Terraprobe

Consulting Geotechnical & Environmental Engineering
Construction Materials Inspection & Testing

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
1575 HURONTARIO STREET
MISSISSAUGA, ONTARIO

Prepared for:

1042967 Canada Corp. c/o
Dream Maker Developments
16 McAdam Avenue
Mississauga, ON
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Attention: Mr. Akeel Hussain

File No 1-18-0537-42
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1.0 EXECUTIVE SUMMARY

Terraprobe Inc. (Terraprobe) was retained by 10422967 Canada Corp. c/o Dream Maker Developments (Dream Maker) to complete a Phase Two Environmental Site Assessment (ESA) of the property (herein referred to as "Property") situated on the east side of Hurontario Street, approximately 115 metres to the south of South Service Road, in Mississauga, Ontario. The Property has the municipal address of 1575 Hurontario Street, Mississauga, Ontario.

The Phase Two ESA is required due to the conclusions of the Phase One ESA, which indicated Areas of Potential Environmental Concern (APECs) were present on the Property. The Phase One ESA identified following Potentially Contaminating Activities (PCAs) within the Phase One Property and Phase One Study Area (Study Area).

On-Site PCA

Southern half of the Phase One Property (Exterior of the building)

- #30 – Importation of Fill Material of Unknown Quality. Suspected fill material may have been used during the development of the Property.

Off-Site PCA

- #28 – Gasoline and Associated Products Storage in Fixed Tanks. Historical fuel outlet with single walled underground storage tanks (USTs) located approximately 90 m northwest of the Property.

During Phase Two ESA investigation, fill material was identified at the Property. The fill material composition resembled the onsite native soils. The fill soils appeared to be reworked native soils generated form the Property and were used for grading purposes. As such, onsite fill material is not considered to be causing an APEC on the Property.

The offsite PCA identified in the Phase One ESA caused the following APEC on the Property:

APEC	Location of APEC on the Property	Details	Potential Contaminants of Concern (PCoCs)	Media Potentially Impacted
APEC 1	Southwestern portion	PCA #28, Result of historical fuel outlet with single walled USTs located approximately 90 m northwest of the Property	PHCs, BTEX	Ground water

A Phase Two ESA was conducted to address the APEC on the Property. The Phase Two ESA was completed in compliance with Ontario Regulation 153/04 (O.Reg.153/04).

The conclusions of the Phase Two ESA were:

- The applicable Site Condition Standards are the Ministry of the Environment Table 2 Standards for Residential, Parkland, Institutional Land Use with coarse-textured soils (Table 2 RPI CT).
- A total of six (6) boreholes were advanced on the Property to a depth of 6 m below ground surface (bgs). Four (4) of the boreholes were installed with monitoring wells.
- During the subsurface investigation, no evidence of imported fill material was observed. Reworked earth fill was identified throughout the site due to possible historical grading activity prior to development of the Property.
- The stratigraphy of the Property is generally summarized as a layer of pavement structure comprising of a 140 to 310 mm thick asphaltic concrete layer at borehole location BH1 to BH4 and BH7 and BH8. A layer of top soil with thickness between 100 to 300 mm was observed at borehole location BH5 and BH6. A layer of earth fill material (reworked onsite native soils) was encountered at all other borehole locations with the exception borehole location BH1 and BH7. The earth fill extended to depths of approximately 0.8 to 2.3 m below ground surface (bgs) and consisted of silty sand with trace amounts clay and gravels. Underlying the surficial material and fill material, a cohesionless deposit of sand to silty sand was encountered and extended to a depth of 2.1 to 6.2 mbgs (Elev. 95.6 to 91.8 masl) at all borehole locations. The sand to silty sand layer is underlain by a layer of sandy silt/clayey silt to sand and clay at all borehole location with the exception of BH7 to BH9. The native soil extended to a depth of 4.6 to 6.7 mbgs (Elev. 89.9 to 91.6 masl). Inferred bedrock was encountered at 4.6 mbgs (Elev. 90.4 masl) at borehole location BH5 and BH6.
- Select soil samples from the native soil were analysed for pH, petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene and xylene (BTEX).
- A total of four (4) ground water samples were analysed for PHCs and BTEX
- Applicable site condition standards were met for soil and ground water on the Property.

The results of the Phase Two ESA indicate that there were no exceedances of the MECP Table 2 RPI standards in the soil and ground water on the Property. A Record of Site Condition can be filed for the Property.

2.0 INTRODUCTION

Terraprobe Inc. (Terraprobe) was retained by 10422967 Canada Corp. c/o Dream Maker Developments (Dream Maker) to complete a Phase Two Environmental Site Assessment (ESA) of the property (herein referred to as "Property") situated on the east side of Hurontario Street, approximately 115 metres to the south of South Service Road, in Mississauga, Ontario. The Property has the municipal address of 1575 Hurontario Street, Mississauga, Ontario. The Phase Two ESA is required due to the conclusions of the Phase One ESA, which indicated Areas of Potential Environmental Concern (APECs) were present on the Property. The Phase Two ESA was completed in compliance with Ontario Regulation 153/04 (O.Reg.153/04).

2.1 Site Description

The Property is approximately rectangular in shape and covers an area of approximately 0.4 ha (0.9 acres). The Property is currently vacant. The majority of the Property consists of asphalt paved driveways/parking areas and landscaped grass and trees. The foundations (one basement level) of a former building were exposed and located in the middle of the Property. The Property was formerly occupied by a restaurant (McDonalds) and was commercial in land use per Ontario Regulation 153/04 (O.Reg.153/04). The surrounding area is predominantly residential and commercial in land use. Site location and features are presented in Figures 1 & 2. The site survey plan is shown in Appendix A.

The Property information is as follows:

Legal Description	Part Lot 1 Range 2 CIR
PIN	13469-0006 (LT)
Municipal Address	1575 Hurontario Street, Mississauga
Assessment Roll No.	NA
Zoning	R1-1 Zone – Residential Zones

2.2 Property Ownership

The ownership information for the Phase Two Property is as follows:

Property Owner Information	10422967 Canada Corp.
Persons, other than Property Owner, who engaged the Qualified Person to conduct the Phase Two ESA	Mr. Akeel Hussain Dream Maker Developments E-mail: development@dreamto.ca

2.3 Current and Proposed Future Uses

2.3.1 Current Land Use

The Property is currently vacant. The foundations (one basement level) of a former building were exposed and located in the middle of the Property. The Property is currently in commercial land use per Ontario Regulation 153/04.

2.3.2 Future Land Use

It is understood that the Property will be redeveloped with townhouse units and one level of underground parking. Under O.Reg.153/04, the future Land Use of the Property would be considered residential land use.

2.4 Applicable Site Condition Standard

The applicable soil and ground water Standards for the Property were determined to be those in Table 2 of the April 15, 2011 Ontario Ministry of Environment, Conservation and Parks (MECP) "*Soil, Ground Water and Sediment Standards for use under part XV.1 of the Environmental Protection Act*" for Residential, Parkland, Institutional Land Use in a potable ground water condition for coarse textured soil (Table 2 RPI CT Standards).

These are considered to be the applicable Standards for the following reasons:

- The proposed use for the Property is for Residential Land Use.
- Soil at the Property was determined to be coarse textured.
- Bedrock is located at a depth of greater than 2 m.
- The site is located in an urban setting, which obtains its potable water from surface water sources; however, the Table 2 Standards are used for a more conservative approach.
- The Property is not located within 30 m of a surface water body.
- The Property is not located in, adjacent to, or within 30 m of an area of natural significance or a source water protection area.

2.5 Objectives of Investigation

The general objectives of the investigation include the following:

- To determine if Contaminants of Potential Concern identified in a Phase One ESA for the Property are found through the course of conducting the Phase Two ESA, in soil, sediment, and/or ground water, as applicable.

- To determine if the concentrations of the potential Contaminants of Concern identified in the investigation met the generic Site Condition Standard.

To ensure that the general objectives of the investigation were met, the Qualified Person ensured the following:

- That the investigation provided sufficient information to provide an understanding of the geological and hydrogeological conditions at the Phase Two Property; and

- That one or more rounds of field sampling are conducted for all Potential Contaminants of Concern (PCoCs) identified for each Area of Potential Environmental Concern (APEC), as identified in the Sampling and Analysis Plan (Appendix C) of the Phase Two ESA and found through the course of conducting the Phase Two ESA, in soil, sediment, and ground water, as applicable.

3.0 BACKGROUND INFORMATION

3.1 Physical Setting

3.1.1 Water Bodies, Wetlands and Areas of Natural Significance

Mapping from the Ontario Ministry of Natural Resources and Forestry (MNRF) was reviewed to determine if water bodies were present on the Property and within 250 m of the Property. The MNRF National Heritage Information Centre database for listings of Areas of Natural or Scientific Interest (ANSIs) was reviewed. The information is summarized below.

Water Bodies (Study Area)	• Mary Fix Creek – located approximately 215 m to the southwest of the Property.
Wetland (Property)	Provincially Significant • No Provincially Significant wetlands are present on the Property. Non- Provincially Significant • No Non- Provincially Significant wetlands are present on the Property. Unevaluated • No Unevaluated wetlands are present on the Property.
Wetland (Study Area)	Provincially Significant • No Provincially Significant wetlands are present in the Study Area. Non- Provincially Significant • No Non- Provincially Significant wetlands are present in the Study Area. Unevaluated • No Unevaluated wetlands are present in the Study Area.
ANSIs (Property)	Provincially Significant Life Science ANSI • No Life Science ANSIs were identified on the Property. Provincially Significant Earth Science ANSI • No Earth Science ANSIs were identified on the Property.
ANSIs (Study Area)	Provincially Significant Life Science ANSI • No Life Science ANSIs were identified in the Study Area. Provincially Significant Earth Science ANSI • No Earth Science ANSIs were identified in the Study Area.

3.1.2 Topography and Surface Water Drainage

A topographic map from the Ontario Ministry of Natural Resources and Forestry (MNRF) and the geological mapping produced by the Ontario Ministry of Northern Development and Mines - *Ontario Geological Survey* was reviewed. The information gleaned from the mapping is summarized below.

Topography	The approximate elevation of the Property is 87 masl and slopes to the south/southeast towards Lake Ontario.
Hydrogeology	The nearest water body is Mary Fix Creek which is located approximately 215 m to the southwest of the Property. Ground water and surface water is expected to flow to the south/southeast towards Lake Ontario.
Geology (overburden)	The overburden on the Property is comprised of coarse-textured glaciolacustrine deposits consisted of sand, gravel, minor silt and clay of foreshore and basinal deposits (9c).
Geology (bedrock)	The bedrock on the Property is of the Georgian Bay Formation, which is comprised of shale and limestone (55b).
Geology (depth to bedrock)	Based on the subsurface investigation, bedrock at the Property was encountered at 4.6 m below ground surface.

3.2 Past Investigations

Previous Phase One Environmental Site Assessment report prepared for the Property by Terraprobe is summarized below:

Report Title	Phase One Environmental Site Assessment, 1575 Hurontario Street, Mississauga, Ontario
Report Date	October 12, 2018
Report Number	1-18-0537-41
Prepared By	Terraprobe Inc.
Prepared For	Dream Maker Developments

A Phase One ESA was completed as per the requirement of O.Reg.153/04 for the Property located at 1575 Hurontario Street, Mississauga, Ontario. The Phase One ESA identified following Potentially Contaminating Activities (PCAs) within the Phase One Property and Phase One Study Area (Study Area).

On-Site PCA

Southern half of the Phase One Property (Exterior of the building)

- #30 – Importation of Fill Material of Unknown Quality. Suspected fill material may have been used during the development of the Property.

Off-Site PCA

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During Phase Two ESA investigation, fill material was identified at the Property. The fill material composition resembled the onsite native soils. The fill soils appeared to be reworked native soils generated form the Property and are used for grading purposes. As such, onsite fill material is not considered to be causing an APEC on the Property.

The offsite PCA identified in the Phase One ESA caused the following APEC on the Property:

- **APEC 1** – Result of historical fuel outlet with single walled USTs located approximately 90 m northwest of the Property.
    - Location on the Property
        - Southwestern portion of the Property
    - Potential Contaminants of Concern (PCoCs)
        - Petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene, xylene (BTEX)
    - Media Potentially Impacted
        - Ground water

A Phase Two ESA is required to investigate the APEC identified on the Property.

4.0 SCOPE OF THE INVESTIGATION

4.1 Overview of Site Investigation

Terraprobe conducted the following subsurface work at the Property:

- Drilling of nine (9) boreholes to approximately 2.1 to 6.7 m depth below existing grades in April 2019.
- Laboratory analysis of selected soil samples for parameters including:
    - Selected Other Regulated Parameters (ORPs)
        - pH
    - F1-F4 petroleum hydrocarbons (PHCs)
    - Benzene, Toluene, Ethylbenzene, Xylene (BTEX)
- Installation of four (4) ground water monitoring wells
- Survey of all boreholes and monitoring wells to a geodetic benchmark
- Measurement of ground water elevations to determine ground water elevation and flow direction
- Development and sampling of all monitoring wells
- Laboratory analysis of ground water samples for:
    - Petroleum Hydrocarbons (PHCs)
    - Benzene, Toluene, Ethylbenzene, Xylene (BTEX)

4.2 Media Investigated

4.2.1 Rational for Inclusion or Exclusion of Media

Media	Included or Excluded	Rational
Soil	Included	Based upon the Phase One ESA, soil sampling was required on the Property of the identified Potential Contaminants of Concern (PCoCs). Sample locations were selected to investigate all the identified Areas of Potential Environmental Concern (APECs).
Sediment	Excluded	Surface water bodies were not present on the Property. As such, sediment sampling was not conducted during the investigation.
Ground Water	Included	Based upon the Phase One ESA, ground water sampling was required on the Property of the identified PCoCs. Sample locations were selected to investigate all the identified Areas of Potential Environmental Concern (APECs).
Surface Water	Excluded	Surface water bodies were not present on the Property. As such, surface water sampling was not conducted during the investigation.

4.2.2 Overview of Field Investigation of Media

Soil sampling was conducted during the drilling program by use of the split spoon sampling method. Ground water sampling was conducted from monitoring wells installed within the completed boreholes.

4.3 Phase One Conceptual Site Model

The Phase One Conceptual Site Model was developed as part of the Phase One ESA for the Property through a review of historical records and a reconnaissance of the area. The Phase One Conceptual Site Model from the Phase One ESA is provided in Appendix B and the PCA and APEC locations are provided in Figure 2.

4.4 Deviations from Sampling and Analysis Plan

The sampling and analysis plan is provided in Appendix C. No deviations from the sampling and analysis plan were observed.

5.0 INVESTIGATION METHOD

5.1 General

Public and private utility clearances were undertaken prior to commencing the subsurface investigation. The Phase Two ESA generally followed the methods outlined in the following documents:

- Ontario Ministry of the Environment and Climate Change *"Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario"* (December 1996)

The methods used in the Phase Two ESA investigation did not differ from the associated standard operating procedures. The Standard Field Investigation Protocol is presented in Appendix D.

5.2 Drilling

The drilling information for the Phase Two ESA is provided below:

Borehole	BH1, BH2, BH3, BH4, BH5, BH6, BH7, BH8, BH9
Date of Work	April 23 and 24, 2019
Name of Contractor	Pontil Drilling Services Inc.
Equipment Used	CME55 track, split spoon sampling
Decontamination Measures	Split spoons are washed between samples.
Sampling Frequency	Please refer to the borehole logs in Appendix E for the sampling frequency

5.3 Soil Sampling

5.3.1 Equipment Used

- Laboratory supplied sampling containers
- Nitrile gloves
- Cooler with loose ice
- Mini Rae Photo-Ionization Detector (PID)

5.3.2 Geological Description of Soil

Please refer to the borehole logs in Appendix E for the geological description of each soil sample collected.

5.4 Field Screening Measurements

Soil samples were screened in the field using portable hydrocarbon vapour testing equipment and following the procedure outlined in the "*Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*" published by the Ontario Ministry of the Environment, Conservation and Parks.

Samples were screened using a Mini Rae Photo-Ionization Detector. The monitor has a range of 0 parts per million (ppm) to 10,000 ppm and an accuracy of +/- 5%. The monitor was calibrated with isobutylene gas prior to field screening as per the calibration procedure outlined by RAE Systems in "*Mini Rae 2000 Portable VOC Monitor Operation and Maintenance Manual, Rev. E*" released May, 2005.

Field screening measurements were used to help select samples for petroleum hydrocarbon and volatile organic compounds laboratory analysis. Complete field screening readings are provided on the borehole logs in Appendix E.

5.5 Ground Water Monitoring Well Installation

Monitoring wells were installed in four (4) of the nine (9) boreholes by the drilling sub-contractor on dates noted in Section 5.2, under the supervision of an experienced Terraprobe field technician. The wells were constructed of 50-mm (2-in) ID PVC screens and risers. Filter sand was placed around the well screen to approximately 0.6 m above the top of the screen. The wells were then backfilled with bentonite to approximately 0.3 m below ground surface. The wells were finished with flush mount cap.

As per Ontario Regulation 903 the monitoring wells were tagged with cluster water well record. The monitoring well locations are provided on Figure 3. The monitoring well installation details are provided on the borehole logs in Appendix E.

5.6 Field Measurement of Water Quality Parameters Ground Water: Sampling

Field measurement of water quality parameters were measured using a Hanna Instruments portable pH/EC/TDS/Temperature meter (model HI 991301).

Range

- pH 0.00 to 14.00 pH
- EC 0.00 to 20.00 mS/cm
- TDS 0.00 to 10.00 ppt (g/L)

- Temperature 0.0 to 60.0°C

Resolution

- pH 0.01 pH
- EC 0.01 mS/cm
- TDS 0.01 ppt
- Temperature 0.1°C

Accuracy

- pH ±0.01 pH
- EC ±2% F.S.
- TDS ±2% F.S.
- Temperature ±0.5°C

5.7 Ground Water Sampling

The monitoring wells were purged and sampled using inertia pump and tubing. Stabilization of parameters (pH, D.O., conductivity, temperature, etc.) and turbidity of the purged water are monitored before a sample is taken, thus sampling methods facilitate equilibrium with the surrounding formation water and produces samples that are representative of the formation water.

Stabilization was considered to occur when consecutive readings were within the following:

- Conductivity ± 3%
- Temperature ± 3%
- pH ± 0.1 unit

5.8 Sediment Sampling

No sediment sampling was conducted as part of this investigation.

5.9 Analytical Testing

Analytical testing of all soil and ground water samples was conducted by AGAT Laboratories.

5.10 Residue Management Procedures

5.10.1 Soil Cuttings

Soil cuttings generated during the drilling activities were placed in drums and left on the Property.

5.10.2 Ground Water

The development and purge water generated during the ground water sampling events was disposed of to the drums.

5.10.3 Fluids from Equipment Cleaning

The fluids from cleaning were removed from the Property and disposed of by the driller.

5.11 Elevation Surveying

The elevations of the boreholes on the Property were surveyed by Terraprobe using a Trimble R10 survey system. The Trimble R10 is a differential global positioning system (GPS) which involves the cooperation of two receivers, one that's stationary and another that's roving around making position measurements. The elevation of each borehole on the Property is presented on the borehole logs in Appendix E.

5.12 Quality Assurance and Quality Control Measures

5.12.1 Containers, Labelling, Handling and Chain of Custody

Containers

The following laboratory supplied sample containers were used for all sampling conducted on the Property.

Soil Parameters	Container
pH	250 mL glass jar, Teflon lined lid
BTEX, PHCs (F1), THMs, VOCs	40–60 mL glass vial (charged with methanol preservative, pre- weighed) and glass jar (for moisture content)
PHCs (F2–F4)	120 mL glass jar, Teflon lined lid

Ground Water Parameters	Container
BTEX, PHCs (F1),THMs, VOCs;	40–60 mL glass vials (minimum of 2)
PHCs (F2–F4)	2 x 500 mL amber glass bottle, Teflon lined lid

Labelling

All sampling containers were identified with laboratory supplied labels. The labels included the following information:

- Unique Sample ID
- Company Name

- Date and Time
- Project Number

Handling

Samples were placed in coolers with loose ice after collection for transportation to the laboratory. Sample hold times were met for all submitted soil and ground water samples.

Chain of Custody

Laboratory supplied Chain of Custody forms were completed for all samples submitted for analysis.

5.12.2 Equipment Cleaning Procedures

All non-dedicated sampling and monitoring equipment was cleaned following each use. During soil sampling a dedicated sampling device was used for each sample to prevent cross-contamination. During ground water sampling any part of the interface meter which came into contact with the ground water was cleaned between monitoring wells.

Dedicated equipment (nitrile gloves, terra core samplers, tubing) were changed between each sample to avoid cross contamination.

5.12.3 Field Quality Control Measures

- All non-dedicated sampling and monitoring equipment was cleaned following each use.
- Where ground water samples are to be analyzed for volatile organic compounds one trip blank sample was submitted for laboratory analysis with each laboratory submission.
- Sufficient field duplicate samples were collected in each medium being sampled, so that at least one (1) field duplicate sample can be submitted for laboratory analysis for every ten (10) samples submitted for laboratory analysis
- Calibration checks on field instruments occurred daily prior to the commencement of sampling

5.12.4 Deviations in the Quality Assurance and Quality Control Measures

No deviations from the quality assurance and quality control measures plan occurred.

6.0 REVIEW AND EVALUATION

6.1 Geology

Detailed geological information for the Property is presented on the borehole logs in Appendix E. The geology at the Property is summarized below. The geological stratigraphy is also presented in Figure 5 and 6.

6.1.1 Geological Unit Thickness (Estimate)

The geological unit thicknesses are presented in Table 1.

6.1.2 Elevations of Geological Units

The geological unit elevations are presented in Table 1.

6.1.3 Material in Geological Units

Surficial Materials

A topsoil layer was encountered in Boreholes 5 and 6. The topsoil thicknesses were 100 and 300 mm in Boreholes 6 and 5, respectively. Pavement structure consisting of 45 to 70 mm thick asphaltic concrete underlain by 90 to 255 mm thick granular base/subbase course was encountered in Boreholes 1, 2, 3, 4, 7 and 8.

Earth Fill

A layer of reworked earth fill material was encountered at all other borehole locations with the exception borehole location BH1 and BH7. The earth fill extended to depths of approximately 0.8 to 2.3 m below ground surface (bgs). The earth fill material generally consisted of silty sand with trace amounts of organics, clay and gravels, loose to compact, brown to dark brown and moist. The fill composition resembled the onsite native soils. As such, the fill material appeared to be reworked native soils generated form the Property and used for grading purposes.

Native Soil

Underlying the surficial material and fill material, a cohesionless deposit of sand to silty sand was encountered and extended to a depth of 2.1 to 6.2 mbgs (Elev. 95.6 to 91.8 masl) at all borehole location. The sand to silty sand layer is underlain by a layer of silt and clay/clayey silt at all borehole location with the exception of BH7 to BH9. The native soil extended to a depth of 4.6 to 6.7 mbgs (Elev. 89.9 to 91.6 masl).

Bedrock

Inferred Bedrock (shale-till complex/weathered shale) was encountered at 4.6 mbgs (Elev. 90.4 masl) at borehole location BH5 and BH6.

6.1.4 Properties of Aquifers and Aquitards

Native Soil

The native soil consisting of cohesionless deposit of sand and silty sand layer is considered to be an aquifer. Recharge into the aquifer will be primarily through rain fall events and migration from the north adjoining properties. The water elevation taken within each of the four (4) monitoring wells indicated that the silty sand to sand layer is an aquifer.

6.1.5 Rationale for Choice of Aquifers and Aquitards Investigated

The native soils were chosen for investigation. This was chosen of investigation because:

- The likelihood of vertical migration of water from the fill material downward
- Possibility of free ground water present through recharge from larger area and up-gradient tributaries.

6.2 Ground Water Elevations and Flow Direction

6.2.1 Rationale for Monitoring Well Locations and Screen Intervals

Monitoring wells were located across the Property in order to provide full site coverage. The monitoring wells were screened within the native soil unit across the Property to allow for the collection of ground water samples within the water bearing aquifer.

6.2.2 Results of Interface Probe Measurements

Interface probe measurements indicated that only water was present on the Property. No light non-aqueous phase liquids (LNAPL) or dense non-aqueous phase liquids (DNAPL) were detected.

6.2.3 Thickness of Free Flowing Product

No free flowing product was encountered on the Property.

6.2.4 Ground Water Elevations

Ground water elevations are presented on Table 3.

6.2.5 Interpreted Direction of Ground Water Flow

Based on the May 1, 2019 readings, the interpreted direction of ground water flow is to the east. It should be noted that the water levels may not have stabilized. The inferred ground water direction is expected to be southeast towards Lake Ontario. Ground water flow direction and ground water elevation contours are presented on Figure 4.

6.2.6 Assessment of Temporal Variability

One ground water level measurement was collected on the Property. Additional ground water measurements will be required in order to comment of the amount of temporal variability.

6.2.7 Influence of Buried Utilities

Buried utilities such as water, sanitary and storm sewer are currently located on the Property. As such, it is likely that buried utilities will influence the ground water flow.

6.3 Ground Water Hydraulic Gradients and Hydraulic Conductivity

6.3.1 Horizontal Hydraulic Gradients

The ground water table is within the silty sand to sandy silt aquifer. Based on the current measured ground water levels, the horizontal hydraulic gradient of the ground water for the silty sand to sandy silt unit at the Property was determined to be approximately 0.28 m/m towards the southeast. It was noted that the current water levels may not be stabilized.

6.3.2 Vertical Hydraulic Gradients

The vertical hydraulic gradient could not be reliably determined from the available data.

6.3.3 Hydraulic Conductivity

According to Freeze and Cherry (1979), the typical hydraulic conductivity of the strata investigated at the Property is:

- Earth Fill (Silty Sand) 10^{-3} m/s to 10^{-7} m/s
- Native Soil (Sandy Silt to Clayey Silt to Sand and Clay) 10^{-6} m/s to 10^{-10} m/s

Hydraulic conductivity measured from single well response test on the Property is as follows:

Monitoring Well	Well Screen Elevation (masl)	Screened Geological Unit	Hydraulic Conductivity (m/s)
BH/MW1	94.9 to 91.9	Silty Sand	2.70×10^{-5}
BH/MW3	94.1 to 91.1	Silty Sand to Sandy Silt	8.92×10^{-6}
BH/MW6	91.4 to 88.4	Clayey Silt	2.88×10^{-7}

6.4 Soil Texture

Fine-medium soil texture was not used during the Phase Two ESA. All chemical results were compared to the coarse textured standards. Grain Size Analysis is provided in Appendix F.

6.5 Soil: Field Screening

All recovered soil samples were screened in the field using portable hydrocarbon vapour testing equipment and following the procedure outlined in the "*Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*" published by the Ontario Ministry of the Environment, Conservation and Parks.

Field screening measurements were used to help select samples for petroleum hydrocarbon and volatile organic compounds laboratory analysis. Complete field screening readings are provided on the borehole logs in Appendix E.

6.6 Soil Quality

6.6.1 Location and Depth of Samples

Soil samples and selected analytical parameters:

Sample	Depth		Strata	pH	PHC	BTEX
	mbgs	masl				
BH1/SS2 & Dup1	0.8-1.4	96.6-97.2	Native	✓		
BH1/SS4	2.3-2.9	95.1-95.7	Native		✓	✓
BH2/SS6 & Dup 1	3.8-4.4	93.8-94.4	Native		✓	✓
BH3/SS6	3.8-4.4	92.8-93.6	Native		✓	✓
BH3/SS7	4.6-5.2	92-92.6	Native	✓		
BH4/SS4	2.3-2.9	94.1-94.7	Native		✓	✓
BH6/SS3	1.5-2.1	92.4-93	Native		✓	✓

Note: ✓ Meets MECP Table 2 RPI Standards
X Exceeds MECP Table 2 RPI Standards

6.6.2 Comparison to Applicable Standards (Soil)

Select soil samples were analysed for the Potential Contaminants of Concern (PCoCs). PCoCs include:

- Selected Other Regulated Parameters (ORPs)
  - pH
- Petroleum Hydrocarbons (PHCs)
- Benzene, Toluene, Ethylbenzene, Xylene (BTEX)

The results of the analysis were compared to the applicable MECP site condition standard for the Property (Table 2 RPI CT). The laboratory certificates of analysis are provided in Appendix G, and the results of the soil chemical analysis are provided in Tables 4 and 5.

No evidence of imported fill material was observed during the subsurface investigation. Reworked earth fill was observed throughout the Property likely due to historical grading of the site. The results of the soil analysis indicated no exceedances of the applicable site standard for all parameters analyzed.

6.6.3 Contaminants of Concern (Soil)

No Contaminants of Concern were found in the reworked earth fill and native soil on the Property.

6.6.4 Chemical or Biological Transformations

No chemical or biological transformations are likely to occur with the Contaminants of Concern which exceeded the applicable site condition standards.

6.6.5 Contamination Impact On Other Media

No contamination impact is likely to be observed on other media since no Contaminants of Concern were observed in the soil on the Property.

6.6.6 Presence of Light or Dense Non-Aqueous Phase Liquids (In Soil)

No light non-aqueous phase liquids (LNAPL) or dense non-aqueous phase liquids (DNAPL) were detected in the soil on the Property.

6.7 Ground Water Quality

6.7.1 Location and Depth of Sample Locations

Ground water sampling was completed for the monitoring wells on the Property. Ground water samples were analysed for parameters including PHCs and BTEX. The laboratory certificates of analysis are provided in Appendix G.

Monitoring Well	Screen/Sample Depth		PHCs	BTEX
	(mbgs)	(masl)		
BH/MW1	3.1-6.1	91.9-95	✓	✓
BH/MW2 & Dup*1	3.1-6.1	92.1-95.2	✓	✓
BH/MW3	3.1-6.1	91.1-94.1	✓	✓
BH/MW6	3.1-6.1	88.4-91.5	✓	✓

Note: ✓ Meets MECP Table 2 Standards
X Exceeds MECP Table 2 Standards

6.7.2 Field Filtering

No field filtering was required for ground water sampling.

6.7.3 Comparison to Applicable Standards (Ground Water)

Ground water samples were analysed for the PCoCs. PCoCs include:

- Petroleum Hydrocarbons (PHCs)
- Benzene, Toluene, Ethylbenzene, Xylene (BTEX)

The results of the analysis were compared to the applicable site condition standard for the Property (Table 2). The laboratory certificates of analysis are provided in Appendix G, and the results of the ground water chemical analysis are provided in Table 6.

6.7.4 Contaminants of Concern (Ground Water)

No Contaminants of Concern associated with the ground water on the Property at the locations investigated.

6.7.5 Chemical or Biological Transformations

No Contaminants of Concern associated with the ground water on the Property at the locations investigated and as such no chemical or biological transformations are expected to occur.

6.7.6 Contamination Impact On Other Media

No Contaminants of Concern associated with the ground water on the Property at the locations investigated.

6.7.7 Presence of Light or Dense Non-Aqueous Phase Liquids (Ground Water)

Light non-aqueous phase liquids (LNAPL) and dense non-aqueous phase liquids (DNAPL) were not detected in the ground water on the Property.

6.8 Sediment Quality

6.8.1 Location and Depth of Sample Locations

No sediment sampling was conducted as part of this investigation.

6.8.2 Comparison to Applicable Standards (Sediment)

No sediment sampling was conducted as part of this investigation.

6.8.3 Contaminants of Concern (Sediment)

No sediment sampling was conducted as part of this investigation.

6.8.4 Chemical or Biological Transformations

No sediment sampling was conducted as part of this investigation.

6.8.5 Contamination Impact On Other Media

No sediment sampling was conducted as part of this investigation.

6.9 Quality Assurance and Quality Control Results

6.9.1 Types of Quality Control Samples Collected and Results

In general, samples were handled in accordance with the Analytical Protocol with respect to holding time, preservation method, storage requirement and sample container type. Laboratory results were compared to MECP standards for quality control under Ontario Regulation 153/04 which require laboratory results to meet specific method detection limit (MDL) requirements. The sampling and analyses performed conformed with the following:

- Ministry of the Environment, Conservation and Parks (MECP) Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario.
- Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.I of the Environmental Protection Act of Ontario.

Duplicate samples were submitted at a rate of 10% for both soil and ground water samples.

6.9.2 Samples Not Handled in Accordance with the Analytical Methods

Holding Time

All samples met the holding times as specified in Ontario Ministry of the Environment and Climate Change (MECP) - Laboratory Services Branch *"Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act"* July 1, 2011

Preservation Method

All samples met the preservation methods as specified in MECP - Laboratory Services Branch "*Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*" July 1, 2011

Storage Requirement

All samples met the storage requirements as specified in MECP - Laboratory Services Branch "*Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*" July 1, 2011

Container Type

All samples met the container type as specified in MECP - Laboratory Services Branch "*Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*" July 1, 2011

6.9.3 Subsection 47 (3) of the Regulation

All certificates of analysis or analytical reports received pursuant to clause 47 (2) (b) of the regulation comply with subsection 47(3). A certificate of analysis or analytical report has been received for each sample submitted for analysis. All certificates of analysis or analytical reports received have been included in full in Appendix G to the Phase Two ESA report.

6.9.4 Results Qualified by Laboratory

The laboratory did not make any significant comments that changed the outcome of the analytical results regarding the soil and ground water samples.

6.9.5 Overall Quality of Field Data

Decision making regard the environmental condition of the Property was not affected by the overall quality of the field data. The overall quality of the field data was considered by the Qualified Person to meet the objectives of the investigation and assessment.

7.0 CONCLUSIONS

7.1 Location and Concentration of Contamination

7.1.1 Land

There were no exceedances of the applicable site standards noted in soils on the Property.

7.1.2 Ground Water

There were no exceedances of the applicable site standards noted in the ground water on the Property.

7.2 Environmental Conditions Requiring a Risk Assessment

There were no exceedances of the applicable site standards noted in the earth fill, the native soil, or the ground water on the Property.

7.3 Whether Applicable Site Condition Standards Where Met

Soil – Earth Fill
The applicable site condition standards were met in the earth fill located on the Property.

Soil – Native Soils
The applicable site condition standards were met in the native soils located on the Property.

Ground Water
The applicable site condition standards were met in the ground water on the Property.

Sediment
Sediment was not present on the Property and was not sampled as part of this investigation.

7.4 Signatures

The Phase Two Environmental Site Assessment has been completed by Ms. Jessie Hui Chung Wu, M. Env. Sc. under the direction and supervision of Muhammad I. Shahid, P.Geo., QP_{ESA}. The findings and conclusions presented in this report have been determined on the basis of the information that was obtained and reviewed from review of previous investigations provided and on the current investigation for the Phase Two Property.

We trust this report meets with your requirements. Should you have any questions regarding the information presented, please do not hesitate to contact our office.

Yours truly,

Terraprobe Inc.

Jessie Hui Chung Wu, M. Env. Sc.
Project Manager

Muhammad I. Shahid, P.Geo., QP_{ESA}
Senior Project Manager

8.0 REFERENCES

1. Armstrong, D.K. and Dodge, J.E.P. *Paleozoic Geology Map of Southern Ontario*. Ontario Geological Survey, Miscellaneous Release--Data 219.

2. Chapman, L.J. and Putnam, D.F. 2007. *The Physiography of Southern Ontario*. Ontario Geological Survey, Miscellaneous Release--Data 228.

3. Freeze, R. Allen and Cherry, John A., 1979. *Groundwater*. Page 29.

4. Ontario Ministry of the Environment, December 1996. *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario.*

5. Ontario Ministry of Environment, 15 April 2011. *Soil, Ground Water and Sediment Standards for use under part XV.1of the Environmental Protection Act.*

6. Ontario Ministry of the Environment, June 2011. *Guide for Completing Phase Two Environmental Site Assessments under Ontario regulation 153/04.*

7. Ontario Ministry of the Environment, July 2011. *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act.*

8. Terraprobe Inc. *Hydrogeological Review 1575 Hurontario Street, Mississauga, Ontario,* June 12, 2019, File Number 1-18-0537-46

9. Terraprobe Inc. *Phase One Environmental Site Assessment 1575 Hurontario Street, Mississauga, Ontario*, October 12, 2018, File Number 1-18-0537-41.

9.0 LIMITATIONS AND USE OF THE REPORT

This report was prepared for the exclusive use of 10422967 Canada Corp., c/o Dream Maker Developments, and is intended to provide an assessment of the environmental condition on the property located at 1575 Hurontario Street in Mississauga, Ontario. The report was prepared for the purpose of identifying potential environmental concerns, including an assessment of the likelihood that the environmental quality of the soil and ground water at the Property may have been adversely affected by past and present practices at the Property, and/or those of the surrounding properties prior to development of the Property. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Terraprobe accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report, including consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

The assessment should not be considered a comprehensive audit that eliminates all risks of encountering environmental problems. The information presented in this report is based on information collected during the completion of the subsurface investigation conducted by Terraprobe Inc. It is based on conditions at the Property at the time of the site inspection. The subsurface conditions were assessed based on information collected at specific borehole and monitoring well locations. The actual subsurface conditions between the sampling points may vary.

There is no warranty expressed or implied by this report regarding the environmental status of the Property. Professional judgment was exercised in gathering and analyzing information collected by our staff, as well as that submitted by others. The conclusions presented are the product of professional care and competence, and cannot be construed as an absolute guarantee.

In the event that during future work new information regarding the environmental condition of the Property is encountered, or in the event that the outstanding responses from the regulatory agencies indicate outstanding issues on file with respect to the Property, Terraprobe should be notified in order that we may re-evaluate the findings of this assessment and provide amendments, as required.

TABLES

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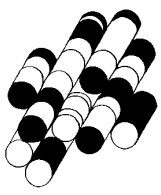


TABLE 1
Geological Units
1575 Hurontario Street, Mississauga
Project #1-18-0537-42

Borehole	BH 1			BH 2			BH 3			BH 4		
	Elev. Top (masl)	Elev. Bottom (masl)	Thickness (m)	Elev. Top (masl)	Elev. Bottom (masl)	Thickness (m)	Elev. Top (masl)	Elev. Bottom (masl)	Thickness (m)	Elev. Top (masl)	Elev. Bottom (masl)	Thickness (m)
Asphaltic concrete/Top Soil	98.01	97.8	0.21	98.2	98.05	0.15	97.2	97.06	0.14	97	96.8	0.2
Earth Fill	-	-	-	98.05	95.9	2.15	97.06	94.9	2.16	96.8	94.7	2.1
Native Soil (Silty Sand)	97.8	91.81	5.99	95.9	92.1	3.8	94.9	92.6	2.3	94.7	92.9	1.8
Native Soil (Sandy Silt; Sand and Clay; Clayey Silt)	91.81	91.61	0.2	92.1	91.5	0.6	92.6	90.5	2.1	92.9	90.3	2.6
Bedrock (weathered)	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 1
Geological Units
1575 Hurontario Street, Mississauga
Project #1-18-0537-42

Borehole	BH 5			BH 6			BH 7			BH 8			BH 9		
	Elev. Top (masl)	Elev. Bottom (masl)	Thickness (m)	Elev. Top (masl)	Elev. Bottom (masl)	Thickness (m)	Elev. Top (masl)	Elev. Bottom (masl)	Thickness (m)	Elev. Top (masl)	Elev. Bottom (masl)	Thickness (m)	Elev. Top (masl)	Elev. Bottom (masl)	Thickness (m)
Asphaltic concrete/Top Soil	95	94.7	0.3	94.5	94.4	0.1	97.7	97.39	0.31	96.8	96.62	0.18	-	-	-
Earth Fill	94.7	94.2	0.5	94.4	93.7	0.7	-	-	-	96.62	95.3	1.32	94.9	93.4	1.5
Native Soil (Silty Sand)	94.2	92.4	1.8	93.7	92.2	1.5	97.39	95.6	1.79	95.3	94.7	0.6	93.4	92.8	0.6
Native Soil (Sandy Silt; Sand and Clay; Clayey Silt)	92.4	90.4	2	92.2	89.9	2.3	-	-	-	-	-	-	-	-	-
Bedrock (weathered)	90.4	88.8	1.6	89.9	88.4	1.5	-	-	-	-	-	-	-	-	-

TABLE 2
Monitoring Well Construction
1575 Hurontario Street, Misssissauga
Project #1-18-0537-42

Well ID	BH/MW 1		BH/MW 2		BH/MW 3		BH/MW 6	
Stick Up (m)	0.00		0.00		0.00		0.00	
Ground Elev. (masl)	98		98.2		97.2		94.5	
Well Componant	**Depth (m)**	**Elev. (masl)**	**Depth (m)**	**Elev. (masl)**	**Depth (m)**	**Elev. (masl)**	**Depth (m)**	**Elev. (masl)**
Concrete - Top								
Bentonitie - Top	0.00	98.00	0.00	98.20	0.00	97.20	0.00	94.50
Bentonitie - Bottom	2.44	95.56	2.44	95.76	2.51	94.69	2.44	92.06
Sand - Top	2.44	95.56	2.44	95.76	2.51	94.69	2.44	92.06
Screen - Top	3.05	94.95	3.05	95.15	3.05	94.15	3.05	91.45
Screen - Bottom	6.10	91.90	6.10	92.10	6.10	91.10	6.10	88.40
Bentonitie - Bottom	6.71	91.29	6.71	91.49	6.71	90.49	6.15	88.35

Note: N/A = Not available

TABLE 3
Ground Water Elevations
1575 Hurontario Street, Mississauga
Project #1-18-0537-42

Well ID	**BH/MW 1**		**BH/MW 2**		**BH/MW 3**		**BH/MW 6**	
Stick Up (m)	0.00		0.00		0.86		0.00	
Depth (mbgs)	5.70		6.05		6.77		6.05	
Ground Elev. (masl)	98		98.2		97.2		94.5	
Date	WL (m)	Elev. (masl)	WL (m)	Elev. (masl)	WL (m)	Elev. (masl)	WL (m)	Elev. (masl)
2019/04/30	3.19	94.81	3.54	94.66	2.41	95.65	3.77	90.73
2019/05/01	3.19	94.81	3.54	94.66	2.41	95.65	3.77	90.73

Note:

TABLE 4
Metals and ORPs (Soil)
1575 Hurontario Street, Mississauga
Project #1-18-0537-42

Sample Name	Unit	Table 2 RPI	BH1/SS2	BH3/SS7	Dup1 [BH1/SS2]
AGAT wo#			19T460614	19T460614	19T460614
AGAT ID#			156796	156797	156798
Date			4/23/2019	4/23/2019	4/23/2019
Parameter/Depth of Sample (masl)			96.6-97.2	92-92.6	96.6-97.2
pH, 2:1 CaCl2 Extraction	NV	NV	8.18	7.98	7.61

Comments:
Results compared to MECP 2011 Table 2 Site Condition Standards for Residential/Park/Institutional Land Use in a Coarse-Textured Soil Condition
RDL - Reported Detection Limit; G / S - Guideline / Standard
<150 Detection limit exceeded Standard
150 Sample result exceeded Standard
EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil).
pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.
NV- No Value
NA-Not Analyzed

TABLE 5
PHCs F1 - F4 (&BTEX) (Soil)
1575 Hurontario Street, Mississauga
Project #1-18-0537-42

Sample Name	Unit	Table 2 RPI	BH1/SS4	BH2/SS6	BH3/SS6	BH4/SS4	BH6/SS3	Dup1 [BH2/SS6]
AGAT wo#			**19T460614**	**19T460614**	**19T460614**	**19T460614**	**19T460614**	**19T460614**
AGAT ID#			**156799**	**156800**	**156801**	**156802**	**156803**	**8726908**
Date			**04/23/2019**	**04/23/2019**	**04/23/2019**	**04/24/2019**	**04/24/2019**	**09/14/2017**
Parameter/Depth of Sample (masl)			**95.1-95.7**	**93.8-94.4**	**92.8-93.6**	**94.1-94.7**	**92.4-93**	**93.8-94.4**
Benzene	µg/g	0.21	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	1.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene Mixture	µg/g	3.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	55	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	<50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	NA	NA	NA	NA	<50	NA
Moisture Content	%	NV	18.8	17.2	13.3	17.9	19.3	18.4
Terphenyl	%	NV	108	119	97	101	109	84

Comments:
Results compared to MECP 2011 Table 2 Site Condition Standards for Residential/Park/Institutional Land Use in a Coarse-Textured Soil Condition
RDL - Reported Detection Limit; G / S - Guideline / Standard
<150 Detection limit exceeded Standard
150 Sample result exceeded Standard
Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
Total C6 - C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.
Quality Control Data is available upon request.
NV- No Value
NA-Not Analyzed

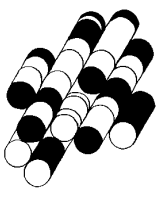
TABLE 6
PHCs F1 - F4 (-BTEX) (Groundwater)
1575 Hurontario Street, Mississauga
Project #1-18-0537-42

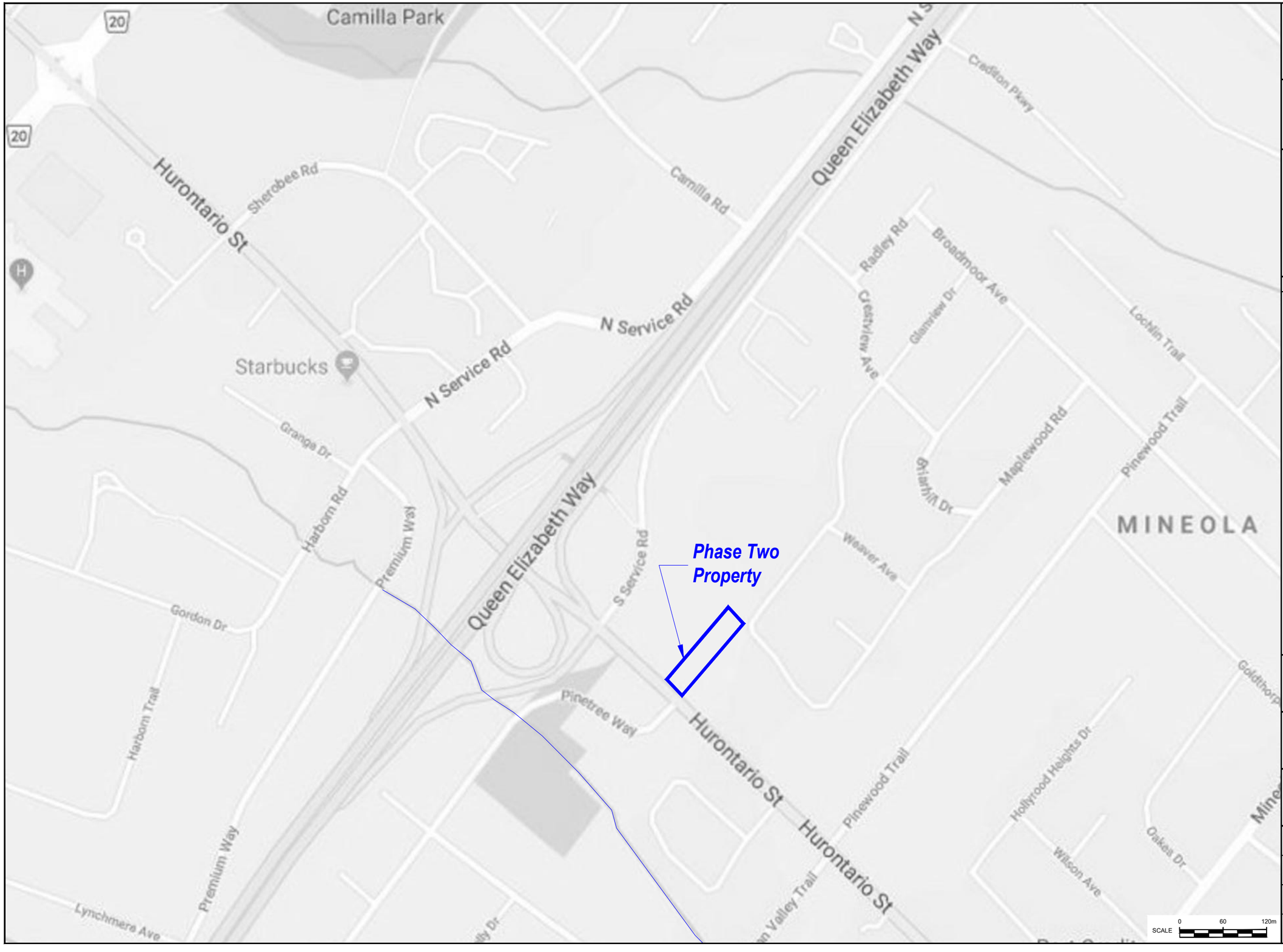
Sample Name	Unit	Table 2 RPI	BH1	BH2	BH3	BH6	Dup 1 [BH2]
AGAT WO#			19T462150	19T462150	19T462150	19T462150	19T462150
AGAT ID#			164320	164322	164323	164324	164325
Date			05/01/2019	05/01/2019	05/01/2019	05/01/2019	05/01/2019
Parameter/Depth of Screens (masl)			91.9-95	92.1-95.2	91.1-94.1	88.4-91.5	92.1-95.2
Benzene	µg/L	5	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L	24	<0.20	<0.20	1.2	<0.20	<0.20
Ethylbenzene	µg/L	2.4	<0.10	<0.10	<0.10	<0.10	<0.10
Xylene Mixture	µg/L	300	<0.20	<0.20	<0.20	<0.20	<0.20
F1 (C6 to C10)	µg/L	750	<25	<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	<25	<25	<25	<25	<25
F2 (C10 to C16)	µg/L	150	<100	<100	<100	<100	<100
F3 (C16 to C34)	µg/L	500	<100	<100	<100	<100	<100
F4 (C34 to C50)	µg/L	500	<100	<100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	NA	NA	NA	NA	NA
Terphenyl	%	NV	95	85	108	62	93

Comments:
Results compared to MECP 2011 Table 2 Site Condition Standards for Residential/Park/Institutional Land Use in a PGW Coarse-Textured Soil Condition
RDL - Reported Detection Limit; G / S - Guideline / Standard
<150 Detection limit exceeded Standard
150 Sample result exceeded Standard
Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
Total C6 - C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.
Quality Control Data is available upon request.
NV- No Value
NA-Not Analyzed

FIGURES

TERRAPROBE INC.





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

Reference:
Toronto Maps 2018

Notes:

Legend:
Phase Two Property Boundary

Project Title:
Phase Two Environmental Site Assessment

Site Location:
1575 Hurontario Street, Toronto, Ontario

Figure Title:
PHASE TWO PROPERTY

Designed By: JW	***File No.:*** 1-18-0537-42
Drawn By: JB	***Scale:*** As Shown
Reviewed By: MS	***Figure No.:*** 1
Date: June 2019	

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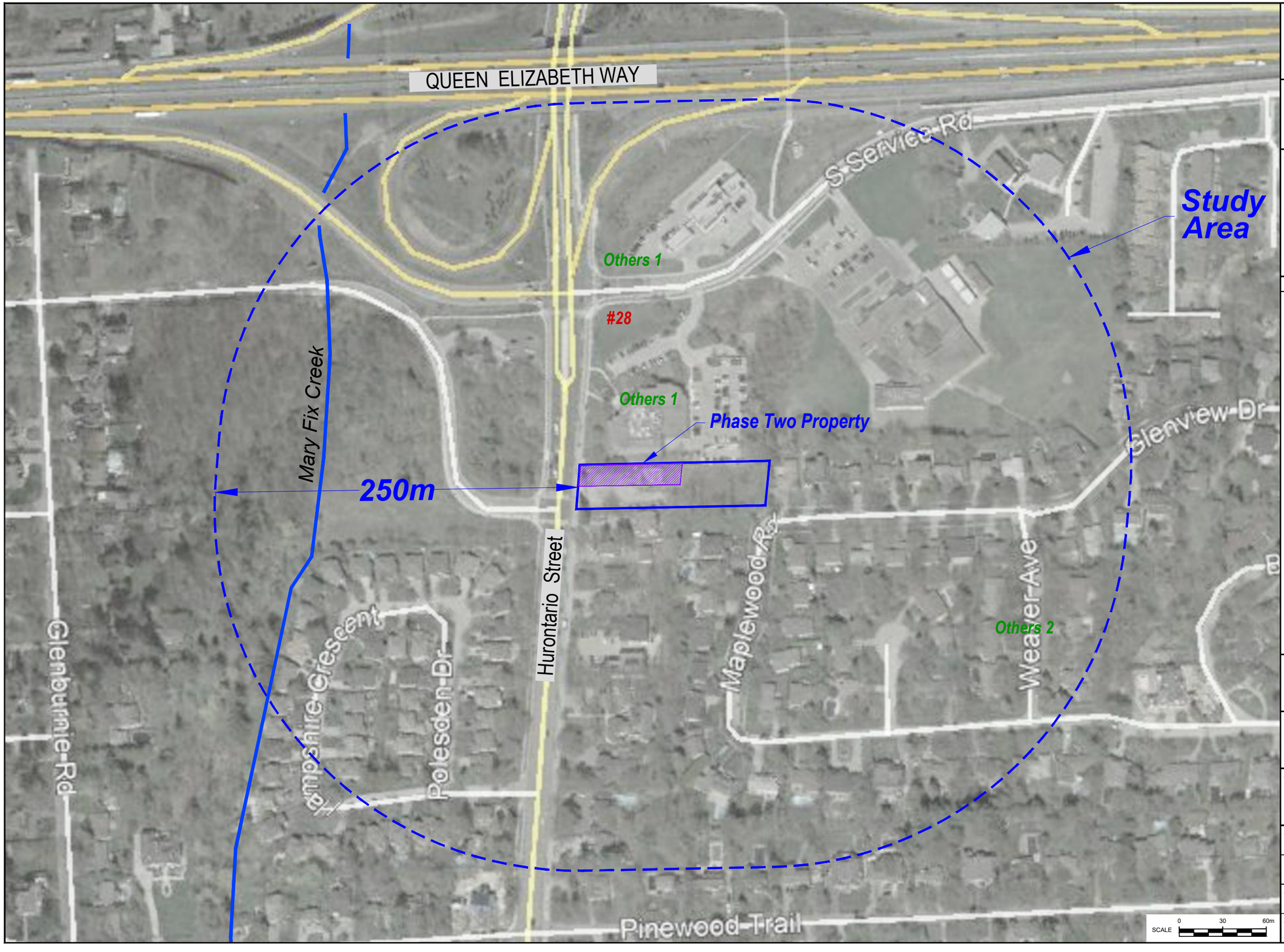

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Consulting Geotechnical & Environmental Engineering
Construction Materials, Inspection & Testing
11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650

Reference:
Toronto Maps 2018

Notes:

PCA - Potentially Contaminating Activity

RED - PCA causing APEC on Property

GREEN - PCA unlikely to affect Property

Legend:

	Phase Two Property Boundary
	Phase Two Study Area
#28	Gasoline and Associated Products Storage in Fixed Tanks
Others 1	O. Reg. 347 Waste Generator
Others 2	Ontario Spills
	APEC 1

Project Title:
Phase Two Environmental Site Assessment

Site Location:
1575 Hurontario Street, Toronto, Ontario

Figure Title:
PCA AND APEC LOCATIONS

Designed By: JW	***File No.:*** 1-18-0537-42
Drawn By: JB	***Scale:*** As Shown
Reviewed By: MS	***Figure No.:*** 2
Date: June 2019	

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

Reference:
Microsoft Streets and Trips

Notes:

Legend:

- Phase Two Property Boundary
- Approximate Borehole Location
- Approximate Borehole with Monitoring Well Location

Project Title:
Phase Two Environmental Site Assessment

Site Location:
1575 Hurontario Street, Toronto, Ontario

Figure Title:
BOREHOLE/ MONITORING WELL LOCATIONS

Designed By: JW	***File No.:*** 1-18-0537-42
Drawn By: SSK	***Scale:*** As Shown
Reviewed By: MS	***Figure No.:*** 3
Date: June 2019	

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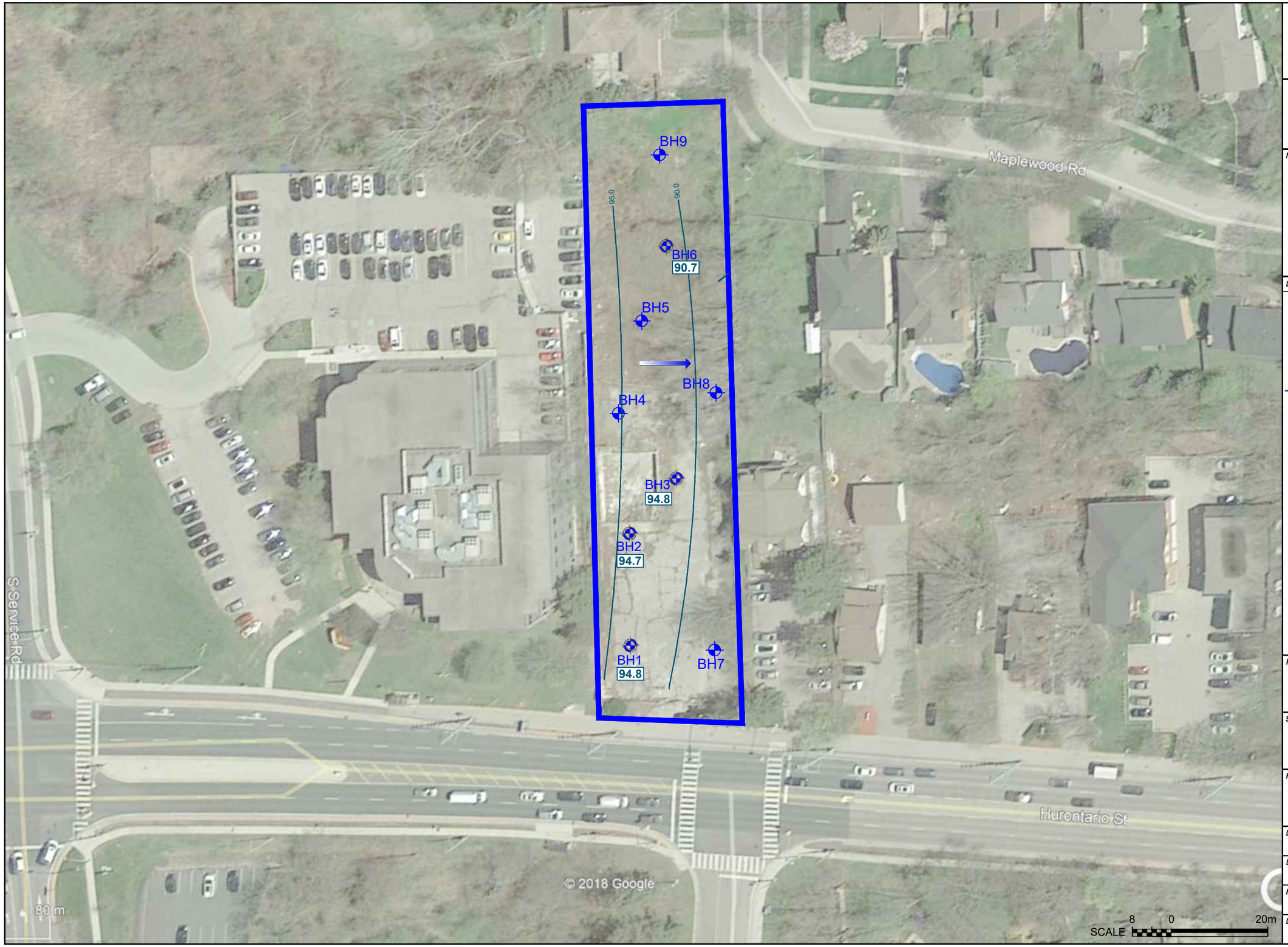

Terraprobe Inc.
Consulting Geotechnical & Environmental Engineering
Construction Materials, Inspection & Testing
11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650

Reference:
Microsoft Streets and Trips

Notes:

Legend:

- Phase Two Property Boundary
- Approximate Borehole Location
- Approximate Borehole with Monitoring Well Location
- 90.7 — Ground Water Elevations; May 1, 2019
- 95.00 — Ground Water Contours
- Ground Water Flow Direction

Project Title:
Phase Two Environmental Site Assessment

Site Location:
1575 Hurontario Street, Toronto, Ontario

Figure Title:
GROUND WATER ELEVATIONS

Designed By: JW	***File No.:*** 1-18-0537-42
Drawn By: SSK	***Scale:*** As Shown
Reviewed By: MS	***Figure No.:*** 4
Date: June 2019	

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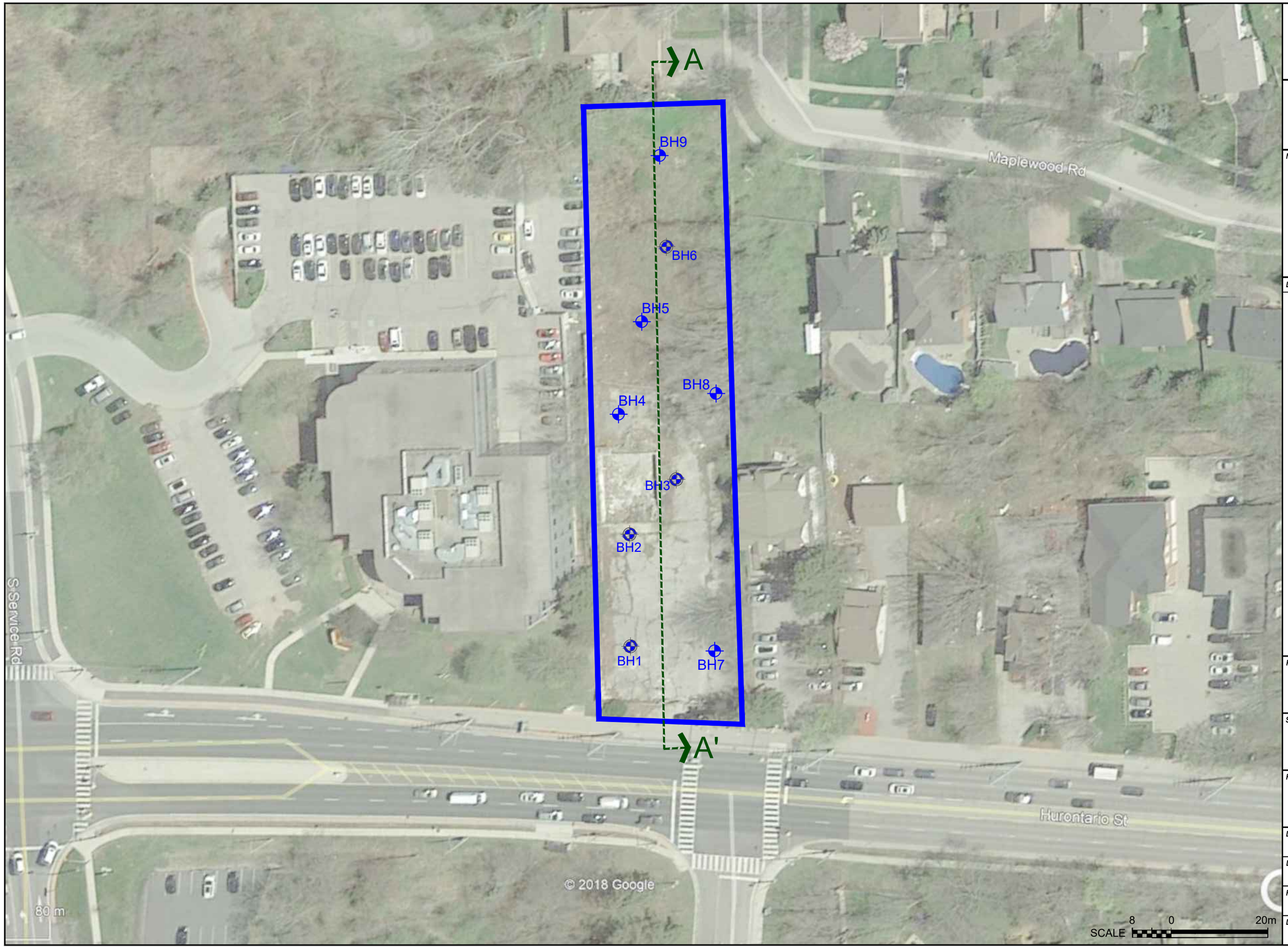

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Construction Materials, Inspection & Testing
11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650

Reference:
Microsoft Streets and Trips

Notes:

Legend:

- Phase Two Property Boundary
- Approximate Borehole Location
- Approximate Borehole with Monitoring Well Location
- Cross Section Location

Project Title:
Phase Two Environmental Site Assessment

Site Location:
1575 Hurontario Street, Toronto, Ontario

Figure Title:
CROSS SECTION LOCATION

Designed By: JW	***File No.:*** 1-18-0537-42
Drawn By: SSK	***Scale:*** As Shown
Reviewed By: MS	***Figure No.:*** 5
Date: June 2019	

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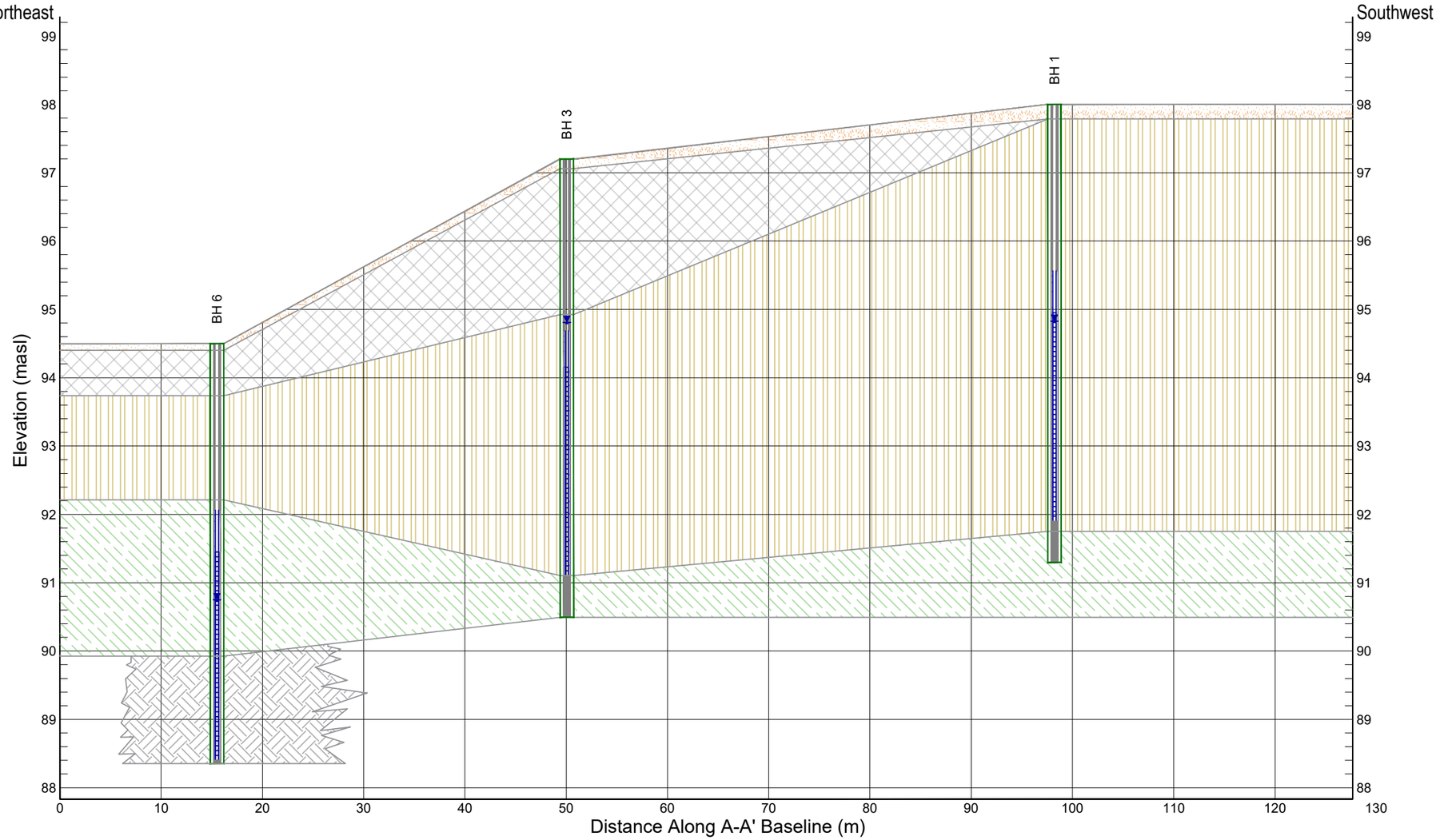

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11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650

Reference:

Notes:

Legend:

- Asphalt / Topsoil
- Fill
- Silty Sand
- Clayey Silt
- Bedrock
- Monitoring Well Screen
- Approximate Elevation of Ground Water Table (masl), May. 1, 2019

Project Title:
Phase Two Environmental Site Assessment

Site Location:
1575 Hurontario Street, Toronto, Ontario

Figure Title:
CROSS SECTION A-A'

Designed By: JW	***File No.:*** 1-18-0537-42
Drawn By: SSK	***Scale:*** As Shown
Reviewed By: MS	***Figure No.:*** 6
Date: June 2019	

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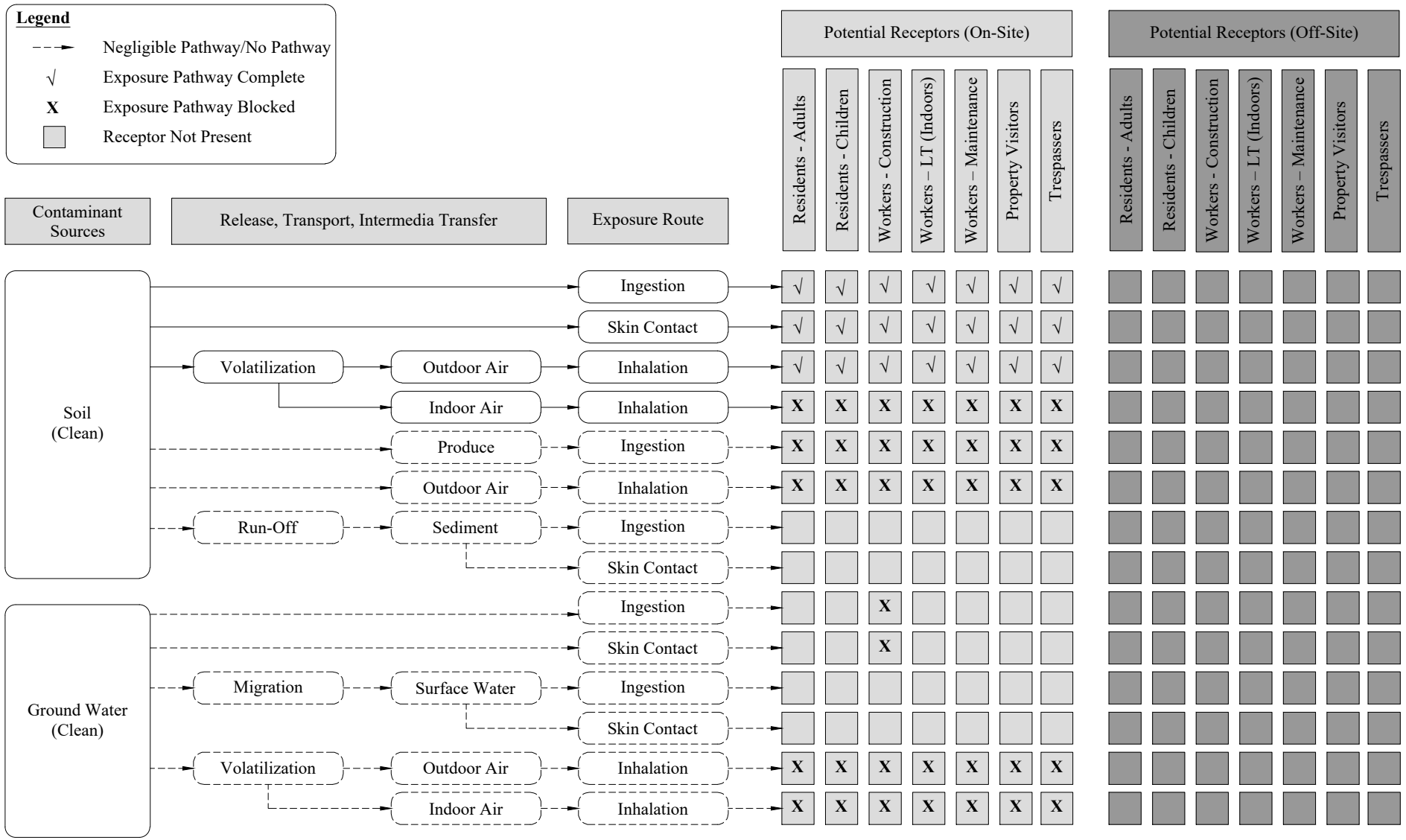
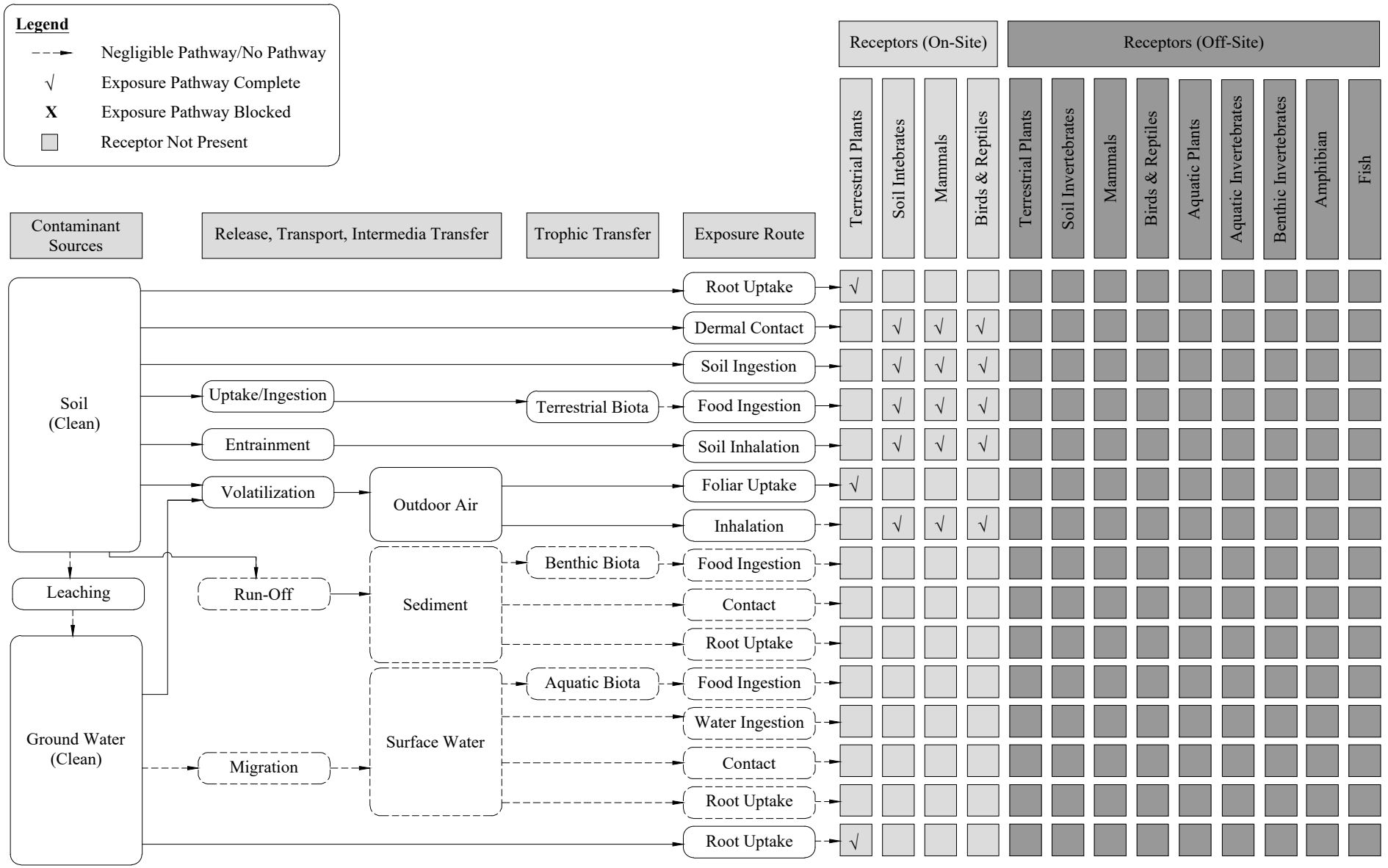


Terraprobe
11 Indell Lane, Brampton, Ontario, L6T 3Y3
Tel: (905) 796-2650 Fax: (905) 796-2250

Title: HUMAN HEALTH CONCEPTUAL SITE MODEL

File No. 1-18-0537-42

FIGURE NO.: 7



Terraprobe
11 Indell Lane, Brampton, Ontario, L6T 3Y3
Tel: (905) 796-2650 Fax: (905) 796-2250

Title: ECOLOGICAL CONCEPTUAL SITE MODEL

File No. 1-18-0537-42

FIGURE NO.: 8

APPENDIX A

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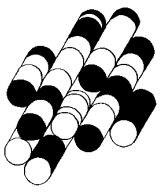

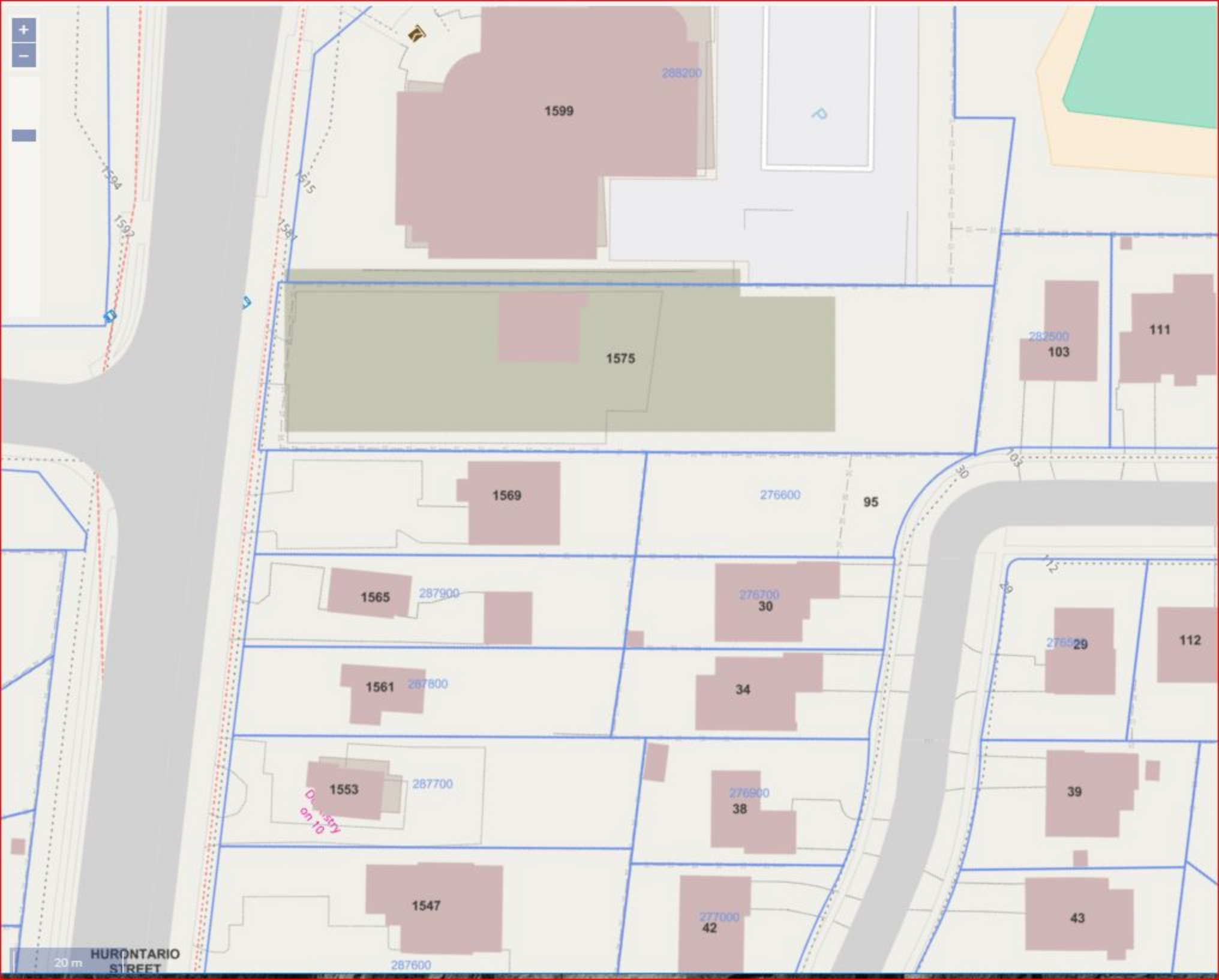
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288200
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276600
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287900
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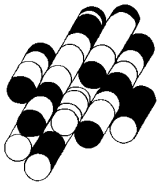
1561
287800
34
1553
287700
276900
38
1547
287600
277000
42
283500
103
111
29
112
39
43
HURONTARIO STREET
20 m

APPENDIX B

TERRAPROBE INC.



PHASE ONE CONCEPTUAL SITE MODEL

1575 HURONTARIO STREET, MISSISSAUGA, ON

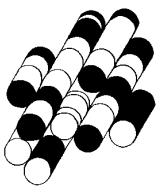
Phase One CSM		Information Pertaining to Property
Figures of the Phase One Study Area are provided that:		
i.	Show any existing buildings and structures,	Existing structures are shown on Figure 2.
ii.	Identify and locate water bodies located in whole or in part on the Phase One Study Area	The closest water body to the Phase One Property is the Mary Fix Creek, which is located approximately 215 m to the southwest. All water bodies on the Phase One Property and in the Phase One Study Area are shown on Figure 3.
iii.	Identify and locate any Areas of Natural Significance located in whole or in part on the Phase One Study Area	Terraprobe reviewed the Ontario Ministry of Natural Resources and Forestry NHIC database for natural area listings. No Areas of Natural Significance were located in the Phase One Study Area.
iv.	Locate any drinking water wells at the Phase One Property	No drinking water wells were identified on the Property during the site inspection. No records of wells on the Property were found in the MECP Water Well Information System (WWIS).
v.	Show roads, including names, within the Phase One Study Area	The Property is located in the southeast quadrant of Hurontario Street and South Service Road. The Property is accessible via Hurontario Street. Other roads and properties within the Study Area are presented on Figure 3.
vi.	Show use of properties adjacent to the Phase One Property	The land uses of the adjacent properties are shown on Figure 4.
vii.	Identify and locate area where any potentially contaminating activity has occurred, and show tanks in such areas	Potentially Contaminating Activities (PCAs) located on the Property and within the Study Area are shown on Figure 5.
viii.	Identify and locate any areas of potential environmental concern	Three Areas of Potential Environmental Concern (APECs) and associated Contaminants of Potential Concern are described on the Table of Areas of Potential Environmental Concern. The locations of the APECs on the Phase One Property are shown on Figure 5.
The following is a description and assessment of:		
i.	Any areas where potentially contaminating activity on or potentially affecting the Phase One Property has occurred,	Phase One Property (Exterior of the building) • PCA #30, result of historical use of fill material during the development of the Property. Northern Portion of Phase One Property • PCA #28, Results of historical fuel outlet located

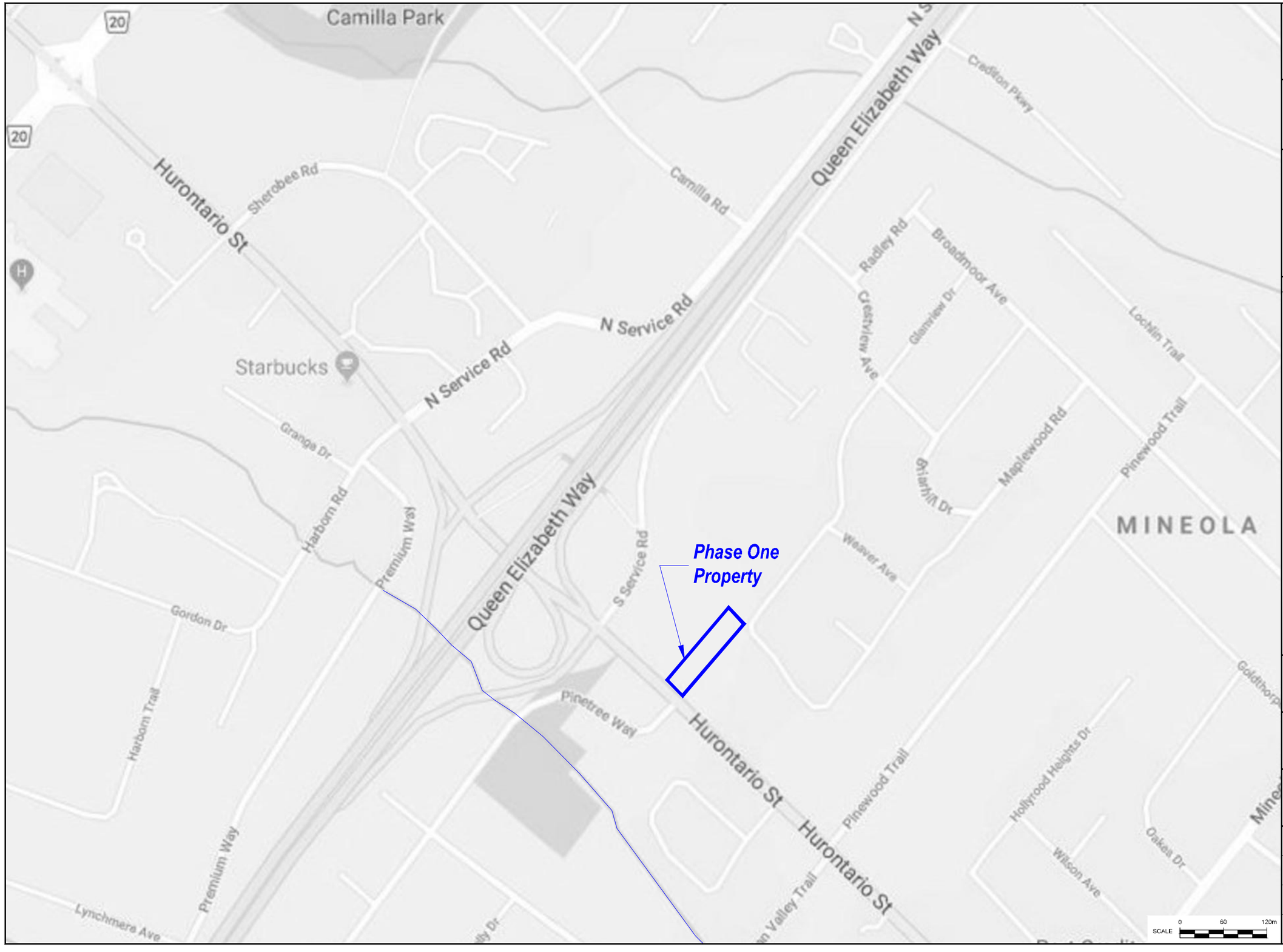
Phase One CSM		Information Pertaining to Property
		approximately 90 m northwest of the Property.
ii.	Any contaminants of potential concern	Contaminants of Potential Concern (CoPCs) identified on the Property include: • Metals, EC, SAR, Sb, As, SE, Cr(VI), Na, Hg, B, B-HWS, pH, CN-, PAHs and PCBs in soil and ground water • PHCs, VOCs and BTEX in ground water
iii.	The potential for underground utilities, if any present, to affect contaminant distribution and transport,	The former building was serviced with municipal supplied water and gas utilities. There is the potential for underground utilities to affect the horizontal distribution or transport of contaminants potentially due to underground service lines located on the Property.
iv.	Available regional or site specific geological and hydrogeological information,	Topography • The approximate elevation of the Property is 87 masl and slopes to the south/southeast towards Lake Ontario. Hydrogeology • The nearest water body is Mary Fix Creek, which is located approximately 215 m to the southwest of the Property. Ground water and surface water is expected to flow to the south/southeast. Geology (overburden) • The overburden primarily consists of coarse-textured glaciolacustrine deposits consisted of sand, gravel, minor silt and clay of foreshore and basinal deposits. Geology (bedrock) • The bedrock on the Property is of the Georgian Bay Formation, which is comprised of shale and limestone. Geology (depth to bedrock) • Based upon published information, the depth to bedrock in the area of the Property is approximately 30 meters below ground surface.
v.	How any uncertainty or absence of information obtained in each of the components of the Phase One ESA could affect the validity of the model.	No uncertainty was encountered while conducting the Phase One ESA that could affect the validity of the model.

Figures:
Figure 1 – Phase One Property Location
Figure 2 – Phase One Property
Figure 3 – Phase One Study Area
Figure 4 – PCA Locations
Figure 5 – APEC Locations

FIGURES

TERRAPROBE INC.





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

Reference:
Toronto Maps 2018

Notes:

Legend:

Phase One Property Boundary

Project Title:
Phase One Environmental Site Assessment

Site Location:
1575 Hurontario Street, Toronto, Ontario

Figure Title:
PHASE ONE PROPERTY

Designed By: JW	***File No.:*** 1-18-0537-41
Drawn By: JB	***Scale:*** As Shown
Reviewed By: MS	***Figure No.:*** 1
Date: October 2018	

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Reference:
Toronto Maps 2018

Notes:

Legend:

Phase One Property Boundary

Project Title:
Phase One Environmental Site Assessment

Site Location:
1575 Hurontario Street, Toronto, Ontario

Figure Title:
PHASE ONE PROPERTY

Designed By: JW	***File No.:*** 1-18-0537-41
Drawn By: JB	***Scale:*** As Shown
Reviewed By: MS	***Figure No.:*** 2
Date: October 2018	

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Reference:
Toronto Maps 2018

Notes:

Legend:

- Phase One Property Boundary
- Phase One Study Area
- Residential Land Use
- Community Land Use (Roads)
- Commercial Land Use
- Parkland Use
- Institutional Land Use

Project Title:
Phase One Environmental Site Assessment

Site Location:
1575 Hurontario Street, Toronto, Ontario

Figure Title:
PHASE ONE STUDY AREA

Designed By: JW	***File No.:*** 1-18-0537-41
Drawn By: JB	***Scale:*** As Shown
Reviewed By: MS	***Figure No.:*** 3
Date: October 2018	

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

Reference:
Toronto Maps 2018

Notes:

PCA - Potentially Contaminating Activity

RED - PCA causing APEC on Property

GREEN - PCA unlikely to affect Property

Legend:

———	Phase One Property Boundary
- - -	Phase One Study Area
#28	Gasoline and Associated Products Storage in Fixed Tanks
#30	Importation of Fill Material of Unknown Quality
Others 1	O. Reg. 347 Waste Generator
Others 2	Ontario Spills

Project Title:
Phase One Environmental Site Assessment

Site Location:
1575 Hurontario Street, Toronto, Ontario

Figure Title:
PCA LOCATIONS

Designed By: JW	***File No.:*** 1-18-0537-41
Drawn By: JB	***Scale:*** As Shown
Reviewed By: MS	***Figure No.:*** 4
Date: October 2018	

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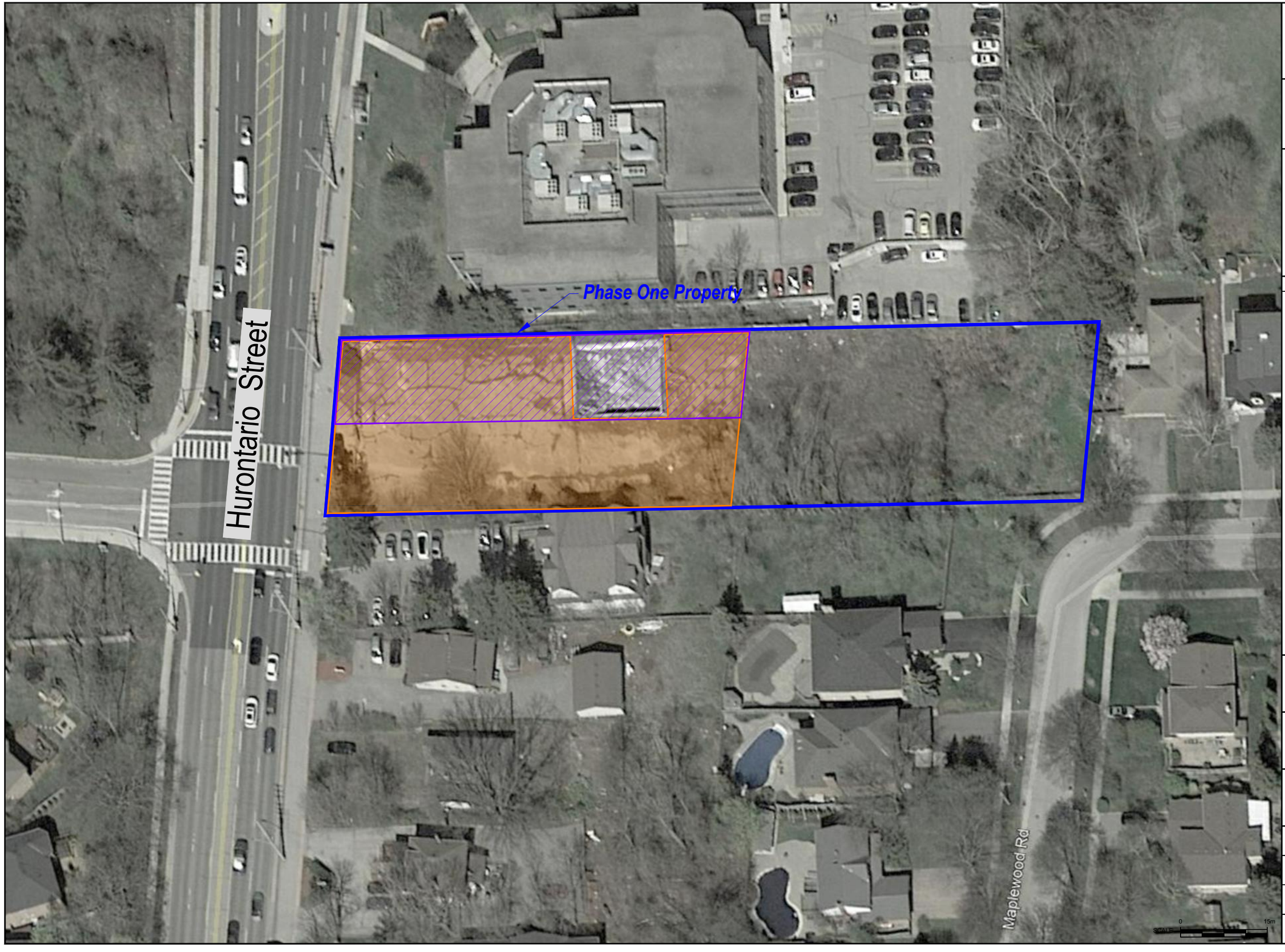

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Construction Materials, Inspection & Testing
11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650

Reference:
Toronto Maps 2018

Notes:
APEC - Areas of Potential Environmental Concern

Legend:
- Phase One Property Boundary
- APEC 1
- APEC 2

Project Title:
Phase One Environmental Site Assessment

Site Location:
1575 Hurontario Street, Toronto, Ontario

Figure Title:
APEC LOCATIONS

Designed By: JW	***File No.:*** 1-18-0537-41
Drawn By: JB	***Scale:*** As Shown
Reviewed By: MS	***Figure No.:*** 5
Date: October 2018	

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APPENDIX C

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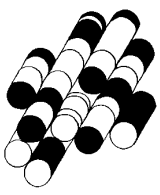


APPENDIX C: SAMPLING AND ANALYSIS PLAN

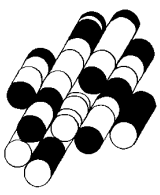
1575 Hurontario St. Mississauga

Project #1-18-0537-42

Borehole/ Monitoring Well Sample	APEC	PCA	Media	pH	PHCs	BTEX
BH1/SS2 & Dup1	APEC 2	#28 - Gasoline and Associated Products Storage in Fixed Tanks	Soil	✓		
BH1/SS4					✓	✓
BH2/SS6 & Dup1					✓	✓
BH3/SS6					✓	✓
BH3/SS7				✓		
BH4/SS4					✓	✓
BH6/SS3					✓	✓
BH/MW1 & DUP1			Ground Water		✓	✓
BH/MW2 & DUP1					✓	✓
BH/MW3					✓	✓
BH/MW6					✓	✓

APPENDIX D

TERRAPROBE INC.



STANDARD OPERATING PROCEDURE – BOREHOLE DRILLING

Solid and Hollow Stem Augers

Introduction

Soil drilling, using a drill rig or other equipment based on site accessibility is a common way to obtain soil samples on a site. Soil drilling is typically completed with a truck or bombardier-mounted drill rig, or Pionjar (or other portable drilling equipment) depending on the site accessibility. The driller operator will handle all equipment, including opening the split spoon.

Hollow stem augers are typically used when wet or loose cohesionless materials are encountered to permit sampling without removing the augers. Alternatively, solid stem augers are advanced and removed at each sampling depth. Samples and in-situ Standard Penetration Testing (STP) are conducted by driving a standard 2" diameter split spoon (hollow sampling tube) through a process of continuous or intermittent sampling. If monitoring wells are to be installed in the boreholes, hollow stem augers are to be used.

Equipment Required

- Personal Protective Equipment (PPE)
    - Hard hat, safety vest, protective eyewear, steel toed boots
- Nitrile Gloves
- Slider Bags
- Borehole logs & Clipboard
- Portable Soil Vapour Measurement Device (Gastech/PID)
- Laboratory Sample Bottles
- Field Notebook and/or Field Sheets
- Well Keys or Tools Required
- Sampling Plan (from project manager)
- Access Agreements (if required)
- Ice
- Drums for Soil Storage

Procedure

1. Prior to drilling, boreholes will be numbered and marked and the site cleared for utilities.
2. Downhole equipment is cleaned/decontaminated by the contractor.

3. All drill cuttings are to be placed in labeled drums or other container and moved to a designated location.
4. Review sampling plan and borehole locations with project manager
5. Determine what equipment and supplies are required.
6. Obtain necessary sampling and monitoring equipment.
7. Coordinate with project manager and clients and drilling crew, as required, for site access.
8. Perform a general site survey in accordance with any applicable site-specific health and safety plans.
9. Perform health and safety meeting, discuss safety around rig and muster points should there be an emergency.
10. The technician will direct the drill crew where to set up the rig to begin drilling.
11. A borehole log must be prepared for every borehole drilled. Include: elevation, GPS coordinates, depth, soil classification, drilling details, sampling, water levels, free product (if any).
12. Record the type of equipment used (solid stem or hollow, type of rig) and the start time when drilling begins.
13. Sampling will be at pre-specified intervals; typically every 2 ½" to 10-15 feet then once every 5 feet from then on. Between samples, split spoons will be cleaned (if an environmental sampling is being conducted).
14. At each sampling interval record; interval number (or sample ID), blow counts, soil description, PPM reading
15. Record depth of borehole, caving (if any) and water level when borehole is complete.
16. Upon completion of drilling in an open borehole that will not be converted to a well the borehole is to be properly filled and abandoned. There are two methods depending on whether the static water level is above or below the bottom of the borehole.
    a. Above and less than 20 feet deep: Abandon borehole by mixing cement or cement/bentonite grout and pouring the mixture into the borehole until it is filled to ground surface.
    b. Below and more than 20 feet deep: Mix and pump cement/bentonite mixture to the bottom of the hole until filled to ground surface.

References

- *Standard Operating Procedure No. 6. Drilling, Logging, and Sampling of Subsurface Materials.*
- *Geotechnical Field Investigations, Terraprobe Limited, July 1990.*

STANDARD OPERATING PROCEDURE – SOIL SAMPLING

General Procedures

Introduction

Subsurface investigations typically involve sampling of subsurface soils at various depths at locations of interest. Several soil sampling methods can be implemented depending on the nature of the investigations. Field screening of soil samples may be performed when potential contaminants of concern include VOC and PHC F1.

Equipment Required

- Nitrile Gloves
- Field Parameter Measurement Device (Gastech, PID)
- Laboratory Sample Bottles
- Terracores or sampling syringes (sampler)
- Field Notebook and/or Field Sheets
- Sampling Plan (from project manager)
- Access Agreements (if required)
- Ice and cooler

Procedure

1. Review sampling plan and sampling locations with project manager
2. Determine what equipment and supplies are required.
3. Obtain necessary sampling and monitoring equipment.
4. Coordinate with project manager and clients, as required, for site access.
5. Perform a general site survey in accordance with any applicable site-specific health and safety plans.
6. Identify and mark all sampling locations.
7. Assemble the appropriate laboratory supplied jars/vials.
8. Collect the samples to be analyzed
    a. Borehole - split spoon, sample from spoon
        i. Split spoon sampling methods are primarily used to collect shallow and deep subsurface soils.
        ii. Gravel, concrete, asphalt and etc. present at or near the surface of the sampling location should be removed prior to split spoon sampling.

iii. Split spoons used for soil sampling must be constructed with stainless steel and are 2 inches in diameter and 18 to 24 inches in length.

iv. The top several inches of the material in the spoon must be discarded before remove any portion of the spoon for sampling.

b. Test pit (backhoe), bag from excavator bucket, then sample.

i. Usually used in the collection of surface and shallow soil samples. Allow soil samples to be collected from very specific intervals.

ii. The bucket must be decontaminated prior to sample collection.

iii. Ensure to scrap off any smeared material on the surface of the bucket that may cross-contaminate the sample prior to jarring the soil sample.

iv. Make sure to not physically enter backhoe excavations to collect a sample for safety issue.

c. Hand-dig (hang augers), sample.

i. Hand augers are typically used to advanced boreholes and collect surficial soils and shallow subsurface soils. A 4 inch stainless steel auger buckets with cutting heads are usually used. The bucket is advanced by simultaneously pushing and turning using an attached handle with extension.

ii. The top several inches of the soil collected by the auger bucket should be discarded and not be placed in the laboratory supplied container for sample submission.

iii. VOC samples need to be collected directly from the auger bucket, if possible.

iv. The entire hand auger assembly must be decontaminated before sampling at a new location. This is to minimize cross-contamination of soil samples.

9. Fill the appropriate jars, making sure to label properly; include the date, company name, parameter to be analyzed, and project number.
10. Change Nitrile gloves between samples.
11. Clean off loose soil that may be on the outside of the jar.
12. Place in a cooler with ice.
13. Log samples in field book.
14. Complete a Chain of Custody for all samples.
15. Package samples and complete necessary paperwork.
16. Transport samples (that have been kept cool) to laboratory or transport to office and call for pick up.

References

- *SESD Operating Procedure – Soil Sampling* U.S EPA, December 2011
- *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*, Ontario Ministry of the Environment, July 2011

STANDARD OPERATING PROCEDURE – FIELD SCREENING AND CALIBRATION

RKI Eagle Gastech and Mini Rae Photo-Ionization Detector

Introduction

Field screening is an important tool in that it provides data for onsite, real time total vapor measurements, evaluation of existing conditions, sample location optimization, extent of contamination, and health and safety evaluations.

RKI Eagle

Portable Multi-Gas Detector

The gastech can be used for reading headspace values in soil and water (wells). There are two types of 'Gastechs' in the Terraprobe office, the RKI Eagle 1 and Eagle 2. These portable gas detectors assist in screening field samples on many projects.

Portable VOC Monitor (Mini Rae 2000)

Portable VOC Monitors or PIDs (photo-ionization detector) monitors VOCs using the photo-ionization detector. If screening is required for VOCs, then this machine can be used. The PIDs are also used for health and safety for workers in enclosed spaces (such as trenches) in a known contaminated area.

Equipment Required

For Cailbration

- Canister of gas (Hexane at 400ppm for Eagle 1, Hexane at 1650ppm for Eagle 2, Isobutylene at 100ppm for PID)
- Regulator.
- Tubing to attach probe to canister.

Field Screening

- Eagle or Mini Rae
- Nitrile Gloves
- Slider Bags
- Sampling Plan (from project manager)

- Access Agreements (if required)
- Field Notebook and/or Field Sheets
  Appropriate Sampling Jars

Procedure (Calibration)

In order to ensure accuracy in the field, Terraprobe calibrates its Gastechs and PIDs each time they will be in the field.

There are three different gas canisters – one for the Eagle 1, the other for the Eagle 2 and a third for the MiniRae. The Eagle 1 is calibrated using the concentration of 400ppm while the Eagle 2 is calibrated with the concentration of 1650ppm. The PID is calibrated with Isobutylene at a concentration of 100ppm. Calibrating each machine is similar in principle but there are differences due to the different models we are using.

Eagle 1:

1. Take the Eagle to a fresh-air location
2. Turn the Eagle on and allow one minute for warm up
3. Hold the AIR button until a tone sounds
4. Press and hold SHIFT/▼ and then press the DISP/ADJ button. This will display the Calibration menu.
5. Select Single Calibration, press Enter
6. Press Enter to select HEX
7. The screen displays the channel selected, and the gas reading will flash
8. Connect the tubing from the regulator to the Eagle's probe.
9. If needed, use the AIR /▲ and SHIFT/▼ buttons to adjust the reading to match the concentration on the cylinder.
10. Press the ENTER button to set the value. Single Calibration will end and the menu will display.
11. Disconnect the tubing from the probe.
12. With the single calibration menu still displayed, use the SHIFT/▼ button until the ESC message displays, then press the ENTER button to return to the Calibration menu.
13. Press the SHIFT/▼ button to place the arrow next to Normal Operation and then press ENTER to return to the normal screen.

Eagle 2:

1. Take the Eagle to a fresh-air environment.
2. Turn the Eagle on and allow one minute for warm up.
3. Press and hold the RANGE/SHIFT button, when press the DISPLAY/ADJUST/NO button and release both buttons.
4. The Calibration Mode Screen displays with the cursor beside Auto Calibration.
5. Set the fresh air reading by: Moving the cursor to the Perform Air Adjust menu item by using the RANGE/SHIFT button. Press and release the POWER/ENTER/RESET button. The screen will say “Perform Air Adjust?” Press the AIR/YES button to continue. The Eagle 2 will indicate it is adjusting the zero reading before it returns to the Calibration Mode Screen.
6. Move the cursor to Single Calibration menu item by using the AIR/YES button.
7. Press and release the POWER/ENTER/RESET button. The “Select Sensor Screen” appears with the cursor flashing.
8. Move the cursor next to the sensor you want to calibrate with the AIR/YES and RANGE/SHIFT buttons.
9. Press and release the power enter reset button to proceed to the Single Calibration Gas Value screen. The calibration gas value is flashing
10. If necessary, adjust the calibration gas value to match the cylinder concentration with the air/yes and range/shift buttons.
11. Press and release the power/enter/reset button to proceed to the single calibration apply gas screen. Cal in Process is flashing.
12. Connect the tubing from the demand flow regulator to the probe. Allow the Eagle 2 to draw gas for one minute.

Mini Rae PID Calibration

1. Bring the Mini Rae to a fresh air environment.
2. Push the MODE and N/- buttons together to access a sub menu.
3. “Fresh Air Cal?” will appear.
4. Press the Y/+ key, the display shows “zero in progress” followed by “wait” and a countdown timer.
5. After about 15 seconds, the display shows the message “zeroed… reading = X.Xppm…” Press any key or wait, the monitor will return to “Fresh Air Calibration?” menu.
6. Connect the tubing to the regulator on the gas cylinder.
7. Press the Y/+ key at the “Span Cal?” to start calibration. The display shows the gas name and the span value of the corresponding gas.
8. The display shows “Apply gas now!” Turn on the valve of the span gas supply.

9. Display shows "wait… 30" with a countdown timer showing the number of remaining seconds while the monitor performs the calibration.
10. When the countdown timer reaches 0, the display gas shows the calibrated value.
11. After a span calibration is completed, the display will show the message "Span Cal Done! Turn Off Gas!"
12. Turn off the flow of gas and disconnect the calibration tubing from the Mini Rae.
13. Press any key to return to the sub menu. Press MENU to return to main menu and being operations.

Procedure (Field Screening)

1. Place soil sample in a slider bag and gently break up the pieces.
2. Using the Eagle, insert the probe into the bag and hold it above the soil. Do NOT put the probe in the soil. Wait 30 seconds for the probe to read the soil vapour.
3. Record the value and remove the probe from the slider bag.
4. PIDs can be used the same way HOWEVER, it must be noted that if sampling for VOCs, the sample must be preserved within 10-12 seconds of sampling. This means that any sample that is potentially going to be jarred must have a methanol vial stored immediately.
5. Using the probes to measure headspace readings in a well follows the same basic principles. Open the j-plug or slip cap and quickly insert the probe into the top of the well taking extreme caution not to allow the probe to touch any water, and cover the top of the well with your hand.
6. Wait 30 seconds for the probe to establish a reading.
7. Remove the probe and record the value.

References

- *US EPA Field Sampling Guidance Document #1210 "Soil Sampling for Volatile Compounds"*
- *MiniRae 2000 Portable VOC Monitor Operation and Maintenance Manual, Rev. C*
- *US EPA Field Screening Methods Catalog User's Guide*
- *Instruction Manual Eagle Series Portable Multi Gas Detector. Rev.H.*
- *RKI Eagle 2 Operator's Manual. Rev. Q.*

STANDARD OPERATING PROCEDURE – WELL INSTALLATION

Introduction

All wells are to be constructed with flush-thread joints and factory-slotted screen. Terraprobe monitoring wells are 2-inch (50 mm) inside diameter PVC unless otherwise stipulated or required by site specific standards or sampling requirements. Other possible well diameters and materials include:

- 1-inch (25 mm) PVC,
- 1.5 –inch (37 mm) PVC,
- 4-inch (100mm) steel,
- 6 inch (150 mm) steel,
- 10 inch (255 mm) steel and;
- 3 foot (915 mm) concrete.

Water washed silica sand is used for the filter pack, bentonite is used to create a seal above the screen to just below the surface and sand is added to ground level. Well casings are installed using cement to secure them.

Notes:

- Monitoring wells are to be installed by a licenced well driller only.
- The installation procedures outlined in this document are for reference only to insure familiarization with the process.
- The installation procedures outlined in this document are for the installation of a typical 2-inch PVC monitoring well.
- Maximum length of well screen allowed under O.Reg. 153/04 is 3 m (10 feet)
- A MOE Well Record is required under O.Reg. 903 if:
    - The monitoring well is greater than 3 m (10 feet) and/or
    - The monitoring well will be in place longer than 30 days
- Well Records can be either for a single well or a group of wells (cluster).
- A well cluster record can be written only if all the wells are within the same property, or adjacent properties owned by the same owner.

Equipment Required

- Interface or Water Level Meter
- Field Notebook and/or Field Sheets
- Well Keys/Locks or Tools Required
- PVC Pipe (risers/casing)
- PVC Screen
- J-Plugs
- Flush Mount Casing or Above Grade Casing
- Bentonite
- Silica Sand
- Sampling Plan (from project manager)
- Access Agreements (if required)

Procedure

1. After borehole completion, measure total depth before riser casing and screen are installed and before the augers are removed. This confirms drilling depths are accurate.
2. Decontaminate screen and casing (typically done off-site by water well driller), check that casing sections are straight and not cracked or damaged.
3. Verify and record diameter and lengths of casings and screen.
4. The casing/screen will be installed by:
    a. Placing an end cap on the screen section
    b. Attaching a section of riser to the screen and lowering into the borehole
    c. Additional sections of riser will be added and lowered into the borehole until the desired screened interval is reached
5. Record the length of screen and riser pipe used for the monitoring well.
6. Verify and record that the proper filter (sand) pack has been selected.
7. The sand is poured into the space around the screen. Ensure it fills the hole to at least two feet above the screen.
    a. In hollow stem auger wells, the sand pack must be poured down the hollow stem of the augers. Augers are then pulled out of the borehole in 2-1/2 to 5 feet increments, sand is poured and level measured with a weighted tape.
8. Use a weighted tape and take continuous measurements while the sand is being poured to ensure proper installation. Pack the sand down to verify.
9. Record how much sand is used.
10. A bentonite seal is placed directly above the sand pack, minimum two feet thick, and should extend into the next soil strata.
11. Record how much bentonite is used.
12. A grout seal is then placed above the bentonite and can be a mixture of cement, bentonite, sand and water.

13. Surface completion is to be completed one of two ways.
    a. Above grade: Locking well cover sticking above grade, secured by lock and key.
    b. At grade: Flush mount casing, lock with ratchet bolts or allen key.
14. Each casing is installed over the PVC pipe and cemented into place.
15. Record GPS coordinates and measure stick up (if above grade).
16. Confirm that a well record will be completed for the monitoring well. Confirm the information to be submitted on the well record or the cluster of wells.
17. Survey the completed monitoring well to a geodetic or recoverable benchmark

References

- *Geotechnical Field Investigations, Terraprobe Ltd, July 26, 1990*
- *Ontario Water Resources Act R.R.O. 1990 Regulation 903 Wells*
- *Environmental Protection Act Ontario Regulation 153/04*

STANDARD OPERATING PROCEDURE – WELL DEVELOPMENT

Introduction

Monitoring well development is necessary to ensure that complete hydraulic connection is made and maintained between the well and the aquifer material surrounding the well screen and filter pack. It also serves to restore the groundwater properties disturbed during drilling.

Most common techniques at Terraprobe include 'surging', and bailing, often used together. Other development methods that may be used include jetting, airlift, and submersible pump methods. Jetting is typically not used as a development method for environmental investigations, but is commonly used for water resource monitoring wells or drinking water wells. Generally a phased process is used to develop wells, starting with a gentle bailing phase to remove sand, followed by a surging phase, and finally a pumping phase after the well begins to clear up.

After a well is first installed, and in fact, often before the bentonite pellet seal is set, gentle bailing is used to remove water and sand from the well. Bailing can be accomplished through the use of dedicated bailers or Waterra inertia pumps. The purpose of this technique is used to settle the sand pack. After further well sealant materials have been added and allowed to set for approximately 48 hours, bailing is resumed as part of well development. The purpose of bailing is to remove any fine material that may have accumulated in the well, and start pulling in natural material into the sand pack. Bailing is often conducted until the sand content in the removed water begins to decrease.

After the sand content begins to decrease, surging is conducted. A surge block is used to move sediments from the filter pack into the well casing. All surge blocks will be constructed of materials that will not introduce contamination into the well. Surge blocks should have some manner of allowing pressure release to prevent casing collapse. Terraprobe uses Waterra surge blocks which fit onto Waterra inertia pumps. The surge block is moved up and down the well screen interval and then removed, followed by a return to bailing to remove any sand brought into the well by the surging action. Care should be taken to not surge too strongly with subsequent casing deformation or collapse; the well screen interval is often the weakest part of a well. Surging should be followed by additional bailing to remove fine materials that may have entered the well during the surging effort.

After surging has been completed and the sand content of the bailed water has decreased, a submersible pump or inertia pump is used to continue well development. The pump should be moved up and

down the well screen interval until the obtained water is relatively clear. Well development will continue until the water in the well clarifies and monitoring parameters such as pH, specific conductivity, and temperature stabilize as defined in the project-specific planning documents. It should be noted that where very fine-grained formations are present at the screened interval, continued well development until clear water is obtained might be impossible. Decisions regarding when to cease development where very fine-grained conditions exist should be made between the field supervisor and project manager.

During well development pH, specific conductivity, temperature, and turbidity should be monitored frequently to establish natural conditions and evaluate whether the well has been completely developed. The main criterion for well development is clear water (Nephelometric turbidity units or NTU of less than 5). As mentioned above, clear water can often be impossible to obtain with environmental monitoring wells. A further criterion for completed well development is that the other water quality parameters mentioned above stabilize to within 10 percent between readings over one well volume. The minimum volume of water purged from the well during development will be approximately a minimum of 3 borehole volumes (wells will typically not reach stabilization of water quality parameters before this condition is achieved and may not have reached stability even after this threshold has been achieved).

Equipment Required

- Interface or Water Level Meter
- Nitrile Gloves
- Water Quality Meter (EC, pH, Temperature)
- Bucket
- Field Notebook and/or Field Sheets
- Well Keys or Tools Required
- Waterra
- Waterra cutters (avoid using knives)
- Surge Blocks (if required)
- Foot valves
- Storage for contaminated (or suspected contaminated) water.
- Access Agreements (if required)

Procedure

1. Review monitoring well locations with project manager
2. Review borehole logs and determine monitoring well depths and well screen locations.
3. Obtain Waterra tubing, foot valves and surge blocks.
4. Coordinate with project manager and clients, as required, for site access.
5. Perform a general site survey in accordance with any applicable site-specific health and safety plans.
6. Identify and mark all monitoring wells.

7. Open the monitoring well and take initial readings (ie; head space air monitor readings, water level, well depth) and record in the field notebook.
8. Organize equipment.
9. Bailing the monitoring well:
    a. Calculate casing volume to determine the ideal amount to be purged (three casing volumes).
    b. Attach foot valve to that end of Waterra
    c. Slowly lower Waterra down the well. Once it hits the bottom, leave some extra Waterra above the top of the well to easily handle pumping and cut the Waterra.
    d. Slowly remove three casing volumes from the monitoring well.
    e. Dispose of purged water in barrels if known or suspected contaminates are of concern, or however the project manager instructs.
10. Surging the monitoring well
    a. Slip surge block onto the end of the Waterra and reattach the foot valve, securing the surge block
    b. Place surge block and Waterra back into the monitoring well
    c. Raise and lower the surge block along the screen. (Should be able to feel location of the well screen)
    d. Continue surging for 5-10 minutes.
11. Final purge of the monitoring well
    a. Remove surge block from Waterra
    b. Lower the Waterra back down the well. Begin pumping water out of the well, taking care to note water quality and appearance (smell, clarity, etc.).
    c. Continue to purge the monitoring well until the following water quality parameters have stabilized:
        i. Turbidity (± 10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized),
        ii. Conductivity (± 3%),
        iii. Temperature (± 3%),
        iv. pH (± 0.1 unit),
    d. Dispose of purged water in barrels if known or suspected contaminates are of concern, or however the project manager instructs.
12. Record final measurements in field book, record date, water level before and after development, quantity of water removed, equipment used and techniques (surge and purge, or purge only).

References

- *ASTM Standard Practice and Installation of Ground Water Monitoring Wells in Aquifers*
- *EPA SOP#2044 Well Development March 10, 199*

STANDARD OPERATING PROCEDURE – GROUND WATER SAMPLING

Inertial Pump (Waterra/Footvalve)

Introduction

The inertial pump consists of a one way foot valve and low density or high density tubing. The inertial pump can be used in the development, purging and sampling of ground water monitoring wells.

Equipment Required

- Interface or Water Level Meter
- Waterra Tubing (typically 5/8" in diameter)
- Footvalve(s)
- Surge Block(s)
- Nitrile Gloves
- Bucket
- Field Parameter Measurement Device (Horiba Flow Cell, YSI Meter, Hanna Meter, etc.)
- Laboratory Sample Bottles
- Field Notebook and/or Field Sheets
- Well Keys or Tools Required
- Sampling Plan (from project manager)
- Access Agreements (if required)
- Ice

Procedure

1. Review sampling plan and monitoring well locations with project manager
2. Review borehole logs and determine monitoring well depths and well screen locations.
3. Determine what equipment and supplies are required.
4. Obtain necessary sampling and monitoring equipment.
5. Decontaminate or pre-clean equipment, and ensure that it is in working order.
6. Coordinate with project manager and clients, as required, for site access.
7. Perform a general site survey in accordance with any applicable site-specific health and safety plans.
8. Identify and mark all sampling locations.
9. Start sampling at the least contaminated monitoring well (if known).

10. Remove locking well cap, note location time of day, and date in your notebook
11. Remove well casing cap.
12. Lower water level measuring device or equivalent into well until water surface is encountered.
13. Measure distance from water surface to reference measuring point on well casing and in field notebook. Alternatively, if there is no reference point, note that water level measurement is from top of steel casing, top of PVC riser pipe, from ground surface.
14. Measure total depth of well. Repeat at least twice to confirm measurement and record in field notebook
15. Calculate the volume of water in the well and record in field notebook.
16. Assemble Waterra tubing and footvalve.
17. Lower tubing (Footvalve first) into the well until the foot valve is at the depth of the well screen.
18. Cut Waterra, leaving enough room to purge and sample comfortably.
19. Purge well until field parameters (such as temperature, pH, conductivity, etc.) have stabilized. Field parameters are measured by a hand held device (YSI or similar). Record field parameters until parameters have stabilized , and record the water level in the monitoring well.
    a. If the calculated purge volume is small, the measurements should be taken frequently to provide a sufficient number of measurements to evaluate stability (every ¼ casing volume). If the purge volume is large, measurements taken every ½ to 1 casing volume may be sufficient.
    b. Stabilization occurs when:
        i. Turbidity (± 10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized),
        ii. Conductivity (± 3%),
        iii. Temperature (± 3%),
        iv. pH (± 0.1 unit),
    c. If after three well volumes have been removed, the chemical parameters have not stabilized according to the above criteria, additional well volumes should be removed.
    d. If the field parameters have not stabilized within five volumes, contact the project manager to determine whether or not to collect a sample or to continue purging.
20. Collect and dispose of purge waters as specified in the site-specific sampling plan.
21. Assemble the appropriate laboratory supplied bottles.
22. Organize sample bottles so as to easily fill them if alone. If with a partner, have them hold the bottles as pumping occurs.
23. Collect samples in the laboratory supplied bottle
    a. For non-filtered samples collect directly from the tubing into the sample bottle.
    b. For filtered samples, connect the tubing directly to the filter unit.
24. Cap the sample bottle tightly and place relabeled sample container in a carrier
25. Replace the well cap.
26. Log all samples in the site logbook and label all samples.

27. Package samples and complete necessary paperwork.
28. Transport sample to staging area for preparation for transport to analytical laboratory.

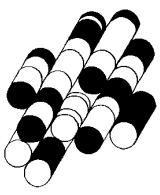
NOTE: Purging should be completed immediately prior to sample collection although it is acceptable to purge and then collect samples within 24 hours.

References

- *Field Sampling guidance Document # 1220 – Groundwater Well Sampling*, U.S.EPA, September 2004
- *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*, Ontario Ministry of the Environment, July 2011

APPENDIX E

TERRAPROBE INC.



LOG OF BOREHOLE 1

Terraprobe

Project No. : 1-18-0537	Client : 10422967 Canada Corp.	Originated by : BR
Date started : April 23, 2019	Project : 1575 Hurontario Street	Compiled by : AR
Sheet No. : 1 of 1	Location : Mississauga, Ontario	Checked by : SZ

Position : E: 613291, N: 4824702 (UTM 17T) Elevation Datum : Geodetic

Rig type : CME 55, buggy-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value	Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) / Undrained Shear Strength (kPa)	Moisture / Plasticity	Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
0	**98.0**	**GROUND SURFACE**										
	97.8	70mm **ASPHALTIC CONCRETE**										
	0.2	140mm **AGGREGATE**										
		SILTY SAND, trace clay, compact to dense, brown, wet		1	SS	15				FID: 0		
1				2	SS	10	97			FID: 0		SS2 Analysis: .pH
		...very loose		3	SS	4				FID: 5		
2							96					
				4	SS	19				FID: 35		SS4 Analysis: BTEX, PHC
3							95					...at 3.0m, spoon wet
				5	SS	21				FID: 5		
4				6	SS	32	94			FID: 5		
		...sand, some silt, trace clay										
5				7	SS	26	93			FID: 20		0 81 17 2
6	91.8			8A			92			FID: 5		
	6.2	**SILT AND CLAY**, trace sand, trace gravel, hard, grey, moist		8B	SS	31				FID: 15		
	91.3											
	6.7	**END OF BOREHOLE**										

Unstabilized Water Level

GRAIN SIZE DISTRIBUTION (%) (MIT)

GR SA SI CL

Penetration Test Values (Blows / 0.3m): Dynamic Cone 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane 40 80 120 160

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit — PL MC LL — 10 20 30

Unstabilized water level measured at 2.4 m below ground surface; borehole caved to 3.4 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Apr 30, 2019	3.2	94.8
May 1, 2019	3.2	94.8

file: 1-18-0537-42 bh logs.gpj

LOG OF BOREHOLE 2

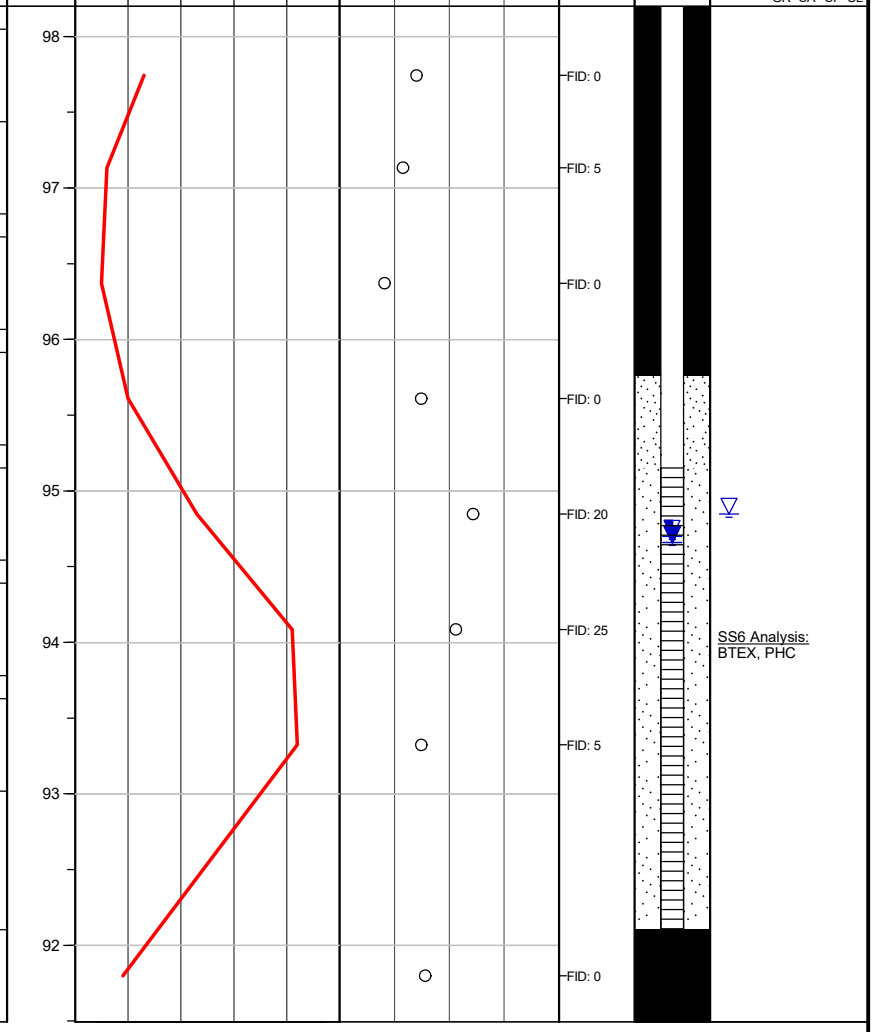
Terraprobe

Project No. : 1-18-0537	Client : 10422967 Canada Corp.	Originated by : BR
Date started : April 23, 2019	Project : 1575 Hurontario Street	Compiled by : AR
Sheet No. : 1 of 1	Location : Mississauga, Ontario	Checked by : SZ

Position : E: 613304, N: 4824719 (UTM 17T) Elevation Datum : Geodetic

Rig type : CME 55, buggy-mounted Drilling Method : Hollow stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	98.2	**GROUND SURFACE**				
	98.0	50mm **ASPHALTIC CONCRETE**				
	0.2	100mm **AGGREGATE**				
		FILL, silty sand, trace clay, trace gravel, loose to compact, brown, moist		1	SS	13
1				2	SS	6
				3	SS	5
2	95.9					
	2.3	**SILTY SAND**, trace clay, compact to dense, brown, wet		4	SS	10
3				5	SS	23
		...grey below		6	SS	41
4						
		...sand and silt		7	SS	42
5						
6	92.1					
	6.1	**SILT AND CLAY**, trace sand, trace gravel, stiff, grey, moist		8	SS	9
	91.5					
	6.7					



END OF BOREHOLE

Unstabilized water level measured at 3.4 m below ground surface; cave not measured due to casing.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Apr 30, 2019	3.5	94.7
May 1, 2019	3.5	94.7

file: 1-18-0537-42 bh logs.gpj

LOG OF BOREHOLE 3

Terraprobe

Project No. : 1-18-0537	Client : 10422967 Canada Corp.	Originated by : BR
Date started : April 23, 2019	Project : 1575 Hurontario Street	Compiled by : AR
Sheet No. : 1 of 1	Location : Mississauga, Ontario	Checked by : SZ

Position : E: 613322, N: 4824722 (UTM 17T) Elevation Datum : Geodetic

Rig type : CME 55, buggy-mounted Drilling Method : Hollow stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	97.2	**GROUND SURFACE**				
		50mm **ASPHALTIC CONCRETE**				
		90mm **AGGREGATE**				
		FILL, silty sand, trace clay, trace gravel, very loose to compact, brown, moist		1	SS	17
1				2	SS	4
				3	SS	11
2	94.9					
	2.3	**SILTY SAND**, trace clay, compact, brown, wet		4	SS	23
3				5	SS	22
	93.4					
	3.8	**SANDY SILT**, trace clay, dense to very dense, grey, moist		6	SS	61
4						
				7	SS	34
5						
	91.1					
6	6.1	**SILT AND CLAY**, trace sand, trace gravel, stiff, grey, moist		8	SS	11
	90.5					
	6.7					

Elevation Scale (m): 97, 96, 95, 94, 93, 92, 91

Penetration Test Values (Blows / 0.3m): Dynamic Cone 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane 40 80 120 160

Moisture / Plasticity: Plastic Limit (PL) Natural Water Content (MC) Liquid Limit (LL) 10 20 30

Headspace Vapour (ppm): FID: 0, FID: 10, FID: 10, FID: 0, FID: 10, FID: 40, FID: 10, FID: 0

Instrument Details

Unstabilized Water Level

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

0 27 64 9

SS6 Analysis: BTEX, PHC

SS7 Analysis: .pH

END OF BOREHOLE

Unstabilized water level measured at 3.4 m below ground surface; cave not measured due to casing.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Apr 30, 2019	2.4	94.8
May 1, 2019	2.4	94.8

file: 1-18-0537-42 bh logs.gpj

LOG OF BOREHOLE 4

Terraprobe

Project No. : 1-18-0537	Client : 10422967 Canada Corp.	Originated by : BR
Date started : April 24, 2019	Project : 1575 Hurontario Street	Compiled by : AR
Sheet No. : 1 of 1	Location : Mississauga, Ontario	Checked by : SZ

Position : E: 613322, N: 4824741 (UTM 17T) Elevation Datum : Geodetic

Rig type : CME 55, buggy-mounted Drilling Method : Hollow stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value	Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) / Undrained Shear Strength (kPa)	Moisture / Plasticity (PL, MC, LL)	Headspace Vapour (ppm)	Instrument Details	Unstabilized Water Level	Lab Data and Comments
0	97.0	**GROUND SURFACE**					97						
	96.8	45mm **ASPHALTIC CONCRETE**											
	0.2	155mm **AGGREGATE**											
1		**FILL**, silty sand, trace clay, trace gravel, trace rootlets, loose to compact, brown, moist		1	SS	13				FID: 0			
				2	SS	9	96			FID: 0			
2				3	SS	12				FID: 5			
	94.7						95						
	2.3	**SILTY SAND**, trace clay, compact, brown, wet		4	SS	26				FID: 70			SS4 Analysis: BTEX, PHC
3				5	SS	25	94			FID: 15			
		...grey		6A	SS	10				FID: 5			
4	92.9						93						
	4.1	**SILT AND CLAY**, trace sand, trace gravel, stiff to very stiff, grey, moist		6B						FID: 0			
				7	SS	14				FID: 25			
5							92						
6		...shale fragments		8	SS	19	91			FID: 0			
	90.3												
	6.7	**END OF BOREHOLE**											

Unstabilized water level measured at 2.7 m below ground surface; cave not measured due to casing.

Penetration Test Values (Blows / 0.3m): Dynamic Cone; Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit

Lab Data and Comments: GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

file: 1-18-0537-42 bh logs.gpj

LOG OF BOREHOLE 5

Terraprobe

Project No. : 1-18-0537	Client : 10422967 Canada Corp.	Originated by : BR
Date started : April 24, 2019	Project : 1575 Hurontario Street	Compiled by : AR
Sheet No. : 1 of 1	Location : Mississauga, Ontario	Checked by : SZ

Position : E: 613339, N: 4824757 (UTM 17T) Elevation Datum : Geodetic

Rig type : CME 55, buggy-mounted Drilling Method : Hollow stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value	Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) / Undrained Shear Strength (kPa)	Moisture / Plasticity (PL, MC, LL)	Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
0	**95.0**	**GROUND SURFACE**					95					
	94.7	300mm **TOPSOIL**										
	0.3	**FILL**, silty sand, trace rootlets, loose, dark brown, moist		1	SS	6				FID: 20		
	94.2											
1	0.8	**SILTY SAND**, trace clay, compact, brown, wet		2	SS	13	94			FID: 25		
				3	SS	22				FID: 10		
2				4A	SS	14	93			FID: 30		
	92.4											
	2.6	**SILT AND CLAY**, trace sand, trace gravel, firm to stiff, grey, moist		4B								
3				5	SS	11	92			FID: 15		
4				6	SS	7	91			FID: 15		
	90.4											
	4.6	**INFERRED BEDROCK**, weathered shale with intermittent limestone / dolostone stringers		7	SS	39				FID: 10		
5							90					
6	88.8			8	SS	50 / 75mm	89			FID: 0		
	6.2	**END OF BOREHOLE**										

Penetration Test Values (Blows / 0.3m): Dynamic Cone; scale 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane; scale 40 80 120 160

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit; PL, MC, LL; scale 10 20 30

Unstabilized Water Level

Lab Data and Comments: GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

Unstabilized water level measured at 5.5 m below ground surface; cave not measured due to casing.

file: 1-18-0537-42 bh logs.gpj

LOG OF BOREHOLE 6

Terraprobe

Project No. : 1-18-0537	Client : 10422967 Canada Corp.	Originated by : BR
Date started : April 24, 2019	Project : 1575 Hurontario Street	Compiled by : AR
Sheet No. : 1 of 1	Location : Mississauga, Ontario	Checked by : SZ

Position : E: 613351, N: 4824764 (UTM 17T) Elevation Datum : Geodetic

Rig type : CME 55, buggy-mounted Drilling Method : Hollow stem augers

Depth (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value
0	94.5	**GROUND SURFACE**				
		100mm **TOPSOIL**				
		FILL, silty sand, trace clay, trace rootlets, very soft, brown, moist		1	SS	2
	93.7					
1	0.8	**SILTY SAND**, trace clay, compact, brown, wet		2	SS	13
				3	SS	17
2	92.2					
	2.3	**CLAYEY SILT**, sandy, some gravel, firm to very stiff, grey, moist		4	SS	21
3				5	SS	6
		...shale fragments		6	SS	18
4	89.9					
	4.6	**INFERRED BEDROCK**, weathered shale with intermittent limestone / dolostone stringers		7	SS	50 / 125mm
5						
6	88.4			8	SS	50 / 50mm
	6.1	**END OF BOREHOLE**				

Elevation Scale (m): 94, 93, 92, 91, 90, 89

Penetration Test Values (Blows / 0.3m) — Dynamic Cone: 10, 20, 30, 40

Undrained Shear Strength (kPa) — Unconfined, Pocket Penetrometer, Field Vane, Lab Vane: 40, 80, 120, 160

Moisture / Plasticity — Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL): 10, 20, 30

Headspace Vapour (ppm): FID: 15; FID: 25; FID: 140; FID: 35; FID: 30; FID: 25; FID: 10; FID: 0

Instrument Details — Unstabilized Water Level

Lab Data and Comments — GRAIN SIZE DISTRIBUTION (%) (MIT): GR SA SI CL

SS3 Analysis: BTEX, PHC

15 27 38 20

Borehole was dry upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Apr 30, 2019	3.8	90.7
May 1, 2019	3.8	90.7

file: 1-18-0537-42 bh logs.gpj

LOG OF BOREHOLE 7

Terraprobe

Project No. : 1-18-0537	Client : 10422967 Canada Corp.	Originated by : BR
Date started : April 23, 2019	Project : 1575 Hurontario Street	Compiled by : AR
Sheet No. : 1 of 1	Location : Mississauga, Ontario	Checked by : SZ

Position : E: 613304, N: 4824689 (UTM 17T) Elevation Datum : Geodetic

Rig type : CME 55, buggy-mounted Drilling Method : Hollow stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value	Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) / Undrained Shear Strength (kPa)	Moisture / Plasticity (PL, MC, LL)	Headspace Vapour (ppm)	Instrument Details	Unstabilized Water Level	Lab Data and Comments (GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL)
0	97.7	**GROUND SURFACE**											
		55mm **ASPHALTIC CONCRETE**											
	97.4	255mm **AGGREGATE**											
	0.3	**SAND**, some silt, trace clay, very loose to compact, brown, moist		1	SS	13				FID: 0			
1				2	SS	2	97			FID: 0			0 88 11 1
				3	SS	8	96			FID: 0			
2	95.6												
	2.1	**END OF BOREHOLE**											

Penetration Test Values (Blows / 0.3m): Dynamic Cone; 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane; 40 80 120 160

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit; PL MC LL; 10 20 30

Borehole was dry and open upon completion of drilling.

file: 1-18-0537-42 bh logs.gpj

LOG OF BOREHOLE 8

Terraprobe

Project No. : 1-18-0537	Client : 10422967 Canada Corp.	Originated by : BR
Date started : April 23, 2019	Project : 1575 Hurontario Street	Compiled by : AR
Sheet No. : 1 of 1	Location : Mississauga, Ontario	Checked by : SZ

Position : E: 613334, N: 4824727 (UTM 17T) Elevation Datum : Geodetic

Rig type : CME 55, buggy-mounted Drilling Method : Hollow stem augers

Depth Scale (m)	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value	Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) / Undrained Shear Strength (kPa)	Moisture / Plasticity	Headspace Vapour (ppm)	Instrument Details	Unstabilized Water Level	Lab Data and Comments
0	**96.8**	**GROUND SURFACE**						Dynamic Cone 10 20 30 40; Unconfined, Pocket Penetrometer, Field Vane, Lab Vane 40 80 120 160	Plastic Limit, Natural Water Content, Liquid Limit PL MC LL 10 20 30				GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	96.6	60mm **ASPHALTIC CONCRETE**											
	0.2	120mm **AGGREGATE**											
		FILL, silty sand, trace clay, trace rootlets, loose to compact, brown, moist		1	SS	16				FID: 5			
1				2	SS	7	96			FID: 0			
	95.3												
	1.5	**SAND**, some silt, trace clay, loose, brown, moist		3	SS	8	95			FID: 0			
2	94.7												
	2.1	**END OF BOREHOLE**											

Borehole was dry and open upon completion of drilling.

file: 1-18-0537-42 bh logs.gpj

LOG OF BOREHOLE 9

Terraprobe

Project No. : 1-18-0537	Client : 10422967 Canada Corp.	Originated by : BR
Date started : April 23, 2019	Project : 1575 Hurontario Street	Compiled by : AR
Sheet No. : 1 of 1	Location : Mississauga, Ontario	Checked by : SZ

Position : E: 613360, N: 4824776 (UTM 17T) Elevation Datum : Geodetic

Rig type : CME 55, buggy-mounted Drilling Method : Hollow stem augers

Depth Scale (m)	Elev / Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value	Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) / Undrained Shear Strength (kPa)	Moisture / Plasticity	Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
0	94.9 **GROUND SURFACE**											
		FILL, silty sand, trace clay, trace rootlets, loose, brown, moist		1	SS	4				FID: 15		
1		...dark brown		2A / 2B	SS	4	94			FID: 10 / FID: 0		
	93.4 / 1.5	**SAND**, some silt, trace clay, compact, brown, wet		3	SS	12	93			FID: 10		
2	92.8 / 2.1	**END OF BOREHOLE**										

Penetration Test Values (Blows / 0.3m): Dynamic Cone — 10, 20, 30, 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane — 40, 80, 120, 160

Moisture / Plasticity: Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL) — 10, 20, 30

Unstabilized Water Level

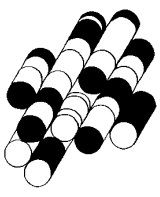
Lab Data and Comments: GRAIN SIZE DISTRIBUTION (%) (MIT) — GR SA SI CL

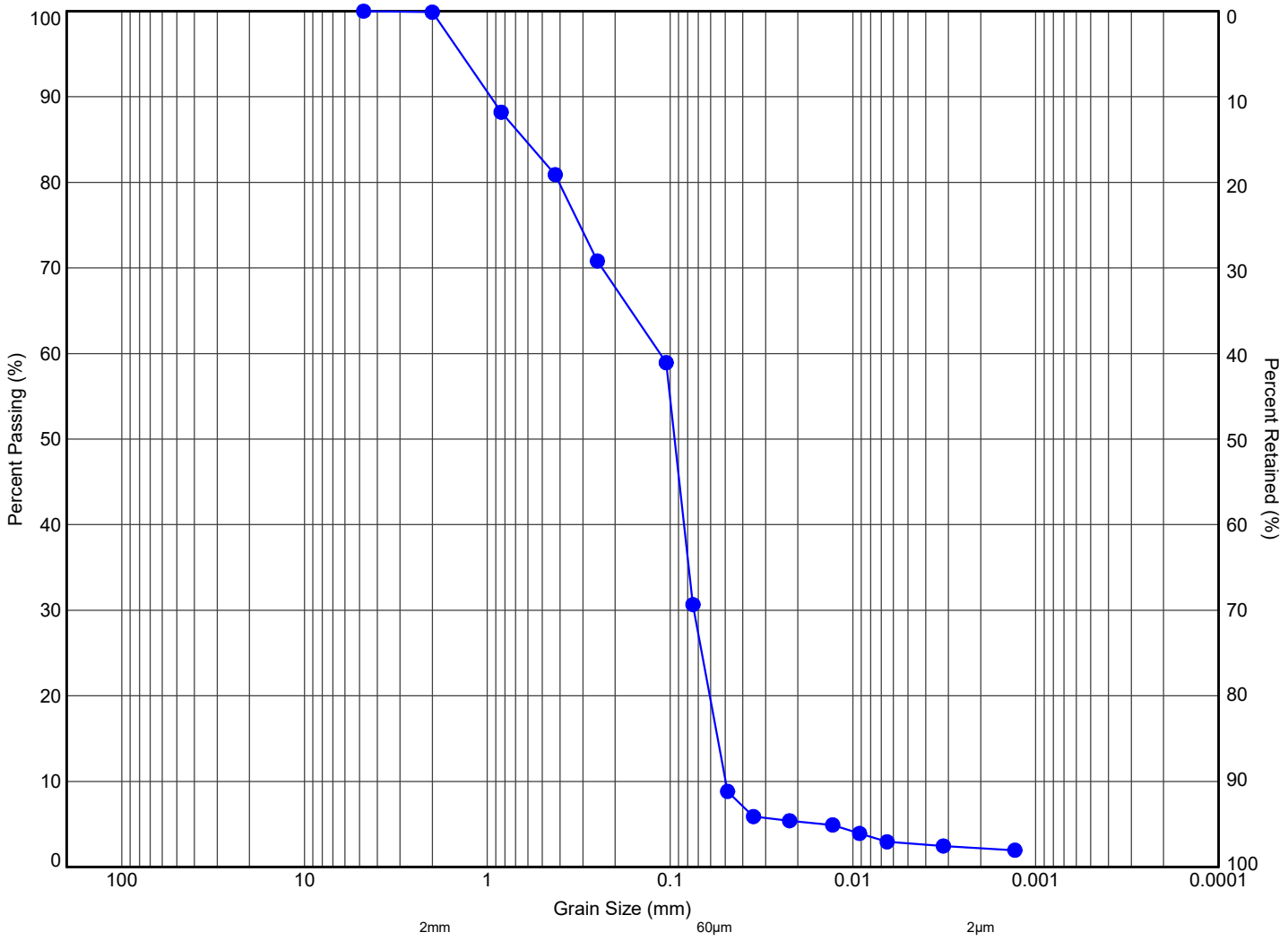
Borehole was dry and open upon completion of drilling.

file: 1-18-0537-42 bh logs.gpj

APPENDIX F

TERRAPROBE INC.





MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

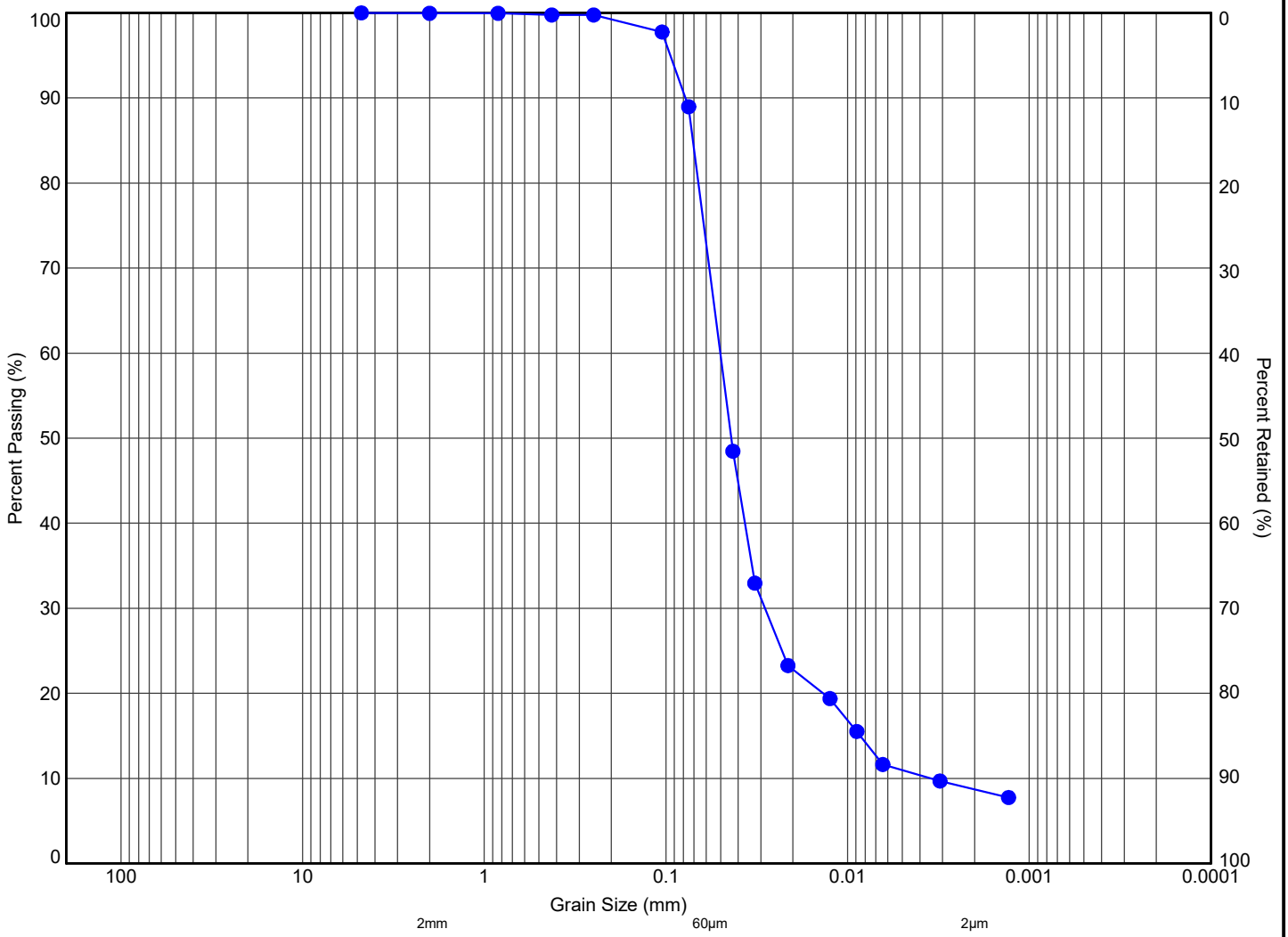
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**1**	SS7	4.9	93.1	0	81	17	2	

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

Title:

GRAIN SIZE DISTRIBUTION
SAND, SOME SILT, TRACE CLAY

File No.: **1-18-0537**



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

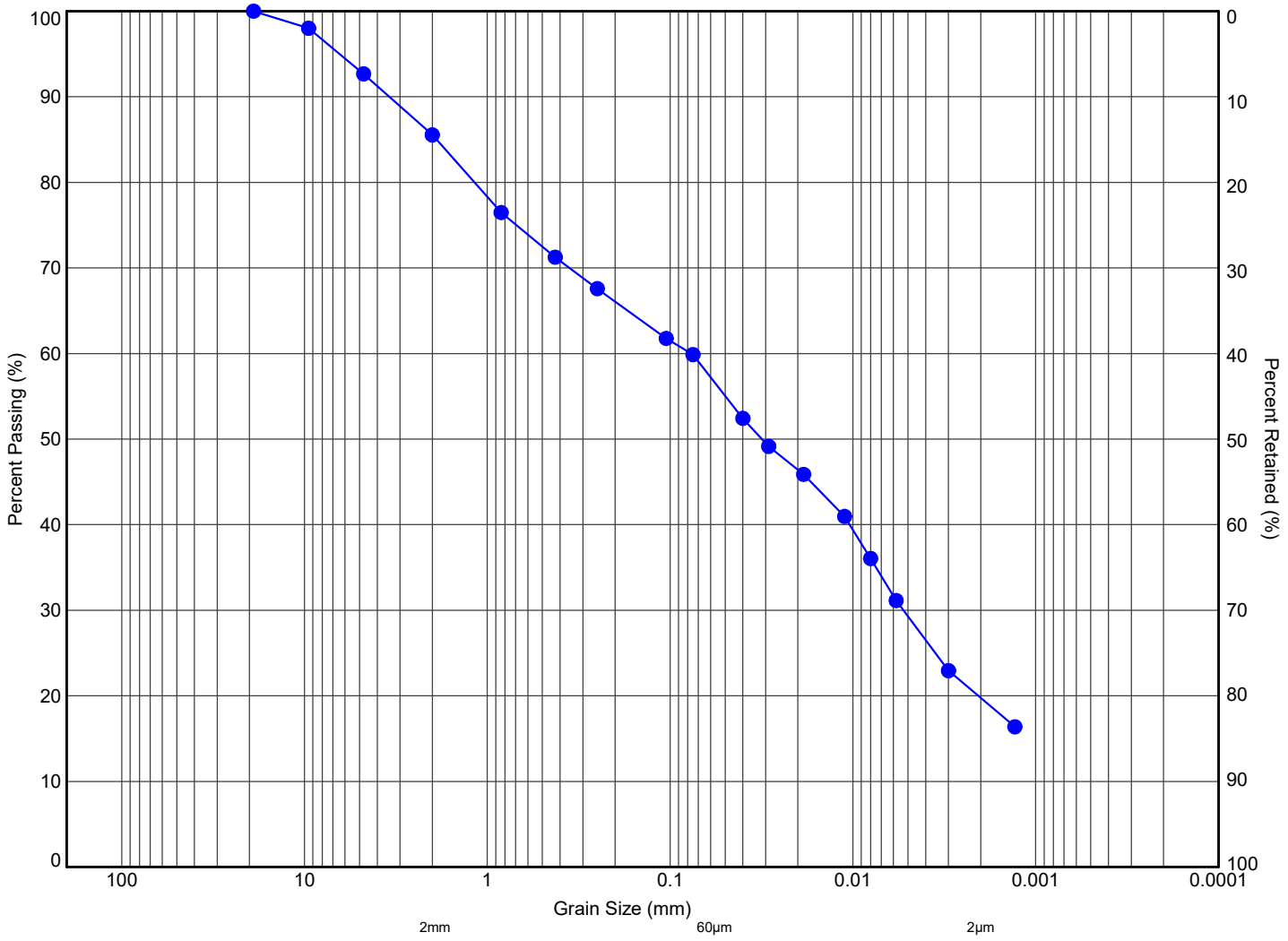
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**3**	SS6	4.1	93.1	0	27	64	9	

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

Title:

GRAIN SIZE DISTRIBUTION
SANDY SILT, TRACE CLAY

File No.: **1-18-0537**



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

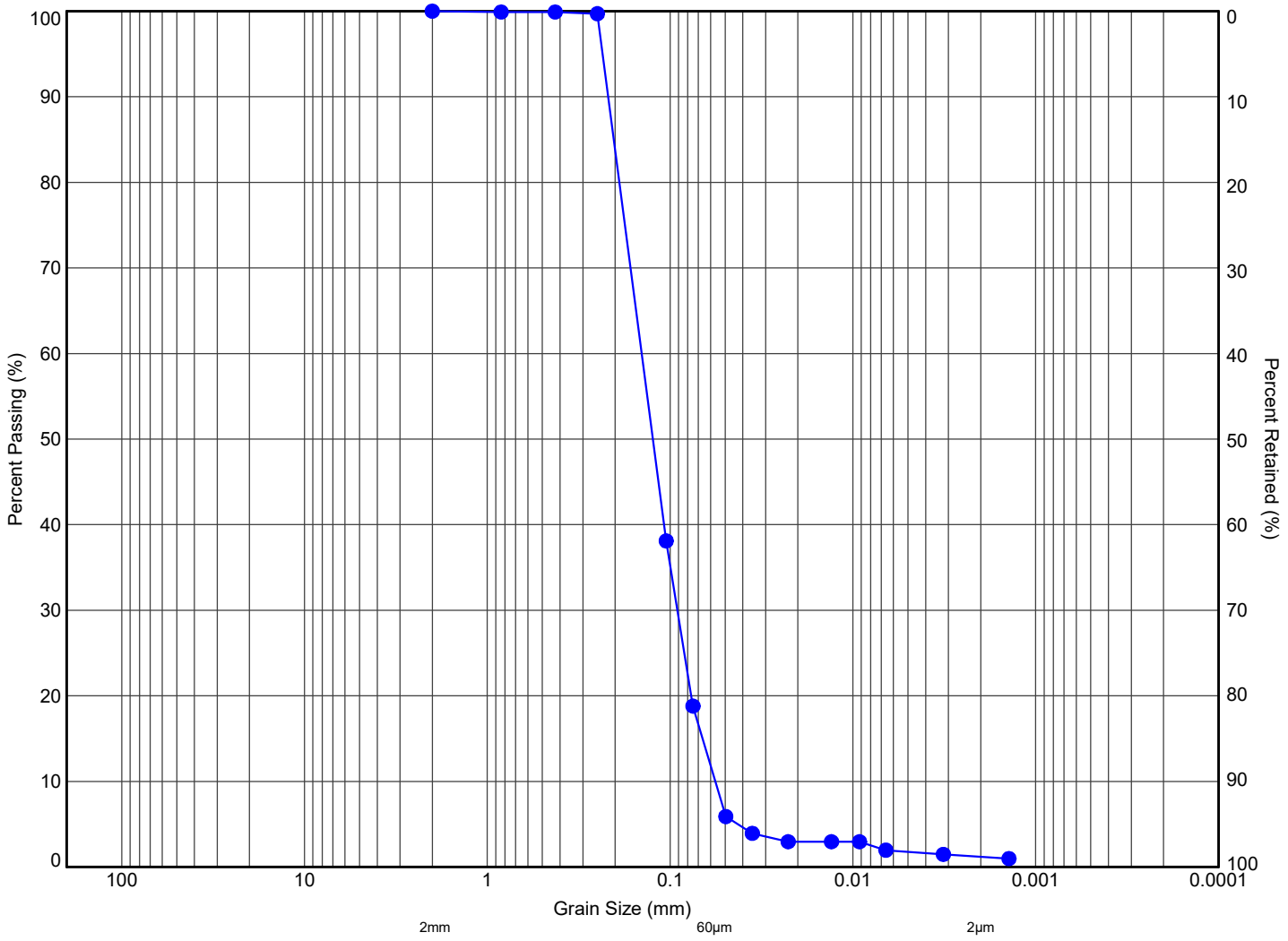
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**6**	SS4	2.6	91.9	15	27	38	20	

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

Title:

GRAIN SIZE DISTRIBUTION
CLAYEY SILT, SANDY, SOME GRAVEL

File No.: **1-18-0537**



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**7**	SS2	1.1	96.6	0	88	11	1	

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

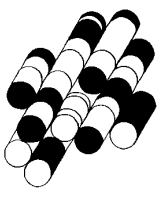
Title:

GRAIN SIZE DISTRIBUTION
SAND, SOME SILT, TRACE CLAY

File No.: **1-18-0537**

APPENDIX G

TERRAPROBE INC.



AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
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http://www.agatlabs.com

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Jessie Wu

PROJECT: 1-18-0537-42

AGAT WORK ORDER: 19T460614

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Supervisor

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

DATE REPORTED: Apr 30, 2019

PAGES (INCLUDING COVER): 7

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 19T460614

PROJECT: 1-18-0537-42

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Jessie Wu

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - ORPs (Soil)

DATE RECEIVED: 2019-04-26

DATE REPORTED: 2019-04-30

		SAMPLE DESCRIPTION:		BH1/SS2	BH3/SS7	Dup1
		SAMPLE TYPE:		Soil	Soil	Soil
		DATE SAMPLED:		2019-04-23	2019-04-23	2019-04-23
Parameter	Unit	G / S	RDL	156796	156797	156798
pH, 2:1 CaCl2 Extraction	pH Units		NA	8.18	7.98	7.61

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to ON T2 S RPI CT
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

156796-156798 pH was determined on the 0.01M CaCl2 extract obtained from 2:1 leaching procedure (2 parts extraction fluid:1 part wet soil).

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 19T460614

PROJECT: 1-18-0537-42

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Jessie Wu

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (Soil)

DATE RECEIVED: 2019-04-26

DATE REPORTED: 2019-04-30

		SAMPLE DESCRIPTION:		Dup1	BH1/SS4	BH2/SS6	BH3/SS6	BH4/SS4	BH6/SS3
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2019-04-23	2019-04-23	2019-04-23	2019-04-23	2019-04-24	2019-04-24
Parameter	**Unit**	**G / S**	**RDL**	**156798**	**156799**	**156800**	**156801**	**156802**	**156803**
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	1.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene Mixture	µg/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA	<50
Moisture Content	%		0.1	18.4	18.8	17.2	13.3	17.9	19.3
Surrogate	**Unit**	**Acceptable Limits**							
Terphenyl	%	60-140		84	108	119	97	101	109

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to ON T2 S RPI CT
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

156798-156803 Results are based on sample dry weight.
The C6-C10 fraction is calculated using Toluene response factor.
Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
C6–C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX contribution.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.
Quality Control Data is available upon request.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

AGAT Laboratories

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Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 19T460614

PROJECT: 1-18-0537-42

ATTENTION TO: Jessie Wu

SAMPLING SITE:

SAMPLED BY:

Soil Analysis

RPT Date: Apr 30, 2019			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - ORPs (Soil)															
pH, 2:1 CaCl2 Extraction	159337		10.4	10.4	0.0%	NA	100%	90%	110%	NA			NA		

Comments: NA signifies Not Applicable.
pH duplicates QA acceptance criteria was met relative as stated in Table 5-15 of Analytical Protocol document.

Certified By:

Amanjot Bhela

CHARTERED CHEMIST AMANJOT BHELA — ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO

AGAT Laboratories

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Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 19T460614

PROJECT: 1-18-0537-42

ATTENTION TO: Jessie Wu

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Apr 30, 2019			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (Soil)															
Benzene	155913		< 0.02	< 0.02	NA	< 0.02	78%	60%	130%	95%	60%	130%	80%	60%	130%
Toluene	155913		< 0.05	< 0.05	NA	< 0.05	86%	60%	130%	88%	60%	130%	84%	60%	130%
Ethylbenzene	155913		< 0.05	< 0.05	NA	< 0.05	87%	60%	130%	88%	60%	130%	87%	60%	130%
Xylene Mixture	155913		< 0.05	< 0.05	NA	< 0.05	77%	60%	130%	90%	60%	130%	81%	60%	130%
F1 (C6 to C10)	155913		< 5	< 5	NA	< 5	92%	60%	130%	89%	85%	115%	83%	70%	130%
F2 (C10 to C16)	143163		< 10	< 10	NA	< 10	112%	60%	130%	80%	80%	120%	80%	70%	130%
F3 (C16 to C34)	143163		97	84	NA	< 50	117%	60%	130%	84%	80%	120%	82%	70%	130%
F4 (C34 to C50)	143163		< 50	< 50	NA	< 50	93%	60%	130%	83%	80%	120%	75%	70%	130%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

AGAT Laboratories

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Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 19T460614

PROJECT: 1-18-0537-42

ATTENTION TO: Jessie Wu

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
pH, 2:1 CaCl2 Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	pH METER
Trace Organics Analysis			
Benzene	VOL-91-5009	EPA SW-846 5035 & 8260D	P&T GC/MS
Toluene	VOL-91-5009	EPA SW-846 5035 & 8260D	P&T GC/MS
Ethylbenzene	VOL-91-5009	EPA SW-846 5035 & 8260D	P&T GC/MS
Xylene Mixture	VOL-91-5009	EPA SW-846 5035 & 8260D	P&T GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	P&T GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	P&T GC/FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC/FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC/FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Laboratory Use Only

Work Order #: 19T460614

Cooler Quantity: Box / Cargo cab

Arrival Temperatures: 4.8 | 5.2 | 4.7 / 5.7 | 3.9 | 3.5

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes:

Report Information:

Company: Terraprobe
Contact: Jessie Wu
Address: 11 Indell Lane · Brampton ·
Phone: 9057962650 Fax:
Reports to be sent to:
1. Email: jwu@terraprobe.ca
2. Email: mshahid@terraprobe.ca

Project Information:

Project: 1-18-0557-42
Site Location: Mississauga, 1575 Hurontario St.
Sampled By: Bob Rachet
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐

Company:
Contact:
Address:
Email:

Regulatory Requirements:

☐ No Regulatory Requirement

(Please check all applicable boxes)

☑ Regulation 153/04
Table 3 (Indicate One)
☐ Ind/Com
☑ Res/Park
☐ Agriculture
Soil Texture (Check One)
☑ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region (Indicate One)
☐ MISA

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
(Indicate One)

Is this submission for a **Record of Site Condition?** ☑ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☑ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y/N	Field Filtered - Metals, Hg, CrVI	O. Reg 153: Metals and Inorganics (☐ All Metals ☐ 153 Metals (excl. Hydrides) ☐ Hydride Metals ☐ 153 Metals (Incl. Hydrides))	O. Reg 153: ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3+NO_2	Volatiles: ☐ VOC ☑ BTEX ☐ THM	PHCs F1 - F4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use	pH
BH1/SS2	April 23/19		1	S									✓	✓							✓
BH3/SS7	↓		1	↓																	✓
Dup 1			1																		✓
BH1/SS4			2										✓	✓							
BH2/SS6			↓										✓	✓							
BH3/SS6	↓												✓	✓							
BH4/SS4	April 24/19												✓	✓							
BH6/SS3	↓												✓	✓							
Dup 1	April 23/19		↓	↓									✓	✓							

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
Jessie Wu	April 26/19	10:00 am		April 26/19	11:29
	April 26/19	1:24			

Page 1 of 1

No: T 087528

AGAT Laboratories

5835 COOPERS AVENUE
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CANADA L4Z 1Y2
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FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Jessie Wu

PROJECT: 1-18-0537-42

AGAT WORK ORDER: 19T462150

TRACE ORGANICS REVIEWED BY: Pinkal Patel, Report Reviewer

DATE REPORTED: May 06, 2019

PAGES (INCLUDING COVER): 7

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 19T462150

PROJECT: 1-18-0537-42

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Jessie Wu

SAMPLING SITE:1575 Hurontario

SAMPLED BY:Bob Racher

O. Reg. 153(511) - PHCs F1 - F4 (Water)

DATE RECEIVED: 2019-05-01

DATE REPORTED: 2019-05-06

		SAMPLE DESCRIPTION:		BH1	BH2	BH3	BH6	DUP #1
		SAMPLE TYPE:		Water	Water	Water	Water	Water
		DATE SAMPLED:		2019-05-01	2019-05-01	2019-05-01	2019-05-01	2019-05-01
Parameter	Unit	G / S	RDL	164320	164322	164323	164324	164325
Benzene	µg/L	5.0	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L	24	0.20	<0.20	<0.20	1.2	<0.20	<0.20
Ethylbenzene	µg/L	2.4	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Xylene Mixture	µg/L	300	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
F1 (C6 - C10)	µg/L	750	25	<25	<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25	<25	<25	<25	<25
F2 (C10 to C16)	µg/L	150	100	<100	<100	<100	<100	<100
F3 (C16 to C34)	µg/L	500	100	<100	<100	<100	<100	<100
F4 (C34 to C50)	µg/L	500	100	<100	<100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA	NA	NA	NA	NA
Surrogate	Unit	Acceptable Limits						
Terphenyl	%	60-140		95	85	108	62	93

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 19T462150

PROJECT: 1-18-0537-42

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Jessie Wu

SAMPLING SITE:1575 Hurontario

SAMPLED BY:Bob Racher

O. Reg. 153(511) - PHCs F1 - F4 (Water)

DATE RECEIVED: 2019-05-01

DATE REPORTED: 2019-05-06

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to ON T2 PGW CT
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

164320-164322
The C6-C10 fraction is calculated using Toluene response factor.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
C6–C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX contribution.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153/04, results are considered valid without determining the PAH contribution if not requested by the client.
NA = Not Applicable

164323
Small amount of sediment was observed in the sample. Entire sample was extracted and bottle rinsed with solvent.
The C6-C10 fraction is calculated using Toluene response factor.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
C6–C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX contribution.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153/04, results are considered valid without determining the PAH contribution if not requested by the client.
NA = Not Applicable

164324
The C6-C10 fraction is calculated using Toluene response factor.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
C6–C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX contribution.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.

Certified By: Pinkal Patel

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Jessie Wu

SAMPLING SITE:1575 Hurontario

SAMPLED BY:Bob Racher

O. Reg. 153(511) - PHCs F1 - F4 (Water)

DATE RECEIVED: 2019-05-01

DATE REPORTED: 2019-05-06

C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153/04, results are considered valid without determining the PAH contribution if not requested by the client.
NA = Not Applicable

164325 Small amount of sediment was observed in the sample. Entire sample was extracted and bottle rinsed with solvent.
The C6-C10 fraction is calculated using Toluene response factor.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
C6–C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX contribution.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153/04, results are considered valid without determining the PAH contribution if not requested by the client.
NA = Not Applicable

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

AGAT Laboratories

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 19T462150

PROJECT: 1-18-0537-42

ATTENTION TO: Jessie Wu

SAMPLING SITE:1575 Hurontario

SAMPLED BY:Bob Racher

Trace Organics Analysis

RPT Date: May 06, 2019			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (Water)															
Benzene	151156		< 0.20	< 0.20	NA	< 0.20	74%	50%	140%	90%	60%	130%	115%	50%	140%
Toluene	151156		< 0.20	< 0.20	NA	< 0.20	74%	50%	140%	83%	60%	130%	112%	50%	140%
Ethylbenzene	151156		< 0.10	< 0.10	NA	< 0.10	78%	50%	140%	78%	60%	130%	106%	50%	140%
Xylene Mixture	151156		< 0.20	< 0.20	NA	< 0.20	75%	50%	140%	84%	60%	130%	98%	50%	140%
F1 (C6 - C10)	151156		< 25	< 25	NA	< 25	94%	60%	140%	87%	60%	140%	85%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	94%	60%	140%	72%	60%	140%	62%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	98%	60%	140%	85%	60%	140%	87%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	96%	60%	140%	96%	60%	140%	92%	60%	140%

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.
When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

AGAT Laboratories

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CANADA L4Z 1Y2
TEL (905)712-5100
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http://www.agatlabs.com

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 19T462150

PROJECT: 1-18-0537-42

ATTENTION TO: Jessie Wu

SAMPLING SITE:1575 Hurontario

SAMPLED BY:Bob Racher

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	VOL-91-5010	MOE PHC-E3421	P&T GC/MS
Toluene	VOL-91-5010	MOE PHC-E3421	P&T GC/MS
Ethylbenzene	VOL-91-5010	MOE PHC-E3421	P&T GC/MS
Xylene Mixture	VOL-91-5010	MOE PHC-E3421	P&T GC/MS
F1 (C6 - C10)	VOL-91- 5010	MOE PHC-E3421	P&T GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC-E3421	P&T GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC-E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC-E3421	GC/FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC-E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC-E3421	BALANCE
Terphenyl	VOL-91-5010	MOE PHC-E3421	GC/FID

AGAT Laboratories

1 med blue

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Laboratory Use Only
Work Order #: 19T462150
Cooler Quantity:
Arrival Temperatures: 4.6 | 4.4 | 4.7 (on ice)
Custody Seal Intact: ☐Yes ☐No ☒N/A
Notes:

Report Information:
Company: Terraprobe
Contact: Jessie Wu
Address: Brampton
Phone: Fax:
Reports to be sent to:
1. Email: jwu@terraprobe.ca
2. Email:

Regulatory Requirements: ☐ No Regulatory Requirement
(Please check all applicable boxes)

☑ Regulation 153/04
Table 3 (Indicate One)
☐ Ind/Com
☒ Res/Park
☐ Agriculture
Soil Texture (Check One)
☒ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region (Indicate One)
☐ MISA

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
(Indicate One)

Turnaround Time (TAT) Required:
Regular TAT ☑ 5 to 7 Business Days
Rush TAT (Rush Surcharges Apply)
☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day
OR Date Required (Rush Surcharges May Apply):
Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*
For 'Same Day' analysis, please contact your AGAT CPM

Project Information:
Project: 1-18-0537-42
Site Location: 1575 Hurontario
Sampled By: B.R.
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Is this submission for a **Record of Site Condition?** ☑ Yes ☐ No

Report Guideline on Certificate of Analysis ☑ Yes ☐ No

Invoice Information:
Bill To Same: Yes ☒ No ☐
Company:
Contact:
Address:
Email: lrossi@terraprobe.ca

Sample Matrix Legend
B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y/N	Field Filtered - Metals, Hg, CrVI	O. Reg 153: Metals and Inorganics (☐ All Metals ☐ 153 Metals (excl. Hydrides) ☐ Hydride Metals ☐ 153 Metals (Incl. Hydrides))	O. Reg 153: ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN ☐ Cr^{6+} ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3+NO_2	Volatiles: ☐ VOC ☒ BTEX ☐ THM	PHCs F1 - F4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use
BH 1	May 1/19		4	GW									X	X						
BH 2	↓		4	↓									X	X						
BH 3			4										X	X						
BH 6			4										X	X						
DUP #1			4										X	X						

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Bob Rachin	May 1 11:00	11:00	Sharmin	May 1/19	11:05am

Page 1 of 1

Nº: T087887