



## ENGINEERING



## LABORATORY



## PHASE II ENVIRONMENTAL SITE ASSESSMENT



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Project No. FE-P-22-12517

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**PROJECT ADDRESS:** 401-421 KINGSTON ROAD, PICKERING, ON  
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**F i s h e r   E n v i r o n m e n t a l   L t d**

Project No. FE-P-22-12517, November 22, 2022

## **GLOSSARY OF ACRONYMS**

APEC:	Area of Potential Environmental Concern
ASL:	Above Sea Level
AST:	Aboveground Storage Tank
BGS:	Below Ground Surface
BTEX:	Benzene, Toluene, Ethylbenzene, Xylene
CALA:	Canadian Association for Laboratory Accreditation
COC:	Contaminants of Concern
CPC:	Contaminants of Potential Concern
CSA:	Canadian Standards Association
CSM:	Conceptual Site Model
EPA:	Environmental Protection Act
HRC	Hydrogen Release Compound
MNR:	Ministry of Natural Resources
MECP:	Ministry of the Environment, Conservation and Parks
MOE:	Ministry of the Environment
PCA:	Potentially Contaminating Activity
PCB:	Polychlorinated Biphenyl
Phase I ESA:	Phase One Environmental Site Assessment
Phase II ESA:	Phase Two Environmental Site Assessment
PAHs	Polycyclic Aromatic Hydrocarbons
PHC (F1-F4):	Petroleum Hydrocarbon in four fractions, F1 to F4
PID:	Photoionization Detector
PPB:	Parts per Billion
PPM:	Parts per Million
PVC:	Polyvinyl Chloride
QA/QC:	Quality Assurance/Quality Control
RSC:	Record of Site Condition
SCS:	Site Condition Standard
UST:	Underground Storage Tank
VOC:	Volatile Organic Compound



## EXECUTIVE SUMMARY

Fisher Environmental Ltd. (Fisher) was retained by Mr. Mike Siskind of Decade Capital to conduct a Phase II ESA of the properties located at 401 to 421 Kingston Road, Pickering, ON, hereinafter referred to as the “Site”. The subsurface soil and groundwater investigation was carried out on October 26 and 27, 2022.

The Site is located on the south of Kingston Road and approximately 130m east of Rougemont Drive with an area of approximately 7,200 m<sup>2</sup>. The Site is occupied by four buildings which are primarily used as a Montessori School. The site has asphalt covered parking and driving areas and green landscaped areas surrounding the buildings.

A recent/updated Phase I was not made available to Fisher, however, a Phase I ESA conducted by Pottinger Gaherty Environmental Consultants Ltd. (PGL File: 4040-01.01) in April 2012 identified an auto wrecker located adjacent to the site's west boundary as an Area of Potential Environmental Concern.

In the present investigation, eight (8) boreholes, four (4) of which were instrumented as monitoring wells to facilitate groundwater level monitoring and sampling, were advanced outside the buildings footprint of the investigated property, up to approximately 9.14m below ground surface (bgs).

Groundwater static level measurements were taken at the monitoring well locations on October 31, 2022, and they were noted at depths ranging from 0.72m bgs in BH1(MW) to 6.05m bgs in BH5(MW); BH4(MW) and BH8(MW) were dry. The local groundwater flow direction was inferred to be south/southwest, towards The Rouge River and Lake Ontario. However, the localized groundwater flow direction may be influenced by the presence of underground utilities, building foundation, variations in vertical and horizontal stratigraphy, depth of wells' screened intervals and/or well trauma. It should be noted that groundwater levels are subjected to seasonal fluctuations; consequently, definitive information on long-term groundwater levels were not obtained during the investigation.

According to the Quaternary Geology of Southern Ontario published by The Ministry of Natural Resources, the Site is situated in an area characterized as Till: Stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain.

On the basis of the boreholes completed, the soil stratigraphy across the Site can generally be described as mainly, brownish grey silt, sandy silt underlain by grey silty sand with trace gravel to borehole termination depths.

The applicable MECP SCS was identified as: Table 3, Full Depth Generic SCS in a Non-Potable Groundwater Condition – Residential/Parkland/Institutional (R/P/I) Property Use for soil samples and All Types of Property Use for groundwater samples in a medium to fine textured soil condition.



Eight (8) soil samples were submitted to the laboratory for analysis of one or more of the following parameters: Metals, PHCs (F1-F4), VOCs and PAHs. Three (3) groundwater samples collected from the installed wells, including one duplicate, were submitted to the laboratory for analysis of one or more of the following parameters: Metals, PHCs (F1-F4), VOCs and PAHs.

#### **FINDINGS – SOIL AND GROUNDWATER**

The analytical results of the submitted soil and groundwater samples were found to be in compliance with the applicable MECP Table 3 SCS.

#### **CONCLUSIONS**

Based on the results of the current investigation, the encountered soil and groundwater conditions at the selected sampling locations of the Site were all within the applicable MECP standards. No further investigation is required at this time.



## 1. INTRODUCTION

Fisher Environmental Ltd. (Fisher) was retained by Mr. Mike Siskind of Decade Capital to conduct a Phase II ESA of the properties located at 401 to 421 Kingston Road, Pickering, ON, hereinafter referred to as the “Site”. The subsurface soil and groundwater investigation was carried out on October 26 and 27, 2022.

## 2. PROPERTY DESCRIPTION

The Site is located on the south of Kingston Road and approximately 130m east of Rougemount Drive with an area of approximately 7,200 m<sup>2</sup>. The Site is occupied by four buildings which are primarily used as a Montessori School. The site has asphalt covered parking and driving areas and green landscaped areas surrounding the buildings.

## 3. EXISTING REPORTS REVIEW

A recent/updated Phase I was not made available to Fisher, however, a Phase I ESA conducted by Pottinger Gaherty Environmental Consultants Ltd. (PGL File: 4040-01.01) in April 2012 identified an auto wrecker located adjacent to the site's west boundary as an Area of Potential Environmental Concern.

## 4. SCOPE OF WORK

The current Phase II ESA was conducted in accordance with the CAN/CSA-Z769-00 standards, as published in March 2000 and reaffirmed in 2018, by the CSA Group. A Phase II ESA involves sampling and testing of materials considered, usually by the outcome of a Phase I ESA or other investigation, to be possible instances of environmental contamination. Normal environmental assessment protocol reserves a detailed investigation for a subsequent phase if the reconnaissance survey indicates a requirement for further contaminant delineation.

The scope of this work generally consisted of the following:

- **Field Program** - Clearance of underground utilities and advancement of eight (8) boreholes to a proposed depth of up to 6 m or resistance, or until sufficient depth is attained for the collection of soil and/or groundwater samples, installation of four (4) groundwater monitoring wells;
- **Laboratory Analytical Program** - Recovery and analysis of selected soil and groundwater samples for one or more of the following: Metals, PHCs (F1-F4), PAHs and VOCs;
- **Data Evaluation** - Comparison of results from laboratory analyses with the applicable MECP SCS; and
- **Reporting** - Provision of final report detailing the findings of performed works.

As conducted, the present investigation may lack information or analytical work that are specific requirements for filing a RSC under Part XV.1 of the EPA and amended Ontario Regulation



153/04, therefore, if a RSC is necessary, the property owner or its agent should undertake complementary investigations required under the RSC filing process.

## 5. FIELD PROGRAM

The subsurface soil and groundwater investigation was carried out on October 26 and 27, 2022. The field work was conducted by Fisher personnel who directed drilling and sampling operations and assured proper chain of custody procedures for the recovered soil and groundwater samples.

In the current investigation, eight (8) boreholes, four (4) of which were instrumented as monitoring wells to facilitate groundwater level monitoring and sampling, were advanced outside the building footprint of the investigated property, up to approximately 9.14m below ground surface (bgs).

### 5.1. Site Preparation

Site preparation included the clearance and/or marking of public underground services by the respective utilities listed with Ontario One Call, to avoid potential disruptions to the utilities during the drilling. Borehole drilling was scheduled following receipt of clearance from all utilities for the given borehole locations.

### 5.2. Boreholes, Soil and Groundwater Sampling

The borehole locations were selected by an initial rationale as being the most likely locations of contamination. Refer to the attached site plan with borehole and monitoring well locations in Appendix A and Table 1 below for descriptions of the borehole location rationale. Borehole drilling was carried out using a truck-mounted Diedrich D-50 drill rig.

TABLE 1: BOREHOLE LOCATION RATIONALE

Borehole I.D.	Borehole Location and Rationale
BH1(MW)	Evaluate the sub-surface soil and groundwater conditions at the north west portion of the subject property in relation to potential impacts originating from, off-site neighbouring properties and adjacent to auto wrecker yard.
BH2, BH3	Evaluate the sub-surface soil conditions at the north central and northeast portions of the subject property in relation to potential impacts originating from, present and historical on-site operations, and off-site neighbouring properties.
BH4(MW), BH5(MW), BH6	Evaluate the sub-surface soil and groundwater conditions at the southeastern, south central and west central portions of the subject property in relation to potential impacts originating from, historical on-site operations, and off-site neighbouring properties.
BH7, BH8(MW)	Evaluate the sub-surface soil and groundwater conditions at the south west portions of the subject property in relation to potential impacts originating from, historical on-site operations, off-site neighbouring properties and adjacent to auto wrecker yard.

The drilling works was conducted by Terra Firma Environmental Services Limited (Terra Firma) of Toronto, Ontario and supervised by Fisher personnel. Terra Firma maintains licensure for



drilling (Water Well Drillers, EPA, Well Contractor License No. 6946) as required by the MECP, and conducted drilling and soil sampling works in accordance with CSA Standard Z769-00 (published March 2000, reaffirmed in 2018) and MECP Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario, and in compliance with Occupational Health and Safety regulations.

The drilling of the boreholes was carried out using a Diedrich D-50 drilling rig equipped with a 50 mm diameter spoon sampler driven 300 mm into the subsoil by a 65 kg hammer, falling 760 mm, and solid stem continuous flight augers. No external water was used to advance the boreholes.

Soil and groundwater samples were collected and handled in accordance with generally accepted sampling and handling procedures used by the environmental consulting industry. For guidance, these practices rely on the 1996 MOE publication “Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario.” To minimize the potential for cross-contamination between soil samples, the split spoon sampler and the stainless steel spatula used to collect soil samples from the boreholes was brushed clean of soil and washed in municipal water containing Alconox then rinsed with distilled water. As well, new disposable latex gloves were used during each sampling event when removing the soil cores from the split spoon sampler and when transferring the samples into laboratory supplied containers. New hermetic samplers were also used for sampling of soil to be tested for PHC (F1), and VOCs.

For each soil sample, the lithology and esthetic evidence of impacts (debris, staining and odours) were recorded as part of field QC procedures. Additionally, each sample was screened in the field for headspace vapour concentration (combustible soil vapour and total organic vapour) using the 10.6 eV lamp Mini Rae 2000 PID calibrated to 100 ppm isobutylene. The headspace monitoring was performed on the soil samples as a preliminary screening for VOCs analysis.

The selection of soil samples to be submitted for laboratory analysis was based on the headspace vapour concentration and/or physical evidence of odours/staining. If no vapour readings or odours/staining are observed in the soil samples, then the worst-case scenarios at the depths in which contaminants are likely to be present were selected. Soil samples collected were placed directly into laboratory supplied containers at the time of sampling and labelled.

Prior to groundwater sampling, three (3) well volumes of groundwater were purged from each groundwater monitoring well to ensure the sampling of “fresh” formation water if the natural recharge rate of the groundwater was sufficient. Groundwater was collected utilizing single-use disposable bailers and placed into laboratory supplied containers and labeled. Soil and groundwater samples were kept in coolers with ice and/or ice packs during field storage and transportation to Fisher Environmental Laboratories.



### **5.3. Groundwater Monitoring Wells**

Four (4) groundwater monitoring wells were installed at the Site in accordance with O. Reg. 903. The groundwater wells were constructed of 52 mm inner diameter PVC pipes, which were pre-cleaned at the factory and delivered to the Site in sealed plastic bags. The portion below and/or intersecting the groundwater table was constructed of a similar diameter machine-slotted screen to permit future measurement of water levels and the collection of groundwater samples.

The installed groundwater monitoring wells were sampled to determine the presence/absence of free phase product within the groundwater monitoring wells. Groundwater static level measurements were taken at the monitoring well locations on October 31, 2022. Further construction details of the groundwater monitoring wells are detailed in the log of boreholes attached in Appendix B. Static groundwater level measurements were conducted prior to sampling. The static groundwater level measurements are summarized in Table 2 below.

**TABLE 2: STATIC GROUNDWATER LEVEL MEASUREMENTS**

Location	Well Depth, m bgs	Groundwater Static Level, m bgs
BH1(MW)	0.72	2.96
BH4(MW)	Dry	7.36
BH5(MW)	6.05	7.62
BH8(MW)	Dry	8.30

Based on the regional topography, the local groundwater flow direction was inferred to be south/southwest, towards The Rouge River and Lake Ontario. The localized shallow groundwater flow direction may be influenced by the presence of underground utilities, building foundations, variations in vertical and horizontal stratigraphy, depth of wells' screened intervals and/or well trauma. It should be noted that groundwater levels are subjected to seasonal fluctuations; consequently, definitive information on long-term groundwater levels were not obtained during the investigation.

### **5.4. Well Record Filed with the MECP**

The groundwater monitoring well installations for this project are regulated under Regulation 903 of the Ontario Water Resources Act. The regulation reveals certain responsibilities on Fisher Environmental and the property owner. As a condition to Fisher Environmental providing groundwater monitoring installation services, our client has accepted responsibility for ensuring that the property owner accepts the following conditions:

1. The name and address of the property owner have been provided to Fisher Environmental.
2. Fisher Environmental has permission to submit well records to the Ministry and to the owner and to report multiple installations on a single well record.



3. Unless otherwise agreed to by Fisher Environmental, installations will be decommissioned by the owner within 180 days of installation. Note that installations greater than 180 days require more costly seals.
4. Well tags on installations must not be removed or destroyed.
5. The owner is responsible for future decommissioning of all installations in accordance with the regulation.
6. The owner is responsible for any expenses associated with controlling and decommissioning installations that have, or may have in the future, artesian conditions.
7. Maintenance of well installations in accordance with the regulation will be by the owner. This includes ensuring that seals remain adequate for preventing water or gas migration between formations and to/from surface, seals do not deteriorate and wells are decommissioned.
8. The client and owner accept responsibility for the inherent risk associated with industry standard installations, and acknowledge that conditions and materials do not remain constant with time nor that they can be completely quantified or predicted in advance.

## **5.5. Site Topography and Geology**

According to the Quaternary Geology of Southern Ontario published by The Ministry of Natural Resources, the Site is situated in an area characterized as Till: Stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain.

On the basis of the boreholes completed, the soil stratigraphy across the Site can generally be described as mainly, brownish grey silt, sandy silt underlain by grey silty sand with trace gravel to borehole termination depths.

## **5.6. Head Space Combustible Vapours**

A 10.6 eV lamp MiniRae 2000 PID calibrated to 100 ppm isobutylene was used to measure combustible vapours in the soil samples. The soil sample with the highest reading from each borehole was selected for analysis.

## **5.7. Visual and Olfactory Soil / Groundwater Quality**

During the on-site soil and groundwater sampling, no deleterious material or hydrocarbon odours were noted in the samples collected.

## **5.8. Selection of Analytical Samples and Parameters**

Selection of samples for laboratory analysis was based on appearance, headspace vapour concentrations, expectations of site conditions, and proximity of potential contaminant sources.

Eight (8) soil samples were submitted to the laboratory for analysis of one or more of the following parameters: Metals, PHCs (F1-F4), VOCs and PAHs. Three (3) groundwater samples collected from the installed wells, including one duplicate, were submitted to the laboratory for analysis of one or more of the following parameters: Metals, PHCs (F1-F4), VOCs and PAHs. The rationale for the selected parameter is detailed in Table 3 below.

**TABLE 3: RATIONALE FOR ANALYTICAL PARAMETER**

Parameter	Description
Metals	<p>Various metallic elements can cause adverse environmental effects at relatively low concentrations. Such metals are associated with industrial/commercial activities, both historic and current, and it is common practice to include metals analysis in subsurface soil and/or groundwater investigations.</p> <p>Eight (8) soil and three (3) groundwater samples collected at the Site were submitted for metals analysis.</p>
PHCs (F1-F4) and BTEX	<p>PHCs are components of gasoline, diesel and other petroleum products for which soil quality guidelines have been developed. These compounds are widely utilized and often included in the evaluation of a Site's overall subsurface condition. BTEX are compounds found in petroleum products and considered to be VOCs.</p> <p>Eight (8) soil and three (3) groundwater samples collected at the Site were submitted for PHCs (F1-F4) and BTEX analysis.</p>
VOCs	<p>VOCs are any volatile compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds. VOCs are included in gasoline, diesel, crude oil, lubricant, waste oil, adhesive, paint, stain, solvents, resin, monomer, and/or any other material containing VOCs.</p> <p>Three (3) soil and two (2) groundwater samples collected at the Site were submitted for VOCs analysis.</p>
PAHs	<p>PAHs are associated with coal and furnace ash, and/or the use of fill materials of unknown quality. Three (3) soil samples collected at the Site was submitted for PAHs analysis.</p>
pH	<p>Soil pH is referred to as the "acidity" of the soil. When the soil pH is too "acid" (low pH) or too "alkaline" (high pH), nutrients present in the soil become locked-up or unavailable. The applicable MECP SCS were developed for soils with a specific range of pH 5-9 for surface soils and 5-11 for subsurface soils. Two (2) soil samples collected at the Site were submitted for pH analysis</p>
Grain Size	<p>As specified by Ontario Regulation 153/04, as amended, "coarse textured soil is defined as material having more than 50 percent (by mass) of particles that are 75 <math>\mu\text{m}</math> or larger in mean diameter". "Materials having more than 50 percent (by mass) of particles that are smaller than 75 <math>\mu\text{m}</math> in mean diameter are medium and fine textured soils". "When at least 1/3 of the soil at the property, measured by volume, consists of coarse textured soil, the standard for coarse textured soil shall apply. In any other case, the standard for medium and fine textured soil may be applied". One (1) soil sample collected at the Site was submitted for Grain Size distribution</p>

## 6. LABORATORY ANALYTICAL PROGRAM

### 6.1. General

Recovered soil and groundwater samples were submitted to Fisher Environmental Laboratories for analysis. As a CALA registered analytical facility, QA/QC procedures were maintained consistent with CALA requirements and standard laboratory practices. The laboratory ensured that analytical sub-samples were, by appearance, representative of the whole sample as collected in the field.

### 6.2. Data Evaluation

#### 6.2.1. Soil and Groundwater Standards

The MECP presents Soil and Groundwater Standards, under the Publication "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the EPA" April 15, 2011. These standards present soil, groundwater, and sediment criteria which have been developed with regard to toxicological data. They are levels at and below which no environmental or safety concerns, or adverse conditions, are anticipated for environments or persons with average sensitivity.

The Site has been utilized for industrial/commercial purposes and it is our understanding that the Site will maintain its industrial/commercial land use. For the purpose of assessing the soil and groundwater quality at the Site in accordance to the requirements for site assessment, under Part XV.1 of the EPA and Ontario Regulation 153/04, it is our intention to utilize a non-potable groundwater condition standard.

For the purposes of this Phase II ESA, the appropriate standards were identified as: Table 3, Full Depth Generic SCS in a Non-Potable Groundwater Condition – Residential/Parkland /Institutional (R/P/I) Property Use for soil samples and All Types of Property Use for groundwater samples in a medium to fine textured soil condition. The criteria values are presented with the results of analysis in the last column of the certificates of analysis attached in Appendix C.

#### 6.2.2. Soil and Groundwater Quality

Eight (8) soil samples were submitted to the laboratory for analysis of one or more of the following parameters: Metals, PHCs (F1-F4), VOCs and PAHs. Three (3) groundwater samples collected from the installed wells, including one duplicate, were submitted to the laboratory for analysis of one or more of the following parameters: Metals, PHCs (F1-F4), VOCs and PAHs. A summary of the soil and groundwater quality is listed in Table 4 and Table 5 below.



**Table 4: Summary of Soil Quality**

Borehole Number	Sample Depth (m bgs)	Laboratory Number	Parameter(s) Analyzed	Exceedances of Table 3 SCS <u>Soil:</u> R/P/I Property Use
<b>Soil Samples (µg/g, ppm)</b>				
BH1	1.50-2.10m	22-9353-1	Metals, VOCs, PHCs (F1-F4)	None
BH2	0.90-1.50m	22-9353-2	Metals, PHCs (F1-F4)	None
BH3	0.90-1.50m	22-9353-3	Metals, PAHs, PHCs (F1-F4)	None
BH4	0.90-1.50m	22-9353-4	Metals, PHCs (F1-F4)	None
BH5	0.00-0.60m	22-9353-5	Metals, PAHs, PHCs (F1-F4)	None
BH6	0.90-1.50m	22-9353-6	Metals, PAHs, PHCs (F1-F4)	None
BH7	1.50-2.10m	22-9353-7	Metals, VOCs, PHCs (F1-F4)	None
BH8	3.00-3.60m	22-9353-8	Metals, VOCs, PHCs (F1-F4)	None

**Table 5: Summary of Groundwater Quality**

Borehole Number	Water Level (m bgs)	Laboratory Number	Parameter(s) Analyzed	Exceedances of Table 3 SCS <u>Groundwater:</u> All Types of Property Use
<b>Groundwater (µg/L, ppb)</b>				
BH1(MW)	0.72	22-9353-9	Metals, VOCs, PHCs (F1-F4)	None
BH1(MW) Duplicate	0.72	22-9353-10	Metals, PHCs (F1-F4)	None
BH5(MW)	6.05	22-9353-11	Metals, VOCs, PHCs (F1-F4)	None

NOTES: PHC (F1-F4)\*: Petroleum Hydrocarbons fractions (F1-F4)

- F1 (C6-C10) Gasoline less BTEX
- F2 (C10-C16) Diesel
- F3 (C16-C34) Diesel
- F4 (C34-C50) Heavy Oil
- F4G (>C34) Heavy Oil

VOC: Volatile Organic Compounds, PAH: Polycyclic Aromatic Hydrocarbons

**Bold:** Exceeds the MOE Standards

\*For a site to meet this standard, there must be no evidence of free product, including but not limited to, visible petroleum hydrocarbon film or sheen present on any groundwater samples.

### 6.2.3. Metals

Eight (8) soil and three (3) groundwater samples were submitted for metals analysis. The results of the lab analyses of the submitted soil and groundwater samples were within the applicable MECP Table 3 SCS.



#### **6.2.4. Petroleum Hydrocarbons and BTEX**

Eight (8) soil and three (3) groundwater samples were submitted for PHCs analysis. The results of the lab analyses of the submitted soil and groundwater samples were within the applicable MECP Table 3 SCS.

#### **6.2.5. Volatile Organic Compounds**

Three (3) soil and two (2) groundwater samples were submitted for VOCs analysis. The results of the lab analyses of the submitted soil and groundwater samples were within the applicable MECP Table 3 SCS.

#### **6.2.6. Polycyclic Aromatic Hydrocarbons (PAHs)**

Three (3) soil samples were submitted for PAHs analysis. The result of the lab analysis of the submitted soil samples were within the applicable MECP Table 3 SCS.

#### **6.2.7. pH**

Two (2) soil samples were submitted for pH analysis. The analytical results of the pH analysis of the submitted soil samples were within the range of 5 to 9 for the surface soil sample and within the range of 5 to 11 for the subsurface soil sample.

#### **6.2.8. Grain Size**

Three (3) soil samples were submitted for Grain Size distribution analysis; the submitted soil samples were determined to be medium to fine textured.

### ***6.3. Quality Assurance/Quality Control***

A chain of custody form was filled out for all samples prior to submitting to the laboratory. The chain of custody documented movement from selection of the sample to receipt at the laboratory and provided sample identification, requested analysis, and condition of samples upon arrival at the laboratory.

The laboratory checks randomly selected samples for QA. Generally, one (1) sample for every twenty (20) samples submitted is selected for QA checks. For each parameter, there is an acceptable upper and lower limit for the measured concentration of the parameter. Measured concentrations of analyzed samples must fall within the upper and lower acceptable limits in order for the sample to be valid. If the result exceeds the upper or lower acceptable limits, the sample must be re-analyzed.

Based on QA reports provided by the laboratory, measured concentrations in the soil and groundwater samples were within the acceptable limits for QC. Copies of the QA/QC reports for the soil and groundwater are included with the certificates of analysis attached in Appendix C.

## 7. SUMMARY AND CONCLUSIONS

Fisher Environmental Ltd. (Fisher) was retained by Mr. Mike Siskind of Decade Capital to conduct a Phase II ESA of the properties located at 401 to 421 Kingston Road, Pickering, ON, hereinafter referred to as the “Site”. The subsurface soil and groundwater investigation was carried out on October 26 and 27, 2022.

- Eight (8) boreholes, four (4) of which were instrumented as monitoring wells to facilitate groundwater level monitoring and sampling, were advanced outside the building footprints of the investigated property, up to approximately 9.14m below ground surface (bgs);
- On the basis of the boreholes completed, the soil stratigraphy across the Site can generally be described as mainly, brownish grey silt, sandy silt underlain by grey silty sand with trace gravel to borehole termination depths;
- Groundwater static level measurements were taken at the monitoring well locations on October 31, 2022, and they were noted at depths ranging from 0.72m bgs in BH1(MW) to 6.05m bgs in BH5(MW); BH4(MW) and BH8(MW) were dry;
- During the on-site soil and groundwater sampling, no deleterious material or hydrocarbon odours were noted in the samples collected;
- Based on the regional topography, the local groundwater flow direction was inferred to be south/southwest, towards The Rouge River and Lake Ontario. The localized shallow groundwater flow direction may be influenced by the presence of underground utilities, building foundations, variations in vertical and horizontal stratigraphy, depth of wells' screened intervals and/or well trauma. It should be noted that groundwater levels are subjected to seasonal fluctuations; consequently, definitive information on long-term groundwater levels were not obtained during the investigation;
- The applicable MECP SCS was identified as: Table 3, Full Depth Generic SCS in a Non-Potable Groundwater Condition – Residential/Parkland /Institutional (R/P/I) Property Use for soil samples and All Types of Property Use for groundwater samples in a coarse textured soil condition;
- Eight (8) soil samples were submitted to the laboratory for analysis of one or more of the following parameters: Metals, PHCs (F1-F4), VOCs and PAHs. Three (3) groundwater samples collected from the installed wells, including one duplicate, were submitted to the laboratory for analysis of one or more of the following parameters: Metals, PHCs (F1-F4), VOCs and PAHs;
- The analytical results of the submitted soil and groundwater samples were found to be in compliance with the applicable MECP Table 3 SCS.



Based on the results of the current investigation, the encountered soil and groundwater conditions at the selected sampling locations of the Site were all within the applicable MECP standards. No further investigation is required at this time.

## 8. LIMITATIONS

This report was prepared for use by Mr. Mike Siskind of Decade Capital and is based on the work as described in the Scope of Work. The conclusions presented in this report reflect existing Site conditions within the scope of this assignment.

No investigation method can completely eliminate the possibility of obtaining partially imprecise or incomplete information. It can only reduce the possibility to an acceptable level. Professional judgment was exercised in gathering and analyzing the information obtained and the formulation of the conclusions and recommendations. Like all professional persons rendering advice, we do not act as absolute insurers of the conclusions reached, but commit ourselves to care and competence in reaching those conclusions. In instances where a Phase II ESA is conducted without the completion of a current Phase I ESA, it is noted that test locations are based on a limited evaluation of current site operations. In such instances, knowledge of current and historical use of the site and neighboring properties may be significantly limited. No warranty, whether expressed or implied, is included or intended in this report.

The scope of services performed may not be appropriate for the purposes of other users. This report should not be used in contexts other than pertaining to the evaluation of the property at the current time. Written authorization must be obtained from Fisher prior to use by any other parties, or any future use of this document or its findings, conclusions, or recommendations represented herein. Any use which a third party makes of this report, or any reliance on or decisions made on the basis of it, are the responsibility of the third parties. Fisher accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Fisher notes that the work conducted at the Site may not fully satisfy the MECP requirements for the purpose of filling an RSC. Should an RSC be required, then additional investigations should be conducted at the Site.



## 9. QUALIFICATIONS OF ASSESSOR

As a Qualified Person who conducts and supervises Phase II ESAs, Mr. David Fisher, president of Fisher, is a senior Managerial and Environmental Engineering Specialist with over thirty (30) years of progressive, innovative experience in the petrochemical and environmental engineering industry. Mr. Fisher is responsible for the development and management of a progressive environmental consulting engineering company specializing in ESAs and remediation, geotechnical and hydrogeological investigations, tank removals, PCB waste treatment, land reclamation, recycling, hazardous waste disposal, and associated laboratory analytical practices.

Fisher has been established as a team of engineers and consultants since 1989 and continues to develop a strong, wide client base. The company is staffed with personnel holding graduate or postgraduate qualifications at the Markham headquarters, as well as specialist associates offering a broad range of expertise and knowledge in environmental consulting. With a background in the petroleum industry, extensive experience has been gained in the prevention and cleanup of contamination in air, water and soil.

## 10. REFERENCES

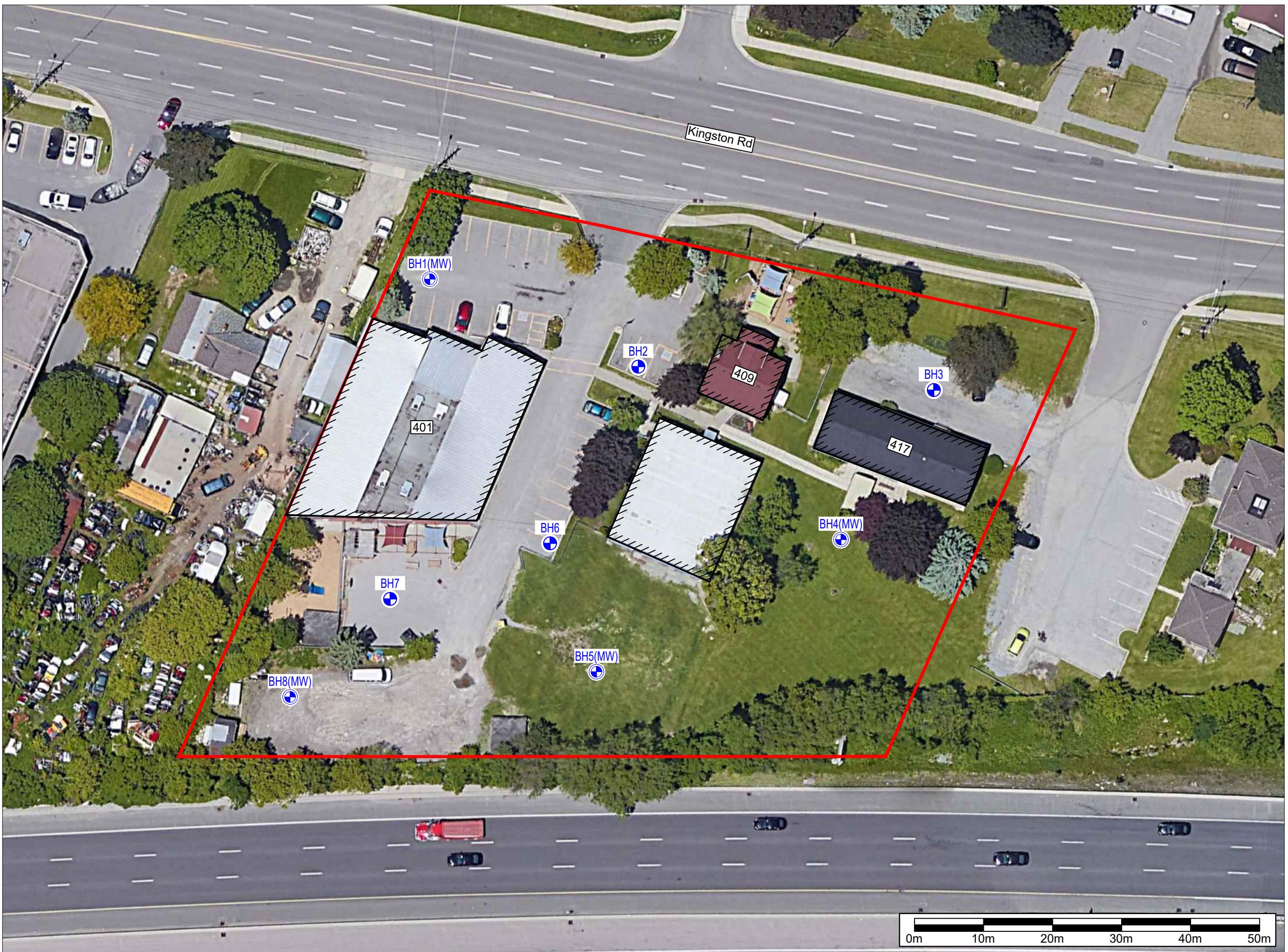
The Phase II ESA was conducted in accordance with the applicable Regulations, Guidelines, Policies, Standards, Protocols and Objectives administrated by the Ontario MECP. Specific reference is made to the following:

- CAN/CSA Standard Z769-00 (published March 2000, reaffirmed 2018), Phase II ESA, A National Standard of Canada;
- “Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario” Ministry of the Environment of Ontario, December 1996;
- EPA, RSO 1990, Charter E. 19, as amended, version date March 22, 2017;
- Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the EPA, dated April 15, 2011;
- The Ontario Water Resources Act – R.R.O. 1990, Ontario Regulation 903 – Amended to Ontario Regulation 128.03, August 2003;
- Surficial geology of southern Ontario, Northern Development and Mines;
- A Phase I ESA conducted by Pottinger Gaherty Environmental Consultants Ltd. (PGL File: 4040-01.01) in April 2012.



## **APPENDIX A – SITE PLAN**



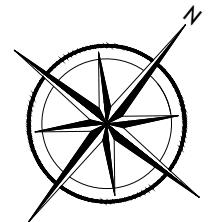


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NORTH



LEGEND

- SITE BOUNDARY
- ▨ BUILDING FOOTPRINT
- BOREHOLE WITH MONITORING WELL LOCATION
- BOREHOLE LOCATION

PROJECT NAME AND ADDRESS

**PHASE II ESA**

401-421 Kingston Rd.,  
Pickering, ON

FIGURE 1:

SITE PLAN WITH BOREHOLE AND  
MONITORING WELL LOCATIONS

PROJECT NO.	SHEET NO.
FE-P 22-12517	
DATE	
2 November 2022	
SCALE	
AS SHOWN	1

## APPENDIX B – LOG OF BOREHOLES





**FISHER**  
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Log of Borehole: BH1(MW)

401-421 Kingston Rd.,  
Pickering, ON

Sheet: 1 of 1

Project #: 22-12517

G.S.Elevation:

Location:

Drill Method: D-50, Solid Stem

Drilling Date: 27 October, 2022

Sample Method: Split Spoon

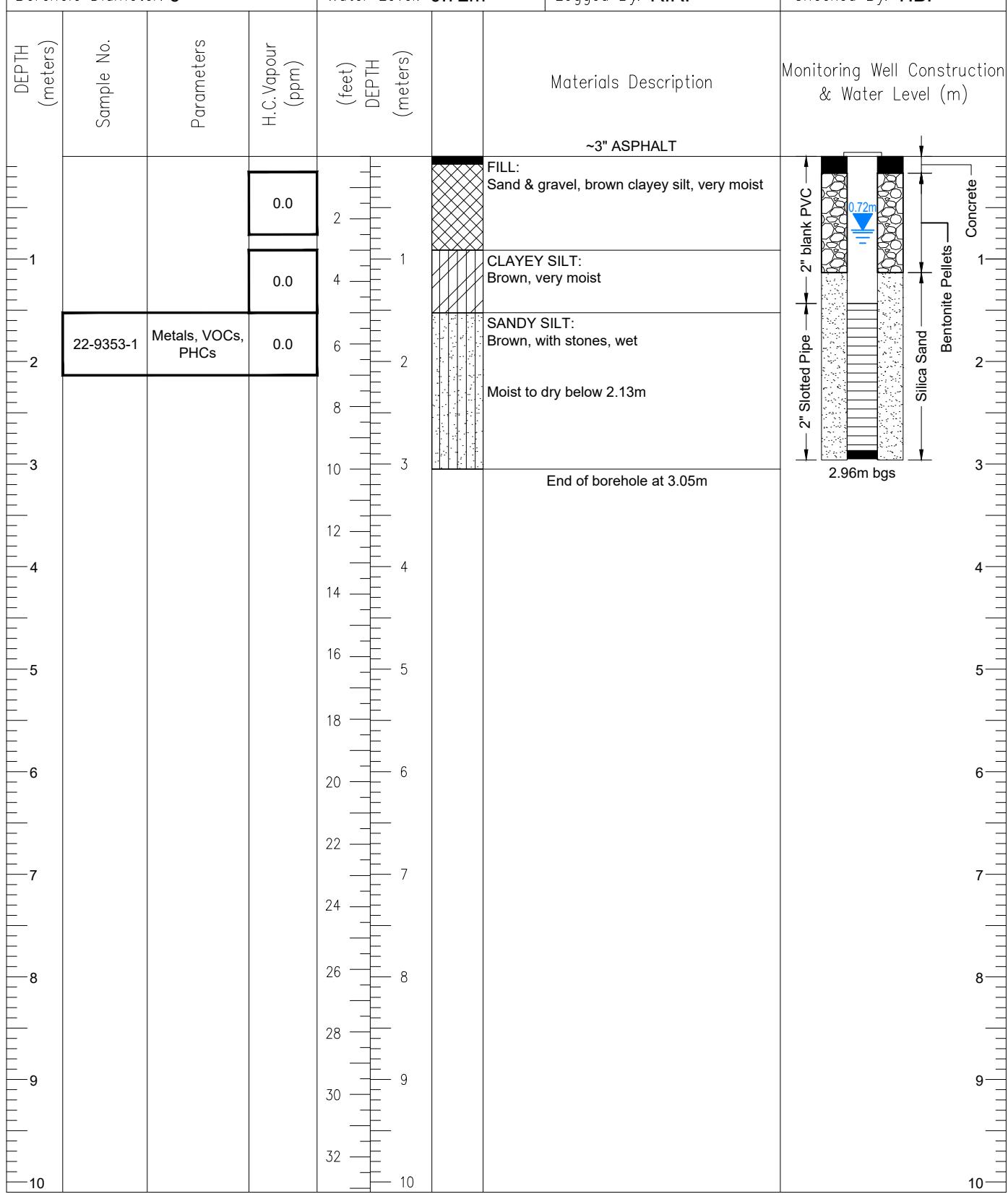
Dates: Water Level 31 October, 2022

Borehole Diameter: 6"

Water Level: 0.72m

Logged By: R.R.

Checked By: T.B.





**FISHER**  
ENVIRONMENTAL LTD.

Log of Borehole: **BH2**

401-421 Kingston Rd.,  
Pickering, ON

Sheet: **1 of 1**

Project #: **22-12517**

G.S.Elevation:

Location:

Drill Method: **Truck, Solid Stem**

Drilling Date: **26 October, 2022**

Sample Method: **Split Spoon**

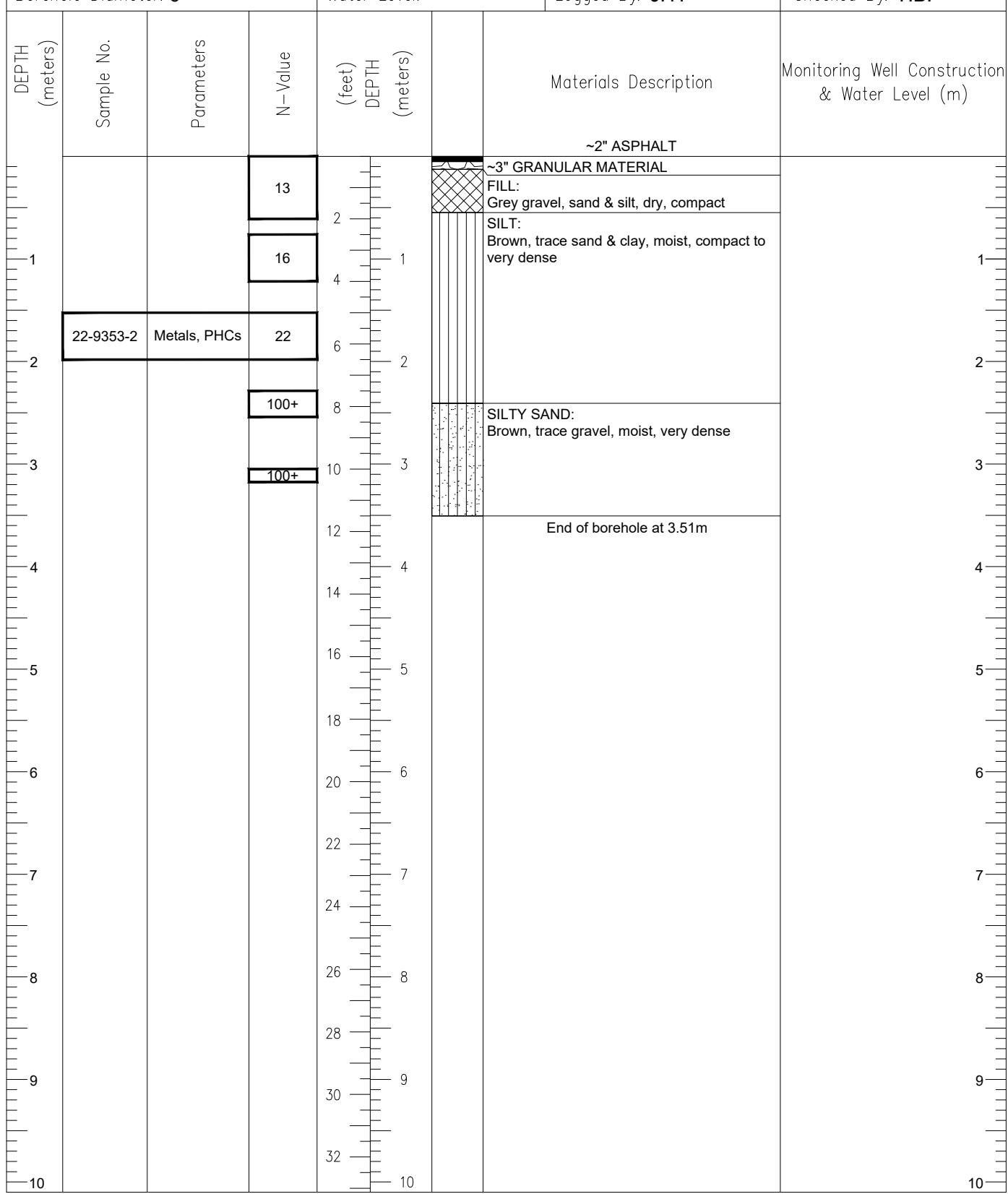
Dates: Water Level

Borehole Diameter: **6"**

Water Level:

Logged By: **J.Y.**

Checked By: **T.B.**





**FISHER**  
ENVIRONMENTAL LTD.

Log of Borehole: **BH3**

401-421 Kingston Rd.,  
Pickering, ON

Sheet: **1 of 1**

Project #: **22-12517**

G.S.Elevation:

Location:

Drill Method: **D-50, Solid Stem**

Drilling Date: **27 October, 2022**

Sample Method: **Split Spoon**

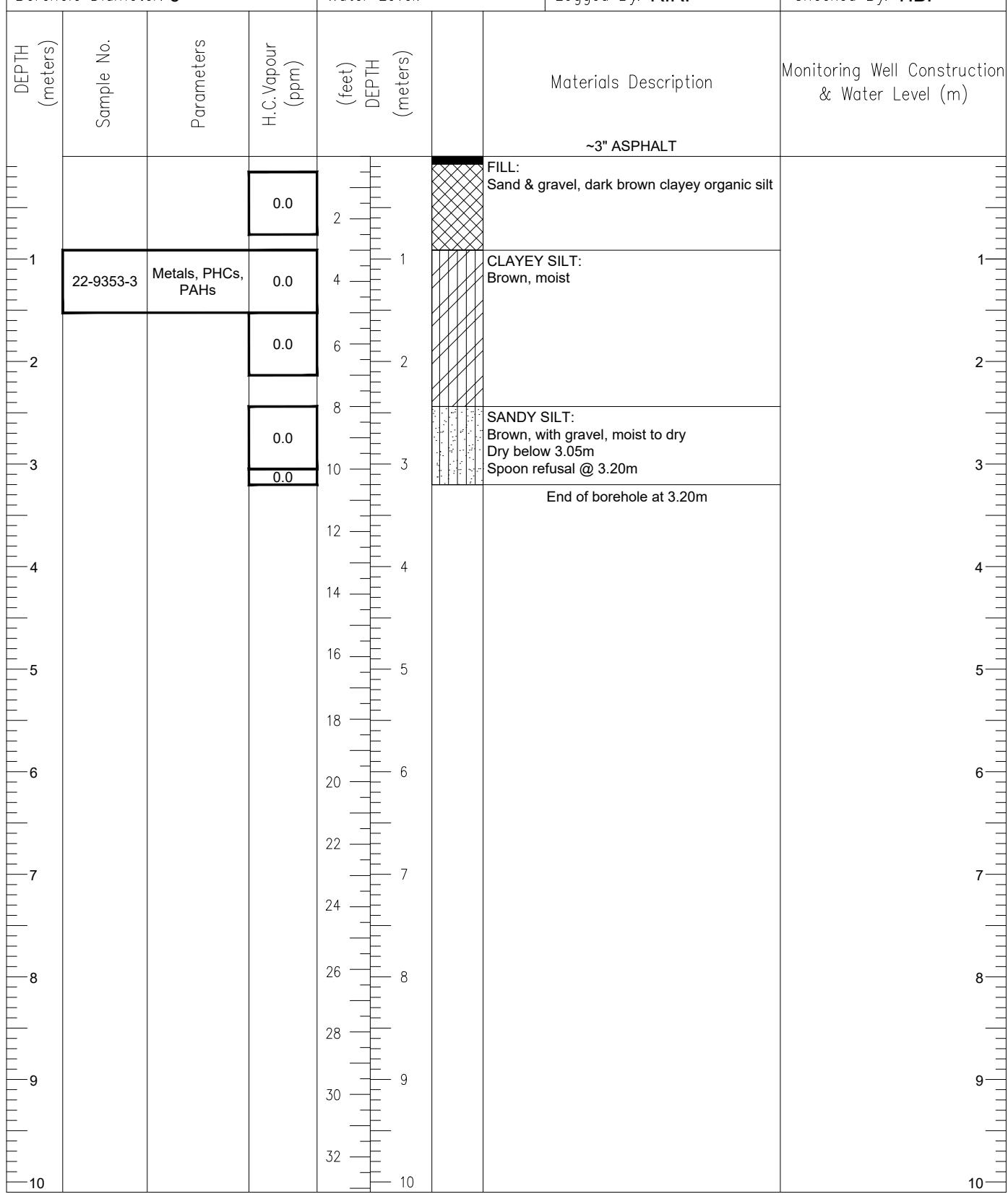
Dates: Water Level

Borehole Diameter: **6"**

Water Level:

Logged By: **R.R.**

Checked By: **T.B.**





# FISHER ENVIRONMENTAL LTD.

## Log of Borehole: BH4(MW)

401-421 Kingston Rd.,  
Pickering, ON

Sheet: 1 of 1

Project #: 22-12517

G.S.Elevation:

Location:

Drill Method: **Truck, Solid Stem**

Drilling Date: **26 October, 2022**

### Sample Method: **Split Spoon**

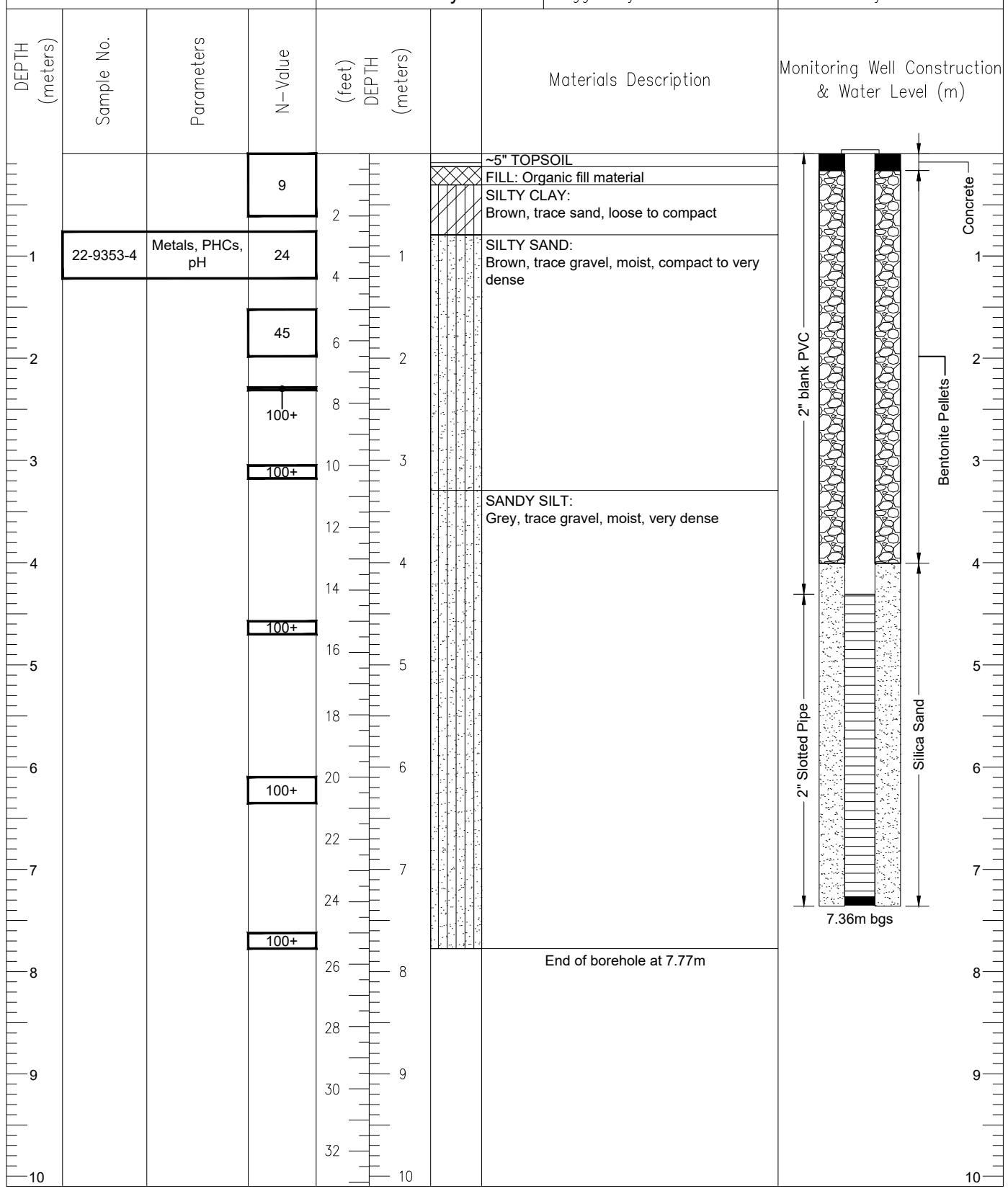
Dates: Water Level **31 October, 2022**

Borehole Diameter: 6"

Water Level: **Dry**

Logged By: **J.Y.**

Checked By: **T.B.**





**FISHER**  
ENVIRONMENTAL LTD.

Log of Borehole: BH5(MW)

401-421 Kingston Rd.,  
Pickering, ON

Sheet: 1 of 1

Project #: 22-12517

G.S.Elevation:

Location:

Drill Method: **Truck, Solid Stem**

Drilling Date: **26 October, 2022**

Sample Method: **Split Spoon**

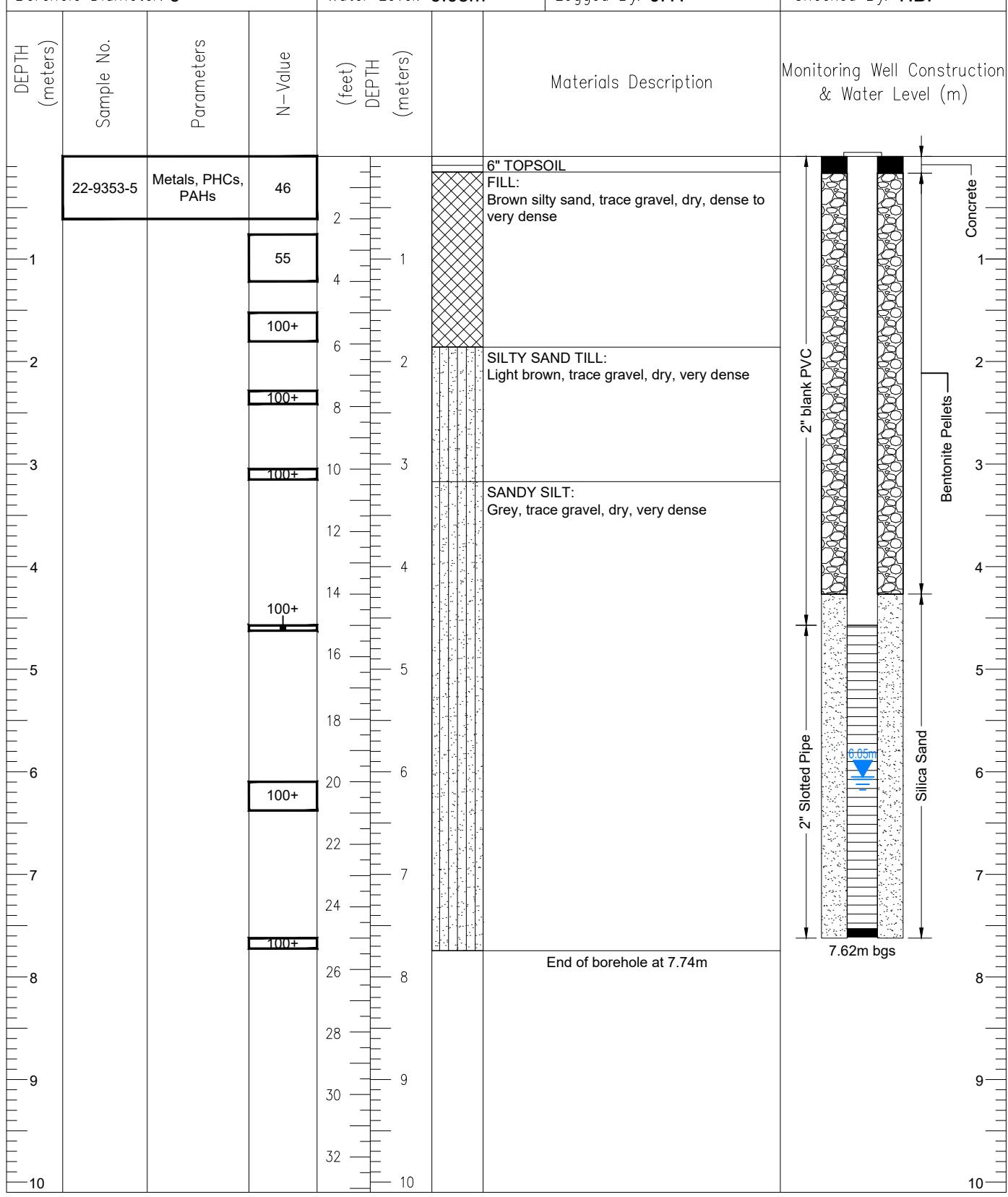
Dates: Water Level **31 October, 2022**

Borehole Diameter: **6"**

Water Level: **6.05m**

Logged By: **J.Y.**

Checked By: **T.B.**





**FISHER**  
ENVIRONMENTAL LTD.

Log of Borehole: **BH6**

401-421 Kingston Rd.,  
Pickering, ON

Sheet: **1 of 1**

Project #: **22-12517**

G.S.Elevation:

Location:

Drill Method: **D-50, Solid Stem**

Drilling Date: **27 October, 2022**

Sample Method: **Split Spoon**

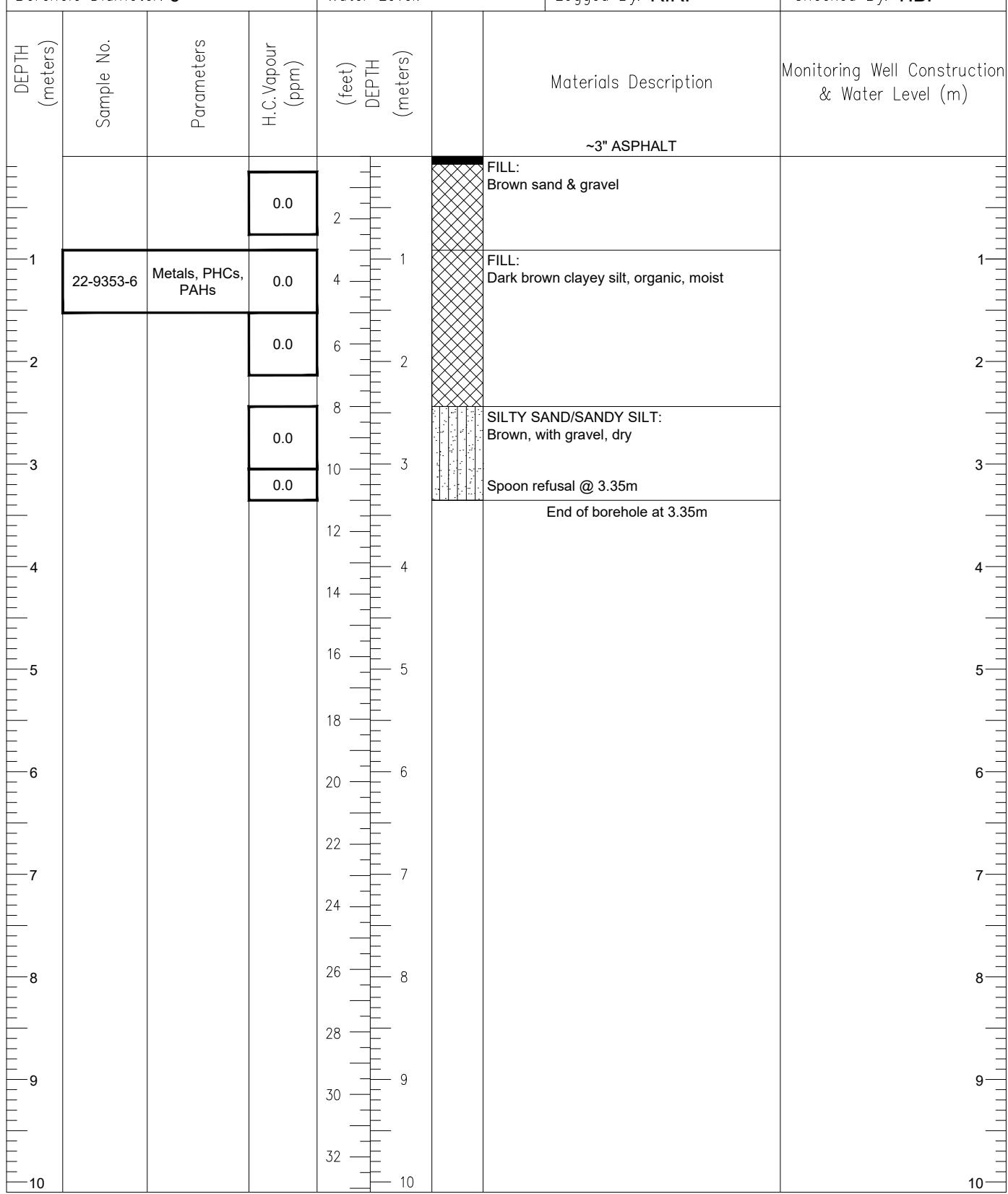
Dates: Water Level

Borehole Diameter: **6"**

Water Level:

Logged By: **R.R.**

Checked By: **T.B.**





**FISHER**  
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Log of Borehole: **BH7**

401-421 Kingston Rd.,  
Pickering, ON

Sheet: **1 of 1**

Project #: **22-12517**

G.S.Elevation:

Location:

Drill Method: **D-50, Solid Stem**

Drilling Date: **27 October, 2022**

Sample Method: **Split Spoon**

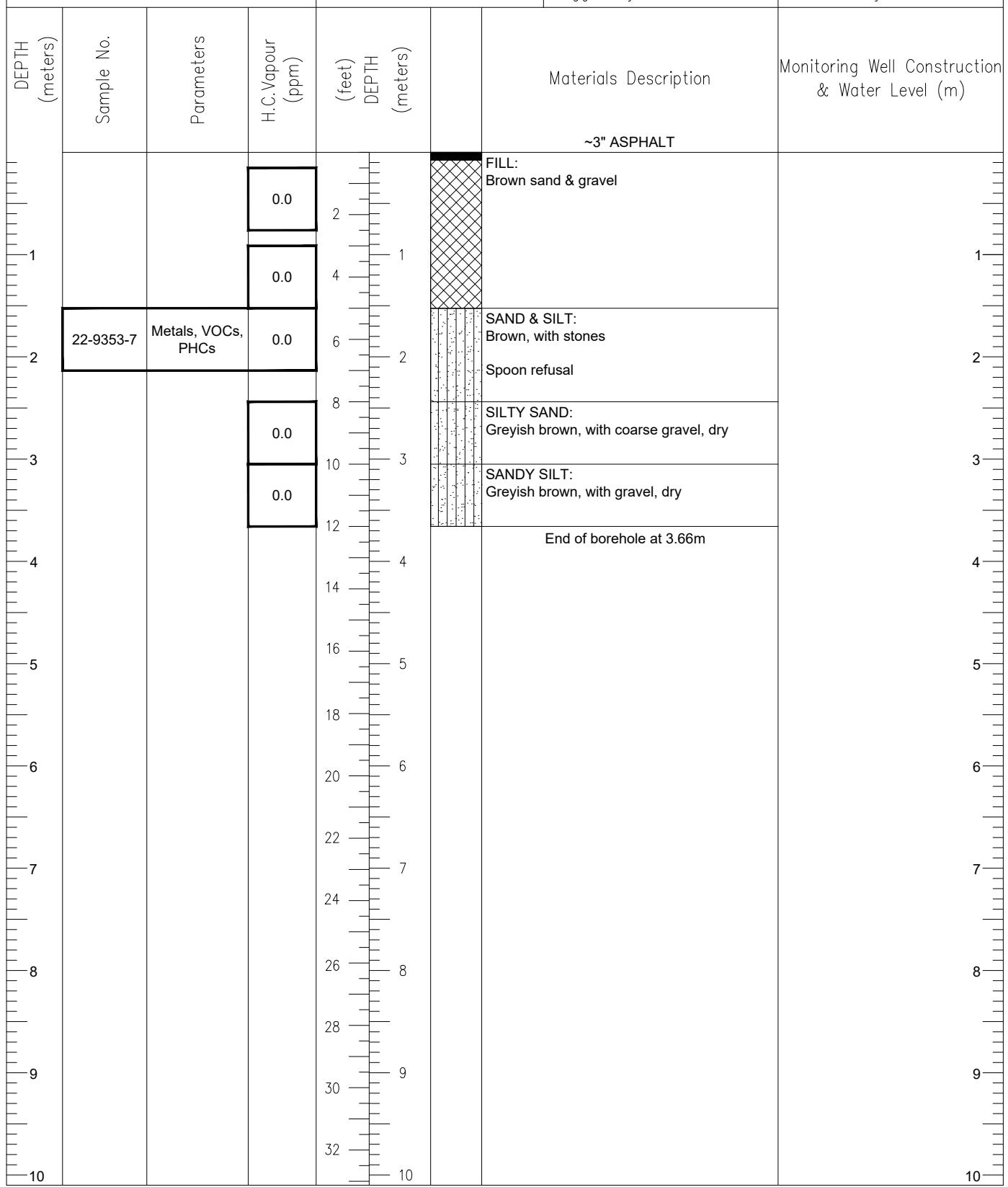
Dates: Water Level

Borehole Diameter: **6"**

Water Level:

Logged By: **R.R.**

Checked By: **T.B.**





**FISHER**  
ENVIRONMENTAL LTD.

Log of Borehole: BH8(MW)

401-421 Kingston Rd.,  
Pickering, ON

Sheet: 1 of 1

Project #: 22-12517

G.S.Elevation:

Location:

Drill Method: D-50, Solid Stem

Drilling Date: 27 October, 2022

Sample Method: Split Spoon

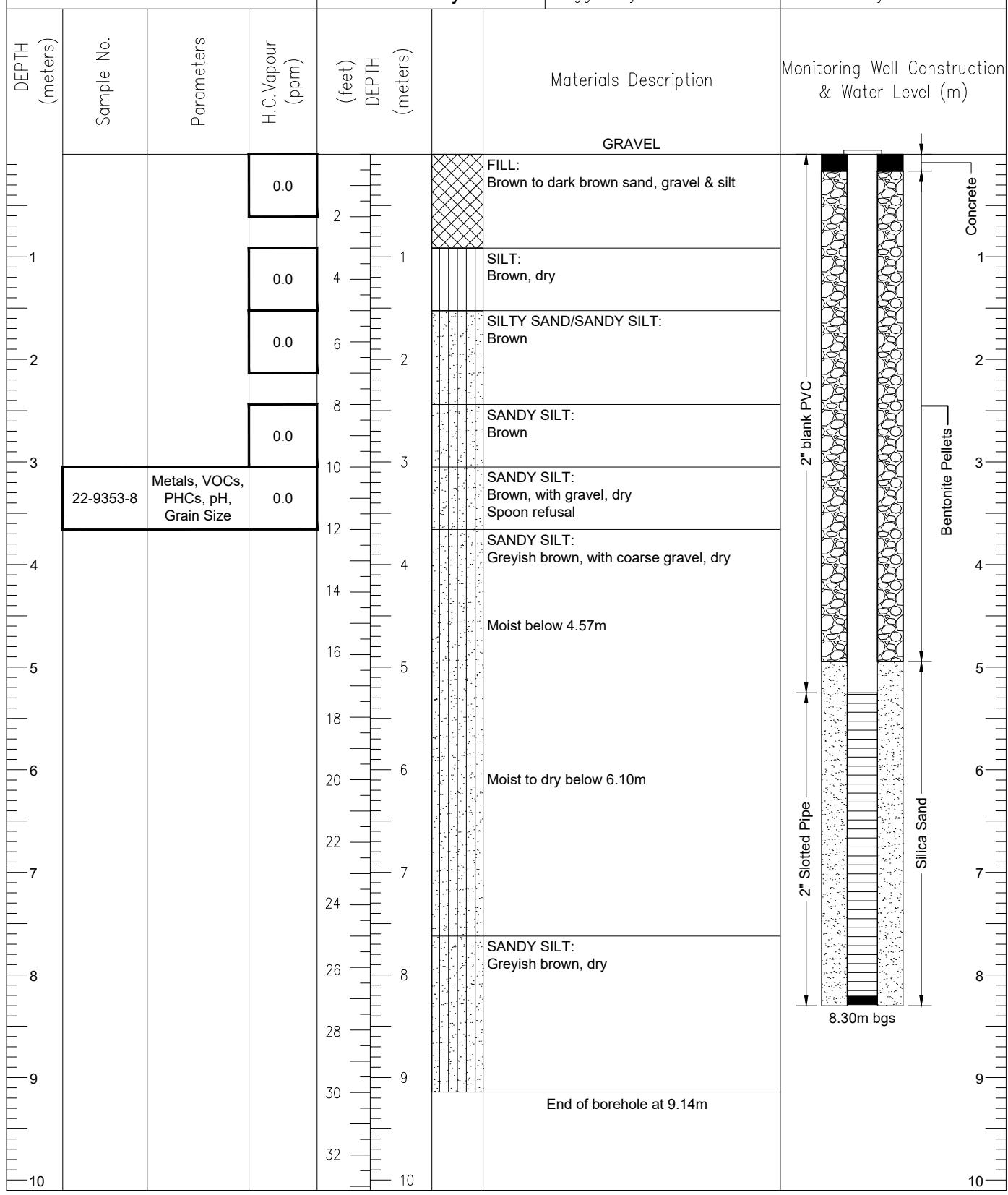
Dates: Water Level 31 October, 2022

Borehole Diameter: 6"

Water Level: Dry

Logged By: R.R.

Checked By: T.B.



## APPENDIX C – CERTIFICATES OF ANALYSIS





# FISHER ENVIRONMENTAL LABORATORIES

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**Client:** Decade Capital  
**Address:** 1806 Avenue Road, Unit 2  
Toronto, ON  
M5M 3Z1  
**Tel.:**  
**Email:** [mike@decadegroup.ca](mailto:mike@decadegroup.ca)  
**Attn.:** Idan Mizrahi / Mike Siskind

**F.E. Job #:** 22-9353  
**Project Name:** Phase II ESA  
**Project ID:** FE-P 22-12517  
**Date Sampled:** 25 & 31-Oct-2022  
**Date Received:** 31-Oct-2022  
**Date Reported:** 8-Nov-2022  
**Location:** 401-421 Kingston Road  
Pickering, ON

## Certificate of Analysis

Analyses	Matrix	Quantity	Date Extracted	Date Analyzed	Lab SOP	Method Reference
Metals	Soil	8	7-Nov-22	7-Nov-22	Metals F-18	EPA 200.2/200.8
VOCs	Soil	3	31-Oct-22	3-Nov-22	VOCs F-14	SW-846, 8260C
PHCs (F1 & BTEX)	Soil	8	31-Oct-22	3-Nov-22	PHCs F-7	CCME CWS
PHCs (F2 - F4)	Soil	8	1-Nov-22	1-Nov-22	PHCs F-7	CCME CWS
PAHs	Soil	3	2-Nov-22	2-Nov-22	PAHs F-4	SM 6410-B
pH	Soil	2	31-Oct-22	31-Oct-22	pH-EC-SAR F-16	SW-846, 9045D
Grain Size	Soil	1	N/A	31-Oct-22	Grain Size F-28	ASTM D6913-04
Moisture Content	Soil	8	N/A	31-Oct-22	Support Procedures F-99	Carter (1993)
Metals	Water	3	N/A	8-Nov-22	Metals F-18	EPA 200.2/200.8
VOCs	Water	2	N/A	2-Nov-22	VOCs F-6	SM 6200-B
PHCs (F1 & BTEX)	Water	3	N/A	2-Nov-22	PHCs F-7	CCME CWS
PHCs (F2 - F4)	Water	3	1-Nov-22	1-Nov-22	PHCs F-7	CCME CWS

Fisher Environmental Laboratories is accredited by CALA (the Canadian Association for Laboratory Accreditation Inc.) for specific parameters as required by Ontario Regulation 153/04. All analytical testing has been performed in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act published by Ontario Ministry of the Environment.

**Authorized by:**

  
Roger Lin, Ph. D., C. Chem.  
Laboratory Manager



## Certificate of Analysis

<b>Analysis Requested:</b>	Metals, VOCs, PHCs, PAHs, pH, Grain Size					
<b>Sample Description:</b>	8 Soil and 3 Water Sample(s)					

<b>Parameter</b>	22-9353-1 BH1 1.50-2.10m	22-9353-2 BH2 1.50-2.10m	22-9353-3 BH3 0.90-1.50m	22-9353-4 BH4 0.90-1.50m	22-9353-5 BH5 0.00-0.60m	<b>Soil Standards<sup>1</sup></b>
	<i>Concentration (µg/g)</i>					
<b><i>Metals in Soil</i></b>						
Antimony	<1	<1	<1	<1	<1	7.5
Arsenic	<1	3.2	1.9	<1	<1	18
Barium	33	140	92	40	38	390
Beryllium	<2	<2	<2	<2	<2	(5) 4
Boron	<5	<5	<5	<5	<5	120
Cadmium	<1	<1	<1	<1	<1	1.2
Chromium	9.7	21	17	8.2	9.6	160
Cobalt	6.8	10	8.9	5.6	3.3	22
Copper	13	17	16	6.7	8.3	(180) 140
Lead	<10	<10	<10	<10	<10	120
Molybdenum	<2	<2	<2	<2	<2	6.9
Nickel	18	32	20	14	7.7	(130) 100
Selenium	<1	<1	<1	<1	<1	2.4
Silver	<0.5	<0.5	<0.5	<0.5	<0.5	(25) 20
Thallium	<1	<1	<1	<1	<1	1
Uranium	<1	<1	<1	<1	<1	23
Vanadium	18	31	29	15	13	86
Zinc	<30	46	39	<30	<30	340

< result obtained was below RL (Reporting Limit).

<sup>1</sup> MOE - Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.

**Table 3:** Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition.

Residential/Parkland/Institutional Property Use (R/P/I);

( ) Standard value in brackets applies to medium and fine textured soils.

## Certificate of Analysis

<b>Analysis Requested:</b>	Metals, VOCs, PHCs, PAHs, pH, Grain Size					
<b>Sample Description:</b>	8 Soil and 3 Water Sample(s)					

<b>Parameter</b>	<b>22-9353-6</b> BH6 0.90-1.50m	<b>22-9353-7</b> BH7 1.50-2.10m	<b>22-9353-8</b> BH8 3.00-3.60m			<b>Soil Standards<sup>1</sup></b>
	<i>Concentration (µg/g)</i>					
<b>Metals in Soil</b>						
Antimony	<1	<1	<1			7.5
Arsenic	1.9	2.3	1.5			18
Barium	58	42	50			390
Beryllium	<2	<2	<2			(5) 4
Boron	<5	<5	<5			120
Cadmium	<1	<1	<1			1.2
Chromium	12	9.3	17			160
Cobalt	6.4	5.8	6.2			22
Copper	15	7.9	9.7			(180) 140
Lead	16	<10	<10			120
Molybdenum	<2	<2	<2			6.9
Nickel	16	23	18			(130) 100
Selenium	1.1	<1	2.1			2.4
Silver	<0.5	<0.5	<0.5			(25) 20
Thallium	<1	<1	<1			1
Uranium	<1	<1	<1			23
Vanadium	22	20	20			86
Zinc	45	<30	<30			340

< result obtained was below RL (Reporting Limit).

<sup>1</sup> MOE - Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.

**Table 3:** Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition.

Residential/Parkland/Institutional Property Use (R/P/I);

( ) Standard value in brackets applies to medium and fine textured soils.

## QA/QC Report

Parameter	Blank	RL	CRM	AR	MS	AR
	( $\mu\text{g/g}$ )		( $\mu\text{g/g}$ )		Recovery (%)	
<b>Metals in Soil</b>						
Antimony	<1	1	1.0	0-10	76	70-130
Arsenic	<1	1	58	25-125	78	70-130
Barium	<5	5	184	149-281	105	70-130
Beryllium	<2	2	0.4	0-5	85	70-130
Boron	<5	5	7	5-20	89	70-130
Cadmium	<1	1	1.1	0-5	71	70-130
Chromium	<5	5	27	14-54	83	70-130
Cobalt	<2	2	12	9-15	89	70-130
Copper	<5	5	165	139-243	80	70-130
Lead	<10	10	85	68-184	84	70-130
Molybdenum	<2	2	2.0	0-5	76	70-130
Nickel	<5	5	53	33-75	81	70-130
Selenium	<1	1	0.0	0-5	76	70-130
Silver	<0.5	0.5	0.7	0-5	75	70-130
Thallium	<1	1	0.5	0-5	79	70-130
Uranium	<1	1	1.0	0-5	108	70-130
Vanadium	<10	10	36	17-51	82	70-130
Zinc	<30	30	403	337-597	104	70-130

**LEGEND:**

RL - Reporting Limit

CRM = Certified Reference Material

MS - Matrix Spike (in case the original sample contains &gt;30ppm, the matrix spike is no longer reliable, the data of reagent spike are entered instead)

AR - Acceptable Range

## QA/QC Report

Parameter	Duplicate	AR					
	RPD (%)						
<b>Metals in Soil</b>							
Antimony	0.0	0-30					
Arsenic	21.1	0-30					
Barium	20.7	0-30					
Beryllium	3.9	0-30					
Boron	6.7	0-30					
Cadmium	27.7	0-30					
Chromium	9.1	0-30					
Cobalt	11.9	0-30					
Copper	11.0	0-30					
Lead	2.1	0-30					
Molybdenum	0.0	0-30					
Nickel	15.0	0-30					
Selenium	0.0	0-30					
Silver	0.0	0-30					
Thallium	0.0	0-30					
Uranium	23.7	0-30					
Vanadium	14.3	0-30					
Zinc	7	0-30					

**LEGEND:**

AR - Acceptable Range

RPD - Relative Percent Difference

## Certificate of Analysis

<b>Analysis Requested:</b>	Metals, VOCs, PHCs, PAHs, pH, Grain Size				
<b>Sample Description:</b>	8 Soil and 3 Water Sample(s)				

<b>Parameter</b>	<b>22-9353-1</b> BH1 1.50-2.10m	<b>22-9353-7</b> BH7 1.50-2.10m	<b>22-9353-8</b> BH8 3.00-3.60m			<b>Soil Standards<sup>1</sup></b>
	<i>Concentration (µg/g)</i>					
<b>VOCs in Soil</b>						
Acetone	<0.5	<0.5	<0.5			(28) 16
Benzene	<0.02	<0.02	<0.02			(0.17) 0.21
Bromodichloromethane	<0.05	<0.05	<0.05			13
Bromoform	<0.05	<0.05	<0.05			(0.26) 0.27
Bromomethane	<0.05	<0.05	<0.05			0.05
Carbon Tetrachloride	<0.05	<0.05	<0.05			(0.12) 0.05
Chlorobenzene	<0.05	<0.05	<0.05			(2.7) 2.4
Chloroform	<0.05	<0.05	<0.05			(0.18) 0.05
Dibromochloromethane	<0.05	<0.05	<0.05			9.4
1,2-Dichlorobenzene	<0.05	<0.05	<0.05			(4.3) 3.4
1,3-Dichlorobenzene	<0.05	<0.05	<0.05			(6) 4.8
1,4-Dichlorobenzene	<0.05	<0.05	<0.05			(0.097) 0.083
Dichlorodifluoromethane	<0.05	<0.05	<0.05			(25) 16
1,1-Dichloroethane	<0.05	<0.05	<0.05			(11) 3.5
1,2-Dichloroethane	<0.05	<0.05	<0.05			0.05
1,1-Dichloroethylene	<0.05	<0.05	<0.05			0.05
c-1,2-Dichloroethylene	<0.05	<0.05	<0.05			(30) 3.4
t-1,2-Dichloroethylene	<0.05	<0.05	<0.05			(0.75) 0.084
1,2-Dichloropropane	<0.05	<0.05	<0.05			(0.085) 0.05
1,3-Dichloropropene (cis+trans-)	<0.05	<0.05	<0.05			(0.083) 0.05
Ethylbenzene	<0.05	<0.05	<0.05			(15) 2
Ethylene Dibromide	<0.05	<0.05	<0.05			0.05
Hexane (n)	<0.05	<0.05	<0.05			(34) 2.8
Methyl Ethyl Ketone	<0.5	<0.5	<0.5			(44) 16
Methyl Isobutyl Ketone	<0.5	<0.5	<0.5			(4.3) 1.7
Methyl tert-butyl Ether	<0.05	<0.05	<0.05			(1.4) 0.75
Methylene Chloride	<0.05	<0.05	<0.05			(0.96) 0.1
Styrene	<0.05	<0.05	<0.05			(2.2) 0.7
1,1,1,2-Tetrachloroethane	<0.05	<0.05	<0.05			(0.05) 0.058
1,1,2,2-Tetrachloroethane	<0.05	<0.05	<0.05			0.05
Tetrachloroethylene	<0.05	<0.05	<0.05			(2.3) 0.28
Toluene	<0.2	<0.2	<0.2			(6) 2.3
1,1,1-Trichloroethane	<0.05	<0.05	<0.05			(3.4) 0.38
1,1,2-Trichloroethane	<0.05	<0.05	<0.05			0.05
Trichloroethylene	<0.05	<0.05	<0.05			(0.52) 0.061
Trichlorofluoromethane	<0.05	<0.05	<0.05			(5.8) 4
Vinyl Chloride	<0.02	<0.02	<0.02			(0.022) 0.02
Xylenes	<0.05	<0.05	<0.05			(25) 3.1
<b>Surrogate Recovery (%)</b>						
1,2-Dichloroethane-d4	105	99	104			50-140
Toluene-d8	108	110	109			50-140
4-Bromofluorobenzene	123	135	132			50-140

< result obtained was below RL (Reporting Limit).

<sup>1</sup> MOE - Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.

**Table 3:** Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition.

Residential/Parkland/Institutional Property Use (R/P/I);

( ) Standard value in brackets applies to medium and fine textured soils.

## QA/QC Report

Parameter	Blank	RL	LCS	AR	MS	AR
	( $\mu\text{g/g}$ )	Recovery (%)		Recovery (%)		
<b>VOCs in Soil</b>						
Acetone	<0.5	0.5	74	50-140	112	50-140
Benzene	<0.02	0.02	90	60-130	79	50-140
Bromodichloromethane	<0.05	0.05	95	50-140	76	50-140
Bromoform	<0.05	0.05	94	60-130	90	50-140
Bromomethane	<0.05	0.05	71	50-140	62	50-140
Carbon Tetrachloride	<0.05	0.05	101	60-130	71	50-140
Chlorobenzene	<0.05	0.05	95	60-130	86	50-140
Chloroform	<0.05	0.05	91	60-130	83	50-140
Dibromochloromethane	<0.05	0.05	93	60-130	80	50-140
1,2-Dichlorobenzene	<0.05	0.05	112	60-130	85	50-140
1,3-Dichlorobenzene	<0.05	0.05	114	60-130	90	50-140
1,4-Dichlorobenzene	<0.05	0.05	111	60-130	86	50-140
Dichlorodifluoromethane	<0.05	0.05	72	50-140	82	50-140
1,1-Dichloroethane	<0.05	0.05	83	60-130	81	50-140
1,2-Dichloroethane	<0.05	0.05	102	60-130	84	50-140
1,1-Dichloroethylene	<0.05	0.05	118	60-130	66	50-140
c-1,2-Dichloroethylene	<0.05	0.05	94	60-130	80	50-140
t-1,2-Dichloroethylene	<0.05	0.05	84	60-130	79	50-140
1,2-Dichloropropane	<0.05	0.05	85	60-130	77	50-140
1,3-Dichloropropene (cis-+trans-)	<0.05	0.05	98	60-130	67	50-140
Ethylbenzene	<0.05	0.05	87	60-130	83	50-140
Ethylene Dibromide	<0.05	0.05	91	60-130	85	50-140
Hexane (n)	<0.05	0.05	71	60-130	73	50-140
Methyl Ethyl Ketone	<0.5	0.5	73	50-140	109	50-140
Methyl Isobutyl Ketone	<0.5	0.5	90	50-140	131	50-140
Methyl tert-butyl Ether	<0.05	0.05	101	60-130	84	50-140
Methylene Chloride	<0.05	0.05	81	60-130	79	50-140
Styrene	<0.05	0.05	94	60-130	85	50-140
1,1,1,2-Tetrachloroethane	<0.05	0.05	97	60-130	85	50-140
1,1,2,2-Tetrachloroethane	<0.05	0.05	79	60-130	103	50-140
Tetrachloroethylene	<0.05	0.05	112	60-130	84	50-140
Toluene	<0.2	0.2	96	60-130	87	50-140
1,1,1-Trichloroethane	<0.05	0.05	96	60-130	81	50-140
1,1,2-Trichloroethane	<0.05	0.05	100	60-130	88	50-140
Trichloroethylene	<0.05	0.05	111	60-130	79	50-140
Trichlorofluoromethane	<0.05	0.05	82	50-140	103	50-140
Vinyl Chloride	<0.02	0.02	88	50-140	106	50-140
Xylenes	<0.05	0.05	92	60-130	89	50-140
<b>Surrogates</b>						
Parameter	Recovery (%)	AR	Recovery (%)	AR	Recovery (%)	AR
1,2-Dichloroethane-d4	99	60-140	98	60-140	105	60-140
Toluene-d8	112	60-140	105	60-140	111	60-140
4-Bromofluorobenzene	91	60-140	118	60-140	110	60-140

**LEGEND:**

RL - Reporting Limit

LCS - Laboratory Control Sample

MS - Matrix Spike

AR - Acceptable Range

## QA/QC Report

Parameter	Duplicate	AR				
	RPD (%)					
<b>VOCs in Soil</b>						
Acetone	0.0	0-50				
Benzene	0.0	0-50				
Bromodichloromethane	0.0	0-50				
Bromoform	0.0	0-50				
Bromomethane	0.0	0-50				
Carbon Tetrachloride	0.0	0-50				
Chlorobenzene	0.0	0-50				
Chloroform	0.0	0-50				
Dibromochloromethane	0.0	0-50				
1,2-Dichlorobenzene	0.0	0-50				
1,3-Dichlorobenzene	0.0	0-50				
1,4-Dichlorobenzene	0.0	0-50				
Dichlorodifluoromethane	0.0	0-50				
1,1-Dichloroethane	0.0	0-50				
1,2-Dichloroethane	0.0	0-50				
1,1-Dichloroethylene	0.0	0-50				
c-1,2-Dichloroethylene	0.0	0-50				
t-1,2-Dichloroethylene	0.0	0-50				
1,2-Dichloropropane	0.0	0-50				
1,3-Dichloropropene (cis-+trans-)	0.0	0-50				
Ethylbenzene	0.0	0-50				
Ethylene Dibromide	0.0	0-50				
Hexane (n)	0.0	0-50				
Methyl Ethyl Ketone	0.0	0-50				
Methyl Isobutyl Ketone	0.0	0-50				
Methyl tert-butyl Ether	0.0	0-50				
Methylene Chloride	0.0	0-50				
Styrene	0.0	0-50				
1,1,1,2-Tetrachloroethane	0.0	0-50				
1,1,2,2-Tetrachloroethane	0.0	0-50				
Tetrachloroethylene	0.0	0-50				
Toluene	14	0-50				
1,1,1-Trichloroethane	0.0	0-50				
1,1,2-Trichloroethane	0.0	0-50				
Trichloroethylene	0.0	0-50				
Trichlorofluoromethane	0.0	0-50				
Vinyl Chloride	0.0	0-50				
Xylenes	0.0	0-50				
<b>Surrogates</b>						
Parameter	Recovery (%)	AR				
1,2-Dichloroethane-d4	105	60-140				
Toluene-d8	110	60-140				
4-Bromofluorobenzene	123	60-140				

**LEGEND:**

AR - Acceptable Range

RPD - Relative Percent Difference

## Certificate of Analysis

<b>Analysis Requested:</b>	Metals, VOCs, PHCs, PAHs, pH, Grain Size					
<b>Sample Description:</b>	8 Soil and 3 Water Sample(s)					
<b>Parameter</b>	<b>22-9353-1</b> BH1 1.50-2.10m	<b>22-9353-2</b> BH2 1.50-2.10m	<b>22-9353-3</b> BH3 0.90-1.50m	<b>22-9353-4</b> BH4 0.90-1.50m	<b>22-9353-5</b> BH5 0.00-0.60m	<b>Soil Standards<sup>1</sup></b>
<i>Concentration (µg/g)</i>						
<b>BTEX in Soil</b>						
Benzene	<0.02	<0.02	<0.02	<0.02	<0.02	(0.17) 0.21
Toluene	<0.2	<0.2	<0.2	<0.2	<0.2	(6) 2.3
Ethylbenzene	<0.05	<0.05	<0.05	<0.05	<0.05	(15) 2
Xylenes	<0.05	<0.05	<0.05	<0.05	<0.05	(25) 3.1
<b>PHCs (F<sub>1</sub>-F<sub>4</sub>) in Soil</b>						
F1-BTEX (C <sub>6</sub> - C <sub>10</sub> )	<10	<10	<10	<10	<10	(65) 55
F2 (C <sub>10</sub> - C <sub>16</sub> )	<10	<10	<10	<10	<10	(150) 98
F3 (C <sub>16</sub> - C <sub>34</sub> )	<50	<50	<50	<50	94	(1300) 300
F4 (C <sub>34</sub> -C <sub>50</sub> )	<50	<50	<50	<50	<50	(5600) 2800
Chromatogram descends to baseline by nC <sub>50</sub> ? (Yes/No)	Yes	Yes	Yes	Yes	Yes	
<b>Surrogate Recovery (%)</b>						
1,2-Dichloroethane-d4	105	104	104	104	104	60-140
Toluene-d8	108	92	94	106	106	60-140
4-Bromofluorobenzene	123	120	125	125	123	60-140

F<sub>4G</sub> (gravimetric heavy hydrocarbons) cannot be added to the C<sub>6</sub> to C<sub>50</sub> hydrocarbons.

< result obtained was below RL (Reporting Limit).

<sup>1</sup> MOE - Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.

**Table 3:** Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition.

Residential/Parkland/Institutional Property Use (R/P/I);

( ) Standard value in brackets applies to medium and fine textured soils.

## Certificate of Analysis

<b>Analysis Requested:</b>	Metals, VOCs, PHCs, PAHs, pH, Grain Size				
<b>Sample Description:</b>	8 Soil and 3 Water Sample(s)				

<b>Parameter</b>	<b>22-9353-6</b> BH6 0.90-1.50m	<b>22-9353-7</b> BH7 1.50-2.10m	<b>22-9353-8</b> BH8 3.00-3.60m			<b>Soil Standards<sup>1</sup></b>
	<i>Concentration (µg/g)</i>					
<b>BTEX in Soil</b>						
Benzene	<0.02	<0.02	<0.02			(0.17) 0.21
Toluene	<0.2	<0.2	<0.2			(6) 2.3
Ethylbenzene	<0.05	<0.05	<0.05			(15) 2
Xylenes	<0.05	<0.05	<0.05			(25) 3.1
<b>PHCs (F<sub>1</sub>-F<sub>4</sub>) in Soil</b>						
F1-BTEX (C <sub>6</sub> - C <sub>10</sub> )	<10	<10	<10			(65) 55
F2 (C <sub>10</sub> - C <sub>16</sub> )	<10	<10	<10			(150) 98
F3 (C <sub>16</sub> - C <sub>34</sub> )	<50	<50	<50			(1300) 300
F4 (C <sub>34</sub> -C <sub>50</sub> )	<50	<50	<50			(5600) 2800
Chromatogram descends to baseline by nC <sub>50</sub> ? (Yes/No)	Yes	Yes	Yes			
<b>Surrogate Recovery (%)</b>						
1,2-Dichloroethane-d4	105	99	104			60-140
Toluene-d8	108	110	109			60-140
4-Bromofluorobenzene	118	135	132			60-140

F<sub>4G</sub> (gravimetric heavy hydrocarbons) cannot be added to the C<sub>6</sub> to C<sub>50</sub> hydrocarbons.

< result obtained was below RL (Reporting Limit).

<sup>1</sup> MOE - Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.

**Table 3:** Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition.

Residential/Parkland/Institutional Property Use (R/P/I);

( ) Standard value in brackets applies to medium and fine textured soils.

## QA/QC Report

Parameter	Blank	RL	LCS	AR	MS	AR
	( $\mu$ g/g)	Recovery (%)			Recovery (%)	
<b>BTEX in Soil</b>						
Benzene	<0.02	0.02	90	60-130	79	50-140
Toluene	<0.2	0.2	96	60-130	87	50-140
Ethylbenzene	<0.05	0.05	87	60-130	83	50-140
Xylenes	<0.05	0.05	92	60-130	89	50-140
<b>PHCs (<math>F_1</math>-<math>F_4</math>) in Soil</b>						
$F1$ -BTEX ( $C_6$ - $C_{10}$ )	<10	10	96	80-120	87	60-140
$F2$ ( $C_{10}$ - $C_{16}$ )	<10	10	99	80-120	113	60-140
$F3$ ( $C_{16}$ - $C_{34}$ )	<50	50	100	80-120	119	60-140
$F4$ ( $C_{34}$ - $C_{50}$ )	<50	50	98	80-120	115	60-140
<b>Surrogates</b>						
Parameter	Blank	AR	Recovery (%)	AR	Recovery (%)	AR
1,2-Dichloroethane-d4	99	60-140	98	60-140	105	60-140
Toluene-d8	112	60-140	105	60-140	111	60-140
4-Bromofluorobenzene	91	60-140	118	60-140	110	60-140

**LEGEND:**

RL - Reporting Limit

LCS - Laboratory Control Sample

MS - Matrix Spike

AR - Acceptable Range

BTEX should be subtracted from  $F_1$ , Naphthalene from  $F_2$  and selected PAHs from  $F_3$  if BTEX/PAHs are analyzed, then report  $F_1$ -BTEX,  $F_2$ -Naph. and  $F_3$ -PAH- nC<sub>50</sub> response factor was within 70% of nC<sub>10</sub>+nC<sub>16</sub>+nC<sub>34</sub> average.

## QA/QC Report

Parameter	Duplicate	AR					
	RPD (%)						
<b>BTEX in Soil</b>							
Benzene	0.0	0-50					
Toluene	14	0-50					
Ethylbenzene	0.0	0-50					
Xylenes	0.0	0-50					
<b>PHCs (F<sub>1</sub>-F<sub>4</sub>) in Soil</b>							
F1-BTEX (C <sub>6</sub> - C <sub>10</sub> )	11	0-30					
F2 (C <sub>10</sub> - C <sub>16</sub> )	0.0	0-30					
F3 (C <sub>16</sub> - C <sub>34</sub> )	4.7	0-30					
F4 (C <sub>34</sub> -C <sub>50</sub> )	4.5	0-30					
<b>Surrogates</b>							
Parameter	Recovery (%)	AR					
1,2-Dichloroethane-d4	105	60-140					
Toluene-d8	110	60-140					
4-Bromofluorobenzene	123	60-140					

**LEGEND:**

AR - Acceptable Range

RPD - Relative Percent Difference

## Certificate of Analysis

<b>Analysis Requested:</b>	Metals, VOCs, PHCs, PAHs, pH, Grain Size					
<b>Sample Description:</b>	8 Soil and 3 Water Sample(s)					

<b>Parameter</b>	22-9353-3 BH3 0.90-1.50m	22-9353-5 BH5 0.00-0.60m	22-9353-6 BH6 0.90-1.50m			Soil Standards <sup>1</sup>
	<i>Concentration (µg/g)</i>					
<b>PAHs in Soil</b>						
Naphthalene	<0.05	<0.05	<0.05			(0.75) 0.6
2-Methylnaphthalene	<0.05	<0.05	<0.05			(3.4) 0.99
1-Methylnaphthalene	<0.05	<0.05	<0.05			(0.17) 0.15
Acenaphthylene	<0.05	<0.05	<0.05			(58) 7.9
Acenaphthene	<0.05	<0.05	<0.05			(0.74) 0.67
Fluorene	<0.05	<0.05	<0.05			(69) 62
Phenanthrene	<0.05	<0.05	<0.05			(7.8) 6.2
Anthracene	<0.05	<0.05	<0.05			(0.74) 0.67
Fluoranthene	<0.05	<0.05	<0.05			0.69
Pyrene	<0.05	<0.05	<0.05			78
Benz [a] anthracene	<0.05	<0.05	<0.05			(0.63) 0.5
Chrysene	<0.05	<0.05	<0.05			(7.8) 7
Benzo [b] fluoranthene	<0.05	<0.05	<0.05			0.78
Benzo [k] fluoranthene	<0.05	<0.05	<0.05			0.78
Benzo [a] pyrene	<0.05	<0.05	<0.05			0.3
Indeno [1,2,3-cd] pyrene	<0.1	<0.1	<0.1			(0.48) 0.38
Dibenzo [a,h] anthracene	<0.1	<0.1	<0.1			0.1
Benzo [g,h,i] perylene	<0.1	<0.1	<0.1			(7.8) 6.6
<b>Surrogate Recovery (%)</b>						
Naphthalene-d8	113	99	105			50-140
Phenanthrene-d10	113	105	100			50-140
Chrysene-d12	102	89	91			50-140

< result obtained was below RL (Reporting Limit).

<sup>1</sup> MOE - Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.

**Table 3:** Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition.

Residential/Parkland/Institutional Property Use (R/P/I);

( ) Standard value in brackets applies to medium and fine textured soils.

## QA/QC Report

Parameter	Blank	RL	LCS	AR	MS	AR
	( $\mu$ g/g)	Recovery (%)			Recovery (%)	
<b>PAHs in Soil</b>						
Naphthalene	<0.05	0.05	108	50-140	89	50-140
2-Methylnaphthalene	<0.05	0.05	125	50-140	90	50-140
1-Methylnaphthalene	<0.05	0.05	128	50-140	105	50-140
Acenaphthylene	<0.05	0.05	104	50-140	111	50-140
Acenaphthene	<0.05	0.05	92	50-140	87	50-140
Fluorene	<0.05	0.05	94	50-140	72	50-140
Phenanthrene	<0.05	0.05	101	50-140	102	50-140
Anthracene	<0.05	0.05	96	50-140	103	50-140
Fluoranthene	<0.05	0.05	104	50-140	110	50-140
Pyrene	<0.05	0.05	102	50-140	104	50-140
Benz [a] anthracene	<0.05	0.05	99	50-140	105	50-140
Chrysene	<0.05	0.05	99	50-140	104	50-140
Benzo [b] fluoranthene	<0.05	0.05	127	50-140	103	50-140
Benzo [k] fluoranthene	<0.05	0.05	121	50-140	94	50-140
Benzo [a] pyrene	<0.05	0.05	93	50-140	100	50-140
Indeno [1,2,3-cd] pyrene	<0.1	0.1	106	50-140	103	50-140
Dibenz [a,h] anthracene	<0.1	0.1	108	50-140	106	50-140
Benzo [g,h,i] perylene	<0.1	0.1	109	50-140	101	50-140
<b>Surrogates</b>						
Parameter	Recovery (%)	AR	Recovery (%)	AR	Recovery (%)	AR
Naphthalene-d8	68	50-140	104	50-140	87	50-140
Phenanthrene-d10	114	50-140	127	50-140	129	50-140
Chrysene-d12	105	50-140	139	50-140	115	50-140

**LEGEND:**

RL - Reporting Limit

LCS - Laboratory Control Sample

MS - Matrix Spike

AR - Acceptable Range

## QA/QC Report

Parameter	Duplicate	AR				
	RPD (%)					
<b>PAHs in Soil</b>						
Naphthalene	0.0	0-40				
2-Methylnaphthalene	0.0	0-40				
1-Methylnaphthalene	0.0	0-40				
Acenaphthylene	0.0	0-40				
Acenaphthene	0.0	0-40				
Fluorene	0.0	0-40				
Phenanthrene	0.0	0-40				
Anthracene	0.0	0-40				
Fluoranthene	0.0	0-40				
Pyrene	0.0	0-40				
Benz [a] anthracene	0.0	0-40				
Chrysene	0.0	0-40				
Benzo [b] fluoranthene	0.0	0-40				
Benzo [k] fluoranthene	0.0	0-40				
Benzo [a] pyrene	0.0	0-40				
Indeno [1,2,3-cd] pyrene	0.0	0-40				
Dibenz [a,h] anthracene	0.0	0-40				
Benzo [g,h,i] perylene	0.0	0-40				
<b>Surrogates</b>						
Parameter	Recovery (%)	AR				
Naphthalene-d8	83	50-140				
Phenanthrene-d10	86	50-140				
Chrysene-d12	70	50-140				

**LEGEND:**

AR - Acceptable Range

RPD - Relative Percent Difference

## Certificate of Analysis

<b>Analysis Requested:</b>	Metals, VOCs, PHCs, PAHs, pH, Grain Size				
<b>Sample Description:</b>	8 Soil and 3 Water Sample(s)				

<b>Parameter</b>	<b>22-9353-4</b>	<b>22-9353-8</b>				<b>Soil Standards *</b>
	BH4 0.90-1.50m	BH8 3.00-3.60m				
<b>pH (pH unit)</b>	8.22	8.83				(5-11) 5-9

\* Surface soil pH value from 5 - 9, Sub-surface soil pH value from 5-11.

## QA/QC Report

<b>Parameter</b>	<b>LCS</b>	<b>AR</b>	<b>Duplicate</b>	<b>AR</b>		
	<b>Absolute Difference (pH Unit)</b>					
<b>pH (pH unit)</b>	7.08	6.90-7.20	0.05	<0.3		

**LEGEND:**

LCS - Laboratory Control Sample

AR - Acceptable Range

## Certificate of Analysis

<b>Analysis Requested:</b>	Metals, VOCs, PHCs, PAHs, pH, Grain Size
<b>Sample Description:</b>	8 Soil and 3 Water Sample(s)

<b>Parameter</b>	22-9353-8 BH8 3.00-3.60m					
<b>Grain Size in Soil</b>						
Total Sample, g	98.4					
Coarse Fraction >75µm, g	43.0					
Fine Fraction <75µm, g	55.4					
Coarse Fraction >75µm, %	43.7					
Fine Fraction <75µm, %	56.3					
Comments	Medium to fine textured					

## Certificate of Analysis

<b>Analysis Requested:</b>	Metals, VOCs, PHCs, PAHs, pH, Grain Size					
<b>Sample Description:</b>	8 Soil and 3 Water Sample(s)					

<b>Parameter</b>	22-9353-1	22-9353-2	22-9353-3	22-9353-4	22-9353-5	22-9353-6
	BH1 1.50-2.10m	BH2 1.50-2.10m	BH3 0.90-1.50m	BH4 0.90-1.50m	BH5 0.00-0.60m	BH6 0.90-1.50m
<b>Moisture Content (%)</b>	7.4	16.1	18.2	8.8	13.0	13.1

<b>Parameter</b>	22-9353-7	22-9353-8				
	BH7 1.50-2.10m	BH8 3.00-3.60m				
<b>Moisture Content (%)</b>	5.5	5.6				

## QA/QC Report

<b>Parameter</b>	<b>Blank</b>	<b>RL</b>	<b>LCS</b>	<b>AR</b>	<b>Duplicate</b>	<b>AR</b>
	<b>Recovery (%)</b>				<b>RPD (%)</b>	
<b>Moisture Content (%)</b>	<0.1	0.1	100	70-130	4.6	0-20

**LEGEND:**

RL - Reporting Limit

LCS - Laboratory Control Sample

AR - Acceptable Range

RPD - Relative Percent Difference

## Certificate of Analysis

<b>Analysis Requested:</b>	Metals, VOCs, PHCs, PAHs, pH, Grain Size				
<b>Sample Description:</b>	8 Soil and 3 Water Sample(s)				

<b>Parameter</b>	<b>22-9353-9</b> BH1 (MW)	<b>22-9353-10</b> BH1 (MW) Duplicate	<b>22-9353-11</b> BH5 (MW)			<b>Ground Water Standards</b> <sup>1</sup>
	<i>Concentration ( μ g/L)</i>					
<b>Metals in Water</b>						
Antimony	<0.5	<0.5	<0.5			20,000
Arsenic	<1	<1	<1			1,900
Barium	145	148	89			29,000
Beryllium	<0.5	<0.5	<0.5			67
Boron	414	378	579			45,000
Cadmium	<0.5	<0.5	<0.5			2.7
Chromium	22	22	<10			810
Cobalt	<1	<1	<1			66
Copper	<5	<5	<5			87
Lead	<1	<1	<1			25
Molybdenum	2.4	2.2	61			9,200
Nickel	<1	<1	1.4			490
Selenium	<5	<5	<5			63
Silver	<0.3	<0.3	<0.3			1.5
Thallium	<0.5	<0.5	<0.5			510
Uranium	2.4	<2	<2			420
Vanadium	<0.5	<0.5	<0.5			250
Zinc	<5	<5	<5			1,100

< result obtained was below RL (Reporting Limit).

<sup>1</sup> MOE - Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.

**Table 3:** Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition.

All Types of Property Use.

( ) Standard value in brackets applies to medium and fine textured soils.

## QA/QC Report

Parameter	Blank	RL	LCS	AR	MS	AR
	( $\mu$ g/L)	Recovery (%)			Recovery (%)	
<b>Metals in Water</b>						
Antimony	<0.5	0.5	100	80-120	101	70-130
Arsenic	<1	1	106	80-120	79	70-130
Barium	<2	2	101	80-120	91	70-130
Beryllium	<0.5	0.5	91	80-120	121	70-130
Boron	<10	10	94	80-120	94	70-130
Cadmium	<0.5	0.5	97	80-120	89	70-130
Chromium	<10	10	88	80-120	74	70-130
Cobalt	<1	1	82	80-120	71	70-130
Copper	<5	5	80	80-120	71	70-130
Lead	<1	1	92	80-120	93	70-130
Molybdenum	<0.5	0.5	108	80-120	108	70-130
Nickel	<1	1	85	80-120	76	70-130
Selenium	<5	5	98	80-120	102	70-130
Silver	<0.3	0.3	100	80-120	75	70-130
Thallium	<0.5	0.5	95	80-120	91	70-130
Uranium	<2	2	105	80-120	116	70-130
Vanadium	<0.5	0.5	87	80-120	79	70-130
Zinc	<5	5	90	80-120	77	70-130

**LEGEND:**

RL - Reporting Limit

LCS - Laboratory Control Sample

MS - Matrix Spike (in case the original sample contains &gt;100ppb, the matrix spike is no longer reliable, the data of reagent spike are entered instead)

AR - Acceptable Range

## QA/QC Report

Parameter	Duplicate	AR					
	RPD (%)						
<b>Metals in Water</b>							
Antimony	0.9	0-20					
Arsenic	0.0	0-20					
Barium	1.2	0-20					
Beryllium	0.0	0-20					
Boron	6.4	0-20					
Cadmium	0.0	0-20					
Chromium	2.7	0-20					
Cobalt	0.0	0-20					
Copper	0.0	0-20					
Lead	0.0	0-20					
Molybdenum	0.0	0-20					
Nickel	0.0	0-20					
Selenium	0.0	0-20					
Silver	0.0	0-20					
Thallium	18.2	0-20					
Uranium	9.4	0-20					
Vanadium	0.0	0-20					
Zinc	6.2	0-20					

**LEGEND:**

AR - Acceptable Range

RPD - Relative Percent Difference

## Certificate of Analysis

<b>Analysis Requested:</b>	Metals, VOCs, PHCs, PAHs, pH, Grain Size					
<b>Sample Description:</b>	8 Soil and 3 Water Sample(s)					

Parameter	22-9353-9 BH1 (MW)	22-9353-11 BH5 (MW)				Ground Water Standards <sup>1</sup>
	Concentration ( $\mu$ g/L)					
<b>VOCs in Water</b>						
Acetone	<30	<30				130000
Benzene	<0.5	<0.5				(430) 44
Bromodichloromethane	<2	<2				85000
Bromoform	<5	<5				(770) 380
Bromomethane	<0.5	<0.5				(56) 5.6
Carbon Tetrachloride	<0.2	<0.2				(8.4) 0.79
Chlorobenzene	<0.5	<0.5				630
Chloroform	<1	<1				(22) 2.4
Dibromochloromethane	<2	<2				82000
1,2-Dichlorobenzene	<0.5	<0.5				(9600) 4600
1,3-Dichlorobenzene	<0.5	<0.5				9600
1,4-Dichlorobenzene	<0.5	<0.5				(67) 8
Dichlorodifluoromethane	<2	<2				4400
1,1-Dichloroethane	<0.5	<0.5				(3100) 320
1,2-Dichloroethane	<0.5	<0.5				(12) 1.6
1,1-Dichloroethylene	<0.5	<0.5				(17) 1.6
c-1,2-Dichloroethylene	<0.5	<0.5				(17) 1.6
t-1,2-Dichloroethylene	<0.5	<0.5				(17) 1.6
1,2-Dichloropropane	<0.5	<0.5				(140) 16
1,3-Dichloropropene (cis-+trans-)	<0.5	<0.5				(45) 5.2
Ethylbenzene	<0.5	<0.5				2300
Ethylene Dibromide	<0.2	<0.2				(0.83) 0.25
Hexane (n)	<5	<5				(520) 51
Methyl Ethyl Ketone	<20	<20				(1500000) 470000
Methyl Isobutyl Ketone	<20	<20				(580000) 140000
Methyl tert-butyl Ether	<2	<2				(1400) 190
Methylene Chloride	<5	<5				(5500) 610
Styrene	<0.5	<0.5				(9100) 1300
1,1,1,2-Tetrachloroethane	<0.5	<0.5				(28) 3.3
1,1,2,2-Tetrachloroethane	<0.5	<0.5				(15) 3.2
Tetrachloroethylene	<0.5	<0.5				(17) 1.6
Toluene	<0.5	<0.5				18000
1,1,1-Trichloroethane	<0.5	<0.5				(6700) 640
1,1,2-Trichloroethane	<0.5	<0.5				(30) 4.7
Trichloroethylene	<0.5	<0.5				(17) 1.6
Trichlorofluoromethane	<5	<5				2500
Vinyl Chloride	<0.5	<0.5				(1.7) 0.5
Xylenes	<0.5	<0.5				4200
<b>Surrogate Recovery (%)</b>						
1,2-Dichloroethane-d4	120	121				50-140
Toluene-d8	68	67				50-140
4-Bromofluorobenzene	104	99				50-140

< result obtained was below RL (Reporting Limit).

<sup>1</sup> MOE - Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.

**Table 3:** Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition.

All Types of Property Use.

( ) Standard value in brackets applies to medium and fine textured soils.

## QA/QC Report

Parameter	Blank	RL	LCS	AR	MS	AR
	(ug/L)	Recovery (%)		Recovery (%)		
<b>VOCs in Water</b>						
Acetone	<30	30	92	50-140	72	50-140
Benzene	<0.5	0.5	94	60-130	86	50-140
Bromodichloromethane	<2	2	95	50-140	81	50-140
Bromoform	<5	5	89	60-130	116	50-140
Bromomethane	<0.5	0.5	117	50-140	73	50-140
Carbon Tetrachloride	<0.2	0.2	95	60-130	92	50-140
Chlorobenzene	<0.5	0.5	99	60-130	108	50-140
Chloroform	<1	1	93	60-130	76	50-140
Dibromochloromethane	<2	2	72	60-130	98	50-140
1,2-Dichlorobenzene	<0.5	0.5	84	60-130	123	50-140
1,3-Dichlorobenzene	<0.5	0.5	77	60-130	121	50-140
1,4-Dichlorobenzene	<0.5	0.5	88	60-130	124	50-140
Dichlorodifluoromethane	<2	2	113	50-140	74	50-140
1,1-Dichloroethane	<0.5	0.5	99	60-130	96	50-140
1,2-Dichloroethane	<0.5	0.5	103	60-130	93	50-140
1,1-Dichloroethylene	<0.5	0.5	98	60-130	106	50-140
c-1,2-Dichloroethylene	<0.5	0.5	93	60-130	110	50-140
t-1,2-Dichloroethylene	<0.5	0.5	87	60-130	129	50-140
1,2-Dichloropropane	<0.5	0.5	99	60-130	93	50-140
1,3-Dichloropropene (cis-+trans-)	<0.5	0.5	95	60-130	105	50-140
Ethylbenzene	<0.5	0.5	84	60-130	114	50-140
Ethylene Dibromide	<0.2	0.2	86	60-130	94	50-140
Hexane (n)	<5	5	91	60-130	90	50-140
Methyl Ethyl Ketone	<20	20	82	50-140	78	50-140
Methyl Isobutyl Ketone	<20	20	97	50-140	95	50-140
Methyl tert-butyl Ether	<2	2	98	60-130	87	50-140
Methylene Chloride	<5	5	93	60-130	85	50-140
Styrene	<0.5	0.5	99	60-130	113	50-140
1,1,1,2-Tetrachloroethane	<0.5	0.5	89	60-130	76	50-140
1,1,2,2-Tetrachloroethane	<0.5	0.5	75	60-130	129	50-140
Tetrachloroethylene	<0.5	0.5	90	60-130	70	50-140
Toluene	<0.5	0.5	107	60-130	126	50-140
1,1,1-Trichloroethane	<0.5	0.5	83	60-130	78	50-140
1,1,2-Trichloroethane	<0.5	0.5	97	60-130	94	50-140
Trichloroethylene	<0.5	0.5	117	60-130	103	50-140
Trichlorofluoromethane	<5	5	100	50-140	127	50-140
Vinyl Chloride	<0.5	0.5	74	50-140	82	50-140
Xylenes	<0.5	0.5	94	60-130	107	50-140
<b>Surrogates</b>						
Parameter	Recovery (%)	AR	Recovery (%)	AR	Recovery (%)	AR
1,2-Dichloroethane-d4	120	60-140	82	60-140	113	60-140
Toluene-d8	72	60-140	108	60-140	69	60-140
4-Bromofluorobenzene	106	60-140	85	60-140	85	60-140

**LEGEND:**

RL - Reporting Limit

LCS - Laboratory Control Sample

MS - Matrix Spike

AR - Acceptable Range

## QA/QC Report

Parameter	Duplicate	AR					
	RPD (%)						
<b>VOCs in Water</b>							
Acetone	0.0	0-30					
Benzene	0.0	0-30					
Bromodichloromethane	0.0	0-30					
Bromoform	0.0	0-30					
Bromomethane	0.0	0-30					
Carbon Tetrachloride	0.0	0-30					
Chlorobenzene	0.0	0-30					
Chloroform	4.1	0-30					
Dibromochloromethane	1.6	0-30					
1,2-Dichlorobenzene	0.0	0-30					
1,3-Dichlorobenzene	0.0	0-30					
1,4-Dichlorobenzene	0.0	0-30					
Dichlorodifluoromethane	0.0	0-30					
1,1-Dichloroethane	0.0	0-30					
1,2-Dichloroethane	0.0	0-30					
1,1-Dichloroethylene	0.0	0-30					
c-1,2-Dichloroethylene	5.0	0-30					
t-1,2-Dichloroethylene	0.0	0-30					
1,2-Dichloropropane	0.0	0-30					
1,3-Dichloropropene (cis-+trans-)	0.0	0-30					
Ethylbenzene	0.0	0-30					
Ethylene Dibromide	0.0	0-30					
Hexane (n)	0.0	0-30					
Methyl Ethyl Ketone	0.0	0-30					
Methyl Isobutyl Ketone	0.0	0-30					
Methyl tert-butyl Ether	0.0	0-30					
Methylene Chloride	0.0	0-30					
Styrene	0.0	0-30					
1,1,1,2-Tetrachloroethane	0.0	0-30					
1,1,2,2-Tetrachloroethane	0.0	0-30					
Tetrachloroethylene	0.0	0-30					
Toluene	0.0	0-30					
1,1,1-Trichloroethane	5.7	0-30					
1,1,2-Trichloroethane	0.0	0-30					
Trichloroethylene	6.1	0-30					
Trichlorofluoromethane	0.0	0-30					
Vinyl Chloride	0.0	0-30					
Xylenes	0.0	0-30					
<b>Surrogates</b>							
Parameter	Recovery (%)	AR					
1,2-Dichloroethane-d4	121	60-140					
Toluene-d8	67	60-140					
4-Bromofluorobenzene	99	60-140					

**LEGEND:**

AR - Acceptable Range

RPD - Relative Percent Difference

## Certificate of Analysis

<b>Analysis Requested:</b>	Metals, VOCs, PHCs, PAHs, pH, Grain Size				
<b>Sample Description:</b>	8 Soil and 3 Water Sample(s)				

<b>Parameter</b>	<b>22-9353-9</b> BH1 (MW)	<b>22-9353-10</b> BH1 (MW) Duplicate	<b>22-9353-11</b> BH5 (MW)			<b>Ground Water Standards<sup>1</sup></b>
	<i>Concentration ( μ g/L)</i>					
<b>BTEX in Water</b>						
Benzene	<0.5	<0.5	<0.5			(430) 44
Toluene	<0.5	<0.5	<0.5			18000
Ethylbenzene	<0.5	<0.5	<0.5			2300
Xylenes	<0.5	<0.5	<0.5			4200
<b>PHCs (F1-F4) in Water</b>						
F1-BTEX (C <sub>6</sub> - C <sub>10</sub> )	<25	<25	<25			750
F2 (C <sub>10</sub> - C <sub>16</sub> )	<100	<100	<100			150
F3 (C <sub>16</sub> - C <sub>34</sub> )	<100	<100	<100			500
F4 (>C <sub>34</sub> )	<100	<100	<100			500
Chromatogram descends to baseline by nC50 ? (Yes/No)	Yes	Yes	Yes			
<b>Surrogate Recovery (%)</b>						
Bromochloromethane	120	119	121			60-140
1,4-Difluorobenzene	68	68	67			60-140
1,4-Dichlorobutane	104	102	99			60-140

F<sub>4G</sub> (gravimetric heavy hydrocarbons) cannot be added to the C<sub>6</sub> to C<sub>50</sub> hydrocarbons.

< result obtained was below RL (Reporting Limit).

<sup>1</sup> MOE - Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.

**Table 3:** Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition.

All Types of Property Use.

( ) Standard value in brackets applies to medium and fine textured soils.

## QA/QC Report

Parameter	Blank	RL	LCS	AR	MS	AR
	(ug/L)	Recovery (%)			Recovery (%)	
<b>BTEX in Water</b>						
Benzene	<0.5	0.5	94	60-130	86	50-140
Toluene	<0.5	0.5	107	60-130	126	50-140
Ethylbenzene	<0.5	0.5	84	60-130	114	50-140
Xylenes	<0.5	0.5	94	60-130	107	50-140
<b>PHC (F1-F4) in Water</b>						
F1-BTEX (C <sub>6</sub> - C <sub>10</sub> )	<25	25	99	60-140	85	60-140
F2 (C <sub>10</sub> - C <sub>16</sub> )	<100	100	99	60-140	95	60-140
F3 (C <sub>16</sub> - C <sub>34</sub> )	<100	100	100	60-140	71	60-140
F4 (>C <sub>34</sub> )	<100	100	98	60-140	79	60-140
<b>Surrogates</b>						
Parameter	Recovery (%)	AR	Recovery (%)	AR	Recovery (%)	AR
Bromochloromethane	120	60-140	82	60-140	113	60-140
1,4-Difluorobenzene	72	60-140	108	60-140	69	60-140
1,4-Dichlorobutane	106	60-140	85	60-140	85	60-140

**LEGEND:**

RL - Reporting Limit

LCS - Laboratory Control Sample

MS - Matrix Spike

AR - Acceptable Range

## QA/QC Report

Parameter	Duplicate	AR					
	RPD (%)						
<b><i>BTEX in Water</i></b>							
Benzene	0.0	0-30					
Toluene	0.0	0-30					
Ethylbenzene	0.0	0-30					
Xylenes	0.0	0-30					
<b><i>PHC (F1-F4) in Water</i></b>							
F1-BTEX (C <sub>6</sub> - C <sub>10</sub> )	0.0	0-30					
F2 (C <sub>10</sub> - C <sub>16</sub> )	0.0	0-30					
F3 (C <sub>16</sub> - C <sub>34</sub> )	4.7	0-30					
F4 (>C <sub>34</sub> )	4.5	0-30					
<b><i>Surrogates</i></b>							
Parameter	Recovery (%)	AR					
Bromochloromethane	121	60-140					
1,4-Difluorobenzene	67	60-140					
1,4-Dichlorobutane	99	60-140					

**LEGEND:**

AR - Acceptable Range

RPD - Relative Percent Difference