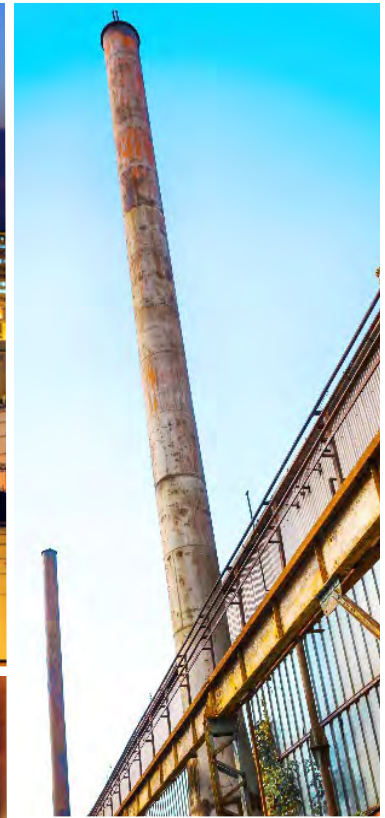




# Phase Two Environmental Site Assessment

Proposed Mixed-Use Development  
540 King Street East  
Cobourg, Ontario

Report for:  
Sunnyside Village Inc.





## Executive Summary

Based on the results of a Phase One Environmental Site Assessment (ESA), a Phase Two ESA was conducted by GHD Limited (GHD) for Sunnyside Village Inc. ("the Client") for lands located at the municipal address of 540 King Street East in Cobourg, Ontario ("the Property"). The Property encompasses an area of 4.0 hectares (9.9 acres) and currently supports a residence, a barn and a storage shed. The Property and surrounding area are municipally serviced for drinking water and sanitary sewer. Based on information compiled, the Property was developed for residential use by the mid-1800s.

The Phase One ESA identified potentially contaminating activities (PCAs) that, in the opinion of GHD, have resulted in areas of potential environmental concern (APECs) at the Property. The PCAs resulting in APECs were identified for an active, adjacent rail line.

The Phase Two ESA included the exploration of the subsurface by advancing ten (10) boreholes to sample soil and groundwater. Monitoring wells were installed in three (3) of the boreholes. Soil samples were tested for pH, metals, petroleum hydrocarbons (PHCs) and volatile organic compounds (VOCs). Groundwater samples were tested for metals, PHCs and VOCs.

Results of the chemical analysis were compared to the Ministry of Environment, Conservation and Parks (MECP) Table 2 Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for Residential / Parkland / Institutional (RPI) Property Use (medium and fine textured soils). The results meet the MECP Table 2 Standards.

Based on our observations, the information collected and the present land use, it is our opinion that the Property has a low level of environmental concern and is suitable for the proposed mixed-use development from an environmental perspective. No further environmental investigation is required at this time.



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Appendix F	Subsurface Exploration Data
Appendix G	Certificates of Chemical Analysis

\*Note: Appendices continue in sequence from the Phase One ESA report.



# 1. Introduction

This report presents the results of a Phase Two Environmental Site Assessment (ESA) that was completed by GHD Limited (GHD) for Sunnyside Village Inc. (herein referred to as "the Client") for lands located at the municipal address of 540 King Street East in Cobourg, Ontario (herein referred to as "the Property").

## 1.1 Site Description

The Property encompasses an area of 4.0 hectares (9.9 acres) and currently supports a residence, a barn and a storage shed. The Property and surrounding area are municipally serviced for drinking water and sanitary sewer. Based on information compiled, the Property was developed for residential use by the mid-1800s.

## 1.2 Property Ownership

The Property is currently owned by Ruth Deborah Kane since October 2017. The Phase One ESA document should be reviewed for additional information with regards to the ownership.

## 1.3 Current and Proposed Future Uses

The Property currently supports a residence, a barn and a storage shed. It is GHD's understanding that this ESA has been requested to provide a professional opinion of the site condition from an environmental assessment perspective, prior to the demolition of any existing structures and construction of a mixed-use development. It is our understanding that the future use will be mixed-use.

## 1.4 Applicable Site Condition Standard

The applicable site condition standard for this Property currently falls under the Ministry of the Environment, Conservation and Parks (MECP) Table 2 Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for Residential / Parkland / Institutional Property Use (MECP, April 15, 2011, "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act*"). The MECP Standards provide generic soil and groundwater quality standards for certain chemicals based on combinations of the following site-specific conditions:

- *Property Use Type* – Agricultural or Residential / Parkland / Institutional (RPI) or Industrial / Commercial / Community (ICC) Property use. The Property is being proposed for mixed-use re-development. The results will be compared to the residential (RPI) standards.
- *Restoration of Groundwater Quality* – Potable or non-potable. The Property is municipally serviced for water. For purposes of this assessment, the analytical results will be compared with the more stringent potable groundwater standards.
- *Restoration Depth* – Full depth or stratified depth. For comparative purposes, results will be compared to full depth standards.



- *Soil Texture* – Coarse or medium to fine textured soils. Medium to fine textured soils are defined under Section 42 of Ontario Regulation 153/04 as soil that contain more than 50 percent by mass of particles that are 75 µm or smaller in mean diameter. Coarse textured standards may be used if at least 1/3 of the soil at the property by volume consists of coarse textured soil.

Gradation analysis classifies native glacial till soils as medium to fine textured soils. These standards will be applied.

- *Shallow Soil Property* – Based on the subsurface investigation, greater than 2 m of overburden soils were encountered. The Property is not considered to be a shallow soil property.
- *Water Body* – There are no permanent water bodies within 30m of the Property. The specific standards relating to the protection of water bodies will not be considered.
- *Environmentally Sensitive Areas* – The Property is not within an area of natural significance or environmentally sensitive area. No environmentally sensitive areas were identified within 30 m of the Property boundaries. The specific standards relating to environmentally sensitive areas will not be considered.

Based upon this information, MECP Table 2 Standards will be applied.

## 2. Background Information

### 2.1 Physical Setting

The Property supports a residence, a barn and a work shed. The surrounding area is generally residential and commercial. The topography of the area generally slopes towards Lake Ontario. Excess surface water will flow in accordance with local topography towards storm water catch basins along King Street East. The Property is situated within the physiographic region known as the Iroquois Plain (Chapman and Putnam, 1984). This region is part of a lowland that typically borders Lake Ontario and corresponds to the area that was inundated by glacial Lake Iroquois during the period of late Wisconsinian glaciation. Soil above limestone bedrock is expected to be comprised of glacial till.

### 2.2 Past Investigations

GHD has conducted a Phase One ESA for the Property, which is the basis for this Phase Two ESA. No other past investigations for the Property were reviewed.

## 3. Scope of Investigation

### 3.1 Overview of Site Investigation

The Phase Two ESA activities have been prepared under the supervision of a Qualified Person, as defined by the Environmental Protection Act, using Ontario Regulation (O. Reg.) 153/04 (as periodically amended). A field investigation was conducted under the supervision of GHD to characterize the subsurface conditions including soil and groundwater. The field activities included advancing and sampling ten (10) boreholes including three (3) monitoring wells installed in select borehole locations.



The boreholes were advanced by GET Drilling Ltd. on April 6 and 7, 2020, using a track-mounted drill rig. The test holes were generally completed through surficial topsoil into a layer of silty sand, which was underlain by native glacial till. The glacial till extended to the depth of investigation in each borehole and generally consisted of clayey silt with varying amounts of sand and gravel.

The Phase Two investigation locations are presented on the Test Hole Plan, Figure 6. The following scope of work was conducted during the Phase Two ESA.

1. Advanced, sampled and logged ten (10) representative boreholes. A monitoring well was installed in three (3) of the boreholes. The boreholes were advanced to depths ranging from 4.6 m to 5.2 m. Soil samples were collected at regular intervals and monitored for volatile hydrocarbon vapours using a RAE Systems MiniRae 3000 hydrocarbon gas detector.
2. Representative samples of the soil and groundwater were subjected to chemical analyses. Soil samples were analyzed for pH, metals, PHCs and VOCs to assess soil quality. Groundwater samples were analyzed for metals, PHCs and VOCs to assess groundwater quality.
3. Data obtained from the investigation were analyzed and the findings presented in this report with conclusions and recommendations. The analytical results were compared to Table 2 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition (RPI Property use) (MECP, April 15, 2011, "Soil, Groundwater and Sediment Standards for use Under Part XV.1 of the *Environmental Protection Act*").

### 3.2 Media Investigated

Soil and groundwater conditions were investigated with a focus on the areas of potential environmental concern (APECs) outlined in the Phase One ESA. The following PCAs were identified as resulting in APECs at the Property:

1. Rail Yards, Tracks and Spurs (PCA #46). This PCA was identified for an adjacent off-site rail line. The rail line is active. GHD recommended further environmental investigation to assess potential impacts to the Property. APECs were identified.

The following field investigation activities were completed:

- Advancement of ten (10) boreholes for soil sampling;
- Installation of three (3) monitoring wells;
- Water level measurements conducted at the monitoring wells;
- Development and sampling of one (1) of the monitoring wells; and
- Laboratory analysis of representative soil and groundwater samples.

### 3.3 Phase One Conceptual Site Model

A Phase One conceptual site model is presented on Figures 4 and 5. The model provides a basic overview, basic geological and hydrogeological information and any other pertinent data that may affect the Phase One ESA. The Property is situated within the physiographic region known as the Iroquois Plain (Chapman and Putnam, 1984).





This region is part of a lowland that typically borders Lake Ontario and corresponds to the area that was inundated by glacial Lake Iroquois during the period of late Wisconsinian glaciation. Soil above limestone bedrock is expected to be comprised of glacial till.

Based on information compiled, the Property was developed for residential use by the mid-1800s. A large portion of the Property has historically been used agriculturally. PCAs resulting in APECs have been identified within the Phase One Study Area for an adjacent, active rail line. The rail line corridor borders the Property on the north side. There were no PCAs identified on the Property itself. It is the opinion of GHD that the aforementioned PCAs have resulted in APECs. The contaminants of concern for the APECs are pH, metals, PHCs and VOCs.

### 3.4 Deviations from Sampling and Analysis Plan

A sampling and analysis plan was prepared based upon information from the Phase One ESA. There were no deviations from the sampling and analysis plan. The sampling plan is presented in Appendix E.

### 3.5 Impediments

Drilling was not conducted with the footprint of the buildings or within with the buried utility corridors. There were no significant impediments for the Phase Two investigation program as the boreholes were advanced within the identified APECs.

## 4. Investigation Method

### 4.1 General

This section of the report describes the field methods utilized during the investigation. The field activities were completed as per MECP protocols, GHD standard operating procedures and standard industry practices. The Phase Two ESA drilling was completed on April 6 and 7, 2020. The investigative tasks completed are described in detail in the following subsections:

- Advancement of boreholes at select locations;
- Completion of field screening measurements;
- Collection of soil samples;
- Analytical soil testing;
- Residual soil management;
- Installation of monitoring wells in select boreholes;
- Water level and development of the monitoring wells;
- Sampling of groundwater for analytical testing; and,
- Quality assurance and quality control measures.

Elevation surveying was not completed as part of this field program. Prior to the commencement of the subsurface investigation, GHD completed the appropriate public utility notifications.





## 4.2 Drilling

The subsurface exploration program consisted of ten (10) boreholes drilled by GET Drilling Ltd. using a track-mounted drill rig on April 6 and 7, 2020. The boreholes were advanced in the locations illustrated on the Test Hole Plan, Figure 6 and extended to depths ranging from 4.6 to 5.2 metres (m).

Boreholes were generally advanced through surficial topsoil into a layer of silty sand, which was underlain by native glacial till. The glacial till extended to the depth of investigation in each borehole and generally consisted of clayey silt with varying amounts of sand and gravel. Detailed borehole logs are provided in Appendix F and provide a further overview of the subsurface conditions encountered during drilling activities. Prior to use, during drilling and between each test hole, the drilling and sampling equipment was decontaminated. The wash procedure for decontamination of equipment was a water detergent wash and potable water rinse.

## 4.3 Soil Sampling

Based on the sampling plan, field observations, headspace analysis of organic vapour readings, visual and olfactory evidence of potential contamination and professional judgment, soil samples were selected for chemical analyses. GHD personnel collected soil samples for laboratory analysis directly from the sampling equipment.

The samples to be submitted for analysis were placed into clean laboratory prepared sample bottles. Fresh nitrile gloves were worn when collecting the samples. The soil samples selected for chemical analyses were kept in a cooler on ice and delivered to Caduceon Laboratories (Caduceon). The following soil samples were submitted for analysis during the Phase Two ESA program:

- BH-4, SS-2 – pH, Metals, PHCs and VOCs; and,
- BH-6, SS-4 – pH, Metals, PHCs and VOCs.

## 4.4 Field Screening Measurements

Field screening measurements were completed using a RAE Systems MiniRae 3000 portable hydrocarbon gas detector. The soil samples obtained during the test hole program were subjected to hydrocarbon vapour testing or “headspace analysis” using the gas detector. Prior to sample collection events, the gas detector was inspected and calibrated according to the manufacturer’s recommendations. The vapour readings are shown on the logs in Appendix F and were at ambient levels.



#### 4.5 Groundwater: Monitoring Well Installation

As part of the Phase Two ESA, some of the monitoring wells were installed within the APEC during the drilling activities. The monitoring wells were installed within boreholes BH-2, BH-6 and BH-9. Monitoring wells were installed to assess potential groundwater impacts with the well screen placed to straddle the water table, if possible. The monitoring wells were constructed of 51 mm diameter PVC well pipes and 10-slot well screen. The wells had 1.5m or 3.0m long screens with sand extending above the screen and a bentonite seal to surface.

#### 4.6 Groundwater: Field Measurement of Water Quality

The monitoring wells were measured for groundwater level and developed with dedicated Waterra tubing and an inertial foot valve prior to sampling. No light or dense non-aqueous phase liquids were observed during the well development activities.

#### 4.7 Groundwater: Sampling

After well development, a water sample was collected from a representative monitoring well using dedicated sampling equipment. The water sample was submitted for analysis of the following parameters:

- BH-6 – Metals, PHCs and VOCs.

The water sample was kept in a cooler on ice and delivered to Caduceon.

#### 4.8 Sediment: Sampling

Sediment sampling is not applicable.

#### 4.9 Analytical Testing

The analytical testing was completed in accordance with the requirements of Ontario Regulation 153/04 (as amended) and associated MECP analytical guidance documents. Sampling was completed based upon information available from the Phase One ESA, visual and olfactory observations, field screening and professional judgment.

The analytical testing was completed at Caduceon, an accredited laboratory with the Canadian Association for Laboratory Accreditation (CALA) for the parameters tested during this investigation. Sampling and analysis were completed for pH, metals, PHCS and VOCs. Copies of the Certificates of Analysis are provided in Appendix G of this report.

#### 4.10 Elevation Surveying

An elevation survey was not completed of the test hole locations. If required, topographic elevations can be inferred from an Ontario Base Map or Google Earth.



#### 4.11 Quality Assurance and Quality Control Measures

The Quality Assurance and Quality Control (QAQC) program was implemented during the ESA to ensure quality data was generated. Soil samples were collected with pre-cleaned sampling equipment and placed directly into laboratory supplied dedicated jars. Samples were submitted under chain-of-custody protocol to an analytical laboratory that is accredited with the CALA for the parameters tested for. From the time of collection to the time of submission to the laboratory, samples were kept cool to maintain sample integrity.

The QAQC measures implemented by the laboratory were maintained throughout the investigation and are included in the laboratory's Certificate of Chemical Analysis included in Appendix G. There were no QAQC issues.

## 5. Review and Evaluation

GHD completed the Phase Two ESA investigation activities to address the APECs defined in the Phase One ESA. This review and evaluation section describes the results of the Phase Two ESA.

### 5.1 Geology

Reference is made to the borehole logs in Appendix F for details including local soil and geology classification and stratigraphy. The stratigraphy in the areas where boreholes were advanced consisted of surficial topsoil underlain by a layer of silty sand, further underlain by native glacial till. The glacial till extended to the depth of investigation in each borehole and generally consisted of clayey silt with varying amounts of sand and gravel.

Grain size distribution analysis conducted on a sample of the silty sand material indicates the following composition: 0% gravel, 52% sand and 48% silt and clay-sized particles.

Grain size distribution analysis conducted on two (2) samples of the glacial till indicates the following compositional range: 0 to 1% gravel, 7 to 10% sand and 89 to 93% silt and clay-sized particles.

### 5.2 Groundwater: Elevations and Flow Direction

The groundwater elevations were not assessed in this report. Groundwater is expected towards Lake Ontario.

### 5.3 Groundwater: Hydraulic Gradient

An assessment of the groundwater hydraulic gradient was not calculated for this investigation.

### 5.4 Fine-Medium Soil Texture

Based upon field observations and gradation analysis, the native overburden soils are glacial till which is comprised of clayey silt with varying amounts of sand and gravel. Gradation analysis on samples of the glacial till indicate medium and fine textured soils. The results will be compared with the medium and fine textured soil standards.



## 5.5 Soil Quality

Two (2) soil samples were submitted for chemical analyses. Soil samples analyzed were selected from the APEC based upon visual and olfactory observations, field screening activities and professional judgment. The laboratory certificates of analysis are provided in Appendix G.

Two (2) samples were submitted for the analysis of pH. The results are compared with Ontario Regulation 153 Standards in Table 5.1. The results meet the acceptable ranges.

Table 5.1: Summary of pH in Soil

Parameter	Sample Identification		Acceptable MECP Ranges
	BH-4, SS-2 (0.8 – 1.4 m) April 6, 2020	BH-6, SS-4 (2.3 – 2.9 m) April 6, 2020	
pH (surface soil ≤ 1.5m)	7.57	-	5 – 9*
pH (subsurface soil > 1.5m)	-	7.85	5 – 11*

\*pH values are based on Ontario Regulation 153 MECP acceptable pH ranges.

Two (2) soil samples were submitted for analysis of metals. The results are summarized and compared with the MECP Table 2 Standards in Table 5.2. The results meet the MECP Table 2 Standards.



Table 5.2: Summary of Metals in Soil

Parameter	Sample Identification		MECP Table 2 Standards
	BH-4, SS-2 (0.8 – 1.4 m) April 6, 2020	BH-6, SS-4 (2.3 – 2.9 m) April 6, 2020	
Antimony	< 0.5	< 0.5	7.5
Arsenic	0.8	1.2	18
Barium	33	83	390
Beryllium	0.2	0.2	5
Boron	5.1	8.3	120
Boron (HWS)	< 0.02	0.16	1.5
Cadmium	< 0.5	< 0.5	1.2
Chromium	9	14	160
Chromium (VI)	< 0.2	< 0.2	10
Cobalt	2	4	22
Copper	3	8	180
Lead	< 5	< 5	120
Mercury	< 0.005	< 0.005	1.8
Molybdenum	< 1	< 1	6.9
Nickel	4	9	130
Selenium	< 0.5	< 0.5	2.4
Silver	< 0.2	< 0.2	25
Thallium	< 0.1	< 0.1	1
Uranium	0.4	0.6	23
Vanadium	13	22	86
Zinc	12	26	340

**Notes:** Analytical results presented as µg/g (parts per million) unless otherwise noted.

"<" indicates parameter is below the laboratory reporting limit (i.e. non-detect). HWS = hot water soluble

MECP "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA", April 15, 2011, Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for RPI Property Use (med/fine textured soils).

Two (2) soil samples were submitted for the analysis of PHCs and VOCs. The results are summarized and compared with the MECP Table 2 Standards in Table 5.3. The results meet the MECP Table 2 Standards.



Table 5.3: Summary of PHCs and VOCs in Soil

Parameter	Sample Identification		MECP Table 2 Standards
	BH-4, SS-2 (0.8 – 1.4 m) April 6, 2020	BH-6, SS-4 (2.3 – 2.9 m) April 6, 2020	
Acetone	< 0.5	< 0.5	28
Benzene	< 0.02	< 0.02	0.17
Bromodichloromethane	< 0.02	< 0.02	1.9
Bromoform	< 0.02	< 0.02	0.26
Bromomethane	< 0.05	< 0.05	0.05
Carbon Tetrachloride	< 0.05	< 0.05	0.12
Monochlorobenzene (Chlorobenzene)	< 0.02	< 0.02	2.7
Chloroform	< 0.02	< 0.02	0.18
Dibromochloromethane	< 0.02	< 0.02	2.9
Dichlorobenzene,1,2-	< 0.05	< 0.05	1.7
Dichlorobenzene,1,3-	< 0.05	< 0.05	6
Dichlorobenzene,1,4-	< 0.05	< 0.05	0.097
Dichlorodifluoromethane	< 0.05	< 0.05	25
Dichloroethane,1,1-	< 0.02	< 0.02	0.6
Dichloroethane,1,2-	< 0.02	< 0.02	0.05
Dichloroethylene,1,1-	< 0.02	< 0.02	0.05
Dichloroethene, cis-1,2-	< 0.02	< 0.02	2.5
Dichloroethene, trans-1,2-	< 0.02	< 0.02	0.75
Dichloropropane,1,2-	< 0.02	< 0.02	0.85
Dichloropropene, cis-1,3-	< 0.02	< 0.02	
Dichloropropene, trans-1,3-	< 0.02	< 0.02	
Dichloropropene 1,3- cis+trans	< 0.02	< 0.02	0.81
Ethylbenzene	< 0.05	< 0.05	1.6
Dibromoethane,1,2- (Ethylene Dibromide)	< 0.02	< 0.02	0.05
Hexane	< 0.02	< 0.02	34
Methyl Ethyl Ketone	< 0.5	< 0.5	44
Methyl Isobutyl Ketone	< 0.5	< 0.5	4.3
Methyl-t-butyl Ether	< 0.05	< 0.05	1.4
Dichloromethane (Methylene Chloride)	< 0.05	< 0.05	0.96
Styrene	< 0.05	< 0.05	2.2
Tetrachloroethane,1,1,1,2-	< 0.02	< 0.02	0.05
Tetrachloroethane,1,1,2,2-	< 0.05	< 0.05	0.05
Tetrachloroethylene	< 0.05	< 0.05	2.3
Toluene	< 0.2	< 0.2	6
Trichloroethane,1,1,1-	< 0.02	< 0.02	3.4
Trichloroethane,1,1,2-	< 0.02	< 0.02	0.05
Trichloroethylene	< 0.05	< 0.05	0.52
Trichlorofluoromethane	< 0.02	< 0.02	6
Vinyl Chloride	< 0.02	< 0.02	0.022
Xylene, m,p-	< 0.03	< 0.03	NS
Xylene, o-	< 0.03	< 0.03	NS
Xylene, m,p,o-	< 0.03	< 0.03	25
PHC F1 (C6-C10)	< 10	< 10	65
PHC F2 (>C10-C16)	< 5	< 5	150
PHC F3 (>C16-C34)	< 10	14	1300
PHC F4 (>C34-C50)	< 10	< 10	5600

**Notes:** Analytical results presented as µg/g (parts per million) unless otherwise noted. NS = no standard. " $<$ " indicates parameter is below the laboratory reporting limit (i.e. non-detect). NS indicates "no standard" MECP "Table 2 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for RPI Property Use (med/fine textured soils).



## 5.6 Groundwater Quality

One (1) groundwater sample was submitted for the analysis of metals. The sample results are summarized and compared to the MECP Table 2 Standards in Table 5.4. The results meet the Table 2 Standards.

Table 5.4: Summary of Metals in Groundwater

Parameter	Sample Identification	MECP Table 2 Standards
	BH-6 April 21, 2020	
Antimony	0.1	6
Arsenic	0.2	25
Barium	216	1000
Beryllium	< 0.1	4
Boron	58	5000
Cadmium	< 0.015	2.7
Chromium	< 2	50
Chromium (VI)	< 10	25
Cobalt	0.1	3.8
Copper	2	87
Lead	0.04	10
Mercury	< 0.02	0.29
Molybdenum	0.8	70
Nickel	0.7	100
Selenium	< 1	10
Silver	< 0.1	1.5
Thallium	< 0.05	2
Uranium	1.73	20
Vanadium	0.5	6.2
Zinc	< 5	1100

Notes: Analytical results presented as µg/L (parts per billion) unless otherwise noted. NS = no standard. “<” indicates parameter is below the laboratory reporting limit (i.e. non-detect) MECP “Table 2 Full Depth Generic Site Condition Standards for All Type of Property Uses.

One (1) groundwater sample was submitted for the analysis of PHCs and VOCs. The sample results are summarized and compared to the MECP Table 2 Standards in Table 5.5. The results meet the Table 2 Standards.





Table 5.5: Summary of PHCs and VOCs in Groundwater

Parameter	Sample Identification	MECP Table 2 Standards
	BH-6 April 21, 2020	
Acetone	< 30	2700
Benzene	< 0.5	5
Bromodichloromethane	< 2	16
Bromoform	< 5	25
Bromomethane	< 0.5	0.89
Carbon Tetrachloride	< 0.2	0.79
Monochlorobenzene (Chlorobenzene)	< 0.5	30
Chloroform	< 1	2.4
Dibromochloromethane	< 2	25
Dichlorobenzene,1,2-	< 0.5	3
Dichlorobenzene,1,3-	< 0.5	59
Dichlorobenzene,1,4-	< 0.5	1
Dichlorodifluoromethane	< 2	590
Dichloroethane,1,1-	< 0.5	5
Dichloroethane,1,2-	< 0.5	1.6
Dichloroethylene,1,1-	< 0.5	1.6
Dichloroethene, cis-1,2-	< 0.5	1.6
Dichloroethene, trans-1,2-	< 0.5	1.6
Dichloropropane,1,2-	< 0.5	5
Dichloropropene, cis-1,3-	< 0.5	NS
Dichloropropene, trans-1,3-	< 0.5	NS
Dichloropropene 1,3- cis+trans	< 0.5	0.5
Ethylbenzene	< 0.5	2.4
Dibromoethane,1,2- (Ethylene Dibromide)	< 0.2	0.2
Hexane	< 5	51
Methyl Ethyl Ketone	< 20	1800
Methyl Isobutyl Ketone	< 20	640
Methyl-t-butyl Ether	< 2	15
Dichloromethane (Methylene Chloride)	< 5	50
Styrene	< 0.5	5.4
Tetrachloroethane,1,1,1,2-	< 0.5	1.1
Tetrachloroethane,1,1,2,2-	< 0.5	1
Tetrachloroethylene	< 0.5	1.6
Toluene	< 0.5	24
Trichloroethane,1,1,1-	< 0.5	200
Trichloroethane,1,1,2-	< 0.5	4.7
Trichloroethylene	< 0.5	1.6
Trichlorofluoromethane	< 5	150
Vinyl Chloride	< 0.2	0.5
Xylene, m,p-	< 1.0	NS
Xylene, o-	< 0.5	NS
Xylene, m,p,o-	< 1.1	300
PHC F1 (C6-C10)	< 50	750
PHC F2 (>C10-C16)	< 50	150
PHC F3 (>C16-C34)	< 400	500
PHC F4 (>C34-C50)	< 400	500

Notes: Analytical results presented as µg/L (parts per billion) unless otherwise noted. NS = no standard. “<” indicates parameter is below the laboratory reporting limit (i.e. non-detect) MECP “Table 2 Full Depth Generic Site Condition Standards for All Type of Property Uses.

## 5.7 Sediment Quality

Sediment quality testing is not applicable.



## 5.8 Quality Assurance and Quality Control Results

The sampling holding times were met and the samples were properly preserved after collection for the Phase Two ESA. The QAQC measures implemented by the laboratory were maintained throughout the investigation. There were no QAQC issues.

## 5.9 Phase Two Conceptual Site Model

Based on the investigative work completed, a Phase Two conceptual site model has been prepared, and is summarized on Figure 6 showing test hole locations and summary of analytical results. The Phase Two ESA consisted of advancing ten (10) boreholes, including the installation of three (3) monitoring wells. The soil contaminants of concern included pH, metals, PHCs and VOCs. The groundwater contaminants of concern included metals, PHCs and VOCs.

All soil and groundwater meets the MECP Table 2 Standards for mixed-use including residential property use (medium/fine textured soils) for the parameters tested including pH, metals, PHCs and VOCs. It is the opinion of GHD that there is a low level of environmental concern at the Property from an environmental perspective. No further environmental evaluation is required at this time and the Property is suitable for the proposed development, from an environmental perspective.

# 6. Conclusions

The supporting data upon which our conclusions are based have been presented in the previous sections of this report. The environmental assessment represents a "snapshot" in time. Consideration has been given to the known Property history, the physical setting, adjacent land use and current regulatory requirements in developing the terms of reference for this study. GHD cannot guarantee the reliability of information provided by others. However, whenever possible, verification of authenticity was attempted.

Based on our observations, the field investigation program and laboratory results, the following conclusions are presented.

- All soil tested from the Property meets the MECP Table 2 Standards for residential property use (medium/fine textured soils) for the parameters tested including pH, metals, PHCs and VOCs.
- Groundwater tested from the Property meets the MECP Table 2 Standards for all property use for the parameters tested including metals, PHCs and VOCs.

Based on our observations, the information collected and the present land use, it is our professional opinion that there is a low level of concern at the Property from an environmental perspective. The Property is suitable for the proposed mixed-use development from an environmental perspective. No further environmental evaluation is required at this time.



## 6.1 Signatures

The following signatures are provided of GHD staff that prepared and conducted the Phase Two ESA. Mr. Nyle McIlveen, a Qualified Person within the meaning of the Environmental Protection Act and associated Regulation 153/04, has provided his opinion based on the information provided in this report.

Following the References section of this report is the Statement of Limitations. These limitations are an integral part of this report. Should questions arise regarding any aspect of our report, please contact our office.

Sincerely,

GHD

David Workman, P.Geo.



Nyle McIlveen, P.Eng.



/ew/dw/nm



## 7. References

- Canadian Standards Association (CSA) Z768-01, "Phase I Environmental Site Assessment", reaffirmed 2012.
- Chapman and Putnam, 1966. The Physiography of Southern Ontario, 2nd Edition. University of Toronto Press.
- Chapman and Putnam, 1984. The Physiography of Southern Ontario, 3rd Edition. Ministry of Natural Resources.
- Environmental Protection Act, R.S.O. 1990, and associated regulations.
- GHD Limited, April 23, 2020. Phase One Environmental Site Assessment Report, Proposed Mixed-Use Development, 540 King Street East, Cobourg, Ontario.
- Occupational Health and Safety Act, R.S.O. 1990, and associated regulations.
- Ontario Ministry of the Environment, 2011. Ontario Regulation 153/04: Records of Site Condition – Part XV.1 of the Act (Environmental Protection Act 153/04, as amended).



## 8. Statement of Limitations

This report is intended solely for Sunnyside Village Inc. in assessing the environmental concerns of the property identified at the municipal address of 540 King Street East in Cobourg, Ontario and is prohibited for use by others without GHD's prior written consent. This report is considered GHD's professional work product and shall remain the sole property of GHD. Any unauthorized reuse, redistribution of or reliance on the report shall be at the Client and recipient's sole risk, without liability to GHD. Client shall defend, indemnify and hold GHD harmless from any liability arising from or related to Client's unauthorized distribution of the report. No portion of this report may be used as a separate entity; it is to be read in its entirety and shall include all supporting drawings and appendices.

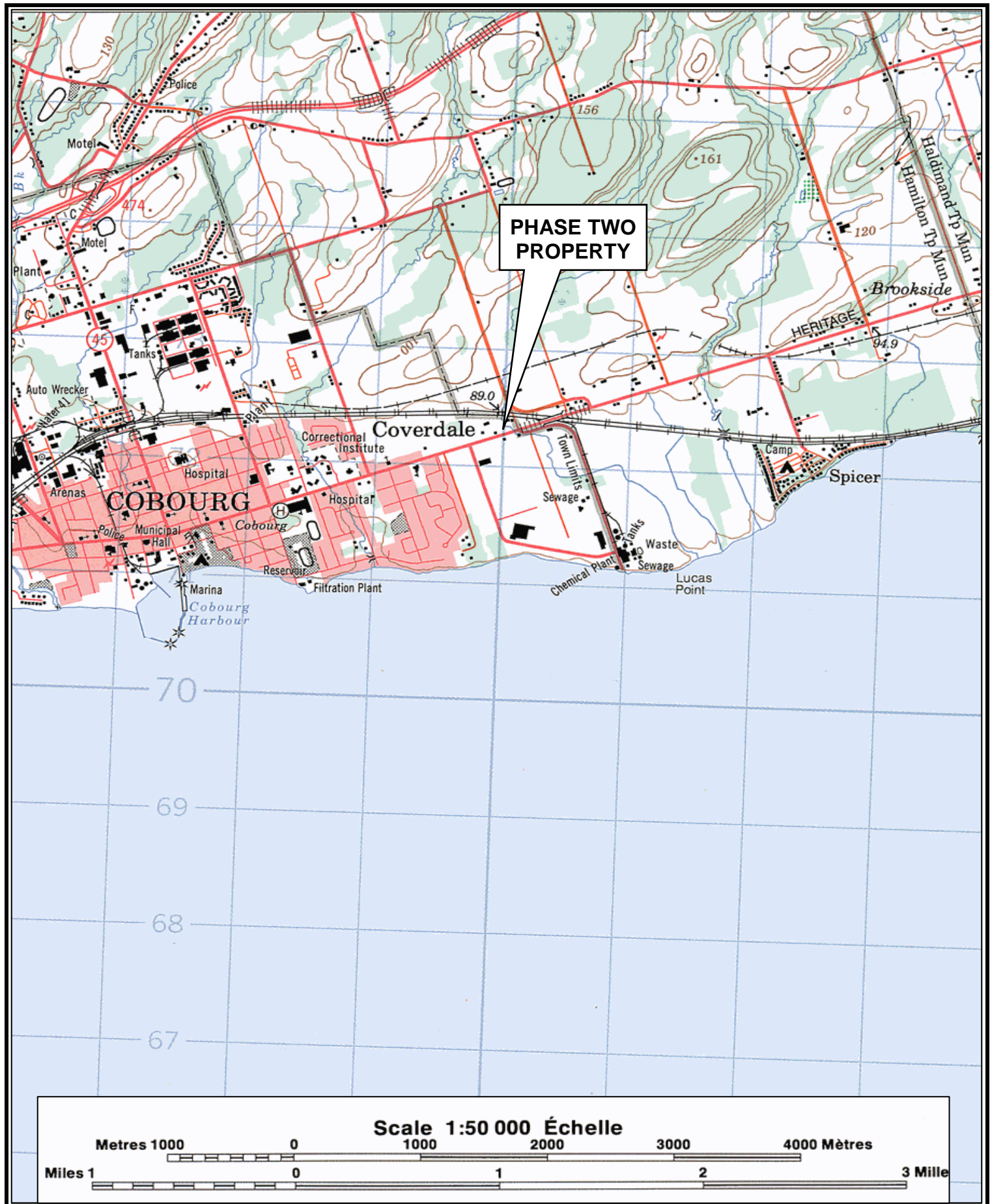
The conclusions and recommendations made in this report are in accordance with our present understanding of the project, the current site use, surface and subsurface conditions, and are based on available information, a site reconnaissance on the date set out in the report, records review and interviews with appropriate people and the work scope approved by the Client and described in the report and should not be construed as a legal opinion. Therefore, our liability is limited to interpreting accurately the information made available to us and assessing the property information investigated during this Phase Two environmental assessment. The services were performed in a manner consistent with that level of care and skill ordinarily exercised by members of environmental engineering professions currently practicing under similar conditions in the same locality. No other representations, and no warranties or representations of any kind, either expressed or implied, are made. 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.

Soil conditions between and beyond the test hole locations may differ both horizontally and vertically from those encountered at the test hole locations and conditions may become apparent during future projects which could not be detected or anticipated at the time of our investigation. Should any conditions at the site be encountered which differ from those found at the test hole locations, we request that we be notified immediately in order to permit a reassessment of our recommendations. If changed conditions are identified, no matter how minor, the recommendations in this report shall be considered invalid until sufficient review and written assessment of said conditions by GHD is completed.

The conclusions in this report are based on available information, documentation and discussions with appropriate people associated with the property. Therefore, our liability is limited to interpreting accurately the information made available to us and assessing the property information at the test hole locations investigated during the Phase Two ESA.

# Enclosures





Base map compiled from Energy, Mines and Resources Canada Map 30 M/16 published 1994. Information current as of 1989.

**Scale:**  
1:50000  
Coordinate System  
NAD 1983 UTM  
Zone 17



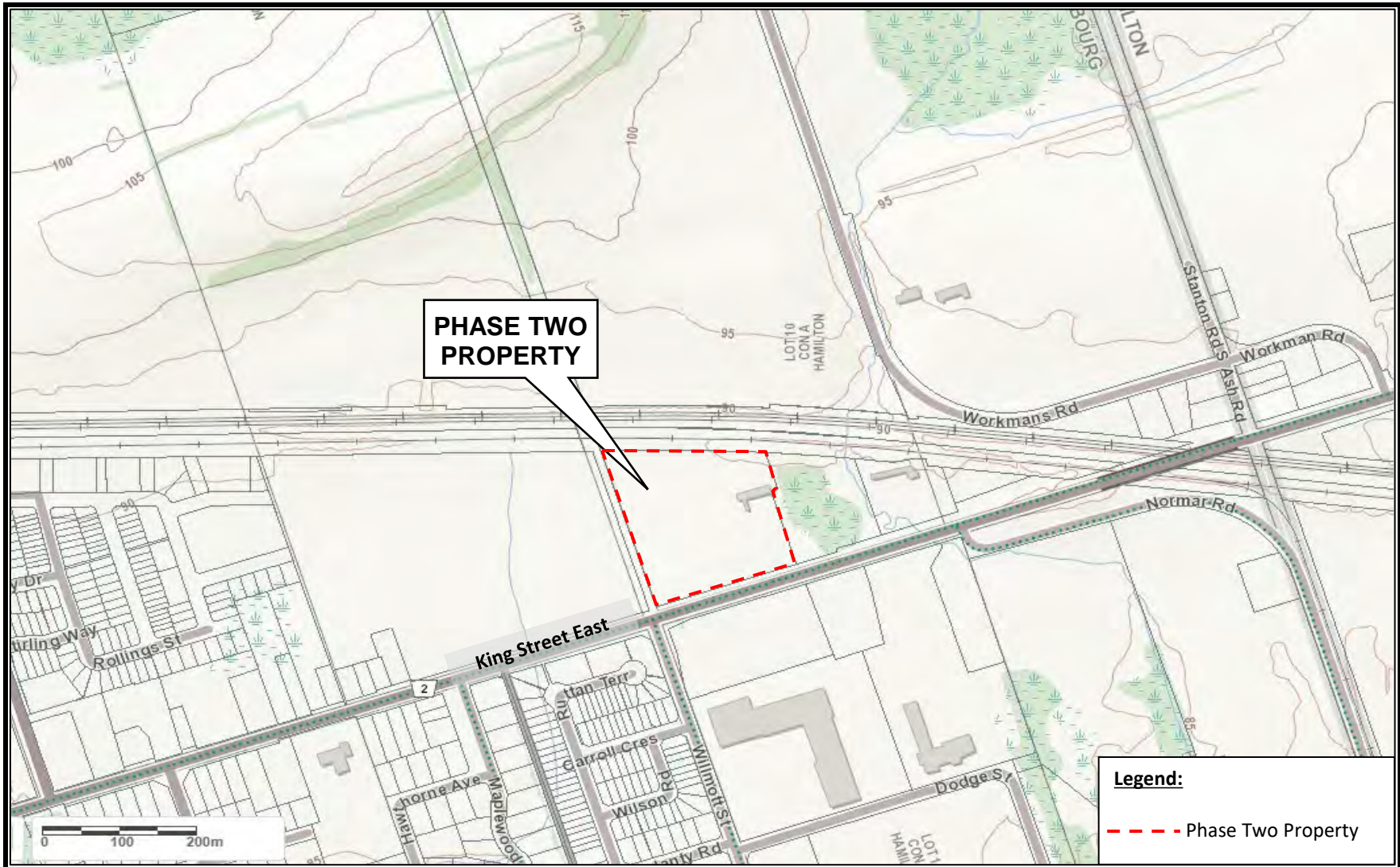
Sunnyside Village Inc.  
540 King Street East, Cobourg, ON  
Phase Two ESA

11211226-01  
May 2020

**Vicinity Plan**

**FIGURE 1**





Source: Ministry of Natural Resources and Forestry. © Queen's Printer for Ontario, 2020.

**Scale:**  
 Refer to Scale Bar  
 Coordinate System:  
 NAD 1983 UTM Zone 17



Sunnyside Village Inc.  
 540 King Street East, Cobourg, ON  
 Phase Two ESA

11211226-01  
 May 2020

**Property Plan**

**FIGURE 2**



Source: Ministry of Natural Resources and Forestry. © Queen's Printer for Ontario, 2020.

**Scale:**  
 Refer to Scale Bar  
 Coordinate System:  
 NAD 1983 UTM Zone 17



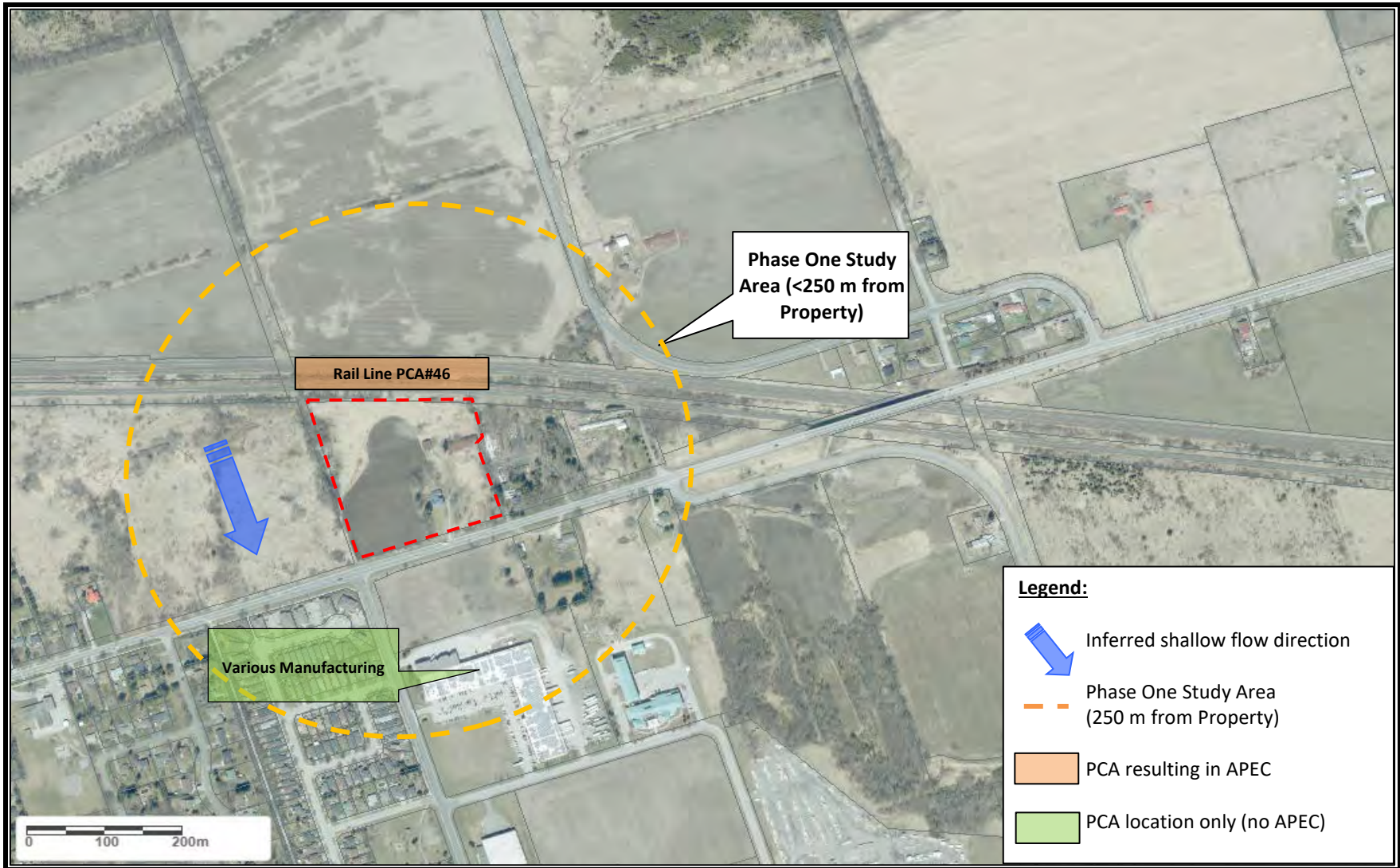
Sunnyside Village Inc.  
 540 King Street East, Cobourg, ON  
 Phase Two ESA

11211226-01  
 May 2020

**Plot Plan**

**FIGURE 3**





Source: Ministry of Natural Resources and Forestry. © Queen's Printer for Ontario, 2020.

**Scale:**  
Refer to Scale Bar  
Coordinate System:  
NAD 1983 UTM Zone 17



Sunnyside Village Inc.  
540 King Street East, Cobourg, ON  
Phase Two ESA

11211226-01  
May 2020

**CSM - Study Area**

**FIGURE 4**



Source: Ministry of Natural Resources and Forestry. © Queen's Printer for Ontario, 2020.

**Scale:**  
Refer to Scale Bar  
Coordinate System:  
NAD 1983 UTM Zone 17



Sunnyside Village Inc.  
540 King Street East, Cobourg, ON  
Phase Two ESA

11211226-01  
May 2020

**CSM - Property**

**FIGURE 5**





Source: Ministry of Natural Resources and Forestry. © Queen's Printer for Ontario, 2020.

**Scale:**  
 Refer to Scale Bar  
 Coordinate System:  
 NAD 1983 UTM Zone 17



Sunnyside Village Inc.  
 540 King Street East, Cobourg, ON  
 Phase Two ESA

11211226-01  
 May 2020

## Test Hole Plan

## FIGURE 6



Source: Ministry of Natural Resources and Forestry. © Queen's Printer for Ontario, 2020.

**Scale:**  
Refer to Scale Bar  
Coordinate System:  
NAD 1983 UTM Zone 17



Sunnyside Village Inc.  
540 King Street East, Cobourg, ON  
Phase Two ESA

11211226-01  
May 2020

## Phase Two CSM

## FIGURE 7

# Appendix E

## Sampling and Analysis Plan



**APPENDIX E: SAMPLING AND ANALYSIS PLAN**

**PROJECT NO.:** 11211226-01  
**CLIENT:** Sunnyside Village Inc.  
**PROPERTY:** 540 King Street East, Cobourg, Ontario

APEC	RATIONALE	INVESTIGATION TYPE	SAMPLE IDENTIFICATION	ESTIMATED INVESTIGATION DEPTH	SAMPLE MEDIA	LABORATORY ANALYSIS	PHYSICAL IMPEDIMENTS	SAMPLING GUIDELINES
APEC 1 –Rail Yards, Tracks and Spurs (PCA #46)	Off-Site PCA: confirm soil and groundwater quality in area of Property down gradient of active rail lines.	Boreholes	BH-4, BH-5 and BH-6	Boreholes to be advanced to max depth of approximately 5 m. Monitoring wells installed.	Soil	pH, Metals, PHCs and VOCs	No drilling / excavation within building footprints or buried utility corridors.	Sample from areas of discoloured soils, highest organic vapour reading or at the water table
		Monitoring Well	BH-6		Groundwater	Metals, PHCs and VOCs		Purge three well volumes prior to sampling with low-flow sampling equipment.

**Notes:**

Refer to Test Hole Plan for locations. Refer to Proposal for details.

Samples to be submitted to Caduceon Environmental Laboratories. Standard turnaround time to meet project requirements.

If installed, groundwater monitoring wells or piezometers to be developed and purged minimum of 3 times prior to sampling. Sample MDLs to meet MECP Table 2 Standards.

If Fill is encountered, confirm quality of fill (metals and pH testing)

- 1) PHCs and BTEX/VOCs – select soil sample with highest PID reading and/or suspected contamination
- 2) All soil samples should be collected from at or above water table unless DNAPLs are suspected
- 3) If impact is encountered, one soil sample should be collected below any “impacted” sample for vertical delineation

Follow GHD collection procedures for soil and groundwater samples including methanol preservative method for soil BTEX/VOCs and PHC F1 analysis

# Appendix F

## Subsurface Exploration Data



**BOREHOLE No.:** BH-1  
**ELEVATION:** Existing Grade

**BOREHOLE REPORT**

Page: 1 of 1

CLIENT: Sunnyside Village Inc.

PROJECT: 540 King Street East, Cobourg, Ontario

LOGGED BY: E. Wierdsma DATE: 6 April 2020

DRILLING COMPANY: GET Drilling Ltd. METHOD: Solid Stem Augers and Split Spoons

NOTES:

**LEGEND**

- ☒ SS - SPLIT SPOON
- ▨ AS - AUGER SAMPLE
- ▧ ST - SHELBY TUBE
- ▩ CS - CORE SAMPLE
- ▼ - WATER LEVEL

BOREHOLE LOG ENVIRO 11211226-01-FIG-20-05-01, GINT LOGS, 540 KING COBOURG, EW/GPJ GEOLOGIC.GDT 4/5/20

Depth	m Below Existing Grade		Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Vapours ppm	Penetration Index N	Shear test (Cu) Sensitivity (S)										Field △ Lab □	COMMENTS
	ft	m								10	20	30	40	50	60	70	80	90			
	0.0			GROUND SURFACE																	
	0.15			TOPSOIL (150mm)																	
1		0.5		SILTY SAND - Light Brown Silty Sand with Clay, Moist, Very Loose	SS-1	40	28	0	2	×		○									
2																					
3		1.0		Wet, Grey, Loose	SS-2	80	23	0	5	×		○							Grain Size Data SS-2: 0% Gravel 52% Sand 48% Silt and Clay-sized Particles Water up to 1.5m Upon Completion		
4																					
5		1.5		Grading Compact at 1.8 m	SS-3	100	21	0	13			×	○								
6																					
7		2.0		SAND AND GRAVEL - Brown Sand and Gravel, Wet, Compact	SS-4	100	17	0	13			×	○						Borehole open to 2.1 m Upon Completion Groundwater First Encountered at 2.3m		
8																					
9		2.5		TILL - Grey Clayey Silt, trace Sand, Moist, Stiff	SS-4	100	17	0	13			×	○								
10																					
11		3.0		Grading Very Stiff at 3.3 m	SS-5	90	19	0	16				×	○							
12																					
13		3.5																			
14																					
15		4.0		Grading Stiff at 4.8 m	SS-6	100	16	0	11				×	○							
16																					
17		4.5		END OF BOREHOLE																	
18		5.0																			
19		5.5																			
20		6.0																	Vapour Readings Refer to Measurements Made with RAE Systems miniRAE 3000		



**BOREHOLE No.:** BH-2  
**ELEVATION:** Existing Grade

**BOREHOLE REPORT**

Page: 1 of 1

**CLIENT:** Sunnyside Village Inc.  
**PROJECT:** 540 King Street East, Cobourg, Ontario  
**LOGGED BY:** E. Wierdsma **DATE:** 6 April 2020  
**DRILLING COMPANY:** GET Drilling Ltd. **METHOD:** Solid Stem Augers and Split Spoons  
**NOTES:**

**LEGEND**

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- WATER LEVEL

BOREHOLE LOG ENVIRO 11211226-01-FIG-20-05-01, GINT LOGS, 540 KING COBOURG, EW/GPJ GEOLOGIC, GDT 4/5/20

Depth	m Below Existing Grade		Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Vapours ppm	Penetration Index N	Shear test (Cu) Sensitivity (S)										Field / Lab	COMMENTS
	ft	m								w <sub>p</sub>	w <sub>L</sub>	Atterberg limits (%)	"N" Value (blows / 12 in.-30 cm)	10	20	30	40	50	60		
	0.0			GROUND SURFACE																	
				<b>SANDY SILT</b> - Brown Sandy Silt with Clay, Wet, Very Loose	SS-1	30	36	0	0	○											
1	0.5			Trace Clay, Mottled, Compact																	
		0.76																			
2					SS-2	100	23	0	12	× ○											
3	1.0			Grey, Wet																	
4																					
		1.37																			
5	1.5			<b>CLAYEY SILT</b> - Grey Clayey Silt, Moist, Firm	SS-3	100	26	0	7	× ○											
6	2.0																				
		1.83																			
7				<b>SAND AND GRAVEL</b> - Brown Sand and Gravel, Wet, Stiff	SS-4	100	13	0	22	○ ×											Groundwater First Encountered at 2.3 m
8	2.5																				
		2.29																			
9				<b>TILL</b> - Grey Clayey Silt, trace Sand, Moist, Compact	SS-5	100	23	0	11	× ○											Grain Size Data SS-5: 0% Gravel 7% Sand 93% Silt and Clay-sized Particles 31% Between 5-75um
10	3.0																				
		2.90																			
11	3.5			Grading Very Stiff at 4.5 m																	
		4.57																			
12					SS-6	100	20	0	29	○ ×											51 mm Diameter Monitoring Well Installed to 4.6 m Vapour Readings Refer to Measurements Made with RAE Systems miniRAE 3000
13	4.0																				
		5.03																			
14	4.5			END OF BOREHOLE																	
15	5.0																				
16																					
17	5.5																				
18																					
19	6.0																				



**BOREHOLE No.:** BH-3  
**ELEVATION:** Existing Grade

**BOREHOLE REPORT**

Page: 1 of 1

**CLIENT:** Sunnyside Village Inc.  
**PROJECT:** 540 King Street East, Cobourg, Ontario  
**LOGGED BY:** E. Wierdsma **DATE:** 6 April 2020  
**DRILLING COMPANY:** GET Drilling Ltd. **METHOD:** Solid Stem Augers and Split Spoons  
**NOTES:**

**LEGEND**

- ☒ SS - SPLIT SPOON
- ▨ AS - AUGER SAMPLE
- ▩ ST - SHELBY TUBE
- ▬ CS - CORE SAMPLE
- ▼ - WATER LEVEL

Depth	m Below Existing Grade		Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Vapours ppm	Penetration Index N	Shear test (Cu) Sensitivity (S)										Field / Lab	COMMENTS				
	ft	m								w <sub>p</sub>	w <sub>L</sub>	Atterberg limits (%)	"N" Value (blows / 12 in.-30 cm)	10	20	30	40	50	60			70	80	90	
		0.0		GROUND SURFACE																					
		0.20		TOPSOIL (200mm)																					
1		0.20		SILTY SAND - Light Brown Silty Sand, Moist, Very Loose	SS-1	50	24	0	3	×	○														
2		0.5																							
3		0.76		Wet																					
4		1.07		Grading Compact, Moist at 1.1 m	SS-2	80	22	0	14	×	○														Water and cave-in up to 0.9 m Upon Completion
5		1.5																							
6		2.0			SS-3	100	19	0	15	×	○														
7		2.5																							
8		2.59		Grey, Wet	SS-4	100	18	0	13	×	○														Groundwater First Encountered at 2.6m
9		3.0																							
10		3.5			SS-5	100	17	0	10	×	○														
11		3.66		TILL - Grey Clayey Silt, trace Sand, Moist, Firm																					
12		4.0																							
13		4.5																							
14		5.0			SS-6	100	25	0	7	×	○														Vapour Readings Refer to Measurements Made with RAE Systems miniRAE 3000
15		5.18		END OF BOREHOLE																					
16		5.5																							
17		6.0																							

BOREHOLE LOG ENVIRO 11211226-01-FIG-20-05-01, GINT LOGS, 540 KING COBOURG, EW/GPJ GEOLOGIC.GDT 4/5/20



**BOREHOLE No.:** BH-4  
**ELEVATION:** Existing Grade

**BOREHOLE REPORT**

Page: 1 of 1

**CLIENT:** Sunnyside Village Inc.  
**PROJECT:** 540 King Street East, Cobourg, Ontario  
**LOGGED BY:** E. Wierdsma **DATE:** 6 April 2020  
**DRILLING COMPANY:** GET Drilling Ltd. **METHOD:** Solid Stem Augers and Split Spoons  
**NOTES:**

**LEGEND**

- ☒ SS - SPLIT SPOON
- ▨ AS - AUGER SAMPLE
- ▩ ST - SHELBY TUBE
- ▬ CS - CORE SAMPLE
- ▼ - WATER LEVEL

Depth	m Below Existing Grade		Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Vapours ppm	Penetration Index N	Shear test (Cu) Sensitivity (S)										COMMENTS		
	ft	m								10	20	30	40	50	60	70	80	90				
		0.0		GROUND SURFACE																		
		0.20		TOPSOIL (200mm)																		
1		0.20		SILTY SAND - Light Brown Silty Sand, Moist, Very Loose	SS-1	60	26	0	3	×	○											
2	0.5																					
3		0.76		Wet																		
4		1.22		Grey, Loose	SS-2	70	22	0	9	×	○											
5	1.5																					
6		1.52		TILL - Brown Clayey Silt, trace Sand and Gravel, Mottled, Moist, Stiff	SS-3	90	20	0	12	×	○											
7	2.0																					
8		2.29		Grading Grey, Very Stiff at 2.3 m	SS-4	90	20	0	26		○	×										
9	2.5																					
10	3.0																					
11					SS-5	100	13	0	29		○	×										
12	3.5																					
13	4.0																					
14	4.5																					
15		4.57		Grading Wet, Stiff at 4.6 m	SS-6	100	12	0	14		○	×										
16	5.0																					
17		5.18		END OF BOREHOLE																		
18	5.5																					
19	6.0																					

BOREHOLE LOG ENVIRO 11211226-01-FIG-20-05-01, GINT LOGS, 540 KING COBOURG, EW/GPJ GEOLOGIC.GDT 4/5/20

Groundwater First Encountered at 0.8m  
 Water up to 1.1m Upon Completion  
 Borehole open to 1.2m Upon Completion

Vapour Readings Refer to Measurements Made with RAE Systems miniRAE 3000



**BOREHOLE No.:** BH-5  
**ELEVATION:** Existing Grade

**BOREHOLE REPORT**

Page: 1 of 1

CLIENT: Sunnyside Village Inc.

PROJECT: 540 King Street East, Cobourg, Ontario

LOGGED BY: E. Wierdsma DATE: 6 April 2020

DRILLING COMPANY: GET Drilling Ltd. METHOD: Solid Stem Augers and Split Spoons

NOTES:

**LEGEND**

- ☒ SS - SPLIT SPOON
- ▨ AS - AUGER SAMPLE
- ▩ ST - SHELBY TUBE
- ▬ CS - CORE SAMPLE
- ▼ - WATER LEVEL

BOREHOLE LOG ENVIRO 11211226-01-FIG-20-05-01, GINT LOGS, 540 KING COBOURG, EW/GPJ GEOLOGIC.GDT 4/5/20

Depth	m Below Existing Grade		Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Vapours ppm	Penetration Index N	Shear test (Cu) Sensitivity (S)										COMMENTS			
	ft	m								10	20	30	40	50	60	70	80	90					
		0.0		GROUND SURFACE																			
				TOPSOIL (250mm)																			
1		0.25		SILTY SAND - Light Brown Silty Sand, Moist, Very Loose	SS-1	50	33	0	3	×													
				Wet																			
2	0.5	0.61																					
				TILL - Brown Clayey Silt, trace Sand and Gravel, Mottled, Moist, Firm	SS-2	100	24	0	8	×													
3	1.0	0.76																					
				Brown, No Mottling, Very Stiff																			
5	1.5	1.52			SS-3	100	25	0	20														
6	2.0																						
8	2.5				SS-4	100	22	0	18														
9	3.0																						
10	3.05			Grey, with Sand and Gravel	SS-5	100	14	0	26														
11	3.5																						
12	4.0																						
15	4.5	4.57		Grading Stiff at 4.6 m																			
16	5.0				SS-6	100	11	0	11														
17	5.18			END OF BOREHOLE																			
18	5.5																						
19	6.0																						

Water up to 0.3m Upon Completion  
 Groundwater First Encountered at 0.6m

Vapour Readings Refer to Measurements Made with RAE Systems miniRAE 3000



**BOREHOLE No.:** BH-6  
**ELEVATION:** Existing Grade

**BOREHOLE REPORT**

Page: 1 of 1

**CLIENT:** Sunnyside Village Inc.

**PROJECT:** 540 King Street East, Cobourg, Ontario

**LOGGED BY:** E. Wierdsma **DATE:** 6 April 2020

**DRILLING COMPANY:** GET Drilling Ltd. **METHOD:** Solid Stem Augers and Split Spoons

**NOTES:**

**LEGEND**

- ☒ SS - SPLIT SPOON
- ▨ AS - AUGER SAMPLE
- ▩ ST - SHELBY TUBE
- ▩ CS - CORE SAMPLE
- ▼ - WATER LEVEL

BOREHOLE LOG ENVIRO 11211226-01-FIG-20-05-01, GINT LOGS, 540 KING COBOURG, EW/GPJ GEOLOGIC.GDT 4/5/20

Depth	m Below Existing Grade		Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Vapours ppm	Penetration Index N	Shear test (Cu) Sensitivity (S)										Field / Lab	COMMENTS
	ft	m								10	20	30	40	50	60	70	80	90			
	0.0			GROUND SURFACE																	
		0.25		TOPSOIL (250mm)																	
1				SILTY SAND - Light Brown Silty Sand, Wet, Very Loose	SS-1	95	22	0	2	×	○										Water Level - 0.02m on 4/21/2020
2	0.5																				
3		0.76		TILL - Brown Clayey Silt, trace Sand, Mottled, Moist, Stiff	SS-2	100	38	0	11	×	○										
4	1.0																				
5	1.5																				
6		1.71		Grading Very Stiff at 1.7 m	SS-3	100	19	0	22	○	×										
7	2.0																				
8		2.29		Grey, With Sand and Gravel	SS-4	100	9	0	25	○	×										
9	2.5																				
10		3.05		Grading Stiff at 3.0 m	SS-5	100	9	0	13	○	×										
11	3.5																				
12	4.0																				
13		4.27		Wet																	
14	4.5																				
15		4.57		Grey Silty Sand with Clay and Gravel, Moist, Very Dense	SS-6	60	7	0	100+	○											Groundwater First Encountered at 4.3m 51 mm Diameter Monitoring Well Installed to 4.6 m Vapour Readings Refer to Measurements Made with RAE Systems miniRAE 3000
16	5.0	5.03		END OF BOREHOLE																	
17																					
18	5.5																				
19																					
	6.0																				







**BOREHOLE No.:** BH-8

**ELEVATION:** Existing Grade

**BOREHOLE REPORT**

Page: 1 of 1

CLIENT: Sunnyside Village Inc.

PROJECT: 540 King Street East, Cobourg, Ontario

LOGGED BY: E. Wierdsma DATE: 7 April 2020

DRILLING COMPANY: GET Drilling Ltd. METHOD: Solid Stem Augers and Split Spoons

NOTES:

**LEGEND**

- ☒ SS - SPLIT SPOON
- ▨ AS - AUGER SAMPLE
- ▩ ST - SHELBY TUBE
- ▬ CS - CORE SAMPLE
- ▼ - WATER LEVEL

BOREHOLE LOG ENVIRO 11211226-01-FIG-20-05-01, GINT LOGS, 540 KING COBOURG, EW/GPJ GEOLOGIC.GDT 4/5/20

Depth	m Below Existing Grade		Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery	Moisture Content	Vapours	Penetration Index	Shear test (Cu)		Sensitivity (S)		Water content (%)		Atterberg limits (%)		"N" Value (blows / 12 in.-30 cm)	RQD CONE	COMMENTS
	ft	m								w <sub>p</sub>	w <sub>L</sub>	Field	Lab	Field	Lab	Field	Lab			
		0.0		GROUND SURFACE		%	%	ppm	N	10	20	30	40	50	60	70	80	90		
		0.20		TOPSOIL (200mm)																
1		0.20		SILTY SAND - Light Brown Silty Sand, Moist, Very Loose	SS-1	30	29	0	4	×	○									
2		0.5																		
3		1.0																		
4		1.0			SS-2	0		0	10	×										
5		1.37		Wet																
5		1.52		TILL - Brown Clayey Silt, trace Sand, Moist, Firm	SS-3	100	22	0	6	×	○									
6		1.52																		
7		2.0			AS-4		31	0			○									
8		2.5																		
9		3.0																		
10		3.05		Grey	AS-5		25	0			○									
11		3.5																		
12		4.0																		
13		4.5																		
15		4.57		END OF BOREHOLE	AS-6		16	0			○									
16		5.0																		
17		5.5																		
18		5.5																		
19		6.0																		

Borehole open to 1.8m Upon Completion  
Water up to 1.8m Upon Completion

Vapour Readings Refer to Measurements Made with RAE Systems miniRAE 3000



**BOREHOLE No.:** BH-9  
**ELEVATION:** Existing Grade

**BOREHOLE REPORT**

Page: 1 of 1

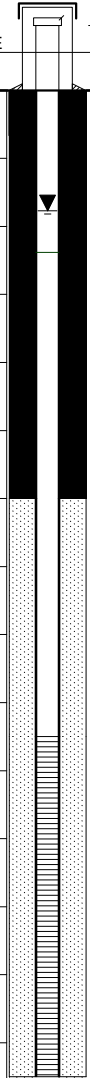
**CLIENT:** Sunnyside Village Inc.  
**PROJECT:** 540 King Street East, Cobourg, Ontario  
**LOGGED BY:** E. Wierdsma **DATE:** 7 April 2020  
**DRILLING COMPANY:** GET Drilling Ltd. **METHOD:** Solid Stem Augers and Split Spoons  
**NOTES:**

**LEGEND**

- ☒ SS - SPLIT SPOON
- ▨ AS - AUGER SAMPLE
- ▧ ST - SHELBY TUBE
- ▩ CS - CORE SAMPLE
- ▼ - WATER LEVEL

BOREHOLE LOG ENVIRO 11211226-01-FIG-20-05-01, GINT LOGS, 540 KING COBOURG, EW/GPJ GEOLOGIC.GDT 4/5/20

Depth	m Below Existing Grade		Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery	Moisture Content	Vapours	Penetration Index	Shear test (Cu) Sensitivity (S)		Water content (%)		Atterberg limits (%)		"N" Value (blows / 12 in.-30 cm)	RQD CONE	COMMENTS	
	ft	m								w <sub>p</sub>	w <sub>L</sub>	U <sub>c</sub>	U <sub>L</sub>	Field	Lab				
		0.0		GROUND SURFACE		%	%	ppm	N	10	20	30	40	50	60	70	80	90	
		0.20		TOPSOIL (200mm)	SS-1A	75	25	0	3		○								
1		0.5		SILTY SAND - Light Brown Silty Sand, Moist, Very Loose	SS-1B		23	0			○								
3		0.91		Grading Compact at 0.9 m	SS-2	0		0	13		×								
5		1.52		Wet															
6		1.83		Grey, Moist, Loose	SS-3	100	20	0	8		×	○							
8		2.44		Wet, Compact	SS-4	100	18	0	11		×	○							
9		2.74		TILL - Grey Clayey Silt, trace Sand, Moist, Very Stiff															
11		3.5			SS-5	100	22	0	17		×	○							
13		3.96		Wet, Stiff															
16		5.0			SS-6	100	20	0	10		×	○							
17		5.18		END OF BOREHOLE															



Water Level - 0.54m on 4/21/2020

Water and cave-in up to 1.8m Upon Completion

Groundwater First Encountered at 2.4m

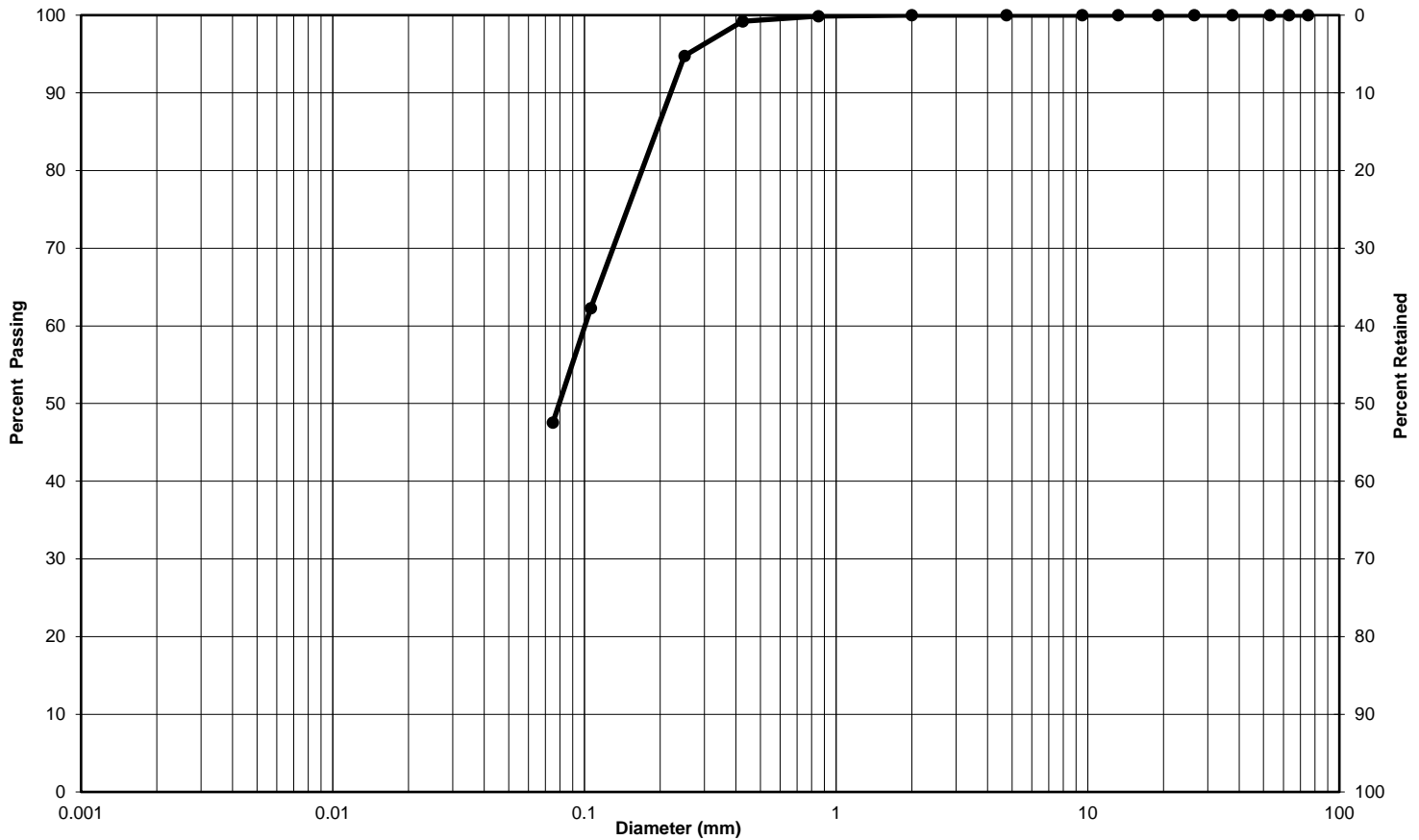
51 mm Diameter Monitoring Well Installed to 4.4 m Vapour Readings Refer to Measurements Made with RAE Systems miniRAE 3000





Particle-Size Analysis of Soils (Geotechnical)  
(USCS) (ASTM D422)

<b>Client:</b>	Sunnyside Village Inc.	<b>Lab no.:</b>	SS-20-19
<b>Project/Site:</b>	540 King Street East, Cobourg	<b>Project no.:</b>	11211226-01
<b>Borehole no.:</b>	BH-1	<b>Sample no.:</b>	SS-2
<b>Depth:</b>	2.5-4.5'	<b>Enclosure:</b>	F-11



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Unified Soil Classification System					

Soil Description	Gravel	Sand	Clay & Silt
	0	52	48

**Remarks:**  
 \_\_\_\_\_  
 \_\_\_\_\_

<b>Performed by:</b>	Josh Sullivan	<b>Date:</b>	April 13, 2020
<b>Verified by:</b>	Joe Sullivan	<b>Date:</b>	April 21, 2020





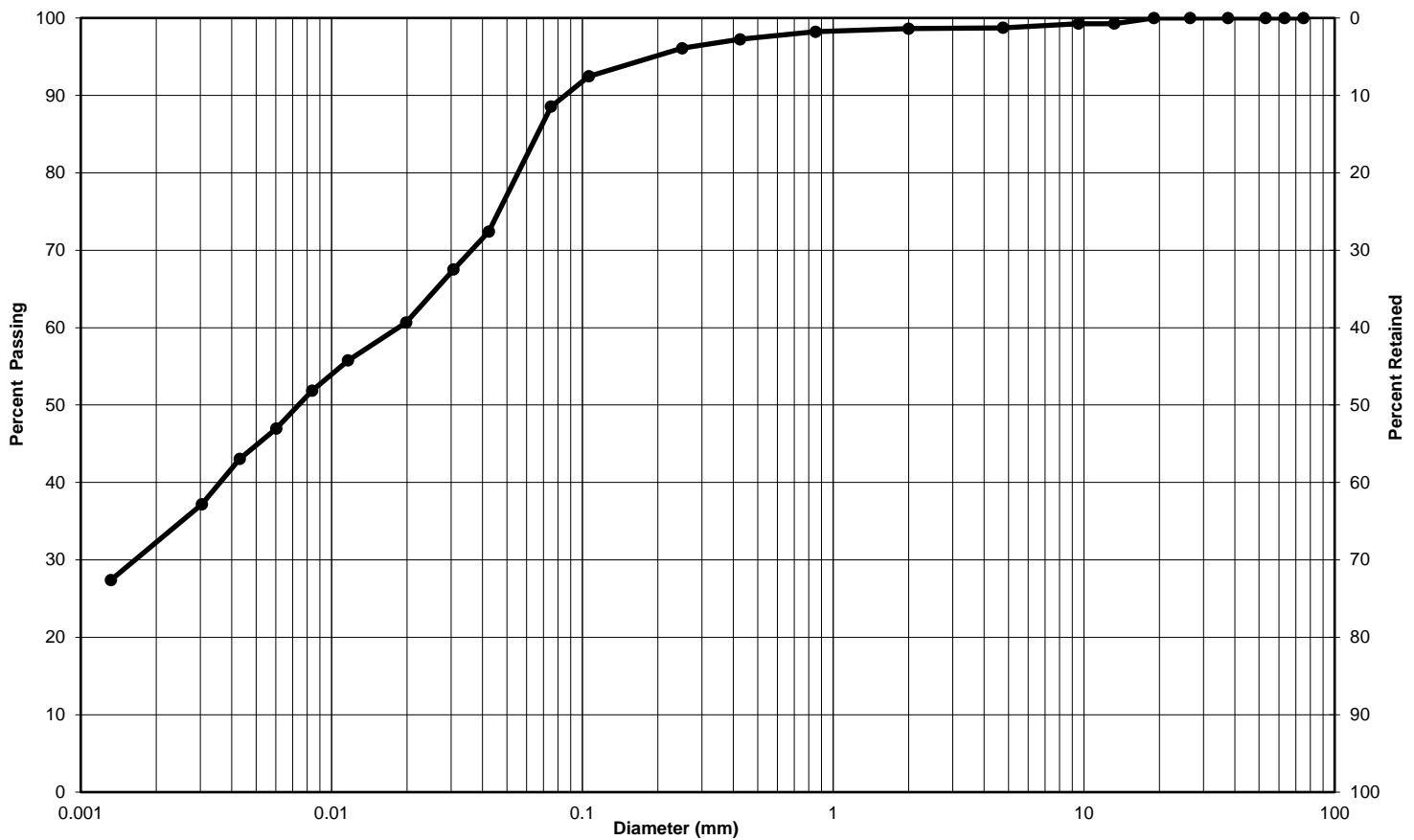


Particle-Size Analysis of Soils (Geotechnical)  
(USCS) (ASTM D422)

**Client:** Sunnyside Village Inc. **Lab no.:** SS-20.19

**Project/Site:** 540 King Street East, Cobourg **Project no.:** 11211226-01

**Borehole no.:** BH-7 **Sample no.:** SS-3  
**Depth:** 5-7' **Enclosure:** F-13



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Unified Soil Classification System					

Soil Description	Gravel	Sand	Clay & Silt
	1	10	89

**Remarks:**  
\_\_\_\_\_  
\_\_\_\_\_

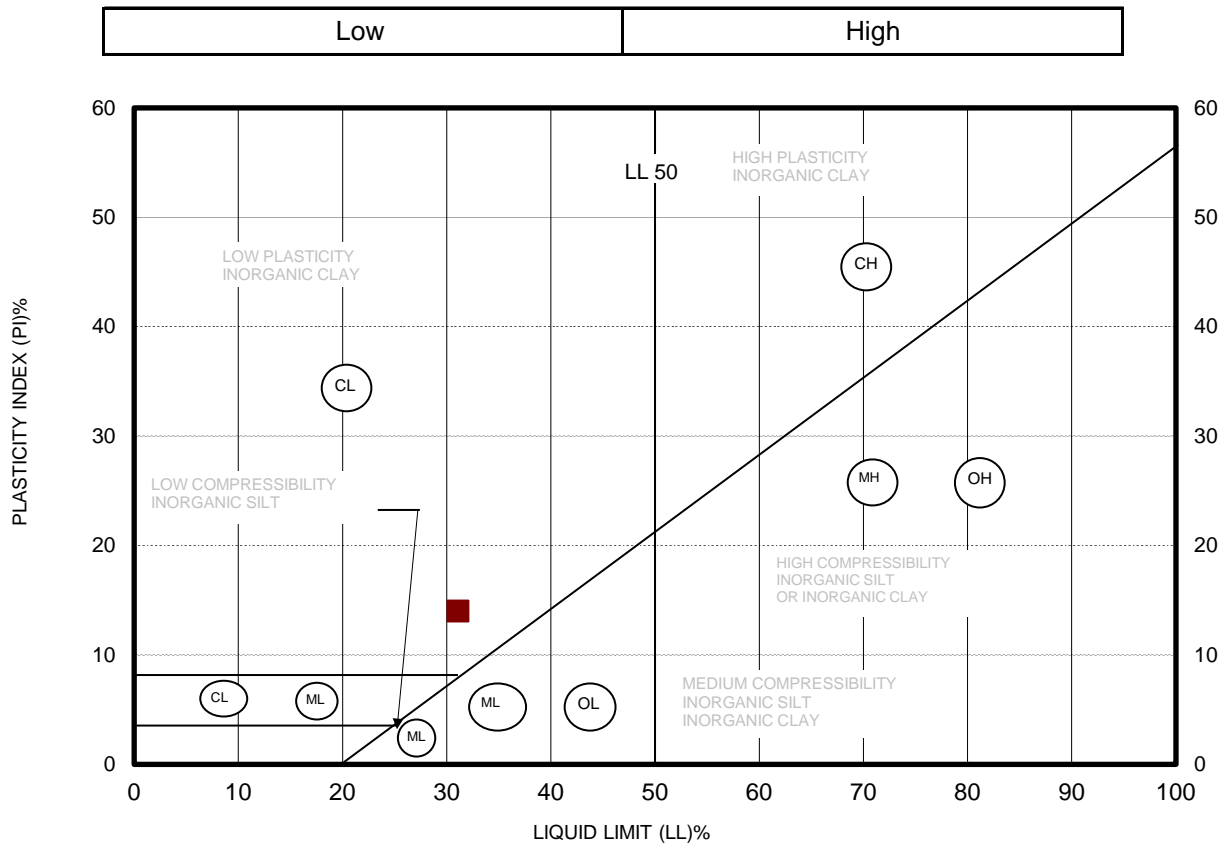
**Performed by:** Josh Sullivan **Date:** April 15, 2020

**Verified by:** Joe Sullivan *Joe Sullivan* **Date:** April 21, 2020



### PLASTICITY CHART

Project Name: 540 King Street East, Cobourg Project No.: 11211226-01  
 Client: Sunnyside Village Inc. Depth: 5-7'  
 Borehole No.: BH-7 Sample No.: SS-3



Symbol	Borehole	Sample	Depth	Sample Results	Value
■	BH-7	SS-3	7-9'	Plasticity Index (%)	14
				Liquid Limit (%)	31

Performed By: Josh Sullivan Date: April 15, 2020

Verified By: Joe Sullivan *Joe Sullivan* Date: April 21, 2020

# Appendix G

## Certificates of Chemical Analysis

C.O.C.: G88326

REPORT No. B20-09799 (i)

**Report To:**

**GHD Limited**  
 455 Phillip Street,  
 Waterloo Ontario N2L 3X2 Canada

**Attention:** Eric Wierdsma

**Caduceon Environmental Laboratories**

110 West Beaver Creek Rd Unit 14  
 Richmond Hill ON L4B 1J9

Tel: 289-475-5442

Fax: 289-562-1963

DATE RECEIVED: 15-Apr-20

JOB/PROJECT NO.: 540 King St. E/11211226-01

DATE REPORTED: 21-Apr-20

P.O. NUMBER: 73519457

SAMPLE MATRIX: Soil

WATERWORKS NO.

Parameter	Qty	Site Analyzed	Analyst Initials	Date Analyzed	Lab Method	Reference Method
pH	2	Richmond Hill	HAZ	15-Apr-20	A-pH-02 (rh)	MOEE3530
Chromium (VI)	2	Holly Lane	LMG	20-Apr-20	D-CRVI-02 (o)	EPA7196A
Mercury	2	Holly Lane	PBK	17-Apr-20	D-HG-01 (o)	EPA 7471A
Boron - HWS	2	Holly Lane	AHM	17-Apr-20	D-HWE s	MOE3470
Metals - ICP-OES	2	Holly Lane	AHM	17-Apr-20	D-ICP-02 (o)	EPA 6010
Metals - ICP-MS	2	Holly Lane	TPR	17-Apr-20	D-ICPMS-01 (o)	EPA 6020

µg/g = micrograms per gram (parts per million) and is equal to mg/Kg

F1 C6-C10 hydrocarbons in µg/g, (F1-btex if requested)

F2 C10-C16 hydrocarbons in µg/g, (F2-naph if requested)

F3 C16-C34 hydrocarbons in µg/g, (F3-pah if requested)

F4 C34-C50 hydrocarbons in µg/g

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

Any deviations from the method are noted and reported for any particular sample.

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

nC10, nC16 and nC34 response factors within 10% of each other:

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

Linearity is within 15%:

All results expressed on a dry weight basis.

Unless otherwise noted all chromatograms returned to baseline by the retention time of nC50.

Unless otherwise noted all extraction, analysis, QC requirements and limits for holding time were met. If analyzed for F4 and F4G they are not to be summed but the greater of the two numbers are to be used in application to the CWS PHC QC will be made available upon request.

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
 Tbl. 2 - RPI Soil - Table 2 - Res./Parkland/Institutional Soil Std



Christine Burke  
 Lab Manager

R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an \*

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

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Fax: 289-562-1963

DATE RECEIVED: 15-Apr-20

JOB/PROJECT NO.: 540 King St. E/11211226-01

DATE REPORTED: 21-Apr-20

P.O. NUMBER: 73519457

SAMPLE MATRIX: Soil

WATERWORKS NO.

Parameter	Client I.D.		BH-4 SS-2	BH-6 SS-4			O. Reg. 153	
	Sample I.D.	Date Collected	B20-09799-1	B20-09799-2			Tbl. 2 - RPI	Soil
	Units	R.L.	07-Apr-20	07-Apr-20				
pH @25°C	pH Units		7.57	7.85				
Antimony	µg/g	0.5	< 0.5	< 0.5			7.5	
Arsenic	µg/g	0.5	0.8	1.2			18	
Barium	µg/g	1	33	83			390	
Beryllium	µg/g	0.2	0.2	0.2			4	
Boron	µg/g	0.5	5.1	8.3			120	
Boron (HWS)	µg/g	0.02	< 0.02	0.16			1.5	
Cadmium	µg/g	0.5	< 0.5	< 0.5			1.2	
Chromium	µg/g	1	9	14			160	
Chromium (VI)	µg/g	0.2	< 0.2	< 0.2			8	
Cobalt	µg/g	1	2	4			22	
Copper	µg/g	1	3	8			140	
Lead	µg/g	5	< 5	< 5			120	
Mercury	µg/g	0.005	< 0.005	< 0.005			0.27	
Molybdenum	µg/g	1	< 1	< 1			6.9	
Nickel	µg/g	1	4	9			100	
Selenium	µg/g	0.5	< 0.5	< 0.5			2.4	
Silver	µg/g	0.2	< 0.2	< 0.2			20	
Thallium	µg/g	0.1	< 0.1	< 0.1			1	
Uranium	µg/g	0.1	0.4	0.6			23	
Vanadium	µg/g	1	13	22			86	
Zinc	µg/g	3	12	26			340	

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
 Tbl. 2 - RPI Soil - Table 2 - Res./Parkland/Institutional Soil Std



R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an \*

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Christine Burke  
 Lab Manager

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**Attention:** Eric Wierdsma

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Richmond Hill ON L4B 1J9

Tel: 289-475-5442

Fax: 289-562-1963

DATE RECEIVED: 15-Apr-20

DATE REPORTED: 21-Apr-20

SAMPLE MATRIX: Soil

JOB/PROJECT NO.: 540 King St. E/11211226-01

P.O. NUMBER: 73519457

WATERWORKS NO.

**Summary of Exceedances**

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
Tbl. 2 - RPI Soil - Table 2 - Res./Parkland/Institutional Soil Std



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Christine Burke  
Lab Manager

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REPORT No. B20-09799 (ii)

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 Waterloo Ontario N2L 3X2 Canada

**Attention:** Eric Wierdsma

**Caduceon Environmental Laboratories**

110 West Beaver Creek Rd Unit 14  
 Richmond Hill ON L4B 1J9  
 Tel: 289-475-5442  
 Fax: 289-562-1963

DATE RECEIVED: 15-Apr-20

JOB/PROJECT NO.: 540 King St. E/11211226-01

DATE REPORTED: 21-Apr-20

P.O. NUMBER: 73519457

SAMPLE MATRIX: Soil

WATERWORKS NO.

Parameter	Qty	Site Analyzed	Analyst Initials	Date Analyzed	Lab Method	Reference Method
% Moisture	2	Richmond Hill	FAL	15-Apr-20	A-% moisture RH	
PHC(F2-F4)	2	Kingston	KPR	16-Apr-20	C-PHC-S-001 (k)	CWS Tier 1
VOC's	2	Richmond Hill	FAL	15-Apr-20	C-VOC-02 (rh)	EPA 8260
PHC(F1)	2	Richmond Hill	FAL	15-Apr-20	C-VPHS-01 (rh)	CWS Tier 1

µg/g = micrograms per gram (parts per million) and is equal to mg/Kg

F1 C6-C10 hydrocarbons in µg/g, (F1-btex if requested)

F2 C10-C16 hydrocarbons in µg/g, (F2-naph if requested)

F3 C16-C34 hydrocarbons in µg/g, (F3-pah if requested)

F4 C34-C50 hydrocarbons in µg/g

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

Any deviations from the method are noted and reported for any particular sample.

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

nC10, nC16 and nC34 response factors within 10% of each other:

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

Linearity is within 15%:

All results expressed on a dry weight basis.

Unless otherwise noted all chromatograms returned to baseline by the retention time of nC50.

Unless otherwise noted all extraction, analysis, QC requirements and limits for holding time were met. If analyzed for F4 and F4G they are not to be summed but the greater of the two numbers are to be used in application to the CWS PHC QC will be made available upon request.

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 Lab Manager

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 Richmond Hill ON L4B 1J9

Tel: 289-475-5442

Fax: 289-562-1963

DATE RECEIVED: 15-Apr-20

JOB/PROJECT NO.: 540 King St. E/11211226-01

DATE REPORTED: 21-Apr-20

P.O. NUMBER: 73519457

SAMPLE MATRIX: Soil

WATERWORKS NO.

Parameter	Client I.D.		BH-4 SS-2	BH-6 SS-4	O. Reg. 153	
	Sample I.D.	Date Collected	B20-09799-1	B20-09799-2	Tbl. 2 - RPI	Soil
	Units	R.L.	07-Apr-20	07-Apr-20		
Acetone	µg/g	0.5	< 0.5	< 0.5	16	
Benzene	µg/g	0.02	< 0.02	< 0.02	0.21	
Bromodichloromethane	µg/g	0.02	< 0.02	< 0.02	1.5	
Bromoform	µg/g	0.02	< 0.02	< 0.02	0.27	
Bromomethane	µg/g	0.05	< 0.05	< 0.05	0.05	
Carbon Tetrachloride	µg/g	0.05	< 0.05	< 0.05	0.05	
Monochlorobenzene (Chlorobenzene)	µg/g	0.02	< 0.02	< 0.02	2.4	
Chloroform	µg/g	0.02	< 0.02	< 0.02	0.05	
Dibromochloromethane	µg/g	0.02	< 0.02	< 0.02	2.3	
Dichlorobenzene, 1,2-	µg/g	0.05	< 0.05	< 0.05	1.2	
Dichlorobenzene, 1,3-	µg/g	0.05	< 0.05	< 0.05	4.8	
Dichlorobenzene, 1,4-	µg/g	0.05	< 0.05	< 0.05	0.083	
Dichlorodifluoromethane	µg/g	0.05	< 0.05	< 0.05	16	
Dichloroethane, 1,1-	µg/g	0.02	< 0.02	< 0.02	0.47	
Dichloroethane, 1,2-	µg/g	0.02	< 0.02	< 0.02	0.05	
Dichloroethylene, 1,1-	µg/g	0.02	< 0.02	< 0.02	0.05	
Dichloroethene, cis-1,2-	µg/g	0.02	< 0.02	< 0.02	1.9	
Dichloroethene, trans-1,2-	µg/g	0.02	< 0.02	< 0.02	0.084	
Dichloropropane, 1,2-	µg/g	0.02	< 0.02	< 0.02	0.050	
Dichloropropene, cis-1,3-	µg/g	0.02	< 0.02	< 0.02		
Dichloropropene, trans-1,3-	µg/g	0.02	< 0.02	< 0.02		

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
 Tbl. 2 - RPI Soil - Table 2 - Res./Parkland/Institutional Soil Std



Christine Burke  
 Lab Manager

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 Richmond Hill ON L4B 1J9

Tel: 289-475-5442

Fax: 289-562-1963

DATE RECEIVED: 15-Apr-20

JOB/PROJECT NO.: 540 King St. E/11211226-01

DATE REPORTED: 21-Apr-20

P.O. NUMBER: 73519457

SAMPLE MATRIX: Soil

WATERWORKS NO.

Parameter	Client I.D.		BH-4 SS-2	BH-6 SS-4	O. Reg. 153	Tbl. 2 - RPI	Soil
	Sample I.D.	Date Collected	B20-09799-1	B20-09799-2			
	Units	R.L.	07-Apr-20	07-Apr-20			
Dichloropropene 1,3-cis+trans	µg/g	0.02	< 0.02	< 0.02			0.050
Ethylbenzene	µg/g	0.05	< 0.05	< 0.05			1.1
Dibromoethane,1,2-(Ethylene Dibromide)	µg/g	0.02	< 0.02	< 0.02			0.05
Hexane	µg/g	0.02	< 0.02	< 0.02			2.8
Methyl Ethyl Ketone	µg/g	0.5	< 0.5	< 0.5			16
Methyl Isobutyl Ketone	µg/g	0.5	< 0.5	< 0.5			1.7
Methyl-t-butyl Ether	µg/g	0.05	< 0.05	< 0.05			0.75
Dichloromethane (Methylene Chloride)	µg/g	0.05	< 0.05	< 0.05			0.10
Styrene	µg/g	0.05	< 0.05	< 0.05			0.7
Tetrachloroethane,1,1,1,2-	µg/g	0.02	< 0.02	< 0.02			0.058
Tetrachloroethane,1,1,2,2-	µg/g	0.05	< 0.05	< 0.05			0.05
Tetrachloroethylene	µg/g	0.05	< 0.05	< 0.05			0.28
Toluene	µg/g	0.2	< 0.2	< 0.2			2.3
Trichloroethane,1,1,1-	µg/g	0.02	< 0.02	< 0.02			0.38
Trichloroethane,1,1,2-	µg/g	0.02	< 0.02	< 0.02			0.05
Trichloroethylene	µg/g	0.05	< 0.05	< 0.05			0.061
Trichlorofluoromethane	µg/g	0.02	< 0.02	< 0.02			4.0
Vinyl Chloride	µg/g	0.02	< 0.02	< 0.02			0.020
Xylene, m,p-	µg/g	0.03	< 0.03	< 0.03			
Xylene, o-	µg/g	0.03	< 0.03	< 0.03			

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
 Tbl. 2 - RPI Soil - Table 2 - Res./Parkland/Institutional Soil Std



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 Lab Manager

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**Caduceon Environmental Laboratories**

110 West Beaver Creek Rd Unit 14  
 Richmond Hill ON L4B 1J9

Tel: 289-475-5442

Fax: 289-562-1963

DATE RECEIVED: 15-Apr-20

JOB/PROJECT NO.: 540 King St. E/11211226-01

DATE REPORTED: 21-Apr-20

P.O. NUMBER: 73519457

SAMPLE MATRIX: Soil

WATERWORKS NO.

Parameter	Units	R.L.	Client I.D.	BH-4 SS-2	BH-6 SS-4	O. Reg. 153	
			Sample I.D.	B20-09799-1	B20-09799-2	Tbl. 2 - RPI Soil	
			Date Collected	07-Apr-20	07-Apr-20		
Xylene, m,p,o-	µg/g	0.03		< 0.03	< 0.03	3.1	
PHC F1 (C6-C10)	µg/g	10		< 10	< 10	55	
PHC F2 (>C10-C16)	µg/g	5		< 5	< 5	98	
PHC F3 (>C16-C34)	µg/g	10		< 10	14	300	
PHC F4 (>C34-C50)	µg/g	10		< 10	< 10	2800	
% moisture	%			16.2	10.6		

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
 Tbl. 2 - RPI Soil - Table 2 - Res./Parkland/Institutional Soil Std



Christine Burke  
 Lab Manager

R.L. = Reporting Limit

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

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C.O.C.: G88326

REPORT No. B20-09799 (ii)

**Report To:**

**GHD Limited**

455 Phillip Street,  
Waterloo Ontario N2L 3X2 Canada

**Attention:** Eric Wierdsma

**Caduceon Environmental Laboratories**

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Richmond Hill ON L4B 1J9

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Fax: 289-562-1963

DATE RECEIVED: 15-Apr-20

DATE REPORTED: 21-Apr-20

SAMPLE MATRIX: Soil

JOB/PROJECT NO.: 540 King St. E/11211226-01

P.O. NUMBER: 73519457

WATERWORKS NO.

**Summary of Exceedances**

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
Tbl. 2 - RPI Soil - Table 2 - Res./Parkland/Institutional Soil Std



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Christine Burke  
Lab Manager

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C.O.C.: G93825

REPORT No. B20-10663 (i)

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DATE RECEIVED: 23-Apr-20

JOB/PROJECT NO.: 540 King St. E/11211226-01

DATE REPORTED: 29-Apr-20

SAMPLE MATRIX: Groundwater

P.O. NUMBER: 73519457

WATERWORKS NO.

Parameter	Qty	Site Analyzed	Analyst Initials	Date Analyzed	Lab Method	Reference Method
Chromium (VI)	1	Holly Lane	LMG	24-Apr-20	D-CRVI-01 (o)	MOE E3056
Mercury	1	Holly Lane	PBK	28-Apr-20	D-HG-02 (o)	SM 3112 B
Metals - ICP-OES	1	Holly Lane	AHM	24-Apr-20	D-ICP-01 (o)	SM 3120
Metals - ICP-MS	1	Holly Lane	TPR	24-Apr-20	D-ICPMS-01 (o)	EPA 200.8

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
 Tbl. 2 - PGW - Table 2 - Potable Ground Water



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DATE REPORTED: 29-Apr-20

P.O. NUMBER: 73519457

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

Parameter	Units	R.L.	Client I.D. Sample I.D. Date Collected	BH - 6 B20-10663-1 21-Apr-20	O. Reg. 153	
					Tbl. 2 - PGW	
Antimony	µg/L	0.1	0.1		6	
Arsenic	µg/L	0.1	0.2		25	
Barium	µg/L	1	216		1000	
Beryllium	µg/L	0.1	< 0.1		4	
Boron	µg/L	5	58		5000	
Cadmium	µg/L	0.015	< 0.015		2.7	
Chromium	µg/L	2	< 2		50	
Chromium (VI)	µg/L	10	< 10 <sup>1</sup>		25	
Cobalt	µg/L	0.1	0.1		3.8	
Copper	µg/L	2	2		87	
Lead	µg/L	0.02	0.04		10	
Mercury	µg/L	0.02	< 0.02		0.29	
Molybdenum	µg/L	0.1	0.8		70	
Nickel	µg/L	0.2	0.7		100	
Selenium	µg/L	1	< 1		10	
Silver	µg/L	0.1	< 0.1		1.5	
Thallium	µg/L	0.05	< 0.05		2	
Uranium	µg/L	0.05	1.73		20	
Vanadium	µg/L	0.1	0.5		6.2	
Zinc	µg/L	5	< 5		1100	

1 Chromium (VI) result is based on total chromium

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
 Tbl. 2 - PGW - Table 2 - Potable Ground Water



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 Lab Manager

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SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: 540 King St. E/11211226-01

P.O. NUMBER: 73519457

WATERWORKS NO.

**Summary of Exceedances**

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
Tbl. 2 - PGW - Table 2 - Potable Ground Water



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Lab Manager

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DATE REPORTED: 29-Apr-20

P.O. NUMBER: 73519457

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

Parameter	Qty	Site Analyzed	Analyst Initials	Date Analyzed	Lab Method	Reference Method
PHC(F2-F4)	1	Kingston	KPR	28-Apr-20	C-PHC-W-001 (k)	MOE E3421
VOC's	1	Richmond Hill	JE	24-Apr-20	C-VOC-02 (rh)	EPA 8260
PHC(F1)	1	Richmond Hill	JE	24-Apr-20	C-VPHW-01 (rh)	MOE E3421

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
 Tbl. 2 - PGW - Table 2 - Potable Ground Water



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SAMPLE MATRIX: Groundwater

WATERWORKS NO.

Parameter	Client I.D.		BH - 6 B20-10663-1 21-Apr-20				O. Reg. 153	
	Sample I.D.	Date Collected					Tbl. 2 - PGW	
	Units	R.L.						
Acetone	µg/L	30	< 30				2700	
Benzene	µg/L	0.5	< 0.5				5	
Bromodichloromethane	µg/L	2	< 2				16	
Bromoform	µg/L	5	< 5				25	
Bromomethane	µg/L	0.5	< 0.5				0.89	
Carbon Tetrachloride	µg/L	0.2	< 0.2				0.79	
Monochlorobenzene (Chlorobenzene)	µg/L	0.5	< 0.5				30	
Chloroform	µg/L	1	< 1				2.4	
Dibromochloromethane	µg/L	2	< 2				25	
Dichlorobenzene, 1,2-	µg/L	0.5	< 0.5				3	
Dichlorobenzene, 1,3-	µg/L	0.5	< 0.5				59	
Dichlorobenzene, 1,4-	µg/L	0.5	< 0.5				1	
Dichlorodifluoromethane	µg/L	2	< 2				590	
Dichloroethane, 1,1-	µg/L	0.5	< 0.5				5	
Dichloroethane, 1,2-	µg/L	0.5	< 0.5				1.6	
Dichloroethylene, 1,1-	µg/L	0.5	< 0.5				1.6	
Dichloroethene, cis-1,2-	µg/L	0.5	< 0.5				1.6	
Dichloroethene, trans-1,2-	µg/L	0.5	< 0.5				1.6	
Dichloropropane, 1,2-	µg/L	0.5	< 0.5				5	
Dichloropropene, cis-1,3-	µg/L	0.5	< 0.5					
Dichloropropene, trans-1,3-	µg/L	0.5	< 0.5					

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
 Tbl. 2 - PGW - Table 2 - Potable Ground Water



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SAMPLE MATRIX: Groundwater

WATERWORKS NO.

Parameter	Client I.D. Sample I.D. Date Collected		BH - 6 B20-10663-1 21-Apr-20				O. Reg. 153 Tbl. 2 - PGW	
	Units	R.L.						
Dichloropropene 1,3-cis+trans	µg/L	0.5	< 0.5				0.5	
Ethylbenzene	µg/L	0.5	< 0.5				2.4	
Dibromoethane,1,2-(Ethylene Dibromide)	µg/L	0.2	< 0.2				0.2	
Hexane	µg/L	5	< 5				51	
Methyl Ethyl Ketone	µg/L	20	< 20				1800	
Methyl Isobutyl Ketone	µg/L	20	< 20				640	
Methyl-t-butyl Ether	µg/L	2	< 2				15	
Dichloromethane (Methylene Chloride)	µg/L	5	< 5				50	
Styrene	µg/L	0.5	< 0.5				5.4	
Tetrachloroethane,1,1,1,2-	µg/L	0.5	< 0.5				1.1	
Tetrachloroethane,1,1,2,2-	µg/L	0.5	< 0.5				1	
Tetrachloroethylene	µg/L	0.5	< 0.5				1.6	
Toluene	µg/L	0.5	< 0.5				24	
Trichloroethane,1,1,1-	µg/L	0.5	< 0.5				200	
Trichloroethane,1,1,2-	µg/L	0.5	< 0.5				4.7	
Trichloroethylene	µg/L	0.5	< 0.5				1.6	
Trichlorofluoromethane	µg/L	5	< 5				150	
Vinyl Chloride	µg/L	0.2	< 0.2				0.5	
Xylene, m,p-	µg/L	1.0	< 1.0					
Xylene, o-	µg/L	0.5	< 0.5					

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
 Tbl. 2 - PGW - Table 2 - Potable Ground Water



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WATERWORKS NO.

Parameter	Units	R.L.	Client I.D. Sample I.D. Date Collected	BH - 6 B20-10663-1 21-Apr-20	O. Reg. 153 Tbl. 2 - PGW	
Xylene, m,p,o-	µg/L	1.1	< 1.1		300	
PHC F1 (C6-C10)	µg/L	50	< 50		750	
PHC F2 (>C10-C16)	µg/L	50	< 50		150	
PHC F3 (>C16-C34)	µg/L	400	< 400		500	
PHC F4 (>C34-C50)	µg/L	400	< 400		500	

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
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WATERWORKS NO.

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## about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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