Terraprobe

Consulting Geotechnical & Environmental Engineering
Construction Materials Inspection & Testing

GEOTECHNICAL REPORT
KEN WHILLANS DRIVE EXTENSION
SOUTH OF CHURCH STREET
CITY OF BRAMPTON
ONTARIO

Prepared for: Parsons Inc.
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APPENDICES

1.0 INTRODUCTION

Terraprobe has been retained by Parsons Inc. (Parsons), to provide geotechnical engineering services to support the preliminary designs for the proposed extension of Ken Whillans Drive from south of Church Street to Queen Street East, in the City of Brampton, Ontario.

The purpose of this study was to explore the subsurface conditions at the site, by borehole drilling, pavement coring, in-situ testing and, laboratory testing on soil samples. The data obtained from this investigation was used to provide a Borehole Location Plan, Log of Borehole Sheets, Asphalt Core Logs, laboratory test results, a description of the subsurface conditions and design recommendations.

2.0 SITE DESCRIPTION

Ken Whillans Drive is a north-south collector road under the jurisdiction of the City of Brampton consisting of a 2-lane urban cross-section. It is proposed to extend Ken Whillans Drive southerly from its Church Street intersection through Rosalea Park, then turning to head westerly to connect with Union Street. Etobicoke Creek flows within a lined channel parallel to Ken Whillans Drive and on the east side of the proposed extension.

As per the City of Brampton Official Plan, this extension of Ken Whillans Drive between Church Street East and Nelson Street East is classified as a collector road with an ultimate Right Of Way of 23 m to 26 m.

3.0 INVESTIGATION PROCEDURES

The fieldwork for this project was carried out on April 20, 2022 after obtaining utility clearances and applicable permits. Details of the field investigations are presented below:

- Drilling six boreholes along the proposed alignment to depths ranging from 3.5 m to 3.7 m below ground surface; and
- Asphaltic concrete coring of the existing YMCA Way pavement at two locations.

The boreholes were marked in the field by Terraprobe's staff in relation to existing features shown on the drawings provided by Parson. The boreholes were also surveyed for coordinates and geodetic elevation with a Trimble R10 Receiver connected to the Global Navigation Satellite System. The borehole data is summarized in the following table and the approximate borehole locations are shown on Figure 2.

Borehole No.	Coordinates (UTM NAD 83, Zone 17)		Ground Surface Elevation (m)	Borehole Depth (m)
	Northing (m)	Easting (m)		
BH 1	4 838 235.5	599 957.7	213.3	3.7
BH 2	4 838 206.6	599 988.0	212.9	3.7
BH 3	4 838 158.4	600 012.1	212.2	3.5
BH 4	4 838 114.3	600 008.4	212.5	3.7
BH 5	4 838 069.9	599 984.5	212.4	3.7
BH 6	4 838 024.6	599 947.9	211.9	3.7

The boreholes were drilled with a track-mounted drill rig supplied and operated by a specialist drilling contractor. Terraprobe's staff observed and recorded the drilling, sampling and in situ testing operations and logged the boreholes.

Samples of the overburden soils were obtained by continuous penetration techniques and also at intervals of 0.75 m and 1.5 m depth, using a 50 mm outer diameter (O.D.) split-spoon sampler in conjunction with the Standard Penetration Testing (SPT) procedures as specified in ASTM Method D 1586[1].

Ground water conditions in the open boreholes were observed during the drilling operations and standpipe piezometers consisting of a 50 mm diameter PVC pipe with a slotted screen were installed in Boreholes 1 and 5 to permit longer term ground water level monitoring.

The recovered soil samples were visually inspected in the field, placed in labelled plastic containers and transferred to Terraprobe's Brampton laboratory for further examination and testing. The recovered soil samples were subjected to Visual Identification (VI) and select soil samples were subjected to a laboratory testing programme consisting of natural moisture content and grain size distribution analyses in accordance with MTO and/or ASTM Standards as appropriate. The results of the soil testing program are presented on the Log of Borehole Sheets in Appendix A and on the figures in Appendix B.

Soil and ground water samples were submitted to SGS Canada Inc. (SGS) for chemical testing. Asphaltic concrete cores were also submitted to SGS to test for the presence of asbestos. The results of the chemical tests are provided in Appendix C.

4.0 SUBSURFACE CONDITIONS

4.1 General

Reference is made to the Log of Borehole Sheets in Appendix A. Details of the encountered soil stratigraphy are presented in this appendix. An overall description of the stratigraphy is given in the following paragraphs.

The stratigraphic boundaries shown on the Log of Borehole Sheets are inferred based on soil sampling methods and therefore represent transitions between soil types rather than exact planes of geological change. The subsurface conditions will vary between and beyond the borehole locations.

In summary, topsoil, a flexible pavement and fill soils consisting of very loose to compact sand and gravel to gravelly sand, firm to very stiff silty clay to clayey silt and loose to compact silty sand to silt and sand were encountered at the site. The native overburden deposit consists of stiff to hard silty clay to clayey silt till.

4.2 Topsoil

Topsoil layers ranging in thickness from 100 mm to 150 mm were encountered at this site. Topsoil thickness will vary between and beyond the test pit locations.

4.3 Flexible Pavement & Fill – Sand and Gravel to Gravelly Sand

A flexible pavement consisting of 70 mm to 160 mm thick asphaltic concrete, underlain by sand and gravel to gravelly sand fill was encountered at this site. The encountered pavement structures are summarized in the following table.

1 ASTM D1586 – Standard Test Method for Standard Penetration Tests and Split Barrel Sampling of Soils.

Location	Average Thickness (mm)		
	HMA	Granular	Total
YMCA Way (BH 6)	100	300	400
Cul-de-sac (BH 4)	160	340	500
Asphalt Trail (BH 2)	70	230	300

Sand and gravel to gravelly sand fill was also encountered at other boreholes and at deeper depths and the locations, thicknesses, depths, and base elevations of the sand and gravel to gravelly sand fill are summarized in the following table.

Borehole No.	Fill Thickness (m)	Fill Depth (m)	Fill Base Elevation (m)
BH 1	0.5	0.6	212.7
	0.9	2.1	211.2
BH 2	0.9	2.1	210.8
BH 3	0.9	2.1	210.1
BH 4	0.9	2.1	210.4
BH 5	0.9	2.1	210.3
BH 6	0.9	2.1	209.8

Standard Penetration tests performed in the sand and gravel to gravelly sand fill measured SPT N-values of 4 blows to 24 blows for 0.3 m of penetration, indicating a very loose to compact relative density. The natural water content of samples of the sand and gravel to gravelly sand fill range from 4% to 27% by weight.

The grain size distribution curves of three samples of sand and gravel to gravelly sand fill are depicted on Figure B1 in Appendix B. These results show a grain size distribution consisting of 25% to 42% gravel, 46% to 57% sand, 13% silt, 3% clay, and 12% and 18% silt and clay size particles.

4.4 Fill – Silty Sand to Silt and Sand

Silty sand to silt and sand fill material was encountered at this site and the locations, thicknesses, depths, and base elevations of the silty sand to silt and sand fill are summarized in the following table.

Borehole No.	Fill Thickness (m)	Fill Depth (m)	Fill Base Elevation (m)
BH 2	0.9	1.2	211.7
BH 3	1.1	1.2	211.0
BH 4	0.7	1.2	211.3
BH 5	1.0	1.2	211.2
BH 6	0.8	1.2	210.7

Standard Penetration tests performed in the silty sand to silt and sand fill measured SPT N-values of 5 blows to 10 blows for 0.3 m of penetration, indicating a loose to compact relative density. The natural water content of samples of the silty sand to silt and sand fill range from 15% to 20% by weight.

The grain size distribution curves of three samples of silty sand to silt and sand fill are depicted on Figure B2 in Appendix B. These results show a grain size distribution consisting of 0% to 12% gravel, 44% to 53% sand, 28% to 46% silt, and 8% to 11% clay size particles.

4.5 Fill – Silty Clay to Clayey Silt

Silty clay to clayey silt fill material was encountered at this site and the locations, thicknesses, depths, and base elevations of the silty clay to clayey silt fill are summarized in the following table.

Borehole No.	Fill Thickness (m)	Fill Depth (m)	Fill Base Elevation (m)
BH 1	0.6	1.2	212.1
BH 2	0.9	3.0	209.9
BH 3	0.9	3.0	209.2

Standard Penetration tests performed in the silty clay to clayey silt fill measured SPT N-values of 8 blows to 26 blows for 0.3 m of penetration, indicating a firm to very stiff consistency. The natural water content of two samples of the silty clay to clayey silt fill are 12% and 16% by weight.

4.6 Silty Clay to Clayey Silt Till

A till deposit with a soil matrix composition that ranges from silty clay to clayey silt was encountered at this site. The locations, thicknesses, depths, and base elevations of the silty clay to clayey silt till are summarized in the following table.

Borehole No.	Thickness (m)	Depth (m)	Base Elevation (m)
BH 1	1.6	3.7*	209.6
BH 2	0.7	3.7*	209.2
BH 3	0.5	3.5*	208.7
BH 4	1.6	3.7*	208.8
BH 5	1.6	3.7*	208.7
BH 6	1.6	3.7*	208.2

*Borehole termination depth.

Standard Penetration tests performed in the silty clay to clayey silt till measured SPT N-values of 11 blows to 59 blows for 0.3 m of penetration, indicating a stiff to hard consistency. The natural water content of samples of the silty clay to clayey silt till range from 11% to 18% by weight.

A grain size distribution test was carried out on a sample of the silty clay to clayey silt till and the grain size distribution curve is illustrated in Figure B3 in Appendix B. These results show a grain size distribution consisting of 5% gravel, 33% sand, 44% silt and 18% clay size particles. Till soils can also be expected to contain random cobble and boulder inclusions.

4.7 Ground Water Conditions

The ground water conditions were observed in the boreholes during and upon completion of drilling. Boreholes 1, and 5 were instrumented with a 50 mm diameter standpipe piezometer. Summarized below are the ground water levels that were measured on separate visits after the completion of drilling.

Borehole No	Date	Water Levels	
		Depth (m)	Elevation (m)
BH 1	May 25, 2022 May 30, 2022	2.4 2.3	210.9 211.0
BH 5	May 25, 2022 May 30, 2022	2.4 2.4	210.0 210.0

The ground water level is expected to generally follow the site topography. The ground water level is expected to fluctuate seasonally as well as in response to severe weather events and will also be controlled by the free water level in the watercourses. Perched water can also be expected to occur where relatively permeable soils are underlain by more impermeable stratigraphic units.

5.0 DISCUSSION AND RECOMMENDATIONS

This section of the report presents interpretations of the factual geotechnical data and provides preliminary geotechnical design recommendations. The preliminary discussions and recommendations presented herein are based on our understanding of the project and our interpretation of the factual data obtained from the subsurface investigations. Further investigations will be required for detail design.

5.1 Pavement Design

The pavement design recommendations provided herein are related to the extension of Ken Whillans Drive from south of Church Street to Nelson Street East. We understand that this road extension will be used as a "shared street" with vehicular traffic speeds ranging from 10 km/h to 15 km/h. It is understood that pavers are the preferred pavement alternative.

5.2 Paver Pavement Structure

The recommended pavement structure for the road and layby parking is provided in the following table.

Pavement Component/Parameter	Ken Whillans Drive Extension (mm)
Brick Paver (ASTM C 1272, CAN3-A231.2)	80
Bedding Sand	25
Base Course Granular A (OPSS 1010)	100
Subbase Course Granular B Type II (OPSS 1010)	400
Total Thickness	605

Edge restraints are necessary around the pavement perimeter to prevent lateral movement of the pavers and loss of the setting bed. Edge restraints hold the pavers tightly together thereby enabling consistent interlock of the units. To maintain interlock, the edge restraints should be able to resist anticipated vertical loads and horizontal traffic forces with minimal movement. Edge restraints can be placed before laying the setting bed, and those restraints that incorporate concrete should be cured before compaction of the brick pavement begins. It is important that the inside face of the edge restraint is vertical so that the pavers can be laid against the restraint with minimal tolerance. Restraints can take the form of precast concrete, plastic, cut stone and aluminium.

Jointing sand is required between the brick pavers after they are placed and compacted. This sand is a finer graded (100% passing the 1.18 mm sieve size) material. Typically, sands conforming to the gradation requirements of ASTM C 144 will meet these requirements. The jointing sand should be dry and spread on the pavement until the joints are full. No traffic is allowed on the pavement until the jointing sand is stabilized. An alternative to regular sand is Polymeric Jointing Sand which is a mix of graded sand and binder specially formulated for filling joints between pavers.

To enhance the surface durability of the paver units, a sealer can be considered. The sealer prevents loss of the joint sand and ingress of water, oils and other fluids into the bedding sand.

5.3 Material Types

Granular A material shall be used for the granular base and Granular B Type II is recommended as subbase material. The Granular A and Granular B Type II material shall meet the OPSS.MUNI 1010 specifications as well as City of Brampton Standard Specification, BSS 1010. The granular material shall also meet the gradation specifications illustrated in the City of Brampton Standard Drawing 211.

5.4 Compaction

Granular base and subbase materials shall be placed in 150 mm lifts and compacted at ±2% of the material's Optimum Moisture Content (OMC). The Granular A base course shall be compacted to 100% of the material's Standard Proctor Maximum Dry Density (SPMDD) and the Granular B subbase course shall be compacted to 98% of the material's SPMDD.

5.5 Stripping

For estimating purposes assume an average topsoil stripping depth of 125 mm. Full depth removal of the topsoil and any other deleterious material is required prior to constructing the pavements.

5.6 Pavement Removals

Refer to the tabulated average pavement thicknesses in Section 4.3 for the appropriate asphalt and granular thickness to use for estimating purposes.

5.7 Reuse of Existing Granular Material

The grain size analyses of samples of the pavement granular material indicates that the sampled material generally does not meet the OPSS.MUNI 1010 gradation requirements for Granular A and Granular B Type II material. Therefore, the existing granular material shall not be used as granular base and subbase material. This existing granular material can be reused as non-structural fill on this contract.

5.8 Drainage

5.8.1 Subdrains

Control of water is an important factor in achieving a good pavement service life. For surface drainage above the roadway satisfactory slopes shall be provided to avoid ponding water. A minimum top of pavement cross fall of 2% is recommended. The subgrade must also be free of depressions and sloped (at a minimum grade of three percent). Grading next to the pavement areas should be designed to ensure that water is not allowed to pond adjacent to the outside edges of the pavement.

Full-length subdrains shall be provided along both sides of the roadway to facilitate drainage of the subgrade and the granular materials. The subdrain invert should be maintained at least 0.3 m below subgrade level. Subdrains shall be constructed in accordance with the OPSD 216.021 and the City of Brampton Standard Drawing 223.

5.8.2 Pipe Culverts

Minor flexible pipe culverts shall be installed in accordance with the geometries illustrated in OPSD 803.030, OPSD 803.031 and City of Brampton Standard Specification, BSS 421. Granular A material is recommended for embedment/bedding and cover to these pipes. Clean native soils can also be used as cover, provided it is placed below the design frost depth. Granular frost tapers will be required when the frost line is below the top of culvert.

5.9 Frost Penetration

For design purposes a minimum frost penetration depth of 1.2 m is recommended.

5.10 Subgrade Preparation

All topsoil, organics, soft/loose and otherwise disturbed soils shall be removed from the subgrade areas. The design subgrade is expected to consist of fine grained soils or granular material such as silty sands and silts and sands. The fine grained soils (such as silty clays and clayey silts) will be weakened by construction traffic when wet, especially if site work is carried out during periods of wet weather. During these weather conditions, an adequate granular working surface would be required in order to minimize subgrade disturbance. Subgrade preparation and fill construction should not be done in the winter.

Immediately prior to placing the granular base course, the subgrade soils shall be compacted and then proofrolled with a heavy rubber tired vehicle (such as a loaded gravel truck). The subgrade shall be inspected for signs of rutting or displacement. Areas displaying signs of rutting or displacement shall be recompacted and retested or, the material should be excavated and replaced with well-compacted and clean fill.

The fill may consist of either granular material or local inorganic soils provided that their moisture contents are within ±2% of optimum. Fill material shall be placed and compacted in accordance with OPSS MUNI 501 and the upper 300 mm thick layer of the subgrade soils should be compacted to 98% of the material's Standard Proctor Maximum Dry Density (SPMDD).

5.11 Fill Materials

Borrow material (if required) shall comply with the OPSS.MUNI 212 specification. The placement of borrow material must be carefully monitored and it must be properly compacted as specified in OPSS.MUNI 501 to ensure adequate pavement support. Mixing of materials from different sources is not recommended due to the risks associated with differential settlement, drainage problems and frost heave. Further verification and approval of fill material will be required during construction.

Soils of low to medium frost susceptibility can be used as fill up to the proposed pavement design subgrade elevation. Soils with high frost susceptibility are not recommended for re-use within a zone extending to a maximum depth of 1.2 m below the proposed pavement design subgrade. These soils should be segregated and used elsewhere.

The fill and native site soils within the project limits are generally considered suitable for reuse provided they are free of topsoil, organic material, or other deleterious material. To achieve the specified compaction, fill material must neither be too wet nor too dry of their optimum moisture content. Material that is too wet

cannot be used immediately because the material will have to be dried to about ± 2 % of the optimum moisture content. If the construction operations are time sensitive, the use of imported granular material may be considered. Soils that are dry of optimum can be used immediately provided that the material is moisture conditioned (i.e. water added) to achieve a moisture content of ± 2 % of optimum. The placing and compacting of fill materials shall be carried out under close supervision.

6.0 SOIL INFILTRATION RATES

Provided herein are preliminary geotechnical design parameters that can be used to develop a storm water management strategy. The estimated ground water elevation to be used for preliminary design is 211.0 m. The estimated percolation times for the various soil units were derived based on the procedures outlined in the *Supplementary Guidelines of the Ontario Building Code, 1997* and these values are provided in the following table:

Soil Description	Estimated Hydraulic Conductivity, k (cm/s)	Estimated Percolation Time, T (min/cm)
Fill – Silty Sand to Silt and Sand	$10^{-3} – 10^{-5}$	8 – 20
Fill – Silty Clay to Clayey Silt	$10^{-5} – 10^{-7}$	> 50
Silty Clay to Clayey Silt Till	$10^{-5} – 10^{-7}$	> 50

7.0 CHEMICAL ANALYSIS

7.1 Soil Chemistry - Metals and Inorganics

Four soil samples were submitted to a CAEAL Certified Laboratory (SGS Environmental, Health & Safety) for chemical characterization with respect to general inorganic parameters including metals, pH, sodium adsorption ratio (SAR) and electrical conductivity (EC). Based on visual and/or olfactory screening of soil samples, these nominal parameters are analysed when there are no indications of environmental impacts. The Certificates of Analysis are included in Appendix C.

The analytical results were compared to Table 1 (Agricultural) and Table 2 and Table 3 (Residential/Parkland/Institutional and Industrial/Commercial/Community Property) of the *MOE Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act*, April 15, 2011. Comparison of the test results to the MOE Standard indicates that the tested soil parameters were generally below the guideline values. However, exceedances in electrical conductivity, sodium adsorption ratio and/or some metal concentrations were reported for most of the tested samples as summarized in the following table.

Borehole No	Approximate Station	Sample Depth (m)	Exceedances								
			Table 1 (Agr)				Table 2 & 3 (RPI)			Table 2 & 3 (ICC)	
			EC	SAR	Silver	Cobalt	EC	SAR	Cobalt	EC	SAR
BH 2	15+220	0.6 – 1.2	✓	✓	-	-	✓	✓	-	-	✓
BH 4	15+510	0.2 – 0.5	✓	✓	✓	✓	-	✓	✓	-	-
BH 4	16+195	0.6 – 1.2	✓	✓	-	-	✓	✓	-	-	-
BH 6	16+735	0.1 – 0.4	✓	✓	-	✓	✓	✓	✓	-	✓

7.2 Soil Chemistry - Petroleum Hydrocarbons

Two soil samples were also submitted to SGS for petroleum hydrocarbon testing (F1 to F4 and F4G fractions, Semi-Volatile Organic compounds and Volatile Organic compounds, Polychlorinated Biphenyls PCBs, and Polyaromatic Hydrocarbons) and the analytical results were compared to Table 1 (Agricultural) and Table 2 and Table 3 (Residential/Parkland/Institutional and Industrial/Commercial/Community Property) of the *MOE Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act*, April 15, 2011. The results indicate that the concentrations of the analysed parameters were below the guideline values. The Certificate of Analysis is included in Appendix C.

7.3 Ground Water Chemistry

Water quality assessments were carried out on ground water samples obtained from the standpipe piezometers installed in Boreholes 1 and 5. The ground water chemistry was compared to the Provincial Water Quality Objectives (PWQO) of the Ministry of Environment and Energy. Ground water sample results are typically compared to this document to assess suitability for discharge into waterbodies. Exceedances were reported for the tested samples as summarized in the following table. The Certificates of Analysis are included in Appendix C.

BH No.	Exceedances																			
	Total															Dissolved				
	Mercury	Arsenic	Boron	Chromium	Cadmium	Cobalt	Copper	Iron	Phosphorus	Nickel	Lead	Silver	Thallium	Vanadium	Zinc	Cobalt	Copper	Phosphorus	Zinc	4AAP-Phenolics
BH 1	-	✓	✓	-	-	✓	✓	✓	✓	-	-	✓	-	✓	✓	✓	✓	✓	✓	✓
BH 5	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	✓	✓

Further ground water assessment is recommended during detail design. If after reassessment the water quality exceeds the discharge criteria for the PWQO Guidelines, then the water must be treated before being discharged.

Particulate filtering systems are commonly used to reduce the concentrations of non-dissolved metals and Total Suspended Solids. Treatment for dissolved metals and inorganics if required, will require designing a treatment system that targets the dissolved metals and inorganics to be removed from solution. The design and implementation of an appropriate treatment system to remove exceedances is the Contractor's responsibility.

7.4 Asbestos

Two asphalt core samples were subjected to testing for the presence of asbestos. Asbestos was not detected in any of the tested cores.

8.0 LIMITATIONS AND RISK

8.1 Procedures

This investigation has been carried out using investigation techniques and engineering analysis methods consistent with those ordinarily exercised by Terraprobe and other engineering practitioners, working under similar conditions and subject to the time, financial and physical constraints applicable to this project. The discussions and recommendations that have been presented are based on the factual data obtained by Terraprobe.

It must be recognized that there are special risks whenever engineering or related disciplines are applied to identify subsurface conditions. Even a comprehensive sampling and testing programme implemented in accordance with the most stringent level of care may fail to detect certain conditions. Terraprobe has assumed for the purposes of providing design parameters and advice, that the conditions that exist between sampling points are similar to those found at the sample locations. The conditions that Terraprobe has interpreted to exist between sampling points can differ from those that actually exist.

It may not be possible to drill a sufficient number of boreholes or sample and report them in a way that would provide all the subsurface information that could affect construction costs, techniques, equipment, and scheduling. Contractors bidding on or undertaking work on the project should be directed to draw their own conclusions as to how the subsurface conditions may affect them, based on their own investigations and their own interpretations of the factual investigation results, cognizant of the risks implicit in the subsurface investigation activities so that they may draw their own conclusions as to how the subsurface conditions may affect them.

8.2 Changes in Site and Scope

It must also be recognized that the passage of time, natural occurrences, and direct or indirect human intervention at or near the site have the potential to alter subsurface conditions. Ground water levels are particularly susceptible to seasonal fluctuations.

The discussion and recommendations are based on the factual data obtained from this investigation made at the site by Terraprobe and, are intended for use by the owner and its retained designers in the design phase of the project. If there are changes to the project scope and development features, the interpretations made of the subsurface information, the geotechnical design parameters and comments relating to constructability issues and quality control may not be relevant or complete for the revised project. Terraprobe should be retained to review the implications of such changes with respect to the contents of this report.

9.0 CLOSURE

This report was prepared by Ms Sepideh D-Monfared, P.Eng., and reviewed by Mr. Rehman Abdul, P.Eng., a Senior Geotechnical Engineer and Principal with Terraprobe.

Terraprobe

Sepideh D-Monfared, P.Eng.
Geotechnical Engineer

Rehman Abdul, P.Eng.
Principal, Senior Geotechnical Engineer

REFERENCES

Ministry of the Environment, April 15, 2011. *Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act, PIBS # 7382e01.*

Ontario Regulation 213/91, *Occupational Health and Safety Act (OHSA) and Regulations for Construction Projects*, April 11, 2012.

Ontario Provincial Standard Specifications (OPSS)

OPSS.MUNI 212	Construction Specification For Earth Borrow.
OPSS.MUNI 501	Construction Specification For Compacting.
OPSS.MUNI 1010	Material Specification For Aggregates – Base, Subbase, Select Subgrade and Backfill Material.

Ontario Provincial Standard Drawings (OPSD)

OPSD 216.021	Subdrain Pipe Connection and Outlet Details, Urban
OPSD 803.030	Frost Treatment – Pipe Culverts, Frost Penetration Line Below Bedding Grade.
OPSD 803.031	Frost Treatment – Pipe Culverts, Frost Penetration Line Between Top of Pipe. and Bedding Grade

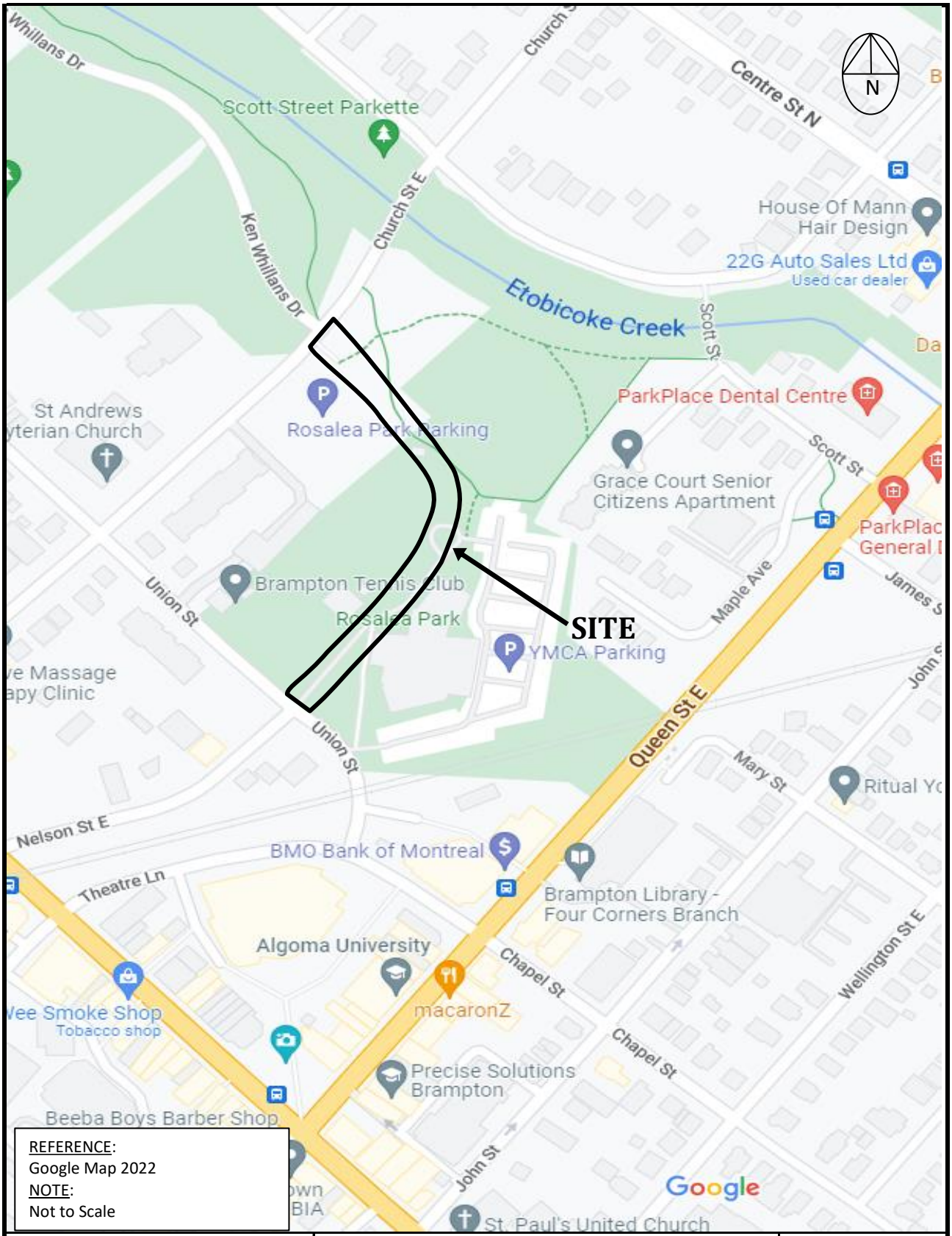
City of Brampton Standard Drawings

Drawing No. 202	Minor Collector 10.0m Pavement on 23.0m R.O.W.
Drawing No. 211	Grain Size Distribution Granular ‘A’, ‘B’ & ‘B’ Modified
Drawing No. 223	Standard Subdrains

City of Brampton Standard Specifications (BSS)

BSS 421	Construction Specification for Pipe Culvert Installation in Open Cut
BSS 1010	Material Specification for Aggregates – Base, Subbase, Select Subgrade and Backfill Materials

FIGURES



REFERENCE:
Google Map 2022
NOTE:
Not to Scale

Terraprobe Consulting Geotechnical & Environmental Engineering Construction Materials, Inspection & Testing 11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650	Title: **SITE LOCATION PLAN**	Figure: 1
	File No.: 1-22-0021	

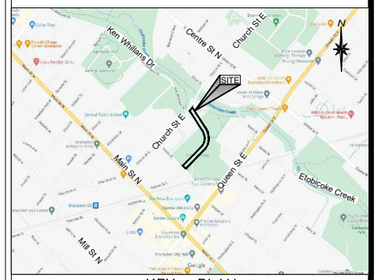
KEN WHILLANS DRIVE EXTENSION
BRAMPTON, ONTARIO

BOREHOLE LOCATION PLAN

SHEET

PARSONS

Terraprobe
Consulting Geotechnical & Environmental Engineering
Construction Materials Engineering, Inspection & Testing
11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650



KEY PLAN NOT TO SCALE

LEGEND

Bore Hole

BH No.	ELEV. (m)	COORDINATES (UTM, NAD83, Zone 17)	
		NORTHING (m)	EASTING (m)
1	213.3	4 838 235.5	599 957.7
2	212.9	4 838 206.6	599 988.0
3	212.2	4 838 158.4	600 012.1
4	212.5	4 838 114.3	600 008.4
5	212.4	4 838 069.9	599 984.5
6	211.9	4 838 024.6	599 947.9

SCALE

10 5 0 5 10 15 20m

NOTE

This drawing is for subsurface information only. Surface details and features are for conceptual illustration. The subsurface conditions can be expected to vary between and beyond the borehole locations.

REFERENCE

Drawings provided in digital format by Parsons, received March 31, 2022 by email.

REVISIONS			
	DATE	BY	DESCRIPTION

HWY. ---	PROJECT No. ----		DIST.
SUBM'D. SD	CHKD. SD	DATE: -----	SITE: ----
DRAWN: KC	CHKD. SD	APPD: RA	DWG. 2

Y:\Shared\GA\Terraprobe\Brampton\1-Project Files\2021\1-21-0021 - Ken Whillans Drive Extension\Geotechnical Investigation\A Dwgs, Logs\AutoCAD\1-21-0021 Figure 2.dwg DWG To PDF.pc3.
Kamal, Kamal

SITE PHOTOGRAPHS	FIGURE 3

Photo 1: Proposed Alignment at Sta. 0+030, Looking at Union Street

Photo 2: Proposed Alignment at Sta. 0+075

SITE PHOTOGRAPHS	FIGURE 4

Photo 3: Proposed Alignment at Sta. 0+130

Photo 4: Proposed Alignment at Sta. 0+175

SITE PHOTOGRAPHS	FIGURE 5

Photo 5: Proposed Alignment at Sta. 0+270, Looking at Church Street East

Photo 6: Proposed Alignment at Sta. 0+275

APPENDIX A
Log of Borehole Sheets

Terraprobe

ABBREVIATIONS AND TERMINOLOGY

SAMPLING METHODS

AS	Auger sample
GS	Grab sample
SS	Split spoon
ST	Shelby tube
WS	Wash sample
RC	Rock core
SC	Soil core

PENETRATION RESISTANCE

Standard Penetration Test (SPT) N-value (penetration resistance) is defined as the number of blows required to advance a standard 50 mm (2 in.) diameter split spoon sampler for a distance of 0.3 m (12 in.) with a hammer weighing 63.5 kg (140 lb.) falling freely for a distance of 0.76 m (30 in.).

Dynamic Cone Penetration Test (DCPT) resistance is defined as the number of blows required to advance a conical steel point 50 mm (2 in.) base diameter tapered 60° to the apex and attached to 'A' size drill rods for a distance of 0.3 m (12 in.), with a hammer weighing 63.5 kg (140 lb.) falling freely for a distance of 0.76 m (30 in.).

COHESIONLESS SOILS

Relative Density	N-value Blows/0.3m
Very loose	< 5
Loose	5 – 10
Compact	10 – 30
Dense	30 – 50
Very dense	> 50

COHESIVE SOILS

Consistency	N-value Blows/0.3m	Undrained Shear Strength (kPa)
Very soft	< 2	< 12
Soft	2 – 4	12 – 25
Firm	4 – 8	25 – 50
Stiff	8 – 15	50 – 100
Very stiff	15 – 30	100 – 200
Hard	> 30	> 200

MINOR SOIL CONSTITUENTS

Modifier (e.g)	% by weight
trace (trace silt)	< 10
some (some silt)	10 – 20
(ey) or (y) (sandy)	20 – 35
and (sand and silt)	> 35

TESTS AND SYMBOLS

MH	combined sieve and hydrometer analysis
w,	water content
w_L,	liquid limit
w_P,	plastic limit
I_P,	plasticity index
k	coefficient of permeability
γ	soil unit weight, bulk
G_s	specific gravity
Φ'	effective angle of internal friction
c'	effective cohesion
c_u	undrained shear strength (Φ = 0 analysis)

▽	Unstabilized water level
▼	1st water level measurement
▼	2nd water level measurement
▼	Most recent water level measurement
3.0 +	Undrained shear strength from field vane (with sensitivity)
C_c	compression index (normally consolidated range)
C_r	recompression index (overconsolidated range)
c_v	coefficient of consolidation
m_v	coefficient of compressibility (volume change)
e	void ratio

FIELD MOISTURE DESCRIPTIONS

Dry	refers to a soil sample with a moisture content well below optimum ($w < w_{opt}$), absence of moisture, dusty, dry to the touch.
Moist	refers to a soil sample with a moisture content at or near optimum ($w \approx w_{opt}$), no visible pore water.
Wet	refers to a soil sample with a moisture content well above optimum ($w > w_{opt}$), has visible pore water.

LOG OF BOREHOLE 1

Terraprobe

Project No. : 1-21-0021-01	Client : Parsons Inc.	Originated by : SM
Date started : April 20, 2022	Project : Ken Whillans Drive Extension	Compiled by : LB
Sheet No. : 1 of 1	Location : City of Brampton, Ontario	Checked by : SD

Position : E: 599957.7, N: 4838235.5 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

ELEV DEPTH (m)	DESCRIPTION	NUMBER	TYPE	SPT 'N' VALUE	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
213.3	**GROUND SURFACE**				
	100mm **TOPSOIL**	1	SS	27	37 47 13 3
212.7 / 0.6	**FILL**, sand and gravel, some silt, trace clay, compact, brown, dry	2	SS	11	
212.1 / 1.2	**FILL**, silty clay, some sand, some gravel, stiff, brown, dry	3	SS	9	
211.2 / 2.1	**FILL**, sand and gravel to gravelly sand, some silt, trace clay, loose, brown, wet	4	SS	24	
	SILTY CLAY to CLAYEY SILT, some sand to sandy, trace gravel, very stiff, brown to 2.9 m, grey below, moist to wet (GLACIAL TILL)	5	SS	26	
209.6 / 3.7	**END OF BOREHOLE**				

Unstabilized water level measured at 2.9m below ground surface, borehole was open upon completion of drilling.

Piezometer installation consists of a 50mm diameter PVC pipe with a 1.5m long slotted screen.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
May 25, 2022	2.4	210.9
May 30, 2022	2.3	211.0

+ 3, × 3: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

file: 1-21-0021 bh logs.gpj

Terraprobe

LOG OF BOREHOLE 2

Project No. : 1-21-0021-01	Client : Parsons Inc.	Originated by : SM
Date started : April 20, 2022	Project : Ken Whillans Drive Extension	Compiled by : LB
Sheet No. : 1 of 1	Location : City of Brampton, Ontario	Checked by : SD

Position : E: 599988.0, N: 4838206.6 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

ELEV DEPTH (m)	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SPT 'N' VALUE	GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT / SHEAR STRENGTH (kPa) (UNCONFINED, QUICK TRIAXIAL, FIELD VANE, LAB VANE)	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT / WATER CONTENT (%)	UNIT WEIGHT γ kN/m^3	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
212.9	**GROUND SURFACE**										
212.6 / 0.3	70mm **ASPHALTIC CONCRETE**; 230mm **FILL**, sand and gravel, some silt, compact, brown, dry to moist		1	SS	16				w_P w w_L		42 46 *(12)*
211.7 / 1.2	**FILL**, silt and sand, trace to some clay, trace gravel, loose, brown, wet		2	SS	5		212				0 44 46 10
210.8 / 2.1	**FILL**, sand and gravel to gravelly sand, some silt, trace clay, compact, brown, wet		3	SS	14		211				
209.9 / 3.0	**FILL**, silty clay to clayey silt, some sand to sandy, some gravel, very stiff, brown, wet		4	SS	26		210				sampler wet at 2.3m ▽
209.2 / 3.7	**SILTY CLAY to CLAYEY SILT**, some sand to sandy, trace gravel, very stiff, grey, moist to wet (GLACIAL TILL)		5	SS	20						

END OF BOREHOLE

Unstabilized water level measured at 2.9 m below ground surface; borehole was open upon completion of drilling.

+^{3}, ×^{3}: Numbers refer to Sensitivity ○$^{3\%}$ STRAIN AT FAILURE

file: 1-21-0021 bh logs.gpj

Terraprobe

LOG OF BOREHOLE 3

Project No. : 1-21-0021-01	Client : Parsons Inc.	Originated by : SM
Date started : April 20, 2022	Project : Ken Whillans Drive Extension	Compiled by : LB
Sheet No. : 1 of 1	Location : City of Brampton, Ontario	Checked by : SD

Position : E: 600012.1, N: 4838158.4 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

ELEV DEPTH (m)	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SPT 'N' VALUE	GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT / SHEAR STRENGTH (kPa)	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT / WATER CONTENT (%)	UNIT WEIGHT γ kN/m^3	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
212.2	**GROUND SURFACE**						212				
	125mm **TOPSOIL**		1	SS	6						
	FILL, silty sand to silt and sand, some gravel, trace clay, loose to compact, brown, wet		2	SS	10						12 52 28 8
211.0							211				
1.2	**FILL**, sand and gravel to gravelly sand, trace to some silt, compact, brown, wet		3	SS	14						Sampler wet at 1.0m
210.1							210				
2.1	**FILL**, silty clay to clayey silt, some sand to sandy, some gravel, firm to stiff, brown, wet		4	SS	8						▽
209.2							209				
3.0	**SILTY CLAY to CLAYEY SILT**, some sand to sandy, trace gravel, hard, grey, moist to wet (GLACIAL TILL)		5	SS	59						
208.7											
3.5	**END OF BOREHOLE**										

Unstabilized water level measured at 2.7 m below ground surface; borehole was open upon completion of drilling.

+ 3, × 3: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

file: 1-21-0021 bh logs.gpj

LOG OF BOREHOLE 4

Terraprobe

Project No. : 1-21-0021-01	Client : Parsons Inc.	Originated by : SM
Date started : April 20, 2022	Project : Ken Whillans Drive Extension	Compiled by : LB
Sheet No. : 1 of 1	Location : City of Brampton, Ontario	Checked by : SD

Position : E: 600008.4, N: 4838114.3 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

ELEV DEPTH (m)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	SPT 'N' VALUE	GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT / SHEAR STRENGTH (kPa)	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT (WATER CONTENT (%))	UNIT WEIGHT γ kN/m^3	REMARKS & GRAIN SIZE DISTRIBUTION (%)
212.5	**GROUND SURFACE**										
212.3 / 0.2	160mm **ASPHALTIC CONCRETE**										
212.0 / 0.5	340mm **FILL**, gravelly sand, some silt to silty, trace clay, compact, brown, moist		1	SS	17		212				
			2	SS	8				○		
211.3 / 1.2	**FILL**, silty sand to silt and sand, some clay, some gravel, loose, brown, wet		3	SS	9		211				Sampler wet at 1.5m
210.4 / 2.1	**FILL**, sand and gravel to gravelly sand, trace to some silt, loose, brown, wet										
	SILTY CLAY to CLAYEY SILT, some sand to sandy, trace gravel, stiff to very stiff, grey, moist to wet (GLACIAL TILL)		4	SS	18		210		○		▽ 5 33 44 18
			5	SS	13						
208.8 / 3.7	**END OF BOREHOLE**						209				

Unstabilized water level measured at 2.7 m below ground surface; borehole was open upon completion of drilling.

+^{3}, ×^{3}: Numbers refer to Sensitivity ○$^{3\%}$ STRAIN AT FAILURE

file: 1-21-0021 bh logs.gpj

LOG OF BOREHOLE 5

Terraprobe

Project No. : 1-21-0021-01	Client : Parsons Inc.	Originated by : SM
Date started : April 20, 2022	Project : Ken Whillans Drive Extension	Compiled by : LB
Sheet No. : 1 of 1	Location : City of Brampton, Ontario	Checked by : SD

Position : E: 599984.5, N: 438069.9 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

ELEV DEPTH (m)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	SPT 'N' VALUE	GROUND WATER CONDITIONS
212.4	**GROUND SURFACE**					
212.2 / 0.2	150mm **TOPSOIL**		1	SS	6	
	FILL, silty sand, some clay, trace to some gravel, loose, brown, wet		2	SS	7	
211.2 / 1.2	**FILL**, sand and gravel to gravelly sand, some silt, very loose, brown, wet		3	SS	4	
210.3 / 2.1	**SILTY CLAY to CLAYEY SILT**, some sand to sandy, trace gravel, stiff, brown to 3.0m, grey below, moist to wet (GLACIAL TILL)		4	SS	11	▽
			5	SS	12	
208.7 / 3.7	**END OF BOREHOLE**					

ELEVATION SCALE: 212, 211, 210, 209

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L

WATER CONTENT (%) (10 20 30)

UNIT WEIGHT γ kN/m^3

REMARKS & GRAIN SIZE DISTRIBUTION (%)

	GR	SA	SI	CL
	2	53	34	11

Sampler wet at 2.2m

Unstabilized water level measured at 2.7m below ground surface, borehole was open upon completion of drilling.

Piezometer installation consists of a 50mm diameter PVC pipe with a 1.5m long slotted screen.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
May 25, 2022	2.4	210.0
May 30, 2022	2.4	210.0

+ ^{3}, × ^{3}: Numbers refer to Sensitivity ○ $^{3\%}$ STRAIN AT FAILURE

file: 1-21-0021 bh logs.gpj

LOG OF BOREHOLE 6

Terraprobe

Project No. : 1-21-0021-01	Client : Parsons Inc.	Originated by : SM
Date started : April 20, 2022	Project : Ken Whillans Drive Extension	Compiled by : LB
Sheet No. : 1 of 1	Location : City of Brampton, Ontario	Checked by : SD

Position : E: 599947.9, N: 4838024.6 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

ELEV DEPTH (m)	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SPT 'N' VALUE	GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT / SHEAR STRENGTH (kPa)	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT / WATER CONTENT (%)	UNIT WEIGHT γ kN/m^3	REMARKS & GRAIN SIZE DISTRIBUTION (%)
211.9	**GROUND SURFACE**										
211.5 / 0.4	100mm **ASPHALTIC CONCRETE**										
	300mm **FILL**, gravelly sand, some silt, compact, brown, wet		1	SS	22						GR 25 SA 57 SI (18) CL
	FILL, silty sand to sand and silt, some clay, trace gravel, loose, brown, wet		2	SS	6		211				
210.7 / 1.2	**FILL**, sand and gravel to gravelly sand, trace to some silt, compact, brown, wet		3	SS	24						Sampler wet at 1.2m
209.8 / 2.1	**SILTY CLAY to CLAYEY SILT**, some sand to sandy, trace gravel, stiff to very stiff, grey, moist to wet (GLACIAL TILL)		4	SS	15		210				
			5	SS	21		209				
208.2 / 3.7	**END OF BOREHOLE**										

Unstabilized water level measured at 1.2 m below ground surface; borehole caved to 1.5 m below ground surface upon completion of drilling.

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100

SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE; 20 40 60 80 100

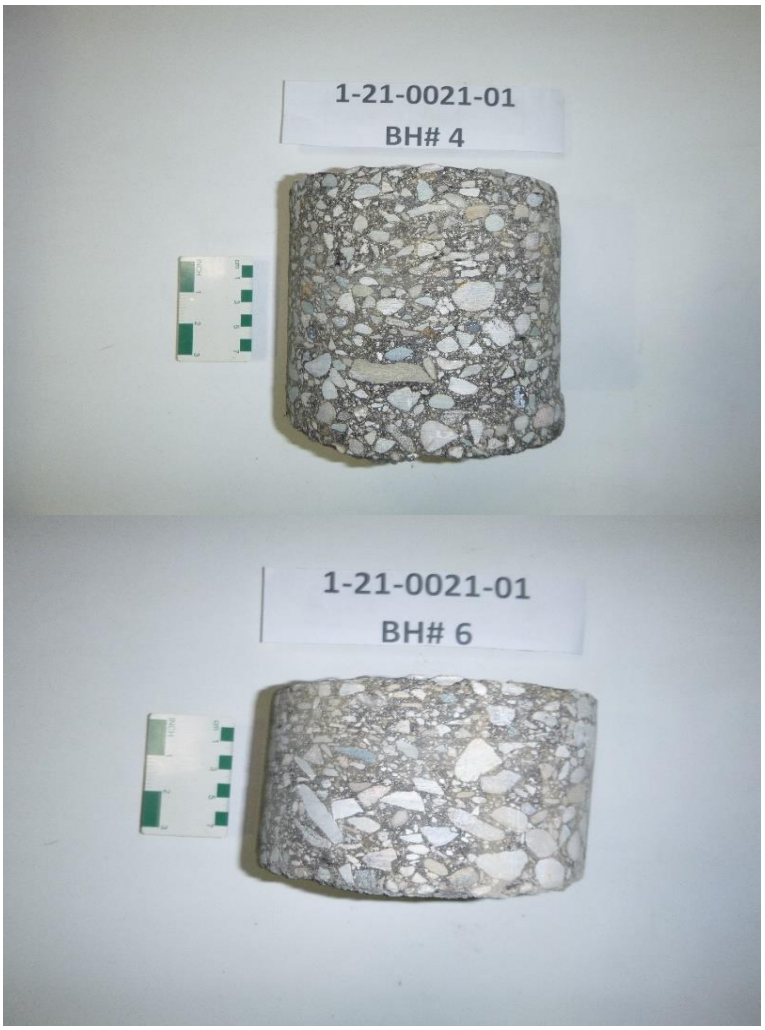
PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L

WATER CONTENT (%): 10 20 30

+^{3}, ×^{3}: Numbers refer to Sensitivity ○$^{3\%}$ STRAIN AT FAILURE

file: 1-21-0021 bh logs.gpj

ASPHALT CORE PHOTOGRAPHS AND DATA



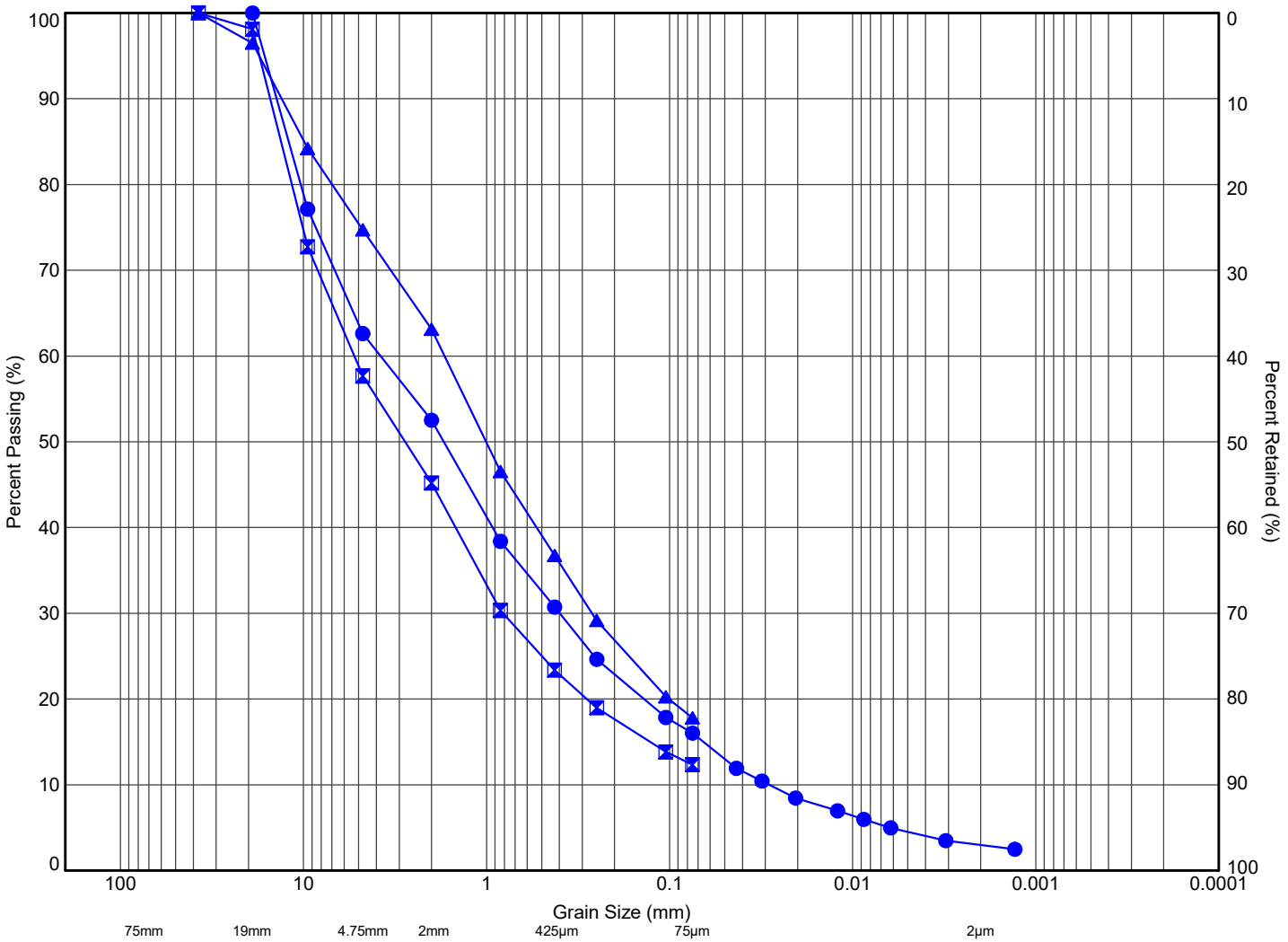
Borehole #4

Lift No.	Thickness (mm)
1	60
2	100
Total	160

Borehole #6

Lift No.	Thickness (mm)
1	30
2	70
Total	100

APPENDIX B
Laboratory Test Results



	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**1**	SS1	0.3	213.0	37	47	13	3	
⊠	**2**	SS1	0.3	212.6	42	46			*(12)*
▲	**6**	SS1	0.4	211.5	25	57			*(18)*

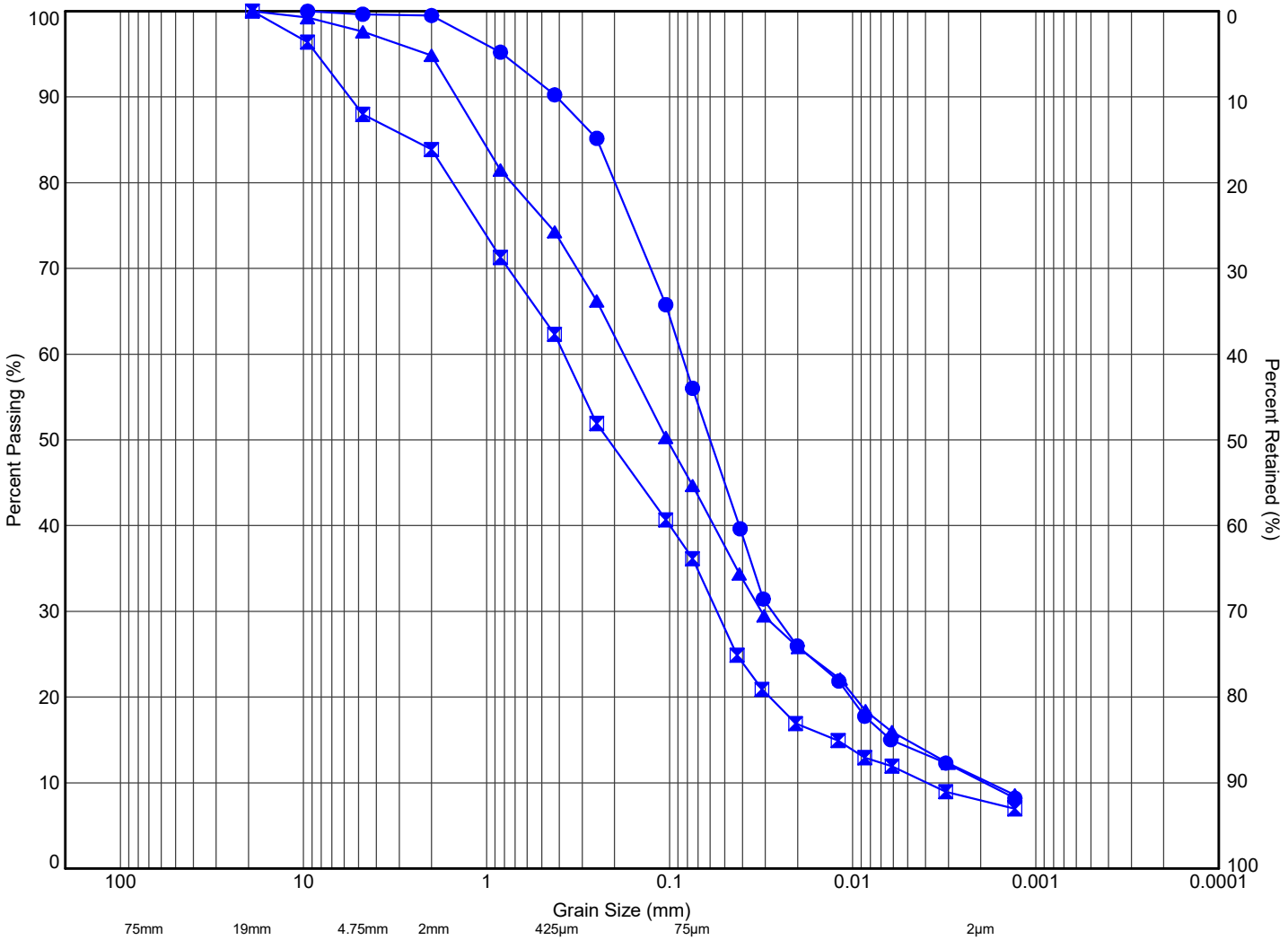
Terraprobe
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

GRAIN SIZE DISTRIBUTION

FIGURE B1:FILL_SAND AND GRAVEL TO GRAVELLY SAND

File No.: **1-21-0021-01**



	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**2**	SS2	0.9	212.0	0	44	46	10	
⊠	**3**	SS2	0.9	211.3	12	52	28	8	
▲	**5**	SS1	0.3	212.1	2	53	34	11	

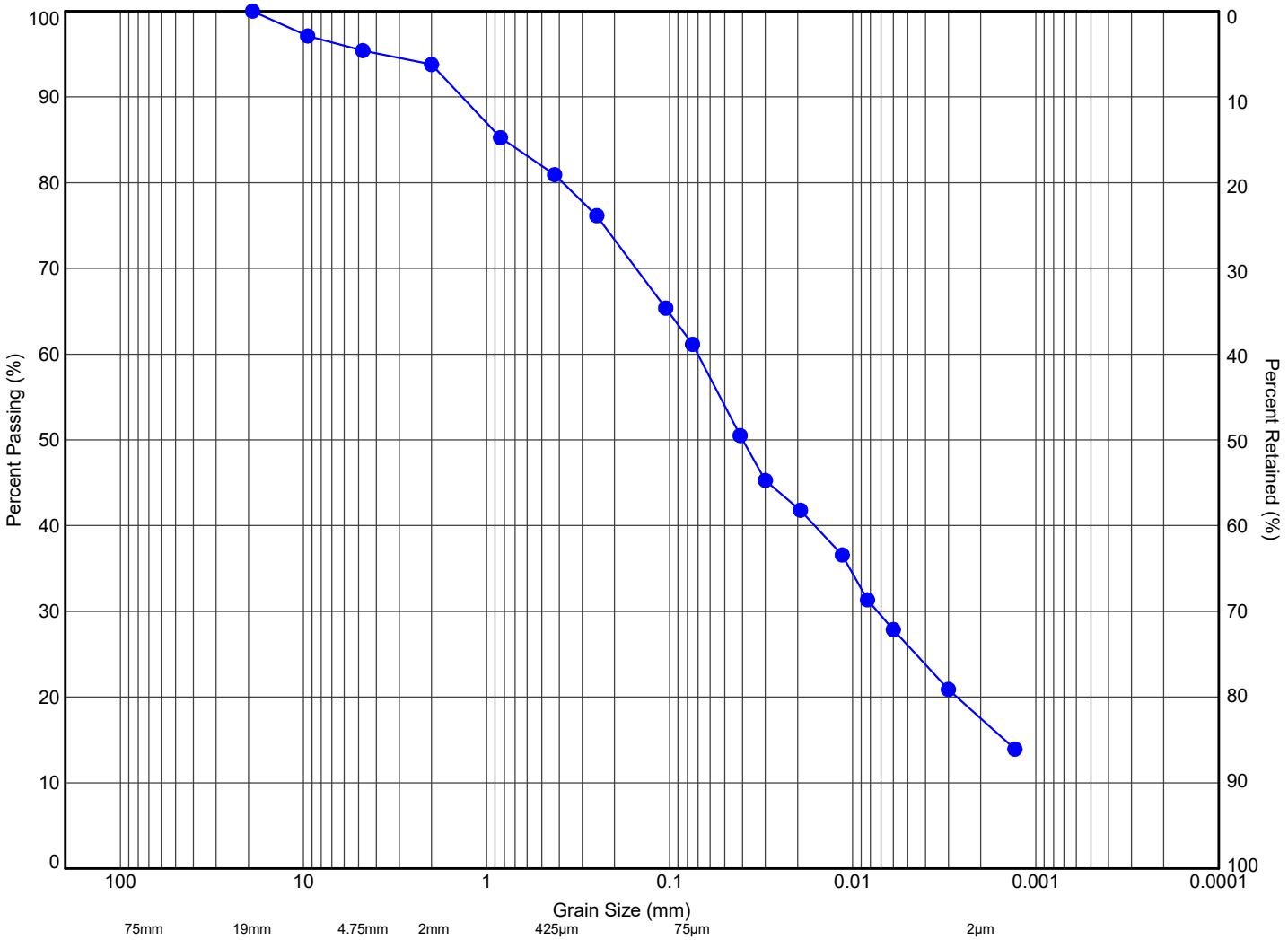
Terraprobe
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

GRAIN SIZE DISTRIBUTION

FIGURE B2:FILL_SILTY SAND TO SILT AND SAND

File No.: **1-21-0021-01**



	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**4**	SS4	2.6	209.9	5	33	44	18	

Terraprobe
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(905) 796-2650

Title:

GRAIN SIZE DISTRIBUTION

FIGURE B3:FILL_SILTY CLAY TO CLAYEY SILT

File No.: **1-21-0021-01**

APPENDIX C
Certificates of Analysis
(Chemical Analysis)

FINAL REPORT

CA40392-APR22 R1

1-21-0021, Ken William's, Brampton

Prepared for

Terraprobe Inc

FINAL REPORT

First Page

CLIENT DETAILS

Client	Terraprobe Inc
Address	11 Indell Lane Brampton, ON L6T 3Y3. Canada
Contact	Leila Baninajarian
Telephone	(905) 796-2650
Facsimile	(905) 796-2250
Email	lbaninajarian@terraprobe.ca
Project	1-21-0021, Ken William's, Brampton
Order Number	
Samples	Soil (4)

LABORATORY DETAILS

Project Specialist	Maarit Wolfe, Hon.B.Sc
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	705-652-2000
Facsimile	705-652-6365
Email	Maarit.Wolfe@sgs.com
SGS Reference	CA40392-APR22
Received	04/22/2022
Approved	05/02/2022
Report Number	CA40392-APR22 R1
Date Reported	05/02/2022

COMMENTS

CCME Method Compliance: Analyses were conducted using analytical procedures that comply with the Reference Method for the CWS for Petroleum Hydrocarbons in Soil and have been validated for use at the SGS laboratory, Lakefield, ON site.

Quality Compliance: Instrument performance / calibration quality criteria were met and extraction and analysis limits for holding times were met.

nC6 and nC10 response factors within 30% of response factor for toluene: YES

nC10, nC16 and nC34 response factors within 10% of the average response for the three compounds: YES

C50 response factors within 70% of nC10 + nC16 + nC34 average: YES

Linearity is within 15%: YES

F4G - gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
The results for F4 and F4G are both reported and the greater of the two values is to be used in application to the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

Benzo(b)fluoranthene results for comparison to the standard are reported as benzo(b+j)fluoranthene. Benzo(b)fluoranthene and benzo(j)fluoranthene co-elute and cannot be reported individually by the analytical method used.

Temperature of Sample upon Receipt: 9 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 028252

SIGNATORIES

Maarit Wolfe, Hon.B.Sc

TABLE OF CONTENTS

Client: Terraprobe Inc
Project: 1-21-0021, Ken William's, Brampton
Project Manager: Leila Baninajarian
Samplers: Leila B.

MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 1 - Agricultural/Other - UNDEFINED

Sample Number				13	14	15	16
Sample Name				BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
Sample Matrix				Soil	Soil	Soil	Soil
Sample Date				20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**Result**	**Result**	**Result**	**Result**
BTEX							
Benzene	µg/g	0.02	0.02	---	---	< 0.02	< 0.02
Ethylbenzene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Toluene	µg/g	0.05	0.2	---	---	< 0.05	< 0.05
Xylene (total)	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
m/p-xylene	µg/g	0.05		---	---	< 0.05	< 0.05
o-xylene	µg/g	0.05		---	---	< 0.05	< 0.05
Hydrides							
Antimony	µg/g	0.8	1	< 0.8	< 0.8	< 0.8	< 0.8
Arsenic	µg/g	0.5	11	2.7	3.1	3.8	3.3
Selenium	µg/g	0.7	1.2	< 0.7	< 0.7	< 0.7	< 0.7
Metals and Inorganics							
Moisture Content	%	no		7.1	10.6	9.7	13.6
Barium	µg/g	0.1	210	34	52	72	39
Beryllium	µg/g	0.02	2.5	0.18	0.28	0.53	0.38
Boron	µg/g	1	36	5	6	9	3
Cadmium	µg/g	0.05	1	0.06	0.05	0.09	0.10
Chromium	µg/g	0.5	67	9.7	9.4	18	13
Cobalt	µg/g	0.01	19	23	23	10	7.7
Copper	µg/g	0.1	62	21	25	26	19
Lead	µg/g	0.1	45	6.2	6.3	11	7.9
Molybdenum	µg/g	0.1	2	0.3	0.4	0.3	0.2

Client: Terraprobe Inc
Project: 1-21-0021, Ken William's, Brampton
Project Manager: Leila Baninajarian
Samplers: Leila B.

MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 1 - Agricultural/Other - UNDEFINED

				Sample Number	13	14	15	16
				Sample Name	BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
				Sample Matrix	Soil	Soil	Soil	Soil
				Sample Date	20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**		**Result**	**Result**	**Result**	**Result**
Metals and Inorganics (continued)								
Nickel	µg/g	0.5	37		11	12	21	12
Silver	µg/g	0.05	0.5		0.38	0.56	< 0.05	< 0.05
Thallium	µg/g	0.02	1		0.07	0.09	0.13	0.08
Uranium	µg/g	0.002	1.9		0.34	0.39	0.56	0.36
Vanadium	µg/g	3	86		16	16	26	23
Zinc	µg/g	0.7	290		35	34	57	31
Water Soluble Boron	µg/g	0.5			< 0.5	< 0.5	< 0.5	< 0.5
Other (ORP)								
Mercury	ug/g	0.05	0.16		< 0.05	< 0.05	< 0.05	< 0.05
Sodium Adsorption Ratio	No unit	0.2	1		23.6	8.4	5.6	12.8
SAR Calcium	mg/L	0.2			3.9	6.9	20.1	7.3
SAR Magnesium	mg/L	0.3			0.6	2.8	21.5	1.5
SAR Sodium	mg/L	0.1			190	104	152	144
Conductivity	mS/cm	0.002	0.47		1.0	0.63	0.90	0.81
pH	pH Units	0.05			8.38	826	8.19	8.07
Chromium VI	µg/g	0.2	0.66		< 0.2	< 0.2	< 0.2	< 0.2
Free Cyanide	µg/g	0.05	0.051		< 0.05	< 0.05	< 0.05	< 0.05

Client: Terraprobe Inc
Project: 1-21-0021, Ken William's, Brampton
Project Manager: Leila Baninajarian
Samplers: Leila B.

MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 1 - Agricultural/Other - UNDEFINED

Sample Number				13	14	15	16
Sample Name				BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
Sample Matrix				Soil	Soil	Soil	Soil
Sample Date				20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**Result**	**Result**	**Result**	**Result**
PAHs							
Acenaphthene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Acenaphthylene	µg/g	0.05	0.093	---	---	< 0.05	< 0.05
Anthracene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Benzo(a)anthracene	µg/g	0.05	0.095	---	---	< 0.05	< 0.05
Benzo(a)pyrene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Benzo(b+j)fluoranthene	µg/g	0.05	0.3	---	---	< 0.05	< 0.05
Benzo(ghi)perylene	µg/g	0.1	0.2	---	---	< 0.1	< 0.1
Benzo(k)fluoranthene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Chrysene	µg/g	0.05	0.18	---	---	< 0.05	< 0.05
Dibenzo(a,h)anthracene	µg/g	0.06	0.1	---	---	< 0.06	< 0.06
Fluoranthene	µg/g	0.05	0.24	---	---	0.07	< 0.05
Fluorene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.1	0.11	---	---	< 0.1	< 0.1
1-Methylnaphthalene	µg/g	0.05		---	---	< 0.05	< 0.05
2-Methylnaphthalene	µg/g	0.05		---	---	< 0.05	< 0.05
Methylnaphthalene, 2-(1-)	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Naphthalene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Phenanthrene	µg/g	0.05	0.19	---	---	0.07	< 0.05
Pyrene	µg/g	0.05	0.19	---	---	0.06	< 0.05

Client: Terraprobe Inc
Project: 1-21-0021, Ken William's, Brampton
Project Manager: Leila Baninajarian
Samplers: Leila B.

MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 1 - Agricultural/Other - UNDEFINED

Sample Number				13	14	15	16
Sample Name				BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
Sample Matrix				Soil	Soil	Soil	Soil
Sample Date				20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**Result**	**Result**	**Result**	**Result**
PCBs							
Polychlorinated Biphenyls (PCBs) - Total	µg/g	0.3	0.3	---	---	< 0.3	< 0.3
PHCs							
F1 (C6-C10)	µg/g	10	17	---	---	< 10	< 10
F1-BTEX (C6-C10)	µg/g	10	17	---	---	< 10	< 10
F2 (C10-C16)	µg/g	10	10	---	---	< 10	< 10
F3 (C16-C34)	µg/g	50	240	---	---	51	< 50
F4 (C34-C50)	µg/g	50	120	---	---	< 50	< 50
Chromatogram returned to baseline at nC50	Yes / No	no		22-Apr-22	---	YES	YES
SVOC Surrogates							
Surr Nitrobenzene-d5	Surr Rec %	no		---	---	99	96
Surr 2-Fluorobiphenyl	Surr Rec %	no		---	---	98	94
Surr 4-Terphenyl-d14	Surr Rec %	no		---	---	108	97
Surr 2-Fluorophenol	Surr Rec %	no		---	---	92	91
Surr Phenol-d6	Surr Rec %	no		---	---	104	102
Surr 2,4,6-Tribromophenol	Surr Rec %	no		---	---	73	70

Client: Terraprobe Inc
Project: 1-21-0021, Ken William's, Brampton
Project Manager: Leila Baninajarian
Samplers: Leila B.

MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 1 - Agricultural/Other - UNDEFINED

Sample Number				13	14	15	16
Sample Name				BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
Sample Matrix				Soil	Soil	Soil	Soil
Sample Date				20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**Result**	**Result**	**Result**	**Result**
THMs (VOC)							
Bromodichloromethane	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Bromoform	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Dibromochloromethane	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
VOC Surrogates							
Surr 1,2-Dichloroethane-d4	Surr Rec %	no		---	---	105	104
Surr 4-Bromofluorobenzene	Surr Rec %	no		---	---	94	94
Surr 2-Bromo-1-Chloropropane	Surr Rec %	no		---	---	89	89
VOCs							
Acetone	µg/g	0.5	0.5	---	---	< 0.5	< 0.5
Bromomethane	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Carbon tetrachloride	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Chlorobenzene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Chloroform	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Dichlorodifluoromethane	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
1,1-Dichloroethane	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
1,2-Dichloroethane	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
1,1-Dichloroethylene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
trans-1,2-Dichloroethylene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05

Client: Terraprobe Inc
Project: 1-21-0021, Ken William's, Brampton
Project Manager: Leila Baninajarian
Samplers: Leila B.

MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 1 - Agricultural/Other - UNDEFINED

Sample Number				13	14	15	16
Sample Name				BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
Sample Matrix				Soil	Soil	Soil	Soil
Sample Date				20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**Result**	**Result**	**Result**	**Result**
VOCs (continued)							
cis-1,2-Dichloroethylene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
1,2-Dichloropropane	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
cis-1,3-dichloropropene	µg/g	0.03		---	---	< 0.03	< 0.03
trans-1,3-dichloropropene	µg/g	0.03		---	---	< 0.03	< 0.03
1,3-dichloropropene (total)	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Ethylenedibromide	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
n-Hexane	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Methyl ethyl ketone	µg/g	0.5	0.5	---	---	< 0.5	< 0.5
Methyl isobutyl ketone	µg/g	0.5	0.5	---	---	< 0.5	< 0.5
Methyl-t-butyl Ether	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Methylene Chloride	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Styrene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Tetrachloroethylene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
1,1,1,2-Tetrachloroethane	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
1,1,2,2-Tetrachloroethane	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
1,1,1-Trichloroethane	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
1,1,2-Trichloroethane	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Trichloroethylene	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Trichlorofluoromethane	µg/g	0.05	0.05	---	---	< 0.05	< 0.05
Vinyl Chloride	µg/g	0.02	0.02	---	---	< 0.02	< 0.02

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	REG153 / SOIL / COARSE - TABLE 1 - Agricultural/Other - UNDEFINED L1
BH6-Granular				
Cobalt	EPA 3050/EPA 200.8	µg/g	23	19
Conductivity	EPA 6010/SM 2510	mS/cm	1.0	0.47
Sodium Adsorption Ratio	MOE 4696e01/EPA 6010	No unit	23.6	1
BH4-Granular				
Cobalt	EPA 3050/EPA 200.8	µg/g	23	19
Silver	EPA 3050/EPA 200.8	µg/g	0.56	0.5
Conductivity	EPA 6010/SM 2510	mS/cm	0.63	0.47
Sodium Adsorption Ratio	MOE 4696e01/EPA 6010	No unit	8.4	1
BH4-SS2 (2'-4')				
Conductivity	EPA 6010/SM 2510	mS/cm	0.90	0.47
Sodium Adsorption Ratio	MOE 4696e01/EPA 6010	No unit	5.6	1
BH2-SS2 (2'-4')				
Conductivity	EPA 6010/SM 2510	mS/cm	0.81	0.47
Sodium Adsorption Ratio	MOE 4696e01/EPA 6010	No unit	12.8	1

QC SUMMARY

Conductivity

Method: EPA 6010/SM 2510 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Conductivity	EWL0495-APR22	mS/cm	0.002	<0.002	0	10	99	90	110	NA		

Cyanide by SFA

Method: SM 4500 I Internal ref.: ME-CA-IENVISFA-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Free Cyanide	SKA5091-APR22	µg/g	0.05	<0.05	ND	20	97	80	120	88	75	125

Hexavalent Chromium by SFA

Method: EPA218.6/EPA3060A I Internal ref.: ME-CA-IENVISKA-LAK-AN-012

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chromium VI	SKA5093-APR22	ug/g	0.2	<0.2	ND	20	93	80	120	98	75	125

QC SUMMARY

Mercury by CVAAS

Method: EPA 7471A/EPA 245 | Internal ref.: ME-CA-IENVISPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Mercury	EMS0186-APR22	ug/g	0.05	<0.05	17	20	93	80	120	103	70	130

Metals in aqueous samples - ICP-OES

Method: MOE 4696e01/EPA 6010 | Internal ref.: ME-CA-IENVISPE-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
SAR Calcium	ESG0075-APR22	mg/L	0.2	<0.09	1	20	108	80	120	93	70	130
SAR Magnesium	ESG0075-APR22	mg/L	0.3	<0.02	2	20	105	80	120	93	70	130
SAR Sodium	ESG0075-APR22	mg/L	0.1	<0.15	1	20	104	80	120	88	70	130

QC SUMMARY

Metals in Soil - Aqua-regia/ICP-MS

Method: EPA 3050/EPA 200.8 | Internal ref.: ME-CA-[ENVISPE-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver	EMS0186-APR22	ug/g	0.05	<0.05	ND	20	97	70	130	101	70	130
Arsenic	EMS0186-APR22	µg/g	0.5	<0.5	7	20	98	70	130	93	70	130
Barium	EMS0186-APR22	ug/g	0.1	<0.1	4	20	103	70	130	106	70	130
Beryllium	EMS0186-APR22	µg/g	0.02	<0.02	2	20	93	70	130	93	70	130
Boron	EMS0186-APR22	µg/g	1	<1	4	20	108	70	130	99	70	130
Cadmium	EMS0186-APR22	ug/g	0.05	<0.05	ND	20	104	70	130	101	70	130
Cobalt	EMS0186-APR22	µg/g	0.01	<0.01	2	20	97	70	130	107	70	130
Chromium	EMS0186-APR22	µg/g	0.5	<0.5	13	20	98	70	130	105	70	130
Copper	EMS0186-APR22	µg/g	0.1	<0.1	5	20	98	70	130	99	70	130
Molybdenum	EMS0186-APR22	µg/g	0.1	<0.1	8	20	95	70	130	102	70	130
Nickel	EMS0186-APR22	ug/g	0.5	<0.5	4	20	94	70	130	107	70	130
Lead	EMS0186-APR22	ug/g	0.1	<0.1	7	20	101	70	130	105	70	130
Antimony	EMS0186-APR22	µg/g	0.8	<0.8	ND	20	99	70	130	110	70	130
Selenium	EMS0186-APR22	µg/g	0.7	<0.7	ND	20	102	70	130	102	70	130
Thallium	EMS0186-APR22	µg/g	0.02	<0.02	ND	20	101	70	130	104	70	130
Uranium	EMS0186-APR22	µg/g	0.002	<0.002	10	20	97	70	130	107	70	130
Vanadium	EMS0186-APR22	µg/g	3	<3	5	20	97	70	130	110	70	130
Zinc	EMS0186-APR22	µg/g	0.7	<0.7	7	20	97	70	130	101	70	130

QC SUMMARY

Petroleum Hydrocarbons (F1)

Method: CCME Tier 1 I Internal ref.: ME-CA-[ENV]GC-LAK-AN-010

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
F1 (C6-C10)	GCM0511-APR22	µg/g	10	<10	ND	30	98	80	120	90	60	140

Petroleum Hydrocarbons (F2-F4)

Method: CCME Tier 1 I Internal ref.: ME-CA-[ENV]GC-LAK-AN-010

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
F2 (C10-C16)	GCM0487-APR22	µg/g	10	<10	ND	30	115	80	120	112	60	140
F3 (C16-C34)	GCM0487-APR22	µg/g	50	<50	ND	30	115	80	120	112	60	140
F4 (C34-C50)	GCM0487-APR22	µg/g	50	<50	ND	30	115	80	120	112	60	140

QC SUMMARY

pH

Method: SM 4500 I Internal ref.: ME-CA-[ENVIEWL-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	ARD0126-APR22	pH Units	0.05		0	20	100	80	120			

Polychlorinated Biphenyls

Method: EPA 3570/8082A/8270C I Internal ref.: ME-CA-[ENVIGC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Polychlorinated Biphenyls (PCBs) - Total	GCM0436-APR22	µg/g	0.3	< 0.3	ND	40	79	60	140	71	60	140

QC SUMMARY

Semi-Volatile Organics

Method: EPA 3541/8270D | Internal ref.: ME-CA-[ENV]GC-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1-Methylnaphthalene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	93	50	140	93	50	140
2-Methylnaphthalene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	93	50	140	93	50	140
Acenaphthene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	100	50	140	96	50	140
Acenaphthylene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	92	50	140	89	50	140
Anthracene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	95	50	140	90	50	140
Benzo(a)anthracene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	95	50	140	91	50	140
Benzo(a)pyrene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	91	50	140	89	50	140
Benzo(b+j)fluoranthene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	93	50	140	91	50	140
Benzo(ghi)perylene	GCM0458-APR22	µg/g	0.1	< 0.1	ND	40	101	50	140	95	50	140
Benzo(k)fluoranthene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	99	50	140	95	50	140
Chrysene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	99	50	140	95	50	140
Dibenzo(a,h)anthracene	GCM0458-APR22	µg/g	0.06	< 0.06	ND	40	97	50	140	91	50	140
Fluoranthene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	97	50	140	92	50	140
Fluorene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	102	50	140	97	50	140
Indeno(1,2,3-cd)pyrene	GCM0458-APR22	µg/g	0.1	< 0.1	ND	40	102	50	140	97	50	140
Naphthalene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	96	50	140	94	50	140
Phenanthrene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	96	50	140	90	50	140
Pyrene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	95	50	140	92	50	140

QC SUMMARY

Volatile Organics

Method: EPA 5035A/5030B/8260C | Internal ref.: ME-CA-IENVIGC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1,1,1,2-Tetrachloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	94	50	140
1,1,1-Trichloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	60	130	95	50	140
1,1,2,2-Tetrachloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	98	50	140
1,1,2-Trichloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	96	50	140
1,1-Dichloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	96	50	140
1,1-Dichloroethylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	60	130	94	50	140
1,2-Dichlorobenzene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	95	50	140
1,2-Dichloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	98	50	140
1,2-Dichloropropane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	96	50	140
1,3-Dichlorobenzene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	94	50	140
1,4-Dichlorobenzene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	60	130	94	50	140
Acetone	GCM0510-APR22	µg/g	0.5	< 0.5	ND	50	90	50	140	89	50	140
Benzene	GCM0510-APR22	µg/g	0.02	< 0.02	ND	50	90	60	130	95	50	140
Bromodichloromethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	93	50	140
Bromoform	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	92	50	140
Bromomethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	50	140	85	50	140
Carbon tetrachloride	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	92	50	140
Chlorobenzene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	95	50	140
Chloroform	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	95	50	140
cis-1,2-Dichloroethylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	94	50	140

QC SUMMARY

Volatile Organics (continued)

Method: EPA 5035A/5030B/8260C | Internal ref.: ME-CA-IENVIGC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
cis-1,3-dichloropropene	GCM0510-APR22	µg/g	0.03	< 0.03	ND	50	90	60	130	89	50	140
Dibromochloromethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	92	60	130	95	50	140
Dichlorodifluoromethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	88	50	140	78	50	140
Ethylbenzene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	60	130	96	50	140
Ethylenedibromide	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	96	50	140
n-Hexane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	86	60	130	62	50	140
m/p-xylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	95	50	140
Methyl ethyl ketone	GCM0510-APR22	µg/g	0.5	< 0.5	ND	50	90	50	140	98	50	140
Methyl isobutyl ketone	GCM0510-APR22	µg/g	0.5	< 0.5	ND	50	92	50	140	102	50	140
Methyl-t-butyl Ether	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	95	60	130	92	50	140
Methylene Chloride	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	84	50	140
o-xylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	60	130	97	50	140
Styrene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	95	50	140
Tetrachloroethylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	92	50	140
Toluene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	95	50	140
trans-1,2-Dichloroethylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	83	50	140
trans-1,3-dichloropropene	GCM0510-APR22	µg/g	0.03	< 0.03	ND	50	91	60	130	90	50	140
Trichloroethylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	94	50	140
Trichlorofluoromethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	50	140	93	50	140
Vinyl Chloride	GCM0510-APR22	µg/g	0.02	< 0.02	ND	50	90	50	140	93	50	140

QC SUMMARY

Water Soluble Boron

Method: O.Reg. 15 3/04 | Internal ref.: ME-CA-[ENV] SPE-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Water Soluble Boron	ESG0068-APR22	µg/g	0.5	<0.5	ND	20	106	80	120	NV	70	130

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.

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

Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

Duplicate Qualifier: for duplicates as the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.

LEGEND

FOOTNOTES

NSS	Insufficient sample for analysis.
RL	Reporting Limit.
↑	Reporting limit raised.
↓	Reporting limit lowered.
NA	The sample was not analysed for this analyte
ND	Non Detect

Data reported represent the sample as submitted to SGS. Solid samples expressed on a dry weight basis.
"Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.
Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality" published by the Ministry and dated March 9, 2004 as amended.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated.

SGS Canada Inc. statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

This report supersedes all previous versions.

-- End of Analytical Report --

FINAL REPORT

CA40392-APR22 R1

1-21-0021, Ken William's, Brampton

Prepared for

Terraprobe Inc

FINAL REPORT

First Page

CLIENT DETAILS

Client	Terraprobe Inc
Address	11 Indell Lane Brampton, ON L6T 3Y3. Canada
Contact	Leila Baninajarian
Telephone	(905) 796-2650
Facsimile	(905) 796-2250
Email	lbaninajarian@terraprobe.ca
Project	1-21-0021, Ken William's, Brampton
Order Number	
Samples	Soil (4)

LABORATORY DETAILS

Project Specialist	Maarit Wolfe, Hon.B.Sc
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	705-652-2000
Facsimile	705-652-6365
Email	Maarit.Wolfe@sgs.com
SGS Reference	CA40392-APR22
Received	04/22/2022
Approved	05/02/2022
Report Number	CA40392-APR22 R1
Date Reported	05/02/2022

COMMENTS

CCME Method Compliance: Analyses were conducted using analytical procedures that comply with the Reference Method for the CWS for Petroleum Hydrocarbons in Soil and have been validated for use at the SGS laboratory, Lakefield, ON site.

Quality Compliance: Instrument performance / calibration quality criteria were met and extraction and analysis limits for holding times were met.

nC6 and nC10 response factors within 30% of response factor for toluene: YES

nC10, nC16 and nC34 response factors within 10% of the average response for the three compounds: YES

C50 response factors within 70% of nC10 + nC16 + nC34 average: YES

Linearity is within 15%: YES

F4G - gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
The results for F4 and F4G are both reported and the greater of the two values is to be used in application to the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

Benzo(b)fluoranthene results for comparison to the standard are reported as benzo(b+j)fluoranthene. Benzo(b)fluoranthene and benzo(j)fluoranthene co-elute and cannot be reported individually by the analytical method used.

Temperature of Sample upon Receipt: 9 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 028252

SIGNATORIES

Maarit Wolfe, Hon.B.Sc

TABLE OF CONTENTS

Client: Terraprobe Inc
Project: 1-21-0021, Ken William's, Brampton
Project Manager: Leila Baninajarian
Samplers: Leila B.

MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 2 - Industrial/Commercial - UNDEFINED

L2 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

				Sample Number	13	14	15	16
				Sample Name	BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
				Sample Matrix	Soil	Soil	Soil	Soil
				Sample Date	20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**
BTEX								
Benzene	µg/g	0.02	0.32	0.21	---	---	< 0.02	< 0.02
Ethylbenzene	µg/g	0.05	1.1	1.1	---	---	< 0.05	< 0.05
Toluene	µg/g	0.05	6.4	2.3	---	---	< 0.05	< 0.05
Xylene (total)	µg/g	0.05	26	3.1	---	---	< 0.05	< 0.05
m/p-xylene	µg/g	0.05			---	---	< 0.05	< 0.05
o-xylene	µg/g	0.05			---	---	< 0.05	< 0.05
Hydrides								
Antimony	µg/g	0.8	40	7.5	< 0.8	< 0.8	< 0.8	< 0.8
Arsenic	µg/g	0.5	18	18	2.7	3.1	3.8	3.3
Selenium	µg/g	0.7	5.5	2.4	< 0.7	< 0.7	< 0.7	< 0.7
Metals and Inorganics								
Moisture Content	%	no			7.1	10.6	9.7	13.6
Barium	µg/g	0.1	670	390	34	52	72	39
Beryllium	µg/g	0.02	8	4	0.18	0.28	0.53	0.38
Boron	µg/g	1	120	120	5	6	9	3
Cadmium	µg/g	0.05	1.9	1.2	0.06	0.05	0.09	0.10
Chromium	µg/g	0.5	160	160	9.7	9.4	18	13
Cobalt	µg/g	0.01	80	22	23	23	10	7.7
Copper	µg/g	0.1	230	140	21	25	26	19
Lead	µg/g	0.1	120	120	6.2	6.3	11	7.9
Molybdenum	µg/g	0.1	40	6.9	0.3	0.4	0.3	0.2

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MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 2 - Industrial/Commercial - UNDEFINED

L2 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

				Sample Number	13	14	15	16
				Sample Name	BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
				Sample Matrix	Soil	Soil	Soil	Soil
				Sample Date	20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**
Metals and Inorganics (continued)								
Nickel	µg/g	0.5	270	100	11	12	21	12
Silver	µg/g	0.05	40	20	0.38	0.56	< 0.05	< 0.05
Thallium	µg/g	0.02	3.3	1	0.07	0.09	0.13	0.08
Uranium	µg/g	0.002	33	23	0.34	0.39	0.56	0.36
Vanadium	µg/g	3	86	86	16	16	26	23
Zinc	µg/g	0.7	340	340	35	34	57	31
Water Soluble Boron	µg/g	0.5	2	1.5	< 0.5	< 0.5	< 0.5	< 0.5
Other (ORP)								
Mercury	ug/g	0.05	3.9	0.27	< 0.05	< 0.05	< 0.05	< 0.05
Sodium Adsorption Ratio	No unit	0.2	12	5	23.6	8.4	5.6	12.8
SAR Calcium	mg/L	0.2			3.9	6.9	20.1	7.3
SAR Magnesium	mg/L	0.3			0.6	2.8	21.5	1.5
SAR Sodium	mg/L	0.1			190	104	152	144
Conductivity	mS/cm	0.002	1.4	0.7	1.0	0.63	0.90	0.81
pH	pH Units	0.05			8.38	826	8.19	8.07
Chromium VI	µg/g	0.2	8	8	< 0.2	< 0.2	< 0.2	< 0.2
Free Cyanide	µg/g	0.05	0.051	0.051	< 0.05	< 0.05	< 0.05	< 0.05

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MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 2 - Industrial/Commercial - UNDEFINED

L2 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

				Sample Number	13	14	15	16
				Sample Name	BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
				Sample Matrix	Soil	Soil	Soil	Soil
				Sample Date	20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**
PAHs								
Acenaphthene	µg/g	0.05	21	7.9	---	---	< 0.05	< 0.05
Acenaphthylene	µg/g	0.05	0.15	0.15	---	---	< 0.05	< 0.05
Anthracene	µg/g	0.05	0.67	0.67	---	---	< 0.05	< 0.05
Benzo(a)anthracene	µg/g	0.05	0.96	0.5	---	---	< 0.05	< 0.05
Benzo(a)pyrene	µg/g	0.05	0.3	0.3	---	---	< 0.05	< 0.05
Benzo(b+j)fluoranthene	µg/g	0.05	0.96	0.78	---	---	< 0.05	< 0.05
Benzo(ghi)perylene	µg/g	0.1	9.6	6.6	---	---	< 0.1	< 0.1
Benzo(k)fluoranthene	µg/g	0.05	0.96	0.78	---	---	< 0.05	< 0.05
Chrysene	µg/g	0.05	9.6	7	---	---	< 0.05	< 0.05
Dibenzo(a,h)anthracene	µg/g	0.06	0.1	0.1	---	---	< 0.06	< 0.06
Fluoranthene	µg/g	0.05	9.6	0.69	---	---	0.07	< 0.05
Fluorene	µg/g	0.05	62	62	---	---	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.1	0.76	0.38	---	---	< 0.1	< 0.1
1-Methylnaphthalene	µg/g	0.05			---	---	< 0.05	< 0.05
2-Methylnaphthalene	µg/g	0.05			---	---	< 0.05	< 0.05
Methylnaphthalene, 2-(1-)	µg/g	0.05	30	0.99	---	---	< 0.05	< 0.05
Naphthalene	µg/g	0.05	9.6	0.6	---	---	< 0.05	< 0.05
Phenanthrene	µg/g	0.05	12	6.2	---	---	0.07	< 0.05
Pyrene	µg/g	0.05	96	78	---	---	0.06	< 0.05

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MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 2 - Industrial/Commercial - UNDEFINED

L2 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

				Sample Number	13	14	15	16
				Sample Name	BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
				Sample Matrix	Soil	Soil	Soil	Soil
				Sample Date	20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**
PCBs								
Polychlorinated Biphenyls (PCBs) - Total	µg/g	0.3	1.1	0.35	---	---	< 0.3	< 0.3
PHCs								
F1 (C6-C10)	µg/g	10	55	55	---	---	< 10	< 10
F1-BTEX (C6-C10)	µg/g	10	55	55	---	---	< 10	< 10
F2 (C10-C16)	µg/g	10	230	98	---	---	< 10	< 10
F3 (C16-C34)	µg/g	50	1700	300	---	---	51	< 50
F4 (C34-C50)	µg/g	50	3300	2800	---	---	< 50	< 50
Chromatogram returned to baseline at nC50	Yes / No	no			22-Apr-22	---	YES	YES
SVOC Surrogates								
Surr Nitrobenzene-d5	Surr Rec %	no			---	---	99	96
Surr 2-Fluorobiphenyl	Surr Rec %	no			---	---	98	94
Surr 4-Terphenyl-d14	Surr Rec %	no			---	---	108	97
Surr 2-Fluorophenol	Surr Rec %	no			---	---	92	91
Surr Phenol-d6	Surr Rec %	no			---	---	104	102
Surr 2,4,6-Tribromophenol	Surr Rec %	no			---	---	73	70

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MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 2 - Industrial/Commercial - UNDEFINED

L2 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

				Sample Number	13	14	15	16
				Sample Name	BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
				Sample Matrix	Soil	Soil	Soil	Soil
				Sample Date	20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**
THMs (VOC)								
Bromodichloromethane	µg/g	0.05	1.5	1.5	---	---	< 0.05	< 0.05
Bromoform	µg/g	0.05	0.61	0.27	---	---	< 0.05	< 0.05
Dibromochloromethane	µg/g	0.05	2.3	2.3	---	---	< 0.05	< 0.05
VOC Surrogates								
Surr 1,2-Dichloroethane-d4	Surr Rec %	no			---	---	105	104
Surr 4-Bromofluorobenzene	Surr Rec %	no			---	---	94	94
Surr 2-Bromo-1-Chloropropane	Surr Rec %	no			---	---	89	89
VOCs								
Acetone	µg/g	0.5	16	16	---	---	< 0.5	< 0.5
Bromomethane	µg/g	0.05	0.05	0.05	---	---	< 0.05	< 0.05
Carbon tetrachloride	µg/g	0.05	0.21	0.05	---	---	< 0.05	< 0.05
Chlorobenzene	µg/g	0.05	2.4	2.4	---	---	< 0.05	< 0.05
Chloroform	µg/g	0.05	0.47	0.05	---	---	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/g	0.05	1.2	1.2	---	---	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/g	0.05	9.6	4.8	---	---	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/g	0.05	0.2	0.083	---	---	< 0.05	< 0.05
Dichlorodifluoromethane	µg/g	0.05	16	16	---	---	< 0.05	< 0.05
1,1-Dichloroethane	µg/g	0.05	0.47	0.47	---	---	< 0.05	< 0.05
1,2-Dichloroethane	µg/g	0.05	0.05	0.05	---	---	< 0.05	< 0.05
1,1-Dichloroethylene	µg/g	0.05	0.064	0.05	---	---	< 0.05	< 0.05
trans-1,2-Dichloroethylene	µg/g	0.05	1.3	0.084	---	---	< 0.05	< 0.05

Client: Terraprobe Inc
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Project Manager: Leila Baninajarian
Samplers: Leila B.

MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 2 - Industrial/Commercial - UNDEFINED

L2 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

				Sample Number	13	14	15	16
				Sample Name	BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
				Sample Matrix	Soil	Soil	Soil	Soil
				Sample Date	20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**
VOCs (continued)								
cis-1,2-Dichloroethylene	µg/g	0.05	1.9	1.9	---	---	< 0.05	< 0.05
1,2-Dichloropropane	µg/g	0.05	0.16	0.05	---	---	< 0.05	< 0.05
cis-1,3-dichloropropene	µg/g	0.03			---	---	< 0.03	< 0.03
trans-1,3-dichloropropene	µg/g	0.03			---	---	< 0.03	< 0.03
1,3-dichloropropene (total)	µg/g	0.05	0.059	0.05	---	---	< 0.05	< 0.05
Ethylenedibromide	µg/g	0.05	0.05	0.05	---	---	< 0.05	< 0.05
n-Hexane	µg/g	0.05	46	2.8	---	---	< 0.05	< 0.05
Methyl ethyl ketone	µg/g	0.5	70	16	---	---	< 0.5	< 0.5
Methyl isobutyl ketone	µg/g	0.5	31	1.7	---	---	< 0.5	< 0.5
Methyl-t-butyl Ether	µg/g	0.05	1.6	0.75	---	---	< 0.05	< 0.05
Methylene Chloride	µg/g	0.05	1.6	0.1	---	---	< 0.05	< 0.05
Styrene	µg/g	0.05	34	0.7	---	---	< 0.05	< 0.05
Tetrachloroethylene	µg/g	0.05	1.9	0.28	---	---	< 0.05	< 0.05
1,1,1,2-Tetrachloroethane	µg/g	0.05	0.087	0.058	---	---	< 0.05	< 0.05
1,1,2,2-Tetrachloroethane	µg/g	0.05	0.05	0.05	---	---	< 0.05	< 0.05
1,1,1-Trichloroethane	µg/g	0.05	6.1	0.38	---	---	< 0.05	< 0.05
1,1,2-Trichloroethane	µg/g	0.05	0.05	0.05	---	---	< 0.05	< 0.05
Trichloroethylene	µg/g	0.05	0.55	0.061	---	---	< 0.05	< 0.05
Trichlorofluoromethane	µg/g	0.05	4	4	---	---	< 0.05	< 0.05
Vinyl Chloride	µg/g	0.02	0.032	0.02	---	---	< 0.02	< 0.02

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	REG153 / SOIL / COARSE - TABLE 2 - Industrial/Commercial - UNDEFINED L1	REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED L2
BH6-Granular					
Cobalt	EPA 3050/EPA 200.8	µg/g	23		22
Conductivity	EPA 6010/SM 2510	mS/cm	1.0		0.7
Sodium Adsorption Ratio	MOE 4696e01/EPA 6010	No unit	23.6	12	5
BH4-Granular					
Cobalt	EPA 3050/EPA 200.8	µg/g	23		22
Sodium Adsorption Ratio	MOE 4696e01/EPA 6010	No unit	8.4		5
BH4-SS2 (2'-4')					
Conductivity	EPA 6010/SM 2510	mS/cm	0.90		0.7
Sodium Adsorption Ratio	MOE 4696e01/EPA 6010	No unit	5.6		5
BH2-SS2 (2'-4')					
Conductivity	EPA 6010/SM 2510	mS/cm	0.81		0.7
Sodium Adsorption Ratio	MOE 4696e01/EPA 6010	No unit	12.8	12	5

QC SUMMARY

Conductivity

Method: EPA 6010/SM 2510 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Conductivity	EWL0495-APR22	mS/cm	0.002	<0.002	0	10	99	90	110	NA		

Cyanide by SFA

Method: SM 4500 I Internal ref.: ME-CA-IENVISFA-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Free Cyanide	SKA5091-APR22	µg/g	0.05	<0.05	ND	20	97	80	120	88	75	125

Hexavalent Chromium by SFA

Method: EPA218.6/EPA3060A I Internal ref.: ME-CA-IENVISKA-LAK-AN-012

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chromium VI	SKA5093-APR22	ug/g	0.2	<0.2	ND	20	93	80	120	98	75	125

QC SUMMARY

Mercury by CVAAS

Method: EPA 7471A/EPA 245 | Internal ref.: ME-CA-IENVISPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Mercury	EMS0186-APR22	ug/g	0.05	<0.05	17	20	93	80	120	103	70	130

Metals in aqueous samples - ICP-OES

Method: MOE 4696e01/EPA 6010 | Internal ref.: ME-CA-IENVISPE-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
SAR Calcium	ESG0075-APR22	mg/L	0.2	<0.09	1	20	108	80	120	93	70	130
SAR Magnesium	ESG0075-APR22	mg/L	0.3	<0.02	2	20	105	80	120	93	70	130
SAR Sodium	ESG0075-APR22	mg/L	0.1	<0.15	1	20	104	80	120	88	70	130

QC SUMMARY

Metals in Soil - Aqua-regia/ICP-MS

Method: EPA 3050/EPA 200.8 | Internal ref.: ME-CA-[ENVISPE-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver	EMS0186-APR22	ug/g	0.05	<0.05	ND	20	97	70	130	101	70	130
Arsenic	EMS0186-APR22	µg/g	0.5	<0.5	7	20	98	70	130	93	70	130
Barium	EMS0186-APR22	ug/g	0.1	<0.1	4	20	103	70	130	106	70	130
Beryllium	EMS0186-APR22	µg/g	0.02	<0.02	2	20	93	70	130	93	70	130
Boron	EMS0186-APR22	µg/g	1	<1	4	20	108	70	130	99	70	130
Cadmium	EMS0186-APR22	ug/g	0.05	<0.05	ND	20	104	70	130	101	70	130
Cobalt	EMS0186-APR22	µg/g	0.01	<0.01	2	20	97	70	130	107	70	130
Chromium	EMS0186-APR22	µg/g	0.5	<0.5	13	20	98	70	130	105	70	130
Copper	EMS0186-APR22	µg/g	0.1	<0.1	5	20	98	70	130	99	70	130
Molybdenum	EMS0186-APR22	µg/g	0.1	<0.1	8	20	95	70	130	102	70	130
Nickel	EMS0186-APR22	ug/g	0.5	<0.5	4	20	94	70	130	107	70	130
Lead	EMS0186-APR22	ug/g	0.1	<0.1	7	20	101	70	130	105	70	130
Antimony	EMS0186-APR22	µg/g	0.8	<0.8	ND	20	99	70	130	110	70	130
Selenium	EMS0186-APR22	µg/g	0.7	<0.7	ND	20	102	70	130	102	70	130
Thallium	EMS0186-APR22	µg/g	0.02	<0.02	ND	20	101	70	130	104	70	130
Uranium	EMS0186-APR22	µg/g	0.002	<0.002	10	20	97	70	130	107	70	130
Vanadium	EMS0186-APR22	µg/g	3	<3	5	20	97	70	130	110	70	130
Zinc	EMS0186-APR22	µg/g	0.7	<0.7	7	20	97	70	130	101	70	130

QC SUMMARY

Petroleum Hydrocarbons (F1)

Method: CCME Tier 1 I Internal ref.: ME-CA-[ENV]GC-LAK-AN-010

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
F1 (C6-C10)	GCM0511-APR22	µg/g	10	<10	ND	30	98	80	120	90	60	140

Petroleum Hydrocarbons (F2-F4)

Method: CCME Tier 1 I Internal ref.: ME-CA-[ENV]GC-LAK-AN-010

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
F2 (C10-C16)	GCM0487-APR22	µg/g	10	<10	ND	30	115	80	120	112	60	140
F3 (C16-C34)	GCM0487-APR22	µg/g	50	<50	ND	30	115	80	120	112	60	140
F4 (C34-C50)	GCM0487-APR22	µg/g	50	<50	ND	30	115	80	120	112	60	140

QC SUMMARY

pH

Method: SM 4500 I Internal ref.: ME-CA-[ENVIEWL-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	ARD0126-APR22	pH Units	0.05		0	20	100	80	120			

Polychlorinated Biphenyls

Method: EPA 3570/8082A/8270C I Internal ref.: ME-CA-[ENVIGC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Polychlorinated Biphenyls (PCBs) - Total	GCM0436-APR22	µg/g	0.3	< 0.3	ND	40	79	60	140	71	60	140

QC SUMMARY

Semi-Volatile Organics

Method: EPA 3541/8270D | Internal ref.: ME-CA-[ENV]GC-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1-Methylnaphthalene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	93	50	140	93	50	140
2-Methylnaphthalene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	93	50	140	93	50	140
Acenaphthene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	100	50	140	96	50	140
Acenaphthylene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	92	50	140	89	50	140
Anthracene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	95	50	140	90	50	140
Benzo(a)anthracene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	95	50	140	91	50	140
Benzo(a)pyrene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	91	50	140	89	50	140
Benzo(b+j)fluoranthene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	93	50	140	91	50	140
Benzo(ghi)perylene	GCM0458-APR22	µg/g	0.1	< 0.1	ND	40	101	50	140	95	50	140
Benzo(k)fluoranthene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	99	50	140	95	50	140
Chrysene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	99	50	140	95	50	140
Dibenzo(a,h)anthracene	GCM0458-APR22	µg/g	0.06	< 0.06	ND	40	97	50	140	91	50	140
Fluoranthene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	97	50	140	92	50	140
Fluorene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	102	50	140	97	50	140
Indeno(1,2,3-cd)pyrene	GCM0458-APR22	µg/g	0.1	< 0.1	ND	40	102	50	140	97	50	140
Naphthalene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	96	50	140	94	50	140
Phenanthrene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	96	50	140	90	50	140
Pyrene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	95	50	140	92	50	140

QC SUMMARY

Volatile Organics

Method: EPA 5035A/5030B/8260C | Internal ref.: ME-CA-IENVIGC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1,1,1,2-Tetrachloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	94	50	140
1,1,1-Trichloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	60	130	95	50	140
1,1,2,2-Tetrachloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	98	50	140
1,1,2-Trichloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	96	50	140
1,1-Dichloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	96	50	140
1,1-Dichloroethylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	60	130	94	50	140
1,2-Dichlorobenzene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	95	50	140
1,2-Dichloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	98	50	140
1,2-Dichloropropane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	96	50	140
1,3-Dichlorobenzene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	94	50	140
1,4-Dichlorobenzene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	60	130	94	50	140
Acetone	GCM0510-APR22	µg/g	0.5	< 0.5	ND	50	90	50	140	89	50	140
Benzene	GCM0510-APR22	µg/g	0.02	< 0.02	ND	50	90	60	130	95	50	140
Bromodichloromethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	93	50	140
Bromoform	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	92	50	140
Bromomethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	50	140	85	50	140
Carbon tetrachloride	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	92	50	140
Chlorobenzene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	95	50	140
Chloroform	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	95	50	140
cis-1,2-Dichloroethylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	94	50	140

QC SUMMARY

Volatile Organics (continued)

Method: EPA 5035A/5030B/8260C | Internal ref.: ME-CA-IENVIGC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
cis-1,3-dichloropropene	GCM0510-APR22	µg/g	0.03	< 0.03	ND	50	90	60	130	89	50	140
Dibromochloromethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	92	60	130	95	50	140
Dichlorodifluoromethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	88	50	140	78	50	140
Ethylbenzene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	60	130	96	50	140
Ethylenedibromide	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	96	50	140
n-Hexane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	86	60	130	62	50	140
m/p-xylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	95	50	140
Methyl ethyl ketone	GCM0510-APR22	µg/g	0.5	< 0.5	ND	50	90	50	140	98	50	140
Methyl isobutyl ketone	GCM0510-APR22	µg/g	0.5	< 0.5	ND	50	92	50	140	102	50	140
Methyl-t-butyl Ether	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	95	60	130	92	50	140
Methylene Chloride	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	84	50	140
o-xylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	60	130	97	50	140
Styrene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	95	50	140
Tetrachloroethylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	92	50	140
Toluene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	95	50	140
trans-1,2-Dichloroethylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	83	50	140
trans-1,3-dichloropropene	GCM0510-APR22	µg/g	0.03	< 0.03	ND	50	91	60	130	90	50	140
Trichloroethylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	94	50	140
Trichlorofluoromethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	50	140	93	50	140
Vinyl Chloride	GCM0510-APR22	µg/g	0.02	< 0.02	ND	50	90	50	140	93	50	140

QC SUMMARY

Water Soluble Boron

Method: O.Reg. 15 3/04 | Internal ref.: ME-CA-[ENV] SPE-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Water Soluble Boron	ESG0068-APR22	µg/g	0.5	<0.5	ND	20	106	80	120	NV	70	130

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.

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

Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

Duplicate Qualifier: for duplicates as the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.

LEGEND

FOOTNOTES

NSS	Insufficient sample for analysis.
RL	Reporting Limit.
↑	Reporting limit raised.
↓	Reporting limit lowered.
NA	The sample was not analysed for this analyte
ND	Non Detect

Data reported represent the sample as submitted to SGS. Solid samples expressed on a dry weight basis.
"Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.
Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality" published by the Ministry and dated March 9, 2004 as amended.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated.

SGS Canada Inc. statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

This report supersedes all previous versions.

-- End of Analytical Report --

FINAL REPORT

CA40392-APR22 R1

1-21-0021, Ken William's, Brampton

Prepared for

Terraprobe Inc

FINAL REPORT

First Page

CLIENT DETAILS

Client	Terraprobe Inc
Address	11 Indell Lane Brampton, ON L6T 3Y3. Canada
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Project	1-21-0021, Ken William's, Brampton
Order Number	
Samples	Soil (4)

LABORATORY DETAILS

Project Specialist	Maarit Wolfe, Hon.B.Sc
Laboratory	SGS Canada Inc.
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SGS Reference	CA40392-APR22
Received	04/22/2022
Approved	05/02/2022
Report Number	CA40392-APR22 R1
Date Reported	05/02/2022

COMMENTS

CCME Method Compliance: Analyses were conducted using analytical procedures that comply with the Reference Method for the CWS for Petroleum Hydrocarbons in Soil and have been validated for use at the SGS laboratory, Lakefield, ON site.

Quality Compliance: Instrument performance / calibration quality criteria were met and extraction and analysis limits for holding times were met.

nC6 and nC10 response factors within 30% of response factor for toluene: YES

nC10, nC16 and nC34 response factors within 10% of the average response for the three compounds: YES

C50 response factors within 70% of nC10 + nC16 + nC34 average: YES

Linearity is within 15%: YES

F4G - gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
The results for F4 and F4G are both reported and the greater of the two values is to be used in application to the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

Benzo(b)fluoranthene results for comparison to the standard are reported as benzo(b+j)fluoranthene. Benzo(b)fluoranthene and benzo(j)fluoranthene co-elute and cannot be reported individually by the analytical method used.

Temperature of Sample upon Receipt: 9 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 028252

SIGNATORIES

Maarit Wolfe, Hon.B.Sc

TABLE OF CONTENTS

Client: Terraprobe Inc
Project: 1-21-0021, Ken William's, Brampton
Project Manager: Leila Baninajarian
Samplers: Leila B.

MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 3 - Industrial/Commercial - UNDEFINED

L2 = REG153 / SOIL / COARSE - TABLE 3 - Residential/Parkland - UNDEFINED

				Sample Number	13	14	15	16
				Sample Name	BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
				Sample Matrix	Soil	Soil	Soil	Soil
				Sample Date	20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**
BTEX								
Benzene	µg/g	0.02	0.32	0.21	---	---	< 0.02	< 0.02
Ethylbenzene	µg/g	0.05	9.5	2	---	---	< 0.05	< 0.05
Toluene	µg/g	0.05	68	2.3	---	---	< 0.05	< 0.05
Xylene (total)	µg/g	0.05	26	3.1	---	---	< 0.05	< 0.05
m/p-xylene	µg/g	0.05			---	---	< 0.05	< 0.05
o-xylene	µg/g	0.05			---	---	< 0.05	< 0.05
Hydrides								
Antimony	µg/g	0.8	40	7.5	< 0.8	< 0.8	< 0.8	< 0.8
Arsenic	µg/g	0.5	18	18	2.7	3.1	3.8	3.3
Selenium	µg/g	0.7	5.5	2.4	< 0.7	< 0.7	< 0.7	< 0.7
Metals and Inorganics								
Moisture Content	%	no			7.1	10.6	9.7	13.6
Barium	µg/g	0.1	670	390	34	52	72	39
Beryllium	µg/g	0.02	8	4	0.18	0.28	0.53	0.38
Boron	µg/g	1	120	120	5	6	9	3
Cadmium	µg/g	0.05	1.9	1.2	0.06	0.05	0.09	0.10
Chromium	µg/g	0.5	160	160	9.7	9.4	18	13
Cobalt	µg/g	0.01	80	22	23	23	10	7.7
Copper	µg/g	0.1	230	140	21	25	26	19
Lead	µg/g	0.1	120	120	6.2	6.3	11	7.9
Molybdenum	µg/g	0.1	40	6.9	0.3	0.4	0.3	0.2

Client: Terraprobe Inc
Project: 1-21-0021, Ken William's, Brampton
Project Manager: Leila Baninajarian
Samplers: Leila B.

MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 3 - Industrial/Commercial - UNDEFINED

L2 = REG153 / SOIL / COARSE - TABLE 3 - Residential/Parkland - UNDEFINED

				Sample Number	13	14	15	16
				Sample Name	BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
				Sample Matrix	Soil	Soil	Soil	Soil
				Sample Date	20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**
Metals and Inorganics (continued)								
Nickel	µg/g	0.5	270	100	11	12	21	12
Silver	µg/g	0.05	40	20	0.38	0.56	< 0.05	< 0.05
Thallium	µg/g	0.02	3.3	1	0.07	0.09	0.13	0.08
Uranium	µg/g	0.002	33	23	0.34	0.39	0.56	0.36
Vanadium	µg/g	3	86	86	16	16	26	23
Zinc	µg/g	0.7	340	340	35	34	57	31
Water Soluble Boron	µg/g	0.5	2	1.5	< 0.5	< 0.5	< 0.5	< 0.5
Other (ORP)								
Mercury	ug/g	0.05	3.9	0.27	< 0.05	< 0.05	< 0.05	< 0.05
Sodium Adsorption Ratio	No unit	0.2	12	5	23.6	8.4	5.6	12.8
SAR Calcium	mg/L	0.2			3.9	6.9	20.1	7.3
SAR Magnesium	mg/L	0.3			0.6	2.8	21.5	1.5
SAR Sodium	mg/L	0.1			190	104	152	144
Conductivity	mS/cm	0.002	1.4	0.7	1.0	0.63	0.90	0.81
pH	pH Units	0.05			8.38	826	8.19	8.07
Chromium VI	µg/g	0.2	8	8	< 0.2	< 0.2	< 0.2	< 0.2
Free Cyanide	µg/g	0.05	0.051	0.051	< 0.05	< 0.05	< 0.05	< 0.05

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Project Manager: Leila Baninajarian
Samplers: Leila B.

MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 3 - Industrial/Commercial - UNDEFINED

L2 = REG153 / SOIL / COARSE - TABLE 3 - Residential/Parkland - UNDEFINED

				Sample Number	13	14	15	16
				Sample Name	BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
				Sample Matrix	Soil	Soil	Soil	Soil
				Sample Date	20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**
PAHs								
Acenaphthene	µg/g	0.05	96	7.9	---	---	< 0.05	< 0.05
Acenaphthylene	µg/g	0.05	0.15	0.15	---	---	< 0.05	< 0.05
Anthracene	µg/g	0.05	0.67	0.67	---	---	< 0.05	< 0.05
Benzo(a)anthracene	µg/g	0.05	0.96	0.5	---	---	< 0.05	< 0.05
Benzo(a)pyrene	µg/g	0.05	0.3	0.3	---	---	< 0.05	< 0.05
Benzo(b+j)fluoranthene	µg/g	0.05	0.96	0.78	---	---	< 0.05	< 0.05
Benzo(ghi)perylene	µg/g	0.1	9.6	6.6	---	---	< 0.1	< 0.1
Benzo(k)fluoranthene	µg/g	0.05	0.96	0.78	---	---	< 0.05	< 0.05
Chrysene	µg/g	0.05	9.6	7	---	---	< 0.05	< 0.05
Dibenzo(a,h)anthracene	µg/g	0.06	0.1	0.1	---	---	< 0.06	< 0.06
Fluoranthene	µg/g	0.05	9.6	0.69	---	---	0.07	< 0.05
Fluorene	µg/g	0.05	62	62	---	---	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.1	0.76	0.38	---	---	< 0.1	< 0.1
1-Methylnaphthalene	µg/g	0.05			---	---	< 0.05	< 0.05
2-Methylnaphthalene	µg/g	0.05			---	---	< 0.05	< 0.05
Methylnaphthalene, 2-(1-)	µg/g	0.05	76	0.99	---	---	< 0.05	< 0.05
Naphthalene	µg/g	0.05	9.6	0.6	---	---	< 0.05	< 0.05
Phenanthrene	µg/g	0.05	12	6.2	---	---	0.07	< 0.05
Pyrene	µg/g	0.05	96	78	---	---	0.06	< 0.05

Client: Terraprobe Inc
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Project Manager: Leila Baninajarian
Samplers: Leila B.

MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 3 - Industrial/Commercial - UNDEFINED

L2 = REG153 / SOIL / COARSE - TABLE 3 - Residential/Parkland - UNDEFINED

				Sample Number	13	14	15	16
				Sample Name	BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
				Sample Matrix	Soil	Soil	Soil	Soil
				Sample Date	20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**
PCBs								
Polychlorinated Biphenyls (PCBs) - Total	µg/g	0.3	1.1	0.35	---	---	< 0.3	< 0.3
PHCs								
F1 (C6-C10)	µg/g	10	55	55	---	---	< 10	< 10
F1-BTEX (C6-C10)	µg/g	10	55	55	---	---	< 10	< 10
F2 (C10-C16)	µg/g	10	230	98	---	---	< 10	< 10
F3 (C16-C34)	µg/g	50	1700	300	---	---	51	< 50
F4 (C34-C50)	µg/g	50	3300	2800	---	---	< 50	< 50
Chromatogram returned to baseline at nC50	Yes / No	no			22-Apr-22	---	YES	YES
SVOC Surrogates								
Surr Nitrobenzene-d5	Surr Rec %	no			---	---	99	96
Surr 2-Fluorobiphenyl	Surr Rec %	no			---	---	98	94
Surr 4-Terphenyl-d14	Surr Rec %	no			---	---	108	97
Surr 2-Fluorophenol	Surr Rec %	no			---	---	92	91
Surr Phenol-d6	Surr Rec %	no			---	---	104	102
Surr 2,4,6-Tribromophenol	Surr Rec %	no			---	---	73	70

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MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 3 - Industrial/Commercial - UNDEFINED

L2 = REG153 / SOIL / COARSE - TABLE 3 - Residential/Parkland - UNDEFINED

				Sample Number	13	14	15	16
				Sample Name	BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
				Sample Matrix	Soil	Soil	Soil	Soil
				Sample Date	20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**
THMs (VOC)								
Bromodichloromethane	µg/g	0.05	18	13	---	---	< 0.05	< 0.05
Bromoform	µg/g	0.05	0.61	0.27	---	---	< 0.05	< 0.05
Dibromochloromethane	µg/g	0.05	13	9.4	---	---	< 0.05	< 0.05
VOC Surrogates								
Surr 1,2-Dichloroethane-d4	Surr Rec %	no			---	---	105	104
Surr 4-Bromofluorobenzene	Surr Rec %	no			---	---	94	94
Surr 2-Bromo-1-Chloropropane	Surr Rec %	no			---	---	89	89
VOCs								
Acetone	µg/g	0.5	16	16	---	---	< 0.5	< 0.5
Bromomethane	µg/g	0.05	0.05	0.05	---	---	< 0.05	< 0.05
Carbon tetrachloride	µg/g	0.05	0.21	0.05	---	---	< 0.05	< 0.05
Chlorobenzene	µg/g	0.05	2.4	2.4	---	---	< 0.05	< 0.05
Chloroform	µg/g	0.05	0.47	0.05	---	---	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/g	0.05	6.8	3.4	---	---	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/g	0.05	9.6	4.8	---	---	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/g	0.05	0.2	0.083	---	---	< 0.05	< 0.05
Dichlorodifluoromethane	µg/g	0.05	16	16	---	---	< 0.05	< 0.05
1,1-Dichloroethane	µg/g	0.05	17	3.5	---	---	< 0.05	< 0.05
1,2-Dichloroethane	µg/g	0.05	0.05	0.05	---	---	< 0.05	< 0.05
1,1-Dichloroethylene	µg/g	0.05	0.064	0.05	---	---	< 0.05	< 0.05
trans-1,2-Dichloroethylene	µg/g	0.05	1.3	0.084	---	---	< 0.05	< 0.05

Client: Terraprobe Inc
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MATRIX: SOIL

L1 = REG153 / SOIL / COARSE - TABLE 3 - Industrial/Commercial - UNDEFINED

L2 = REG153 / SOIL / COARSE - TABLE 3 - Residential/Parkland - UNDEFINED

			Sample Number	13	14	15	16
			Sample Name	BH6-Granular	BH4-Granular	BH4-SS2 (2'-4')	BH2-SS2 (2'-4')
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Date	20/04/2022	20/04/2022	20/04/2022	20/04/2022
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**	**Result**
VOCs (continued)								
cis-1,2-Dichloroethylene	µg/g	0.05	55	3.4	---	---	< 0.05	< 0.05
1,2-Dichloropropane	µg/g	0.05	0.16	0.05	---	---	< 0.05	< 0.05
cis-1,3-dichloropropene	µg/g	0.03			---	---	< 0.03	< 0.03
trans-1,3-dichloropropene	µg/g	0.03			---	---	< 0.03	< 0.03
1,3-dichloropropene (total)	µg/g	0.05	0.18	0.05	---	---	< 0.05	< 0.05
Ethylenedibromide	µg/g	0.05	0.05	0.05	---	---	< 0.05	< 0.05
n-Hexane	µg/g	0.05	46	2.8	---	---	< 0.05	< 0.05
Methyl ethyl ketone	µg/g	0.5	70	16	---	---	< 0.5	< 0.5
Methyl isobutyl ketone	µg/g	0.5	31	1.7	---	---	< 0.5	< 0.5
Methyl-t-butyl Ether	µg/g	0.05	11	0.75	---	---	< 0.05	< 0.05
Methylene Chloride	µg/g	0.05	1.6	0.1	---	---	< 0.05	< 0.05
Styrene	µg/g	0.05	34	0.7	---	---	< 0.05	< 0.05
Tetrachloroethylene	µg/g	0.05	4.5	0.28	---	---	< 0.05	< 0.05
1,1,1,2-Tetrachloroethane	µg/g	0.05	0.087	0.058	---	---	< 0.05	< 0.05
1,1,2,2-Tetrachloroethane	µg/g	0.05	0.05	0.05	---	---	< 0.05	< 0.05
1,1,1-Trichloroethane	µg/g	0.05	6.1	0.38	---	---	< 0.05	< 0.05
1,1,2-Trichloroethane	µg/g	0.05	0.05	0.05	---	---	< 0.05	< 0.05
Trichloroethylene	µg/g	0.05	0.91	0.061	---	---	< 0.05	< 0.05
Trichlorofluoromethane	µg/g	0.05	4	4	---	---	< 0.05	< 0.05
Vinyl Chloride	µg/g	0.02	0.032	0.02	---	---	< 0.02	< 0.02

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	REG153 / SOIL / COARSE - TABLE 3 - Industrial/Commercial - UNDEFINED L1	REG153 / SOIL / COARSE - TABLE 3 - Residential/Parkland - UNDEFINED L2
BH6-Granular					
Cobalt	EPA 3050/EPA 200.8	µg/g	23		22
Conductivity	EPA 6010/SM 2510	mS/cm	1.0		0.7
Sodium Adsorption Ratio	MOE 4696e01/EPA 6010	No unit	23.6	12	5
BH4-Granular					
Cobalt	EPA 3050/EPA 200.8	µg/g	23		22
Sodium Adsorption Ratio	MOE 4696e01/EPA 6010	No unit	8.4		5
BH4-SS2 (2'-4')					
Conductivity	EPA 6010/SM 2510	mS/cm	0.90		0.7
Sodium Adsorption Ratio	MOE 4696e01/EPA 6010	No unit	5.6		5
BH2-SS2 (2'-4')					
Conductivity	EPA 6010/SM 2510	mS/cm	0.81		0.7
Sodium Adsorption Ratio	MOE 4696e01/EPA 6010	No unit	12.8	12	5

QC SUMMARY

Conductivity

Method: EPA 6010/SM 2510 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Conductivity	EWL0495-APR22	mS/cm	0.002	<0.002	0	10	99	90	110	NA		

Cyanide by SFA

Method: SM 4500 I Internal ref.: ME-CA-IENVISFA-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Free Cyanide	SKA5091-APR22	µg/g	0.05	<0.05	ND	20	97	80	120	88	75	125

Hexavalent Chromium by SFA

Method: EPA218.6/EPA3060A I Internal ref.: ME-CA-IENVISKA-LAK-AN-012

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chromium VI	SKA5093-APR22	ug/g	0.2	<0.2	ND	20	93	80	120	98	75	125

QC SUMMARY

Mercury by CVAAS

Method: EPA 7471A/EPA 245 | Internal ref.: ME-CA-IENVISPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Mercury	EMS0186-APR22	ug/g	0.05	<0.05	17	20	93	80	120	103	70	130

Metals in aqueous samples - ICP-OES

Method: MOE 4696e01/EPA 6010 | Internal ref.: ME-CA-IENVISPE-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
SAR Calcium	ESG0075-APR22	mg/L	0.2	<0.09	1	20	108	80	120	93	70	130
SAR Magnesium	ESG0075-APR22	mg/L	0.3	<0.02	2	20	105	80	120	93	70	130
SAR Sodium	ESG0075-APR22	mg/L	0.1	<0.15	1	20	104	80	120	88	70	130

QC SUMMARY

Metals in Soil - Aqua-regia/ICP-MS

Method: EPA 3050/EPA 200.8 | Internal ref.: ME-CA-[ENVISPE-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver	EMS0186-APR22	ug/g	0.05	<0.05	ND	20	97	70	130	101	70	130
Arsenic	EMS0186-APR22	µg/g	0.5	<0.5	7	20	98	70	130	93	70	130
Barium	EMS0186-APR22	ug/g	0.1	<0.1	4	20	103	70	130	106	70	130
Beryllium	EMS0186-APR22	µg/g	0.02	<0.02	2	20	93	70	130	93	70	130
Boron	EMS0186-APR22	µg/g	1	<1	4	20	108	70	130	99	70	130
Cadmium	EMS0186-APR22	ug/g	0.05	<0.05	ND	20	104	70	130	101	70	130
Cobalt	EMS0186-APR22	µg/g	0.01	<0.01	2	20	97	70	130	107	70	130
Chromium	EMS0186-APR22	µg/g	0.5	<0.5	13	20	98	70	130	105	70	130
Copper	EMS0186-APR22	µg/g	0.1	<0.1	5	20	98	70	130	99	70	130
Molybdenum	EMS0186-APR22	µg/g	0.1	<0.1	8	20	95	70	130	102	70	130
Nickel	EMS0186-APR22	ug/g	0.5	<0.5	4	20	94	70	130	107	70	130
Lead	EMS0186-APR22	ug/g	0.1	<0.1	7	20	101	70	130	105	70	130
Antimony	EMS0186-APR22	µg/g	0.8	<0.8	ND	20	99	70	130	110	70	130
Selenium	EMS0186-APR22	µg/g	0.7	<0.7	ND	20	102	70	130	102	70	130
Thallium	EMS0186-APR22	µg/g	0.02	<0.02	ND	20	101	70	130	104	70	130
Uranium	EMS0186-APR22	µg/g	0.002	<0.002	10	20	97	70	130	107	70	130
Vanadium	EMS0186-APR22	µg/g	3	<3	5	20	97	70	130	110	70	130
Zinc	EMS0186-APR22	µg/g	0.7	<0.7	7	20	97	70	130	101	70	130

QC SUMMARY

Petroleum Hydrocarbons (F1)

Method: CCME Tier 1 I Internal ref.: ME-CA-[ENV]GC-LAK-AN-010

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
F1 (C6-C10)	GCM0511-APR22	µg/g	10	<10	ND	30	98	80	120	90	60	140

Petroleum Hydrocarbons (F2-F4)

Method: CCME Tier 1 I Internal ref.: ME-CA-[ENV]GC-LAK-AN-010

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
F2 (C10-C16)	GCM0487-APR22	µg/g	10	<10	ND	30	115	80	120	112	60	140
F3 (C16-C34)	GCM0487-APR22	µg/g	50	<50	ND	30	115	80	120	112	60	140
F4 (C34-C50)	GCM0487-APR22	µg/g	50	<50	ND	30	115	80	120	112	60	140

QC SUMMARY

pH

Method: SM 4500 I Internal ref.: ME-CA-[ENVIEWL-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	ARD0126-APR22	pH Units	0.05		0	20	100	80	120			

Polychlorinated Biphenyls

Method: EPA 3570/8082A/8270C I Internal ref.: ME-CA-[ENVIGC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Polychlorinated Biphenyls (PCBs) - Total	GCM0436-APR22	µg/g	0.3	< 0.3	ND	40	79	60	140	71	60	140

QC SUMMARY

Semi-Volatile Organics

Method: EPA 3541/8270D | Internal ref.: ME-CA-[ENV]GC-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1-Methylnaphthalene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	93	50	140	93	50	140
2-Methylnaphthalene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	93	50	140	93	50	140
Acenaphthene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	100	50	140	96	50	140
Acenaphthylene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	92	50	140	89	50	140
Anthracene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	95	50	140	90	50	140
Benzo(a)anthracene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	95	50	140	91	50	140
Benzo(a)pyrene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	91	50	140	89	50	140
Benzo(b+j)fluoranthene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	93	50	140	91	50	140
Benzo(ghi)perylene	GCM0458-APR22	µg/g	0.1	< 0.1	ND	40	101	50	140	95	50	140
Benzo(k)fluoranthene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	99	50	140	95	50	140
Chrysene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	99	50	140	95	50	140
Dibenzo(a,h)anthracene	GCM0458-APR22	µg/g	0.06	< 0.06	ND	40	97	50	140	91	50	140
Fluoranthene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	97	50	140	92	50	140
Fluorene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	102	50	140	97	50	140
Indeno(1,2,3-cd)pyrene	GCM0458-APR22	µg/g	0.1	< 0.1	ND	40	102	50	140	97	50	140
Naphthalene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	96	50	140	94	50	140
Phenanthrene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	96	50	140	90	50	140
Pyrene	GCM0458-APR22	µg/g	0.05	< 0.05	ND	40	95	50	140	92	50	140

QC SUMMARY

Volatile Organics

Method: EPA 5035A/5030B/8260C | Internal ref.: ME-CA-IENVIGC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1,1,1,2-Tetrachloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	94	50	140
1,1,1-Trichloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	60	130	95	50	140
1,1,2,2-Tetrachloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	98	50	140
1,1,2-Trichloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	96	50	140
1,1-Dichloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	96	50	140
1,1-Dichloroethylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	60	130	94	50	140
1,2-Dichlorobenzene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	95	50	140
1,2-Dichloroethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	98	50	140
1,2-Dichloropropane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	96	50	140
1,3-Dichlorobenzene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	94	50	140
1,4-Dichlorobenzene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	60	130	94	50	140
Acetone	GCM0510-APR22	µg/g	0.5	< 0.5	ND	50	90	50	140	89	50	140
Benzene	GCM0510-APR22	µg/g	0.02	< 0.02	ND	50	90	60	130	95	50	140
Bromodichloromethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	93	50	140
Bromoform	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	92	50	140
Bromomethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	50	140	85	50	140
Carbon tetrachloride	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	92	50	140
Chlorobenzene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	95	50	140
Chloroform	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	95	50	140
cis-1,2-Dichloroethylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	94	50	140

QC SUMMARY

Volatile Organics (continued)

Method: EPA 5035A/5030B/8260C | Internal ref.: ME-CA-IENVIGC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
cis-1,3-dichloropropene	GCM0510-APR22	µg/g	0.03	< 0.03	ND	50	90	60	130	89	50	140
Dibromochloromethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	92	60	130	95	50	140
Dichlorodifluoromethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	88	50	140	78	50	140
Ethylbenzene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	60	130	96	50	140
Ethylenedibromide	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	96	50	140
n-Hexane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	86	60	130	62	50	140
m/p-xylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	95	50	140
Methyl ethyl ketone	GCM0510-APR22	µg/g	0.5	< 0.5	ND	50	90	50	140	98	50	140
Methyl isobutyl ketone	GCM0510-APR22	µg/g	0.5	< 0.5	ND	50	92	50	140	102	50	140
Methyl-t-butyl Ether	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	95	60	130	92	50	140
Methylene Chloride	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	84	50	140
o-xylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	91	60	130	97	50	140
Styrene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	95	50	140
Tetrachloroethylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	92	50	140
Toluene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	60	130	95	50	140
trans-1,2-Dichloroethylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	83	50	140
trans-1,3-dichloropropene	GCM0510-APR22	µg/g	0.03	< 0.03	ND	50	91	60	130	90	50	140
Trichloroethylene	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	90	60	130	94	50	140
Trichlorofluoromethane	GCM0510-APR22	µg/g	0.05	< 0.05	ND	50	89	50	140	93	50	140
Vinyl Chloride	GCM0510-APR22	µg/g	0.02	< 0.02	ND	50	90	50	140	93	50	140

QC SUMMARY

Water Soluble Boron

Method: O.Reg. 15 3/04 | Internal ref.: ME-CA-[ENV] SPE-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Water Soluble Boron	ESG0068-APR22	µg/g	0.5	<0.5	ND	20	106	80	120	NV	70	130

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.

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

Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

Duplicate Qualifier: for duplicates as the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.

LEGEND

FOOTNOTES

NSS	Insufficient sample for analysis.
RL	Reporting Limit.
↑	Reporting limit raised.
↓	Reporting limit lowered.
NA	The sample was not analysed for this analyte
ND	Non Detect

Data reported represent the sample as submitted to SGS. Solid samples expressed on a dry weight basis.
"Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.
Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality" published by the Ministry and dated March 9, 2004 as amended.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated.

SGS Canada Inc. statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

This report supersedes all previous versions.

-- End of Analytical Report --

FINAL REPORT

CA40024-JUN22 R1

1-21-0021, Brampton

Prepared for

Terraprobe Inc

FINAL REPORT

First Page

CLIENT DETAILS

Client	Terraprobe Inc
Address	11 Indell Lane Brampton, ON L6T 3Y3. Canada
Contact	Leila Baninajarian
Telephone	(905) 796-2650
Facsimile	(905) 796-2250
Email	lbaninajarian@terraprobe.ca
Project	1-21-0021, Brampton
Order Number	
Samples	Ground Water (6)

LABORATORY DETAILS

Project Specialist	Brad Moore Hon. B.Sc
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	705-652-2143
Facsimile	705-652-6365
Email	brad.moore@sgs.com
SGS Reference	CA40024-JUN22
Received	06/01/2022
Approved	06/08/2022
Report Number	CA40024-JUN22 R1
Date Reported	06/08/2022

COMMENTS

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
NR - Not reportable under applicable Provincial drinking water regulations as per client.

Temperature of Sample upon Receipt: 5 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 026813

Turb recv'd past hold time

raised RL for NO2 due to SM

SIGNATORIES

Brad Moore Hon. B.Sc

TABLE OF CONTENTS

Client: Terraprobe Inc
Project: 1-21-0021, Brampton
Project Manager: Leila Baninajarian
Samplers: Leila B

MATRIX: WATER

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number			7	8	9	10	11	12
Sample Name			BH1	BH5	BH1 Dissolved	BH5 Dissolved	BH1 06/02/22	BH5 06/02/22
Sample Matrix			Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Sample Date			30/05/2022		30/05/2022		02/06/2022	02/06/2022
Parameter	**Units**	**RL**	**L1**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
General Chemistry								
UV Transmittance	%T			69.2	54.9	---	---	---	---
Alkalinity	mg/L as CaCO3	2		563	246	---	---	---	---
Bicarbonate	mg/L as CaCO3	2		563	246	---	---	---	---
Carbonate	mg/L as CaCO3	2		< 2	< 2	---	---	---	---
OH	mg/L as CaCO3	2		< 2	< 2	---	---	---	---
Colour	TCU	3		10	3	---	---	---	---
Conductivity	uS/cm	2		7350	6620	---	---	---	---
Total Suspended Solids	mg/L	2		417	3900	---	---	---	---
Turbidity	NTU	0.10		---	---	---	---	78.3	5.33
Organic Nitrogen	mg/L	0.5		< 0.5	< 0.5	---	---	---	---
Total Kjeldahl Nitrogen	as N mg/L	0.5		< 0.5	< 0.5	---	---	---	---
Ammonia+Ammonium (N)	as N mg/L	0.1		< 0.1	0.1	---	---	---	---
Dissolved Organic Carbon	mg/L	1		4	2	---	---	---	---
Total Organic Carbon	mg/L	1		6	2	---	---	---	---
Ion Ratio	-	-9999		0.98	1.28	---	---	---	---
Total Dissolved Solids (calculated)	mg/L	-9999		4713	4649	---	---	---	---
Conductivity (calculated)	uS/cm	-9999		8313	8873	---	---	---	---
Langeliers Index 4° C	@ 4° C	-9999		0.91	0.93	---	---	---	---
Saturation pH 4°C	pHs @ 4°C	-9999		6.82	6.75	---	---	---	---

Client: Terraprobe Inc
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MATRIX: WATER

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

	Sample Number	7	8	9	10	11	12		
	Sample Name	BH1	BH5	BH1 Dissolved	BH5 Dissolved	BH1 06/02/22	BH5 06/02/22		
	Sample Matrix	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water		
	Sample Date	30/05/2022		30/05/2022		02/06/2022	02/06/2022		
Parameter	**Units**	**RL**	**L1**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Metals and Inorganics									
Fluoride	mg/L	0.06		0.17	0.10	---	---	---	---
Bromide	mg/L	0.3		0.8	0.6	---	---	---	---
Nitrite (as N)	as N mg/L	0.03		< 0.3↑	< 0.3↑	---	---	---	---
Nitrate (as N)	as N mg/L	0.06		2.60	2.27	---	---	---	---
Sulphate	mg/L	0.2		150	94	---	---	---	---
Sulphide	mg/L	0.02		< 0.02	< 0.02	---	---	---	---
Hardness	mg/L as CaCO3	0.05		1090	2500	825	1340	---	---
Aluminum (total)	mg/L	0.001		0.005	0.003	0.002	< 0.001	---	---
Aluminum (0.2µm)	mg/L	0.001	0.075	0.005	0.003	---	---	---	---
Arsenic (total)	mg/L	0.0002	0.005	0.0090	0.0420	0.0006	0.0002	---	---
Boron (total)	mg/L	0.002	0.2	0.248	0.155	0.130	0.036	---	---
Barium (total)	mg/L	0.00008		0.305	0.980	0.148	0.285	---	---
Beryllium (total)	mg/L	0.000007	1.1	0.000710	0.00382	< 0.000007	< 0.000007	---	---
Bismuth (total)	mg/L	0.00001		0.00014	0.00093	< 0.00001	< 0.00001	---	---
Cobalt (total)	mg/L	0.000004	0.0009	0.00971	0.0558	0.00135	0.000070	---	---
Calcium (total)	mg/L	0.01		317	854	242	471	---	---
Cadmium (total)	mg/L	0.000003	0.0005	0.000200	0.000600	0.000120	0.000020	---	---
Copper (total)	mg/L	0.0002	0.005	0.0758	0.279	0.0089	< 0.0002	---	---
Chromium (total)	mg/L	0.00008	0.1	0.0311	0.124	0.00021	0.00046	---	---
Iron (total)	mg/L	0.007	0.3	20.9	150	< 0.007	< 0.007	---	---
Potassium (total)	mg/L	0.009		19.4	27.9	15.1	5.74	---	---
Magnesium (total)	mg/L	0.001		73.5	89.8	53.9	39.1	---	---

Client: Terraprobe Inc
Project: 1-21-0021, Brampton
Project Manager: Leila Baninajarian
Samplers: Leila B

MATRIX: WATER

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

Sample Number				7	8	9	10	11	12
Sample Name				BH1	BH5	BH1 Dissolved	BH5 Dissolved	BH1 06/02/22	BH5 06/02/22
Sample Matrix				Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Sample Date				30/05/2022		30/05/2022		02/06/2022	02/06/2022
Parameter	**Units**	**RL**	**L1**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Metals and Inorganics (continued)									
Manganese (total)	mg/L	0.00001		1.59	9.97	0.772	0.0617	---	---
Molybdenum (total)	mg/L	0.00004	0.04	0.00404	0.00257	0.00170	0.00055	---	---
Nickel (total)	mg/L	0.0001	0.025	0.0174	0.118	0.0032	0.0007	---	---
Sodium (total)	mg/L	0.01		1350	919	1120	904	---	---
Phosphorus (total)	mg/L	0.003	0.01	0.480	4.72	0.020	0.010	---	---
Lead (total)	mg/L	0.00009	0.005 0.025	0.0142	0.06005	< 0.00009	< 0.00009	---	---
Silicon (total)	mg/L	0.02		47.0	171	5.68	3.20	---	---
Silver (total)	mg/L	0.00005	0.0001	0.00012	0.00023	< 0.00005	< 0.00005	---	---
Strontium (total)	mg/L	0.00008		2.80	2.91	2.59	2.04	---	---
Thallium (total)	mg/L	0.000005	0.0003	0.000220	0.000900	0.000060	< 0.000005	---	---
Tin (total)	mg/L	0.00006		0.00490	0.01007	0.00043	0.00210	---	---
Titanium (total)	mg/L	0.00005		0.827	2.70	0.00017	0.00010	---	---
Antimony (total)	mg/L	0.0009	0.02	< 0.0009	0.0009	0.0011	< 0.0009	---	---
Selenium (total)	mg/L	0.00004	0.1	0.00044	0.00099	0.00043	0.00066	---	---
Uranium (total)	mg/L	0.000002	0.005	0.00412	0.00396	0.00319	0.000540	---	---
Vanadium (total)	mg/L	0.00001	0.006	0.0379	0.188	0.00086	0.00052	---	---
Zinc (total)	mg/L	0.002	0.02	0.090	0.350	0.032	0.024	---	---
Cation sum	meq/L	-9999		82.29	99.61	---	---	---	---
Anion Sum	meq/L	-9999		83.98	77.85	---	---	---	---
Anion-Cation Balance	% difference	-9999		-1.02	12.26	---	---	---	---

Client: Terraprobe Inc
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MATRIX: WATER

L1 = PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E

	Sample Number	7	8	9	10	11	12		
	Sample Name	BH1	BH5	BH1 Dissolved	BH5 Dissolved	BH1 06/02/22	BH5 06/02/22		
	Sample Matrix	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water		
	Sample Date	30/05/2022		30/05/2022		02/06/2022	02/06/2022		
Parameter	**Units**	**RL**	**L1**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Microbiology									
Total Coliform	cfu/100mL	0		---	---	---	---	60	0
E. Coli	cfu/100mL	0	100	---	---	---	---	21	0
Heterotrophic Plate Count (HPC)	cfu/1mL	0		---	---	---	---	>2000	>2000
Other (ORP)									
pH	No unit	0.05	8.6	7.73	7.68	---	---	---	---
Chloride	mg/L	1		2500	2500	---	---	---	---
Mercury (total)	mg/L	0.00001	0.0002	< 0.00001	0.07800	---	---	---	---
Mercury (dissolved)	mg/L	0.00001	0.0002	< 0.00001	0.00014	---	---	---	---
Phenols									
4AAP-Phenolics	mg/L	0.002	0.001	< 0.002	0.003	---	---	---	---

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	PWQO_L / WATER / - - Table 2 - General - July 1999 PIBS 3303E L1
BH1				
Arsenic	SM 3030/EPA 200.8	mg/L	0.0090	0.005
Boron	SM 3030/EPA 200.8	mg/L	0.248	0.2
Cobalt	SM 3030/EPA 200.8	mg/L	0.00971	0.0009
Copper	SM 3030/EPA 200.8	mg/L	0.0758	0.005
Iron	SM 3030/EPA 200.8	mg/L	20.9	0.3
Phosphorus	SM 3030/EPA 200.8	mg/L	0.480	0.01
Silver	SM 3030/EPA 200.8	mg/L	0.00012	0.0001
Vanadium	SM 3030/EPA 200.8	mg/L	0.0379	0.006
Zinc	SM 3030/EPA 200.8	mg/L	0.090	0.02
4AAP-Phenolics	SM 5530B-D	mg/L	< 0.002	0.001
BH5				
Mercury	EPA 7471A/SM 3112B	mg/L	0.07800	0.0002
Arsenic	SM 3030/EPA 200.8	mg/L	0.0420	0.005
Cadmium	SM 3030/EPA 200.8	mg/L	0.000600	0.0005
Chromium	SM 3030/EPA 200.8	mg/L	0.124	0.1
Cobalt	SM 3030/EPA 200.8	mg/L	0.0558	0.0009
Copper	SM 3030/EPA 200.8	mg/L	0.279	0.005
Iron	SM 3030/EPA 200.8	mg/L	150	0.3
Lead	SM 3030/EPA 200.8	mg/L	0.06005	0.025
Nickel	SM 3030/EPA 200.8	mg/L	0.118	0.025
Phosphorus	SM 3030/EPA 200.8	mg/L	4.72	0.01
Silver	SM 3030/EPA 200.8	mg/L	0.00023	0.0001
Thallium	SM 3030/EPA 200.8	mg/L	0.000900	0.0003
Vanadium	SM 3030/EPA 200.8	mg/L	0.188	0.006
Zinc	SM 3030/EPA 200.8	mg/L	0.350	0.02
4AAP-Phenolics	SM 5530B-D	mg/L	0.003	0.001
BH1 Dissolved				
Cobalt	SM 3030/EPA 200.8	mg/L	0.00135	0.0009
Copper	SM 3030/EPA 200.8	mg/L	0.0089	0.005
Phosphorus	SM 3030/EPA 200.8	mg/L	0.020	0.01
Zinc	SM 3030/EPA 200.8	mg/L	0.032	0.02
BH5 Dissolved				
Zinc	SM 3030/EPA 200.8	mg/L	0.024	0.02

QC SUMMARY

Alkalinity

Method: SM 2320 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Alkalinity	EWL0054-JUN22	mg/L as CaCO3	2	< 2	2	20	102	80	120	NA		

Ammonia by SFA

Method: SM 4500 I Internal ref.: ME-CA-IENVISFA-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Ammonia+Ammonium (N)	SKA5019-JUN22	as N mg/L	0.1	<0.1	1	10	101	90	110	96	75	125

Anions by discrete analyzer

Method: US EPA 325.2 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-026

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chloride	DIO5036-JUN22	mg/L	1	<1	7	20	104	80	120	107	75	125

QC SUMMARY

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-[ENV]IC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Bromide	DIO0079-JUN22	mg/L	0.3	<0.3	4	20	98	90	110	102	75	125
Nitrate (as N)	DIO0079-JUN22	mg/L	0.06	<0.06	0	20	100	90	110	100	75	125
Bromide	DIO0081-JUN22	mg/L	0.3	<0.3	2	20	97	90	110	97	75	125
Nitrate (as N)	DIO0081-JUN22	mg/L	0.06	<0.06	1	20	99	90	110	100	75	125
Nitrite (as N)	DIO0113-JUN22	mg/L	0.03	<0.03	5	20	94	90	110	102	75	125
Sulphate	DIO0143-JUN22	mg/L	0.2	<0.2	4	20	98	90	110	77	75	125

Carbon by SFA

Method: SM 5310 | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-009

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Dissolved Organic Carbon	SKA0035-JUN22	mg/L	1	<1	2	20	100	90	110	109	75	125
Total Organic Carbon	SKA0035-JUN22	mg/L	1	<1	2	20	100	90	110	109	75	125

QC SUMMARY

Carbonate/Bicarbonate

Method: SM 2320 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Carbonate	EWL0054-JUN22	mg/L as CaCO3	2	< 2	ND	10	NA	90	110	NA		
Bicarbonate	EWL0054-JUN22	mg/L as CaCO3	2	< 2	2	10	NA	90	110	NA		
OH	EWL0054-JUN22	mg/L as CaCO3	2	< 2	ND	10	NA	90	110	NA		

Colour

Method: SM 2120 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-002

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Colour	EWL0087-JUN22	TCU	3	< 3	0	10	100	80	120	NA		

QC SUMMARY

Conductivity

Method: SM 2510 | Internal ref.: ME-CA-[ENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Conductivity	EWL0054-JUN22	uS/cm	2	< 2	0	20	100	90	110	NA		

Fluoride by Specific Ion Electrode

Method: SM 4500 | Internal ref.: ME-CA-[ENVIEWL-LAK-AN-014

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Fluoride	EWL0066-JUN22	mg/L	0.06	<0.06	0	10	103	90	110	92	75	125

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-[ENVISPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Mercury (total)	EHG0009-JUN22	mg/L	0.00001	< 0.00001	ND	20	101	80	120	88	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver (total)	EMS0022-JUN22	mg/L	0.00005	<0.00005	ND	20	99	90	110	94	70	130
Aluminum (total)	EMS0022-JUN22	mg/L	0.001	<0.001	11	20	102	90	110	84	70	130
Aluminum (0.2µm)	EMS0022-JUN22	mg/L	0.001	<0.001	11	20	102	90	110	84	70	130
Arsenic (total)	EMS0022-JUN22	mg/L	0.0002	<0.0002	ND	20	103	90	110	101	70	130
Barium (total)	EMS0022-JUN22	mg/L	0.00008	<0.00002	1	20	100	90	110	106	70	130
Beryllium (total)	EMS0022-JUN22	mg/L	0.000007	<0.000007	0	20	96	90	110	99	70	130
Boron (total)	EMS0022-JUN22	mg/L	0.002	<0.002	8	20	97	90	110	102	70	130
Bismuth (total)	EMS0022-JUN22	mg/L	0.00001	<0.00001	ND	20	95	90	110	108	70	130
Calcium (total)	EMS0022-JUN22	mg/L	0.01	<0.01	0	20	99	90	110	85	70	130
Cadmium (total)	EMS0022-JUN22	mg/L	0.000003	<0.000003	ND	20	100	90	110	103	70	130
Cobalt (total)	EMS0022-JUN22	mg/L	0.000004	<0.000004	10	20	98	90	110	98	70	130
Chromium (total)	EMS0022-JUN22	mg/L	0.00008	<0.00008	ND	20	98	90	110	118	70	130
Copper (total)	EMS0022-JUN22	mg/L	0.0002	<0.0002	ND	20	98	90	110	93	70	130
Iron (total)	EMS0022-JUN22	mg/L	0.007	<0.007	ND	20	102	90	110	125	70	130
Potassium (total)	EMS0022-JUN22	mg/L	0.009	<0.009	0	20	98	90	110	103	70	130
Magnesium (total)	EMS0022-JUN22	mg/L	0.001	<0.001	5	20	110	90	110	112	70	130
Manganese (total)	EMS0022-JUN22	mg/L	0.00001	<0.00001	18	20	99	90	110	101	70	130
Molybdenum (total)	EMS0022-JUN22	mg/L	0.00004	<0.00004	ND	20	105	90	110	105	70	130
Sodium (total)	EMS0022-JUN22	mg/L	0.01	<0.01	1	20	109	90	110	85	70	130
Nickel (total)	EMS0022-JUN22	mg/L	0.0001	<0.0001	13	20	98	90	110	91	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS (continued)

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Lead (total)	EMS0022-JUN22	mg/L	0.00009	<0.00001	ND	20	98	90	110	99	70	130
Phosphorus (total)	EMS0022-JUN22	mg/L	0.003	<0.003	ND	20	103	90	110	NV	70	130
Antimony (total)	EMS0022-JUN22	mg/L	0.0009	<0.0009	ND	20	106	90	110	113	70	130
Selenium (total)	EMS0022-JUN22	mg/L	0.00004	<0.00004	1	20	103	90	110	98	70	130
Silicon (total)	EMS0022-JUN22	mg/L	0.02	<0.02	1	20	108	90	110	NV	70	130
Tin (total)	EMS0022-JUN22	mg/L	0.00006	<0.00006	ND	20	97	90	110	NV	70	130
Strontium (total)	EMS0022-JUN22	mg/L	0.00008	<0.00002	3	20	99	90	110	102	70	130
Titanium (total)	EMS0022-JUN22	mg/L	0.00005	<0.00005	ND	20	103	90	110	NV	70	130
Thallium (total)	EMS0022-JUN22	mg/L	0.000005	<0.000005	ND	20	93	90	110	96	70	130
Uranium (total)	EMS0022-JUN22	mg/L	0.000002	<0.000002	ND	20	94	90	110	98	70	130
Vanadium (total)	EMS0022-JUN22	mg/L	0.00001	<0.00001	3	20	99	90	110	103	70	130
Zinc (total)	EMS0022-JUN22	mg/L	0.002	<0.002	ND	20	99	90	110	110	70	130
Silver (total)	EMS0033-JUN22	mg/L	0.00005	<0.00005	ND	20	103	90	110	102	70	130
Aluminum (total)	EMS0033-JUN22	mg/L	0.001	<0.001	5	20	101	90	110	91	70	130
Arsenic (total)	EMS0033-JUN22	mg/L	0.0002	<0.0002	2	20	103	90	110	102	70	130
Barium (total)	EMS0033-JUN22	mg/L	0.00008	<0.00002	0	20	96	90	110	99	70	130
Beryllium (total)	EMS0033-JUN22	mg/L	0.000007	<0.000007	3	20	91	90	110	92	70	130
Boron (total)	EMS0033-JUN22	mg/L	0.002	<0.002	11	20	96	90	110	98	70	130
Bismuth (total)	EMS0033-JUN22	mg/L	0.00001	<0.00001	2	20	99	90	110	91	70	130
Calcium (total)	EMS0033-JUN22	mg/L	0.01	<0.01	7	20	99	90	110	102	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS (continued)

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Cadmium (total)	EMS0033-JUN22	mg/L	0.000003	<0.000003	1	20	103	90	110	100	70	130
Cobalt (total)	EMS0033-JUN22	mg/L	0.000004	<0.000004	0	20	104	90	110	106	70	130
Chromium (total)	EMS0033-JUN22	mg/L	0.00008	<0.00008	ND	20	101	90	110	101	70	130
Copper (total)	EMS0033-JUN22	mg/L	0.0002	<0.0002	7	20	99	90	110	79	70	130
Iron (total)	EMS0033-JUN22	mg/L	0.007	<0.007	1	20	102	90	110	NV	70	130
Potassium (total)	EMS0033-JUN22	mg/L	0.009	<0.009	19	20	108	90	110	107	70	130
Magnesium (total)	EMS0033-JUN22	mg/L	0.001	<0.001	2	20	106	90	110	101	70	130
Manganese (total)	EMS0033-JUN22	mg/L	0.00001	<0.00001	3	20	100	90	110	104	70	130
Molybdenum (total)	EMS0033-JUN22	mg/L	0.00004	<0.00004	9	20	105	90	110	108	70	130
Sodium (total)	EMS0033-JUN22	mg/L	0.01	<0.01	1	20	99	90	110	98	70	130
Nickel (total)	EMS0033-JUN22	mg/L	0.0001	<0.0001	0	20	100	90	110	100	70	130
Lead (total)	EMS0033-JUN22	mg/L	0.00009	<0.00001	2	20	103	90	110	101	70	130
Phosphorus (total)	EMS0033-JUN22	mg/L	0.003	<0.003	3	20	101	90	110	NV	70	130
Antimony (total)	EMS0033-JUN22	mg/L	0.0009	<0.0009	1	20	108	90	110	124	70	130
Selenium (total)	EMS0033-JUN22	mg/L	0.00004	<0.00004	ND	20	105	90	110	121	70	130
Silicon (total)	EMS0033-JUN22	mg/L	0.02	<0.02	1	20	100	90	110	NV	70	130
Tin (total)	EMS0033-JUN22	mg/L	0.00006	<0.00006	9	20	102	90	110	NV	70	130
Strontium (total)	EMS0033-JUN22	mg/L	0.00008	<0.00002	16	20	100	90	110	103	70	130
Titanium (total)	EMS0033-JUN22	mg/L	0.00005	<0.00005	13	20	96	90	110	NV	70	130
Thallium (total)	EMS0033-JUN22	mg/L	0.000005	<0.000005	5	20	101	90	110	100	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS (continued)

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Uranium (total)	EMS0033-JUN22	mg/L	0.000002	<0.000002	3	20	100	90	110	101	70	130
Vanadium (total)	EMS0033-JUN22	mg/L	0.00001	<0.00001	0	20	103	90	110	105	70	130
Zinc (total)	EMS0033-JUN22	mg/L	0.002	<0.002	2	20	101	90	110	NV	70	130

Microbiology

Method: SM 9222D | Internal ref.: ME-CA-IENVIMIC-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
E. Coli	BAC9064-JUN22	cfu/100mL	-	ACCEPTED	ACCEPTED							
Heterotrophic Plate Count (HPC)	BAC9064-JUN22	cfu/1mL	-	ACCEPTED	ACCEPTED							
Total Coliform	BAC9064-JUN22	cfu/100mL	-	ACCEPTED	ACCEPTED							

QC SUMMARY

pH

Method: SM 4500 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0054-JUN22	No unit	0.05	NA	0		100			NA		

Phenols by SFA

Method: SM 5530B-D I Internal ref.: ME-CA-IENVISFA-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
4AAP-Phenolics	SKA0039-JUN22	mg/L	0.002	<0.002	0	10	87	80	120	NV	75	125

Sulphide by SFA

Method: SM 4500 I Internal ref.: ME-CA-IENVISFA-LAK-AN-008

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Sulphide	SKA0061-JUN22	mg/L	0.02	<0.02	ND	20	101	80	120	NA	75	125

QC SUMMARY

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-[ENVIEWL-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Suspended Solids	EWL0063-JUN22	mg/L	2	< 2	3	10	107	90	110	NA		

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-[ENVISFA-LAK-AN-002

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Kjeldahl Nitrogen	SKA0053-JUN22	as N mg/L	0.5	<0.5	ND	10	105	90	110	102	75	125

Turbidity

Method: SM 2130 | Internal ref.: ME-CA-[ENVIEWL-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Turbidity	EWL0049-JUN22	NTU	0.10	< 0.10	2	10	100	90	110	NA		

QC SUMMARY

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.

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

Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

Duplicate Qualifier: for duplicates as the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.

LEGEND

FOOTNOTES

NSS	Insufficient sample for analysis.
RL	Reporting Limit.
↑	Reporting limit raised.
↓	Reporting limit lowered.
NA	The sample was not analysed for this analyte
ND	Non Detect

Data reported represent the sample as submitted to SGS. Solid samples expressed on a dry weight basis.
"Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.
Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality" published by the Ministry and dated March 9, 2004 as amended.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated.

SGS Canada Inc. statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

This report supersedes all previous versions.

-- End of Analytical Report --

emcscientific
INCORPORATED

Laboratory Analysis Report

To:

Brad Moore
SGS Canada Inc.
185 Concession Street
Lakefield, Ontario

EMC LAB REPORT NUMBER: A80310
Job/Project Name:
Analysis Method: Polarized Light Microscopy – EPA 600
Date Received: Jun 2/22 **Date Analyzed:** Jun 9/22
Analyst: Joseph Woo
Reviewed By: Chengming Li, *Analyst*

Job No: CA14016-JUN22
Number of Samples: 2
Date Reported: Jun 9/22

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
	A80310-1[5]	BH4	Black, tar	**ND**			100
	A80310-2[5]	BH6	Black, tar	**ND**			100

Note:
1. Bulk samples are analyzed using Polarized Light Microscopy (PLM) and dispersion staining techniques. The analytical procedures are in accordance with EPA 600/R-93/116 method.
2. The results are only related to the samples analyzed. **ND** = None Detected (no asbestos fibres were observed), **NA** = Not Analyzed (analysis stopped due to a previous positive result).
3. This report may not be reproduced, except in full without the written approval of EMC Scientific Inc. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.
4. The Ontario Regulatory Threshold for asbestos is 0.5%. The limit of quantification (LOQ) is 0.5%.
5. This sample is large in size. A representative portion was taken and analyzed.