

**PHASE ONE
ENVIRONMENTAL SITE ASSESSMENT**

of

97 Gorham Road, Fort Erie, ON

For:

Bomofive Inc.
6-302 Merritt Street
St. Catharines, ON
L2T 1T9



March 17th, 2020
Project: E-19-71-1

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of:

97 Gorham Road, Fort Erie, ON

Prepared by **Hallex Environmental Ltd.** on behalf of:

Bomofive Inc.

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EXECUTIVE SUMMARY

Hallex Environmental Ltd. was retained by Bomofive Inc. to conduct a Phase One Environmental Site Assessment (ESA) of the property located at 97 Gorham Road, Fort Erie, ON. The objectives of the Phase One ESA were an investigation of the subject property and adjacent lands conducted in accordance with O. Reg. 153/04 as amended, and under the supervision of a Qualified Person in order to determine the likelihood that one or more contaminants may have affected any land and/or water on, in or under the property.

Potentially Contaminating Activities (PCAs), and contaminants or materials of potential concern, if revealed on-site, or at properties located within a 250 m radius of the site, were evaluated as to whether they generated 'Areas of Potential Environmental Concern' (APECs). PCAs are itemized in Schedule D Table 2 of O. Reg 511/09. APECs, if identified, were individually evaluated whether they were triggers for additional investigation via a Phase Two ESA. Additionally, building materials were documented and evaluated regarding the potential need for a Designated Substance and Hazardous Materials Survey.

PHASE ONE ESA SCOPE OF INVESTIGATION

The Phase One ESA scope of investigation includes review of historical background information via examination of:

- Fire Insurance Plans;
- Environmental Risk Information System (EcoLog ERIS);
- Mapping resources including: Niagara Navigator Thematic, MNR Heritage Area, Topographic, Quaternary, Bedrock and Geology;
- Aerial photographs; and
- Water well records from Ontario Oil, Gas & Salt Resources Library & Ministry of the Environment, Conservation and Parks.

A site reconnaissance is completed to observe site grounds, on-site structures (if applicable), and adjacent properties in order to identify PCAs and APECs. This information is utilized to formulate a preliminary Conceptual Site Model regarding potential contaminants, contaminant migration pathways, and human and/or ecological receptors at the site.

SITE DESCRIPTION

The study site is currently utilized for residential purposes. The residential structures on-site were constructed between the 1950's to mid-1960's and consist of two rows of apartment blocks (north and south) measuring approximately 191 m² and 228 m² in size. A single-family dwelling is also located on site measuring approximately 110 m². The total size of the property is 6,532 m². The site is fully serviced with municipal sewer and water. The driveway area and parking is gravel covered with a grassy yard and woodlot beyond the property boundaries.

PHASE ONE ESA FINDINGS

The Phase One ESA findings revealed the following:

- One (1) historic Potential Contaminating Activity was identified at the study site
 - ***PCA-1/APEC-1: Gasoline and Associated Products Storage in Fixed Tanks (#28 as per Regulations).*** During the site reconnaissance there was visual evidence of remnant piping, often associated with Aboveground Storage Tanks (ASTs), used for heating oil purposes. The piping was located within the apartment blocks and residential dwelling. The presence of an AST represents a PCA resulting in an APEC. Target contaminants of concern include Petroleum Hydrocarbons (PHC), Polycyclic Aromatic Hydrocarbons (PAH) & Benzene, Toluene, Ethylbenzene, Xylene (BTEX) to the site's soil and/or groundwater.
- No current PCAs were identified at the study site or adjacent sites.
- No PCAs were noted within 250 m of the Study Site.

RECOMMENDATIONS

Based on the above noted findings Hallex therefore recommends:

- 1) **A Designated Substance & Hazardous Materials Survey be conducted on the exterior of the apartment buildings and interior/exterior of the house.**
- 2) **A Phase Two Environmental Site Assessment to determine the presence/absence of potential contaminants of concern in the soil and/or groundwater resulting from the historic use of heating oil.**

LIST OF ACRONYMS

ACM	Asbestos Containing Materials
APEC	Area of Potential Environmental Concern
AST	Aboveground Storage Tank
BH	Borehole
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CSM	Conceptual Site Model
DSS	Designated Substance Survey
EC	Electrical Conductivity
EPA	Environmental Protection Act
ESA	Environmental Site Assessment
ERIS	Environmental Risk Information Services
FIP	Fire Insurance Plans
GPR	Ground Penetrating Radar
masl	Metres above sea level
mbgs	Metres below ground surface
MECP	Ministry of the Environment, Conservation and Parks
MOECC	Ministry of the Environment and Climate Change
MNR	Ministry of Natural Resources
MW	Monitoring Well
NPCA	Niagara Peninsula Conservation Authority
NPRI	National Pollutant Release Inventory
OC/OCP	Organochlorine Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PCA	Potentially Contaminating Activity
PCB	Polychlorinated Biphenyl
PCE	Perchloroethylene (tetrachloroethylene)
pH	Power of Hydrogen
PHC	Petroleum Hydrocarbons
QA/QC	Quality Assurance/Quality Control
QP	Qualified Person
RA	Risk Assessment
RSC	Record of Site Condition
SAR	Specific Absorption Rate
SCS	Site Condition Standard
SVOC	Semi-Volatile Organic Compounds
TP	Test Pit
UST	Underground Storage Tank
VOC	Volatile Organic Compounds

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- Appendix C: Ministry of Natural Resources Natural Heritage Map
- Appendix D: EcoLog ERIS
- Appendix E: Aerial Photographs
- Appendix F: Record of Interview
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1.0 INTRODUCTION

Hallex Environmental Ltd. was retained by Bomofive Inc. to conduct a Phase One Environmental Site Assessment (ESA) of the property located at 97 Gorham Road, Fort Erie, ON (study site). The environmental work was requested for due diligence purposes. The site location is shown on Figure 1 and the site layout and adjacent land uses are depicted on Figure 2.

1.1 Phase One Property Information

Municipal address:	97 Gorham Road, Fort Erie, ON
Client(s):	Bomofive Inc.
UTM co-ordinates:	17 T 4749014.79 m N 658489.37 m E
Elevation:	193 masl
Approx. site area:	6,532 m ²

1.2 Limitations and Exceptions of Report

Hallex Environmental Ltd. prepared this report for the account of: Bomofive Inc. The material in it reflects Hallex Environmental Ltd.'s best judgement based on the information discovered at the time of preparation, within the Phase One ESA scope of work. The investigative procedures and format of this report generally follow the guidelines established in: Part XV.1 of the Environmental Protection Act, per O. Reg. 153/04, as amended. Any information presented concerning materials at the site is based on information gathered during historical document search and site reconnaissance only. There may be materials and/or subsurface soil and/or groundwater conditions on-site, which are not represented by these non-invasive investigations. 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. Hallex Environmental Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Declaration: Hallex Environmental Ltd., and its' Officers and Directors, declare no conflicting business or interests with the client or the subject property.

2.0 SCOPE OF INVESTIGATION

The objectives of the Phase One ESA were an investigation of the subject property and adjacent lands conducted in accordance with O. Reg. 153/04 as amended, and under the supervision of a Qualified Person in order to determine the likelihood that one or more contaminants may have affected any land and/or water on, in or under the property. Potentially Contaminating Activities (PCAs), and contaminants or materials of potential concern, if revealed on-site, or at properties located within a 250 m radius of the site, were evaluated as to whether they generated 'Areas of Potential Environmental Concern' (APECs). PCAs are itemized in Schedule D Table 2 of O. Reg 511/09. APECs if identified were individually evaluated whether they were triggers for additional investigation via a Phase Two ESA. Additionally, building materials were documented and evaluated regarding the potential need for a Designated Substance and Hazardous materials Survey.

2.1 Procedures

The Phase One ESA scope of investigation includes review of historical background information via examination of:

- Fire Insurance Plans;
- Vernon's City Directories;
- Environmental Risk Information System (EcoLog ERIS);
- Mapping resources including: Niagara Navigator Thematic, MNR Heritage Area, Topographic, Quaternary, Bedrock and Geology;
- Aerial photographs; and
- Water well records from Ontario Oil, Gas & Salt Resources Library & Ministry of the Environment, Conservation and Parks.

A site reconnaissance was completed to observe site grounds, on-site structures (if applicable), and adjacent properties in order to identify PCAs and APECs. This information is utilized to formulate a preliminary Conceptual Site Model regarding potential contaminants, contaminant migration pathways, and human and/or ecological receptors at the site.

3.0 RECORDS REVIEW

3.1 General

3.1.1 Phase One Study Area Determination

Review of Fire Insurance Plans (FIPs), EcoLog ERIS databased information, air photograph interpretation, and other historic environmental documents, in addition to the site investigation, revealed that it was not necessary to expand the data search beyond a 250 m radius of the property, the minimum area of study.

3.1.2 First Developed Use Determination

The first developed land use, as determined through historical documents research and aerial photographs dating to 1934, was Agriculture or Other land use.

3.1.3 Fire Insurance Plans

The 1927 FIP does not illustrate the study site, however, does display the south & southwest portion of the study area (within 250 m from the site). The southwest area was noted as developed for residential purposes and the south as vacant/undeveloped lands. None of these land uses within the study area are considered as Potentially Contaminating Activities (PCAs). The FIPs are located in Appendix A.

3.1.4 City Directory Search

The Vernon's City Directories were reviewed for the study site and study area. The search was conducted at Brock University in 10-year increments, with records available from 1973 – 2005/06 for the Town of Fort Erie. The Study Site was listed as "Top of the Ridge Motel" from 1976 – 1985 and "Kitty's Apartments" from 1995/96 - 2005/06. The study area was listed in all of the directories, and consisted of a mix of residential, commercial and community land uses, none of which are considered to represent a PCA. A summary table of the Vernon's City Directories are located in Appendix B.

3.1.5 Environmental Reports

No existing environmental reports were provided to Hallex Environmental Ltd. to review concerning the Study Site.

3.2 Environmental Source Information

The following agency databases and documents were reviewed where available and discussed further where necessary, for information regarding the study site and the surrounding area to determine the presence of any activity or material of potential environmental concern.

Source	Description of Data Analysis
National Pollutant Release Inventory (NPRI)	No pertinent information was gleaned from NPRI database regarding the subject site or adjacent properties. Some sites were listed in Fort Erie; however, none were within Ridgeway or the Study Area (250m).
PCB Waste Storage Inventory	A review of the "Ontario Inventory of PCB Storage Sites" (MOE July 2000) indicated the Study Site was not a registered PCB storage site. Adjacent sites and sites within the study area were not listed in the PCB Inventory.
Environmental Registry of Ontario	A search was conducted on the Environmental Registry database relating to policy, regulation, act, instrument, bulletin, and appeal. Special attention was taken for Environmental Compliance Approvals (ECAs), Permits to Take Water, and Certificates of Property Use (CPU). No records were found relating to the Study Site or adjacent sites.
Coal Gasification Plants	A review of the "Inventory of Coal Gasification Plant Waste Sites" (MOE, April 1989) did not identify any former coal gasification plants for the Study Site or within the Study Area. Only one plant was listed within the Niagara Region, located in St. Catharines.
Waste Disposal Site Inventory	Review of the MOE Waste Disposal Site Inventory, June 1991 did not indicate any historic waste disposal sites in the Study Area. Closed waste disposal sites were associated with numerous industrial sites in Fort Erie; however, these sites were outside the Study Area and were not expected to impact the Study Site.
Waste Management Records	No waste management records were available for the Study Site.
TSSA Retail Fuel Storage Tank Info	A request was not submitted to the Technical Safety and Standards Authority (TSSA) for information concerning fueling systems (USTs, ASTs) as there was no evidence of former tanks at the Study Site.
Record of Site Condition (RSC)	Hallex searched the Brownfield Environmental Site Registry and no RSCs were identified for the Study Site or adjacent sites.
Ministry of Natural Resources (MNR)	A woodland Areas of Natural Significance (ANSIs) was identified along the south and west adjacent properties of the subject site according to MNR on-line records. A map showing the MNR Natural Heritage Areas is provided in Appendix C.

3.2.1 EcoLog ERIS Database

The EcoLog ERIS report returned five (5) environmental records, one (1) of the records was affiliated with the study site and five (5) from within 0.25 km of the study site. The records associated with the study site pertain to water well information system for domestic water supply installed in 1959. Records of significance have been summarized below, with the full EcoLog ERIS report located in Appendix D.

Municipal Address	Company	EcoLog ERIS Record	Description	Distance (m) from Study Site	PCA and/or APEC to Study Site
-	Maple Leaf Gas Syndicate – J. Pickard #1	OOGW	1921 – 1954; Natural Gas well	155.42 NW	Not considered a PCA

OOGW = Ontario Oil and Gas Well

3.3 Physical Setting

3.3.1 Aerial Photographs

Aerial photographs from 1934, 1955, 1965, 1983, 2000, and 2018 were examined and revealed that the Study Site was agricultural in 1934, and residential from at least 1955 to present day. The Study Area was a mix of residential, commercial, agricultural and community land uses. Aerial photographs are contained in Appendix E, with brief summaries provided below.

Date	Comments
1934	In the 1934 aerial photograph the study site is depicted as agricultural, along with the north, west and south adjacent properties. The property to the east was shown as residential.
1955	The 1955 aerial photograph indicates that the study site was developed for residential use, with one (1) rectangular structure along the south property boundary (in the similar shape as current day). More residential dwellings were developed north of the study site. No other significant changes are noted within the study area.
1965	The 1965 aerial photograph illustrates the study site developed further with one (1) large rectangular structure along the north property boundary, and a residential dwelling along the east property boundary. Road widening occurred to Gorham Road. The study area along the south appears developed cemetery plots, and more residential developments along the east. No other significant changes are noted within the study area.
1983	The north adjacent property appears developed with a residential dwelling. No other significant changes are noted to the study site or study area from the 1965 aerial photograph.
2000	No significant changes were noted within the study site or study area.
2018	No significant changes were noted within the study site or study area.

3.3.2 Topography, Hydrology, Geology

Topography

Ontario Base Map was reviewed for the Phase One study area. The geodetic ground surface elevation of the site is approximately 193 meters above sea level (masl). The study site had a slight slope from the front of the building to the rear of the property (east to the northwest). The overall study area slope is approximately 1.6% north-northwest.

Geology and Physiography

The Phase One property and area is generally characterized as clay plains (Chapman and Putnam, 1984. Map: P.2715). Review of the maps “*Quaternary Geology of Ontario – Southern Sheet*”

(*Ontario Geological Survey Map 2556*), and *Bedrock Geology of Ontario (Ontario Geological Survey Map 2544)* indicated that the subject site overburden was underlain by bedrock noted as part of the Bois Blanc Formation; Oriskany Formation. Knowledge of the bedrock depth within the study area indicates a depth between 2.3 to 3.0 metres below ground surface.

Hydrology:

The depth to the unconfined aquifer is not specifically known for the site, the confined aquifer for the site is approximated at 16.8 mbgs. Surface water drainage would be into catch basins on-site and municipal sewers along Gorham Road. The overall groundwater flow for the area is inferred as southeast towards Lake Erie. The site is noted to be within the Beaver Creek Watershed.

3.3.3 Fill Materials

No fill materials were observed at the study site through historical air photos search or site reconnaissance.

3.3.4 Water Bodies and Areas of Natural Significance

No water bodies and/or areas of natural significance are located on or adjacent to the study site. Lake Erie is located approximately 1.3 km southeast of the site.

3.3.5 Well Records

A review of the water well records from Ontario Oil, Gas & Salt Resources Library as well as the Ministry of the Environment, Conservation and Parks (MECP) well records revealed that there were no water well records available for the study site or within close enough proximity to provide site stratigraphy.

3.4 Site Operating Records

There were no applicable site operating records available for review.

4.0 INTERVIEW

On March 6th, 2020 during site reconnaissance, an interview was conducted with a representative of Boncore Properties, the current property manager of the Phase One ESA property. The information gathered from the interviewed party is considered accurate and is consistent with the historical records review for the Phase One ESA property and adjacent sites. The following is a summary of the information provided to Hallex:

- The site was purchased from the City as a foreclosure in 2005.
- The two (2) rows of apartment were then gutted and renovated.
- Historically the apartment utilized above ground storage tanks with heating oil as their heat source. In 2005 the heating was upgraded to gas. Approximately five (5) years later the company that provided the heating equipment closed with parts for the units no longer available. Electrical units were subsequently installed in all buildings and remain to current day.
- There have not been any previous environmental studies conducted at the study site (Phase One ESA, Phase Two ESA, Remediation, Designated Substance Survey, etc.).

The full record of interview is located in Appendix F.

5.0 SITE RECONNAISSANCE

5.1 General Requirements

The site investigation took place on March 6, 2020 at approximately 12:00 pm and was conducted by Hallex staff member Nicole Metz, *Environmental Technician* and overseen by Kevin Christian, *Qualified Person*. The Phase One property is not considered an Enhanced Investigation Property (EIP). The weather conditions during site reconnaissance were overcast and snow, approximately 1 °C and all areas of the Phase One property were accessible.

5.2 Specific Observations at Phase One Property

The purpose of the site reconnaissance was to identify any PCAs and/or APECs that could present the potential for contaminant sources available for migration via air, surface drainage, soil, and/or groundwater flow to human and/or ecological receptors. A photo log highlights the site in addition to surrounding land uses and is provided in Appendix G. Findings are summarized below and discussed further where necessary. Site layout is illustrated in Figure 3, including annotation to the photographs taken during site reconnaissance.

5.2.1 Exterior Observations

- There are currently five (5) buildings located on-site (Photo 1-8). An apartment row located along the northern property line and another along the southern property line, a house, a small recreational hall, and a shed.
- The shingles on all the buildings were updated two (2) years ago.
- No ASTs/USTs were observed on-site; however, there was evidence of the possible use of ASTs for heating oil purposes (historically).
- Below-ground structures and utilities were unknown at the time of site reconnaissance, including the type and locations of water, sewer, electrical, gas, etc.
- Historic documents indicate that there was a domestic water well onsite, no evidence of the well was observed during site reconnaissance.
- The ground cover at the Site consisted of gravel and grass (Photo 1-8).
- There was no evidence of historic fill material being placed on-site.
- The site occupies an area of approximately 6,532 m² of land.

Exterior Focus Items	Exterior Location / Description
Storage tanks (AST/UST)	None observed.
Wells	No drinking wells were observed.
Wastewater	None observed.
Pits and lagoons	A man-made pond located behind the house.
Stained materials	None observed.
Stressed vegetation	None observed.
Fill	None observed.
Surface Water	Some surface water was observed within the west area near the fire pit.
Watercourses, ditches, standing water	None observed.
Equipment	None observed.
Debris	None observed.
Chemical storage	None observed.

5.2.2 Interior Observations

Apartments

The two (2) rows of apartments each consisted of one (1) floor at ground level constructed of wooden foundation and concrete blocks. The interiors were completely gutted and renovated in 2005. All of the apartments were occupied with residents. The south row apartment block occupies approximately 191 m² and the north row apartment block is approximately 228 m² of the 6,532 m² of the study site

House

The house was in its original state with half of a basement made of poured concrete and concrete blocks above grade. The municipal water supplied to the property is delivered via the main line along Gorham Road to the house and then distributed from there to each apartment block. The property managers have occupied the house since the property was purchased in 2005. It occupies approximately 110 m² of the 6,532 m² of the study site.

Floor	Surface	Construction Materials	Notes
North apartments	• Walls	• Painted drywall.	None.
	• Floors	• Laminate and vinyl over wood.	
	• Ceilings	• Painted drywall.	
South apartments	• Walls	• Painted drywall.	None.
	• Floors	• Laminate and vinyl over wood.	
	• Ceilings	• Painted drywall.	
House	• Walls	• Painted drywall.	House was in original state since built.
	• Floors	• Laminate and vinyl over wood for the main floor and poured concrete for the basement.	
	• Ceilings	• Painted drywall.	

Interior Focus Items	Interior Location & Description
UFFI (urea formaldehyde foam insulation)	None observed
PCB's (polychlorinated biphenyl)	Possibly in basement of the house.
Ozone Depleting Substances	None observed
Designated Substances under O. Reg 490/09 of the Occupational Health and Safety Act, including:	
<i>Acrylonitrile</i>	None observed
<i>Isocyanates</i>	None observed
<i>Arsenic</i>	None observed
<i>Lead (Paint)</i>	The presence of lead-based paint could exist on the exterior of the apartments and the interior/exterior of the house given the age of the original buildings.
<i>Asbestos Containing Materials (ACM) in apartments.</i>	Potential ACM was noted on materials: parging, window mastic and door mastic.
<i>Asbestos Containing Materials (ACM) in house.</i>	Potential ACM was noted on materials: parging, window/door mastic, drywall joint compound, and vinyl flooring.
<i>Mercury</i>	Possibly within thermostat.
<i>Benzene</i>	None observed
<i>Silica</i>	Building materials
<i>Ethylene Oxide</i>	None observed
<i>Vinyl Chloride</i>	None observed
Radon	Survey not conducted
Mould	Only observed on single drywall cut-out in the basement of the home.
Water damage	None observed
Noise	None observed
Electromagnetic field sources	None observed
Heating and cooling systems	Historically was heating oil (aboveground storage tank), then switched to electric, then to gas, and currently electric.
Drains and sumps	Within basement of the house.
Hydraulic equipment	None observed
Chemical storage	None observed
Odours	None observed
Other	None observed

5.2.3 Potential Designated Substance and Hazardous Materials

5.2.3.1 Asbestos Containing Material (ACM)

Potential ACMs were observed as the drywall joint compound, window mastic, door mastic, parging, and vinyl flooring. Asbestos is classified as a Designated Substance under the Occupational Health and Safety Act, and regulated under O. Reg. 490/09.

5.2.3.2 Lead

The potential for the presence of lead-based paint was documented due to the age of the original buildings (pre 1965). Lead is classified as a Designated Substance under O. Reg. 843 of the Occupational Health and Safety Act.

5.2.3.2 Mould

Mould was only noted on one (1) item in the house, drywall cut out in basement.

5.3 Surrounding Properties in the Phase One ESA Study Area

The surrounding land uses were a mix of residential, agricultural and undeveloped lots (as seen in Photos 14-17). Further descriptions of surrounding property use are presented below.

Description	Current Use	Past Use	Source used
Adjacent/ Surrounding Properties:	North: Residential South: Undeveloped with mature trees East: Residential West: Agricultural	North: Residential South: Undeveloped with mature trees East: Residential West: Agricultural	Historical document research, aerial photos and site investigation (March 6, 2020).

6.0 REVIEW AND EVALUATION OF INFORMATION

6.1 Current and Past Uses – Subject Site

The historic documents research and the site reconnaissance revealed the Study Site was agricultural in 1934, then developed and utilized for residential purposes from the 1950's to present day.

6.2 Potentially Contaminating Activities

Analysis of the historical research, and information gathered during site reconnaissance, was used to determine if there were any PCAs, current or historic, found on-site and/or within the Study Area that may have resulted in creating an on-site APEC. PCA's within the study area are depicted in Figure 4.

6.2.1 Historical On-site PCAs

One (1) historic PCA's was identified at the study site.

- *PCA-1/APEC-1: Gasoline and Associated Products Storage in Fixed Tanks (#28 as per Regulations).* During the site reconnaissance there was visual evidence of remnant piping, often associated with Aboveground Storage Tanks (ASTs), used for heating oil purposes. The piping was located within the apartment blocks and residential dwelling. The presence of an AST represents a PCA resulting in an APEC. Target contaminants of concern include Petroleum Hydrocarbons (PHC), Polycyclic Aromatic Hydrocarbons (PAH) & Benzene, Toluene, Ethylbenzene, Xylene (BTEX) to the site's soil and/or groundwater.

6.2.2 Recent On-site PCAs

No recent PCA was identified at the study site.

6.2.3 Adjacent Sites PCAs

No PCAs were identified at adjacent sites to the Phase One property.

6.2.4 Study Area PCAs

Other land uses within the study area North, South, East, and West of the study site did not exhibit visible items of concern that would constitute PCAs relevant to the subject site regarding potential for impact to soil and/or groundwater.

6.3 Areas of Potential Environmental Concern

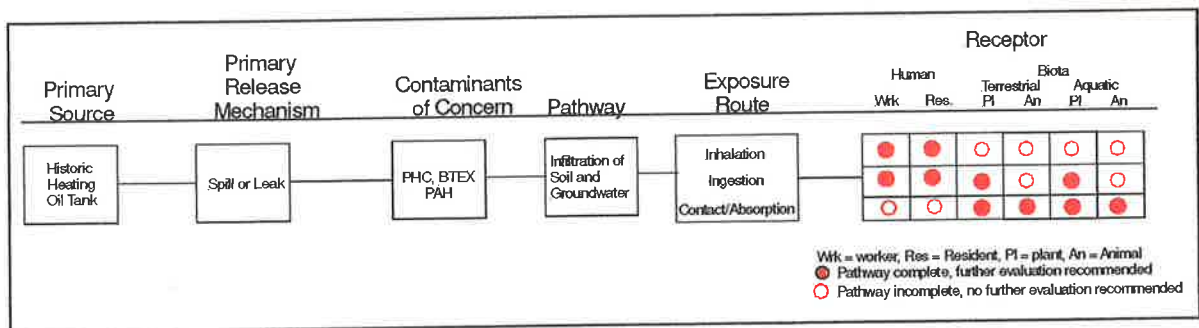
One (1) previously described PCA was determined to create an on-site APEC with the potential to impact the Phase One study site's soil, and/or groundwater. On-site APECs are illustrated in Figure 4, with further details provided below in table format.

Areas of Potential Environmental Concern ¹	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity ²	Location of PCA (on-site or off-site)	Contaminants of Potential Concern ³	Media Potentially Impacted (Ground water, soil and/or sediment)
APEC-1	Rear of apartment blocks & northwest corner of the house	#28 Gasoline and Associated Products Storage in Fixed Tanks	On-site	PHCs, PAHs, BTEX	Soil and Groundwater

The Phase One research is considered valid with no absence of information and was completed in full and considered accurate in determining the APECs located on-site.

6.4 Phase One Conceptual Site Model

The conceptual site model qualitatively considers the potential interaction of primary sources of environmental concern, with suspected contaminants of concern, and the pathway(s) and exposure route(s) to the receptors. Target contaminants of, PHCs, BTEX and PAHs were identified with potential migration pathways to human and/or biota receptors.



7.0 CONCLUSIONS & RECOMMENDATIONS

Hallex Environmental Ltd. was retained by Bomofive Inc. to conduct a Phase One Environmental Site Assessment (ESA) of the property located at 97 Gorham Road, Fort Erie, ON. The objectives of the Phase One ESA were an investigation of the subject property and adjacent lands conducted in accordance with O. Reg. 153/04 as amended, and under the supervision of a Qualified Person in order to determine the likelihood that one or more contaminants may have affected any land and/or water on, in or under the property.

Potentially Contaminating Activities (PCAs), and contaminants or materials of potential concern, if revealed on-site, or at properties located within a 250 m radius of the site, were evaluated as to whether they generated 'Areas of Potential Environmental Concern' (APECs). PCAs are itemized in Schedule D Table 2 of O. Reg 511/09. APECs, if identified, were individually evaluated whether they were triggers for additional investigation via a Phase Two ESA. Additionally, building materials were documented and evaluated regarding the potential need for a Designated Substance and Hazardous Materials Survey.

PHASE ONE ESA SCOPE OF INVESTIGATION

The Phase One ESA scope of investigation included review of historical background information via examination of:

- Fire Insurance Plans;
- Vernon's City Directory Search;
- Environmental Risk Information System (EcoLog ERIS);
- Mapping resources including: Niagara Navigator Thematic, MNR Heritage Area, Topographic, Quaternary, Bedrock and Geology;
- Aerial photographs; and
- Water well records from Ontario Oil, Gas & Salt Resources Library & Ministry of the Environment, Conservation and Parks.

A site reconnaissance was completed to observe site grounds, on-site structures (if applicable), and adjacent properties in order to identify PCAs and APECs. This information was utilized to formulate a preliminary Conceptual Site Model regarding potential contaminants, contaminant migration pathways, and human and/or ecological receptors at the site.

PHASE ONE ESA FINDINGS

The Phase One ESA findings revealed the following:

- One (1) historic Potential Contaminating Activity was identified at the study site
 - ***PCA-1/APEC-1: Gasoline and Associated Products Storage in Fixed Tanks (#28 as per Regulations)***. During the site reconnaissance there was visual evidence of remnant piping, often associated with Aboveground Storage Tanks (ASTs), used for heating oil purposes. The piping was located within the apartment blocks and residential dwelling. The presence of an AST represents a PCA resulting in an APEC. Target contaminants of concern include Petroleum Hydrocarbons (PHC), Polycyclic Aromatic Hydrocarbons (PAH) & Benzene, Toluene, Ethylbenzene, Xylene (BTEX) to the site's soil and/or groundwater.
- No current PCAs were identified at the study site or adjacent sites.
- No PCAs were noted within 250 m of the Study Site.

RECOMMENDATIONS

Based on the above noted findings Hallex therefore recommends:

- 1) **A Designated Substance & Hazardous Materials Survey be conducted on the exterior of the apartment buildings and interior/exterior of the house.**
- 2) **A Phase Two Environmental Site Assessment to determine the presence/absence of potential contaminants of concern in the soil and/or groundwater resulting from the historic use of heating oil.**

8.0 **AUTHOR**

Hallex Environmental Ltd. has conducted this Phase One Environmental Site Assessment as permitted by Hallex Certificate of Authorization (#90252). The following employees authored the report:

Nicole Metz - Ms. Nicole Metz, ETPD, ERPC, was the Environmental Technician for the project with over five years of experience in the environmental consulting field. Some projects Mrs. Metz have worked on included: Phase One & Two Environmental Site Assessments, Site Remediation, groundwater and surface water sampling, underground or aboveground storage tank decommissioning, Designated Substance Surveys, Records of Site Condition Filing, Environmental Compliance Approvals, National Pollutant Release Inventory, and Hazardous Waste Information Network training.

Jade Anema - Ms. Jade Anema, MBA, B. Eng, CAPM, E.I.T, was the Project Coordinator for the project. Ms. Anema conducted the research for this report. Jade Anema recently graduated with a Bachelor of Environmental Engineering and has over three years of environmental project experience including work on Phase One & Two Environmental Site Assessments, Records of Site Condition Filing, Environmental Compliance Approvals, Designated Substances and Hazardous Materials Surveys, Site Investigations, and Remediation Studies.

Jodie Glasier - Mrs. Jodie Glasier, B.A.(Hons), PD-EMA, M.MM, EP, is a Project Manager with over ten + years of diverse environmental project experience including work on Phase One & Two Environmental Site Assessments, Records of Site Condition Filing, Environmental Compliance Approvals, Designated Substances and Hazardous Materials Surveys, Site Investigations, Remediation Studies, and Environmental Planning.

Kevin Christian - Mr. Kevin Christian, M.Sc., P.Geo., a Professional Geoscientist (#0387) registered with the Association of Professional Geoscientists of Ontario, and a Qualified Person (Environmental Site Assessment & Risk Assessment) as per Ontario Regulations 153/04 and 511/09, has thirty-two years of experience in the environmental geoscience consulting industry.

9.0 REFERENCES

The following reports, documents and databases were reviewed for the completion of this Phase One ESA.

- EcoLog ERIS
- Brock University Map Library
- City of Fort Erie/Bertie Fire Insurance Plans
- City of Fort Erie Vernon's City Directories
- Brock University Special Collections Library
- National Pollutant Release Inventory (NPRI) database www.ec.gc.ca.
- Ontario Inventory of PCB Storage Site October 1991, Ministry of the Environment, January 1992.
- Technical Safety and Standards Authority (TSSA) Fuel Storage Information
- Inventory of Coal Gasification Plant Waste Sites in Ontario, Volume II; MOE, 1987
- Ontario Oil, Gas, and Salt Resources Library, www.ogsrlibrary.com.
- Waste Disposal Site Inventory, Ministry of the Environment, 1991.
- Search Record of Site Condition, Ontario Ministry of Environment, Conservations and Parks; https://www.lrcsde.lrc.gov.on.ca/BFISWebPublic/pub/searchFiledRsc_search?request_locale=en
- Environmental Registry: Search Certificate of Property Use; <https://www.ebr.gov.on.ca/ERS-WEB-External/searchNotice.do>
- Ministry of Natural Resources (ANSIs) mapping; https://www.gisapplication.lrc.gov.on.ca/matm/Index.html?viewer=Make_A_Topographic_Map.MATM&locale=en-US
- Search Access Environment for Environmental Compliance Approvals; <http://www.accessenvironment.ene.gov.on.ca/AEWeb/ae/GoSearch.action?search=basic&lang=en>

FIGURES

- Figure 1: Site Location
- Figure 2: Adjacent Land Uses
- Figure 3: Site Layout
- Figure 4: Potentially Contaminating Activities within Study Area/ Areas of Potential Environmental Concern



Legend

 Study Site

Client

Bornolite Inc.

Project

Phase One ESA
97 Gornham Road,
Fort Erie, ON

Figure Name

Site Location

Project E-19-71-1

Date February 2020
Drafted by: mwez
Reviewed by: JLG

Figure

1



Legend

- Phase One Property
- Residential Use
- Agricultural Use
- Community Use
- Vacant land
- Commercial Use

Client
Bomofive Inc.

Project
Phase One ESA
97 Gorham Road,
Fort Erie, ON

Figure Name
Site Layout and
Adjacent Land
Use

Figure 2

Project	E-19-71-1
Date	February 2020
Created	N. Macer
Reviewed	J.S.



Legend

Phase One Property

Photo Log Reference

Arrow point indicates direction of photo taken

Fence/line

Client
Bomfive Inc.

Project
Phase One ESA
97 Gotham Road,
Fort Erie, ON

Figure Name
Site Layout

Project	E419-71-1	Figure 3
Date	February 2020	
Drawn/Checked/Reviewed	N. Metz / JIS	





Legend

- Phase One Property
- PCA-#
- PCA-1: Location of piping potentially associated with historic ASTs

- APEC-#
- APEC-1: areas of concern to soil/groundwater from possible ASTs.

* Indicates unknown UST location

- Historic AST

Client
Borntive Inc.

Project
Phase One ESA
97 Gotham Road,
Fort Erie, ON

Figure Name
Potentially
Contaminating
Activities

Project E-19-7-1-1
Date February 2020
Drawn by N. Lutz
Reviewed by JG

Figure
4



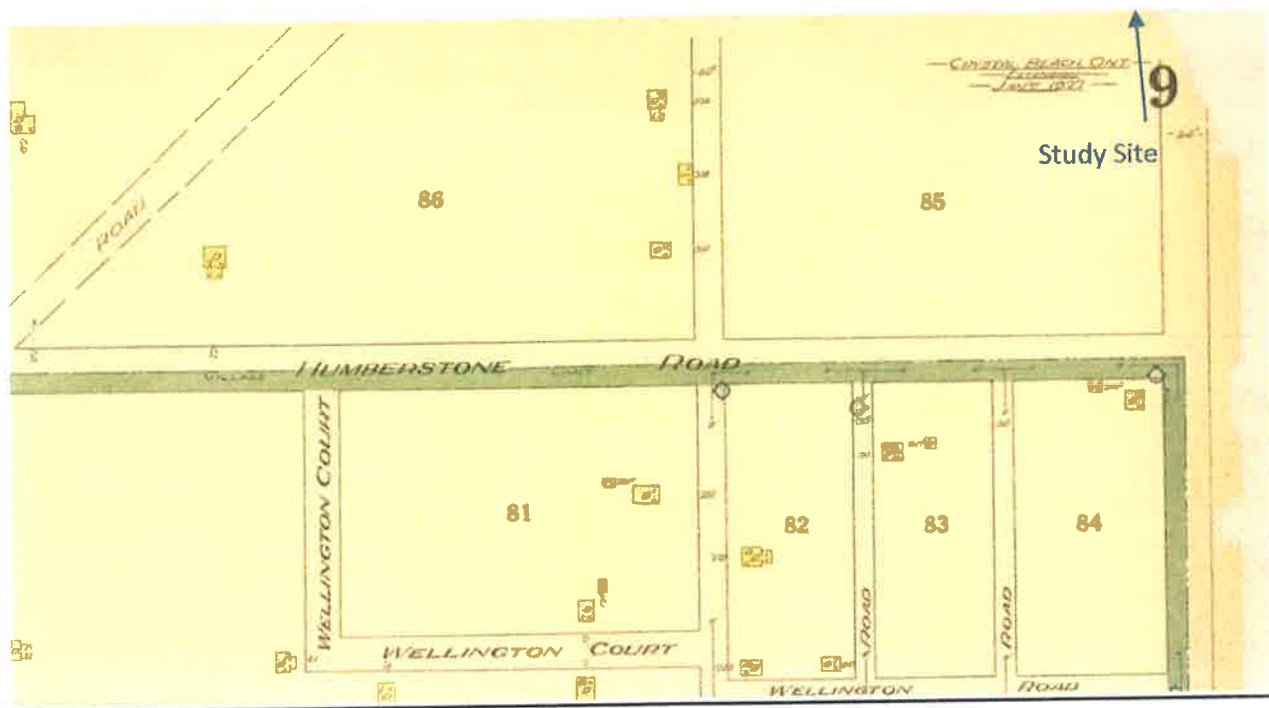
Appendix A:

Fire Insurance Plans

Fire Insurance Plans

One (1) Fire Insurance Plan (FIP) was available at Brock University from the Special Collections library, dated 1927. Details are provided below.

1927



The 1927 FIP illustrates the south & southwest portion of the study area, the study site is located approximately 140m north of the northeast section of the FIP. The southwest area was noted as residential properties and the south as vacant/undeveloped lands. None of these land uses within the study area are considered to be Potentially Contaminating Activities (PCAs).

Appendix B:

Vernon's City Directories

Vernon's City Directory Search

Vernon's City Directories were available for the Town of Fort Erie dating from 1973 – 2005/06; however, the study site was only listed from 1976 - 2005/06. Details from the City Directory search are provided below.

Date	Location Description	Address	Property Name	
2005/06	Farr Avenue			
		3812-3856	Residential	
		3856	Timberwolf Tree Service	
		3870	No Return	
		3916-3970	Residential	
		3801	Ridgeway Manor	
		3837 – 3949	Residential	
		Gorham Road		
		44	Residential	
		50	Vacant	
		58	Lino's Pizza	
		ws	Ridgeway Cemetery	
		104-204	Residential	
		97	Kitty's Apartments (4 tenants)	
		113-171	Residential	
Highland Drive				
	3821-3856	Residential		
Park Street				
	97-246	Residential		
1995/96	Farr Avenue			
		3812-3856	Residential	
		3846	No Return	
		3916-3970	Residential	
		3801	Ridgeway Manor	
		Gorham Road		
		44	Residential	
		58	Lino's Pizza	
		ws	Ridgeway Cemetery	
		104-204	Residential	
		97	Kitty's Apartments (2 tenants)	
		113-171	Residential	
		Highland Drive		
			3821-3856	Residential
Park Street				
	97-246	Residential		
1985	Farr Avenue			
		3812-3856	Residential	
		3846	Kitty's Motel and Gift Shop	
		3916-3970	Residential	
		Gorham Road		
	44	Residential		
	62	Lino's Pizza		

Date	Location Description	Address	Property Name
		ws	Ridgeway Cemetery
		104-204	Residential
		97	Top of the Ridge Motel
		113-171	Residential
	Highland Drive		
		3821-3856	Residential
	Park Street		
		97-246	Residential
1976	Farr Avenue		
		3812-3856	Residential
		3746	Kitty's Motel and Gift Shop
		3866	Top of the Ridge Motel
	Gorham Road		
		62	Trading Post
		ws	Ridgeway Cemetery
		104-204	Residential
		97	Top of the Ridge Motel
		113-171	Residential
	Highland Drive		
		3821-3856	Residential
	Park Street		
		97-246	Residential
1973	Gorham Road		
			Ridgeway was outside of the Town of Fort Erie listings for Vernon's City Directories.

Notes:

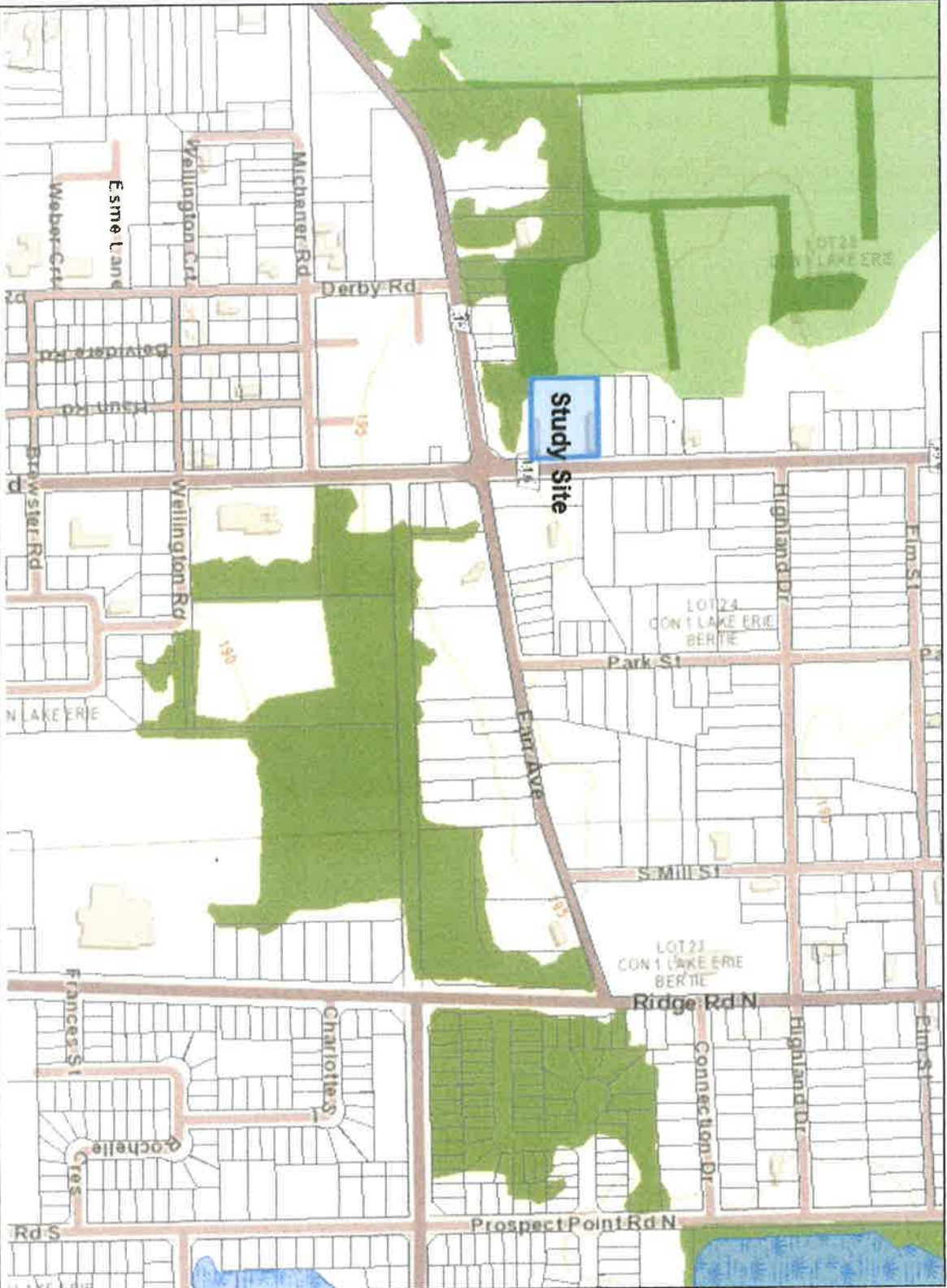
- ss: south side, ns: north side.
- Highlighted properties indicate study site.
- Red text indicates a Potentially Contaminating Activity

Appendix C:

Ministry of Natural Resources Natural Heritage Map

97 Gorham Road, Fort Erie, ON

Notes:



Legend

- Assessment Parcel
- Woodland
- Conservation Reserve
- Provincial Park
- Natural Heritage System
- Scarpion
- Wetland
- Provincially Significant Natural Estuarine
- Non-Provincially Significant Natural Estuarine
- Unincorporated Wetland
- Area of Natural Heritage & Scientific Interest (ANHSI)
- Provincially Significant
- Provincially Significant Earth Science Area (ESA)
- Greenbelt Plan
- Boundary
- River Valley Connectors
- Land Use Designations
- Protected Campsites
- Towns and Villages
- Hamlets
- Urban River Valley
- Specialty Crop Areas
- Niagara Escarpment Plan (NEP)
- Boundary
- Parks and Open Space System
- Land Use Designations
- Escarpment Natural Area
- Escarpment Protection Area
- Escarpment Rural Area
- Natural Resource Extension Area
- Escarpment Recreation Area
- Urban Area
- Major Urban Centre
- Oak Ridge Moraine Conservation Plan (OSM)
- Boundary
- Land Use Designations
- Rural Core Area
- Heritage Linkage Area
- Countryside Area
- Rural Settlement
- Palgrave Estates Residential Community Settlement Area

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry (OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

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Appendix D:

EcoLog ERIS

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



DATABASE REPORT

Project Property: *Phase One ESA - 97 Gorham Road,
Ridgeway, ON
97 Gorham Road
Ridgeway ON L0S 1N0*

Project No: *E-19-71-1*

Report Type: *Standard Report*

Order No: *20200225130*

Requested by: *Hallex Environmental Ltd.*

Date Completed: *February 28, 2020*

Environmental Risk Information Services

A division of Glacier Media Inc.

1.866.517.5204 | info@erisinfo.com | erisinfo.com

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Executive Summary

Property Information:

Project Property: Phase One ESA - 97 Gorham Road, Ridgeway, ON
97 Gorham Road Ridgeway ON L0S 1N0

Project No: E-19-71-1

Coordinates:

Latitude: 42.8772897
Longitude: -79.0594298
UTM Northing: 4,749,014.79
UTM Easting: 658,489.37
UTM Zone: 17T

Elevation: 634 FT
193.38 M

Order Information:

Order No: 20200225130
Date Requested: February 25, 2020
Requested by: Hallex Environmental Ltd.
Report Type: Standard Report

Historical/Products:

Executive Summary: Report Summary

<i>Database</i>	<i>Name</i>	<i>Searched</i>	<i>Project Property</i>	<i>Within 0.25 km</i>	<i>Total</i>
AAGR	<i>Abandoned Aggregate Inventory</i>	Y	0	0	0
AGR	<i>Aggregate Inventory</i>	Y	0	0	0
AMIS	<i>Abandoned Mine Information System</i>	Y	0	0	0
ANDR	<i>Anderson's Waste Disposal Sites</i>	Y	0	0	0
AST	<i>Aboveground Storage Tanks</i>	Y	0	0	0
AUWR	<i>Automobile Wrecking & Supplies</i>	Y	0	0	0
BORE	<i>Borehole</i>	Y	0	0	0
CA	<i>Certificates of Approval</i>	Y	0	1	1
CDRY	<i>Dry Cleaning Facilities</i>	Y	0	0	0
CFOT	<i>Commercial Fuel Oil Tanks</i>	Y	0	0	0
CHEM	<i>Chemical Register</i>	Y	0	0	0
CNG	<i>Compressed Natural Gas Stations</i>	Y	0	0	0
COAL	<i>Inventory of Coal Gasification Plants and Coal Tar Sites</i>	Y	0	0	0
CONV	<i>Compliance and Convictions</i>	Y	0	0	0
CPU	<i>Certificates of Property Use</i>	Y	0	0	0
DRL	<i>Drill Hole Database</i>	Y	0	0	0
EASR	<i>Environmental Activity and Sector Registry</i>	Y	0	0	0
EBR	<i>Environmental Registry</i>	Y	0	0	0
ECA	<i>Environmental Compliance Approval</i>	Y	0	1	1
EEM	<i>Environmental Effects Monitoring</i>	Y	0	0	0
EHS	<i>ERIS Historical Searches</i>	Y	0	1	1
EIIS	<i>Environmental Issues Inventory System</i>	Y	0	0	0
EMHE	<i>Emergency Management Historical Event</i>	Y	0	0	0
EPAR	<i>Environmental Penalty Annual Report</i>	Y	0	0	0
EXP	<i>List of Expired Fuels Safety Facilities</i>	Y	0	0	0
FCON	<i>Federal Convictions</i>	Y	0	0	0
FCS	<i>Contaminated Sites on Federal Land</i>	Y	0	0	0
FED TANKS	<i>Federal Identification Registry for Storage Tank Systems (FIRSTS)</i>	Y	0	0	0
FOFT	<i>Fisheries & Oceans Fuel Tanks</i>	Y	0	0	0
FST	<i>Fuel Storage Tank</i>	Y	0	0	0
FSTH	<i>Fuel Storage Tank - Historic</i>	Y	0	0	0
GEN	<i>Ontario Regulation 347 Waste Generators Summary</i>	Y	0	0	0
GHG	<i>Greenhouse Gas Emissions from Large Facilities</i>	Y	0	0	0
HINC	<i>TSSA Historic Incidents</i>	Y	0	0	0
IAFT	<i>Indian & Northern Affairs Fuel Tanks</i>	Y	0	0	0
INC	<i>Fuel Oil Spills and Leaks</i>	Y	0	0	0

<i>Database</i>	<i>Name</i>	<i>Searched</i>	<i>Project Property</i>	<i>Within 0.25 km</i>	<i>Total</i>
LIMO	<i>Landfill Inventory Management Ontario</i>	Y	0	0	0
MINE	<i>Canadian Mine Locations</i>	Y	0	0	0
MNR	<i>Mineral Occurrences</i>	Y	0	0	0
NATE	<i>National Analysis of Trends in Emergencies System (NATES)</i>	Y	0	0	0
NCPL	<i>Non-Compliance Reports</i>	Y	0	0	0
NDFT	<i>National Defense & Canadian Forces Fuel Tanks</i>	Y	0	0	0
NDSP	<i>National Defense & Canadian Forces Spills</i>	Y	0	0	0
NDWD	<i>National Defence & Canadian Forces Waste Disposal Sites</i>	Y	0	0	0
NEBI	<i>National Energy Board Pipeline Incidents</i>	Y	0	0	0
NEBP	<i>National Energy Board Wells</i>	Y	0	0	0
NEES	<i>National Environmental Emergencies System (NEES)</i>	Y	0	0	0
NPCB	<i>National PCB Inventory</i>	Y	0	0	0
NPRI	<i>National Pollutant Release Inventory</i>	Y	0	0	0
OGWE	<i>Oil and Gas Wells</i>	Y	0	0	0
OOGW	<i>Ontario Oil and Gas Wells</i>	Y	0	1	1
OPCB	<i>Inventory of PCB Storage Sites</i>	Y	0	0	0
ORD	<i>Orders</i>	Y	0	0	0
PAP	<i>Canadian Pulp and Paper</i>	Y	0	0	0
PCFT	<i>Parks Canada Fuel Storage Tanks</i>	Y	0	0	0
PES	<i>Pesticide Register</i>	Y	0	0	0
PINC	<i>Pipeline Incidents</i>	Y	0	0	0
PRT	<i>Private and Retail Fuel Storage Tanks</i>	Y	0	0	0
PTTW	<i>Permit to Take Water</i>	Y	0	0	0
REC	<i>Ontario Regulation 347 Waste Receivers Summary</i>	Y	0	0	0
RSC	<i>Record of Site Condition</i>	Y	0	0	0
RST	<i>Retail Fuel Storage Tanks</i>	Y	0	0	0
SCT	<i>Scott's Manufacturing Directory</i>	Y	0	0	0
SPL	<i>Ontario Spills</i>	Y	0	0	0
SRDS	<i>Wastewater Discharger Registration Database</i>	Y	0	0	0
TANK	<i>Anderson's Storage Tanks</i>	Y	0	0	0
TCFT	<i>Transport Canada Fuel Storage Tanks</i>	Y	0	0	0
VAR	<i>Variances for Abandonment of Underground Storage Tanks</i>	Y	0	0	0
WDS	<i>Waste Disposal Sites - MOE CA Inventory</i>	Y	0	0	0
WDSH	<i>Waste Disposal Sites - MOE 1991 Historical Approval Inventory</i>	Y	0	0	0
WWIS	<i>Water Well Information System</i>	Y	1	0	1
Total:			1	4	5

Executive Summary: Site Report Summary - Project Property

<i>Map Key</i>	<i>DB</i>	<i>Company/Site Name</i>	<i>Address</i>	<i>Dir/Dist (m)</i>	<i>Elev diff (m)</i>	<i>Page Number</i>
<u>1</u>	WWIS		lot 25 con 1 ON <i>Well ID:</i> 6600124	NW/33.9	-0.56	<u>13</u>

Executive Summary: Site Report Summary - Surrounding Properties

<i>Map Key</i>	<i>DB</i>	<i>Company/Site Name</i>	<i>Address</i>	<i>Dir/Dist (m)</i>	<i>Elev Diff (m)</i>	<i>Page Number</i>
<u>2</u>	CA	FORT ERIE TOWN	GORHAM RD/FARR AVE/DOMINION RD FORT ERIE TOWN ON	SSE/94.9	1.47	<u>15</u>
<u>3</u>	ECA	The Regional Municipality of Niagara	1 Ridgeway Rd Fort Erie ON	SSE/115.8	2.02	<u>15</u>
<u>4</u>	EHS		Ridgeway Road Fort Erie ON	S/125.2	2.37	<u>16</u>
<u>5</u>	OOGW	Maple Leaf Gas Syndicate-J. Pickard #1	Bertie ON Licence No: F015382	NW/155.4	-3.54	<u>16</u>

Executive Summary: Summary By Data Source

CA - Certificates of Approval

A search of the CA database, dated 1985-Oct 30, 2011* has found that there are 1 CA site(s) within approximately 0.25 kilometers of the project property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction</u>	<u>Distance (m)</u>	<u>Map Key</u>
FORT ERIE TOWN	GORHAM RD/FARR AVE/DOMINION RD FORT ERIE TOWN ON	SSE	94.93	<u>2</u>

ECA - Environmental Compliance Approval

A search of the ECA database, dated Oct 2011-Jan 31, 2020 has found that there are 1 ECA site(s) within approximately 0.25 kilometers of the project property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction</u>	<u>Distance (m)</u>	<u>Map Key</u>
The Regional Municipality of Niagara	1 Ridgeway Rd Fort Erie ON	SSE	115.83	<u>3</u>

EHS - ERIS Historical Searches

A search of the EHS database, dated 1999-Jan 31, 2020 has found that there are 1 EHS site(s) within approximately 0.25 kilometers of the project property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction</u>	<u>Distance (m)</u>	<u>Map Key</u>
	Ridgeway Road Fort Erie ON	S	125.24	<u>4</u>

OOGW - Ontario Oil and Gas Wells

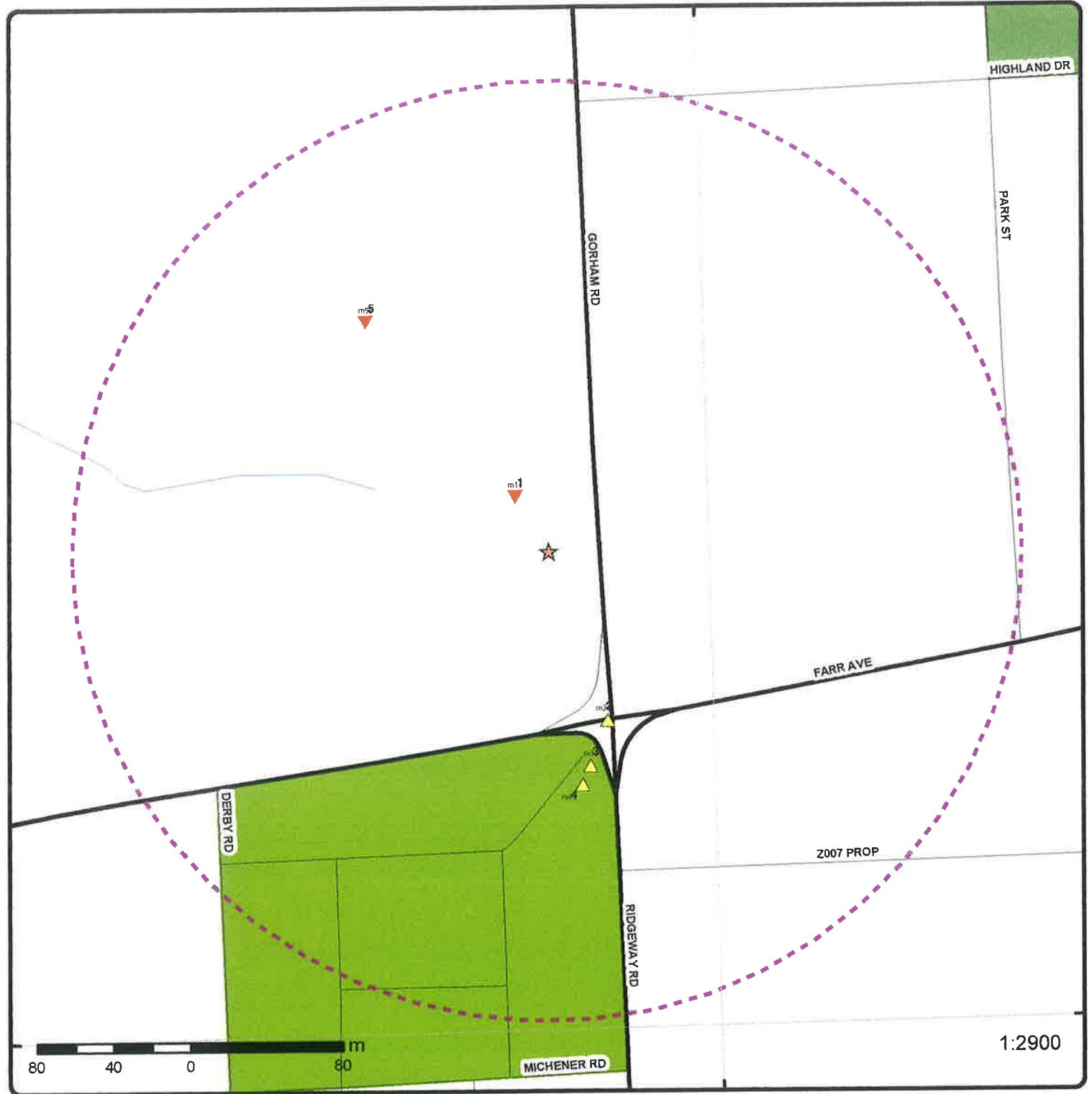
A search of the OOGW database, dated 1800-Jun 2019 has found that there are 1 OOGW site(s) within approximately 0.25 kilometers of the project property.

<u>Lower Elevation</u>	<u>Address</u>	<u>Direction</u>	<u>Distance (m)</u>	<u>Map Key</u>
Maple Leaf Gas Syndicate-J. Pickard #1	Bertie ON <i>Licence No:</i> F015382	NW	155.42	<u>5</u>

WWIS - Water Well Information System

A search of the WWIS database, dated Feb 28, 2019 has found that there are 1 WWIS site(s) within approximately 0.25 kilometers of the project property.

<u>Lower Elevation</u>	<u>Address</u>	<u>Direction</u>	<u>Distance (m)</u>	<u>Map Key</u>
	lot 25 con 1 ON	NW	33.94	<u>1</u>
	<i>Well ID:</i> 6600124			



Map : 0.25 Kilometer Radius

Order Number: 20200225130
Address: 97 Gorham Road, Ridgeway, ON



Project Property	Expressway	Industrial and Resource - Regions	National Park
Buffer Outline	Principal Highway	Main Line	Provincial or Territorial Park
Eris Sites with Higher Elevation	Secondary Highway	Sidetrack	Other Park
Eris Sites with Same Elevation	Major Road	Transit Line	Golf Course or Driving Range
Eris Sites with Lower Elevation	Local road	Abandoned Line	Park or Sports Field
Eris Sites with Unknown Elevation	Trail	Proposed Road	Other Recreation Area
	Ferry Route/Ice Road		



Aerial Year: 2017

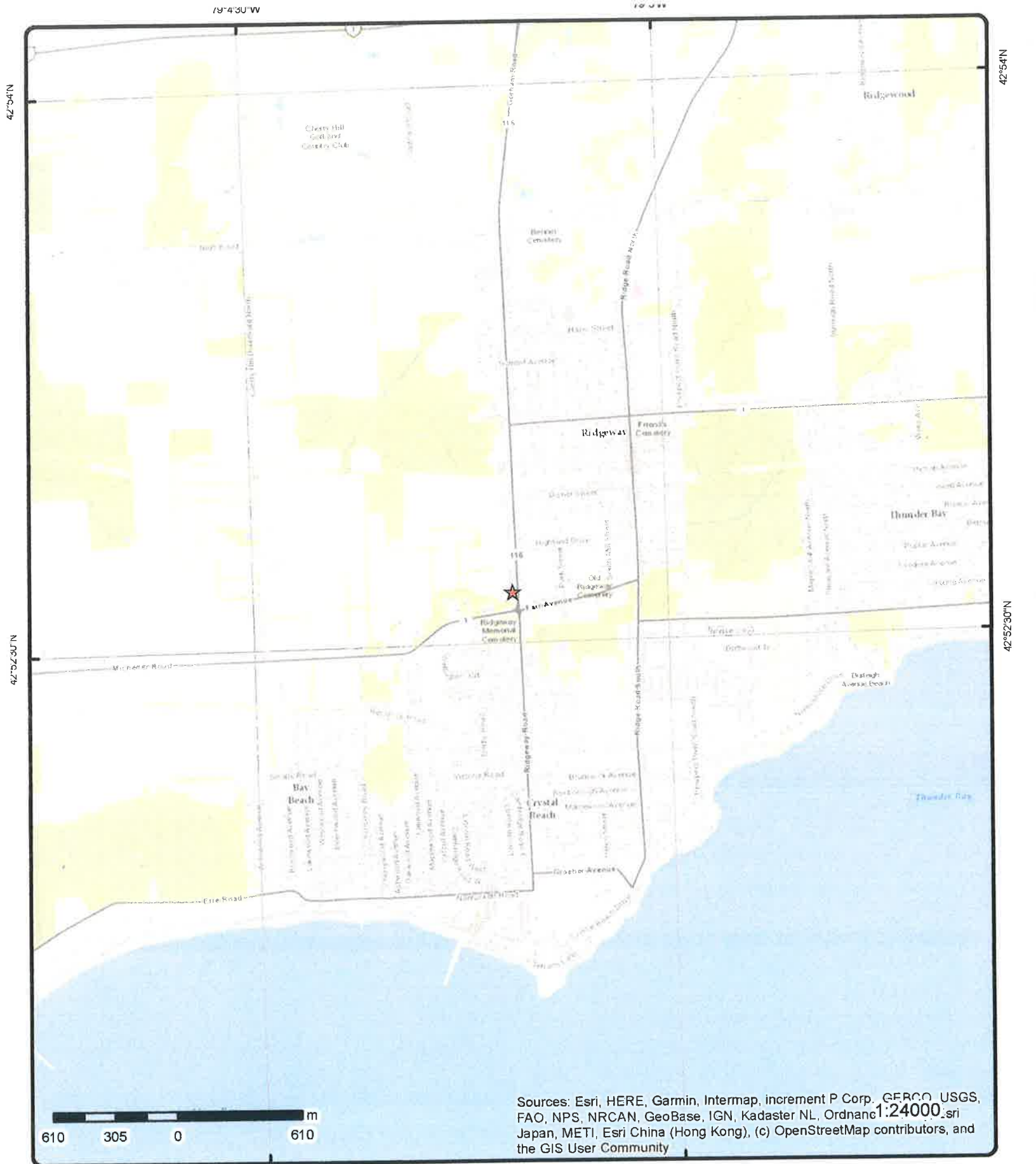
Address: 97 Gorham Road, Ridgeway, ON

Source: ESRI World Imagery

Order Number: 20200225130



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Topographic Map

Address: 97 Gorham Road, ON

Source: ESRI World Topographic Map

Order Number: 20200225130



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Detail Report

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
1	1 of 1	NW/33.9	192.8 / -0.56	lot 25 con 1 ON	WWIS

<p>Well ID: 6600124</p> <p>Construction Date:</p> <p>Primary Water Use: Domestic</p> <p>Sec. Water Use: 0</p> <p>Final Well Status: Water Supply</p> <p>Water Type:</p> <p>Casing Material:</p> <p>Audit No:</p> <p>Tag:</p> <p>Construction Method:</p> <p>Elevation (m):</p> <p>Elevation Reliability:</p> <p>Depth to Bedrock:</p> <p>Well Depth:</p> <p>Overburden/Bedrock:</p> <p>Pump Rate:</p> <p>Static Water Level:</p> <p>Flowing (Y/N):</p> <p>Flow Rate:</p> <p>Clear/Cloudy:</p>	<p>Data Entry Status:</p> <p>Data Src: 1</p> <p>Date Received: 5/20/1959</p> <p>Selected Flag: Yes</p> <p>Abandonment Rec:</p> <p>Contractor: 2526</p> <p>Form Version: 1</p> <p>Owner:</p> <p>Street Name:</p> <p>County: NIAGARA (WELLAND)</p> <p>Municipality: FORT ERIE TOWN (BERTIE)</p> <p>Site Info:</p> <p>Lot: 025</p> <p>Concession: 01</p> <p>Concession Name: LEF</p> <p>Easting NAD83:</p> <p>Northing NAD83:</p> <p>Zone:</p> <p>UTM Reliability:</p>
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Bore Hole Information

<p>Bore Hole ID: 10459858</p> <p>DP2BR: 38</p> <p>Spatial Status:</p> <p>Code OB: r</p> <p>Code OB Desc: Bedrock</p> <p>Open Hole:</p> <p>Cluster Kind:</p> <p>Date Completed: 5/14/1959</p> <p>Remarks:</p> <p>Elevrc Desc:</p> <p>Location Source Date:</p> <p>Improvement Location Source:</p> <p>Improvement Location Method:</p> <p>Source Revision Comment:</p> <p>Supplier Comment:</p>	<p>Elevation: 192.099685</p> <p>Elevrc:</p> <p>Zone: 17</p> <p>East83: 658472.1</p> <p>North83: 4749044</p> <p>Org CS:</p> <p>UTMRC: 5</p> <p>UTMRC Desc: margin of error : 100 m - 300 m</p> <p>Location Method: p5</p>
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Overburden and Bedrock

Materials Interval

Formation ID: 932588087

Layer: 2

Color:

General Color:

Mat1: 15

Most Common Material: LIMESTONE

Mat2:

Other Materials:

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site
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Mat3:
 Other Materials:
 Formation Top Depth: 38
 Formation End Depth: 55
 Formation End Depth UOM: ft

Overburden and Bedrock
 Materials Interval

Formation ID: 932588086
 Layer: 1
 Color:
 General Color:
 Mat1: 09
 Most Common Material: MEDIUM SAND
 Mat2: 11
 Other Materials: GRAVEL
 Mat3:
 Other Materials:
 Formation Top Depth: 0
 Formation End Depth: 38
 Formation End Depth UOM: ft

Method of Construction & Well
 Use

Method Construction ID:
 Method Construction Code: 1
 Method Construction: Cable Tool
 Other Method Construction:

Pipe Information

Pipe ID: 11008428
 Casing No: 1
 Comment:
 Alt Name:

Construction Record - Casing

Casing ID: 930746703
 Layer: 1
 Material: 1
 Open Hole or Material: STEEL
 Depth From:
 Depth To: 40
 Casing Diameter: 5
 Casing Diameter UOM: inch
 Casing Depth UOM: ft

Construction Record - Casing

Casing ID: 930746704
 Layer: 2
 Material: 4
 Open Hole or Material: OPEN HOLE
 Depth From:
 Depth To: 55
 Casing Diameter: 5
 Casing Diameter UOM: inch
 Casing Depth UOM: ft

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
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Results of Well Yield Testing

Pump Test ID: 996600124
Pump Set At:
Static Level: 11
Final Level After Pumping: 18
Recommended Pump Depth: 18
Pumping Rate: 10
Flowing Rate:
Recommended Pump Rate: 10
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code: 2
Water State After Test: CLOUDY
Pumping Test Method: 1
Pumping Duration HR: 0
Pumping Duration MIN: 30
Flowing: N

Water Details

Water ID: 933947356
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 55
Water Found Depth UOM: ft

<u>2</u>	1 of 1	SSE/94.9	194.8 / 1.47	FORT ERIE TOWN GORHAM RD/FARR AVE/DOMINION RD FORT ERIE TOWN ON	CA
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Certificate #: 7-1237-97-
Application Year: 97
Issue Date: 11/24/1997
Approval Type: Municipal water
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

<u>3</u>	1 of 1	SSE/115.8	195.4 / 2.02	The Regional Municipality of Niagara 1 Ridgeway Rd Fort Erie ON	ECA
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Approval No: 5197-6JSRD6
Approval Date: 2005-12-07
Status: Approved
Record Type: ECA
Link Source: IDS
SWP Area Name:
Approval Type: ECA-Municipal Drinking Water Systems
Project Type: Municipal Drinking Water Systems
Address: 1 Ridgeway Rd
Full Address:
Full PDF Link:

MOE District:
City:
Longitude:
Latitude:
Geometry X:
Geometry Y:

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
<u>4</u>	1 of 1	S/125.2	195.7 / 2.37	Ridgeway Road Fort Erie ON	EHS
Order No:	20151023078			Nearest Intersection:	
Status:	C			Municipality:	Niagara
Report Type:	Standard Report			Client Prov/State:	NC
Report Date:	30-OCT-15			Search Radius (km):	.25
Date Received:	23-OCT-15			X:	-79.05925
Previous Site Name:	N/A			Y:	42.87617
Lot/Building Size:	2.825-ha				
Additional Info Ordered:	Aerial Photos				

<u>5</u>	1 of 1	NW/155.4	189.8 / -3.54	Maple Leaf Gas Syndicate-J. Pickard #1 Bertie ON	OOGW
Licence No:	F015382			Well Compl:	27092
Well ID:	27477			County:	Welland
Well Compl ID:	27092			Block:	NULL
W Class ID:	2362			Lot:	25
UWI Code:	F015382			Conc:	ILES
Permit Date:	NULL			Surface Lat NAD83:	42.87841083
Depth(m):	256.34			Surface Long NAD83:	-79.06056806
Well Pool:	Welland Pool			Bottom Lat NAD83:	42.87841083
Completion Date:	NULL			Bottom Long NAD83:	-79.06056806
Depth Reached:	1950-08-05 00:00:00			Lot Sides (m):	395.32 N
Capped Date:	NULL			E/W (m):	106.68 W
Class ID:				Latitude Nad27:	
DB Source:				Longitude Nad27:	
Status as of:	June 2019			bottom lat27:	
Start Date:	1950-07-15 00:00:00			bottom long27:	
SPUD Date:	1950-07-15 00:00:00			Lateral:	No
Class:	DEV			Accuracy:	50
Grnd Elev:	185.00			Method:	Well Records (1921 to 1954)
KB Elev:	185.31			Parent:	NULL
TVD:	256.34			Prod Top:	230.73
PBTD:	NULL			Prod Bot:	NULL
TD Form:	Queenston			PROPD Depth:	609.60
Workover D:	NULL			Location Method:	Well Records (1921 to 1954)
Operator:	Maple Leaf Gas Syndicate			Location Accuracy:	Within 50 metres
Township:	Bertie			Dt Obtained:	2010-07-09 15:29:10
Well Name:	Maple Leaf Gas Syndicate-J. Pickard #1				
Target:	CLI				
Target Desc:	TARGETS WITHIN THE CLINTON AND CATARACT (OR MEDINA) GROUPS (WHIRLPOOL TO IRONDEQUOIT FORMATIONS INCLUSIVE)				
Well Status Type:	Natural Gas Well				
Status Type Desc:	A WELL PRESENTLY OR FORMERLY USED TO PRODUCE NATURAL GAS FROM A RESERVOIR				
Well Status Mode:	Unknown				
Status Mode Desc:					
Classification:	DEVELOPMENT				
Classification Desc:	"DEVELOPMENT WELL" MEANS A WELL THAT IS DRILLED FOR THE PURPOSE OF PRODUCING FROM OR EXTENDING A POOL OF OIL OR GAS INTO WHICH ANOTHER WELL HAS ALREADY BEEN DRILLED				
Cement Rec:	NULL				
Comments:	On Form 1 well is measured south from centre lot line. Location confirmed by J. Pickard #2 (F015383)				

Details

License No:	F015382	Source:	FORM 7
Top (m):	11.28	Static Level (m):	n/a
Elevation (m):	174.03	Geology/Water:	Geology

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	
Geology Formation:	Bois Blanc			Elevation / Top (m):	174.03 / 11.28
Type of Water:	n/a				
License No:	F015382			Source:	FORM 7
Top (m):	11.28			Static Level (m):	n/a
Elevation (m):	174.03			Geology/Water:	Geology
Geology Formation:	Top of Bedrock			Elevation / Top (m):	174.03 / 11.28
Type of Water:	n/a				
License No:	F015382			Source:	MNR
Top (m):	220.07			Static Level (m):	n/a
Elevation (m):	-34.76			Geology/Water:	Geology
Geology Formation:	Grimsby			Elevation / Top (m):	-34.76 / 220.07
Type of Water:	n/a				
License No:	F015382			Source:	FORM 7
Top (m):	242.93			Static Level (m):	n/a
Elevation (m):	-57.62			Geology/Water:	Geology
Geology Formation:	Cabot Head			Elevation / Top (m):	-57.62 / 242.93
Type of Water:	n/a				
License No:	F015382			Source:	FORM 7
Top (m):	0.30			Static Level (m):	n/a
Elevation (m):	185.00			Geology/Water:	Geology
Geology Formation:	Drift			Elevation / Top (m):	185.00 / 0.30
Type of Water:	n/a				
License No:	F015382			Source:	MNR
Top (m):	211.53			Static Level (m):	n/a
Elevation (m):	-26.22			Geology/Water:	Geology
Geology Formation:	Irondequoit			Elevation / Top (m):	-26.22 / 211.53
Type of Water:	n/a				
License No:	F015382			Source:	FORM 7
Top (m):	211.53			Static Level (m):	n/a
Elevation (m):	-26.22			Geology/Water:	Geology
Geology Formation:	Irondequoit			Elevation / Top (m):	-26.22 / 211.53
Type of Water:	n/a				
License No:	F015382			Source:	MNR
Top (m):	11.28			Static Level (m):	n/a
Elevation (m):	174.03			Geology/Water:	Geology
Geology Formation:	Bois Blanc			Elevation / Top (m):	174.03 / 11.28
Type of Water:	n/a				
License No:	F015382			Source:	FORM 7
Top (m):	133.81			Static Level (m):	n/a
Elevation (m):	51.50			Geology/Water:	Geology
Geology Formation:	Guelph			Elevation / Top (m):	51.50 / 133.81
Type of Water:	n/a				
License No:	F015382			Source:	FORM 7
Top (m):	192.33			Static Level (m):	n/a
Elevation (m):	-7.02			Geology/Water:	Geology
Geology Formation:	Rochester			Elevation / Top (m):	-7.02 / 192.33
Type of Water:	n/a				
License No:	F015382			Source:	MNR
Top (m):	11.28			Static Level (m):	n/a
Elevation (m):	174.03			Geology/Water:	Geology
Geology Formation:	Top of Bedrock			Elevation / Top (m):	174.03 / 11.28
Type of Water:	n/a				
License No:	F015382			Source:	MNR
Top (m):	254.51			Static Level (m):	n/a
Elevation (m):	-69.20			Geology/Water:	Geology

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	
Geology Formation:	Queenston			Elevation / Top (m):	-69.20 / 254.51
Type of Water:	n/a				
License No:	F015382			Source:	MNR
Top (m):	133.81			Static Level (m):	n/a
Elevation (m):	51.50			Geology/Water:	Geology
Geology Formation:	Guelph			Elevation / Top (m):	51.50 / 133.81
Type of Water:	n/a				
License No:	F015382			Source:	MNR
Top (m):	249.02			Static Level (m):	n/a
Elevation (m):	-63.72			Geology/Water:	Geology
Geology Formation:	Whirlpool			Elevation / Top (m):	-63.72 / 249.02
Type of Water:	n/a				
License No:	F015382			Source:	n/a
Top (m):	51.51			Static Level (m):	7.92
Elevation (m):	n/a			Geology/Water:	Water
Geology Formation:	Bois Blanc			Elevation / Top (m):	n/a / 51.51
Type of Water:	Sulphur				
License No:	F015382			Source:	n/a
Top (m):	13.72			Static Level (m):	5.18
Elevation (m):	n/a			Geology/Water:	Water
Geology Formation:	F Unit			Elevation / Top (m):	n/a / 13.72
Type of Water:	Fresh				
License No:	F015382			Source:	MNR
Top (m):	242.93			Static Level (m):	n/a
Elevation (m):	-57.62			Geology/Water:	Geology
Geology Formation:	Cabot Head			Elevation / Top (m):	-57.62 / 242.93
Type of Water:	n/a				
License No:	F015382			Source:	MNR
Top (m):	0.30			Static Level (m):	n/a
Elevation (m):	185.00			Geology/Water:	Geology
Geology Formation:	Drift			Elevation / Top (m):	185.00 / 0.30
Type of Water:	n/a				
License No:	F015382			Source:	MNR
Top (m):	192.33			Static Level (m):	n/a
Elevation (m):	-7.02			Geology/Water:	Geology
Geology Formation:	Rochester			Elevation / Top (m):	-7.02 / 192.33
Type of Water:	n/a				
License No:	F015382			Source:	FORM 7
Top (m):	220.07			Static Level (m):	n/a
Elevation (m):	-34.76			Geology/Water:	Geology
Geology Formation:	Grimsby			Elevation / Top (m):	-34.76 / 220.07
Type of Water:	n/a				
License No:	F015382			Source:	FORM 7
Top (m):	249.02			Static Level (m):	n/a
Elevation (m):	-63.72			Geology/Water:	Geology
Geology Formation:	Whirlpool			Elevation / Top (m):	-63.72 / 249.02
Type of Water:	n/a				
License No:	F015382			Source:	FORM 7
Top (m):	254.51			Static Level (m):	n/a
Elevation (m):	-69.20			Geology/Water:	Geology
Geology Formation:	Queenston			Elevation / Top (m):	-69.20 / 254.51
Type of Water:	n/a				

Unplottable Summary

Total: 11 Unplottable sites

DB	Company Name/Site Name	Address	City	Postal
CA	The Regional Municipality of Niagara	Gorham Rd	Fort Erie ON	
CA	CRYSTAL BEACH COOPERATIVE HOMES INC.	DERBY RD.,PLAN #420, (SWM)	FORT ERIE TOWN ON	
CA	The Corporation of the Town of Fort Erie	Gorham Rd From Hazel Street to 78 meter South	Fort Erie ON	
CA	BENJAMIN AND LORRIE ANGER	FARR AVE/DERBY RD/GORHAM RD.	FORT ERIE TOWN ON	
CA		Lot 23/24, Concession 1 L.E./2L.E.	Fort Erie ON	
CA		Highland Drive	Fort Erie ON	
CA	DRT DEVELOPMENT CO. INC.- PT.LOT 26/RP#35	RR #11 (ERIE RD)/RIDGEWAY RD.	FORT ERIE TOWN ON	L2A 5M4
CA		Gorham Road	Fort Erie ON	
CA	FORT ERIE TOWN	PARK ST/FARR AVE/HIGHLAND DR.	FORT ERIE ON	
RST	SHERKSTON AUTO	RR 1 STN MAIN	FORT ERIE ON	L2A 5M4
SPL	The Regional Municipality of Niagara	Gorham Rd., Fort Erie	Fort Erie ON	

Unplottable Report

Site: *The Regional Municipality of Niagara
Gorham Rd Fort Erie ON*

Database:
CA

Certificate #: 2094-7GUQN3
Application Year: 2008
Issue Date: 7/25/2008
Approval Type: Municipal and Private Sewage Works
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: *CRYSTAL BEACH COOPERATIVE HOMES INC.
DERBY RD., PLAN #420, (SWM) FORT ERIE TOWN ON*

Database:
CA

Certificate #: 3-1288-93-
Application Year: 93
Issue Date: 11/30/1993
Approval Type: Municipal sewage
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: *The Corporation of the Town of Fort Erie
Gorham Rd From Hazel Street to 78 meter South Fort Erie ON*

Database:
CA

Certificate #: 8751-7NVSNM
Application Year: 2009
Issue Date: 2/5/2009
Approval Type: Municipal and Private Sewage Works
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: *BENJAMIN AND LORRIE ANGER
FARR AVE/DERBY RD/GORHAM RD. FORT ERIE TOWN ON*

Database:
CA

Certificate #: 3-0276-95-
Application Year: 95

Issue Date: 3/24/1995
Approval Type: Municipal sewage
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: Lot 23/24, Concession 1 L.E./2L.E. Fort Erie ON

Database:
CA

Certificate #: 8310-4SPK47
Application Year: 01
Issue Date: 1/24/01
Approval Type: Municipal & Private water
Status: Approved
Application Type: New Certificate of Approval
Client Name: Corporation of the Town of Fort Erie
Client Address: Municipal Centre, 1 Municipal Centre Dr.
Client City: Fort Erie
Client Postal Code: L2A 2S6
Project Description: construction of watermains on Dominion Road
Contaminants:
Emission Control:

Site: Highland Drive Fort Erie ON

Database:
CA

Certificate #: 7224-4X9Q7F
Application Year: 01
Issue Date: 5/31/01
Approval Type: Municipal & Private sewage
Status: Approved
Application Type: New Certificate of Approval
Client Name: Corporation of the Town of Fort Erie
Client Address: Municipal Centre, 1 Municipal Centre Dr.
Client City: Fort Erie
Client Postal Code: L2A 2S6
Project Description: Construction of storm sewers on Highland Drive from Gorham Road to Park Street.
Contaminants:
Emission Control:

Site: DRT DEVELOPMENT CO. INC.-PT.LOT 26/RP#35
RR #11 (ERIE RD)/RIDGEWAY RD. FORT ERIE TOWN ON L2A 5M4

Database:
CA

Certificate #: 7-0237-92-
Application Year: 92
Issue Date: 4/23/1993
Approval Type: Municipal water
Status: Underwent 2nd revision in 1993
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: Gorham Road Fort Erie ON

Database:
CA

Certificate #: 2311-5CBP5J
Application Year: 02
Issue Date: 7/26/02
Approval Type: Municipal & Private sewage
Status: Approved
Application Type: New Certificate of Approval
Client Name: The Corporation of the Town of Fort Erie
Client Address: Municipal Centre, 1 Municipal Centre Dr.
Client City: Fort Erie
Client Postal Code: L2A 2S6
Project Description: This application is for the construction of sanitary sewer on Gorham Road.
Contaminants:
Emission Control:

Site: FORT ERIE TOWN
PARK ST/FARR AVE/HIGHLAND DR. FORT ERIE ON

Database:
CA

Certificate #: 3-1313-98-
Application Year: 98
Issue Date: 8/28/1998
Approval Type: Municipal sewage
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: SHERKSTON AUTO
RR 1 STN MAIN FORT ERIE ON L2A 5M4

Database:
RST

Headcode: 1186800
Headcode Desc: Service Stations-Gasoline, Oil & Natural Gas
Phone: 9058941732
List Name:
Description:

Site: The Regional Municipality of Niagara
Gorham Rd., Fort Erie Fort Erie ON

Database:
SPL

Ref No:	2772-8YGUEQ	Discharger Report:	
Site No:		Material Group:	
Incident Dt:	25-SEP-12	Health/Env Conseq:	
Year:		Client Type:	
Incident Cause:	Leak/Break	Sector Type:	Sewer (Private or Municipal)
Incident Event:		Agency Involved:	
Contaminant Code:	44	Nearest Watercourse:	
Contaminant Name:	SEWAGE,PRIMARY UNCHLORINATED	Site Address:	Gorham Rd., Fort Erie
Contaminant Limit 1:		Site District Office:	
Contam Limit Freq 1:		Site Postal Code:	
Contaminant UN No 1:		Site Region:	
Environment Impact:	Possible	Site Municipality:	Fort Erie
Nature of Impact:	Surface Water Pollution	Site Lot:	
Receiving Medium:		Site Conc:	
Receiving Env:		Northing:	
MOE Response:	No Field Response	Eastng:	
Dt MOE Arvl on Scn:		Site Geo Ref Accu:	
MOE Reported Dt:	25-SEP-12	Site Map Datum:	
Dt Document Closed:		SAC Action Class:	Watercourse Spills

Incident Reason:
Site Name:
Site County/District:
Site Geo Ref Meth:
Incident Summary:
Contaminant Qty:

Unknown / N/A

Source Type:

On N/B lane Gorham Rd., between Pearl Street and Nigh Rd.<UNOFFICIAL>

Niagara Region: raw, unchlor sewage to marsh, forcemain brk
0 other - see incident description

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. **Note:** Databases denoted with " * " indicates that the database will no longer be updated. See the individual database description for more information.

Abandoned Aggregate Inventory:

Provincial

AAGR

The MAAP Program maintains a database of abandoned pits and quarries. Please note that the database is only referenced by lot and concession and city/town location. The database provides information regarding the location, type, size, land use, status and general comments.*

Government Publication Date: Sept 2002*

Aggregate Inventory:

Provincial

AGR

The Ontario Ministry of Natural Resources maintains a database of all active pits and quarries. The database provides information regarding the registered owner/operator, location name, operation type, approval type, and maximum annual tonnage.

Government Publication Date: Up to Sep 2019

Abandoned Mine Information System:

Provincial

AMIS

The Abandoned Mines Information System contains data on known abandoned and inactive mines located on both Crown and privately held lands. The information was provided by the Ministry of Northern Development and Mines (MNDM), with the following disclaimer: "the database provided has been compiled from various sources, and the Ministry of Northern Development and Mines makes no representation and takes no responsibility that such information is accurate, current or complete". Reported information includes official mine name, status, background information, mine start/end date, primary commodity, mine features, hazards and remediation.

Government Publication Date: 1800-Oct 2018

Anderson's Waste Disposal Sites:

Private

ANDR

The information provided in this database was collected by examining various historical documents which aimed to characterize the likely position of former waste disposal sites from 1860 to present. The research initiative behind the creation of this database was to identify those sites that are missing from the Ontario MOE Waste Disposal Site Inventory, as well as to provide revisions and corrections to the positions and descriptions of sites currently listed in the MOE inventory. In addition to historic waste disposal facilities, the database also identifies certain auto wreckers and scrap yards that have been extrapolated from documentary sources. Please note that the data is not warranted to be complete, exhaustive or authoritative. The information was collected for research purposes only.

Government Publication Date: 1860s-Present

Aboveground Storage Tanks:

Provincial

AST

Historical listing of aboveground storage tanks made available by the Department of Natural Resources and Forestry. Includes tanks used to hold water or petroleum. This dataset has been retired as of September 25, 2014 and will no longer be updated.

Government Publication Date: May 31, 2014

Automobile Wrecking & Supplies:

Private

AUWR

This database provides an inventory of known locations that are involved in the scrap metal, automobile wrecking/recycling, and automobile parts & supplies industry. Information is provided on the company name, location and business type.

Government Publication Date: 1999-Jan 31, 2020

Borehole:

Provincial

BORE

A borehole is the generalized term for any narrow shaft drilled in the ground, either vertically or horizontally. The information here includes geotechnical investigations or environmental site assessments, mineral exploration, or as a pilot hole for installing piers or underground utilities. Information is from many sources such as the Ministry of Transportation (MTO) boreholes from engineering reports and projects from the 1950 to 1990's in Southern Ontario. Boreholes from the Ontario Geological Survey (OGS) including The Urban Geology Analysis Information System (UGAIS) and the York Peel Durham Toronto (YPDT) database of the Conservation Authority Moraine Coalition. This database will include fields such as location, stratigraphy, depth, elevation, year drilled, etc. For all water well data or oil and gas well data for Ontario please refer to WWIS and OOGW.

Government Publication Date: 1875-Jul 2018

Certificates of Approval: Provincial CA
 This database contains the following types of approvals: Air & Noise, Industrial Sewage, Municipal & Private Sewage, Waste Management Systems and Renewable Energy Approvals. The MOE in Ontario states that any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste, must have a Certificate of Approval before it can operate lawfully. Fields include approval number, business name, address, approval date, approval type and status. This database will no longer be updated, as CofA's have been replaced by either Environmental Activity and Sector Registry (EASR) or Environmental Compliance Approval (ECA). Please refer to those individual databases for any information after Oct.31, 2011.
Government Publication Date: 1985-Oct 30, 2011*

Dry Cleaning Facilities: Federal CDRY
 List of dry cleaning facilities made available by Environment and Climate Change Canada. Environment and Climate Change Canada's Tetrachloroethylene (Use in Dry Cleaning and Reporting Requirements) Regulations (SOR/2003-79) are intended to reduce releases of tetrachloroethylene to the environment from dry cleaning facilities.
Government Publication Date: Jan 2004-Dec 2017

Commercial Fuel Oil Tanks: Provincial CFOT
 Locations of commercial underground fuel oil tanks. This is not a comprehensive or complete inventory of commercial fuel tanks in the province; this listing is a copy of records of registered commercial underground fuel oil tanks obtained under Access to Public Information. Note that the following types of tanks do not require registration: waste oil tanks in apartments, office buildings, residences, etc.; aboveground gas or diesel tanks. Records are not verified for accuracy or completeness.
Government Publication Date: Feb 28, 2017

Chemical Register: Private CHEM
 This database includes information from both a one time study conducted in 1992 and private source and is a listing of facilities that manufacture or distribute chemicals. The production of these chemical substances may involve one or more chemical reactions and/or chemical separation processes (i.e. fractionation, solvent extraction, crystallization, etc.).
Government Publication Date: 1999-Jan 31, 2020

Compressed Natural Gas Stations: Private CNG
 Canada has a network of public access compressed natural gas (CNG) refuelling stations. These stations dispense natural gas in compressed form at 3,000 pounds per square inch (psi), the pressure which is allowed within the current Canadian codes and standards. The majority of natural gas refuelling is located at existing retail gasoline that have a separate refuelling island for natural gas. This list of stations is made available by the Canadian Natural Gas Vehicle Alliance.
Government Publication Date: Dec 2012 - Nov 2019

Inventory of Coal Gasification Plants and Coal Tar Sites: Provincial COAL
 This inventory includes both the "Inventory of Coal Gasification Plant Waste Sites in Ontario-April 1987" and the Inventory of Industrial Sites Producing or Using Coal Tar and Related Tars in Ontario-November 1988) collected by the MOE. It identifies industrial sites that produced and continue to produce or use coal tar and other related tars. Detailed information is available and includes: facility type, size, land use, information on adjoining properties, soil condition, site operators/occupants, site description, potential environmental impacts and historic maps available. This was a one-time inventory.*
Government Publication Date: Apr 1987 and Nov 1988*

Compliance and Convictions: Provincial CONV
 This database summarizes the fines and convictions handed down by the Ontario courts beginning in 1989. Companies and individuals named here have been found guilty of environmental offenses in Ontario courts of law.
Government Publication Date: 1989-Nov 2019

Certificates of Property Use: Provincial CPU
 This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include all CPU's on the registry such as (EPA s. 168.6) - Certificate of Property Use.
Government Publication Date: 1994-Jan 31, 2020

Drill Hole Database: Provincial DRL
 The Ontario Drill Hole Database contains information on more than 113,000 percussion, overburden, sonic and diamond drill holes from assessment files on record with the department of Mines and Minerals. Please note that limited data is available for southern Ontario, as it was the last area to be completed. The database was created when surveys submitted to the Ministry were converted in the Assessment File Research Image Database (AFRI) project. However, the degree of accuracy (coordinates) as to the exact location of drill holes is dependent upon the source document submitted to the MNDM. Levels of accuracy used to locate holes are: centering on the mining claim; a sketch of the mining claim; a 1:50,000 map; a detailed company map; or from submitted a "Report of Work".
Government Publication Date: 1886 - Sep 2019

Environmental Activity and Sector Registry:

Provincial **EASR**

On October 31, 2011, a smarter, faster environmental approvals system came into effect in Ontario. The EASR allows businesses to register certain activities with the ministry, rather than apply for an approval. The registry is available for common systems and processes, to which preset rules of operation can be applied. The EASR is currently available for: heating systems, standby power systems and automotive refinishing. Businesses whose activities aren't subject to the EASR may apply for an ECA (Environmental Compliance Approval). Please see our ECA database.

Government Publication Date: Oct 2011-Jan 31, 2020

Environmental Registry:

Provincial **EBR**

The Environmental Registry lists proposals, decisions and exceptions regarding policies, Acts, instruments, or regulations that could significantly affect the environment. Through the Registry, thirteen provincial ministries notify the public of upcoming proposals and invite their comments. For example, if a local business is requesting a permit, license, or certificate of approval to release substances into the air or water; these are notified on the registry. Data includes: Approval for discharge into the natural environment other than water (i.e. Air) - EPA s. 9, Approval for sewage works - OWRA s. 53(1), and EPA s. 27 - Approval for a waste disposal site. For information regarding Permit to Take Water (PTTW), Certificate of Property Use (CPU) and (ORD) Orders please refer to those individual databases.

Government Publication Date: 1994-Jan 31, 2020

Environmental Compliance Approval:

Provincial **ECA**

On October 31, 2011, a smarter, faster environmental approvals system came into effect in Ontario. In the past, a business had to apply for multiple approvals (known as certificates of approval) for individual processes and pieces of equipment. Today, a business either registers itself, or applies for a single approval, depending on the types of activities it conducts. Businesses whose activities aren't subject to the EASR may apply for an ECA. A single ECA addresses all of a business's emissions, discharges and wastes. Separate approvals for air, noise and waste are no longer required. This database will also include Renewable Energy Approvals. For certificates of approval prior to Nov 1st, 2011, please refer to the CA database. For all Waste Disposal Sites please refer to the WDS database.

Government Publication Date: Oct 2011-Jan 31, 2020

Environmental Effects Monitoring:

Federal **EEM**

The Environmental Effects Monitoring program assesses the effects of effluent from industrial or other sources on fish, fish habitat and human usage of fisheries resources. Since 1992, pulp and paper mills have been required to conduct EEM studies under the Pulp and Paper Effluent Regulations. This database provides information on the mill name, geographical location and sub-lethal toxicity data.

Government Publication Date: 1992-2007*

ERIS Historical Searches:

Private **EHS**

ERIS has compiled a database of all environmental risk reports completed since March 1999. Available fields for this database include: site location, date of report, type of report, and search radius. As per all other databases, the ERIS database can be referenced on both the map and "Statistical Profile" page.

Government Publication Date: 1999-Jan 31, 2020

Environmental Issues Inventory System:

Federal **EIIS**

The Environmental Issues Inventory System was developed through the implementation of the Environmental Issues and Remediation Plan. This plan was established to determine the location and severity of contaminated sites on inhabited First Nation reserves, and where necessary, to remediate those that posed a risk to health and safety; and to prevent future environmental problems. The EIIS provides information on the reserve under investigation, inventory number, name of site, environmental issue, site action (Remediation, Site Assessment), and date investigation completed.

Government Publication Date: 1992-2001*

Emergency Management Historical Event:

Provincial **EMHE**

List of locations of historical occurrences of emergency events, including those assigned to the Ministry of Natural Resources by Order-In-Council (OIC) under the Emergency Management and Civil Protection Act, as well as events where MNR provided requested emergency response assistance. Many of these events will have involved community evacuations, significant structural loss, and/or involvement of MNR emergency response staff. These events fall into one of ten (10) type categories: Dam Failure; Drought / Low Water; Erosion; Flood; Forest Fire; Soil and Bedrock Instability; Petroleum Resource Center Event, EMO Requested Assistance, Continuity of Operations Event, Other Requested Assistance. EMHE record details are reproduced by ERIS under License with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2017.

Government Publication Date: Dec 31, 2016

Environmental Penalty Annual Report:

Provincial **EPAR**

This database contains data from Ontario's annual environmental penalty report published by the Ministry of the Environment and Climate Change. These reports provide information on environmental penalties for land or water violations issued to companies in one of the nine industrial sectors covered by the Municipal Industrial Strategy for Abatement (MISA) regulations.

Government Publication Date: Jan 1, 2011 - Dec 31, 2018

List of Expired Fuels Safety Facilities:

Provincial EXP

List of facilities and tanks for which there was once a fuel registration. This is not a comprehensive or complete inventory of expired tanks/tank facilities in the province; this listing is a copy of previously registered tanks and facilities obtained under Access to Public Information. Includes private fuel outlets, bulk plants, fuel oil tanks, gasoline stations, marinas, propane filling stations, liquid fuel tanks, piping systems, etc; includes tanks which have been removed from the ground.

Notes: registration was not required for private fuel underground/aboveground storage tanks prior to January 1990, nor for furnace oil tanks prior to May 1, 2002; registration is not required for waste oil tanks in apartments, office buildings, residences, etc., or aboveground gas or diesel tanks. Records are not verified for accuracy or completeness.

Government Publication Date: Feb 28, 2017

Federal Convictions:

Federal FCON

Environment Canada maintains a database referred to as the "Environmental Registry" that details prosecutions under the Canadian Environmental Protection Act (CEPA) and the Fisheries Act (FA). Information is provided on the company name, location, charge date, offence and penalty.

Government Publication Date: 1988-Jun 2007*

Contaminated Sites on Federal Land:

Federal FCS

The Federal Contaminated Sites Inventory includes information on known federal contaminated sites under the custodianship of departments, agencies and consolidated Crown corporations as well as those that are being or have been investigated to determine whether they have contamination arising from past use that could pose a risk to human health or the environment. The inventory also includes non-federal contaminated sites for which the Government of Canada has accepted some or all financial responsibility. It does not include sites where contamination has been caused by, and which are under the control of, enterprise Crown corporations, private individuals, firms or other levels of government.

Government Publication Date: Jun 2000-Nov 2019

Federal Identification Registry for Storage Tank Systems (FIRSTS):

Federal FED TANKS

A list of federally regulated Storage tanks from the Federal Identification Registry for Storage Tank Systems (FIRSTS). FIRSTS is Environment and Climate Change Canada's database of storage tank systems subject to the Storage Tank for Petroleum Products and Allied Petroleum Products Regulations. The main objective of the Regulations is to prevent soil and groundwater contamination from storage tank systems located on federal and aboriginal lands. Storage tank systems that do not have a valid identification number displayed in a readily visible location on or near the storage tank system may be refused product delivery.

Government Publication Date: May 31, 2018

Fisheries & Oceans Fuel Tanks:

Federal FOFT

Fisheries & Oceans Canada maintains an inventory of aboveground & underground fuel storage tanks located on Fisheries & Oceans property or controlled by DFO. Our inventory provides information on the site name, location, tank owner, tank operator, facility type, storage tank location, tank contents & capacity, and date of tank installation.

Government Publication Date: 1964-Sep 2018

Fuel Storage Tank:

Provincial FST

List of registered private and retail fuel storage tanks. This is not a comprehensive or complete inventory of private and retail fuel storage tanks in the province; this listing is a copy of registered private and retail fuel storage tanks, obtained under Access to Public Information.

Notes: registration was not required for private fuel underground/aboveground storage tanks prior to January 1990, nor for furnace oil tanks prior to May 1, 2002; registration is not required for waste oil tanks in apartments, office buildings, residences, etc., or aboveground gas or diesel tanks. Records are not verified for accuracy or completeness.

Government Publication Date: Feb 28, 2017

Fuel Storage Tank - Historic:

Provincial FSTH

The Fuels Safety Branch of the Ontario Ministry of Consumer and Commercial Relations maintained a database of all registered private fuel storage tanks. Public records of private fuel storage tanks are only available since the registration became effective in September 1989. This information is now collected by the Technical Standards and Safety Authority.

Government Publication Date: Pre-Jan 2010*

Ontario Regulation 347 Waste Generators Summary:

Provincial GEN

Regulation 347 of the Ontario EPA defines a waste generation site as any site, equipment and/or operation involved in the production, collection, handling and/or storage of regulated wastes. A generator of regulated waste is required to register the waste generation site and each waste produced, collected, handled, or stored at the site. This database contains the registration number, company name and address of registered generators including the types of hazardous wastes generated. It includes data on waste generating facilities such as: drycleaners, waste treatment and disposal facilities, machine shops, electric power distribution etc. This information is a summary of all years from 1986 including the most currently available data. Some records may contain, within the company name, the phrase "See & Use..." followed by a series of letters and numbers. This occurs when one company is amalgamated with or taken over by another registered company. The number listed as "See & Use", refers to the new ownership and the other identification number refers to the original ownership. This phrase serves as a link between the 2 companies until operations have been fully transferred.

Government Publication Date: 1986-Oct 31, 2019

Greenhouse Gas Emissions from Large Facilities:

Federal GHG

List of greenhouse gas emissions from large facilities made available by Environment Canada. Greenhouse gas emissions in kilotonnes of carbon dioxide equivalents (kt CO2 eq).

Government Publication Date: 2013-Dec 2017

TSSA Historic Incidents:

Provincial HINC

List of historic incidences of spills and leaks of diesel, fuel oil, gasoline, natural gas, propane, and hydrogen recorded by the TSSA in their previous incident tracking system. The TSSA's Fuels Safety Program administers the Technical Standards & Safety Act 2000, providing fuel-related safety services associated with the safe transportation, storage, handling and use of fuels such as gasoline, diesel, propane, natural gas and hydrogen. Under this Act, the TSSA regulates fuel suppliers, storage facilities, transport trucks, pipelines, contractors and equipment or appliances that use fuels. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of historical fuel spills and leaks in the province. This listing is a copy of the data captured at one moment in time and is hence limited by the record date provided here.

Government Publication Date: 2006-June 2009*

Indian & Northern Affairs Fuel Tanks:

Federal IAFT

The Department of Indian & Northern Affairs Canada (INAC) maintains an inventory of aboveground & underground fuel storage tanks located on both federal and crown land. Our inventory provides information on the reserve name, location, facility type, site/facility name, tank type, material & ID number, tank contents & capacity, and date of tank installation.

Government Publication Date: 1950-Aug 2003*

Fuel Oil Spills and Leaks:

Provincial INC

Listing of spills and leaks of diesel, fuel oil, gasoline, natural gas, propane, and hydrogen reported to the Spills Action Centre (SAC). This is not a comprehensive or complete inventory of fuel-related leaks, spills, and incidents in the province; this listing is a copy of incidents reported to the SAC, obtained under Access to Public Information. Includes incidents from fuel-related hazards such as spills, fires, and explosions. Records are not verified for accuracy or completeness.

Government Publication Date: Feb 28, 2017

Landfill Inventory Management Ontario:

Provincial LIMO

The Landfill Inventory Management Ontario (LIMO) database is updated every year, as the ministry compiles new and updated information. The inventory will include small and large landfills. Additionally, each year the ministry will request operators of the larger landfills complete a landfill data collection form that will be used to update LIMO and will include the following information from the previous operating year. This will include additional information such as estimated amount of total waste received, landfill capacity, estimated total remaining landfill capacity, fill rates, engineering designs, reporting and monitoring details, size of location, service area, approved waste types, leachate of site treatment, contaminant attenuation zone and more. The small landfills will include information such as site owner, site location and certificate of approval # and status.

Government Publication Date: Feb 28, 2019

Canadian Mine Locations:

Private MINE

This information is collected from the Canadian & American Mines Handbook. The Mines database is a national database that provides over 290 listings on mines (listed as public companies) dealing primarily with precious metals and hard rocks. Listed are mines that are currently in operation, closed, suspended, or are still being developed (advanced projects). Their locations are provided as geographic coordinates (x, y and/or longitude, latitude). As of 2002, data pertaining to Canadian smelters and refineries has been appended to this database.

Government Publication Date: 1998-2009*

Mineral Occurrences:

Provincial MNR

In the early 70's, the Ministry of Northern Development and Mines created an inventory of approximately 19,000 mineral occurrences in Ontario, in regard to metallic and industrial minerals, as well as some information on building stones and aggregate deposits. Please note that the "Horizontal Positional Accuracy" is approximately +/- 200 m. Many reference elements for each record were derived from field sketches using pace or chain/tape measurements against claim posts or topographic features in the area. The primary limiting factor for the level of positional accuracy is the scale of the source material. The testing of horizontal accuracy of the source materials was accomplished by comparing the plan metric (X and Y) coordinates of that point with the coordinates of the same point as defined from a source of higher accuracy.

Government Publication Date: 1846-Jan 2019

National Analysis of Trends in Emergencies System (NATES):

Federal NATE

In 1974 Environment Canada established the National Analysis of Trends in Emergencies System (NATES) database, for the voluntary reporting of significant spill incidents. The data was to be used to assist in directing the work of the emergencies program. NATES ran from 1974 to 1994. Extensive information is available within this database including company names, place where the spill occurred, date of spill, cause, reason and source of spill, damage incurred, and amount, concentration, and volume of materials released.

Government Publication Date: 1974-1994*

Non-Compliance Reports:

Provincial [NCPL](#)

The Ministry of the Environment provides information about non-compliant discharges of contaminants to air and water that exceed legal allowable limits, from regulated industrial and municipal facilities. A reported non-compliance failure may be in regard to a Control Order, Certificate of Approval, Sectoral Regulation or specific regulation/act.

Government Publication Date: Dec 31, 2018

National Defense & Canadian Forces Fuel Tanks:

Federal [NDFT](#)

The Department of National Defense and the Canadian Forces maintains an inventory of all aboveground & underground fuel storage tanks located on DND lands. Our inventory provides information on the base name, location, tank type & capacity, tank contents, tank class, date of tank installation, date tank last used, and status of tank as of May 2001. This database will no longer be updated due to the new National Security protocols which have prohibited any release of this database.

Government Publication Date: Up to May 2001*

National Defense & Canadian Forces Spills:

Federal [NDSP](#)

The Department of National Defense and the Canadian Forces maintains an inventory of spills to land and water. All spill sites have been classified under the "Transportation of Dangerous Goods Act - 1992". Our inventory provides information on the facility name, location, spill ID #, spill date, type of spill, as well as the quantity of substance spilled & recovered.

Government Publication Date: Mar 1999-Apr 2018

National Defence & Canadian Forces Waste Disposal Sites:

Federal [NDWD](#)

The Department of National Defence and the Canadian Forces maintains an inventory of waste disposal sites located on DND lands. Where available, our inventory provides information on the base name, location, type of waste received, area of site, depth of site, year site opened/closed and status.

Government Publication Date: 2001-Apr 2007*

National Energy Board Pipeline Incidents:

Federal [NEBI](#)

Locations of pipeline incidents from 2008 to present, made available by the Canada Energy Regulator (CER) - previously the National Energy Board (NEB). Includes incidents reported under the Onshore Pipeline Regulations and the Processing Plant Regulations related to pipelines under federal jurisdiction, does not include incident data related to pipelines under provincial or territorial jurisdiction.

Government Publication Date: 2008-Dec 31, 2019

National Energy Board Wells:

Federal [NEBP](#)

The NEBW database contains information on onshore & offshore oil and gas wells that are outside provincial jurisdiction(s) and are thereby regulated by the National Energy Board. Data is provided regarding the operator, well name, well ID No./UWI, status, classification, well depth, spud and release date.

Government Publication Date: 1920-Feb 2003*

National Environmental Emergencies System (NEES):

Federal [NEES](#)

In 2000, the Emergencies program implemented NEES, a reporting system for spills of hazardous substances. For the most part, this system only captured data from the Atlantic Provinces, some from Quebec and Ontario and a portion from British Columbia. Data for Alberta, Saskatchewan, Manitoba and the Territories was not captured. However, NEES is also a repository for previous Environment Canada spill datasets. NEES is composed of the historic datasets ' or Trends ' which dates from approximately 1974 to present. NEES Trends is a compilation of historic databases, which were merged and includes data from NATES (National Analysis of Trends in Emergencies System), ARTS (Atlantic Regional Trends System), and NEES. In 2001, the Emergencies Program determined that variations in reporting regimes and requirements between federal and provincial agencies made national spill reporting and trend analysis difficult to achieve. As a consequence, the department has focused efforts on capturing data on spills of substances which fall under its legislative authority only (CEPA and FA). As such, the NEES database will be decommissioned in December 2004.

Government Publication Date: 1974-2003*

National PCB Inventory:

Federal [NPCB](#)

Environment Canada's National PCB inventory includes information on in-use PCB containing equipment in Canada including federal, provincial and private facilities. Federal out-of-service PCB containing equipment and PCB waste owned by the federal government or by federally regulated industries such as airlines, railway companies, broadcasting companies, telephone and telecommunications companies, pipeline companies, etc. are also listed. Although it is not Environment Canada's mandate to collect data on non-federal PCB waste, the National PCB inventory includes some information on provincial and private PCB waste and storage sites. Some addresses provided may be Head Office addresses and are not necessarily the location of where the waste is being used or stored.

Government Publication Date: 1988-2008*

National Pollutant Release Inventory:

Federal [NPRI](#)

Environment Canada has defined the National Pollutant Release Inventory ("NPRI") as a federal government initiative designed to collect comprehensive national data regarding releases to air, water, or land, and waste transfers for recycling for more than 300 listed substances.

Government Publication Date: 1993-May 2017

Oil and Gas Wells:

Private OGWE

The Nickle's Energy Group (publisher of the Daily Oil Bulletin) collects information on drilling activity including operator and well statistics. The well information database includes name, location, class, status and depth. The main Nickle's database is updated on a daily basis, however, this database is updated on a monthly basis. More information is available at www.nickles.com.

Government Publication Date: 1988-Aug 31, 2019

Ontario Oil and Gas Wells:

Provincial OOGW

In 1998, the MNR handed over to the Ontario Oil, Gas and Salt Resources Corporation, the responsibility of maintaining a database of oil and gas wells drilled in Ontario. The OGSR Library has over 20,000+ wells in their database. Information available for all wells in the ERIS database include well owner/operator, location, permit issue date, and well cap date, license No., status, depth and the primary target (rock unit) of the well being drilled. All geology/stratigraphy table information, plus all water table information is also provide for each well record.

Government Publication Date: 1800-Jun 2019

Inventory of PCB Storage Sites:

Provincial OPCB

The Ontario Ministry of Environment, Waste Management Branch, maintains an inventory of PCB storage sites within the province. Ontario Regulation 11/82 (Waste Management - PCB) and Regulation 347 (Generator Waste Management) under the Ontario EPA requires the registration of inactive PCB storage equipment and/or disposal sites of PCB waste with the Ontario Ministry of Environment. This database contains information on: 1) waste quantities; 2) major and minor sites storing liquid or solid waste; and 3) a waste storage inventory.

Government Publication Date: 1987-Oct 2004; 2012-Dec 2013

Orders:

Provincial ORD

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include all Orders on the registry such as (EPA s. 17) - Order for remedial work, (EPA s. 18) - Order for preventative measures, (EPA s. 43) - Order for removal of waste and restoration of site, (EPA s. 44) - Order for conformity with Act for waste disposal sites, (EPA s. 136) - Order for performance of environmental measures.

Government Publication Date: 1994-Jan 31, 2020

Canadian Pulp and Paper:

Private PAP

This information is part of the Pulp and Paper Canada Directory. The Directory provides a comprehensive listing of the locations of pulp and paper mills and the products that they produce.

Government Publication Date: 1999, 2002, 2004, 2005, 2009-2014

Parks Canada Fuel Storage Tanks:

Federal PCFT

Canadian Heritage maintains an inventory of known fuel storage tanks operated by Parks Canada, in both National Parks and at National Historic Sites. The database details information on site name, location, tank install/removal date, capacity, fuel type, facility type, tank design and owner/operator.

Government Publication Date: 1920-Jan 2005*

Pesticide Register:

Provincial PES

The Ontario Ministry of the Environment and Climate Change maintains a database of licensed operators and vendors of registered pesticides.

Government Publication Date: 1988-Jan 2020

Pipeline Incidents:

Provincial PINC

List of pipeline incidents (strikes, leaks, spills). This is not a comprehensive or complete inventory of pipeline incidents in the province; this listing in an historical copy of records previously obtained under Access to Public Information. Records are not verified for accuracy or completeness.

Government Publication Date: Feb 28, 2017

Private and Retail Fuel Storage Tanks:

Provincial PRT

The Fuels Safety Branch of the Ontario Ministry of Consumer and Commercial Relations maintained a database of all registered private fuel storage tanks and licensed retail fuel outlets. This database includes an inventory of locations that have gasoline, oil, waste oil, natural gas and/or propane storage tanks on their property. The MCCR no longer collects this information. This information is now collected by the Technical Standards and Safety Authority (TSSA).

Government Publication Date: 1989-1996*

Permit to Take Water:

Provincial PTTW

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include all PTTW's on the registry such as OWRA s. 34 - Permit to take water.

Government Publication Date: 1994-Jan 31, 2020

Ontario Regulation 347 Waste Receivers Summary:

Provincial REC

Part V of the Ontario Environmental Protection Act ("EPA") regulates the disposal of regulated waste through an operating waste management system or a waste disposal site operated or used pursuant to the terms and conditions of a Certificate of Approval or a Provisional Certificate of Approval. Regulation 347 of the Ontario EPA defines a waste receiving site as any site or facility to which waste is transferred by a waste carrier. A receiver of regulated waste is required to register the waste receiving facility. This database represents registered receivers of regulated wastes, identified by registration number, company name and address, and includes receivers of waste such as: landfills, incinerators, transfer stations, PCB storage sites, sludge farms and water pollution control plants. This information is a summary of all years from 1986 including the most currently available data.

Government Publication Date: 1986-2016

Record of Site Condition:

Provincial RSC

The Record of Site Condition (RSC) is part of the Ministry of the Environment's Brownfields Environmental Site Registry. Protection from environmental cleanup orders for property owners is contingent upon documentation known as a record of site condition (RSC) being filed in the Environmental Site Registry. In order to file an RSC, the property must have been properly assessed and shown to meet the soil, sediment and groundwater standards appropriate for the use (such as residential) proposed to take place on the property. The Record of Site Condition Regulation (O. Reg. 153/04) details requirements related to site assessment and clean up.

RSCs filed after July 1, 2011 will also be included as part of the new (O.Reg. 511/09).

Government Publication Date: 1997-Sept 2001, Oct 2004-Jan 2020

Retail Fuel Storage Tanks:

Private RST

This database includes an inventory of retail fuel outlet locations (including marinas) that have on their property gasoline, oil, waste oil, natural gas and / or propane storage tanks.

Government Publication Date: 1999-Jan 31, 2020

Scott's Manufacturing Directory:

Private SCT

Scott's Directories is a data bank containing information on over 200,000 manufacturers across Canada. Even though Scott's listings are voluntary, it is the most comprehensive database of Canadian manufacturers available. Information concerning a company's address, plant size, and main products are included in this database.

Government Publication Date: 1992-Mar 2011*

Ontario Spills:

Provincial SPL

This database identifies information such as location (approximate), type and quantity of contaminant, date of spill, environmental impact, cause, nature of impact, etc. Information from 1988-2002 was part of the ORIS (Occurrence Reporting Information System). The SAC (Spills Action Centre) handles all spills reported in Ontario. Regulations for spills in Ontario are part of the MOE's Environmental Protection Act, Part X.

Government Publication Date: 1988-Jun 2019

Wastewater Discharger Registration Database:

Provincial SRDS

Information under this heading is combination of the following 2 programs. The Municipal/Industrial Strategy for Abatement (MISA) division of the Ontario Ministry of Environment maintained a database of all direct dischargers of toxic pollutants within nine sectors including: Electric Power Generation; Mining; Petroleum Refining; Organic Chemicals; Inorganic Chemicals; Pulp & Paper; Metal Casting; Iron & Steel; and Quarries. All sampling information is now collected and stored within the Sample Result Data Store (SRDS).

Government Publication Date: 1990-Dec 31, 2017

Anderson's Storage Tanks:

Private TANK

The information provided in this database was collected by examining various historical documents, which identified the location of former storage tanks, containing substances such as fuel, water, gas, oil, and other various types of miscellaneous products. Information is available in regard to business operating at tank site, tank location, permit year, permit & installation type, no. of tanks installed & configuration and tank capacity. Data contained within this database pertains only to the city of Toronto and is not warranted to be complete, exhaustive or authoritative. The information was collected for research purposes only.

Government Publication Date: 1915-1953*

Transport Canada Fuel Storage Tanks:

Federal TCFT

List of fuel storage tanks currently or previously owned or operated by Transport Canada. This inventory also includes tanks on The Pickering Lands, which refers to 7,530 hectares (18,600 acres) of land in Pickering, Markham, and Uxbridge owned by the Government of Canada since 1972; properties on this land has been leased by the government since 1975, and falls under the Site Management Policy of Transport Canada, but is administered by Public Works and Government Services Canada. This inventory provides information on the site name, location, tank age, capacity and fuel type.

Government Publication Date: 1970-Aug 2018

Variances for Abandonment of Underground Storage Tanks:

Provincial VAR

Listing of variances granted for storage tank abandonment. This is not a comprehensive or complete inventory of tank abandonment variances in the province; this listing is a copy of tank abandonment variance records previously obtained under Access to Public Information. In Ontario, registered underground storage tanks must be removed within two years of disuse; if removal of a tank is not feasible, an application may be sought for a variance from this code requirement.

Records are not verified for accuracy or completeness.

Government Publication Date: Feb 28, 2017

Waste Disposal Sites - MOE CA Inventory:

Provincial WDS

The Ontario Ministry of Environment, Waste Management Branch, maintains an inventory of known open (active or inactive) and closed disposal sites in the Province of Ontario. Active sites maintain a Certificate of Approval, are approved to receive and are receiving waste. Inactive sites maintain Certificate(s) of Approval but are not receiving waste. Closed sites are not receiving waste. The data contained within this database was compiled from the MOE's Certificate of Approval database. Locations of these sites may be cross-referenced to the Anderson database described under ERIS's Private Source Database section, by the CA number. All new Environmental Compliance Approvals handed out after Oct 31, 2011 for Waste Disposal Sites will still be found in this database.

Government Publication Date: Oct 2011-Jan 31, 2020

Waste Disposal Sites - MOE 1991 Historical Approval Inventory:

Provincial WDSH

In June 1991, the Ontario Ministry of Environment, Waste Management Branch, published the "June 1991 Waste Disposal Site Inventory", of all known active and closed waste disposal sites as of October 30st, 1990. For each "active" site as of October 31st 1990, information is provided on site location, site/CA number, waste type, site status and site classification. For each "closed" site as of October 31st 1990, information is provided on site location, site/CA number, closure date and site classification. Locations of these sites may be cross-referenced to the Anderson database described under ERIS's Private Source Database section, by the CA number.

Government Publication Date: Up to Oct 1990*

Water Well Information System:

Provincial WWIS

This database describes locations and characteristics of water wells found within Ontario in accordance with Regulation 903. It includes such information as coordinates, construction date, well depth, primary and secondary use, pump rate, static water level, well status, etc. Also included are detailed stratigraphy information, approximate depth to bedrock and the approximate depth to the water table.

Government Publication Date: Feb 28, 2019

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

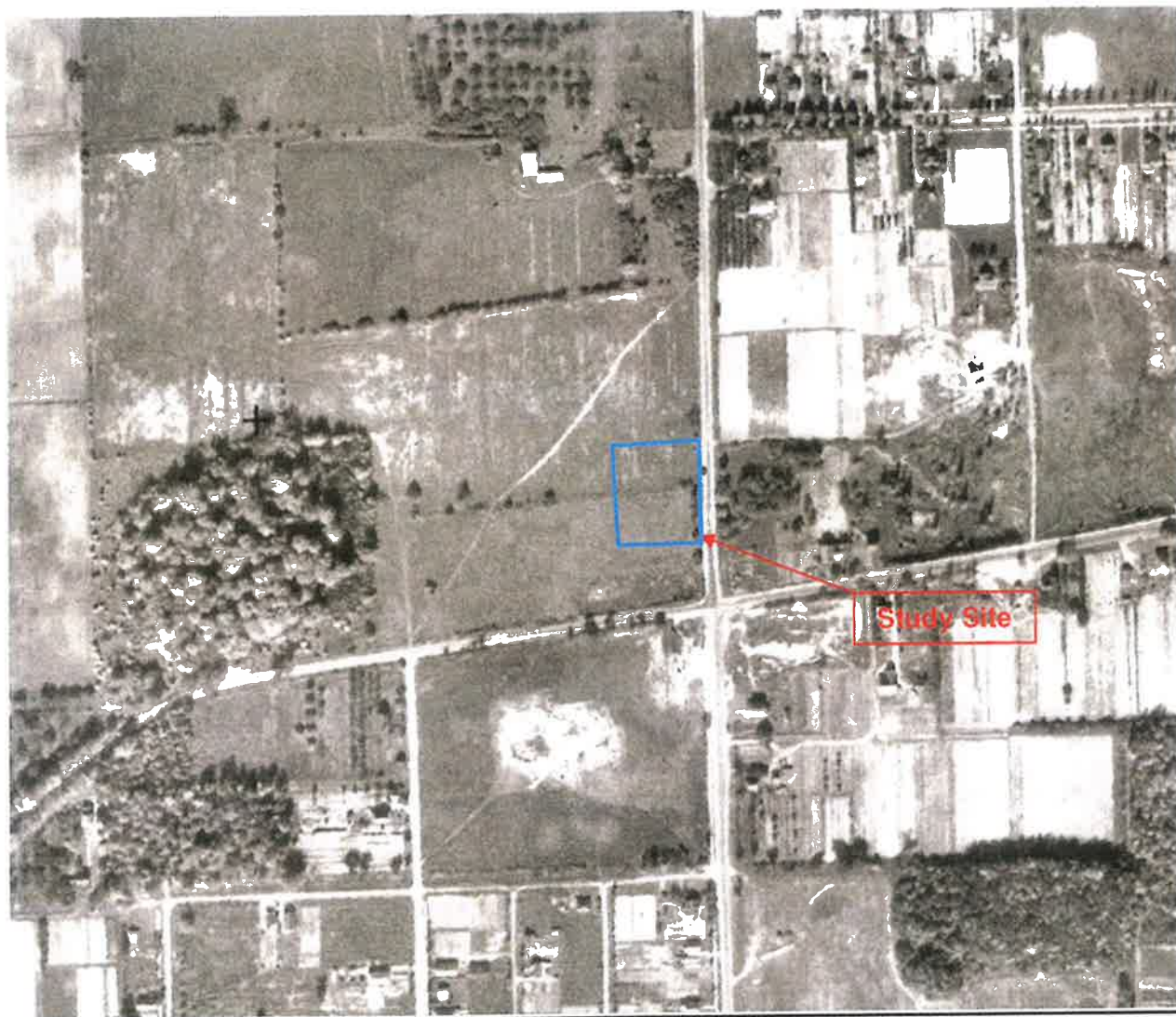
The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

Appendix E:
Aerial Photographs

Aerial Photographs

1934



1955



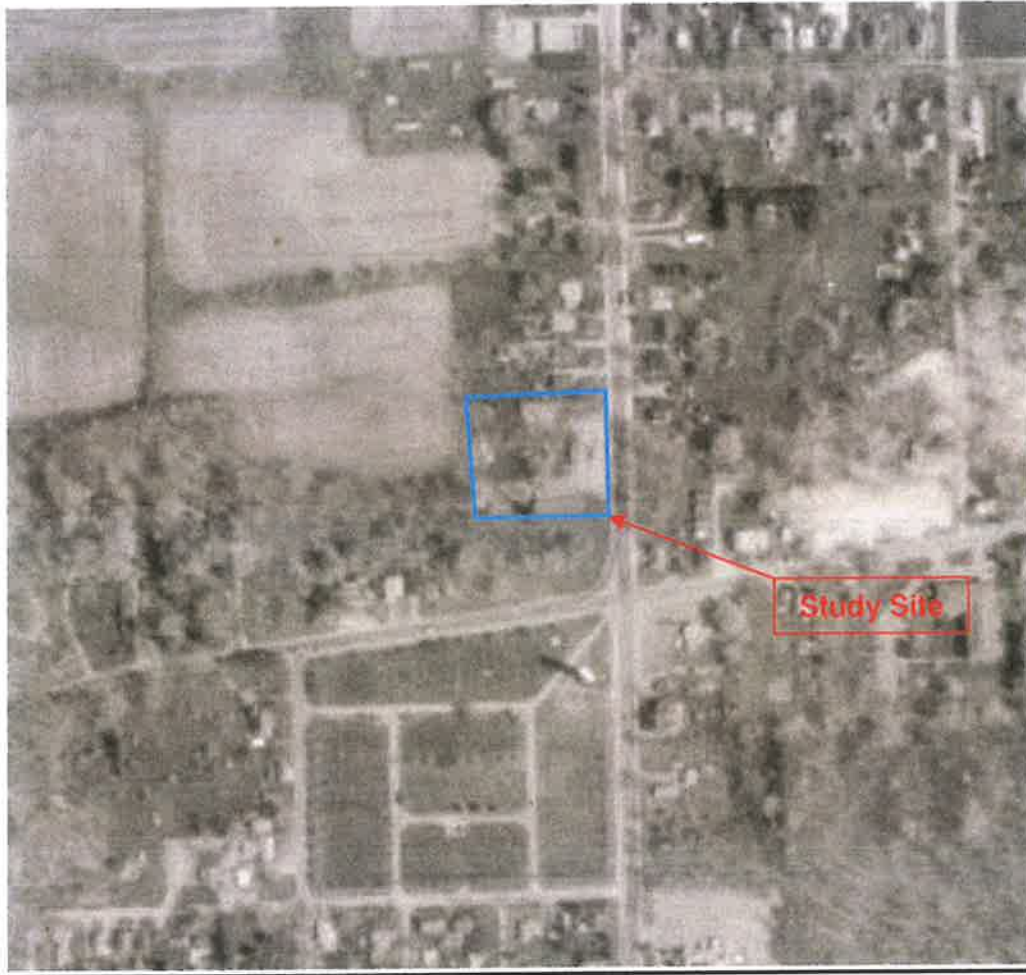
1965



1983



2000



2018



Appendix F:
Record of Interview

RECORD OF INTERVIEW



Date & Time of Interview	March 6, 2020 @ 12:00pm
Interviewer Name	Nicole Metz
Weather	Cloudy with snow, approximately 1 °C
Site Address	97 Gorham Road, Fort Erie, ON
Project Number	E-19-71-1
Interviewee Name & Position	Ms. Brenda representing Boncore Properties
Interviewee Contact Information	905-991-4239-cell or 905-894-4556-office
SITE INFORMATION	
Describe land use history. Was the property ever used for industrial use, as a dry cleaner, a garage, or bulk liquid dispensing facility (including gasoline)	Historically was a motel.
Are you aware of any environmental issues associated with the study site such as waste disposal, landfilling, chemical use and/or storage (AST or UST)	Not aware of any environmental issues.
Are you aware of any site-specific permits, waste generation number, certificate of approval, ECA, water well records or sewer discharge permits	No site-specific permits.
Are you aware of any current or historical environmental concerns associated with adjacent properties	No current or historical environmental concerns.
Did you ever apply salt in the parking area?	Yes, for safety purposes.
Are there any reports done on the property?	No reports done.
Is there anyone else Hallex could contact for additional information?	n/a
BUILDING INFORMATION & FEATURES	
Are you aware of any environmental building management issues such as ACM, PCBs, etc.	No environmental building management issues.
Has a DSS/HMS/ACM report previously been done?	No, a DSS report has not been previously been done.
Building footprint size	Unsure.
Year of construction	Unsure.
Year(s) of addition/renovation/demolition	Apartments were fully gutted and renovated in 2005.
Number of storeys	One (1).
Number of exits/entrances	One (1) per apartment and three (3) for the house.
Number of current occupants/ tenants	Ten (10).
If vacant when was the last time the building was occupied and by whom	n/a

RECORD OF INTERVIEW



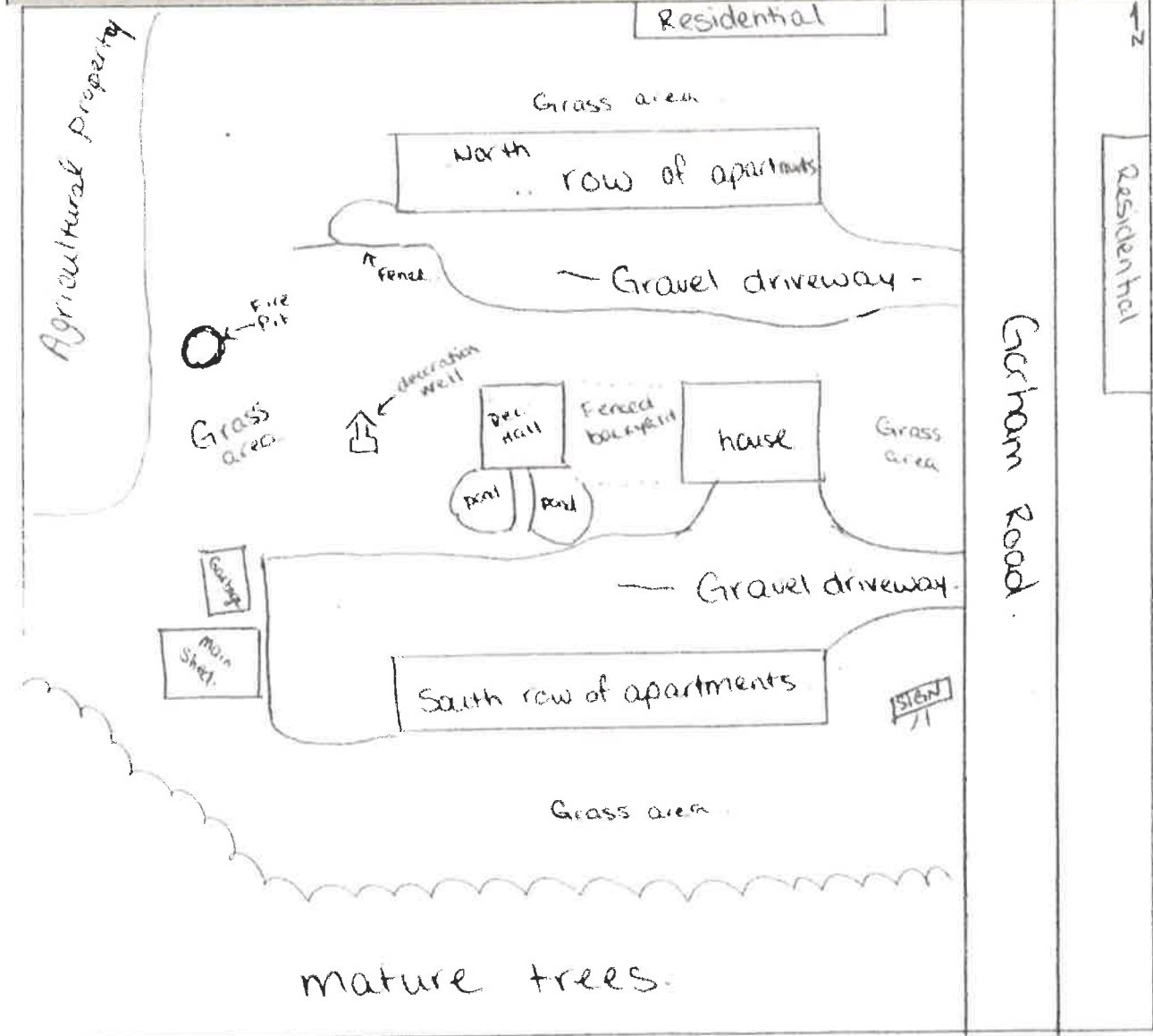
Type of manufacturing/warehousing/processing in building (current and past)	n/a
What are the waste management practices	n/a
Chemical Storage	n/a
Full/partial/no basement	Only the house had a partial basement.
Heating type (Historic/current)	Historically heating oil followed by gas in 2005 and electric in 2010.
Wall material / paint type	Drywall, all painted.
Floor material	Laminate and/or vinyl over wood.
Ceiling material	Drywall.
Lighting type	All bulbs with one (1) fluorescent lighting in the basement of the house.
Water damage	None.
Exterior wall material	Concrete blocks.
Roof material	Shingles – updated two (2) years ago with older material stripped.
Foundation type	Apartments – wood, house – poured concrete.
Other	n/a
EXTERIOR SITE FEATURES	
Source of clean water (Municipal)	Municipal.
Source of waste water (Municipal)	Municipal.
Surface water runoff (swale, catch basin)	Into catch basins onsite or agricultural field – northwest of the study site.
Man-made forms of standing water (ditches, pits, ect.)	Pond west of the house.
Natural Watercourses	None.
Wells on site	No current wells on-site.
Transformers on site	None.
Electrical generator on site	None.
Chemical storage on site	None.
stressed vegetation	None.
Stained material	None.
Fill material	None.
Debris	None.
Equipment	None.
Ground cover (Snow, grass, asphalt)	Grass and gravel with some areas of snow cover.
Study site Slope	Slight slope northwest towards agricultural property.
Miscellaneous	n/a
Historic /Current AST/UST	
Location of AST	No current UST or ASTs on-site; however, piping was noted within the house and apartment that appeared to be associated with former ASTs. The areas in question were located behind the rows of apartments and

	within the basement of the house.
Contents of AST	n/a
Material (fiberglass, steel)	n/a
Year installed/removed	n/a
Secondary containment	n/a
How often filled	n/a
Staining around base	n/a
Distressed vegetation?	n/a

SURROUNDING LAND USE FEATURES

North	Residential
South	Undeveloped lot with mature trees.
East	Residential
West	Agricultural

STUDY SITE AND ADJACENT LAND USE SKETCH



Appendix G:
Site Photograph Log



Photo #	Study Site – Exterior	Description
1		<p>Façade of the apartments along the southern portion of the study site, with a gravel driveway/parking lot. Photo facing west.</p>
2		<p>Rear side of apartments along the southern portion of the study site, photo facing east.</p>



Photo #	Study Site – Exterior	Description
3		<p>Capped pipes with closed/open holes going into each apartment. Possibly associated with use of former Aboveground Storage Tank (AST) for heating oil. The pipes were located along the rear side of the north and south apartment buildings.</p>
4		<p>Front façade of the apartments along the northern portion of the study site, with gravel driveway/parking lot. Photo facing northeast.</p>



Photo #	Study Site - Exterior	Description
5		<p>Rear side of the apartments along the northern portion of the study site, photo facing west.</p>
6		<p>Front and south façade of the residential dwelling in the middle of the study site, photo facing northwest.</p>



Photo #	Study Site – Exterior	Description
7		Large open backyard with gardens, ponds, mature trees, and open-fire pit, photo facing west.
8		Shed along southwest corner of study site, containing seasonal maintenance items, photo facing southwest.



Photo #	Study Site – Interior	Description
9		Interior of one of the apartments along the north row, all of the apartments were similar in construction and currently occupied.
10		Electrical room in north row.



Photo #	Study Site - Interior	Description
11		Interior of the house in the middle of the property.
12		Capped off pipe & wall anchors (circled in red), possibly associated with a former Aboveground Storage Tank (AST) for heating oil.


Photo #	Study Site – Interior	Description
13		Mould noted on single cut-out sheet of drywall, located in the basement of the house.





Photo #	Study Site – Surrounding Properties	Description
14		West adjacent agricultural property, photo facing west.
15		North adjacent residential property, photo facing northwest.

Photo #	Study Site – Surrounding Properties	Description
16	 A photograph showing a residential street scene. In the foreground, there is a grassy area. A paved road (Gorham Road) runs horizontally across the middle. On the other side of the road, there are several houses, including a prominent white house with a dark roof and a chimney. Bare trees are visible in the background under an overcast sky.	Residential properties to the east across Gorham Road, photo facing east.
17	 A photograph of a wooded area. The trees are mostly bare, suggesting late autumn or winter. The ground is covered with dry leaves and some green grass. In the lower right corner, there is a wooden structure, possibly a gate or a small shed, with some text on it that is partially obscured.	South adjacent vacant/undeveloped woodlot, photo facing southwest.

**PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT**

of

97 Gorham Road, Ridgeway, ON

**For:
Bomofive Inc.
3937 Rolling Acres Drive
Niagara Falls, ON**



September 25, 2020
Project: E-19-71-2

4999 Victoria Avenue
Niagara Falls, ON, L2E 4C9
Tel: (905) 357-4015 Fax: (905) 353-1105

EXECUTIVE SUMMARY

INTRODUCTION

Hallex Environmental Ltd. was retained by Bomofive Inc. to conduct a Phase Two Environmental Site Assessment (ESA) at 97 Gorham Road, Ridgeway, ON following the Phase One ESA completed by Hallex on March 17th, 2020 that identified the following Potentially Contaminating Activities (PCA)/Areas of Potential Environmental Concern (APEC):

- ***PCA-1/APEC-1: Gasoline and Associated Products Storage in Fixed Tanks (#28 as per Regulations)***. During the site reconnaissance there was visual evidence of remnant piping, often associated with Aboveground Storage Tanks (ASTs), used for heating oil purposes. The piping was located within the apartment blocks and residential dwelling. The presence of an AST represents a PCA resulting in an APEC. Target contaminants of concern include Petroleum Hydrocarbons (PHCs F1-F4), Benzene, Toluene, Ethylbenzene, and Xylene (BTEX), and Polycyclic Aromatic Hydrocarbons (PAHs) to the site's soil and/or groundwater.

The objectives of the Phase Two ESA were to determine the presence/absence of potential contaminants of concern within the soil and groundwater. The presence of contaminants would determine the need for further sampling and analyses of soil to delineate the extent of impact, and to satisfy the requirements of Ontario Regulation (O. Reg.) 153/04, amended by O. Reg. 511/09.

PHASE 2 ESA METHODS

Soil

Five (5) boreholes, BH-1 to BH-5 were advanced on August 17th, 2020. Soil samples were collected at depth intervals of 0.6m until they reached the maximum depth of 6.1m. Seven (7) samples were submitted to Paracel Laboratories Ltd. for analyses of PHCs (F1-F4), BTEX, PAHs, EC/SAR/pH and Grain Size Analysis.

Groundwater

Three (3) monitoring wells were advanced into designated boreholes to a depth of 6.1m. All three (3) monitoring wells were sampled for PHCs (F1-F4), BTEX & PAHs and submitted to Paracel laboratory Ltd.

FINDINGS & CONCLUSIONS

The Phase Two Environmental Site Assessment at 97 Gorham Road, Ridgeway, ON revealed soil and groundwater samples *met* applicable Ministry of the Environment, Conservation and Parks Site Condition Standards 2011 Table 3 for Residential Land Use in a Non-Potable Ground Water

Potentially Contaminating Activities (PCAs)
Schedule D Table 2 of O. Reg 511/09



PCA#	Description	PCA#	Description
1	Acid and Alkali Manufacturing, Processing and Bulk Storage	31	Ink Manufacturing, Processing and Bulk Storage
2	Adhesives and Resins Manufacturing, Processing and Bulk Storage	32	Iron and Steel Manufacturing and Processing
3	Airstrips and Hangars Operation	33	Metal Treatment, Coating, Plating and Finishing
4	Antifreeze and De-icing Manufacturing and Bulk Storage	34	Metal Fabrication
5	Asphalt and Bitumen Manufacturing	35	Mining, Smelting and Refining; Ore Processing; Tailings Storage
6	Battery Manufacturing, Recycling and Bulk Storage	36	Oil Production
7	Boat Manufacturing	37	Operation of Dry-Cleaning Equipment (where chemicals are used)
8	Chemical Manufacturing, Processing and Bulk Storage	38	Ordnance Use
9	Coal Gasification	39	Paints Manufacturing, Processing and Bulk Storage
10	Commercial Autobody Shops	40	Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications
11	Commercial Trucking and Container Terminals	41	Petroleum-derived Gas Refining, Manufacturing, Processing and Bulk Storage
12	Concrete, Cement and Lime Manufacturing	42	Pharmaceutical Manufacturing and Processing
13	Cosmetics Manufacturing, Processing and Bulk Storage	43	Plastics (including Fibreglass) Manufacturing and Processing
14	Crude Oil Refining, Processing and Bulk Storage	44	Port Activities, including Operation and Maintenance of Wharves and Docks
15	Discharge of Brine related to oil and gas production	45	Pulp, Paper and Paperboard Manufacturing and Processing
16	Drum and Barrel and Tank Reconditioning and Recycling	46	Rail Yards, Tracks and Spurs
17	Dye Manufacturing, Processing and Bulk Storage	47	Rubber Manufacturing and Processing
18	Electricity Generation, Transformation and Power Stations	48	Salt Manufacturing, Processing and Bulk Storage
19	Electronic and Computer Equipment Manufacturing	49	Salvage Yard, including automobile wrecking
20	Explosives and Ammunition Manufacturing, Production and Bulk Storage	50	Soap and Detergent Manufacturing, Processing and Bulk Storage
21	Explosives and Firing Range	51	Solvent Manufacturing, Processing and Bulk Storage
22	Fertilizer Manufacturing, Processing and Bulk Storage	52	Storage, maintenance, fueling and repair of equipment, vehicles, and material used to maintain transportation systems
23	Fire Retardant Manufacturing, Processing and Bulk Storage	53	Tannery
24	Fire Training	54	Textile Manufacturing and Processing
25	Flocculants Manufacturing, Processing and Bulk Storage	55	Transformer Manufacturing, Processing and Use
26	Foam and Expanded Foam Manufacturing and Processing	56	Treatment of Sewage equal to or greater than 10,000 litres per day
27	Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	57	Vehicles and Associated Parts Manufacturing
28	Gasoline and Associated Products Storage in Fixed Tanks	58	Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners
29	Glass Manufacturing	59	Wood Treating and Preservative Facility and Bulk Storage of Treated and Preserved Wood Products
30	Importation of Fill Material of Unknown Quality		

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1.0 INTRODUCTION

1.1 Project Objectives

Hallex Environmental Ltd. was retained by Bomofive Inc. to conduct a Phase Two Environmental Site Assessment (ESA) at 97 Gorham Road, Ridgeway, ON following the Phase One ESA completed by Hallex on March 17th, 2020 that identified the following Potentially Contaminating Activities (PCA)/Areas of Potential Environmental Concern (APEC):

- ***PCA-1/APEC-1: Gasoline and Associated Products Storage in Fixed Tanks (#28 as per Regulations).*** During the site reconnaissance there was visual evidence of remnant piping, often associated with Aboveground Storage Tanks (ASTs), used for heating oil purposes. The piping was located within the apartment blocks and residential dwelling. The presence of an AST represents a PCA resulting in an APEC. Target contaminants of concern include Petroleum Hydrocarbons (PHCs F1-F4), Benzene, Toluene, Ethylbenzene, and Xylene (BTEX), and Polycyclic Aromatic Hydrocarbons (PAHs) to the site's soil and/or groundwater.

The objectives of the Phase Two ESA were to determine the presence/absence of potential contaminants of concern within the soil and groundwater. The presence of contaminants would determine the need for further sampling and analyses of soil to delineate the extent of impact, and to satisfy the requirements of Ontario Regulation (O. Reg.) 153/04, amended by O. Reg. 511/09. The site location is shown on Figure 1 and the PCA/APEC, identified in the Phase One ESA (Hallex, 2019) are shown on Figure 2.

1.2 Limitations and Exceptions of Assessment

This report was prepared by Hallex Environmental Ltd. (hereinafter referred to as "Hallex") for the client. The material in it reflects Hallex's best judgment based on the information discovered at the time of preparation and within the scope of work. The investigative procedures, and format of this report, generally follow the guidelines established in: O. Reg. 511/09 per Part XV.1 of the Environmental Protection Act. Any information presented concerning materials at the site is based on information gathered at the boreholes and monitoring wells locations only. There may be materials and/or subsurface soil and/or groundwater conditions on-site which are not represented by these investigations. 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. Hallex Environmental Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

2.0 INVESTIGATION METHODS

2.1 Borehole Drilling

Kodiak Drilling utilized a Geoprobe 7822DT – Direct Push drilling system for borehole sampling and monitoring well installations. Preparation for borehole sampling was initiated via requests for demarcation of underground utilities by Ontario One Call: for Bell, cable, hydro, natural gas, water, sewer and private locates. All services were cleared within the designated work areas.

2.2 Soil Investigation

Five (5) boreholes, BH-1 to BH-5 were advanced on August 17th & 18th, 2020. Borehole locations are shown in Figure 3 and borehole logs are contained in Appendix A. Soil samples were collected at depth intervals of 0.6 m to a maximum depth of 6.6 meters below ground surface (mbgs).

2.2.1 Soil: Sampling

Each sample was placed in a 250 ml glass jar with a Teflon lined lid, filled to zero head-space, sealed, and placed in a cooler for transportation. Concurrently, a 12 ml soil sample was collected with a disposable syringe and placed inside a 40 ml vial containing methanol for field preservation of Petroleum Hydrocarbons F1, Benzene, Toluene, Ethylbenzene, Xylene (BTEX) and Volatile Organic Compounds (VOCs). A portion of each sample was placed in a plastic bag and allowed to warm to approximately 20° C for headspace combustible vapour measurement using an E-34102 Portable Multi-Gas Detection Eagle Series (Eagle). Each sample was logged for colour, texture, structure, moisture, and visual and olfactory evidence of contamination. Additionally, textural identification of soil, through hand soil textural techniques, including the ‘squeeze test’ and ‘ribbon test’ was conducted on soil from each stratum identified.

2.3 Field Screening Combustible Soil Vapour Survey

On-site field screening measurements were conducted utilizing the Eagle, capable of measuring hydrocarbon Combustible Soil Vapour Concentrations (CSVC’s) from 1 part per million (ppm) to 100% Lower Explosive Limit (LEL). The readings from the Eagle were utilized to indicate the presence or absence of VOC’s within the field samples. The samples with the highest combustible vapour concentration readings were chosen, in addition to other select samples, as determined by the QP, for laboratory analyses. The combustible soil vapour readings indicated on the borehole logs in Appendix A and tabulated in Section 3.2.

Decontamination of equipment and sampling tools was carried out during field work, as well as appropriate precautions, including new nitrile gloves, to minimize potential cross-contamination between samples and boreholes.

Soil sampling was implemented according to *Protocol for Analytical Methods Used in the Assessment of Properties Under Part XV.1 of the Environmental Protection Act* (March 9, 2004 as amended as of July 1, 2011). Chain of Custody reports were completed for all samples submitted for analyses to keep track of samples collected and to ensure that all parties involved were properly informed as to the nature of the samples.

Instruments and all their associated components are checked daily prior to field use, and annual equipment servicing and maintenance is conducted by Enviro Measure Inc. to ensure the equipment remains properly calibrated and functioning.

Borehole #/ Sample ID		Date Sampled	Depth (m)	CSVC Reading (ppm)	Parameters Analyzed
BH-1	-1	Aug. 17	0 - 0.61	0	
	-2		0.76 - 1.37	0	
	-3		1.52 - 2.13	0	
	-4		2.29 - 2.90	5	
	-5		3.05 - 3.66	0	
	-6		3.81 - 4.42	0	
	-7		4.57 - 5.18	0	
	-8		5.33 - 5.94	5	PHC (F1-F4), BTEX & PAHs
	-9		6.1 - 6.71	0	
BH-2	-1	Aug. 17	0 - 0.61	15	
	-2		0.76 - 1.37	0	
	-3		1.52 - 2.13	5	
	-4		2.29 - 2.90	5	
	-5		3.05 - 3.66	0	
	-6		3.81 - 4.42	40	PHC (F1-F4), BTEX & PAHs
	-7		4.57 - 5.18	10	
	-8		5.33 - 5.94	5	
	BH-3		-1	Aug. 17	0 - 0.61
-2		0.76 - 1.37	0		
-3		1.52 - 2.13	0		
-4		2.29 - 2.90	0		
-5		3.05 - 3.66	5		
-6		3.81 - 4.42	10		
-7		4.57 - 5.18	15		Grain size texture
-8		5.33 - 5.94	25		PHC (F1-F4), BTEX & PAHs
BH-4		-1	Aug. 17 & 18		0 - 0.61
	-2	0.76 - 1.37		0	
	-3	1.52 - 2.13		0	
	-4	2.29 - 2.90		0	
	-5	3.05 - 3.66		0	
	-6	3.81 - 4.42		5	
	-7	4.57 - 5.18		10	PHC (F1-F4), BTEX & PAHs
	-8	5.33 - 5.94		0	
	-9	6.1 - 6.71		0	

Monitoring Well	mbgs	Masl
MW-1	5.198	189.06
MW-2	4.747	188.58
MW-3	4.064	188.08

mbgs= metres below ground surface, masl = metres above sea level

Groundwater elevation contours are plotted on Figure 5.

3.5 Groundwater Laboratory Results

Groundwater laboratory analytical data was compared with groundwater criteria in the MECP Site Condition Standards (2011) Table 3: Commercial, Non-Potable Groundwater condition, coarse textured soil. Results indicated that all samples *met* applicable criteria. Complete laboratory analytical reports are provided in Appendix C.

3.6 Laboratory Quality Assurance and Quality Control

Laboratory QA/QC measures adhering to the Ministry of the Environment's "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, March 2010" are standard procedure for Paracel Laboratories (accredited to the ISO/IEC 17025 Standard by CALA) in order to ensure that the standards of quality were met within the expected level of confidence.

5.0 CONCLUSIONS

The Phase Two Environmental Site Assessment at 97 Gorham Road, Ridgeway, ON revealed all soil and groundwater samples *met* applicable Ministry of the Environment, Conservation & Parks (MECP) Site Condition Standards 2011 Table 3 for Residential Land Use in a non-potable groundwater condition, for coarse textured soil. Hallex therefore concludes the site suitable for residential land use with no further environmental work required as of September 4th, 2020.

FIGURES

- Figure 1: Site Location**
- Figure 2: Potentially Contaminating Activities / Areas of Potential Environmental Concern**
- Figure 3: Borehole and Monitoring Well Locations**
- Figure 4a: Study Site Cross Section Location**
- Figure 4b: Cross Section A-A', B-B'**
- Figure 5: Topographic and Groundwater Flow Contours**



Legend

Phase Two Property

PCA#

PCA-1: Location of piping potentially associated with historic ASTs

APEC#

APEC-1: areas of concern to soil/groundwater from possible AST.

* Indicates unknown UST location

Historic AST

Client

Bornofive Inc.

Project

Phase One ESA
97 Gorham Road,
Ridgeway, ON

Figure Name

PCA/APEC




Project
E-19-71-2
Date Sept. 2020
District N. Maz
Reviews: 30

Figure
2





Legend

-  Study Site
-  Borehole
-  Monitoring Well

A - A'
B - B'

Client

Bornofive Inc.

Project

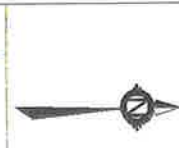
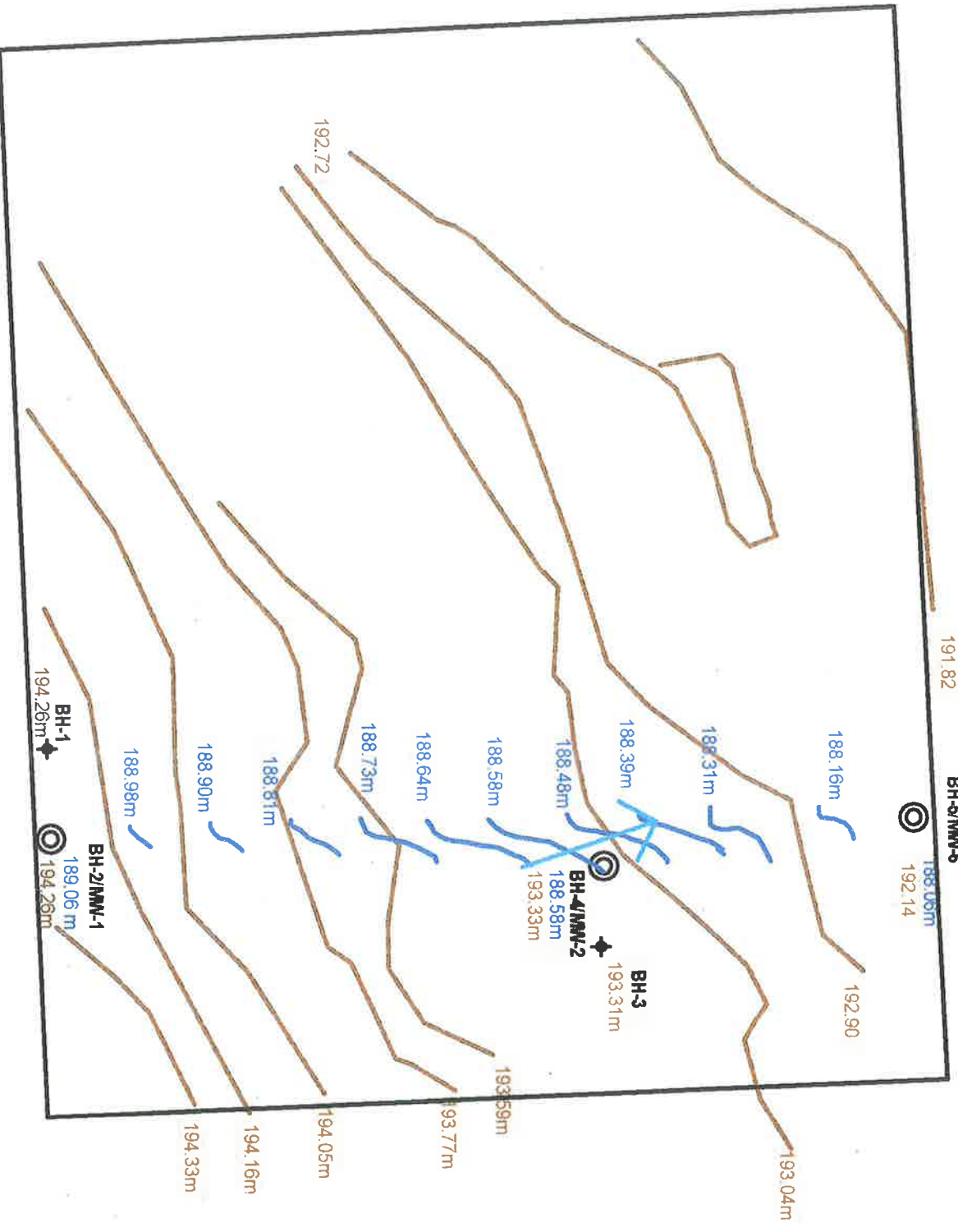
Phase Two ESA
97 Gorham Road,
Ridgeway, ON

Figure Name

Study Site Cross
Section Locations
(A-A', B-B')

Project E-19-71-2
Date Sep 2020
Drafted N. Metz
Reviewed L. Co.

Figure 4a



Legend
 □ Phase Two Property Boundary
 ● Monitoring Well Location
 ⊕ Borehole Location
 --- Groundwater Contour
 --- Elevation Contour
 → Groundwater Flow Direction

Client
 Bomotive Inc.

Project
 Phase Two ESA
 97 Gotham Road,
 Ridgeway, ON

Figure Name
 Topographic and
 Groundwater
 Flow Contours

Figure 5
 Prepared: E-19-71-2
 Date: Sept. 2020
 Drafted: N. Mraz
 Reviewed: KC



Project No: E-19-71-2

Project: Phase Two ESA of
97 Gorham Road,
Ridgeway, ON

Borehole #: BH-1
Monitoring Well #: N/A

Drill Date: August 17, 2020

Surface Elevation: 194.26

Logged by: NM
Reviewed by: KC

SUBSURFACE PROFILE				SAMPLE			VOC Concentration	Well Completion Details
Depth - ft	Depth - m	Symbol	Description	Elev. masl	Number	Type	Laboratory Analysis	
Ground Surface								A well was not installed within this Borehole
			SANDY SILT Topsoil - Dark brown		SA - 1		0 ppm	
			SANDY SILT (reworked) Brown with some pebbles and clay - dry - no odours					
			SANDY SILT (reworked) Brown with some pebbles and clay - dry - no odours		SA - 2		0 ppm	
			SAND - brown					
5			SAND - brown		SA - 3		0 ppm	
			SANDY SILT Brown with trace clay & pebbles - dry, no odours					
			CLAYEY SILT Brown with trace sand & pebbles slightly moist - no odours		SA - 4		5 ppm	
10			SANDY SILT Brown - slight moist - no odours		SA - 5	Split Spoon	0 ppm	
			SANDY SILT Grey with trace pebbles - slight moist - no odours		SA - 6		0 ppm	
15			SANDY SILT Grey with trace pebbles - slight moist - no odours		SA - 7		0 ppm	
			SANDY SILT Grey with some clay and pebbles slight moist - no odours		SA - 8	PHCs (F1-F4) BTEX, & PAHs	5 ppm	
20			Coarse SAND - Grey - moist - no odours		SA - 9		0 ppm	
			SANDY SILT Grey with trace pebbles - moist - no odours					
			End of Borehole					
25								

Driller: Kodiak Drilling, Marl M2

Sheet: 1 of 1

Borehole Diameter: 5.25"

Lithology:

	Asphalt		Fracture		Fill
	Gravel		Silt		Sand
	Clay		Rock Fill		Organic

Project No: E-19-71-2

Borehole #: BH-3
Monitoring Well #: N/A

Project: Phase Two ESA of
97 Gorham Road,
Ridgeway, ON

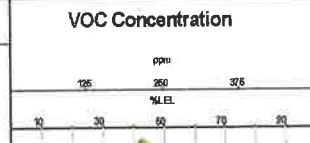
Drill Date: August 17, 2020

Logged by: NM
Reviewed by: KC

Surface Elevation: 193.31



SUBSURFACE PROFILE				SAMPLE			VOC Concentration	Well Completion Details
Depth - ft	Depth - m	Symbol	Description	Elev. masl	Number	Type	Laboratory Analysis	
			Ground Surface					A well was not installed within this Borehole
			SANDY SILT Topsoil - Dark brown		SA - 1		0 ppm	
			CLAYEY SILT FILL Brown with some sand - dry - no odours					
			CLAYEY SILT FILL Brown with some sand - dry - no odours		SA - 2		0 ppm	
			CLAY FILL - brown with some silt, sand & pebbles					
5			CLAY FILL Brown with some silt, sand & pebbles dry - no odours		SA - 3		0 ppm	
			CLAY FILL - brown with some silt, sand & pebbles		SA - 4		0 ppm	
			SANDY SILT Brown with trace pebbles - dry - no odours					
10			SANDY SILT Brown with trace pebbles dry to slightly moist - no odours		SA - 5	Split Spoon	5 ppm	
			SANDY SILT Brown with trace pebbles moist - no odours		SA - 6		10 ppm	
15			SANDY SILT Brown with trace pebbles moist - no odours		SA - 7		15 ppm	
			SANDY SILT Brown with trace pebbles moist - no odours		SA - 8		25 ppm	
20			End of Borehole					



Driller: Kodiak Drilling, Marl M2

Sheet: 1 of 1

Borehole Diameter: 5.25"

Lithology:

Asphalt	Fracture	Fill
Gravel	Silt	Sand
Clay	Rock Fill	Organic



Project No: E-19-71-2

Project: Phase Two ESA of
97 Gorham Road,
Ridgeway, ON

Logged by: NM
Reviewed by: KC

Borehole #: BH-5
Monitoring Well #: MW-3

Drill Date: August 17, 2020

Surface Elevation: 192.14 masl

SUBSURFACE PROFILE				SAMPLE		VOC Concentration	Well Completion Details		
Depth - ft	Depth - m	Symbol	Description	Elev. masl	Number	Type		Laboratory Analysis	ppm
			Ground Surface						
			CLAYEY SILT TOPSOIL - black		SA - 1			0 ppm	
			CLAYEY SILT FILL Brown with some pebbles					0 ppm	
			CLAYEY SILT & SANDY SILT FILL Brown with some pebbles moist - no odours		SA - 2			0 ppm	
			CLAYEY SILT & SANDY SILT FILL Brown with some pebbles - dry - no odours		SA - 3			0 ppm	
			CLAYEY SILT - Brown with trace pebbles & sand					0 ppm	
			SANDY SILT Brown - dry - no odours		SA - 4			0 ppm	
			SANDY SILT Brown with trace pebbles slightly moist - no odours		SA - 5	Split Spoon		20 ppm	
			SANDY SILT Brown with trace pebbles moist - no odours		SA - 6		PHCs (F1-F4) BTEX, & PAHs	30 ppm	
			SANDY SILT Brown with some pebbles moist - no odours		SA - 7			15 ppm	
			SANDY SILT Grey with some pebbles moist - no odours		SA - 8			5 ppm	
			End of Borehole						

Driller: Kodiak Drilling, Marl M2

Sheet: 1 of 1

Borehole Diameter: 5.25"

Lithology:

	Asphalt		Fracture		Fill
	Gravel		Silt		Sand
	Clay		Rock Fill		Organic

Certificate of Analysis

Hallex Environmental Ltd.

4999 Victoria Ave
Niagara Falls, ON L2E 4C9
Attn: Kevin Christian

Client PO:
Project: E-19-71-2
Custody: 53738

Report Date: 24-Aug-2020
Order Date: 18-Aug-2020

Order #: 2034129

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2034129-01	BH1-8
2034129-02	BH2-6
2034129-03	BH3-8
2034129-04	BH4-1
2034129-05	BH3-7

Paracel ID	Client ID
------------	-----------

Approved By:



Alex Enfield, MSc
Lab Manager

Certificate of Analysis
 Client: **Hallex Environmental Ltd.**
 Client PO:

Report Date: 24-Aug-2020
 Order Date: 18-Aug-2020
 Project Description: E-19-71-2

Summary of Exceedances

(If this page is blank then there are no exceedances)
 Only those criteria that a sample exceeds will be highlighted in red

Regulatory Comparison: Paracel Laboratories has provided regulatory guidelines on this report for informational purposes only and makes no representations or warranties that the data is accurate or reflects the current regulatory values. The user is advised to consult with the appropriate official regulations to evaluate compliance. Sample results that are highlighted have exceeded the selected regulatory limit. Calculated uncertainty estimations have not been applied for determining regulatory exceedances. Regulatory limits displayed in brackets, (), applies to medium and fine textured soils.

Criteria:

Client ID	Analyte	MDL / Units	Result	Reg 153/04 (2011)-Table 3 Residential
-----------	---------	-------------	--------	---------------------------------------

	Client ID: BH1-8 BH2-6 BH3-8 BH4-1				Criteria:
	Sample Date: 17-Aug-2020	Sample Date: 17-Aug-2020	Sample Date: 17-Aug-2020	Sample Date: 17-Aug-2020	
Sample ID: 2034129-01	2034129-01	2034129-02	2034129-03	2034129-04	Reg 153/04 (2011)-Table 3 Residential
Matrix:	Soil	Soil	Soil	Soil	
MDL/Units					
Benzo [b] fluoranthene	0.02 ug/g	<0.02	<0.02	-	(0.78) 0.78 ug/g
Benzo [g,h,i] perylene	0.02 ug/g	<0.02	<0.02	-	(7.8) 6.6 ug/g
Benzo [k] fluoranthene	0.02 ug/g	<0.02	<0.02	-	(0.78) 0.78 ug/g
Chrysene	0.02 ug/g	<0.02	<0.02	-	(7.8) 7 ug/g
Dibenzo [a,h] anthracene	0.02 ug/g	<0.02	<0.02	-	(0.1) 0.1 ug/g
Fluoranthene	0.02 ug/g	<0.02	<0.02	-	(0.69) 0.69 ug/g
Fluorene	0.02 ug/g	<0.02	<0.02	-	(69) 62 ug/g
Indeno [1,2,3-cd] pyrene	0.02 ug/g	<0.02	<0.02	-	(0.48) 0.38 ug/g
1-Methylnaphthalene	0.02 ug/g	<0.02	<0.02	-	(3.4) 0.99 ug/g
2-Methylnaphthalene	0.02 ug/g	<0.02	<0.02	-	(3.4) 0.99 ug/g
Methylnaphthalene (1&2)	0.04 ug/g	<0.04	<0.04	-	(3.4) 0.99 ug/g
Naphthalene	0.01 ug/g	<0.01	<0.01	-	(0.75) 0.6 ug/g
Phenanthrene	0.02 ug/g	<0.02	<0.02	-	(7.8) 6.2 ug/g
Pyrene	0.02 ug/g	<0.02	<0.02	-	(7.8) 7.8 ug/g
2-Fluorobiphenyl	Surrogate	79.9%	81.6%	-	
Terphenyl-d14	Surrogate	86.2%	81.7%	-	

Certificate of Analysis
Client: Hallex Environmental Ltd.
Client PO:

Report Date: 24-Aug-2020
Order Date: 18-Aug-2020
Project Description: E-19-71-2

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Conductivity	ND	5	uS/cm						
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [a,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	0.174		ug/g		87.2	50-140			
Surrogate: Terphenyl-d14	0.151		ug/g		75.3	50-140			
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	9.67		ug/g		120	50-140			

Certificate of Analysis
Client: Hallex Environmental Ltd.
Client PO:

Report Date: 24-Aug-2020
Order Date: 18-Aug-2020
Project Description: E-19-71-2

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	67	7	ug/g	ND	94.0	80-120			
F2 PHCs (C10-C16)	92	4	ug/g	ND	88.3	60-140			
F3 PHCs (C16-C34)	207	8	ug/g	ND	86.3	60-140			
F4 PHCs (C34-C50)	81	6	ug/g	ND	75.0	60-140			
Semi-Volatiles									
Acenaphthene	0.080	0.02	ug/g	ND	72.9	50-140			
Acenaphthylene	0.075	0.02	ug/g	ND	68.2	50-140			
Anthracene	0.081	0.02	ug/g	ND	73.8	50-140			
Benzo [a] anthracene	0.098	0.02	ug/g	ND	89.6	50-140			
Benzo [a] pyrene	0.083	0.02	ug/g	ND	75.7	50-140			
Benzo [b] fluoranthene	0.080	0.02	ug/g	ND	72.7	50-140			
Benzo [g,h,i] perylene	0.087	0.02	ug/g	ND	79.1	50-140			
Benzo [k] fluoranthene	0.077	0.02	ug/g	ND	69.8	50-140			
Chrysene	0.084	0.02	ug/g	ND	76.6	50-140			
Dibenzo [a,h] anthracene	0.077	0.02	ug/g	ND	69.9	50-140			
Fluoranthene	0.113	0.02	ug/g	0.029	76.6	50-140			
Fluorene	0.086	0.02	ug/g	ND	78.7	50-140			
Indeno [1,2,3-cd] pyrene	0.086	0.02	ug/g	ND	78.1	50-140			
1-Methylanthracene	0.088	0.02	ug/g	ND	80.7	50-140			
2-Methylanthracene	0.086	0.02	ug/g	ND	78.8	50-140			
Naphthalene	0.076	0.01	ug/g	ND	69.1	50-140			
Phenanthrene	0.097	0.02	ug/g	ND	88.8	50-140			
Pyrene	0.099	0.02	ug/g	0.021	71.0	50-140			
Surrogate: 2-Fluorobiphenyl	0.190		ug/g		86.8	50-140			
Surrogate: Terphenyl-d14	0.178		ug/g		81.4	50-140			
Volatiles									
Benzene	8.94	0.02	ug/g	ND		60-130			
Ethylbenzene	9.51	0.05	ug/g	ND		60-130			
Toluene	9.74	0.05	ug/g	ND		60-130			
m,p-Xylenes	19.5	0.05	ug/g	ND		60-130			
o-Xylene	9.97	0.05	ug/g	ND		60-130			
Surrogate: Toluene-d8	16.0		ug/g		99.0	50-140			



Parcel ID: 2034129

Chain Of Custody
(Lab Use Only)
No 53738

Client Name: **Halex Environmental Ltd.**
Address: **Contact Kevin Christian**
4999 Victoria Ave.
Niagara Falls, ON L2E 4C9
Telephone: **Ph: 905-988-8030**

Project Ref: **E-19-71-2**
Order #: **20-003**
Site #: **20-003**
Email: **kevinchristian@halex.ca**
klasier@halex.ca

Page **1** of **1**
Turnaround Time
 1 day 3 day
 2 day The Quicker
Date Required: _____

Regulation 153/04
 Other Regulation
 SW (Surface Water) SS (Storm/Sanitary Sewer)
 P (Part) A (Aq) O (Other)

Matrix: _____
Air Volume: _____
of Containers: _____
Date: _____
Time: _____
Sample Taken: _____

Required Analysis
PAH
DHC (FI-FU)
BTEX
EC/SAR/pH
6 min size texture
(fine/coarse)

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Date	Time	Required Analysis
1 BH1-E						
2 BH2-L6						
3 BH3-B						
4 BH4-1						
5 BH3-7						
6						
7						
8						
9						
10						

Method of Recovery: **drop box**
Reviewed By: **BHomenick**
Date/Time: **18 Aug 20**
Checked By: **VP**
Date/Time: **18 Aug 20**
Temperature: **6** °C
Date/Time: **18 Aug 20**
Temperature: **9.5** °C

Chain of Custody
Personnel

Certificate of Analysis
 Client: Hallex Environmental Ltd.
 Client PO:

Report Date: 24-Aug-2020

Order Date: 18-Aug-2020

Project Description: E-19-71-2

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	20-Aug-20	24-Aug-20
Conductivity	MOE E3138 - probe @25 °C, water ext	21-Aug-20	21-Aug-20
PHC F1	CWS Tier 1 - P&T GC-FID	20-Aug-20	24-Aug-20
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	20-Aug-20	24-Aug-20
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	20-Aug-20	24-Aug-20
REG 153: pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	20-Aug-20	20-Aug-20
SAR	Calculated	21-Aug-20	21-Aug-20
Solids, %	Gravimetric, calculation	19-Aug-20	20-Aug-20

Certificate of Analysis

Report Date: 24-Aug-2020

Client: Hallex Environmental Ltd.

Order Date: 18-Aug-2020

Client PO:

Project Description: E-19-71-2

		Client ID:	BH4-7	BH5-6	BH3-1	
		Sample Date:	18-Aug-20 11:00	18-Aug-20 11:00	17-Aug-20 15:00	-
		Sample ID:	2034212-01	2034212-02	2034212-03	-
	MDL/Units		soil	soil	soil	-
Naphthalene	0.01 ug/g dry		<0.01	<0.01	-	-
Phenanthrene	0.02 ug/g dry		<0.02	<0.02	-	-
Pyrene	0.02 ug/g dry		<0.02	<0.02	-	-
2-Fluorobiphenyl	Surrogate		78.6%	80.2%	-	-
Terphenyl-d14	Surrogate		82.3%	79.1%	-	-

Certificate of Analysis
Client: Hallex Environmental Ltd.
Client PO:

Report Date: 24-Aug-2020
Order Date: 18-Aug-2020
Project Description: E-19-71-2

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
SAR	3.88	0.01	N/A	3.96			2.0	30	
Conductivity	833	5	uS/cm	860			3.2	5	
pH	7.42	0.05	pH Units	7.43			0.1	10	
Hydrocarbons									
F1 PHCs (C8-C10)	ND	7	ug/g dry	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND			NC	30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND			NC	30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND			NC	30	
Physical Characteristics									
% Solids	95.6	0.1	% by Wt.	95.9			0.3	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g dry	ND			NC	40	
Acenaphthylene	ND	0.02	ug/g dry	ND			NC	40	
Anthracene	ND	0.02	ug/g dry	ND			NC	40	
Benzo [a] anthracene	ND	0.02	ug/g dry	ND			NC	40	
Benzo [a] pyrene	ND	0.02	ug/g dry	ND			NC	40	
Benzo [b] fluoranthene	ND	0.02	ug/g dry	ND			NC	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g dry	ND			NC	40	
Benzo [k] fluoranthene	ND	0.02	ug/g dry	ND			NC	40	
Chrysene	ND	0.02	ug/g dry	ND			NC	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g dry	ND			NC	40	
Fluoranthene	0.030	0.02	ug/g dry	0.029			5.2	40	
Fluorene	ND	0.02	ug/g dry	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g dry	ND			NC	40	
1-Methylnaphthalene	ND	0.02	ug/g dry	ND			NC	40	
2-Methylnaphthalene	ND	0.02	ug/g dry	ND			NC	40	
Naphthalene	ND	0.01	ug/g dry	ND			NC	40	
Phenanthrene	ND	0.02	ug/g dry	ND			NC	40	
Pyrene	0.023	0.02	ug/g dry	0.021			8.8	40	
Surrogate: 2-Fluorobiphenyl	0.197		ug/g dry		89.8	50-140			
Surrogate: Terphenyl-d14	0.177		ug/g dry		81.0	50-140			
Volatiles									
Benzene	ND	0.02	ug/g dry	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g dry	ND			NC	50	
Toluene	ND	0.05	ug/g dry	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g dry	ND			NC	50	
o-Xylene	ND	0.05	ug/g dry	ND			NC	50	
Surrogate: Toluene-d8	9.33		ug/g dry		104	50-140			

Certificate of Analysis

Client: Hallex Environmental Ltd.

Client PO:

Report Date: 24-Aug-2020

Order Date: 18-Aug-2020

Project Description: E-19-71-2

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.
- When reported, data for F4G has been processed using a silica gel cleanup.

Certificate of Analysis

Hallex Environmental Ltd.

4999 Victoria Ave
Niagara Falls, ON L2E 4C9
Attn: Kevin Christian

Client PO:
Project: E-19-71-2
Custody: 53741

Report Date: 1-Sep-2020
Order Date: 26-Aug-2020

Order #: 2035361

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2035361-01	MW1
2035361-02	MW2
2035361-03	MW3

Approved By:



Alex Enfield, MSc
Lab Manager

Summary of Exceedances

(If this page is blank then there are no exceedances)
Only those criteria that a sample exceeds will be highlighted in red

Regulatory Comparison:

Paracel Laboratories has provided regulatory guidelines on this report for informational purposes only and makes no representations or warranties that the data is accurate or reflects the current regulatory values. The user is advised to consult with the appropriate official regulations to evaluate compliance. Sample results that are highlighted have exceeded the selected regulatory limit. Calculated uncertainty estimations have not been applied for determining regulatory exceedances. Regulatory limits displayed in brackets, (), applies to medium and fine textured soils.

Criteria:

Client ID	Analyte	MDL / Units	Result	Reg 153/04 (2011)-Table 3 Non-Potable Groundwater
MW3	F2 PHCs (C10-C16)	100 ug/L	8730 [2] [4]	(150) ug/L
MW3	F3 PHCs (C16-C34)	100 ug/L	9880 [2] [4]	(500) ug/L

Certificate of Analysis
Client: Hallex Environmental Ltd.
Client PO:

Report Date: 01-Sep-2020
Order Date: 26-Aug-2020
Project Description: E-19-71-2

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
Volatiles									
Benzene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: Toluene-d8	82.0		ug/L		102	50-140			

Certificate of Analysis
Client: Halex Environmental Ltd.
Client PO:

Report Date: 01-Sep-2020
Order Date: 26-Aug-2020
Project Description: E-19-71-2

Qualifier Notes:

Login Qualifiers :

Sample - Received with >5% sediment, instructed to decant and analyze without sediment

Sample Qualifiers :

- 2 : Extraction difficulties - emulsion.
 - 3 : Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
 - 4 : FID trace is elevated but does not look like typical hydrocarbons. May be due to other substances present in the sample.
- QC Qualifiers :**
- S-GC : Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

- n/a: not applicable
- ND: Not Detected
- MDL: Method Detection Limit
- Source Result: Data used as source for matrix and duplicate samples
- %REC: Percent recovery.
- RPD: Relative percent difference.
- NC: Not Calculated



Client Name: **Halex Environmental Ltd.**
 Contact: **Kevin Christian**
 4999 Victoria Ave.
 Niagara Falls, ON L2E4C9
 Ph: 905-988-8030

Project Ref: **E-19-71-2**
 Order #:
 PO #:
 Email: **christian@halex.ca**
klasier@halex.ca

Page **1** of **1**
 Turnaround Time
 1 day
 2 day
 3 day
 Date Required: **Regular**

Regulation 153/04
 T-100
 T-100-1
 T-100-2
 T-100-3
 T-100-4
 T-100-5
 T-100-6
 T-100-7
 T-100-8
 T-100-9
 T-100-10
 T-100-11
 T-100-12
 T-100-13
 T-100-14
 T-100-15
 T-100-16
 T-100-17
 T-100-18
 T-100-19
 T-100-20

Other Regulation
 RC 558
 RC 559
 RC 560
 RC 561
 RC 562
 RC 563
 RC 564
 RC 565
 RC 566
 RC 567
 RC 568
 RC 569
 RC 570
 RC 571
 RC 572
 RC 573
 RC 574
 RC 575
 RC 576
 RC 577
 RC 578
 RC 579
 RC 580

Matrix Type: S (Soil/Sed), GW (Ground Water)
 SW (Surface Water) SS (Storm/Sanitary Sewer)
 P (Paint) A (Air) O (Other)

Sample Taken
 Date: **Aug 25**
 Time: **3pm**

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Date	Time	Required Analysis
1 M01	GW		1	Aug 25	3pm	PAH PAC (FI-FU) BTEX
2 M02	GW		1			
3 M03	GW		1			
4						
5						
6						
7						
8						
9						
10						

Requested By: **Sign**
 Received By: **KL**
 Date/Time: **Aug 24, 7:00 PM**
 Temperature: **22.7 °C**

Received at Lab: **KL**
 Date/Time: **21-Aug-20 8:30**
 Temperature: **7.4 °C**

Method of Delivery: **ASTRA KENW D/O**
 Verified By: **KL**
 Date/Time: **21-Aug-20 8:30**
 pH Verified:

Comments: **PLEASE DON'T M03 PAH.**

Certificate of Analysis

Report Date: 14-Sep-2020

Client: Hallex Environmental Ltd.

Order Date: 8-Sep-2020

Client PO:

Project Description: E-19-71-2

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	11-Sep-20	12-Sep-20

Certificate of Analysis

Report Date: 14-Sep-2020

Client: Hallex Environmental Ltd.

Order Date: 8-Sep-2020

Client PO:

Project Description: E-19-71-2

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						

Certificate of Analysis
Client: Hallex Environmental Ltd.
Client PO:

Report Date: 14-Sep-2020
Order Date: 8-Sep-2020
Project Description: E-19-71-2

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.
- When reported, data for F4G has been processed using a silica gel cleanup.