



# **Phase Two Environmental Site Assessment**

**Existing Residential Property, 46 Stevens  
Road, Bowmanville, Ontario**

Kaitlin Corporation

June 03, 2022

# 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 Kaitlin Corporation. (“the Client”) for land at the municipal address of 46 Stevens Road, Bowmanville, Ontario (herein referred to as “the Property”). The Property encompasses an area of 8.7 hectares (21.5 acres). The Property is a vacant lot formerly used for residential and agricultural purposes. The surrounding area can be generally described as residential.

The Phase One ESA identified the following potentially contaminating activity (PCA) which, in the opinion of GHD, resulted in an area of potential environmental concern (APEC) at the Property:

- Pesticides (including Herbicides, Fungicides, and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage, and Large-Scale Application (PCA #40). This PCA is identified for the property’s historical use as an orchard.

The Phase Two ESA was carried out to address the PCA identified in the Phase One ESA and included the exploration of the subsurface by advancing ten (10) test pits across the Property. Samples of the soil were collected from the test pits for chemical analysis.

Soil samples were selected and tested for a suite of metals and organochlorine pesticides (OCPs). 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 (coarse textured soil standards) for Residential / Parkland / Institutional (RPI) property use (Table 2 Standards). The soil results meet the MECP Table 2 Standards for RPI property use.

Based on our observations, the information collected and the proposed future land use, it is our professional opinion that there is a low level of concern from an environmental perspective and the Property is suitable for its proposed future residential use.

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\*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 Kaitlin Corporation (herein referred to as “the Client”) for land located at the municipal address of 46 Stevens Road, Bowmanville, Ontario (herein collectively referred to as “the Property”).

## 1.1 Site Description

The Property encompasses an area of 8.7 hectares (21.5 acres) and is a vacant lot formerly used for residential and agricultural purposes. The Property was previously serviced privately for water by a dug well, and sewage with a septic system.

## 1.2 Property Ownership

The Property has been owned by VAD Retail Limited since 2004. GHD’s Phase One ESA should be reviewed for further information regarding ownership.

## 1.3 Current and Proposed Future Uses

The Property is currently vacant and formerly supported a residential dwelling and agricultural fields. It is GHD’s understanding that the Property is to be developed to support a retirement community development. It is GHD’s understanding that the development will be municipally serviced for water and sewer.

## 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 (RPI) 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 will be referred to as “Table 2 Standards” within this report.

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* – Residential / Parkland / Institutional (RPI) or Industrial / Commercial / Community (ICC) Property use. The Property will be used for residential purposes. Analytical results will be compared with the RPI standards.
- *Restoration of Groundwater Quality* – Potable or non-potable. The property was privately serviced for water by a dug well and sewage with a septic system. It is GHD’s understanding that the future development will be municipally serviced for water and sewage. However, 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. Based on the soil testing results, the Property is a medium to fine textured soil Property. For purposes of this assessment, the analytical results will be compared with the more stringent coarse textured soil standards.

- *Shallow Soil Property* – Based on the subsurface excavation program, the overburden soils are more than two (2) metres in thickness. As such, the Property is not considered to be a shallow soil property.
- *Water Body* – Bowmanville Creek is identified on the lands adjacent to the Property. However, the creek is located over 30 m from the locations of the APECs. The specific standards relating to the protection of water bodies will therefore not be considered.
- *Environmentally Sensitive Areas* – The Property is not within an area of natural significance or environmentally sensitive areas. The specific standards relating to environmentally sensitive areas will not be considered.

Based upon this information, Table 2 Standards for coarse textured soils will be applied.

## 2. Background Information

### 2.1 Physical Setting

The Property is a vacant lot within a residential neighborhood and was formerly used for agricultural and residential purposes. The Property is bordered Stevens Road to the South. Surface water will flow in accordance with the local topography towards Bowmanville Creek. The Property is situated within the physiographic region known as the Iroquois Plain (Chapman and Putnam, 1984) and the surrounding terrain is comprised of shallow deposits of stratified clay. The underlying bedrock is typically limestone.

### 2.2 Past Investigations

A Phase One ESA for the Property was conducted by GHD in 2022 and is the basis of this Phase Two ESA. The Phase One ESA should be reviewed for further information. No other past investigations were provided or reviewed by GHD for the Property.

## 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). The Phase Two ESA is generally based upon O. Reg. 153/04 and the “CSA Z769-00, Phase II Environmental Site Assessment, re-affirmed 2004” document for conducting ESAs.

A field investigation was conducted by GHD to characterize the subsurface conditions and soil quality. The following scope of work was conducted during the Phase Two ESA:

1. Advanced, sampled and logged ten (10) test pits to depths ranging from 0.38 to 2.95 metres below ground surface (mbgs). Soil samples were collected from the topsoil and underlying stratigraphy.
2. Representative samples of the soil were subjected to chemical analyses. Soil samples were analyzed for organochlorine pesticides (OCPs) and a suite of metals.
3. Analyzed data obtained and presented the findings in this report with conclusions and recommendations. The analytical results were compared to the Table 2 Full Depth Generic Site Condition Standards in a Potable Ground Water Condition (RPI property use) (MECP, April 15, 2011, “Soil, Groundwater and Sediment Standards for use Under Part XV.1 of the *Environmental Protection Act*”) – coarse textured soils.

## 3.2 Media Investigated

Soil and groundwater conditions were investigated with a focus on the PCA which has resulted in an APEC as outlined in the Phase One ESA. The following PCA, in GHD's opinion, was identified as resulting in an APEC:

1. Pesticides (including Herbicides, Fungicides, and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage, and Large-Scale Application (PCA #40). This PCA is identified for the Property's historical use as an orchard.

The following field investigation activities were completed:

- Advancement of ten (10) test pits for soil sampling; and,
- Submission of samples to an accredited laboratory for analysis of representative soil samples.

The Phase Two investigation locations are presented on the **Test Pit Location Plan, Figure 6**.

## 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 ESA. The Property is situated in the physiographic region known as the Iroquois Plain (Chapman and Putnam, 1984) and the surrounding terrain is comprised of shallow deposits of stratified clay. Bedrock is expected to be comprised of limestone. Local groundwater flow direction is inferred to be towards the south-east.

Based on information reviewed, the Property has been historically used for agricultural purposes.

The Phase One ESA identified PCAs on the Property and within the Phase One Study Area. PCAs resulting in APECs were identified for potential presence of pesticides due to the Property's historical use as an orchard. An APEC was identified for this PCA. The soil contaminants of concern for the APEC are pesticides and metals.

## 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 provided in **Appendix E**.

## 3.5 Impediments

Excavation was not conducted within buried utility corridors. There were no other impediments to the sampling and analysis plan. The impediment was not significant as the investigation program was conducted within the identified APEC.

# 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 excavation was completed on May 26, 2022. The investigative tasks are described in detail in the following subsections:

- Advancement of test pits at select locations;
- Completion of field screening measurements;
- Collection of soil samples;

- Analytical soil testing;
- Residual soil management; and,
- Quality assurance and quality control measures.

Prior to the commencement of the subsurface investigation, GHD completed the appropriate public and private utility notifications.

## 4.2 Excavation

The subsurface exploration program consisted of the advancement of ten (10) test pits by Rusland's Contracting using a track-mounted excavator on May 26, 2022. The test pits were advanced in the locations illustrated on the **Test Pit Location Plan, Figure 6** and extended to depths ranging from 0.38 to 2.95 mbgs.

Topsoil was encountered at each test hole location. The topsoil ranged in thickness from 230 mm to 460 mm and averaged a 0.27 m thickness.

The silt layer was encountered below the topsoil layer in each of the test holes beginning at depths ranging from 0.23 to 0.46 mbgs and extended to the bottom of test pits TP-1, TP-2, TP-3, TP-9, and TP-10. The silt layer extended in depth from 0.38 to 0.97 mbgs. This soil was generally described as light to dark brown silt, with clay and containing trace sand and was noted to exist in a moist in-situ state.

The clayey silt and silty clay layers were encountered in TP-4, TP-5, TP-6, TP-7, and TP-8 below the silt layer beginning at depths ranging from 0.46 to 0.81 mbgs and extended to the terminal depth of each of these test holes. The clayey silt and silty clay appeared light brown in colour and was generally encountered in a moist in-situ state.

The soil was generally brown in colour with lower moisture content indicating that these soils are likely not saturated year-round. Soil moisture and groundwater levels at the Site will fluctuate seasonally and in response to climatic events.

Detailed logs are provided in **Appendix F** and provide a further overview of the subsurface conditions encountered during the drilling activities.

## 4.3 Soil Sampling

Based on the sampling plan, field observations, 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 excavator bucket.

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:

- TP-1, GS-1 – metals and OCPs;
- TP-2, GS-1 – metals and OCPs; and,
- TP-3, GS-1 – metals and OCPs.

## 4.4 Groundwater: Field Measurement of Water Quality

The existing dug well on the Property was measured for groundwater level. No light or dense non-aqueous phase liquids were observed.

## 4.5 Groundwater: Sampling

Groundwater was not identified as a potentially impacted media in the Phase One ESA.

## 4.6 Sediment: Sampling

Sediment sampling is not applicable.

## 4.7 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 analyses were completed for metals and pesticides. Copies of the Certificates of Analysis are provided in **Appendix G** of this report.

## 4.8 Quality Assurance and Quality Control Measures

The Quality Assurance and Quality Control (QA/QC) 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 QA/QC measures implemented by the laboratory were maintained throughout the investigation. There were no QA/QC issues.

# 5. Review and Evaluation

GHD completed the Phase Two ESA investigation activities to address the APEC 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 test holes were advanced generally consisted of surficial topsoil averaging 270 mm in thickness, over native silt material ranging to depths of 0.38 to 0.97 mbgs, underlain by native clayey silt and silty clay layers to depths ranging from 0.91 to 2.95 mbgs.

Bedrock was not encountered during excavation.

## 5.2 Groundwater: Flow Direction

Water levels obtained, observations of groundwater seepage within the test pits and local topography were utilized for interpretation of local groundwater flow direction. Based upon the data obtained, the local shallow groundwater flow is in a south-easterly direction.

## 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 grain size analysis, the native soil is classified as medium to fine textured silty clay or clayey silt material. For purposes of this assessment, the soil will be compared with the more stringent coarse textured Standards.

## 5.5 Soil Quality

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**. The quality of soil was assessed with analysis of metals and OCPs in three (3) samples. The results are summarized and compared with the MECP Table 2 Standards in **Table 1**. The results meet the MECP Table 2 Standards for coarse textured soils.

**Table 1** Summary of Metals in Soil

Parameter	Sample Identification			MECP Table 2 Standards
	TP-1, GS-1 (0 – 0.38 m) May 26/22	TP-2, GS-1 (0 – 0.51 m) May 26/22	TP-3, GS-1 (0 – 0.46 m) May 26/22	
Antimony	< 0.5	< 0.5	< 0.5	7.5
Arsenic	1.5	1.3	2.0	18
Barium	63	52	63	390
Beryllium	0.3	0.4	0.4	4
Boron	4.3	1.8	8.5	120
Boron (HWS)	< 0.02	0.03	0.06	1.5
Cadmium	< 0.5	< 0.5	< 0.5	1.2
Chromium	14	14	15	160
Chromium (VI)	< 0.2	< 0.2	< 0.2	8
Cobalt	5	5	5	22
Copper	9	5	8	140
Lead	< 5	< 5	8	120
Mercury	0.010	0.037	0.049	0.27
Molybdenum	< 1	< 1	< 1	6.9
Nickel	9	7	8	100
Selenium	0.5	0.6	0.7	2.4
Silver	< 0.2	< 0.2	< 0.2	20
Thallium	< 0.1	< 0.1	< 0.1	1
Uranium	0.4	0.5	0.5	23
Vanadium	23	23	24	86
Zinc	24	24	33	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). - = not analyzed, HWS = hot water soluble, NS = no standard  
 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 (coarse textured soils) – RPI property use.

Three (3) soil samples were submitted for the analysis of OCPs. The results are summarized and compared with the MECP Table 2 Standards in **Table 2**. The results meet the Table 2 Standards.

**Table 2** Summary of OCPs in Soil

Parameter	Sample Identification			MECP Table 2 Standards
	TP-1, GS-1 (0 – 0.38 m) May 26/22	TP-2, GS-1 (0 – 0.51 m) May 26/22	TP-3, GS-1 (0 – 0.46 m) May 26/22	
Aldrin	< 0.05	< 0.05	< 0.05	0.05
Chlordane Total (alpha+gamma)	< 0.05	< 0.05	< 0.05	0.05
DDD Total	< 0.05	< 0.05	< 0.05	0.05
DDE Total	< 0.05	< 0.05	< 0.05	0.05
DDT Total	< 0.05	< 0.05	< 0.05	0.078
Dieldrin	< 0.05	< 0.05	< 0.05	0.05
Lindane (Hexachlorocyclohexane, Gamma)	< 0.01	< 0.01	< 0.01	0.01
Endosulfan I/II	< 0.04	< 0.04	< 0.04	0.04
Endrin	< 0.04	< 0.04	< 0.04	0.04
Heptachlor	< 0.05	< 0.05	< 0.05	0.05
Heptachlor Epoxide	< 0.05	< 0.05	< 0.05	0.05
Hexachlorobenzene	< 0.01	< 0.01	< 0.01	0.01
Hexachlorobutadiene	< 0.01	< 0.01	< 0.01	0.01
Hexachloroethane	< 0.01	< 0.01	< 0.01	0.01
Methoxychlor	< 0.05	< 0.05	< 0.05	0.05
<p><b>Notes:</b> Analytical results presented as µg/g (parts per million) unless otherwise noted. “&lt;” indicates parameter is below the laboratory reporting limit (i.e. non-detect). - = not analyzed, NS = no standard</p> <p>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 (coarse textured soils) – RPI property use.</p>				

## 5.6 Groundwater Quality

Groundwater was not identified as a potentially impacted media in the Phase One ESA.

## 5.7 Sediment Quality

Sediment was not identified as a potentially impacted media in the Phase One ESA.

## 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 QA/QC measures implemented by the laboratory were maintained throughout the investigation. There were no QA/QC issues, and it is our opinion that the analytical results generated during this ESA can be relied upon.

## 5.9 Phase Two Conceptual Site Model

The APEC related to the PCA identified in the Phase One ESA is illustrated on **Figures 4** and **5**. Based on the investigative work completed, a Phase Two conceptual site model has been prepared and is summarized on **Figure 7** showing sampling locations and summary of analytical results.

The Phase Two ESA consisted of the advancement of ten (10) test pits and the collection of soil samples. The soil contaminants of concern included metals and OCPs.

Based on analytical testing completed, the soil results meet the Table 2 Standards for the parameters tested including metals and OCPs.

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

# 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:

- The soil tested from the locations selected meets the MECP Table 2 RPI Standards for parameters tested including metals and OCPs.

Based on our observations and the information collected, it is our professional opinion that there is a low level of concern from an environmental perspective at the Property.

It is our professional opinion that the Property is suitable for its proposed future use and that no further testing or field investigation 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. Wesley Moore, 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 the undersigned or our office.

Sincerely,



Wesley Moore, P.Eng.  
Project Manager



Steve Gagne, H.B.Sc.  
Project Director, Associate

## 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, March 4, 2022. Phase One Environmental Site Assessment Report, Proposed Commercial Development, Speers Boulevard, Amherstview, 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

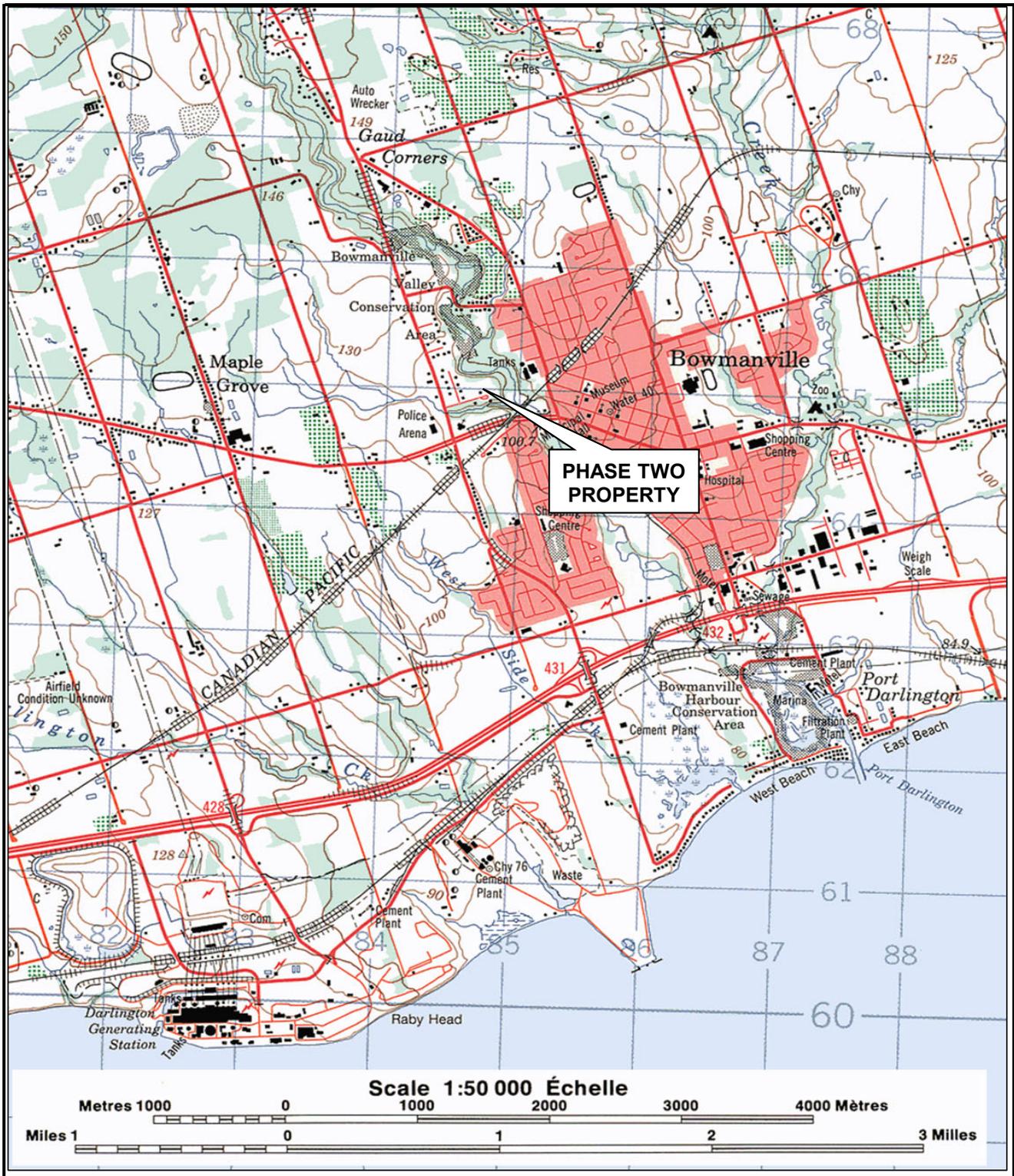
This report is intended solely for Kaitlin Corporation in assessing the environmental concerns of land identified at the municipal address of 46 Stevens Road in Bowmanville, Ontario and is prohibited for use by others without GHD's prior written consent. This report is considered GHD's professional work 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 locations may differ both horizontally and vertically from those encountered at the test 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 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.

# Figures



Base map compiled from Energy, Mines and Resources Canada Map 30 M/15 published 1994. Information current as of 1989.

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

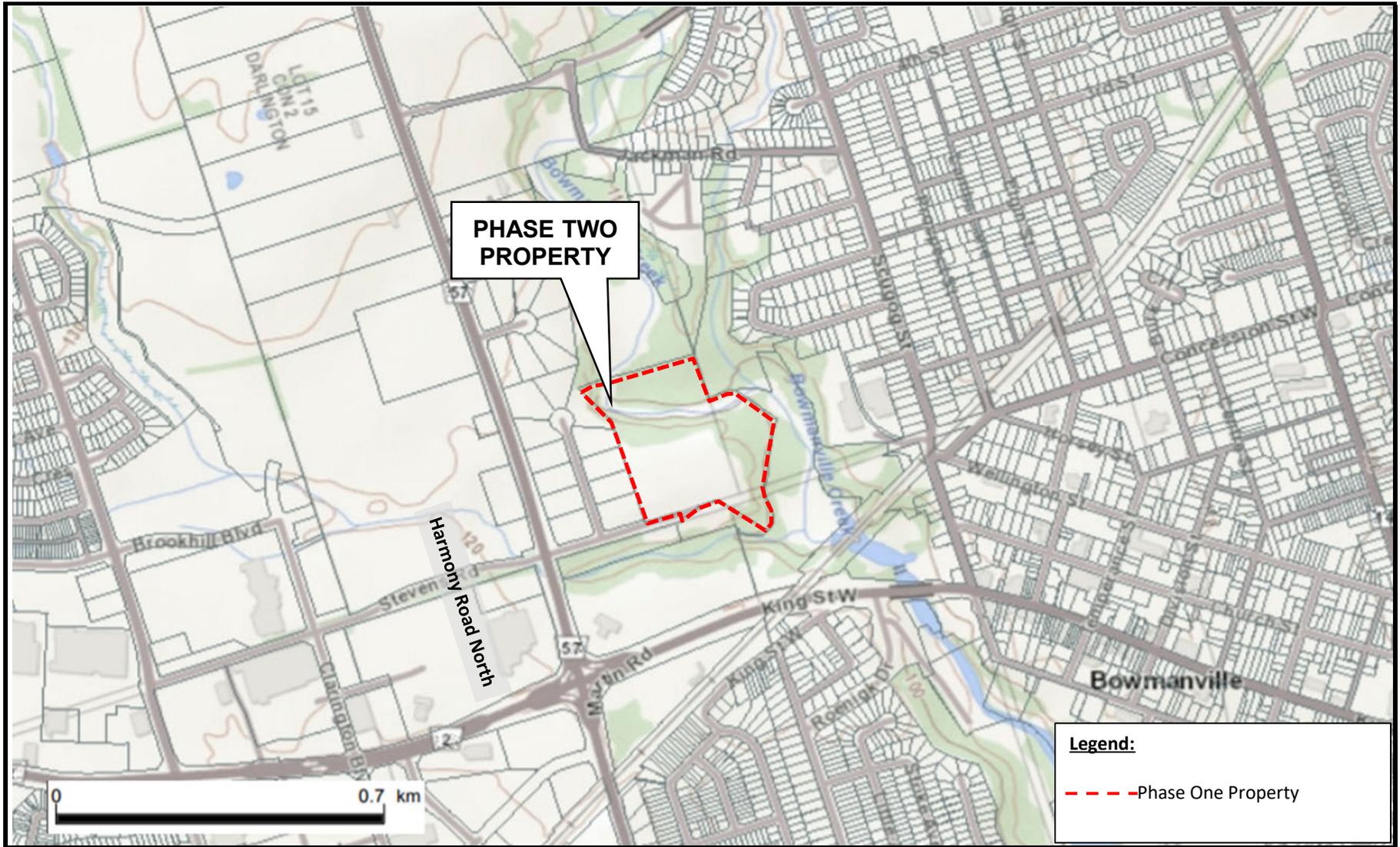


Kaitlin Corporation  
46 Stevens Road, Bowmanville, ON  
Phase Two ESA

12579364-01  
June 2022

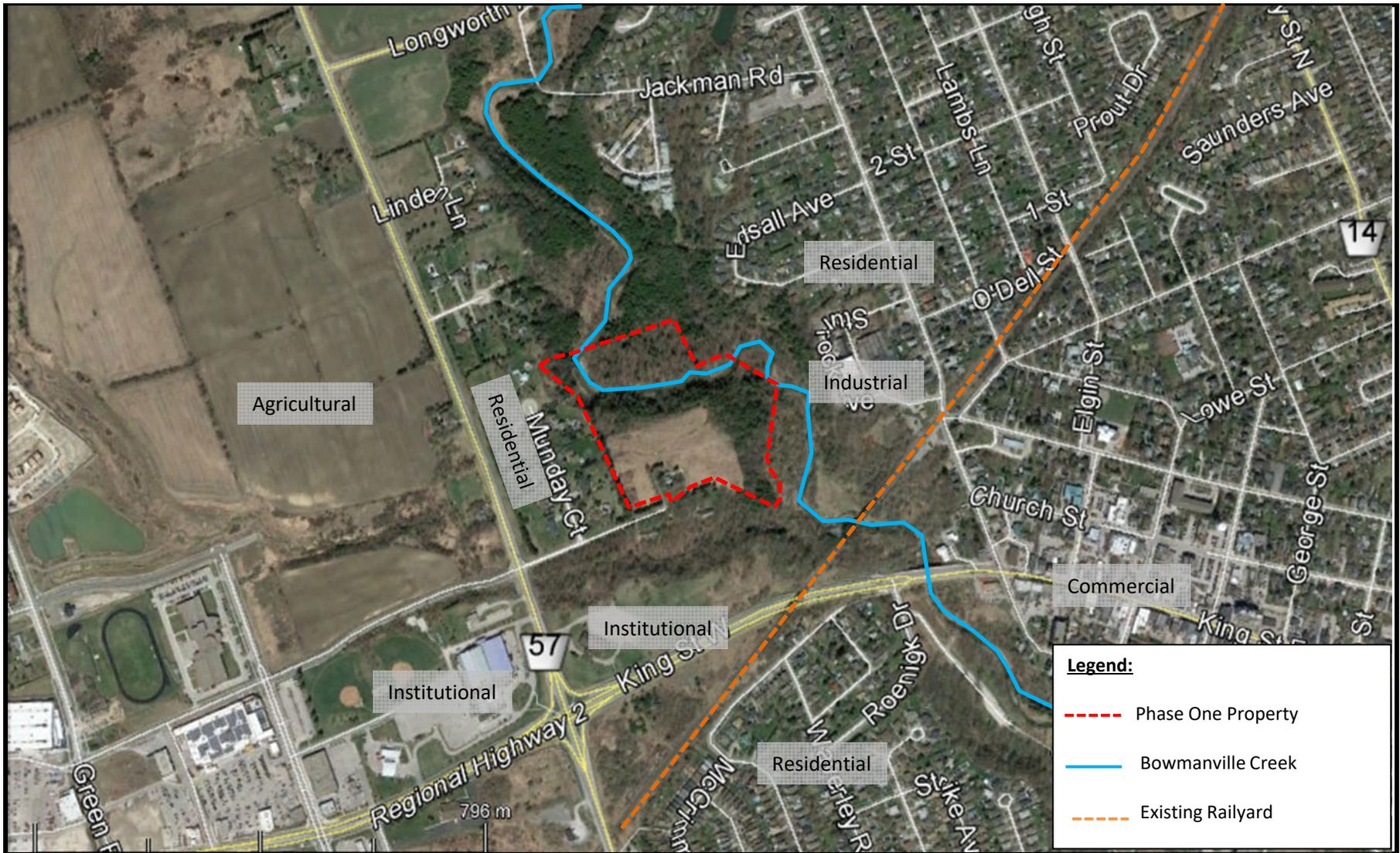
## Vicinity Plan

## FIGURE 1



Source: Ministry of Natural Resources and Forestry. © Queen's Printer for Ontario, 2019.

<p><b>Scale:</b> Refer to Scale Bar Coordinate System: NAD 1983 UTM Zone 17</p>			<p>Kaitlin Corporation 46 Stevens Road, Bowmanville, ON Phase Two ESA</p> <p><b>Property Plan</b></p>	<p>12579364-01 June 2022</p> <p><b>FIGURE 2</b></p>
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Source: Ministry of Natural Resources and Forestry. © Queen's Printer for Ontario, 2019.

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

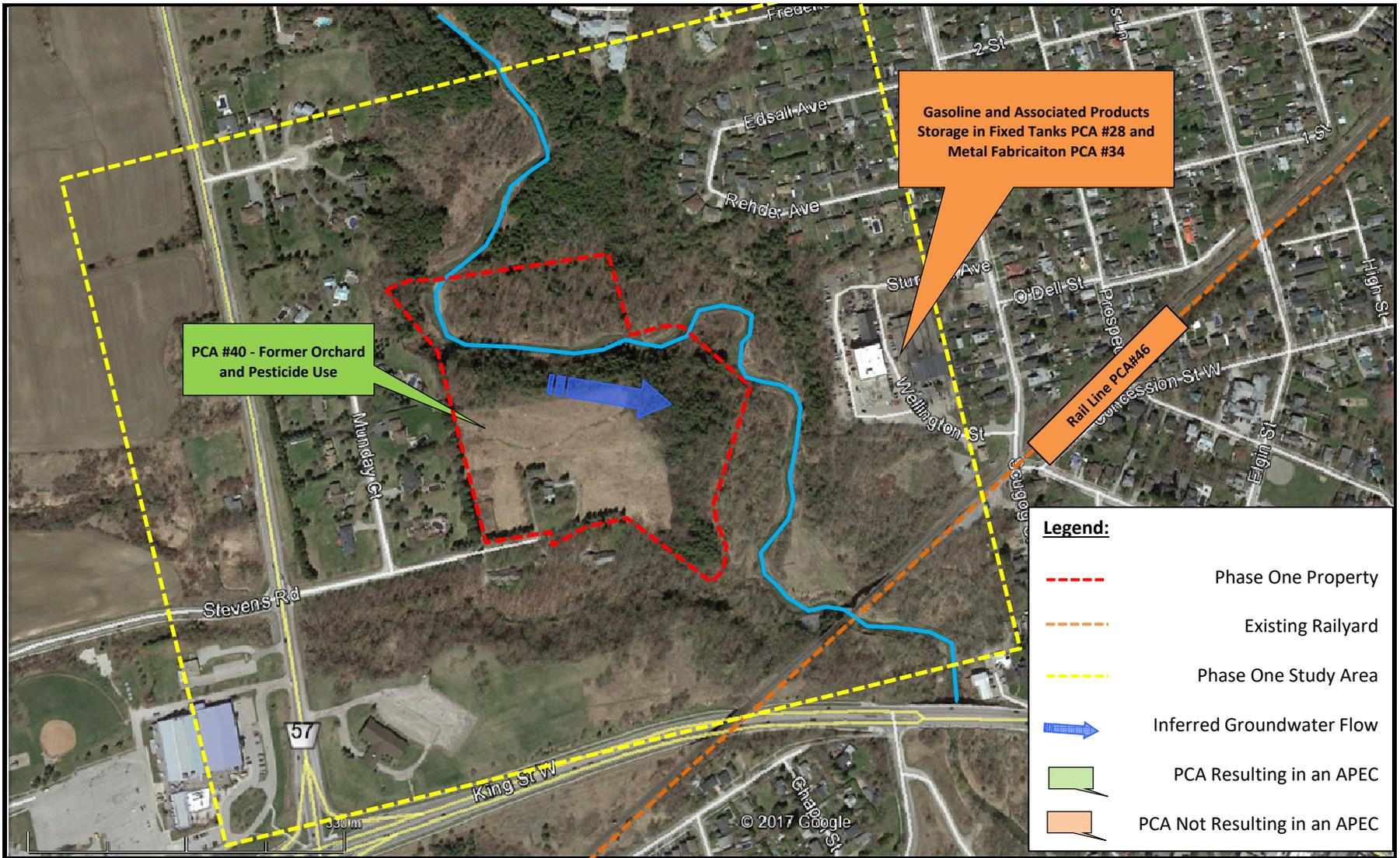


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Phase Two ESA

12579364-01  
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## Plot Plan

## FIGURE 3



Source: Ministry of Natural Resources and Forestry. © Queen's Printer for Ontario, 2019.

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



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**CSM - Study Area**

**FIGURE 4**



Source: Ministry of Natural Resources and Forestry. © Queen's Printer for Ontario, 2019.

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



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**CSM - Property**

**FIGURE 5**



Source: Ministry of Natural Resources and Forestry. © Queen's Printer for Ontario, 2019.

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



Kaitlin Corporation  
46 Stevens Road, Bowmanville, ON  
Phase Two ESA

12579364-01  
June 2022

**Borehole Location Plan**

**FIGURE 6**



Source: Ministry of Natural Resources and Forestry. © Queen's Printer for Ontario, 2019.

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



Kaitlin Corporation  
46 Stevens Road, Bowmanville, ON  
Phase Two ESA

12579364-01  
June 2022

**Phase Two CSM**

**FIGURE 7**

# Appendices

# **Appendix E**

## **Sampling and Analysis Plan**

## **APPENDIX E: SAMPLING AND ANALYSIS PLAN**

**PROJECT NO.:** 12579364-01

**CLIENT:** Kaitlin Corporation

**PROPERTY:** 46 Stevens Road, Bowmanville, ON

<b>APEC</b>	<b>RATIONALE</b>	<b>INVESTIGATION TYPE</b>	<b>SAMPLE IDENTIFICATION</b>	<b>ESTIMATED INVESTIGATION DEPTH</b>	<b>SAMPLE MEDIA</b>	<b>LABORATORY ANALYSIS</b>	<b>PHYSICAL IMPEDIMENTS</b>	<b>SAMPLING GUIDELINES</b>
APEC 1 – Large-Scale Application of Pesticides	On-site PCA. Confirm soil quality in areas of former orchard	Test Pits	TP-1, Tp-2 and TP-3	Shallow Test Pits up to 0.9 m	Soil	OC Pesticides	No excavation within buried utility corridors or proximate to overhead electrical lines.	Sample from highest organic vapour reading or immediately below topsoil

### **Notes:**

Refer to Borehole Location 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 RPI Standards.

- 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**



TEST PIT No.: TP-1  
 ELEVATION: Existing

# TEST PIT REPORT

CLIENT: Kaitlin Corporation  
 PROJECT: Phase Two ESA  
 LOCATION: 46 Stevens Road, Bowmanville, ON  
 DESCRIBED BY: R. Sanford DATE: 26 May 2022  
 CHECKED BY: W. Moore DATE: 31 May 2022

**LEGEND**

- GSE - GRAB SAMPLE (environmental)
- GS - GRAB SAMPLE (geotechnical)
- Cu - SHEAR TEST
- CHEM - CHEMICAL ANALYSIS
- OVC - ORGANIC VAPOR CONCENTRATION
- INF - INFILTRATION
- ▼ - WATER LEVEL

File: N:\CA\PETERBOROUGH\PROJECTS\6621\2579364\WORKSHARE\DESIGN\12579364-01\_22-05-27 TEST PIT GINT LOGS.RS.GPJ Library File: GHD\_GEOTECH\_V09.GLB Report: TEST PIT LOG Date: 3/6/22

Depth		Elevation (m) BGS Existing	Symbol	STRATIGRAPHY	Sample Type & Number	Moisture %	Tests Type	INF
Feet	Metres							
				TOPSOIL - (250mm)				
1		0.25		ML - SILT, with clay, trace sand, dark brown, moist, firm	GS-1	20.8		
		0.38		<b>END OF HOLE</b>				
2	0.5			<b>NOTES:</b> -Hole open upon completion -Hole dry upon completion				
3	1.0							
4								
5	1.5							
6								
7	2.0							
8	2.5							
9								
10	3.0							
11	3.5							



TEST PIT No.: TP-2  
 ELEVATION: Existing

**TEST PIT REPORT**

CLIENT: Kaitlin Corporation  
 PROJECT: Phase Two ESA  
 LOCATION: 46 Stevens Road, Bowmanville, ON  
 DESCRIBED BY: R. Sanford DATE: 26 May 2022  
 CHECKED BY: W. Moore DATE: 31 May 2022

**LEGEND**

- GSE - GRAB SAMPLE (environmental)
- GS - GRAB SAMPLE (geotechnical)
- Cu - SHEAR TEST
- CHEM - CHEMICAL ANALYSIS
- OVC - ORGANIC VAPOR CONCENTRATION
- INF - INFILTRATION
- ▼ - WATER LEVEL

File: N:\CAM\PIETERBOROUGH\PROJECTS\6621\12579364\WORKSHARE\DESIGN\12579364-01\_22-05-27 TEST PIT GINT LOGS.RS.GPJ Library File: GHD\_GEOTECH\_V09.GLB Report: TEST PIT LOG Date: 3/6/22

Depth		Elevation (m) BGS Existing	Symbol	STRATIGRAPHY	Sample Type & Number	Moisture %	Tests Type	INF
Feet	Metres							
				TOPSOIL - (250mm)				
1		0.25		ML - SILT, with clay, trace sand, dark brown, moist, firm	GS-1	23.3		
	0.5	0.46		<b>END OF HOLE</b>				
2				<b>NOTES:</b> -Hole open upon completion -Hole dry upon completion				
3								
	1.0							
4								
5								
	1.5							
6								
	2.0							
7								
	2.5							
8								
	3.0							
9								
	3.5							



TEST PIT No.: TP-3  
 ELEVATION: Existing

**TEST PIT REPORT**

CLIENT: Kaitlin Corporation  
 PROJECT: Phase Two ESA  
 LOCATION: 46 Stevens Road, Bowmanville, ON  
 DESCRIBED BY: R. Sanford DATE: 26 May 2022  
 CHECKED BY: W. Moore DATE: 31 May 2022

**LEGEND**

- GSE - GRAB SAMPLE (environmental)
- GS - GRAB SAMPLE (geotechnical)
- Cu - SHEAR TEST
- CHEM - CHEMICAL ANALYSIS
- OVC - ORGANIC VAPOR CONCENTRATION
- INF - INFILTRATION
- ▼ - WATER LEVEL

File: N:\CAM\PIETERBOROUGH\PROJECTS\6621\2579364\WORKSHARE\DESIGN\12579364-01\_22-05-27 TEST PIT GINT LOGS.RS.GPJ Library File: GHD\_GEOTECH\_V09.GLB Report: TEST PIT LOG Date: 3/6/22

Depth		Elevation (m) BGS Existing	Symbol	STRATIGRAPHY	Sample Type & Number	Moisture %	Tests Type	INF
Feet	Metres							
				TOPSOIL - (230mm)				
1		0.23		ML - SILT, with clay, trace sand, dark brown, firm, moist	GS-1	28.1		
	0.5	0.41		<b>END OF HOLE</b>  NOTES: -Hole open upon completion -Hole dry upon completion				
2								
3	1.0							
4								
5	1.5							
6								
7	2.0							
8								
9	2.5							
10	3.0							
11	3.5							



**TEST PIT No.:** TP-4  
**ELEVATION:** Existing

**TEST PIT REPORT**

**CLIENT:** Kaitlin Corporation  
**PROJECT:** Phase Two ESA  
**LOCATION:** 46 Stevens Road, Bowmanville, ON  
**DESCRIBED BY:** R. Sanford **DATE:** 26 May 2022  
**CHECKED BY:** W. Moore **DATE:** 31 May 2022

**LEGEND**

- GSE - GRAB SAMPLE (environmental)
- GS - GRAB SAMPLE (geotechnical)
- Cu - SHEAR TEST
- CHEM - CHEMICAL ANALYSIS
- OVC - ORGANIC VAPOR CONCENTRATION
- INF - INFILTRATION
- ▼ - WATER LEVEL

File: N:\CAM\PETERBOROUGH\PROJECTS\66212579364\WORKSHARE\DESIGN\12579364-01\_22-05-27 TEST PIT GINT LOGS RS.GPJ Library File: GHD\_GEOTECH\_V09.GLB Report: TEST PIT LOG Date: 3/6/22

Depth		Elevation (m) BGS Existing	Symbol	STRATIGRAPHY	Sample Type & Number	Moisture %	Tests Type	INF
Feet	Metres							
				<b>TOPSOIL</b> - (230mm)				
1		0.23		<b>ML</b> - SILT, with clay, trace sand, dark brown, moist, firm				
2	0.5				GS-1	21.6		
		0.71		<b>MLC</b> - CLAYEY SILT, light brown, moist, stiff, mottled				
3					GS-2	20.9		
	1.0	1.01		<b>CLM</b> - SILTY CLAY, few sand, light brown, moist, very stiff				
4								
5	1.5							
6								
	2.0	2.03		GS-3 Gravel: 0%, Sand: 13%, Silt: 66%, Clay: 21% LL: 18, PL: 14, PI: 4	GS-3	15		
7				<b>END OF HOLE</b>				
8	2.5			<b>NOTES:</b> -Hole open upon completion -Hole dry upon completion -Infiltration test INF-01 completed at 0.51 mbgs -Infiltration test INF-02 completed at 2.0 mbgs -LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index				
9								
10	3.0							
11	3.5							



TEST PIT No.: TP-5  
 ELEVATION: Existing

# TEST PIT REPORT

CLIENT: Kaitlin Corporation  
 PROJECT: Phase Two ESA  
 LOCATION: 46 Stevens Road, Bowmanville, ON  
 DESCRIBED BY: R. Sanford DATE: 26 May 2022  
 CHECKED BY: W. Moore DATE: 31 May 2022

**LEGEND**

- GSE - GRAB SAMPLE (environmental)
- GS - GRAB SAMPLE (geotechnical)
- Cu - SHEAR TEST
- CHEM - CHEMICAL ANALYSIS
- OVC - ORGANIC VAPOR CONCENTRATION
- INF - INFILTRATION
- ▼ - WATER LEVEL

File: N:\CAM\PETERBOROUGH\PROJECTS\6621\12579364\WORKSHARE\DESIGN\12579364-01\_22-05-27 TEST PIT GINT LOGS.RS.GPJ Library File: GHD\_GEOTECH\_V09.GLB Report: TEST PIT LOG Date: 3/6/22

Depth		Elevation (m) BGS Existing	Symbol	STRATIGRAPHY	Sample Type & Number	Moisture %	Tests Type	INF
Feet	Metres							
				<b>TOPSOIL</b> - (250mm)				
1		0.25		<b>ML</b> - SILT with clay, trace sand, dark brown, moist, firm				
	0.5	0.46		<b>CLM</b> - Silty clay, light brown, moist, very stiff	GS-1	21		
2								
3								
	1.0							
4		1.17		<b>END OF HOLE</b>	GS-2	21.6		
				<b>NOTES:</b> -Hole open upon completion -Hole dry upon completion -Infiltration test INF-03 completed at 0.60 meters below grade -Infiltration test INF-04 completed at 2.0 meters below grade				
5								
	1.5							
6								
	2.0							
7								
	2.5							
8								
	3.0							
9								
	3.5							



**TEST PIT No.:** TP-6  
**ELEVATION:** Existing

**TEST PIT REPORT**

**CLIENT:** Kaitlin Corporation  
**PROJECT:** Phase Two ESA  
**LOCATION:** 46 Stevens Road, Bowmanville, ON  
**DESCRIBED BY:** R. Sanford      **DATE:** 26 May 2022  
**CHECKED BY:** W. Moore      **DATE:** 31 May 2022

**LEGEND**

- GSE - GRAB SAMPLE (environmental)
- GS - GRAB SAMPLE (geotechnical)
- Cu - SHEAR TEST
- CHEM - CHEMICAL ANALYSIS
- OVC - ORGANIC VAPOR CONCENTRATION
- INF - INFILTRATION
- ▼ - WATER LEVEL

File: N:\CAM\PETERBOROUGH\PROJECTS\66212579364\WORKSHARE\DESIGN\12579364-01\_22-05-27 TEST PIT GINT LOGS.RS.GPJ Library File: GHD\_GEOTECH\_V09.GLB Report: TEST PIT LOG Date: 3/6/22

Depth		Elevation (m) BGS Existing	Symbol	STRATIGRAPHY	Sample Type & Number	Moisture %	Tests Type	INF
Feet	Metres							
				<b>TOPSOIL - (250mm)</b>				
1		0.25		<b>ML - SILT</b> with clay, trace sand, dark brown, moist, firm		15.2		
2	0.5				GS-1			
3		0.79						
4	1.0			<b>MLC - SANDY SILT</b> , with clay, light brown, moist, stiff  GS-3 Gravel: 0%, Sand: 36%, Silt: 47%, Clay: 17%		19.8		
4					GS-2			
5	1.5				GS-3		18.8	
6	2.0	1.83		<b>CLM - SILTY CLAY</b> , light brown, very stiff, moist	GS-4	17.5		
7		2.16			GS-5	16.1		
8	2.5			<b>END OF HOLE</b>  <b>NOTES:</b> -Hole open upon completion -Hole dry upon completion				
9								
10	3.0							
11	3.5							



**TEST PIT No.:** TP-7  
**ELEVATION:** Existing

**TEST PIT REPORT**

**CLIENT:** Kaitlin Corporation  
**PROJECT:** Phase Two ESA  
**LOCATION:** 46 Stevens Road, Bowmanville, ON  
**DESCRIBED BY:** R. Sanford **DATE:** 26 May 2022  
**CHECKED BY:** W. Moore **DATE:** 31 May 2022

**LEGEND**

- GSE - GRAB SAMPLE (environmental)
- GS - GRAB SAMPLE (geotechnical)
- Cu - SHEAR TEST
- CHEM - CHEMICAL ANALYSIS
- OVC - ORGANIC VAPOR CONCENTRATION
- INF - INFILTRATION
- ▼ - WATER LEVEL

File: N:\CAM\PETERBOROUGH\PROJECTS\6621\2579364\WORKSHARE\DESIGN\12579364-01\_22-05-27 TEST PIT GINT LOGS.RS.GPJ Library File: GHD\_GEOTECH\_V09.GLB Report: TEST PIT LOG Date: 3/6/22

Depth		Elevation (m) BGS Existing	Symbol	STRATIGRAPHY	Sample Type & Number	Moisture %	Tests Type	INF
Feet	Metres							
				<b>TOPSOIL</b> - (250mm)				
1		0.25		<b>FILL:</b> SILT, with clay, trace sand, dark brown, moist, firm, reworked native with construction material				
	0.5				GS-1	22.7		
2				CLAYEY SILT, dark brown, moist, stiff, reworked native with construction material				
	1.0	0.81						
3					GS-2	16.8		
4				<b>NATIVE:</b> CLM - SILTY CLAY, few sand, light brown, moist, very stiff				
	1.5	1.55						
5					GS-3	16.4		
	2.0				GS-4	15.7		
6								
	2.5							
7								
	3.0	2.95						
8				<b>END OF HOLE</b>				
	3.5			<b>NOTES:</b> -Hole open upon completion -Hole dry upon completion				



**TEST PIT No.:** TP-8  
**ELEVATION:** Existing

**TEST PIT REPORT**

**CLIENT:** Kaitlin Corporation  
**PROJECT:** Phase Two ESA  
**LOCATION:** 46 Stevens Road, Bowmanville, ON  
**DESCRIBED BY:** R. Sanford **DATE:** 26 May 2022  
**CHECKED BY:** W. Moore **DATE:** 31 May 2022

**LEGEND**

- GSE - GRAB SAMPLE (environmental)
- GS - GRAB SAMPLE (geotechnical)
- Cu - SHEAR TEST
- CHEM - CHEMICAL ANALYSIS
- OVC - ORGANIC VAPOR CONCENTRATION
- INF - INFILTRATION
- ▼ - WATER LEVEL

File: N:\CAM\PETERBOROUGH\PROJECTS\66212579364\WORKSHARE\DESIGN\12579364-01\_22-05-27 TEST PIT GINT LOGS.RS.GPJ Library File: GHD\_GEOTECH\_V09.GLB Report: TEST PIT LOG Date: 3/6/22

Depth		Elevation (m) BGS Existing	Symbol	STRATIGRAPHY	Sample Type & Number	Moisture %	Tests Type	INF
Feet	Metres							
				<b>TOPSOIL</b> - (250mm)				
1		0.25		<b>MLS</b> - SANDY SILT, with clay, few gravel, dark brown, moist, firm				
2	0.5			GS-1 Gravel: 11%, Sand: 29%, Silt: 35%, Clay: 25%	GS-1	13.6		
3		0.76		<b>CLM</b> - SILTY CLAY, light brown, moist, very stiff				
4								
5	1.5							
6					GS-2	25.9		
7	2.0				GS-3	19		
		2.19		<b>END OF HOLE</b>				
8	2.5			<b>NOTES:</b> -Hole open upon completion -Hole dry upon completion				
9								
10	3.0							
11	3.5							



TEST PIT No.: TP-9  
 ELEVATION: Existing

**TEST PIT REPORT**

CLIENT: Kaitlin Corporation  
 PROJECT: Phase Two ESA  
 LOCATION: 46 Stevens Road, Bowmanville, ON  
 DESCRIBED BY: R. Sanford DATE: 26 May 2022  
 CHECKED BY: W. Moore DATE: 31 May 2022

**LEGEND**

- GSE - GRAB SAMPLE (environmental)
- GS - GRAB SAMPLE (geotechnical)
- Cu - SHEAR TEST
- CHEM - CHEMICAL ANALYSIS
- OVC - ORGANIC VAPOR CONCENTRATION
- INF - INFILTRATION
- ▼ - WATER LEVEL

File: N:\CAM\PETERBOROUGH\PROJECTS\6621\12579364\WORKSHARE\DESIGN\12579364-01\_22-05-27 TEST PIT GINT LOGS RS.GPJ Library File: GHD\_GEOTECH\_V09.GLB Report: TEST PIT LOG Date: 3/6/22

Depth		Elevation (m) BGS Existing	Symbol	STRATIGRAPHY	Sample Type & Number	Moisture %	Tests Type	INF
Feet	Metres							
				<b>TOPSOIL - (250mm)</b>				
1		0.25		<b>ML - SILT</b> , with clay, few sand, light brown, moist, firm				
2	0.5				GS-1	42.6		
3					GS-2	27.3		
	1.0	0.97		becomes wet <b>END OF HOLE</b>				
4				<b>NOTES:</b> -Hole open upon completion -Water infiltration encountered at 0.94 meters below grade -Water to 0.94 meters below grade upon completion				
5	1.5							
6								
	2.0							
7								
8	2.5							
9								
10	3.0							
11								
	3.5							



# **Appendix G**

## **Certificates of Chemical Analysis**

C.O.C.: G098485

REPORT No. B22-15840 (i)

**Report To:**

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

**Attention:** Wesley Moore

**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: 27-May-22

JOB/PROJECT NO.: 12579364

DATE REPORTED: 02-Jun-22

SAMPLE MATRIX: Soil

P.O. NUMBER:

WATERWORKS NO.

Parameter	Qty	Site Analyzed	Analyst Initials	Date Analyzed	Lab Method	Reference Method
Chromium (VI)	3	Holly Lane	ST	31-May-22	D-CRVI-02 (o)	EPA7196A
Mercury	3	Holly Lane	PBK	31-May-22	D-HG-01 (o)	EPA 7471A
Boron - HWS	3	Holly Lane	AHM	31-May-22	D-HWE s	MOE3470
Metals - ICP-OES	3	Holly Lane	AHM	31-May-22	D-ICP-02 (o)	EPA 6010
Metals - ICP-MS	3	Holly Lane	TPR	01-Jun-22	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. 1 - All - Table 1 - Res/Park/Institutional/Indus/Com/Commun



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

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

C.O.C.: G098485

REPORT No. B22-15840 (i)

**Report To:**

**GHD Limited**

455 Phillip Street,  
 Waterloo Ontario N2L 3X2 Canada

**Attention:** Wesley Moore

**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: 27-May-22

JOB/PROJECT NO.: 12579364

DATE REPORTED: 02-Jun-22

P.O. NUMBER:

SAMPLE MATRIX: Soil

WATERWORKS NO.

Parameter	Client I.D.		TP-1 GS-1	TP-2 GS-1	TP-3 GS-1	O. Reg. 153	
	Sample I.D.	Date Collected	B22-15840-1 26-May-22	B22-15840-2 26-May-22	B22-15840-3 26-May-22	Tbl. 1 - All	
	Units	R.L.					
Antimony	µg/g	0.5	< 0.5	< 0.5	< 0.5	1.3	
Arsenic	µg/g	0.5	1.5	1.3	2.0	18	
Barium	µg/g	1	63	52	63	220	
Beryllium	µg/g	0.2	0.3	0.4	0.4	2.5	
Boron	µg/g	0.5	4.3	1.8	8.5	36	
Boron (HWS)	µg/g	0.02	< 0.02	0.03	0.06		
Cadmium	µg/g	0.5	< 0.5	< 0.5	< 0.5	1.2	
Chromium	µg/g	1	14	14	15	70	
Chromium (VI)	µg/g	0.2	< 0.2	< 0.2	< 0.2	0.66	
Cobalt	µg/g	1	5	5	5	21	
Copper	µg/g	1	9	5	8	92	
Lead	µg/g	5	< 5	< 5	8	120	
Mercury	µg/g	0.005	0.010	0.037	0.049	0.27	
Molybdenum	µg/g	1	< 1	< 1	< 1	2	
Nickel	µg/g	1	9	7	8	82	
Selenium	µg/g	0.5	0.5	0.6	0.7	1.5	
Silver	µg/g	0.2	< 0.2	< 0.2	< 0.2	0.5	
Thallium	µg/g	0.1	< 0.1	< 0.1	< 0.1	1	
Uranium	µg/g	0.1	0.4	0.5	0.5	2.5	
Vanadium	µg/g	1	23	23	24	86	
Zinc	µg/g	3	24	24	33	290	

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
 Tbl. 1 - All - Table 1 - Res/Park/Institutional/Indus/Com/Commun



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

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

C.O.C.: G098485

REPORT No. B22-15840 (i)

**Report To:**

**GHD Limited**

455 Phillip Street,  
Waterloo Ontario N2L 3X2 Canada

**Attention:** Wesley Moore

**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: 27-May-22

DATE REPORTED: 02-Jun-22

SAMPLE MATRIX: Soil

JOB/PROJECT NO.: 12579364

P.O. NUMBER:

WATERWORKS NO.

**Summary of Exceedances**

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
Tbl. 1 - All - Table 1 - Res/Park/Institutional/Indus/Com/Commun



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

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from  
Caduceon Environmental Laboratories.

C.O.C.: G098485

REPORT No. B22-15840 (ii)

**Report To:**

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

**Attention:** Wesley Moore

**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: 27-May-22

JOB/PROJECT NO.: 12579364

DATE REPORTED: 02-Jun-22

SAMPLE MATRIX: Soil

P.O. NUMBER:

WATERWORKS NO.

Parameter	Qty	Site Analyzed	Analyst Initials	Date Analyzed	Lab Method	Reference Method
OC Pesticides	3	Kingston	CS	31-May-22	C-PESTCL-01 K	EPA 8080

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. 1 - All - Table 1 - Res/Park/Institutional/Indus/Com/Commun



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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C.O.C.: G098485

REPORT No. B22-15840 (ii)

**Report To:**

**GHD Limited**

455 Phillip Street,  
 Waterloo Ontario N2L 3X2 Canada

**Attention:** Wesley Moore

**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: 27-May-22

JOB/PROJECT NO.: 12579364

DATE REPORTED: 02-Jun-22

P.O. NUMBER:

SAMPLE MATRIX: Soil

WATERWORKS NO.

Parameter	Client I.D.		TP-1 GS-1	TP-2 GS-1	TP-3 GS-1	O. Reg. 153	
	Sample I.D.	Date Collected	B22-15840-1	B22-15840-2	B22-15840-3	Tbl. 1 - All	
	Units	R.L.	26-May-22	26-May-22	26-May-22		
Aldrin	µg/g	0.05	< 0.05	< 0.05	< 0.05	0.05	
Chlordane (alpha)	µg/g	0.05	< 0.05	< 0.05	< 0.05		
Chlordane (Gamma)	µg/g	0.05	< 0.05	< 0.05	< 0.05		
Chlordane Total (alpha+gamma)	µg/g	0.05	< 0.05	< 0.05	< 0.05	0.05	
DDD, 2,4-	µg/g	0.05	< 0.05	< 0.05	< 0.05		
DDD, 4,4-	µg/g	0.05	< 0.05	< 0.05	< 0.05		
DDD Total	µg/g	0.05	< 0.05	< 0.05	< 0.05	0.05	
DDE, 2,4-	µg/g	0.05	< 0.05	< 0.05	< 0.05		
DDE, 4,4-	µg/g	0.05	< 0.05	< 0.05	< 0.05		
DDE Total	µg/g	0.05	< 0.05	< 0.05	< 0.05	0.05	
DDT, 2,4-	µg/g	0.05	< 0.05	< 0.05	< 0.05		
DDT, 4,4-	µg/g	0.05	< 0.05	< 0.05	< 0.05		
DDT Total	µg/g	0.05	< 0.05	< 0.05	< 0.05	1.4	
Dieldrin	µg/g	0.05	< 0.05	< 0.05	< 0.05	0.05	
Lindane (Hexachlorocyclohexane, Gamma)	µg/g	0.01	< 0.01	< 0.01	< 0.01	0.01	
Endosulfan I	µg/g	0.04	< 0.04	< 0.04	< 0.04		
Endosulfan II	µg/g	0.04	< 0.04	< 0.04	< 0.04		
Endosulfan I/II	µg/g	0.04	< 0.04	< 0.04	< 0.04	0.04	
Endrin	µg/g	0.04	< 0.04	< 0.04	< 0.04	0.04	
Heptachlor	µg/g	0.05	< 0.05	< 0.05	< 0.05	0.05	
Heptachlor Epoxide	µg/g	0.05	< 0.05	< 0.05	< 0.05	0.05	

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
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 Lab Manager

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SAMPLE MATRIX: Soil

WATERWORKS NO.

Parameter	Units	R.L.	Client I.D.	TP-1 GS-1	TP-2 GS-1	TP-3 GS-1	O. Reg. 153	
			Sample I.D.	TP-1 GS-1	TP-2 GS-1	TP-3 GS-1	Tbl. 1 - All	
			Date Collected	26-May-22	26-May-22	26-May-22		
Hexachlorobenzene	µg/g	0.01		< 0.01	< 0.01	< 0.01	0.01	
Hexachlorobutadiene	µg/g	0.01		< 0.01	< 0.01	< 0.01	0.01	
Hexachloroethane	µg/g	0.01		< 0.01	< 0.01	< 0.01	0.01	
Methoxychlor	µg/g	0.05		< 0.05	< 0.05	< 0.05	0.05	

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
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Christine Burke  
 Lab Manager

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SAMPLE MATRIX: Soil

WATERWORKS NO.

**Summary of Exceedances**

O. Reg. 153 - Soil, Ground Water and Sediment Standards  
Tbl. 1 - All - Table 1 - Res/Park/Institutional/Indus/Com/Commun



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Christine Burke  
Lab Manager

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