar-21	12:00	Soil	4	✓	✓					
14	BH 14 SS2 (2'6"-4'6")	1-Mar-21	2:00	"	7	✓	✓	✓				
15	BH 19 SS4 (7'6"-9'6")	2-Mar-21	2:00	"	4	✓	✓					
16	BH 20 SS1 (0'-2')	26-Feb-21	12:00	"	4	✓	✓					
17	BH 21 SS3 (5'-7')	2-Mar-21	11:00	"	7	✓	✓	✓				
18	BH 23 SS1 (0'-2')	26-Feb-21	10:00	"	7	✓	✓	✓				
19	BH 24 SS1 (0'-2')	25-Feb-21	4:00	"	4	✓	✓					
20	BH 25 SS4 (7'6"-9'6")	01-Mar-21	11:00	Soil	7	✓	✓	✓				
21	BH 26 SS5 (10'-12')	1-Mar-21	3:30	"	4	✓	✓					

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

Are samples taken from a Regulated DW System? ☐ YES ☐ NO
Are samples for human consumption/ use? ☐ YES ☐ NO

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

SAMPLE RECEIPT DETAILS (lab use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED
Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO
Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
	8.3

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
Rachel Bourassa	March 5/21	

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
	Mar 5/21	16:00

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**.

Thurber Engineering Ltd. (Oakville)
ATTN: Rachel Bourssa
2010 Winston Park Drive
Unit 103
Oakville ON L6H 5R7

Date Received: 05-MAR-21
Report Date: 18-MAR-21 12:30 (MT)
Version: FINAL REV. 2

Client Phone: 905-829-8666

Certificate of Analysis

Lab Work Order #: L2564174

Project P.O. #: NOT SUBMITTED
Job Reference: 30726
C of C Numbers:
Legal Site Desc:

Amanda Overholster
Account Manager

Summary of Guideline Exceedances

ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Guideline						
Ontario Regulation 406/19 - Excess Soils - 17-December-20 - T3.1 - Leachate Screening Levels - Res/Park/Inst Property Use						
(No parameter exceedances)						
Ontario Regulation 406/19 - Excess Soils - 17-December-20 - T3.1 - Leachate Screening Levels - Ind/Com/Commu Property Use						
(No parameter exceedances)						

ANALYTICAL REPORT

Sample Preparation - WASTE

			Lab ID	L2564174-1	L2564174-2	L2564174-3	L2564174-4	L2564174-5
			Sample Date	23-FEB-21	25-FEB-21	26-FEB-21	25-FEB-21	01-MAR-21
			Sample ID	BH01 SPLP	BH05 SPLP	BH08 SPLP	BH12 SPLP	BH25 SPLP
Analyte	Unit	Guide Limits #1	#2					
Initial pH	pH units	-	-	9.21	9.18	9.42	9.06	9.39
Final pH	pH units	-	-	9.05	8.95	9.08	9.07	9.37

Guide Limit #1: T3.1 - Leachate Screening Levels - Res/Park/Inst Property Use
Guide Limit #2: T3.1 - Leachate Screening Levels - 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

SPLP Metals - WASTE

				Lab ID	L2564174-1	L2564174-2	L2564174-3	L2564174-4	L2564174-5
				Sample Date	23-FEB-21	25-FEB-21	26-FEB-21	25-FEB-21	01-MAR-21
				Sample ID	BH01 SPLP	BH05 SPLP	BH08 SPLP	BH12 SPLP	BH25 SPLP
Analyte	Unit	Guide Limits #1	#2						
Antimony (Sb)	ug/L	-	-	<5.0	<5.0	<5.0	<5.0	<5.0
Arsenic (As)	ug/L	-	-	<5.0	<5.0	<5.0	<5.0	<5.0
Barium (Ba)	ug/L	4600	4600	<100	<100	<100	<100	<100
Beryllium (Be)	ug/L	11	11	<2.0	<2.0	<2.0	<2.0	<2.0
Boron (B)	ug/L	-	-	<500	<500	<500	<500	<500
Cadmium (Cd)	ug/L	-	0.5	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium (Cr)	ug/L	130	130	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt (Co)	ug/L	10	10	<2.0	<2.0	<2.0	<2.0	<2.0
Copper (Cu)	ug/L	14	14	<10	<10	<10	<10	<10
Lead (Pb)	ug/L	-	-	<2.0	<2.0	<2.0	<2.0	<2.0
Molybdenum (Mo)	ug/L	-	1500	<10	<10	<10	<10	<10
Nickel (Ni)	ug/L	78	78	<20	<20	<20	<20	<20
Selenium (Se)	ug/L	10	10	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	ug/L	0.3	0.3	<0.25	<0.25	<0.25	<0.25	<0.25
Thallium (Tl)	ug/L	-	80	<0.80	<0.80	<0.80	<0.80	<0.80
Uranium (U)	ug/L	20	20	<15	<15	<15	<15	<15
Vanadium (V)	ug/L	-	-	11.2	<5.0	6.5	8.0	7.8
Zinc (Zn)	ug/L	180	180	<30	<30	<30	<30	<30

Guide Limit #1: T3.1 - Leachate Screening Levels - Res/Park/Inst Property Use
Guide Limit #2: T3.1 - Leachate Screening Levels - 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

Volatile Organic Compounds - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID	Sample Date	Sample ID			
				L2564174-1	L2564174-2	L2564174-3	L2564174-4	L2564174-5
				23-FEB-21	25-FEB-21	26-FEB-21	25-FEB-21	01-MAR-21
				BH01 SPLP	BH05 SPLP	BH08 SPLP	BH12 SPLP	BH25 SPLP
1,3-Dichloropropene (cis & trans)	ug/L	-	-	<0.50	<0.50	<0.50	<0.50	<0.50

Guide Limit #1: T3.1 - Leachate Screening Levels - Res/Park/Inst Property Use
Guide Limit #2: T3.1 - Leachate Screening Levels - 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

SPLP VOCs - WASTE

				Lab ID	L2564174-1	L2564174-2	L2564174-3	L2564174-4	L2564174-5
				Sample Date	23-FEB-21	25-FEB-21	26-FEB-21	25-FEB-21	01-MAR-21
				Sample ID	BH01 SPLP	BH05 SPLP	BH08 SPLP	BH12 SPLP	BH25 SPLP
Analyte	Unit	Guide Limits #1	#2						
Bromomethane	ug/L	0.5	0.5	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon tetrachloride	ug/L	0.2	0.2	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	ug/L	-	-	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylene dibromide	ug/L	0.2	0.2	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	ug/L	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	ug/L	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethane	ug/L	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloroethane	ug/L	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/L	0.5	0.5	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,2-Dichloroethylene	ug/L	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,2-Dichloroethylene	ug/L	0.5	0.5	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	ug/L	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,3-Dichloropropene	ug/L	-	-	<0.20	<0.20	<0.20	<0.20	<0.20
trans-1,3-Dichloropropene	ug/L	-	-	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1,2-Tetrachloroethane	ug/L	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	ug/L	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	ug/L	0.5	0.5	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/L	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	ug/L	0.5	0.5	<0.50	<0.50	<0.50	<0.50	<0.50
Surrogate: 4-Bromofluorobenzene	%	-	-	104.5	100.0	95.5	105.3	102.2
Surrogate: 1,4-Difluorobenzene	%	-	-	102.4	103.0	103.7	104.0	104.4

Guide Limit #1: T3.1 - Leachate Screening Levels - Res/Park/Inst Property Use
Guide Limit #2: T3.1 - Leachate Screening Levels - 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**
LEACH-MSPLP-WT	Waste	Modified SPLP Extraction	E9003

A Sample (100g) of soil is leached for 18 +/- 2 hours with 2.0 liters of splp leaching fluid #2 (pH = 5). For the analysis of metals, the leachate is filtered through a 0.45um filter using a metals free filtering system prior to digestion and analysis.

MET-SPLP-WT	Waste	SPLP Leachable Metals	EPA 200.8

An extract produced by the Synthetic Precipitation Leaching Procedure (SPLP) as per EPA 1312 or Ontario MECP E9003 is analyzed by Collision/Reaction Cell ICPMS. The extract is filtered through a 0.6 to 0.8 micron glass fibre filter for Method 1312 or through a 0.45um filter for Method E9003.

VOC-1,3-DCP-CALC-WT	Water	Regulation 153 VOCs	SW8260B/SW8270C
VOC-SPLP-WT	Waste	VOCs for O. R153/04 SPLP Leachate	SW846 8260

A sample of waste is leached in a zero headspace extractor at 30–2 rpm for 18–2.0 hours with the appropriate leaching solution.After tumbling the leachate is analyzed directly by headspace technology, followed by GC/MS using internal standard quantitation.

**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

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-SPLP-WT	**Waste**							
Batch R5399169								
WG3499432-4 DUP		**WG3499432-3**						
Antimony (Sb)		<5.0	<5.0	RPD-NA	ug/L	N/A	25	10-MAR-21
Arsenic (As)		<5.0	<5.0	RPD-NA	ug/L	N/A	25	10-MAR-21
Barium (Ba)		<100	<100	RPD-NA	ug/L	N/A	25	10-MAR-21
Beryllium (Be)		<2.0	<2.0	RPD-NA	ug/L	N/A	25	10-MAR-21
Boron (B)		<500	<500	RPD-NA	ug/L	N/A	25	10-MAR-21
Cadmium (Cd)		<0.10	<0.10	RPD-NA	ug/L	N/A	25	10-MAR-21
Chromium (Cr)		<5.0	<5.0	RPD-NA	ug/L	N/A	25	10-MAR-21
Cobalt (Co)		<2.0	<2.0	RPD-NA	ug/L	N/A	25	10-MAR-21
Copper (Cu)		<10	<10	RPD-NA	ug/L	N/A	25	10-MAR-21
Lead (Pb)		<2.0	<2.0	RPD-NA	ug/L	N/A	25	10-MAR-21
Molybdenum (Mo)		<10	<10	RPD-NA	ug/L	N/A	25	10-MAR-21
Nickel (Ni)		<20	<20	RPD-NA	ug/L	N/A	25	10-MAR-21
Selenium (Se)		<1.0	<1.0	RPD-NA	ug/L	N/A	25	10-MAR-21
Silver (Ag)		<0.25	<0.25	RPD-NA	ug/L	N/A	25	10-MAR-21
Thallium (Tl)		<0.80	<0.80	RPD-NA	ug/L	N/A	25	10-MAR-21
Uranium (U)		<15	<15	RPD-NA	ug/L	N/A	25	10-MAR-21
Vanadium (V)		<5.0	<5.0	RPD-NA	ug/L	N/A	25	10-MAR-21
Zinc (Zn)		<30	<30	RPD-NA	ug/L	N/A	25	10-MAR-21
WG3499432-2 LCS								
Antimony (Sb)			108.0		%		70-130	10-MAR-21
Arsenic (As)			104.0		%		70-130	10-MAR-21
Barium (Ba)			107.2		%		70-130	10-MAR-21
Beryllium (Be)			102.7		%		70-130	10-MAR-21
Boron (B)			97.1		%		70-130	10-MAR-21
Cadmium (Cd)			99.5		%		70-130	10-MAR-21
Chromium (Cr)			100.5		%		70-130	10-MAR-21
Cobalt (Co)			102.9		%		70-130	10-MAR-21
Copper (Cu)			100.4		%		70-130	10-MAR-21
Lead (Pb)			99.7		%		70-130	10-MAR-21
Molybdenum (Mo)			104.2		%		70-130	10-MAR-21
Nickel (Ni)			99.9		%		70-130	10-MAR-21
Selenium (Se)			96.6		%		70-130	10-MAR-21
Silver (Ag)			101.4		%		70-130	10-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-SPLP-WT	**Waste**							
Batch R5399169								
WG3499432-2 LCS								
Thallium (Tl)			101.7		%		70-130	10-MAR-21
Uranium (U)			99.4		%		70-130	10-MAR-21
Vanadium (V)			103.4		%		70-130	10-MAR-21
Zinc (Zn)			99.2		%		70-130	10-MAR-21
WG3499432-1 MB								
Antimony (Sb)			<5.0		ug/L		5	10-MAR-21
Arsenic (As)			<5.0		ug/L		5	10-MAR-21
Barium (Ba)			<100		ug/L		100	10-MAR-21
Beryllium (Be)			<2.0		ug/L		2	10-MAR-21
Boron (B)			<500		ug/L		500	10-MAR-21
Cadmium (Cd)			<0.10		ug/L		0.1	10-MAR-21
Chromium (Cr)			<5.0		ug/L		5	10-MAR-21
Cobalt (Co)			<2.0		ug/L		2	10-MAR-21
Copper (Cu)			<10		ug/L		10	10-MAR-21
Lead (Pb)			<2.0		ug/L		2	10-MAR-21
Molybdenum (Mo)			<10		ug/L		10	10-MAR-21
Nickel (Ni)			<20		ug/L		20	10-MAR-21
Selenium (Se)			<1.0		ug/L		1	10-MAR-21
Silver (Ag)			<0.25		ug/L		0.25	10-MAR-21
Thallium (Tl)			<0.80		ug/L		0.8	10-MAR-21
Uranium (U)			<15		ug/L		15	10-MAR-21
Vanadium (V)			<5.0		ug/L		5	10-MAR-21
Zinc (Zn)			<30		ug/L		30	10-MAR-21
WG3499432-5 MS		**WG3499432-3**						
Antimony (Sb)			98.8		%		50-140	10-MAR-21
Arsenic (As)			102.1		%		50-140	10-MAR-21
Barium (Ba)			105.6		%		50-140	10-MAR-21
Beryllium (Be)			97.4		%		50-140	10-MAR-21
Boron (B)			95.1		%		50-140	10-MAR-21
Cadmium (Cd)			98.6		%		50-140	10-MAR-21
Chromium (Cr)			100.0		%		50-140	10-MAR-21
Cobalt (Co)			101.5		%		50-140	10-MAR-21
Copper (Cu)			97.4		%		50-140	10-MAR-21
Lead (Pb)			100.8		%		50-140	10-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-SPLP-WT	**Waste**							
Batch R5399169								
WG3499432-5 MS		**WG3499432-3**						
Molybdenum (Mo)			99.0		%		50-140	10-MAR-21
Nickel (Ni)			98.7		%		50-140	10-MAR-21
Selenium (Se)			95.6		%		50-140	10-MAR-21
Silver (Ag)			115.5		%		50-140	10-MAR-21
Thallium (Tl)			97.6		%		50-140	10-MAR-21
Uranium (U)			99.1		%		70-130	10-MAR-21
Vanadium (V)			103.1		%		50-140	10-MAR-21
Zinc (Zn)			96.2		%		50-140	10-MAR-21
VOC-SPLP-WT	**Waste**							
Batch R5399015								
WG3499050-1 LCS								
1,1,1,2-Tetrachloroethane			97.6		%		70-130	09-MAR-21
1,1,2,2-Tetrachloroethane			105.8		%		70-130	09-MAR-21
1,1,2-Trichloroethane			101.8		%		70-130	09-MAR-21
1,1-Dichloroethane			94.8		%		70-130	09-MAR-21
1,1-Dichloroethylene			93.9		%		70-130	09-MAR-21
1,2-Dichlorobenzene			100.2		%		70-130	09-MAR-21
1,2-Dichloroethane			101.2		%		70-130	09-MAR-21
1,2-Dichloropropane			97.5		%		70-130	09-MAR-21
1,4-Dichlorobenzene			98.7		%		70-130	09-MAR-21
Bromomethane			99.4		%		70-130	09-MAR-21
Carbon tetrachloride			99.5		%		70-130	09-MAR-21
Chloroform			100.8		%		70-130	09-MAR-21
cis-1,2-Dichloroethylene			103.2		%		70-130	09-MAR-21
cis-1,3-Dichloropropene			100.6		%		70-130	09-MAR-21
Ethylene dibromide			108.1		%		70-130	09-MAR-21
Tetrachloroethylene			102.0		%		70-130	09-MAR-21
trans-1,2-Dichloroethylene			87.3		%		70-130	09-MAR-21
trans-1,3-Dichloropropene			100.9		%		70-130	09-MAR-21
Trichloroethylene			101.5		%		70-130	09-MAR-21
WG3499050-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	09-MAR-21
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	09-MAR-21
1,1,2-Trichloroethane			<0.50		ug/L		0.5	09-MAR-21

Quality Control Report

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-SPLP-WT	**Waste**							
Batch R5399015								
WG3499050-2 MB								
1,1-Dichloroethane			<0.50		ug/L		0.5	09-MAR-21
1,1-Dichloroethylene			<0.50		ug/L		0.5	09-MAR-21
1,2-Dichlorobenzene			<0.50		ug/L		0.5	09-MAR-21
1,2-Dichloroethane			<0.50		ug/L		0.5	09-MAR-21
1,2-Dichloropropane			<0.50		ug/L		0.5	09-MAR-21
1,4-Dichlorobenzene			<0.50		ug/L		0.5	09-MAR-21
Bromomethane			<0.50		ug/L		0.5	09-MAR-21
Carbon tetrachloride			<0.20		ug/L		0.2	09-MAR-21
Chloroform			<1.0		ug/L		1	09-MAR-21
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	09-MAR-21
cis-1,3-Dichloropropene			<0.20		ug/L		0.2	09-MAR-21
Ethylene dibromide			<0.20		ug/L		0.2	09-MAR-21
Tetrachloroethylene			<0.50		ug/L		0.5	09-MAR-21
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	09-MAR-21
trans-1,3-Dichloropropene			<0.20		ug/L		0.2	09-MAR-21
Trichloroethylene			<0.50		ug/L		0.5	09-MAR-21
Surrogate: 1,4-Difluorobenzene			103.0		%		60-140	09-MAR-21
Surrogate: 4-Bromofluorobenzene			104.8		%		60-140	09-MAR-21

Quality Control Report

Workorder: L2564174 Report Date: 18-MAR-21

Client: Thurber Engineering Ltd. (Oakville)
2010 Winston Park Drive Unit 103
Oakville ON L6H 5R7
Contact: Rachel Bourssa

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.

Chain of Custody

L2564174-COFC

COC Number: 20 -

Page 1 of 1

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	Thurber Engineering Ltd.
Contact:	Rachel Bourassa
Phone:	~~905-829-8666~~ 416 5237015
	Company address below will appear on the final report
Street:	2010 Winston Park Drive, Suite 103
City/Province:	Oakville, Ontario
Postal Code:	L6H 5R7

Invoice To		
	Same as Report To	☐ YES ☑ NO
	Copy of Invoice with Report	☑ YES ☐ NO
Company:	Thurber Engineering Ltd.	
Contact:		

Project Information	
ALS Account # / Quote #:	25053 / 84199
Job #:	30726
PO / AFE:	
LSD:	

ALS Lab Work Order # (lab use only): L2564174

Reports / Recipients	
Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☑ YES ☐ NO ☐ N/A
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	rbourassa@thurber.ca
Email 2	
Email 3	

Invoice Recipients	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	accountingON@thurber.ca
Email 2	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Contact: Amanda Overholster **Sampler:**

Turnaround Time (TAT) Requested

- ☑ Routine [R] if received by 3pm M-F - no surcharges apply
- ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
- ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
- ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
- ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
- ☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush resuests on weekends, statutory holidays and non-routine tests

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

For tests that can not be performed according to the TAT requested, you will be contacted.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

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	Reg. 406: MET-R406-LEACHATE-WT	Reg. 406: VOC-R406-LEACHATE-WT	LEACH-MSPLP-WT	LEACH-ZHE-MSPLP-WT	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	BH01 SPLP	23-Feb-21	2:00	80:1	2	✓	✓	✓	✓			
	BH05 SPLP	25-Feb-21	5:00	"	2	✓	✓	✓	✓			
	BH08 SPLP	26-Feb-21	12:00	"	2	✓	✓	✓	✓			
	BH12 SPLP	25-Feb-21	4:00	"	2	✓	✓	✓	✓			
	BH 20 SPLP	01-Mar-21	11:30	"	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

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

Reg. 406 mSPLP

SAMPLE RECEIPT DETAILS (lab use only)

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

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				8.5			

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
Rachel Bourassa	March 5, 2021	

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
	Mar 5/21	16:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 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.

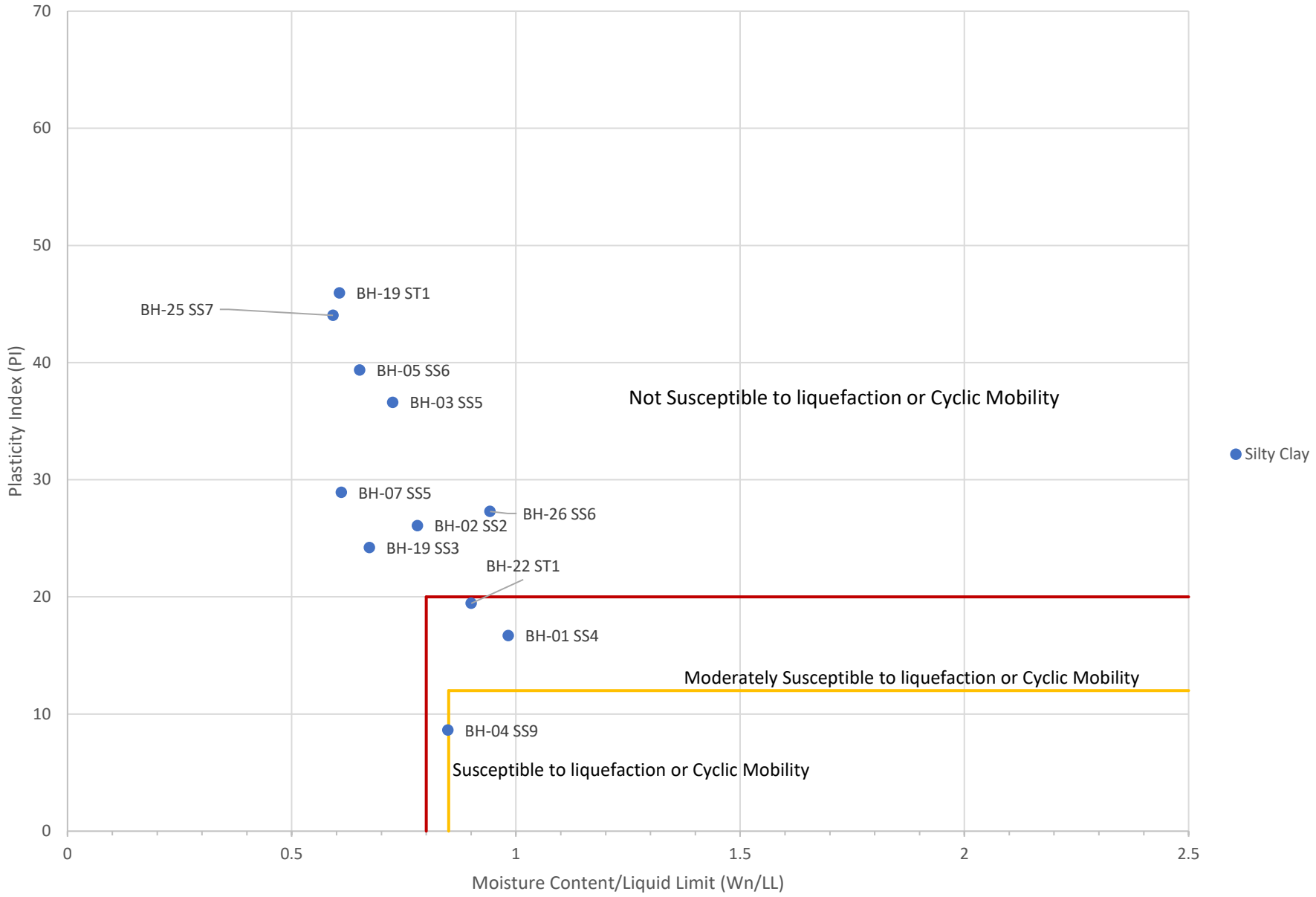
1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

THURBER

Appendix I

Seismic Hazard Calculation and Liquefaction Susceptibility

Figure I1: Liquefaction Susceptibility of Fine-grained Soils (Bray et al. 2004)



2015 National Building Code Seismic Hazard Calculation

INFORMATION: Eastern Canada English (613) 995-5548 français (613) 995-0600 Facsimile (613) 992-8836
Western Canada English (250) 363-6500 Facsimile (250) 363-6565

Site: 44.240N 76.961W **User File Reference:** Greater Napanee Utilities 2021-06-23 15:11 UT

Requested by: Thurber Engineering Limited

Probability of exceedance per annum	0.000404	0.001	0.0021	0.01
Probability of exceedance in 50 years	2 %	5 %	10 %	40 %
Sa (0.05)	0.125	0.074	0.048	0.017
Sa (0.1)	0.165	0.103	0.069	0.026
Sa (0.2)	0.156	0.102	0.070	0.028
Sa (0.3)	0.131	0.087	0.061	0.025
Sa (0.5)	0.106	0.071	0.049	0.019
Sa (1.0)	0.063	0.042	0.029	0.010
Sa (2.0)	0.033	0.021	0.014	0.004
Sa (5.0)	0.009	0.005	0.003	0.001
Sa (10.0)	0.004	0.002	0.001	0.001
PGA (g)	0.095	0.059	0.039	0.015
PGV (m/s)	0.090	0.057	0.037	0.012

Notes: Spectral (Sa(T), where T is the period in seconds) and peak ground acceleration (PGA) values are given in units of g (9.81 m/s^2). Peak ground velocity is given in m/s. Values are for "firm ground" (NBCC2015 Site Class C, average shear wave velocity 450 m/s). NBCC2015 and CSAS6-14 values are highlighted in yellow. Three additional periods are provided - their use is discussed in the NBCC2015 Commentary. Only 2 significant figures are to be used. **These values have been interpolated from a 10-km-spaced grid of points. Depending on the gradient of the nearby points, values at this location calculated directly from the hazard program may vary. More than 95 percent of interpolated values are within 2 percent of the directly calculated values.**

References

National Building Code of Canada 2015 NRCC no. 56190; Appendix C: Table C-3, Seismic Design Data for Selected Locations in Canada

Structural Commentaries (User's Guide - NBC 2015: Part 4 of Division B)
Commentary J: Design for Seismic Effects

Geological Survey of Canada Open File 7893 Fifth Generation Seismic Hazard Model for Canada: Grid values of mean hazard to be used with the 2015 National Building Code of Canada

See the websites www.EarthquakesCanada.ca and www.nationalcodes.ca for more information